

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

### Part I. White and pink spored groups.

By Rolf Singer (Tucuman, Argentina).

The worlds southernmost wooded area has been neglected by mycologists generally and by specialists of the *Basidiomycetes* in particular. The Argentine sector of Tierra del Fuego (Fireland) with its windswept steppes, its pure stands of Antarctic beech and lenga (*Nothofagus pumilio*), its sheep pastures and „turberas“ (Sphagneta) has been studied only by Spegazzini who collected *Basidiomycetes* along with other plants, but lost a large portion of his collections. The rest is preserved at the “Instituto de Botánica C. Spegazzini” at La Plata but was found to be in poor condition although the material is now kept in good order. Since Spegazzini's descriptions although comparatively good at the time they were published (as emphasized by P. A. Saccardo), are insufficient to determine his species if they are synonyms, or to place them in the correct genus if not, the author has attempted to make a reasonably complete study of the types still available, in combination with a trip devoted to the study of the fungi of Tierra del Fuego in the field.

Aside from Spegazzini's work, there is also a small paper by Bresadola who determined P. Dusén's and O. Nordenskjöld's fungous material. The specimens are supposed to be deposited at the Riksmuseet in Stockholm but very few of these specimens were actually found there, and these do not concern Bresadola's new species, nor are they in a condition conducive to comparative studies. Since many of these specimens came from the region visited by the author during his mission to Tierra del Fuego, the interpretation of Bresadola's list can only be achieved in the light of a complete analysis of the mycoflora of the Rio Grande and the Lago Fagnano region. The collection and observation of fungi in these regions was first suggested by the Rector of the University of Tucumán, Dr. Horacio D. Descote, and Mr. Bridge, grandson of the first white man who ever lived in lonely Tierra del Fuego, was kind enough to point out the localities most suited for the study of higher fungi.

Aside from these men, I have also to thank the family Sutherland who extended their kind hospitality to me offering everything from shelter to transportation in a country where there are no public conveyances, no hotels, not even good maps. The Sutherland home, the Estancia "Nueva Argentina" was made headquarters of the excursions which took place during summer season, in February 1950. For the financing of the trip, I am mainly indebted to the Fundación Miguel Lillo.

I am now presenting the first results of these investigations. It is the first contribution ever made containing a taxonomic treatment of Tierra del Fuego *Basidiomycetes* with complete descriptions and keys. The classification followed is that of Singer\*). The colors are indicated in terms of Maerz & Paul's Chart\*\*). The abbreviations of the herbaria cited are those recommended by Lanjouw\*\*\*).

#### Key to the Families and Genera.

- A. Hymenophoral trama irregular or regular; pronged metuloids and macrocystidia absent on the sides of the lamellae; spores rarely pink \*).
- B. Fungi combining the following characters: Lamellae comparatively thick and waxy; basidia comparatively long; clamp connections present in all four-spored individuals; spores smooth and non-amyloid; cystidia none; pigment of a vivid bright color, or, if not so, at least not incrusting the hyphal walls. *Hygrophoraceae*
- C. Hymenophoral trama irregular *Camarophyllus*
- C. Hymenophoral trama almost regular to regular *Hygrocybe*
- B. Never combining the above characters.
  - D. Pileus and stipe with a distinct epithelium; clamp connections present; cystidia absent; veil present; spores amyloid, smooth *Agaricaceae* (part) *Cystoderma*
  - D. Epithelium none, or not on both pileus and stipe present; not combining all the characters indicated above *Tricholomataceae*
- E. Spores non-amyloid.
  - F. Spores strongly echinate, subglobose or globose; trama perfectly regular; carpophores with a pinkish tinge, especially in the lamellae *Laccaria*
  - F. Spores not strongly echinate and fungi not combining the characters indicated above.
    - G. Lamellae splitting longitudinally and revolute from the edge towards the trama of the pileus in normal condition; tough and non-stipitate lignicolous species *Schizophyllum*

\*) Singer, Rolf. The *Agaricales* in modern Taxonomy. Lilloa 22: 1—850. pl. 1—29. Tucumán 1949 (1951).

\*\*\*) Maerz M. & Rea, Paul, A Dictionary of Color, First Edition. New York 1930.

\*\*\*) In *Chronica Botanica* 5 (2/3): 143—150. 1939.

\*) The characters indicated in the key are not identical with the characters on which the taxa concerned are based but refer merely to the species known or assumed to occur in Tierra del Fuego.



G. Lamellae never longitudinally split.

H. Tissue turning deep green in alkalis

*Antracophyllum*

H. Tissue not turning deep green in alkalis.

I. Lamellae decurrent or subdecurrent, not deeply emarginate-sinuate; clamp connections present at the septa of the hyphae of the carpophore, or, if absent, a membranous veil is present at the apex of the stipe.

J. All hyphae with clamp connections; veil none.

K. Cystidia, cheilocystidia, dermatocystidia absent or poorly differentiated.

L. Spores cylindric; lignicolous species with non-amyloid trama which is irregular in the lamellae; pigment not incrusting the hyphal walls *Pleurotus*

L. Spores not cylindric, or fungi not combining all the characters indicated above.

M. Walls of the internal hyphae of the stipe amyloid (see *Marasmius*)

N. Pigment never incrusting

*Clitocybe*

N. Pigment incrusting

(see *Omphalina*)

K. Cystidia and cheilocystidia or dermatocystidia or all, or some of these differentiated and conspicuous (if habit pleurotoid and only cheilocystidia differentiated, and epicutis not strongly differentiated, i. e. without dermatocystidia or diverticulate hyphae, see *Pleurotus!*) *Marasmiellus*

J. Clamp connections absent (except sometimes at the base of the basidia and in the mycelium). Veil present, forming an apical annulus which is membranaceous, or else absent, and then cuticle with a strong incrusting fuscous membrana pigment.

O. With annulus; mostly on wood

*Armillariella*

O. Without veil; mostly on earth

*Omphalina*

I. Lamellae neither decurrent nor subdecurrent but rather emarginate, deeply sinuate, adnexed, or subfree.

P. Hyphae of the trama amyloid *Marasmius*

P. Hyphae of the trama nonamyloid.

Q. Cystidia conspicuous; spores globose to subglobose, with a large hilar appendage; epicutis of the pileus well differentiated; carpophore with dull greyish brownish pigment

*Mycenella*

Q. Cystidia inconspicuous, or else not combining the above characters.

R. Clamp connections present.

- S. Epicutis of the pileus well differentiated with conspicuous hairs, with diverticulate or broom-like hyphal ends or dermatocystidia; cystidia or at least cheilocystidia usually well differentiated (see *Marasmiellus*).
- S. Not combining the characters indicated above.
  - T. Carpophores resupinate, usually dark colored *Resupinatus*
  - T. Centrally stipitate *Collybia*
- R. Clamp connections absent  
*Tricholoma*
- E. Spores amyloid.
  - U. Exosporial ornamentation present; clamp connections absent *Melanoleuca*
  - U. Exosporial ornamentation absent; clamp connections usually present.
    - V. Trama amyloid *Myccena*
    - V. Trama nonamyloid.
      - W. Cheilocystidia not or poorly differentiated; spores globose or subglobose, or at least a majority of the spores subglobose; habit collybioid; carpophores lignicolous *Fayodia*
      - W. Cheilocystidia differentiated; spores neither globose nor subglobose; habit clitocyoid, pleurotoid, or tricholomatoid
        - Y. Large fleshy carpophores; trama of the pileus not gelatinized.
        - Z. Lamellae decurrent; on wood *Cantharellula*
        - Z. Lamellae emarginate; on earth and humus *Porpoloma*
        - Y. Small pleurotoid carpophores; trama of the pileus partly strongly gelatinized *Panellus*
- A. Hymenophoral trama inverse or intermixed; cystidia conspicuous, or metuloids pronged on the sides of the lamellae, or else macrocystidia present; clamp connections absent.
  - Z. Thin flexible lamellae which are free at the stipe with pronged metuloids or conspicuous cystidia on the sides; trama homoiomerous and not fragile; spores smooth, non-amyloid, and pinkish in print *Amanitaceae: Pluteus*
  - Z. Moderately thin, rigid-fragile lamellae subfree to decurrent at the stipe and covered with a hymenium with numerous macrocystidia; trama heteromerous with numerous spherocysts; spores with strongly amyloid ornamentation, white in print *Russulaceae: Russula*.

### *Hygrophoraceae.*

The species occurring in the Magallanes region have (as far as known) no veil; their spores are non-amyloid; their trama is never bilateral; the mycelium does not form mycorrhiza with forest trees. Only two genera are represented. The genera *Hygrophorus*, so



common in the northern hemisphere, *Pseudohygrophorus* and *Bertrandia* are apparently absent.

Characters of the family: see key and diagnosis of the *Hygrophoraceae* in „The Agaricales in modern taxonomy“ (l. c.).

*Camarophyllus* (Fr.) Karst.

The author observed three typical *Camarophylli*. A forth was indicated by *Bresadola* (l. c.), see note after *C. adonis* Sing.

Key to the Species

- A. Carpophore not bright colored, without purple or lilac colors; spores smaller than  $7\ \mu$ ; habit of *Omphalina philonotis* *C. tehuelches*
- A. Carpophore with purple or lilac colors; spores larger than  $7\ \mu$ .
- B. Pileus hygrophanous, lilac; lamellae entirely lilac; habit of *Laccaria amenthystina* *C. laccarioides*
- B. Pileus non-hygrophanous, opaque; lamellae white or partially concolorous with the pileus which is violet; habit of *Camarophyllus pratensis* and *C. lacmus* *C. adonis*

***Camarophyllus tehuelches*** (Speg.) Sing. comb nov.

*Agaricus tehuelches* Speg., Bol. Acad. Nac. Cienc. Cordoba **11**: 6. 1887.

*Clitocybe tehuelches* (Speg.) Sacc., Syll. Fung. **5**: 23. 1891.

*Omphalia tehuelches* (Speg.) Speg. An. Soc. Cient. Arg. **94**: 68. 1922.

Pileus "Tuscan tan Sauterne" or between "Pablo" and "Aztec" when wet, hygrophanous and becoming pl. 9, 3—E, or 4—F when dry, shining when fresh but not viscid, opaque when dry, glabrous, in old caps striate over one third of the radius of the pileus by transparency, sometimes also sulcate, at first slightly incurved at the margin, convex with deeply umbilicate center, eventually infundibuliform, 10—27 mm. broad. — Lamellae "raffia", often forked, deeply decurrent, descendant, subdistant (up to 23 through-lamellae), rather narrow to rather broad (up to 3 mm. broad). — Stipe sordid white to subconcolorous, glabrous, hollow, tapering upwards or downwards, or subequal, central or slightly eccentric, (10) 15—30  $\times$  1.5—5 mm. — Context whitish, inodorous. — Spores 5—6.9  $\times$  4.8—5.5  $\mu$ , thin-walled, hyaline, short-ellipsoid, sometimes globose, non-amyloid. Basidia moderately long (just enough to meet the quotient required for the *Hygrophoraceae*), 34—42  $\times$  7.2—8.5  $\mu$ , 4-spored. Cystidia and cheilocystidia none. Hyphae of the irregular gill trama hyaline and 4—8  $\mu$  in diameter, i. e. rather variable, strongly interwoven but occasionally showing an axillar trend; hyphae of the dense cuticular layer slightly less loosely arranged than those of the completely irregular trama of the pileus, melleous, not incrustated by pigment, poorly differentiated, all hyphae non-amyloid, with clamp connections. — Among various mosses (rarely *Sphagnum*) in wet mossy pastures and in retreating *Sphagneta*, usually in large numbers, fruiting from February until April.

From Patagonia south to Tierra del Fuego. The author has studied the type and his own collections. The type came from Gregory Bay, Magallanes Street, LPS. In Tierra del Fuego it is common in the Cordillera and northeast to the timberline. Material collected at Estancia Nueva Argentina, Rio Grande, no. 213, is at LIL.

This species has the general appearance of an *Omphalina*, but in view of the pigmentation of the hyphae of the pileus and the length of the basidia which is somewhat beyond the basidial length generally observed in *Omphalina*, it is much better placed in *Camarophyllus*. In A. H. Smith's papers, one would compare it with *H. albipes* Peck and *H. obconicus* Peck. The former differs in having solid stipe, lack of depressed center, more narrow lamellae (although Peck had a tendency to exaggerate this character), presence of thin gelatinized hyphae on the surface of the pileus, and the tendency of dried specimens to become yellow. The latter differs in the shape of the pileus, smaller spores shorter basidia, more distant and ventricose lamellae.

*Camarophyllus tehuelches* is one of the banal-looking but very characteristic species of the subantarctic flora, and may be called a character species of the Sphagneta succession, often growing on a carpet of mosses and various phanerogamic plants covering the old peat. It is easily recognized once it has been fully understood.

Although this species creates by no means a taxonomic problem regarding the delimitation of the genus *Camarophyllus*, it may be indicated as an argument in favor of a closer relationship between *Camarophyllus* and *Omphalina* as recently suggested by R. Heim. ***Camarophyllus laccarioides*** Sing. spec. nov.

Pileo brunneo-purpurascente, fuscescente, hygrophano, haud viscido, substriato, 5—22 mm. — Lamellis lilacino-purpureis, adnato-subdecurrentibus vel decurrentibus, crassiusculis et acie obtusiusculis, distantibus latis. — Stipite concolori, cavo, 18—25 × 4—8 mm. — Sporis hyalinis, 7.5—9.5(13.5) × 4.1—5.8(6.8) μ. Basidiis tetrasporis, paucis bisporis. Hyphis fibulatis. — Habitat in pascuis tundriformibus ad terram, sparse, aestate, Rio Grande, Tierra del Fuego, R. Argentina.

Pileus "casserole" to "Piccadilly", in age often "leather brown" with "Mandalay" center, hygrophaneous, light tan when dry, not viscid, very short and very slightly striate by transparence when mature, 5—22 mm. broad, usually more or less convex. — Lamellae when young pl. 44, 2—F, old pl. 46, 2—G, adnate-subdecurrent to decurrent, with rather obtuse edges, rather thick, with frequently venose sides and often anastomosing in the interlamellar spaces, inserted (with 1—6 very short and 1—2 longer lamellulae present), or all equal but in the latter case usually all or nearly all forked in



most caps, distant, broad, especially behind. — Stipe concolorous, hollow, versiform,  $18-25 \times 4-8$  mm. — Context paler than the surface to whitish at places, in certain regions more or less hygrophanous, inodorous; taste not tested when fresh but seems slightly bitterish in dried condition. — Spores  $7.5-9.5(13.8) \times 4.1-5.8(6.9) \mu$ , ellipsoid, more rarely oblong-ellipsoid to cylindric-ellipsoid, few spores grotesquely elongated but these evidently originating from basidia with less than four spores, hyaline, smooth, non-amyloid, thin-walled. Basidia mostly 4-spored, but often (1)—2—(3)-spored ones intermixed, long and slender,  $66-80 \times 7.5-8.3 \mu$ . Cystidia and cheilocystidia none. Hyphae of the irregular hymenophoral trama strongly interwoven without a distinct axillar trend, elongate, with clamp connections; hyphae of the cuticular layer of the pileus not imbedded in a gelatinous layer, not incrustated by pigment nor with membrana-pigment, clamped at the septa, little differentiated from the strongly-irregular hyphae of the context.

On tundra-like pastures, from 5—40 m. away from the nearest trees, not very frequent. "Nueva Argentina", Rio Grande, Tierra del Fuego, February 16, 1950, coll. R. Singer, M 300, LIL.

The form described above is the normal four-spored form. A parthenogenetic two-spored form was also observed. In the parthenogenetic form the average size of the fruiting bodies was slightly smaller. The microscopical characters were as above described for the normal form but the spores were found to be often longer than twice their breadth, often broader than half their length,  $8-11 \times 4.0-6.0 \mu$ , with one large oil drop, ellipsoid to oblong or even subcylindric. Basidia  $66-80 \times 7.2 \mu$ ; sterigmata  $8.3 \mu$  long, two to a basidium. Hyphae without clamp connections.

On tundra-like pastures several meters away from the margin of the woods often together with the normal form, same locality, same date, coll. R. Singer M 300 a, LIL.

This species reminds one of *Agaricus sandicinus* of Fries and Lange but is larger than the European plant at least as far as Lange's interpretation is concerned; it also has different surface characters of the pileus and hollow stipe, furthermore, the lamellae are more distant in our fungus than in that described by Fries. It also reminds one of *Hygrophorus subviolaceus* Peck but differs definitely in narrower spores, non-viscid pileus, smaller size, shorter stipe and broader lamellae.

*Camarophyllus laccarioides* has, as the name suggests, a strong similarity with representatives of the genus *Laccaria* and may easily be mistaken for a *Laccaria* in the field. However, considering the shape of its spores and the structure of its trama, there is not the slightest doubt that there is scarcely any affinity. It is the illusion conveyed by habit and color that makes one think of *Laccaria*.

**Camarophyllus adonis** Sing. spec. nov.

Pileo violaceo, opaco, levi, sicco, 14—35 mm. lato. — Lamellis albis vel partim subconcoloribus, distantibus, decurrentibus. — Stipite concolore ad apicem, sed pallidiore, flavido ad basin, inter apicem et basin albo, sicco, glabro vel fibrilloso, saepe longitudinaliter compresso, 17—33  $\Rightarrow$  4.5—14 mm. — Carne alba sed sub cuticula concolori vel subconcolori, in basi saepe sordide flavido-pallescente, miti, inodora. — Sporis 7.5—9  $\Rightarrow$  5.5—6.8  $\mu$ . Basidiis tetrasporis, 40—66  $\Rightarrow$  6.8—8.3  $\mu$ . Hyphis pilei pigmento amethystino intracellulari gaudentibus, in cuticula haud gelatinascentibus, omnibus fibuligeris. Tramate lamellarum irregulari. — Habitat in apricis pascuis prope marginem silvarum *Nothofagi antarcticae* in Tierra del Fuego, Argentina.

Pileus when wet pl. 55, 11—E, dry „Bishop's violet”, not viscid, with opaque, glabrous surface with slightly wavy margin which is neither striate nor sulcate, usually more or less convex but rather versiform in age, 14—35 mm. broad. — Lamellae white or sometimes partly concolorous with the pileus, the interlamellar spaces always concolorous with the pileus, distant, forked, intermixed, with white edge, 2—2.8 mm. broad; spore print pure white. — Stipe at the apex concolorous with the pileus but paler, below white but at the base usually distinctly yellowish, solid or narrowly hollow, partly stuffed, usually ventricose, but often rather versiform, often longitudinally compressed, the surface more or less fibrillose to grabrous, not viscid, 17—33  $\times$  4.5—14 mm. — Context white but underneath the cuticle where it is more or less concolorous with the surface or pl. 45, 6—J, and in the base of the stipe usually sordid yellowish pallid; odor none; taste mild. — Spores 7.5—9  $\times$  5.5—6.8  $\mu$ , ellipsoid, without suprahilar depression, hyaline, smooth, Basidia 40—66  $\times$  6.8—8.3  $\mu$ , 4-spored, hyaline, clavate. Cystidia and cheilocystidia none. Hymenophoral trama irregular. Cuticular layer of the pileus poorly differentiated, not otherwise differing from the trama of the pileus than by the amethyst violet pigment which is dissolved in the cell sap, this pigment becoming buff in KOH after a while but remaining rather stable in dried material; there are no gelatinous layers at or near the surface. All hyphae with clamp connections.

Among herbs and mosses in pasture land close to the margin of scattered stands of *Nothofagus antarctica* in summer, Tierra del Fuego, Nueva Argentina and Lago Fagnano, R. Singer (M 351, type, and M 374, LIL).

This is one of the most beautiful agarics found in this region. The bright violet color and its appearance remind one of *Camarophyllus lacmus* as it is depicted by Bresadola, Icon Mycol. pl. 337—1 but it differs in the non-cinerascent pileus, the violet apex of



the stipe and broader lamellae. Bresadola indicates a *Hygrophorus pratensis* forma *coriicolor* Bres. (Ofvers. Kongl. Vet. Akad. Förhandl. 1900 (2): 312. 1900) from near Rio Grande. Since the habit of the Fuegian species is identical with that of *C. pratensis*, and carelessly dried material as often gathered by phanerogamists, will soon loose its characteristic pigment, one may assume that this form is identical with our species.

### *Hygrocybe* (Fr.) Karst.

Only one species occurs and even that is rare. It has the typical bright yellow-red color of this genus and, aside from *Marasmiellus fibula*, appears to be the only one of this color occurring in Tierra del Fuego.

*Hygrocybe sciophana* (Fr.) Karst., Hattsv. p. 233. 1879.

*Hygrophorus sciophanus* Fr., Epicrisis, p. 329. 1838.

*Agaricus sciophanus* Fr., Syst. Mycol. 1: 102. 1821.

Pileus "Kobe" to "Egyptian red", hygrophanous, "deep chrome yellow" when dry, or pallescent, becomes entirely fire orange on drying (in the herbarium), viscid, obtuse, non-striate, 11—12 mm. broad. — Lamellae yellow, deeper colored in the interlamellar spaces, obscured with red, becoming fire orange when dried in the oven, broad, ventricose, subdistant, adnexed; spore print pure white. — Stipe orange, at the apex slightly obscured with red, or at times sordid red over a larger area, entirely fire orange in dried condition, more yellow towards the base in fresh condition, very slightly viscid and drying rapidly, smooth, hollow, equal,  $25 \times 3.5$ —4 mm. — Context white, concolorous in the peripheric portions, especially in the area near the cuticle of the pileus; odor none; taste mild. — Spores hyaline,  $7.5$ — $10.2 \times 5.2$ — $6.2$   $\mu$ , ellipsoid, without suprahilar depression or applanation, or more rarely with an indistinct one, thin-walled, smooth; Basidia 4-spored,  $53 \times 10.2$   $\mu$ . Cystidia and cheilocystidia none. Hymenophoral trama between regular and subregular, consisting of slightly unequal, subparallel hyphae. Surface of the pileus with a distinct and broad layer of thin and very thin-walled hyphae imbedded in a gelatinous mass; these hyphae are erect and flexuous, hyaline (as contrasted with the pigmented hyphae below) and loosely arranged. All hyphae with clamp connections.

In herbose patches in opening between stands of *Nothofagus antarctica*, well outside the woods, rare and solitary, fruiting in summer, Lago Fagnano, Tierra del Fuego, Argentina, coll. R. Singer, February 19, 1950, M 303, LIL.

This seems to agree with the European concept of this species such as illustrated by Fries, Icones Selectae Hymen. 2: 66, pl. 167, 1. 1884, and the corresponding picture preserved at the Riksmuseet in

Stockholm among the originals of Fries ("E. M. Fries direxit"). The spores of the Fuegian specimens are slightly smaller than indicated in the European works dealing with this species, and the pileus is less striate than shown in many European pictures. Only the dried material of our plant shows a slight occasional striation over a short distance from the margin but indistinctly so, and I find no note indicating this from fresh material. However, it is believed that these slight and probably variable discrepancies are too insignificant to separate our form from the European type.

### *Tricholomataceae.*

The family is subdivided into a number of tribes. The following tribes occur in the region (including the species known from limnophilous regions of Chile):

*Clitocybeae*: *Laccaria*, *Clitocybe*, *Lepista*, *Collybia*, *Anthracophyllum*, *Armillariella*, *Omphalina*, *Tricholoma*.

*Leucopaxilleae*: *Cantharellula*, *Porpoloma*, *Melanoleuca*.

*Resupinateae*: *Resupinatus*.

*Panelleae*: *Panellus*.

*Schizophylleae*: *Schizophyllum*.

*Lentineae*: *Pleurotus*.

*Myceneae*: *Mycenella*, *Marasmiellus*, *Marasmius*, *Fayodia*, *Mycena*.

### *Clitocybeae.*

This contains all those genera with nonamyloid spores, non-resupinate and always stipitate carpophores, entire lamellae, and poorly differentiated epicuticular layer; species which have the hyphae of the interior of the stipe amyloid, or species with conspicuous cystidia or cheilocystidia, and species which are lignicolous and eccentrically or laterally stipitate and provided with irregular gill trama and cylindrical spores (all of these characters!) do not enter this tribus \*).

### *Laccaria* Berk. & Br.

The species of this region have pinkish lamellae and echinate, subglobose to globose, large spores. Two species were observed.

#### Key to the Species

- A. Spores medium sized; basidia tetrasporous; predominantly near the Atlantic Coast of Tierra del Fuego *L. tetraspora*
- A. Spores gigantic; basidia (1)—2—(3)-spored; predominantly on the Pacific side of the Magallanes region *L. echinospora*

\*) Only species from Tierra del Fuego, Argentine Sector, and limnophilous regions are considered. As for a more general description of the tribus, see THE AGRICALES IN MODERN TAXONOMY, 1. c.



*Laccaria tetraspora* Sing., Mycologia **38**: 689. 1946.

Pileus pale purple pinkish when dry, brownish flesh color when wet, also frequently a rather pure rosy-flesh-color when young and fresh, striate when wet, sulcate when dry, hygrophanous, pellucid, not viscid, glabrous to fibrillose, convex then appanate and with depressed center, in fresh condition sometimes, in dried condition nearly always umbilicate, 9—20 mm. broad. — Lamellae flesh-color-roseous, broad, distant, adnato-decurrent, pulverulent from the spores in age, intermixed; spore print pure white. — Stipe almost concolorous with the pileus, almost glabrous, dry, solid, equal, or at the base thickened, 10—30 × 1.5—2.5 mm.; mycelial tomentum scanty to moderately copious, white. — Context more pallid than the surface, almost fragile in the pileus but never brittle; odor none; taste mild. — Spores 7.5—14 × 7—13.5  $\mu$ , mostly about 11 × 10  $\mu$ , with 1—2.5  $\mu$  long pyramidal spines, hyaline, echinate, globose or subglobose, non-amyloid. Basidia 40—57 × 7.5—13.7  $\mu$ , 4-spored clavate to often ventricose in the portion just above the middle or even ampullaceous; cystidia none; cheilocystidia present but very inconspicuous, basidiomorphous, or narrower, very scattered to numerous, but edge of the lamellae not heteromorphous. Trama of the lamellae very regular, consisting of parallel to subparallel elongate hyphae. All hyphae with clamp connections, and non-amyloid.

In frondose woods, particularly in comparatively open woods, often along the roads and paths, or along the margin of the swamps, on the earth, always gregarious but in Tierra del Fuego particularly frequently clustered together and almost fasciculate, fruiting from December until June in the southern, and from June until October in the northern hemisphere. Known only from the regions adjacent to the Atlantic Coast, from Massachusetts (and probably farther north) south to Florida and from Uruguay south to Tierra del Fuego. In the latter territory, it was collected by R. Singer between Estancia Nueva Argentina and the Cordillera to the east end (cabecera) of Lake Fagnano, M 207, M 209, LIL.

This species so common south of Rio Grande and around Buenos Aires and Montevideo, is remarkable for its strange area. It has never been found outside the coastal region (in the larger sense) of the Atlantic Ocean of North and South America. It was confused with *Laccaria laccata* by many authors, among others C. Spegazzini. However, *L. laccata* differs by smaller spores with shorter spines, larger average size (although some specimens of *L. tetraspora* reach the size of medium sized *L. laccata*) and geographic distribution. The southernmost locality where the true *L. laccata* has been found is to my knowledge Costa Rica where it occurs on volcanic ash and soil of the Volcano Irazu at 10700 feet altitude (the fungus ascending

highest of all), coll. W. R. Hatch no. 175, FH (det. Singer); on the other side, *L. laccata* reaches Greenland (two collections in the Herbarium Snell, R. I. USA.).

*Laccaria echinospora* (Speg.) Sing. Ann. Mycol. **41**: 17. 1943.

*Agaricus echinosporus* Speg., An. Soc. Cient. Arg. **10**: 123. 1880.

*Clitocybe echinospora* (Speg.) Sacc. Syll. **5**: 198. 1887.

*Laccaria pumila* Fayod, Ann. R. Acc. d'Agr. Torino 1893, p. 91. 1893.

*Clitocybe pumila* (Fayod) Sacc., Syll. **17**: 13. 1905.

*Laccaria nana* Mass., R. Bot. Gard., Bull. Misc. Inf. 1913: 195. 1913.

Pileus from plate, 4, E—10 to deeper brownish pink, reaching "chutney" on disc and striae, distinctly and broadly transparently striate to sulcate, at times deeply sulcate when dry, hygrophanous or subhygrophanous, about „burnous" when dry, often slightly pruinose when dry, especially near the margin, glabrescent, neither viscid nor scaly or fibrillose, hemispherical and soon depressed, or campanulate then appanate, sometimes umbilicate almost from the beginning, sometimes with a papilla in deep depression, eventually often concave, often misshapen in various ways, 3—16 mm. broad. — Lamellae pink, eventually dusted with the white spores, sinuate-adsent to deeply decurrent, sometimes adnexed or partly so, subdistant to very distant, medium broad to rather broad, 2—4 mm. broad. — Stipe concolorous with the pileus, often dusted by spores, glabrous to coarsely but slightly fibrillose, stuffed, then hollow, equal, or slightly tapering upward or downward, without bulb, 10—22 × 1—3 mm.; basal tomentum white. — Context paler than the surfaces, white in the pith of the stipe, fleshy and somewhat fragile in the pileus, less fragile in the stipe; odor none; taste mild. — Spores 12—23 × 10—20  $\mu$ , globose to subglobose, with innate long spines (which are included in the spore measurements), hyaline, non-amyloid; spines (1)—1.5—3  $\mu$  long, arranged in spirals. Basidia about 50—59 × 12.7—13.1  $\mu$ , (1)—2—(3)-spored, at times all 2-spored (so in Punta Arenas and in many European collections), at times 2—3-spored (so in the type) and sometimes mixed 1- and 2-spored (so in some recent Argentine collections), Cheilocystidia either none or inconspicuous. Cystidia none. Subhymenium well developed, consisting of small clamped elements. Hymenophoral trama regular, subhyaline to melleous-hyaline, dense, All hyphae non-amyloid, with clamp connections.

On naked earth, or among hepatics or small mosses under trees (conifers or *Nothofagus* in the Magallanes area, otherwise often under *Alnus*, *Salix*, and *Populus*, preferably in moist places, gregarious, in the Magallanes region usually densely tufted and often deformed, fruiting from December until June, in the northern hemis-



phere from June until November. Probably everywhere in the cooler part of the temperate zones and the frigid zones (Europe, North America, South America).

Material studied: Punta Arenas, R. Thaxter, FH. — Argentina: Prov. Buenos Aires, Punta Lara, 9. VI. 1949, R. Singer, no. S. 115, LIL. — Recoleta, May 1880, C. Spegazzini, LPS, type. — Prov. Tucumán, Tafi del Valle, 17. I. 1950, R. Singer no. T 900, LIL. — USSR: Karelia, Kivatch, Retchkin, September 1936, Freidling & Singer, no. 4—163, LE. — Germany, Tempelhof bei Berlin, 20. VI. 1890, P. Hennings, FH, syntype of *Russuliopsis laccata* var. *nana* Henn.

This species does not seem to occur in the Rio Grande woods, where it is replaced by *L. tetraspora*. Its area is obviously very extensive and bipolar with an interruption in the tropical countries. In the province of Tucumán it occurs only in altitudes above 1900 m.

*Agaricus tortilis* Fr. is evidently not this species since the plate published by Bolton and cited by Fries seems to refer to a smaller *L. laccata* rather than to this species. I think that Rea (British Basidiomycetae p. 291, 1922) gives *A. tortilis* its correct interpretation. On the other hand, many authors misinterpret *A. tortilis* applying this name for our large-spored *Laccaria*. Massée whose type of *L. nana* Mass. I have not seen, must have disregarded these misinterpretations and renamed the large-spored species, a solution accepted by Rea. However, the species had been named twice before: Once by Spegazzini (*Agaricus echinispurus* Speg.), and once by Fayod (*Laccaria pumila* Fayod).

### *Clitocybe* (Fr.) Quél.

The species of the Magallanes region correspond well to the classical description of this genus with the exception of one pleurotoid species which might be looked for in the genus *Pleurotus*. All species belong to the section *Candicantes* Bat. Five species were observed.

#### Key to the species

- A. Pileus, lamellae and stipe with a grey-umber or fuscous tone; odor of anise; spores (5.5)—6—7.5  $\mu$  long; lamellae subdistant *C. patagonica*
- A. Pileus not so colored; odor of anise present or absent, but never strong; spores as above or different; lamellae not subdistant if spores reach 7.5  $\mu$  in length.
  - B. Spores medium sized: 7—8  $\times$  3—4  $\mu$  *C. suaveolens*
  - B. Spores smaller.
    - C. Lamellae subdistant, rather broad, some of the tramal hyphae rather thick (reaching almost 10  $\mu$  in diameter); growing on wood but stipe not eccentric *C. subleptoloma*

C. Not combining these characters.

D. Growing on earth or on dung; stipe never strongly eccentric; spores 4.8–6.5  $\mu$  long *C. subhygrophanoides*

D. Growing on rotting or rotten wood of *Nothofagus*; stipe often strongly eccentric or even lateral; spores 3–4.7  $\mu$  long *C. pleurotus*

*Clitocybe patagonica* (Speg.) Sacc., Syll. 9: 23. 1891.

*Agaricus patagonicus* Speg., Bol. Ac. Nac. Cienc. Cordoba 11: 6. 1887.

Pileus between „Arizona” and pl. 13, G–7, hygrophanous, white when dry, often preserving a greyish brownish zone on the margin when drying out, becoming grey again when dried, with slightly striate margin and slightly umbilicate center, otherwise smooth and convex, glabrous, not viscid, (10)–25–32 mm, broad. — Lamellae „Hamadan T” (grey) to „Polo tan”, adnate and subdecurrent, rather broad, (2)–3.5–4 mm, broad, subdistant, somewhat arcuate. — Stipe “Madrid” below, light colored above, stuffed, becoming hollow, with a broader bulb (6–8 mm, broad) which, however is not always very distinct, otherwise subequal, (15)–25–29  $\times$  (2)–3.5–4.5 mm.; mycelial tomentum at the base white. — Context subconcolorous with the surface and paler inside, fleshy, the stipe somewhat tougher; odor distinctly of anise when fresh; taste unknown. — Spores (5.5)–6–7.5  $\times$  (2.7)–3–3.8–(4.2)  $\mu$ , with slight suprahilar applanation or a small depression, smooth, hyaline, thin-walled, non-amyloid. Basidia 23–25  $\times$  6.7–7.5  $\mu$ , clavate, 4-spored. Cystidia and cheilocystidia none. Hymenophoral trama hyaline to brownish hyaline, consisting of long-filamentous equal hyphae, regular, of the *Clitocybe* type non-amyloid. All hyphae with clamp connections.

On woody humus under *Nothofagus antarctica* and on trunks between mosses in *Nothofagus pumilo* woods. Fruiting from February until April. From Punta Arenas eastwards to Rio Grande.

Material studied: Chile: Punta Arenas, April 1882, C. Spegazzini, type, LPS. — Argentina: Estancia Nueva Argentina, February 1950, R. Singer, M 192, 192 a, LIL.

This species resembles *C. vibecina* sensu Konr. & Maubl. from which it differs in having an anise odor, slightly broader and slightly more distant lamellae, less depressed pileus, more distinctly greyish lamellae and different habitat. It also reminds one of *C. obsoleta* as described and illustrated by Bresadola but differs in smaller spores, smaller basidia, more distant lamellae, and the habitat. It may be identical with *C. Velenovskyi* Sing. according to my key in *Annales Mycol.* 41: 25. 1943 but I have no material for comparison and Spegazzini's name would have priority in any case. *C. parilis* (Fr.) Quél. indicated by Bresadola for Rio Grande, is probably this.



*Clitocybe suaveolens* (Schum. ex Fr.) Quél., Champ. Jura, p. 90, 1872.

*Agaricus suaveolens* Schum. ex Fr., Syst. Mycol. 1: 91. 1821.

Pileus "raffia" when wet, hygrophanous, pl. 9, 2—C when dry, short transparently striate when wet, with frequently coarsely furrowed or sulcate margin, often with sinuate or crenate-undulate margin, always with shallowly umbilicate center, otherwise convex then irregularly flattened, with eventually strongly uplifted margin, glabrous, non-viscid, 35—53 mm. broad. — Lamellae "Leghorn" to pl. 9, 2—C, close to crowded, narrow, deeply decurrent, 2—3.5 mm. broad, frequently inserted with attenuate lamellulae, simple, never anastomosing. — Stipe concolorous with the pileus but with innate white fibrillose longitudinally appressed lines, paler in youth in dry weather than when old or wet, often deeply canaliculate and compressed when old, very slightly subpruinose at the apex when young, decidedly hollow even when young, subequal or with swollen base, 30—40 × 4—14 mm.; basal mycelium white. — Context white, unchanging, somewhat elastic but not tough; odor of anise of *Marasmius oreades* but not very strong; taste mild. — Spores 7—8 × 3—4 μ, smooth, thin-walled, hyaline, cylindric to ellipsoid-oblong, non-amyloid. Basidia 21—23 × 6—7.5 μ, 4-spored. Cystidia and cheilocystidia none. Hymenophoral trama consisting of slightly interwoven hyphae all being filamentous and more or less of the same diameter, regular and of the *Clitocybe*-subtype. Cuticle very little or not differentiated. All hyphae non-amyloid, with clamp connections.

Around cow manure in herbose place in sparse woods of *Nothofagus antarctica*. Fruiting in February (in the northern hemisphere in summer and fall), in crowded groups. Occurring in Europe and probably in the whole circumpolar region, in the southern hemisphere known only from Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, 13. II. 1950, R. Singer, M 246 LIL. — Also various materials from Europe.

This species seems to be quite identical with the interpretation of *Clitocybe suaveolens* by various European authors. It is certainly identical with what Bresadola calls *Omphalia umbilicata* Fr. but which is not the *Agaricus umbilicatus* in the sense of Fries and in the current conception of European writers. I have preferred to give a description completely based on Tierra del Fuego material in order to make it possible to compare these data with the description of European material.

***Clitocybe subleptoloma*** Sing. spec. nov.

Pileo albedo vel alutaceo, dein alutaceo, hygrophano, albo in statu siccio breviter striato ad marginem, opimo in humidis, centro depresso

minore. — Lamellis albo-alutaceis, dein alutaceis, latiusculis, decurrentibus, subdistantibus. — Stipite albido vel alutaceo, glabro, aequali, vel attenuato basin aut apicem versus, 16—25 × 2—4 mm.; mycelio basali albo. — Carne alba, demum partim alutaceo-alba, inodora. — Sporis 4—5.3 × 2.5—3.8 μ, ellipsoideis, levibus, hyalinis, haud amyloideis. Basidiis 20 × 5.5 μ, tetrasporis. Cystidiis nullis. Tramate hymenophorali regulari, ex hyphis latiusculis, pro ratione latiuscule tunicatis (parietibus 0.5—0.6 μ crassis), latitudine inaequalibus, haud amyloideis consistente. Cuticula paululum differentiatia. Hyphis omnibus fibulatis. — Ad truncos nothofagineos, Tierra del Fuego, R. Argentina.

Pileus whitish or alutaceous, then alutaceous, hygrophanous, not viscid but slightly opimous in the wet stage, white when dry (from whitish to snow white), short transparently striate on the margin, convex with depressed center, eventually more applanate with depressed center, rarely almost infundibuliform, 10—28 mm. broad. — Lamellae whitish alutaceous, then alutaceous, rather broad, decurrent, more rarely partly subdecurrent, subdistant. — Stipe whitish or alutaceous, glabrous, equal, or tapering up or downwards, 16—25 × 2—4 mm.; basal mycelium white. — Context white, eventually partly alutaceous-white, fleshy in the pileus; odor none. — Spores 4—5.3 × 2.5—3.8 μ, ellipsoid, smooth, hyaline, non-amyloid, without suprahilar depression or with a very indistinct one. Basidia 20 × 5.5 μ, 4-spored. Cystidia and cheilocystidia none. Hymenophoral trama regular and rather well showing the *Clitocybe* subtype of hyphal configuration, consisting of rather broad (3.5—9.7 μ, i. e. broader than ordinarily in this genus) comparatively thick-walled for a *Clitocybe* (walls 0.5—0.6 μ in diameter) hyphae which are slightly interwoven in the middle and more strictly parallel near the hymenial layer, narrower and broader hyphae intermixed, hyaline, non-amyloid. Subhymenium not clearly separated from the marginal layer of the trama, its elements thin-walled, thin, short, and hyaline. Cuticle differentiated from the trama of the pileus only in having more depressed (all repent) and more equally filamentous hyphae. All hyphae thin-walled (comparatively — but see above), elongate, non-amyloid, with clamp connections.

On trunks of *Nothofagus* in the woods, fruiting in February, growing solitary, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 10. II. 1950, R. Singer, M 169, LIL, type. — M 170, paratype.

This species keys out with *Clitocybe leptoloma* but is different from the latter because it lacks silky pileus and its colors are more alutaceous than chalk white; its surface is smoothed-subshining



when dry rather than matted; the lamellae are subdistant and rather broad, not crowded to subclose and narrow as in *C. leptoloma* according to materials studied by the author in the United States. The margin is striate and at times even sulcate rather than smooth as in *C. leptoloma*. The European species differ strongly; most closely related may be *Clitocybe diatreta* (Fr.) Quél. which has smaller spores and grows on conifer needles. *Clitocybe straminea* Metrod, published without a Latin diagnosis, has a tendency to become golden yellow towards the margin which is smooth; the mycelial tomentum is yellow, and the lamellae are close; the odor is farinaceous; the structure of the trama is more typically like that of the species of this genus; the spores are smaller, and the habitat on conifer needles.

***Clitocybe subhygrophanoides*** Sing. spec. nov.

Pileo eburneo vel sordide alutaceo-albido, hygrophano, levi, glabro, convexo, umbonato vel subumbonato, 32—82 mm. lato. — Lamellis pallide sordide albidis vel subconcoloribus, variabiliter adnatis, confertis, latiusculis, rarius angustioribus. — Stipite albo vel subconcolori, irregulariter formato, subfibrilloso vel subfarinaceo ad apicem, 23—42 × 10—22 mm. — Carne alba, crassa; odore fragrante vel aniseo. — Sporis 4.8—6.5 × 2.8—4 μ Cystidiis nullis. Tramate hymenophorali regulari. — In silvis sparsis nothofagineis graminosis et in pratis humidis apricis. Tierra del Fuego, R. Argentina.

Pileus pl. 13, E—7, or pl. 14, G—9, hygrophanous, "Ivory" or pl. 9, E—3 when dry, at times somewhat marbled when just beginning to dry out, but usually unicolorous, smooth or with transparently striate margin over a very short (1 mm.) distance, never sulcate, entire, convex, subumbonate to umbonate, 32—82 mm. broad. — Lamellae "Caen stone" to pl. 14, G—9, often with "lariat" shades, sometimes with brownish edges when old, inserted, the lamellulae sometimes rather variably inserted, most of them rather suddenly attenuate, almost truncate, rather broad (5—8 mm. broad), or more rarely rather narrow (3.5—5 mm.), simple, close, sometimes crisp, very variably attached to the stipe: adnato-decurrent to decurrent, but in younger specimens often subemarginate, rounded-adnate, later often planely adnate and eventually often separating from the apex of the stipe; spore print not obtained in sufficiently thick layer, but obviously white. — Stipe white or whitish and remaining so on the apex, below often with concolorous longitudinal ridges (i. e. in the color of the pileus) on more whitish ground, ventricose or tapering up- or downward, glabrous and naked or slightly fibrillose, 23—42 × 10—22 mm. — Context white, eventually often becoming sordid, thick fleshy; odor agreeable, fragrant to subinodorous when adult, with an odor of anise but very weak (as in *C. suaveolens* above) when quite young and fresh, and with a honey odor when old and beginning to dry

(as in *Clitocybe melliolens* Sing.); taste mild. — Spores  $4.8-6.5 \times 2.8-4 \mu$ , ellipsoid-oblong to ellipsoid-subcylindric, often multi-guttulate, or else with one large oil droplet, with suprahilar applanation, hyaline. Basidia  $22-24 \times 5.5-6 \mu$ , 4-spored. Cystidia and cheilocystidia none. Hymenophoral trama regular, of the *Clitocybe*-subtype, consisting of unequally thick filamentous hyphae which are non-amyloid and provided with clamp connections, subparallel; also some oleiferous hyphae present.

On wet pastures and on grassy ground in open woods, often near dung, caespitose to densely gregarious, fruiting in February.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R. G., 13. II. 1950, R. Singer, no. M 245, LIL, type. — 21. II. 1950, no. M 392, LIL, paratype.

*Clitocybe dealbata* in the sense of Spegazzini (1887) is probably this.

***Clitocybe pleurotus*** Sing. spec. nov.

Pileus white or whitish, later becoming watery dotted in many specimens, and almost constantly assuming a buffy sordid ground color (center "sweetmeat", or partly reaching "pastel, parchment", or even "sandust" to pl. 9, B—4 in a few caps) starting from the center with the whitish marginal zone becoming narrower and narrower, hygrophanous, whitish when dry, more watery when wet, mostly with a more or less distinct white silkiness which becomes more visible upon the wet discolored surface of adult but not very old material, later without white silkiness, varying from short and indistinctly striate in thicker and younger caps to strongly striate (up to one half of the pileus especially in older and thinner caps), smooth to sulcate along the striae, in a few caps even densely pectinate, circular, especially in centrally stipitate caps, or else elliptical in outline, with the longer diameter parallel to the stipe or more often transversal in relation to the stipe, convex at first and either umbilicate or papillate, later, if it was papillate becoming obtuse or sub-obtuse, and if it was umbilicate the umbilicus widening into a central depression, or a depression near the rear portion of the pileus (if the latter is not circular), never viscid, glabrous or finely silky (see above), often with the extreme margin of very young caps finely pubescent but soon glabrescent, (9)—11—63 mm., the larger caps generally the ones which are more eccentrically stipitate. — Lamellae white or whitish, soon concolorous-paler, crowded to subclose, the crowded gills predominant in collections with small carpophores, and with papillate pilei, usually rather constantly denser or less dense in a given collection (population), narrow to rather broad (1.5—3 mm. broad), splitting along the trama when pileus is broken, adnate to sometimes very slightly sinuate or subdecurrent, never decurrent,



linear; spore print pure white; in dried material the lamellae always seem to be very narrow. Stipe white pruinose on whitish, soon sordid buffy (concolorous with pileus) ground, glabrescent when old, stuffed, then narrowly hollow, usually initially comparatively long, eventually rather short, often curved, most frequently vertical or obliquely ascendant or horizontal and recurved to a vertical position immediately (a few mm. s) underneath its attachment to the pileus, either centrally attached or more frequently eccentric to a variable degree, or even lateral but then still leaving a sterile margin in the rear, versiform, in most cases subequal, (8)—10—34  $\times$  1—4 mm. — Context white or whitish, eventually somewhat watery fuscous pallid or ochraceous, fleshy in pileus and somewhat toughish in stipe, unchanging; odor almost absent to rather strong, farinaceous and at the same time somewhat fruity, or with the odor of *Clitocybe infundibuliformis*, i. e. remarkably inconstant, absent in dried material: taste mild. — Spores 3—4.5  $\times$  2.5—3.2  $\mu$ , hyaline, smooth, thin-walled, short-ellipsoid to ellipsoid, non-amyloid. Basidia 16.5  $\times$  4—4.3  $\mu$ , 4-spored. Cystidia and cheilocystidia none. Hymenophoral trama regular, of the *Clitocybe* subtype, Cuticle consisting of hyphae which are repent, smooth, hyaline, filamentous. All hyphae non-amyloid, with clamp connections, thin-walled.

On fallen rotting trunks of *Nothofagus pumilio* in dense woods, always densely gregarious, fruiting in February.

Material studied: Argentina: Estancia Nueva Argentina, R. G., 10. II. 1950, R. Singer, no. M 175, LIL, type. — 15. II. 1950, R. Singer, no. M 285, LIL, paratype. — 18. II. 1950, R. Singer, no. M 339, LIL, paratype.

The paratypes differ from the type in having slightly less crowded lamellae and obtuse pilei (no papilla), however, I am convinced that the three collections cited above are conspecific. This species is unique among the species of *Clitocybe* now known as it has pleurotoid habit. It is quite possible that the European species *Pleurotus fimbriatus* or *P. circinatus* are very closely related to *Clitocybe pleurotus*, but there are no descriptions available which contain all the anatomical data in order to prove that they are *Pleurotus* species rather than relatives of *Pleurocybella lignatilis*. *Pleurotus fimbriatus* in the sense of the Friesian description has much broader stipe than our species, forked lamellae, eventually infundibuliform pileus which is merely subeccentric while many of our specimens are strongly eccentric to lateral and have simple lamellae and never truly infundibuliform pileus. The habit of the plant illustrated by Bresadola (Iconographia pl. 284, 1) is not reminiscent of our species. *Pleurotus circinatus*, on the other hand, was considered identical with *P. fimbriatus* by many authors, but if

this should not be the case, it would be different from *Clitocybe pleurotus* in habit (see Fries, Icon. Sel. 1: 88, 1), radicate stipe (which is also much thicker than in *C. pleurotus*), and the non-hygrophanous pileus (according to Ricken). Pilát mentions a specimen from North America collected by Atkinson and preserved at the Riksmuseet at Stockholm whose description fits our specimens rather well. Unfortunately I did not compare our material with this North American material. The only comparatively modern description of *P. fimbriatus* published by Kavina from Czechoslovakia, is probably identical with the original Scandinavian material published by Fries, or at least coincides very well with the description of the latter. The hymenophoral trama is here indicated as being composed of longitudinal hyphae (evidently meaning axillary arranged) with  $4\ \mu$  diameter (Pilát translates " $4\ \mu$  long" which is impossible). This would mean that it has the trama of a *Clitocybe* rather than a *Pleurocybella* and cannot therefore be a form of *Pleurocybella lignatilis* as suggested by Pilát. Consequently, one would assume that there are at least two species of pleurotoid Clitocybes in existence, one (or two) in Europe and North America, and one in Tierra del Fuego.

Latin diagnosis: Pileo albo, ad ochraceum vergente, hygrophano, plus minusve striatulo vel sublevi, circulari vel elliptico, inconspicue appresse sericeo et demum supra pileum aquosum albo-sericeo-obtecto, primum papillato aut umbilicato, demum depresso supra stipitis apicem, convexo, dein versiformi, 11—63 mm lato. — Lamellis concoloribus, angustis vel sublatiusculis, confertiusculis vel confertissimis, simplicibus, linearibus, adnatis, interdum leniter sinuatis, interdum subdecurrentibus; sporis in cumulo niveis. — Stipite albo vel concolori, plerumque subaequali, haud radicato, horizontali, curvatoque vel verticali, centrali vel excentrico vel sublaterali (at pileo circiter marginato) farcto deinde anguste cavo,  $10-34 \times 1-4$  mm. — Carne alba vel albida, saepe demum decolorata, subtenacella in stipite, carnosa in pileo, immutabili, miti, odore farinaceo et pomaceo, vel Clitocybis infundibuliformis, vel nullo. — Sporis  $3-4.5 \times 2.5-3.2\ \mu$ ; ceteris characteribus ut in Clitocybis typicis, praecipue tramate hymenophorali regulari gaudente. — Ad truncum putrescentem *Nothofagi* in silva, Tierra del Fuego, R. Argentina.

#### *Lepista* (Fr.) Smith.

*Lepista* differs from *Clitocybe* and the clamp-bearing species of *Tricholoma* in having rough pink spores. It is possible that *Lepista nuda* (Bull. ex Fr.) Sm. exists in Tierra del Fuego since I have observed immature fruiting bodies of the color of that fungus in flower pots inside a farmer's house in Rio Grande. However, even



if this determination should have been correct, it is most probably an introduced species although *L. nuda* was also indicated by Montagne for Illapel, Chile.

### *Collybia* (Fr.) Quél.

The two species observed in Tierra del Fuego belong in the section *Peronati*. They differ from *Marasmius* in the repent and smooth epicuticular hyphae.

#### Key to the species

- A. Habit of *Collybia dryophila*; stipe smooth, brown and tomentose below. On the earth and among Sphagnum. *C. platensis*  
B. Habit of *Collybia fusipes*; stipe often but obsoletely grooved, without brown basal tomentum; on buried wood and on stumps of *Nothofagus* *C. fuegiana*

### *Collybia platensis* (Speg.) Sing. comb. nov.

*Marasmius platensis* Speg., An. Mus. Nac. Bs. As. 6: 109. 1899.

Pileus ochraceous cinnamon, hygrophanous, buffish when dry, or preserving a light pinkish cinnamon in the center, strongly sulcate or rugose, striate over half of the radius, convex, often with depressed center, 20—30 mm. broad. — Lamellae light pinkish cinnamon or pl. 12, E—8, close to moderately close, rather narrow to moderately broad (2.5—3 mm.), broadest in the inner third, adnexed to adnate and rarely very slightly rounded-adnexed; spore print not obtained, probably white. — Stipe rather deep red brown (“Caldera”), much paler (cinnamon pallid) above, smooth, very finely pubescent all over, hollow, equal with narrow and acute brown tomentose base, 40—60 × 2—3 mm. — Context thin, inodorous and mild. Spores 6.2—8.8 × 3.4—5.5 μ, hyaline, or pale melleous in ammonia, smooth, ellipsoid-oblong to subcylindric, with suprahilar appanation, thin-walled, non-amyloid, rather variable in size. Basidia 22—28 × 7 μ, 4-spored. Cheilocystidia 27—35 × 4—4.2 μ, hair-like, undulose, obtusely rounded above, often somewhat branched or with nodose excrescencies, agglutinate. Cystidia none. Subhymenium well developed, definitely cellular. Hymenophoral trama regular, consisting of filamentous, subinterwoven hyphae. Cuticle consisting of a hypodermium of strongly interwoven-interlaced hyphae which are smooth and little pigmented (no incrusting pigment present), densely arranged; and an epicutis which differs from the hypodermium in its hyphae being applicate, repent, and forming a layer of one to several hyphal strands; all hyphae non-amyloid, with clamp connections.

On the humus and among Sphagnum in shady woods, often solitary or in small groups. Fruiting from February until April. Occurring from the province of Buenos Aires south to Tierra del Fuego.

Material studied: Argentina: Prov. de Buenos Aires, La Plata, C. Spegazzini, LSP, type. — Tierra del Fuego, R. G., Estancia Nueva Argentina, R. Singer, 10. II. 1950, no. M 158, LIL. — 12. II. 1950, no. 226, LIL. — Ushuaia, May, det. Bresadola (ut *Marasmius erythropus* Pers.), S.

This is the only species which is common to the province of Buenos Aires and Tierra del Fuego without being very widely distributed otherwise. However, it remains to be seen whether or not it is completely different from other species described in *Collybia* and *Marasmius* but not completely restudied up to this date, since their types are either in bad shape or not available. If the very fine covering of the surface of the stipe is overlooked, this species may easily be mistaken for *Collybia dryophila* which is common in Central and Northern Argentina. It is similar to and closely related with *Collybia spongiosa* (B. & C.) Sing. (= *Marasmius semihirtipes* Peck) which Bresadola thinks is the same as *Marasmius erythropus* Fr.

**Collybia fuegiana** Sing. spec. nov.

Pileo griseo vel cinnamomeo, pallescente, tomentoso, glabrescente, demum radiatim innate fibrilloso, umbonato vel subumbonato, levi vel ruguloso, 14—51 mm. lato. — Lamellis albidis dein alutaceis, adnatis, usque ad 3.5 mm. latis; sporis in massa niveis. — Stipite fuscidulo vel albo-sordido ad apicem et magis brunnescente ad basin, fere semper ut minimum partim longitudinaliter sulcato vel sulcato-innate-fibrilloso, demum semper partim vel ex toto subfibrilloso, e basi crassa apicem versus attenuato et subtus radicato-attenuato vel breviter acuminato, tubuloso, 29—69 × 4—11 mm. — Carne albida vel prope superficiem pallidiore, subalba in speciminibus juvenilibus, subtenacella, odore *Marasmii collini* gaudente; sapore inamoeno, foetido, sed neque alliaceo neque acri neque amaro. — Sporis 6.8—8 × 3.5—4.8 μ, oblongis vel ellipsoideis; cystidiolis plerumque numerosis; tramate hymenophorali hyalino, subregulari; epicute ex hyphis irregularibus, intertextis haud radialiter dispositis, pigmento incrustatis consistente. — Habitat ad ligna putrescentia ad et circum truncos nec non ad lignum immersum, plerumque caespitose vel fasciculariter crescens, rarius gregatim tantum, in silvis puris caesis nothofagineis, Tierra del Fuego. R. Argentina.

Pileus varying from grey to deep cinnamon, the grey caps especially common among the freshest youngest specimens, eventually bleaching to cinnamon buff, tomentose, glabrescent, eventually radiately innately fibrillose, umbonate, or subumbonate, convex, eventually somewhat irregular, smooth or rugulose, 14—51 mm. broad. — Lamellae whitish, soon cinnamon buff, adnate, close to subdistant, narrow, up to 3.5 mm. broad, intermixed, often with anastomosing



veins; spore print pure white. — Stipe whitish sordid, more brownish at the base, or brownish all over, almost always at least partly longitudinally grooved-sulcate, or innately fibrillose-sulcate, eventually partially or entirely subfibrillose like the stipe of *Laccaria laccata*, attenuate from a thickened base upwards, acute or attenuate into a short pseudorhiza from the thickened base downward, tubulose, without brown tomentum below, the mycelial tomentum not well developed and not discernible on dried material, 25—69 × 4—11 mm. — Context whitish or at least paler than the surface in mature material, white in young specimens, unchanging on the air, toughish, with an odor reminding one of that of *Marasmius collinus*; taste disagreeable, fetid, but neither bitter nor acrid, and not of garlic. — Spores 6.8—8 × 3.5—4.8 μ, hyaline, with very thin wall, oblong to ellipsoid, non-amyloid, smooth. Basidia 27—42 × 6—7.5 μ, 4-spored, clavate; basidioles fusoid. Cystidia none but cystidioles present and usually very numerous at the edges where they may be interpreted as cheilocystidia, in young specimens less developed, versiform, ampullaceous, fusiform, capitale with a constriction above a ventricose middle portion, etc., hyaline, e. gr. 35—44 × 5—8.5 μ. Hymenophoral trama hyaline, almost regular, consisting of filamentous hyphae. Epicutis consisting of hyphae which are not tangentially or radially arranged but strongly and irregularly interlaced-interwoven, filamentous, brown from a dissolved intracellular pigment and besides brown incrustated although the incrustation is rather scarce. All hyphae non-amyloid, with clamp connections.

On rotten wood of trunks and buried wood, often fasciculate or cespitose around the trunks, at least gregarious, usually in larger numbers in places where the wood has been cut recently, fruiting in February.

Material studied: Argentina: Tierra del Fuego, R. G. Estancia Nueva Argentina, 10. II. 1950, R. Singer, no. M. 157, LIL, type. Also observed further southeast, and at Lago Fagnano.

This species differs from *Collybia fuscopurpurea* in the absence of the brown tomentum at the base and from other similar species in the different taste and odor. This species has a great deal in common with the *Collybia butyracea* group but differs in several characters, especially the pure white spore print. *Collybia ushuaiensis* (Speg.) Sacc. differs in broad (10 mm.) lamellae, type is in extremely poor condition.

#### *Anthracophyllum* Ces.

This genus is easily recognizable among all pleurotoid agarics by the pigment which dissolves to a characteristic green solution when sections are studied in alkaline medium. The genus is charac-

teristic for the tropical countries. However, some species reach as south as Concepción, Chile and the Island San Juan Fernandez. For this reason, it may be desirable to list the southernmost Chilean species here and give a full description, in case it should occur in the Magallanes region although it is improbable that it reaches the Argentine sector of Tierra del Fuego.

*Anthracophyllum discolor* (Mont.) Sing., Lilloa. 1950.

*Xerotus discolor* Mont. in Gay, Historia de Chile, Botánica **7**: 353. 1850.

*Crepidotus xerotoides* Speg., Bol. Acad. Nac. Cienc. Cordoba **25**: 17 (reprint pagination, p. 19). 1921.

Pileus dusky terra cotta or testaceous to fulvous, smooth and rugose, not sulcate, with involute, later straight or sometimes sinuose margin, with glabrous dry surface, conchate, sessile or very short-stipitate, sometimes subresupinate, strongly convex, then convex and eventually convex-subappanate, 8—15 mm. broad. — Lamellae concolorous with the surface of the pileus or deeper brown, distant, somewhat ventricose, intermixed, with 10—12 through-lamellae and an equal number of lamellulae, concurrent at an eccentric point or attenuate toward the rudimentary stipe, with entire edge; spore print pure white (probably since the spores are perfectly hyaline in water, and the print is pure white in other species of this genus). — Stipe if present rudimentary, slightly paler than the pileus, glabrous or slightly pubescent. — Context thin, tough; odor and taste unknown but probably not remarkable. — Spores 7.7—10.2 × 4—6.8 μ, ellipsoid, non-amyloid, hyaline, but at times somewhat colored by the dissolving pigment of the hyphae, smooth. Basidia 35—39 × 7—9.5 μ, 4-spored, clavate; basidioles also clavate. Cystidioles sometimes present, rather inconspicuous; cystidia none. Subhymenium dense, ramose, distinct, both this and the hymenium deep green in NH<sub>4</sub>OH and KOH, with some deep colored particles remaining undissolved. Hymenophoral trama subregular, consisting of hyphae which are tinted greenish from the dissolving portion of the pigment when studied in KOH or NH<sub>4</sub>OH, arranged axillary either by individual hyphae or by strands of hyphae but at the same time rather interwoven. Trama of the pileus of filamentous hyphae, the latter broader than in the hymenophore. Epicutis not differentiated. All hyphae smooth, non-amyloid, with clamp connections. Chemical characters: Pileus, fresh as well as dried, becomes black with NH<sub>4</sub>OH.

On small branches and on cortex of *Nothofagus obliqua* in Southern Chile. Fruiting in May. Usually growing in large colonies.

Material studied: Chile: Mariluán, Victoria, Campo, LPS, type of *Crepidotus xerotoides* Speg. — Concepción, R. Thaxter, FH. — Southern Provinces of Chile, det. Montagne, FH, type of *X. discolor*.



The author has never collected this species. The details of the macroscopical description which cannot be seen on dried material were taken from the descriptions referring to material studied by the author. They were checked by the authors own observations and supplemented by anatomical data. *Montagne* himself had many doubts as to whether or not *A. discolor* is different from *A. Berterii* (Mont.) Sing. The author agrees with *Montagne* that the color and size of the carpophores seem to indicate a different species, an assumption which is corroborated by the fact that the spores are somewhat larger in *A. Berterii* than in *A. discolor*.

### *Armillariella* Karst.

This genus is characterized by its clampless hyphae and clitocyboid habit. It is well represented in South America in general, however, its only representative in the far South seems to be a species determined *Armillaria* or *Armillariella mellea* (Fl. D. ex Fr.) Karst. by various authors. I have not seen specimens myself. Thus, a redescription of this well known species is unnecessary since it can be looked up in any work on fungi. *A. mellea*, or what is called so by *Spegazzini*, was observed by him on Staten Island (Islas de los Estados) in March 1882, and a Latin description was given (Bol. Acad. Cienc. Cordoba **11**: 136. 1887). Another description was given, many years before, for specimens observed and illustrated by *Gay* in *Montagne*'s work on the fungi of Chile. It is said to occur in two forms in Valdivia and other places in Southern Chile.

### *Omphalina* Quél.

The genus *Omphalina* is now recognized in the narrower sense, i. e. containing only those species which are closely related to *O. umbellifera*. Two species of that group occur in Tierra del Fuego. *Omphalina griseopallida* (Desm.) Quél., Enchir. p. 44. 1886.  
*Agaricus griseopallidus* Desm. Pl. cr. nord fr. fasc. **3**, no. 120. 1825.  
*Omphalia griseopallida* (Desm.) Quél., Champ. Jura, p. 100. 1872.  
*Agaricus griseolus* Pers., Mycol. Europ. **3**: 87. 1828.  
*Omphalia griseola* (Pers.) Gill., Champ. Fr. Hymen. 1878.  
*Omphalia griseola* (Pers.) Quél., Fl. Mycol. p. 201. 1888.  
Forma **tetraspora** \*).

Pileus "Chukker br." on disk and striae, "lariat" between striae, hygrophanous, white when dried and in dry condition, glabrous,

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\*) The four-spored form occurs in Europe as well as in North and South America. Although it is obviously the original form from a phylogenetical point of view, the type is nomenclatorially not this but the two-spored form since *Desmazière*'s specimens are bisporous as has been ascertained by the author.

transparently striate, sulcate, convex, then with a central depression, 5—12 mm. broad. — Lamellae grey, the darkest portion of the carpophore when this is dried, rather moderately broad to broad, decurrent, sometimes forked, but not anastomosing nor intervenose, intermixed with very few lamellulae in small caps and with numerous short gills in large caps. — Stipe pale umber at the apex, paler to pallid below, solid or stuffed, eventually sometimes slightly hollow, subequal, sometimes somewhat eccentric. glabrous but somewhat mycelioid at base in many specimens, 8—10(20) × 1—1.5 mm. — Context paler than the surfaces, fleshy, thin; odor none, or at times very weakly aromatic. — Spores 8—9.5(10.2) × 4—6.2 μ, hyaline, smooth, non-amyloid, ellipsoid, or subcylindric, rarely saccate (broader above than below). Basidia 30—31 × 8—9.6 μ, clavate, 4-spored. Cystidia none. Hymenophoral trama irregular but not intermixed, with a slight axillar trend and therefore, when sectioned at the right angle, appearing subregular, consisting of filamentous hyphae which are not equal in size and shape, closely crowded, mostly strongly elongate, small to medium large, incrustated by a fuscous pigment. Subhymenium consisting of irregular elements, not distinctly cellular but its elements too variable in shape to be called filamentous-ramose, the elements usually small and short. Epicutis little differentiated. All hyphae non-amyloid, with clamp connections.

On naked earth in open pasture land, occasionally among *Polytrichaceae* but also among other mosses, algae, or herbs, usually gregarious but not cespitose. Fruiting in February (in other regions practically the whole year) Known from Europe, North America (e. gr. Maine, USA) and Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 21. II. 1950, R. Singer, no. M 391, LIL. — Also material from North America and Europe.

This species differs from other *Omphalinae* known to me in having clamp connections, strongly pigmented hyphae, and occurring on naked earth or sand being four-spored (at least in this particular form) and the two-spored form also having clamp connections, i. e. not being parthenogenetic. It differs from *O. gerardiana* of North America in its habitat (never occurring in *Sphagnum*) and size, and some other characters, especially color and spore size. It differs from *Omphalina rustica* in the sense of the author in the color of the dried pileus, in comparatively short stipe and the pigment-incrustation of the tramal hyphae. *O. rustica* occurs in the mountain region of Central South America.

***Omphalina defibulata*** Sing. spec. nov.

Pileo fusco-atro, hygrophano, in siccis pallescente usque ad subalbidum, transparenter striato, sicco levi, margine haud incurvo,



glabro, convexo, obtuso, demum concavo, cc. 8 mm. lato. — Lamellis obscure griseis, adnato-decurrentibus et subarcuatis, dein descendentibus, distantibus, haud furcatis, haud anastomosantibus. — Stipite subconcolori, pallescente, pruinato, piloso ad basin, aequali, 16.5—17.5 × 1—1.3 mm. — Carne hygrophana, inodora. — Sporis 6.7—7 × 4.5—4.8 μ. Basidiis plerumque tetrasporis. Tramate hyalino. Hyphis defibulatis. — Habitat ad terram nudam in pascuis. Tierra del Fuego, R. Argentina.

Pileus at first brownish black, then about „Rembrandt” when wet, hygrophanous, pallescent to nearly whitish when dry, moderately transparently striate, not sulcate, non-striate when dry, with straight margin at first, glabrous, convex, obtuse, later concave, about 8 mm. broad. — Lamellae deep grey, adnato-decurrent and slightly arcuate, soon becoming straight descendant, distant, not connected by veins and not forked; spore print not obtained. — Stipe subconcolorous, also bleaching with the rest of the carpophore, by dehydration, pruinose, pilose below, equal, 16.5—17.5 × 1—1.3 mm. — Context hygrophanous all through; odor none; taste not tested. — Spores 6.7—7 × 4.5—4.8 μ, hyaline, smooth, with numerous small oil droplets, non-amyloid, ellipsoid. Basidia about 33 × 5.8 μ, 4-spored, clavate, a very few basidia two-spored. Cystidia and cheilocystidia none. Hymenophoral trama irregular and even slightly intermixed (but without spherocysts), hyaline, without pigment-incrustation, consisting of two types of hyphae (1) thick hyphae with crowded septa, with a diameter of 13—15 μ, and (2) thin ones (2.5—5.5 μ in diameter), with more distant septa. Epicutis little differentiated, consisting of interwoven hyphae, with a strong pigment-incrustation which does not dissolve in KOH (membrana-pigment). All hyphae non-amyloid, without clamp connections.

On naked earth in pastures, in small groups. February. Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 18. II. 1950, R. S i n g e r, no. M 355, LIL, type.

This species differs from other clamp-less species in having four sterigmata to the basidium and not growing in the Sphagnetum (as does *O. philonotis*) and not showing any bright colors (as do the so-called varieties of *O. umbellifera*). In *O. umbellifera* (L. ex Fr.) Quél., the species most closely related to *O. defibulata* Sing., the four-spored form has clamp connections.

### *Tricholoma* (Fr.) Quél.

This large genus, well represented in the woods of the northern hemisphere is completely absent in the tropical and temperate belt beyond the area of *Pinus* (in the north) and *Nothofagus* (in the

south). There are two indigenous species in Tierra del Fuego. All the other tricholomatoid species so strikingly common in the woods of Fireland, are actually species of *Porpoloma*.

*Tracholoma* is characterized, in Tierra del Fuego, by the absence of clamp connections, emarginate-sinuate lamellae and non-amyloid spores.

Key to the species

- |   |                      |
|---|----------------------|
| A. Cortina present; spores large; $9.2-10 \times 7-7.3 \mu$ | <i>T. cortinatum</i> |
| A. Cortina absent; spores small: $4.8-5.5 \times 4-4.5 \mu$ | <i>T. fagnani</i>    |

**Tricholoma cortinatum** Sing. spec. nov.

Pileo brunneolo vel ochraceo vel carneo, fibrillis carneo-brunneis vel pallide ferrugineis obsito, furfuraceo-squamuloso-areolato vel ferrugineo-maculato in centro, saepe rimoso in margine qui saepe ferrugineus fit, viscido, convexo, saepe umbonato, 45—51 mm. lato. — Lamellis albis, demum subferrugineis vel ad aciem fuscidulis vel aurantiacis, confertis vel moderate confertis, adnatis vel sub-sinuatis, 5.5 mm. latis. — Stipite albo sed infra cortinam fibrillis veli generalis ferrugineis, aurantiacis, brunneolis obsito, ad apicem glabro vel minute fibrilloso, cortinato, solido vel cavo, versiformi, plerumque ventricosus,  $54-56 \times 14-25$  mm.; cortina pallida, stipitem supra zonam e velo generali fibrillosam coloratamque attingente et, interdum juncta cum velo generali, anulum exiguum fugacem distantem, angustum efformante. — Carne alba vel aquose alba, interdum partim subaurantiaca et sub cute persicino-carnea vel brunneola, immutabili; odore nullo; sapore miti. — Sporis  $9-10 \times 7-7.5 \mu$ , breviter ellipsoideis, levibus, haud amyloideis. Basidiis tetrasporis. Cystidiis nullis. Tramate hymenophorali subregulari, haud amyloideo, ex hyphis filamentosis defibulatis consistente. Epicute ex hyphis filamentosis parallelis vel subparallelis gelatinescentibus jacentibus, cum eis hypodermii membrana haud incrustata instructis efformata. — Habitat ad terram in silvis nothofagineis. Tierra del Fuego, R. Argentina.

Pileus "bure" to "burnous", or pl. 9, B—4, then margin often "ferruginous" to "talavera", the center sometimes scurfy and rusty dotted, or tending to "cocoa" when mature often becoming "cocoa" almost all over, when young with pale ferruginous fibrils or with fibrils colored pl. 5, A—11, and these fibrils later less distinct, but in age often becoming scurfy-squamose-areolate or scurfy-squamulose in the center and slightly and sparsely rimose as in *Inocybe fastigiata* on the margin, viscid, with at first involute margin, convex and frequently umbonate, 45—51 mm. broad. — Lamellae white, becoming somewhat cinnamon at some places where wounded, or with orange to fuscous edge, close, subclose, or moderately close,



adnate or more frequently shallowly sinuate, often with lines continuing the lamellae running down the apex of the stipe, 5.5 mm. broad; spore print not obtained but evidently white or nearly so. — Stipe white, the apex pure white and glabrous or finely concentrically or obliquely appressedly subfibrillose, underneath the apically attached cortina covered by the remainders of a general veil which is colored pl. 10, G—7, pl. 11, G—8, older pl. 12, E—9, or “ferruginous”, or “talavera” and forms belt-like appressed fibrils or squamulae, or a squarrose to floccose vestiment, solid or hollow, versiform, but usually thickest in the middle, or below, and attenuate or acuminate toward the very base and more or less tapering toward the apex, but also showing other shapes,  $54-56 \times 14-24$  mm.; cortina pallid, forming (sometimes together with portions of the general veil) a narrow, distant, small, fugacious annulus but not constantly so; at the zone of attachment of the cortina to the stipe, there are at times fuliginous fibrils on greenish ground (the greenish ground rather inconstant). — Context white or watery whitish, often with a sordid orangy hue in the pileus and with orange colored zones in the stipe, brownish or “peach blow” underneath the cuticle and frequently also in the base, unchanging, fleshy; odor none; taste mild. — Spores  $9-10 \times 7-7.5$   $\mu$ , smooth, most of them with a voluminous round oil droplet and thin to very thin wall, short-ellipsoid, some almost subglobose, non-amyloid, hyaline. Basidia  $34-48 \times 8.2-9.5$   $\mu$ , 4-spored. Cystidia none, but at the edge of the lamellae frequently with an accumulation of basidioles which may remain permanently sterile and take the place of cheilocystidia, but without modification of the shape of normal basidioles; on and near the edge at times all elements of the hymenium and even some of the trama filled with a fulvous sap (in the specimens where the edge is macroscopically fulvous or orange); cheilocystidia (or rather pseudoparaphyses of the edge), if present, measuring  $20-27 \times 4.2$   $\mu$ . Subhymenium consisting of small regularly filamentous hyphae which are transversely arranged. Hymenophoral trama consisting of rather thin filamentous hyphae which are subregularly arranged. Hyphae of the hypodermium filled with an ocher brown to ferruginous sap, their walls remaining hyaline and without pigment-incrustation. Epicutis with less intracellular pigmentation, consisting of repent, parallel to subparallel hyphae which gelatinize easily and show a wavy wall at times, but are not otherwise differentiated. All hyphae non-amyloid and without clamp-connections.

On the ground in *Nothofagus* woods, usually at the edge along the limit between the stands of *Nothofagus antarctica* and *N. pumilio*, solitary or in small groups, probably forming mycorrhiza with *Nothofagus*, fruiting in February. Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 22. II. 1950, R. S i n g e r, no. M 433, LIL, type. — 23. II. 1950, no. 444, LIL (paratype).

This is a fine new species quite different from other *Tricholomas* known in this section.

***Tricholoma fagnani*** Sing. spec. nov.

Pileo rufo-brunneo, margine tomentosus, involuto crenulatoque, centro tenuiter tomentosulo vel subtomentoso et simul viscido, demum indistincte subsquamuloso, 37—70 mm. lato. — Lamellis albis, demum alutaceo-pallidis et rufo-maculatis, latiusculis, sinuatis. — Stipite albo sed brunneo-fibrilloso in parte inferiore, interdum apice quoque rufo-brunnescente in vetustis sed numquam fibrilloso, evelato, plus minusve aequali, solido vel farcto, dein cavo, 43—50 × 12 mm. — Carne albida, demum concolori, inodora, miti. — Sporis 4.8—5.5 × 4—4.5  $\mu$ , breviter ellipsoideis, haud amyloideis, levibus. Cystidiis nullis. Tramate hymenophorali hyalino, regulari. Epicute ex hyphis parallelis subsasperulatis consistente, cutem efformante. Hyphis omnibus fibulis destitutis. Habitat ad terram subhumidam in silva nothofaginea (*Nothofagus pumilio*), gregatim. Tierra del Fuego, R. Argentina.

Pileus about "Chutney" but deeper and more intensely colored in the center, later partly "Pecan br.", with tomentose margin and thinly tomentose to subtomentose center, viscid when wet, becoming slightly subsquamulose in part, but the squamules not very distinct and not very constant, convex, in many caps subumbonate with the margin involute at first and then crenulate for a while, 37—70 mm. broad. — Lamellae white, eventually buffish pallid with reddish brown dotted edge, sinuate, 8 mm. broad, i. e. rather broad, close, tending to anastomose and fork; spore print white. — Stipe white and always glabrous at the apex, brown fibrillose below, the apex also often becoming concolorous with the pileus, sometimes eccentric, solid or stuffed, eventually becoming hollow, more or less equal, 43—50 × 12 mm.; veil none. — Context whitish, eventually concolorous with the surfaces, inodorous, mild to the taste. — Spores 4.8—5.5 × 4—4.5  $\mu$ , short ellipsoid, smooth, non-amyloid, with a very large oil droplet so that they appear opaque but actually always thin-walled, hyaline and transparent. Basidia 31—32 × 5.5—6.2  $\mu$ . Cystidia none Cheilocystidia none. Hymenophoral trama hyaline, regular. Cuticle with an epicutis of parallel hyphae with somewhat roughened walls. All hyphae non-amyloid, without clamp connections.

On somewhat moist earth in woods of *Nothofagus pumilio*, gregarious. Fruiting in February. Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Lago Fagnano, near the south shore of the eastern end of the lake, 19. II. 1950, R. S i n g e r, no. M 366, LIL, type.



This species reminds one somewhat of *Tricholoma imbricatum* and its group but is certainly new and different from all known species. Nevertheless, it is possible that Spegazzini has seen it and determined it as *T. imbricatum* (An. Soc. Arg. 94: 64. 1922) although he indicates the spores as larger ( $7-8 \times 4-5 \mu$ ) which would rather suggest *Tricholoma cortinatum* Sing. in somewhat immature state.

#### *Leucopaxilleae* Sing.

This contains all those genera with amyloid spores and non-pleurotoid habit (unless they are very large and fleshy) unless their hymenophoral trama is bilateral (but then not occurring in Tierra del Fuego!), or their habit is mycenoid or collybioid and their epicutis is strongly differentiated (by diverticulate hyphae, for example), or else their stipe is tubulose. In general one will look here for fleshy agarics with the habit of a *Tricholoma* or *Clitocybe*, rarely of *Pleurotus*, if the spores are amyloid. Smaller pleurotoid species with tougher trama will be found in the *Panelleae* \*).

#### *Cantharellula* Sing.

This genus is represented by a new subgenus not known from the Northern hemisphere which we call *Neocantharellula* Sing.

Subgenus *Neocantharellula* Sing. subgen. nov.

Pileo opaco vel subnitidulo, innato-fibrilloso, haud hygrophano vel hygrophano, haud viscido; pigmento haud incrustante; carne haud rubescente; fibulis in carpophoris praesentibus; lamellis fortiter decurrentibus, haud distincte constanterque furcatis; tramate hymenophorali subregulari; hyphis strati centralis intertextis; subhymenio subirregulariter vel subdivergenter intertexto-subramoso, elementis brevibus constituto; stipite frequenter excentrico; ad ligna putrida.

This subgenus is characterized by all the characters of *Cantharellula* (type subgenus of *Cantharellula*, formerly subgenus *Eu-Cantharellula* Sing.), i. e. clitocyboid habit (here often somewhat pleurotoid), absence of incrusting pigment and presence of clamp connections, comparatively narrow spores, but differs in the lack of the almost regular bifurcation of the lamellae and in having more distinct and more numerous cheilocystidia, and unchanging context. The type species is *C. tarnensis* (Speg.) Sing.

By the presence of numerous cheilocystidia, this subgenus approaches the following genus *Porpoloma*. Only one species is known in Tierra del Fuego.

\*) Only species from Tierra del Fuego, Argentine sector, and limittrophous regions, are considered. As for a more general description of the tribes, see The Agaricales in modern Taxonomy, l. c.

**Cantharellula tarnensis** (Speg.) Sing. comb. nov.

*Agaricus tarnensis* Speg., Bol. Acad. Nac. Cienc. Cordoba **11**:  
9. 1887.

*Pleurotus tarnensis* (Speg.) Sacc. **9**: 48. 1891.

Pileus "goat" to "grey 31", or "bamboo" to "thrush", becoming "Leghorn" when dry, not distinctly hygrophanous, not viscid, glabrous but innately radiately fibrillose, smooth, convex with deep umbilicus, 16—49 mm. broad. — Lamellae pure white, eventually often sordid or pale greyish white, moderately broad to rather broad (4—6 mm. broad), deeply decurrent, moderately close, or rather distant, often with crisp lamellulae, or with straight lamellulae, regularly intermixed, not anastomosing, rarely with a few forked ones intermixed, the felt of the stipe occasionally ascending in between the lamellae; spore print pure white. — Stipe whitish to greyish or like the pileus but paler, stuffed and soon becoming hollow but not tubulose, usually subfibrillose but sometimes finely tomentose, occasionally quite glabrous, often eccentric, almost lateral in some cases, but in other carpophores strictly central, often compressed, often canaliculate, more or less subequal,  $30-50 \times 3-11$  mm.; mycelium at the base of the stipe pure white. — Context white, unchanging, inodorous, mild. — Spores  $6-8.3 \times 3.3-4.8$   $\mu$ , ellipsoid oblong or cylindric to more rarely short-ellipsoid-cylindric, with suprahilar applanation, smooth, with a globose central oil droplet, thin-walled, the hilar appendage of the young spores often protracted into a spine-like organ, hyaline, distinctly amyloid. Basidia  $34-35 \times 6-6.3$   $\mu$ , 4-spored, clavate. Cystidia none. Cheilocystidia enormously versiform, most frequently elongate-clavate, or with a neck-like mucro above, sometimes subcylindric or fusoid or capitate, even narrowly ampullaceous, or vesiculose, thin-walled or thick-walled,  $22-37 \times 5.5-9.5$   $\mu$ , making the edge of the lamellae almost heteromorphous or quite heteromorphous (there are usually a few basidia mixed in). Cystidia none. Subhymenium ramose, consisting of filamentous short hyphae which are very thin and strongly interwoven but often seem to diverge in continuation of the slightly diverging bases of the basidia. Hymenophoral trama almost irregular to regular, consisting of filamentous hyphae which vary in diameter (from 1 to 12.5  $\mu$ ), often ramify, show very few septa, often run in all directions although an axillar trend is always noticeable, with thin walls. Cuticle dense, consisting of hyphous elements which are repent, radially arranged, filamentous, brownish but without incrusting pigment, the uppermost layer often somewhat interwoven; hyphae with clamp connections; all other hyphae likewise with clamp connections and non-amyloid.



On rotting wood of *Nothofagus pumilio* in shady woods, fasciculate or densely cespitose, fruiting in February and until May, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Rio Grande, Estancia Nueva Argentina, 11. II. 1950, R. Singer, no. M 185, LIL. — 14. II. 1950, no. M 271, LIL. — Ushuaia, Lago Fagnano, south shore near the eastern end of the lake on the slope toward Cerro Observación, 19. II. 1950, no. M 384, LIL. — Chile: Voces Bay toward Mount Tarn, May 1882, C. Spegazzini, LPS, type.

This is a characteristic and common species in the Magallanes area, easily recognizable, and quite different from all other species of the region.

### **Porpoloma** Sing.

This is a new genus, restricted to the Magallanes region and the *Nothofagus* area. It is extraordinary because of its close resemblance to *Tricholoma*, and all species known are strictly parallel to some species of *Tricholoma*. This is so striking in the field, one will not recognize the fact that a species of another genus has been collected unless the analysis is made in the laboratory. This convergence, the most instructive example of convergence in the *Agaricales* yet observed, does not by any means contest the value of the new genus, or impair its delimitation from *Tricholoma*. On the contrary, *Porpoloma* is not closely related to *Tricholoma* but rather to *Cantharellula* from which it differs in the heteromorphous edge of the lamellae which are not decurrent to adnate but deeply and distinctly sinuate to emarginate as in the most typical *Tricholomas*, furthermore by constant connection with *Nothofagus* with which all three species apparently form ectotrophic mycorrhiza as far as can be told on the basis of field observations. The difference from *Tricholoma* is as clear-cut as might be desirable but only in the anatomical-microchemical characters. The hyphae are clamp bearing although the analogy with the *Tricholoma* species does not concern the clamp-bearing *Tricholomas* but rather the clamp-less ones with which they also share the structure of the epicutis (to a certain extent). They differ from all *Tricholomas* constantly in distinctly amyloid spores. *Porpoloma* is also similar to the genus *Armillaria* in the restricted sense (with *A. luteovirens* as lecto-type) since it has the same amyloid spores but differs sharply in the regular gill trama and the absence of a veil. In contrast to *Cantharellula*, *Porpoloma* is an extremely homogeneous group of fungi, consisting of closely related species\*).

\*) Jossierand (Bull. Soc. Mycol. Fr. 59: 14. 1943) described a *Tricholoma cuneifolium* (Fr.) Gillet sensu Konrad & Maublanc, Kühner which has clamp connections and amyloid spores; the epicutis is mostly but not constantly cellular and the hyphae are provided with

**Porpoloma** Sing. gen. nov.

Pileo sicco, cuticula innata fibrillosa vel fibrillositate superficiali vel squamulis tomentoque oblecta; pigmento membranam hypharum cuticulae incrustante praesente vel absente; fibulis in hyphis carpophori semper praesentibus; lamellis constanter sinuatis vel emarginatis *Tricholomatum* modo, latiusculis vel latissimis; sporis in cumulo albis; tramate hymenophorali regulari; subhymenio subintertexto, ex elementis subsodiametricis et filamentosis composito; stipite numquam excentrico, carnosio; habitu generali tricholomatoideo; ad humum et terram silvestrem sub *Nothofagis*.  
Species typica: *P. sejunctum* Sing.

Key to the species

- A. Pileus, lamellae and stipe yellow from the beginning; appearance much like that of *Tricholoma sejunctum* *P. sejunctum*  
A. Pileus, lamellae and stipe not yellow from the beginning.  
B. Pileus innately fibrillose or rarely squamulose in the center; appearance much like that of *Tricholoma portentosum* *P. portentosum*  
B. Pileus distinctly squamulose over large areas; appearance much like that of *Tricholomas* of the terreum group *P. terreum*

**Porpoloma sejunctum** Sing. spec. nov.

Pileo citrino, brunneo-fibrilloso, haud viscido, convexo, 77—88 mm. lato. — Lamellis citrinis, latis, sinuatis, subconfertis, crispis, anastomosantibus; sporis in cumulo albis. — Stipite albo citrino-tincto, sicco, glabro, sursum attenuato, solido, 60—65 × 17—31 mm. — Carne citrina in circumferentia, intus flavo-alba vel sordida; odore nullo; sapore miti. — Sporis 8.2—9 × 5.5—6.3 μ, levibus, amyloideis, ellipsoideis. Cheilocystidiis numerosis, versiformibus. Epicute ex hyphis subparallelis vel parallelis, pigmento obsolete incrustatis consistente. Hyphis omnibus inamyloideis, fibuligeris. — Habitat ad terram humosam in silvis *Nothofagi pumilionis*, Tierra del Fuego, R. Argentina.

Pileus "citron yellow, Mimosa", strongly streaked with more or less appressed fibrils of "Wigwam" color, not viscid, convex, eventually flatter, 77—88 mm. broad. — Lamellae "Reed y.", broad (9 mm.), deeply sinuate, subclose, or medium close, crisp and anastomosing; spore print white. — Stipe white and partly "citron yellow, Mimosa" or "Reed y." from the beginning, dry, glabrous,

clamp connections. This species differs from *Porpoloma* only in the absence of cheilocystidia and the presence, in most caps, of an epithelium on the pileus. It grows in meadows rather than in the woods. I do not think that this European species is congeneric with the Fuegian species treated here. It is possible that the three small tricholomatoid species of Europe with epithelium and without *Lyophyllum*-basidia should enter a separate genus which might be called *Dermoloma* (Lange).



solid, tapering upward, with the base often bulbous, 60—65 × 17—19 mm., bulb 22—31 mm. thick; veil none. — Context yellowish in the cortical layer, otherwise yellowish white or sordid; odor none; taste mild, not farinaceous; there is a watery line above the lamellae. — Spores 8.2—9 × 5.5—6.3  $\mu$ , smooth, amyloid, ellipsoid, hyaline; Basidia 37 × 9  $\mu$ , 4-spored. Cheilocystidia variable in shape, usually vesiculose-clavate to cylindric but often irregular, tending to be flexuous, appressed to the edge or even interwoven, colorless in ammoniacal preparations of dried material, about 8—10  $\mu$  broad. Cuticle with a rather thick fulvous epicutis consisting of parallel to subparallel hyphae of 5—14  $\mu$  diameter, with rather thick and almost hyaline walls (1—1.5  $\mu$  in diameter), the walls rough from an inconspicuous but undoubtedly constant hyaline, yellowish and at places dark incrustation. All hyphae non-amyloid and with clamp connections. — Chemical characters: NH<sub>4</sub>OH and KOH on flesh negative. — NH<sub>4</sub>OH on surface of pileus more cinnamon but weak reaction. — KOH on pileus sordid. — FeSO<sub>4</sub> on flesh slightly deeper yellow (weak reaktion).

On the humus in shady woods of *Nothofagus pumilio*, rather frequent and widely distributed in Tierra del Fuego, fruiting in February.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 13./18. II. 1950, R. Singer, no. M 256, LIL, type. — M 256 a, LIL, paratype. — Also observed around Lago Fagnano.

This species is amazingly similar to *Tricholoma sejunctum*. It differs however, sharply in its anatomical characters. Field observations would tend to indicate a mycorrhizal relationship with *Nothofagus pumilio*. I am convinced that Spegazzini had this from Staten Island (as *Agaricus auratus* Fr.).

**Porpoloma portentosum** Sing. spec. nov.

Pileo griseo, centro interdum minute tomentosum, semper distincte innate radiatim fibrilloso *Tricholomatis portentosi* modo, sed ceterum perfecte glabro, nullo modo viscido, haud squamoso, interdum demum partim flavescente, convexo vel applanato, obtuse vel subtiliter umbonato, 42—65 mm. lato. — Lamellis albis, demum frequentissime subtiliter flavidis, moderate confertis vel subdistantibus, sinuatis, latis, interdum venosis ad latera; sporis in cumulo albis. — Stipite albo, demum saepe partim flavido, levi, sicco, nudo, solido, demum anguste cavo, versiformi, frequenter subaequali, 40—55 × 12—22 mm. — Carne alba, interdum hyalina, immutabili, raro flavida in parte in vetustis; odore nullo; sapore miti. — Sporis 9.8—11 × 6.2—7.5  $\mu$ , ellipsoideis, amyloideis, levibus. Cheilocystidiis summopere versiformibus, numerosis; tramate hymenophorali regulari; epicute ex hyphis subparallelis membrana pigmento haud in-

crustata instructis consistente. Hyphis omnibus inamyloideis, fibuligeris. — Habitat ad terram humosam sub *Nothofagus pumilionibus* in silvis umbrosis. Tierra del Fuego, R. Argentina.

Pileus "slate grey" to "log cabin" (more or less cinereous), in age with yellowish stretches, not viscid, not hygrophanous, center sometimes slightly tomentose, always radiately innately fibrillose, but otherwise glabrous, convex or flat, obtuse, or slightly umbonate, 42—65 mm. broad. — Lamellae white, eventually slightly yellowish in most specimens, moderately close to subdistant, sinuate, broad, e. gr. 6 mm. broad, sometimes venose on the sides; spore print with. — Stipe white, in age often yellowish at least in part, smooth, dry, naked, glabrous, solid, in age narrowly hollow, 40—55 × 12—22 mm. — Context white or in most specimens rather hyaline than white in moist weather, unchanging on exposure to the oxygen of the air, and unchanging in age, or else becoming partly yellowish in age; odor none; taste mild. — Spores 9.8—11 × 6.2—7.5 μ, most frequently about 10.3 × 7.3 μ, broadly ellipsoid, few narrowly ellipsoid, smooth, hyaline, amyloid, with central droplet, with rather thin wall, with suprahilar applanation. Basidia 37—41 × 8.5—10.3 μ 4-spored, rarely a few 1-, 2-, or 3-spored. Cheilocystidia making the edge of the lamellae nearly heteromorphous, most of them long and flexuous, with obtusely rounded apex, extremely versiform (basidiomorphous, filamentous-club-shaped, ventricose, rarely with ampullaceous apex, cylindric or quite irregular), many agglutinated, about 6—9 μ broad, rarely narrower or broader. Cystidia none. Subhymenium slightly intermixed, some of the small elements filamentous, others subisodiametric. Hymenophoral trama perfectly regular, with filamentous elements which are only very slightly interwoven. Cuticle of the pileus consisting of a single layer of subparallel hyphae with brownish hyaline contents and hyaline, non-incrusted walls (in NH<sub>4</sub>OH medium, dried material), forming a dense cutis. All hyphae non amyloid, with clamp connections.

On the ground, in humus and among mosses in shady woods of *Nothofagus pumilio* in small groups, rather frequent in Tierra del Fuego all through February.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 10. II. 1950, R. Singer, no. M 149, LIL, type. Also observed along the south shore of Lago Fagnano.

This species is remarkable for its uncanny similarity with *Tricholoma portentosum* which macroscopically differs almost exclusively in the viscid pileus. However, microscopically, the two species are so far apart they cannot even be regarded as closely related.



**Porpoloma terreum** Sing. spec. nov.

Pileo griseo, plerumque subtiliter tomentoso in disco, praeterea appresse squamuloso, haud viscido, haud hygrophano, convexo, subumbonato, 28—38 mm. lato. — Lamellis albis, demum frequenter flavescens, plerumque subdistantibus, latiusculis, sinuatis, subdecurrentibus (dente). — Stipite albo, demum frequenter flavescens, glabro vel ad apicem subtiliter fibrilloso, aequali vel sursum attenuato, solido,  $30-42 \times 9-12$  (13.5 mm. — Carne alba, demum interdum subflavescens, inodora. — Sporibus  $9.5-10.3 \times 6.8 \mu$ , levibus, amyloides. Epicute pilei ex hyphis parallelis, nonnullis ex eis crassiusculis, pigmento umbrino incrustatis efformata. Cheilocystidiis basidiomorphis. Cystidiis nullis. Hyphis omnibus haud amyloideis, fibuligeris. Habitat ad terram subhumidam humosam gregatim in silvis nothofagineis (*Nothofagus pumilio*), Tierra del Fuego, R. Argentina.

Pileus "taupe", disc sometimes "nutria" or lighter colored, usually slightly tomentose in the center, outside the discal zone always finely squamulose, dry (i. e. neither hygrophanous nor viscid), convex, subumbonate, 28—30 mm. broad. — Lamellae white, tending to become yellow ("Cockatoo") in age, subclose to usually subdistant, rather broad (about 4 mm. broad), sinuate, subdecurrent with a tooth. — Stipe white, tending to become yellow ("Cockatoo"), glabrous or slightly fibrillose at the apex, equal or tapering upwards, solid,  $30-42 \times 9-12$  (13.5) mm.; veil none. — Context white, eventually sometimes somewhat yellowish; odor none. — Spores  $9.5-10.3 \times 6.8 \mu$ , smooth, amyloid, hyaline, rather thin-walled, ellipsoid. Basidia  $38 \times 8-9 \mu$ , 4-spored. Cheilocystidia "empty" but otherwise very similar to the basidia, clavate, rounded at the apex, very rarely a few acute ones observed, not very conspicuous, about  $37 \mu$  long and  $6-9 \mu$  broad, mixed with basidia on the edge which is not really heteromorphous. Cystidia none. Epicutis of the pileus consisting of parallel hyphae which form a cutis; these hyphae partly thin and partly thickened,  $4.5-13.7 \mu$  in diameter, with umber brown pigment incrustation, otherwise smooth, elongate. All hyphae non-amyloid, with clamp connections.

On the ground in dense shady woods at somewhat moist places under *Nothofagus pumilio* in groups, fruiting in February, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Ushuaia, Lago Fagnano, 1 km. southwest from the "Cabecera" of Lago Fagnano, 19. II. 1950, R. Singer, no. M 372, LIL, type.

This species is somewhat rarer than the preceding ones. There is no way of distinguishing it from the *Tricholomas* of the *terreum* group when seen in the field for the first time.

*Melanoleuca* Pat.

This genus is very characteristic in having warty amyloid spores with plage and cystidia. The hyphae are without clamp connections. This genus is well represented in the Magallanes area in general.

Key to the species

- A. Stipe with fuscous fuliginous or blackish brown squamules all over  
*M. verrucipes*
- A. Stipe with concolorous covering, or else glabrous.
- B. Pileus and the other organs of the carpophore without a strong ochraceous tinge; spores  $9.5-10.3 \times 5.5-6.2 \mu$ .
- C. Context turning greyish or brownish in the stipe, especially when broken; ornamentation of the spores of type II-IV (with short ridges), or even II (with longer reticulate ridges), at least in a large majority of the spores, or in a conspicuous minority, rather coarse as compared with the ornamentation of other species of the genus; stipe grey, finely flocculose or fibrillose.  
On humus in woods *M. umbrinella*
- C. Context of the stipe white and remaining so until the brown pigment gradually reaches as far down as the stipe, starting from underneath the cuticle of the pileus at the umbo, unchanging when wounded; ornamentation of the spores of type VI (isolated warts) or IV (thin connecting veins scattered between warts), without ridges; stipe white, pruinose in youth, especially at the apex *M. excissa*
- B. Pileus and also the other organs of the carpophore with a distinct ochraceous tinge, even in the flesh of the stipe; spores strongly elongate;  $10-11.5(12) \times 5.5-6.5 \mu$  *M. longispora*

*Melanoleuca verrucipes* (Fr. apud Quél.) Sing., Rev. d. Mycol. **4**: 68. 1939.

*Armillaria verrucipes* Fr. apud Quél., Champ. Jura **1**: 317. 1872.

*Agaricus verrucipes* (Fr. apud Quél.) Fr., Hymen. Europ. p. 43. 1874.

*Gyrophila verrucipes* (Fr. apud Quél.) Quél., Enchir. p. 10. 1886.

*Tricholoma verrucipes* (Fr. apud Quél.) Bres., Fung. Trid. **2**: 5. 1896.

*Clitocybe verrucipes* (Fr. apud Quél.) Maire, Bull. Soc. Myc. Fr. **27**: 408. 1911.

*Agaricus puellula* Karst., Bidr. Finl. Nat. Folk **25**: 52. 1876.

*Clitocybe puellula* (Karst.) Karst., Hattsv. **1**: 65. 1879.

*Agaricus adsentiens* Karst., Bidr. Finl. Nat. & Folk **25**: 53. 1876.

*Clitocybe adsentiens* (Karst.) Karst., Hattsv. **1**: 65. 1879.

*Clitocybe Eismondii* Blonski, Hedwigia **28**: 281. 1889.

Pileus pure white, slightly opimous when moist, non-hygrophanous, the umbo slightly colored, especially in age, reaching pl. 17, F-7 or "Mosul", slightly pubescent at the extreme margin when very young and fresh, smooth, glabrous, convex, then applanate and often depressed in the center, 26-34 mm. broad. — Lamellae white, eventually whitish-buffish, adnate, often with decurrent tooth,



3—6 mm. broad, i. e. not broad; spore print pure white. — Stipe white or whitish, with fuscous-fuliginous squamules all over, denser toward the apex, but the very apex sometimes naked and glabrous, the color of the squamules varying between "olive wood" and "Conga", solid, tapering upward gradually, or with a slight bulb below, central, rarely slightly eccentric,  $25-37 \times 4-7$  mm. at the apex,  $5.5-9$  mm. below. — Context white, with a watery line along the cortical layer and above the lamellae, unchanging on exposure; taste mild; odor of anise. — Spores  $9.5-12.3 \times 4.8-5.7$   $\mu$ , warty to finely punctate, more spores merely punctate than verrucose, with suprahilar smooth spot, ellipsoid, rather narrow and often rather long, hyaline, the exosporial ornamentation strongly amyloid. Basidia  $35-38 \times 7.5-11.5$   $\mu$ , 4-spored, clavate or attenuate at the very apex. Cystidia very few, inconspicuous, fusoid, acute or almost acute, about  $46.5 \times 6.3$   $\mu$ . Hymenophoral trama regular. All hyphae non-amyloid, without clamp connections.

In open places, especially on the ground where the woods have been cut, in small groups, fruiting in February. Northern Europe, Northern Altay (Siberia), Alps, Jura, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 23. II. 1950, R. Singer, no. M 443, LIL. — USSR, Altay, Oirotia, between Artubash and Choya, 17. IX. 1937, R. Singer, no. A 1147, LE. — Moscovskaya obl., Kratovo, 16. IX. 1940, R. Singer, 5—805, LE. — Sweden: Uppland, Uppsala, M. A. Lindblad, S. — Hvetlanda, 15. IX. 1901, J. Cederström, S. — Italy: Near Cimbram 1884, P. Giovanella, det. Bresadola, S.

The description given above has been drawn from Fuegian specimens exclusively. A description of the European and Asiatic specimens collected by the author has been published in *Annales Mycologici* 41: 52. 1943, and should be compared. The Fuegian material coincides in all characters with the material of the northern hemisphere except for being slightly smaller (near the lower limit of the size usually observed in Europe) and having an odor of anise instead of fruity odor, odor of *Marsmus oreades*, or *Clitocybe infundibuliformis*. Since, however, anise odor occurs in some Fuegian *Clitocybes*, and often appears to be inconstant being replaced by odor of *Marasmius oreades* or *Clitocybe infundibuliformis*, we cannot give this difference any weight, nor does the difference in size mean anything at all. Under these circumstances, we have to face the fact that the known area of this fungus is bipolar and interrupted with a preference for the cold zones in both hemispheres, especially the mountain regions and the extreme north and south. Such cases have been observed in other classes of plants, yet what makes the case of

*M. verrucipes* especially baffling is the fact that this species has never been observed in the boreal regions of North America, at least as far as the author knows. It is very probable that it will be discovered in Canada or Alaska.

**Melanoleuca umbrinella** (Speg.) Sing. comb. nov.

*Tricholoma umbrinellum* Speg., An. Soc. Cient. Arg. **94**: 67. 1922.

Pileus greyish brown to light brownish grey or evenly grey ("polo tan, Marocco sand"), the umbo often reaching "airdale", or the whole pileus paler with light brownish grey center, slightly hygrophanous, with a surface of the quality of kid when touched, glabrous, smooth, naked, convex, with depressed or subumbonate center or with a very broad and slight umbo in the center of which there may be an umbilicus, (30—42—85 mm. broad). — Lamellae white, later becoming buffy white or pale alutaceous cream, medium broad to broad (5—9 mm. broad), often ventricose in the inner third, very deeply sinuate or emarginate and narrowly adnexed, close to crowded, with entire edge spore print pure white. — Stipe grey, but often one side of the bulb or the entire bulb white, at least in young specimens, varying from pl. 14, F—7 to somewhat paler than pl. 14, F—7, but more frequently rather exactly like pl. 14, F—7, entirely covered with a fine and dense flocculose fibrillosity, glabrescent in old specimens, smooth, but in some specimens longitudinally splitting in the surface so that it appears coarsely appressedly fibrillose, or fibrous, especially in age, but rather rarely so, usually strongly bulbous at the base, (25)40—52 × 7—12.5 mm., the base, if bulbous, 9—24 mm. broad. — Context white, in fresh material, especially in the stipe, usually distinctly turning brownish or creamy grey where broken, with a sordid zone along the rind of the stipe, and with a glassy greyish hyaline zone underneath the cuticle, slowly becoming pale brownish from the stipe upwards and eventually entirely pale brown in old specimens, spongy-fleshy, more fibrillose in the stipe, rather thin in the pileus of most specimens; odor none; taste mild. — Spores 9—10.3 × 6—6.2  $\mu$ , hyaline, with an ornamentation of type VI, IV, II-IV, II, always with a large number of spores which show distinct coarse ridges (II, II-IV), the ornamentation 0.7  $\mu$  high, rarely less, and strongly amyloid, with a suprahilar smooth spot, ellipsoid. Basidia 25.5—41 × 6.2—11.2  $\mu$ , 4-spored, clavate. Cystidia numerous, especially near the gill edge, 68—99 × 9—17.5  $\mu$ , characteristic because of their size and shape (of the lageniform type of Metrod), pedicellate at the base, ventricose at the level of the sterigmata of the accompanying basidia, acuminate above the ventricose portion with a long acute apex which is incrustated at least at the very tip with needle-like crystals, somewhat deeper-rooted than the basidia, hyaline. Hymenophoral trama hyaline, regular. All hyphae



non-amyloid, without clamp connections. — Chemical characters: FESO<sub>4</sub> in all parts negative.

On humus and on grassy soil in the woods under *Nothofagus antarctica* as well as *N. pumilio*, usually in shady places, solitary and in groups, fruiting in February and March, Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 14. II. 1950, R. Singer, no. M 270, LIL., topo-type. — No. M 298, LIL, topo-type. — Ushuaia, Lago Fagnano, Cabecera del Lago, 19. II. 1950, R. Singer, no. M 357, LIL, neo-type.

The material on which Spégazzini based his description is not preserved. However, there can be no doubt about the identity of his species with the species described above. Moreover, my material came partly from very near the original locality. Nevertheless, we thought it useful to propose a substitute type.

*M. umbrinella* is very close to *M. humilis* from which it differs in larger spores and cystidia, the slightly less fibrillose and slightly longer (in an average) stipe when compared with the diameter of the pileus, the changing of the context of the stipe on exposure, and the habitat in the woods which appears to be fairly constant.

*Melanoleuca excissa* (Fr.) Sing., Cavanillesia 7: 125. 1935.

*Agaricus excissus* Fr., Syst. Mycol. 1: 114. 1821.

*Tricholoma excissum* (Fr.) Quél., Champ. Jura 1: 84. 1872.

Pileus white with cinereous or light bister grey umbo, or light greyish brown with fuscous umbo (so constantly when old), not distinctly hygrophanous, glabrous or occasionally somewhat scurfy, smooth, naked, convex, slightly to strongly umbonate (constantly so in age), 28—56 mm. broad. — Lamellae white, eventually sordid pale brownish cream color, sinuate, finely fimbriate when young, moderately broad, 3—6.5 mm. broad, close but not crowded; spore print pure white. — Stipe white, finely pruinose, especially at the apex, eventually more or less glabrescent, solid, equal or tapering upward, rarely tapering downward, not bulbous, as long as the diameter of the pileus or up to one third longer, 20—65 × 4—9 mm. — Context pure white with a narrow zone of grey-brown, grey, or fuscous directly underneath the umbo, gradually becoming brown in the entire upper half of the pileus, in very old specimens or in specimens exposed to strong changes of weather, often entirely brownish even in the stipe; odor none; taste mild. — Spores 9.5—10.3 × 5.5—6.2 μ, ellipsoid and often slightly ovoid, i. e. broader at the hilar end, warty, with the ornamentation strongly amyloid and of the type VI (i. e. warts isolated), or, in some spores, IV (i. e. with fine connecting lines between occasional warts). Basidia 35.5 × 9 μ, 4-spored, clavate. Cystidia about 55 μ long, thickened to 6.2 μ at the very base, needle shaped or subacute and with crystalline

incrustation at the tip, thin-walled, moderately numerous. Hymenophoral trama regular. All hyphae non-amyloid, without clamp connections.

On grassy ground, usually near trees, especially on rich earth, in large groups, fruiting (in the southern hemisphere) in February. Thus far encountered in Europe and in Tierra del Fuego, but probably more widely distributed.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 13./14. II. 1950, R. Singer, no. M 258, LIL. — No. M 258 a, LIL. — Also numerous collections from Europe.

This species is most closely related to *M. Spegazzinii* (Sacc.) Sing. which may be interpreted as a more thermophilous race or vicariant, as it occurs in the warmer regions of the Argentine Republic, and seems to be identical with *M. excissa* var. *submedia* Sing. It differs from *M. Spegazzinii* in longer, larger spores which it has in common with *M. excissa* in the sense of Ricken and Bresadola. Our South America material seems to be less dark-umbonate than that of Ricken, no more than that of Bresadola. It has less crowded lamellae than that of Ricken and corresponds in this regard with that of Bresadola. Fries's picture (Icones Hymen. pl. 44, below) corresponds rather closely with our specimens. Most European authors indicate glabrous stipe which would be correct only for older material; only Bresadola mentions subfibrillose stipe which might express what we call pruinosity.

**Melanoleuca longispora** Sing. spec. nov.

A *Melanoleuca cognata* recedit sporis longioribus, cystidiis tenuioribus, statura nonnihil minore; a *Melanoleuca strictipes* (Karst.) Metrod differt sporis longioribus odore nullo saporeque miti.

Pileus "burnt umber" on the distinct umbo, otherwise pl. 10, E—5, smooth, glabrous, subhygrophanous, opaque when dry and almost opaque when wet, about 35 mm. broad. — Lamellae pl. 9, E—4, deeply sinuate, broad (5.5 mm. broad), close to crowded; spore print pure white. — Stipe subconcolorous with the margin of the pileus, innately longitudinally fibrillose, pruinose at the apex,  $33 \times 6$  m., at the base 7.5 mm. in diameter but not bulbous there. — Context of the pileus white, of the stipe concolorous with the surface; odor none; taste mild. — Spores  $10-11.5(12.5) \times 5.5-6.5(6.8)$   $\mu$  ellipsoid to ellipsoid-oblong, with a strongly amyloid exosporial ornamentation of type VI (finely punctate to verrucose without anastomoses and ridges, hyaline, with a suprahilar smooth spot. Basidia  $33-37 \times 9.5-11$   $\mu$ , 4-spored, clavate. Cystidia  $47-85 \times 8.2-11.8$   $\mu$ , thin-walled, or with a very slightly thickened wall, fusoid or ventricose in the middle (lageniform type of Metrod), acute, or more rarely (after loss of incrusting crystals of the tip) becoming



obtuse, rather numerous, at least on the edge of the lamellae. Hymenophoral trama regular. All hyphae non-amyloid, without clamp connections.

In sparsely wooded areas on the ground, solitary, fruiting in February. Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 15. II. 1950, R. Singer, no. M 281, LIL, type.

This species is closely related with *M. cognata* (Fr.) Konr. & Maubl. and perhaps also with *M. strictipes* (Karst.) Metrod sensu Lange, Metrod, a species well known to me and probably interpreted correctly since it was collected in Finland by me\*). The only new species of Tierra del Fuego is at the same the rarest.

Bresadola (Ofvers. K. Vetensk.-Akad. Förh. 1900(2): 311. 1900) indicates *Tricholoma melaleucum* (Pers.) from the Rio Azopardo (Tierra del Fuego). This must be one of the species described above, since it is impossible to distinguish most of the species of *Melanoleuca* from dried material without the pertinent notes. I do not believe that true *Melanoleuca melaleuca* (Pers. ex Fr.) Murr. occurs in the Magallanes region.

Spegazzini indicates a species which he calls *Tricholoma magellanicum* (Speg.) Sacc. In its original form (as *Agaricus magellanicus* Speg.) it is a nomen dubium (if there ever was one!) since

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\*) In order to make it possible to compare this material with the Fuegian collection, I add my data on *M. strictipes*: "Pileus pale horn grey, almost white on the margin and sordid isabelline-umber, later horn grey in the middle, more sordid brownish when quite young, and turning more yellowish and still paler when beginning to dry out, slightly viscidulous-opimous when wet, slightly hygrophanous, pallid on the margin when dry, yellowish when dried in hot air, with initially incurved, later not projecting, at first pure white extreme margin convex with declivous margin and umbonate center when young, later concave with umbo, 35—85 mm broad. — Lamellae white, linear, up to 7 mm broad, i. e. not broad, crowded, irregularly attached to the stipe, easily separable as a whole from the tissue of the pileus; spore print pure white. — Stipe white, then pallid, solid, soon hollow, pruinately above, glabrous below, often twisted, equal, up to 92 × 8 mm. — Context pure white, eventually pallid or very slightly brownish in the stipe; odor agreeable; taste not bitter. — Spores 8.5—9 × 4.5—5 μ; basidia 20—36 × 7.5—7.8 μ, 4-spored; cystidia ventricose below or in the middle, with long attenuate or cylindric ampullaceous "neck", 42—73 × 7—17 μ, thinwalled, a few with somewhat thickened walls, some with crystalline tip. — In a meadow, on the ground, near Ollila, Karelia, formerly Finland, now USSR, 26—IX—1940, R. Singer, LE. — This collection shows somewhat larger macroscopical measurements than that of Metrod (from France) and does not show the brown flesh of the stem observed by that author; furthermore, Metrod indicates the odor as "vireuse". Lange's picture and description is completely in agreement with my own, except for the habitat which is, in my locality, the same as that indicated by Karsten. At any rate, the Fuegian material seems to be sufficiently different.

the description is completely worthless, and even at variance with Spegazzini's own later interpretation of his species, and no specimens exist. In 1922, Spegazzini emended the description, and nothing was found in Rio Grande similar to the plant he described then. It is either a species identical with one of the species described above by the author, or else a species I have not seen. If so, it must remain doubtful until further investigations are made.

### *Resupinateae.*

This tribus which differs from the other tribes with pleurotoid agarics in the shape of the spores (not cylindrical) and the presence of a gelatinous layer in the trama.

### *Resupinatus* S. F. Grey.

This genus is characterized by the absence of metuloids, and thus differs from the other important genus of the tribus, viz. *Hohenbuehelia*. The latter has not been collected in the Magallanes area with any degree of certainty. At least one species, however, has been found that lacks metuloids.

*Resupinatus chilensis* Sing., Pap. Mich. Acad. Sc., Arts, Lett. **32**: 134. 1946 (1948).

Pileus in dried condition greyish, under a lens tomentose, in the outer half sulcate, resupinate, narrowly campanulate, with attenuate base, with initially incurved margin, later obtuse, 1—2 mm. broad. — Lamellae paler venose, with obtuse edge, toward the margin of the carpophores more or less tomentose, ascendant, radiately arranged, very narrow, somewhat anastomosing, distant, at times only one or three present, concurrent and in the inner depressed portion of the carpophore touching each other so that the aspect of the hymenophore results somewhat like that of a *Favolaschia*, especially in dried material. — Context very thin. — Spores 6.3—7.5 × 4.2—6.3  $\mu$ , short-ellipsoid, hyaline, smooth, non-amyloid, thin-walled. Basidia 28—29 × 6.3—7  $\mu$ . Cystidia and cheilocystidia proper not observed, but there are pseudophysis-like bodies on the edge of the lamellae. Hymenophoral trama consisting of hyphae which are irregularly undulating in a gelatinous mass, hyaline, thin, non-amyloid. Epicutis consisting of interwoven filamentous hyphae which are dense but not gelatinized and more or less repent or depressed, somewhat indistinct because of an incrustation, often with small branchlets, forks, etc.; this same structure also observed on the outer portion of the gill edges. All hyphae with clamp connections.

Very densely gregarious on wood.

Material studied: Chile: Punta Arenas, R. Thaxter, FH, type.

This species differs from most other species of this genus in the



strange narrowly bell-shaped carpophores and the narrow distant lamellae which touch each other at their inner ends. According to the surface characters it may also be considered as *Asterotus*.

Spegazzini indicates *Resupinatus applicatus* (Batsch & Fr.) S. F. Grey from Cabo Negro (Magellan Strait) and Staten Island (Islas de los Estados). I have not studied the material.

### *Panelleae.*

This tribus is characterized by its pleurotoid habit, tough trama, and amyloid spores. One genus with lamellae and another with pores has been distinguished. The lamellate genus occurs in the Magallanes region.

### *Panellus* Karst.

The only species observed was described as *Pleurotus*; the author does not know the fresh condition.

***Panellus longinquus*** (Berk.) Sing. comb. nov.

*Agaricus minusculus* Speg., Bol. Acad. Nac. Cienc. Cordoba **11**: 144. 1887.

*Agaricus longinquus* Berk. in Hooker, The Botany of the Antarctic Voyage ... (Flora Antarctica) **1**: 447, pl. 163, fig. 5. 1844.

*Pleurotus minusculus* (Speg.) Sacc., Syll. **9**: 50. 1891.

*Pleurotus longinquus* (Berk.) Sacc., Syll. **11**: 26. 1895.

Pileus whitish hyaline, often pink in the center, or eventually brownish, smooth and glabrous, 2—15 mm. in diameter, sessile or more often from the cuneate or heart-shaped rear side extended into a short stipe. — Lamellae white or whitish-pinkish, on both sides acute, subdistant, straight, simple or somewhat forked, without anastomoses, intermixed with shorter ones, adnate to attenuate-subdecurrent; spore print unknown. — Stipe if present poorly differentiated from above, well differentiated from below, pale yellowish brown (?) glabrous, smooth, terete, with mycelioid base, 1—3×1—2 mm.; veil none. — Context with a gelatinous layer above. — Spores 6.8—8×2.7  $\mu$ , smooth, hyaline, amyloid, obovate to subcylindric-oblong. Basidia 27—35×7—7.5  $\mu$ . Cheilocystidia present, versiform, mostly filiform or slightly clavate, rarely nodulose or branched. Cystidioles often replacing the majority of the basidia. Subhymenium consisting of small elements. Hymenophoral trama regular. Hyphae of the lower denser layer of the trama of the pileus thin with slightly thickened walls (in the hymenophoral trama with thin walls); in the loose upper layer strongly gelatinized and hyaline. All hyphae non-amyloid and with clamp connections.

On dead branches and generally dead wood, e. gr. of *Maytenus magellanicus*, solitary or in groups, fruiting from May until September (October?).

Material studied: Gable Island, May 1882, Spegazzini, LPS, type of *A. minusculus*. — Hermite Island (Cape Horn), officers of the "Terror", det. Berkeley, after Sept. 21, 1842, K, type of *A. longinquus*.

It is remarkable that this southernmost wood-inhabiting fungus of the earth occurs in winter (very late fall and very early spring); it probably fruits the year round as long as there are no freezing conditions.

### *Schizophylleae.*

The tribus differs from all other agarics in splitting lamellae, the halves becoming revolute on both sides, with the hymenium on the concave side.

### *Schizophyllum* Fr.

The species *Schizophyllum commune* Fr. is indicated from regions adjacent to the Magallanes area, yet it does not occur spontaneously in the woods of Rio Grande or in the Cordillera of the Gran Isla of Tierra del Fuego. It is mentioned here merely because specimens have been observed on manufactured wood along the coast in various ports. A description of this common almost cosmopolitan species is unnecessary.

### *Lentineae.*

This tribus is characterized by pleurotoid habit, and cylindric, non-amyloid spores, normal lamellae, and usually habitat on wood. This is a group of agarics which is extremely important in warm-temperate and tropical regions as far as the number of species as well as individuals is concerned. In the Magallanes area, this tribus is poorly represented. Only one genus occurs with certainty, and within this genus only two species have been encountered, one of them not lignicolous, the other one rather rare.

### *Pleurotus* (Fr.) Quéf.

This genus is characterized by irregular trama, well developed subhymenium, and moderately tough context. Metuloids do not occur in the species observed in Tierra del Fuego. The edge of the lamellae is entire. The exact color of the spore print is thus far unknown.

### Key to the species

- A. Growing on wood of *Nothofagus*; stipe lateral, pileus not with smooth surface *P. sutherlandii*
- A. Growing on stems and roots of *Azorella* and *Bolax*; stipe rarely lateral, pileus with smooth surface *P. eryngii*



**Pleurotus sutherlandii** Sing. sp. nov.

Pileo albido-ochraceo, substratum versus obscurius ochraceo, margine sulcatulo, superficie rugoso-venoso, linguiformi vel orbiculari, convexo, 30 mm. in diametro. — Lamellis subconcoloribus, moderate latis (3 mm.), subdecurrentibus, subdescendentibus sed haud profunde decurrentibus, ad stipitem haud anastomosantibus, acie integris, moderate confertis vel subdistantibus. — Stipite albo cum zona cinnamomea ad apicem, grosse strigoso, ad latus superius a pileo haud delimitato (pileus ibi haud limitatus est!), sed bene evoluto, 7—15 × 3 mm. — Carne alba, subtenacella, inodora. — Sporis 8—9.7 × 3.5—4.2  $\mu$ , hyalinis, cylindraceutis, in positione laterali interdum subcurvulis prope partem hilarem, haud amyloideis, levibus. Basidiis 31.5 × 6.8  $\mu$ , tetrasporis. Subhymenio bene evoluto. Tramate hymenophorali irregulari. Fibulis praesentibus. — Habitat ad lignum trunci emortui nothofaginei. Tierra del Fuego, R. Argentina.

Pileus whitish ochraceous, somewhat deeper ochraceous behind, with sulcate margin, the rear portion rugose-venose, glabrous, naked, convex, tongue-shaped or with orbicular outline, about 30 mm. in diameter. — Lamellae subconcolorous, moderately broad (3 mm. broad), subdecurrent-subdescendant, not deeply decurrent, not anastomosing at the stipe, moderately close to subdistant, with entire edge; spore print not obtained. — Stipe white with a cinnamon zone at the apex, well developed but without limitation above (the pileus is margined behind!), coarsely strigose, 7—15 × 3 mm.; veil none. — Context white, somewhat toughish, inodorous. — Spores 8—9.7 × 3.5—4.2  $\mu$ , hyaline, cylindric, often slightly curved near the hilar end when seen in lateral view, non-amyloid, smooth. Basidia 31.5 × 6.8  $\mu$ , 4-spored. Ceilocystidia not seen (possibly present in younger material — as they collapse easily in the species of this genus). Subhymenium well developed, distinctly filamentous, consisting of thin and thin-walled elements which are more or less elongate, interwoven. Hymenophoral trama irregular, consisting of strongly interwoven hyphae which run in all directions although a certain axillar trend is recognizable, very irregular (in size and shape) elements composing it, hyphal walls thick. All hyphae non-amyloid and with clamp connections.

On a dead trunc of *Nothofagus pumilio* in shady woods, fruiting in February. Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 10. II. 1950, R. S i n g e r, no. M 151, LIL, type.

This species is close to the polymorphous *P. ostreatus* (Jacq. ex Fr.) Quél. but differs in various aspects, especially the cinnamon zone of the apex of the stipe. This may be *Pleurotus aulaxinus* (Mont.) Sacc. in the sense of S p e g a z z i n i but in that case it is

probably misinterpreted and the spores are incorrectly described. On the other hand, if the spores are correctly indicated by Spegazzini, the author has not met with this species, either in the sense of Spegazzini or in the original sense.

*Pleurotus eryngii* (DC ex Fr.) Quél., Champ. Jura p. 84, 1872.

*Agaricus eryngii* DC ex Fr., Syst. Mycol. 1: 84. 1821, with numerous synonyms in Europe and Asia.

*Agaricus tucala* Speg., Bol. Acad. Nac. Cienc. Cordoba 11: 139. 1887.

*Clitocybe tucala* (Speg.) Sacc., Syll., 9: 24. 1891.

Pileus chestnut-fuscous, perfectly glabrous and smooth, with straight margin which is acute and entire and scarcely repand, infundibuliform (?), 20 mm. broad. — Lamellae whitish eventually flesh colored-brownish, very acute on both sides, rather close, linear, with entire edge, decurrent. — Stipe flesh-color brown or honey brown, stuffed, with the base attenuate toward the rear and rounded and very little radicate, terete-obconic, short: 5–10 × 3–4 mm. — Context brownish-flesh color, hygrophanous (?), in the pileus thin, in the stipe fibrous-compact (sec. Spegazzini who obviously observed rather young, small and badly discolored specimens). — Spores 7–10 × 3–4 μ, non-amyloid, hyaline, smooth, cylindric. Basidia 30 × 4.7 μ. Cystidia none. Cheilocystidia not observed. Hyphae of the trama slightly gelatinized in these specimens; hymenophoral trama hyaline, irregular, consisting of interwoven, rather thin hyphae which are intermixed with some swollen ones. Subhymenium consisting of smaller hyphae, somewhat brownish in the dried material, rather thick but moderately sharply delimited from the trama proper. All hyphae non-amyloid, with clamp connections.

On stems and roots of *Azorella* and *Bolax* on cespeds of these plants, fruiting in fall, obviously widely distributed in Tierra del Fuego and nearby territories and islands.

Material studied: Argentina: Ushuaia, May 1882, Spegazzini, LPS, type of *Agaricus tucala*. — Cyprus, material at the FH. — Kazakhstan, Central Asia, material at LE (as *Clitocybe sapida* Lebed.).

The description given by Spegazzini is unfortunately the only complete description of the South American form and had to be quoted although it contains obvious errors (like the allegedly infundibuliform pileus and the hygrophanous flesh) and refers to material which even though young must have been watersoaked and discolored. Spegazzini thinks that *Agaricus glebarum* Berk. in Hooker might be the same thing. This species was described from the Islas Malvinas. The type has been studied, and turned out to be different from the species described above. Spegazzini's type is,



as far as one can see, absolutely identical with the northern Umbelliferae inhabiting Pleuroti, and might, at best, be a local race (which can be decided only when a good fresh spore print on white paper and a description of the colors of the carpophore according to color chart terms is available from good fresh material). Spegazzini re-collected what he thought to be *Clitocybe tucala* in 1924 but the material is different from the original collection.

### *Hemimyceneae.*

This tribus reunites the marasmioid, mycenoid and collybioid species with somewhat differentiated epicuticular layers, or with conspicuous cystidia and with non-amyloid spores and trama. This tribus is poorly represented in the region studied. Only two genera with few species were observed.

### *Mycenella* (Lange) Sing.

This genus differs from *Marasmiellus* in having round spores with a rather voluminous hilar appendage. These spores are usually echinate, but the only Fuegian species has smooth spores as in the European *M. salicina* (Velen.) Sing. The genus differs from *Mycena* in non-amyloid spores and trama, and from *Collybia* in the presence of conspicuous cystidia and a well differentiated epicutis.

### *Mycenella funebris* Sing. spec. nov.

Pileo fuscidulo-griseo vel fusco, hygrophano, fusco-pallido in siccis, pellucide striato, centro saepius brunneo-fibrilloso, margine radiato-ruguloso usque ad centrum vel sublevi, campanulato-convexo, obtuso, 10—30 mm. lato. — Lamellis griseis vel dilute griseis, latiusculis vel latissimis, confertiusculis, profunde emarginatis angustaque adnexis. — Stipite sordide pallideque fuscidulo vel griseolo, ex toto brunneo-scabro, haud viscido, cavo, cylindraco, 38—70 × 4—6.5(8) mm.; tomento basali albo. — Carne aquose griseola, inodora. — Sporis 9—10.2 × 8.5—9.5 μ, globosis vel subglobosis, hyalinis, levibus, appendice hilari majusculo, e. gr. 2 × 1.3 μ, haud amyloideis. Basidiis 44—45 × 9.5—12 μ, 4-sporis, nonnullis 2-sporis intermixtis, clavatis. Cystidiis 55—165 × 6.7—22 μ, conspicuis 40—50 μ projicientibus, tenui- vel crassitunicatis, ventricosis, sursum ampullaceis, ad aciem et ad latera lamellarum numerosis. Subhymenio bene evoluto, Tramate ex hyphis parallelis efformato in lamellis et in contextu pilei et stipitis, haud amyloideo; fibulis praesentibus. Epicute e dermatocystidiis decumbentibus vel ascendentibus vel geniculato-erectis, e. gr. 30 μ projicientibus, 10 μ latis, late cylindraceis vel clavatis, succo brunneo impletis formata. — Habitat in silvis nothofagineis densis umbrosis, Tierra de Fuego, R. Argentina.

Pileus grey or fuscous, hygrophanous, fuscous-pallid when dry, one half of the radius transparently striate, when dry often slightly

and finely radiately rugulose to the center, the latter frequently brown-fibrillose, campanulate or convex, usually rather high (12 mm. or more), completely obtuse, 19—30 mm. broad. — Lamellae light grey, and sometimes paler towards the edge, or unicolorously grey on edges and sides, broad (6 mm.) or very broad, moderately close to subclose, suddenly attenuated, emarginate-sinuate and very narrowly adnexed; thin spore print white, thick print not obtained. — Stipe light greyish sordid-pallid or sordid (olive-) fuscous above and almost pallid below, brown, scabrous all over and therefore appearing darker than the ground color, non-viscid, hollow, usually perfectly cylindrical, but sometimes compressed and then reaching 8 mm. in diameter,  $38-70 \times 4-6.5$  mm; mycelial tomentum at the base white. — Context watery grey, but the hollow of the stipe with white wall; odor absolutely none. — Spores  $9-10.2 \times 8.5-9.5$   $\mu$ , globose or subglobose, hyaline, non-amyloid, with a larger hilar appendage (e. gr.  $2 \times 1.3$   $\mu$ ), perfectly smooth. Basidia  $44-45 \times 9.5-12$   $\mu$ , clavate, 4-spored, few 2-spored ones intermixed. Cystidia equal on edges and sides of the lamellae, ventricose-ampullaceous,  $55-165 \times 6.7-22$   $\mu$ , very conspicuous and rather numerous, the pleuro-cystidia in an average somewhat larger and some of them tending to have the wall thickened in the middle portion, and often with minute droplets in the upper half of the interior, the apex cylindrical and rounded-obtuse. Subhymenium well developed and well delimited from the trama proper, consisting of elements smaller than those of the hymenophoral trama and more irregularly arranged, densely packed. Hymenophoral trama perfectly regular. Trama of the pileus consisting of hyphae which are radially arranged and parallel with each other, hyaline. Epicutis consisting of a layer formed by dermatocystidia some of which are appressed to the little differentiated hypodermial hyphae, some are ascendant and some have a thin repent pedicel whereas the main portion (e. gr.  $30-40 \times 9-10$   $\mu$ ) is erect; all dermatocystidia clavate to cylindrical, with a brown cell sap (few: hyaline), with smooth and thin hyaline wall, very numerous. All hyphae with clamp connections, non-amyloid.

On fallen rotting trunks of *Nothofagus pumilio*, solitary or in small groups. Fruiting in February. Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 15. II. 1950, R. Singer, no. M 286, LIL, type. — 13. II. 1950, LIL, paratype. — Also observed around the eastern end of Lago Fagnano.

In spite of several discrepancies (pileus conico-campanulate, more or less acutely umbonate), Spegazzini's *Mycena funebris* (Speg.) Sacc. from Port Cook, Staten Island (Islas de Los Estados) seems to be identical. It is possible that the description is erroneous,



or that there is another closely related species with acute umbo, or else, that the fungus is more variable than our numerous observations on the Isla Grande of Tierra del Fuego seem to prove. Since there is no way, at present, to demonstrate one or the other of these possibilities as true, I have chosen a name for the species described above which will not be altered even in case the identity proof should be given in the future whereby Spegazzini's epithet remains preserved.

*M. funebris* is a common-looking species, not very striking in its colors (although rather characteristic), but easy to identify even macroscopically.

### *Marasmiellus* Murr.

This genus was originally meant to accommodate *Marasmius* with eccentric stipe which could not enter the genus *Panellus*. The type species turned out to be congeneric with *Hemimycena*, a generic name proposed by the author for a large group of species somehow intermediate between *Mycena* and *Marasmius*. This genus is extremely rich in species in the tropics, somewhat less so in temperate regions, and much less so in the boreal regions. In Tierra del Fuego, the author has observed only one species of this genus, but it is probable that other species occur in the wetter coastal woods along the Beagle Canal in the south and in the Punta Arenas region and the nearby island in the west, possibly also on Staten Island.

#### Key to the species

- A. Pileus orange or rufescent, very brightly colored; lamellae broad and deeply decurrent; context fragile and fleshy but very thin; epicutis with numerous entire dermatocystidia; cystidia on the sides of the lamellae present. *M. fibula*
- A. Colors less bright; lamellae less deeply decurrent; context of the pileus and especially the stipe rather tough; epicutis with diverticulate-branched hyphae; pleurocystidia none.
  - B. Pileus white or grey, on *Fagus betuloides* (see note on species indicated by Spegazzini at the end of the descriptions of species well known).
  - B. Pileus neither white nor grey, on *Libocedrus tetragona* *M. ramealis*

*Marasmiellus fibula* (Bull. ex Fr.) Sing., The Agaricales, Lilloa **23**: 300. 1950.

*Agaricus fibula* Bull. ex Fr., Syst. Mycol. **1**: 163. 1821.

*Omphalia fibula* (Bull. ex Fr.) Quél., Champ. Jura **1**: 101. 1872.

*Omphalina fibula* (Bull. ex Fr.) Quél., Enchir. p. 46. 1886.

*Mycena fibula* (Bull. ex Fr.) Kühner, Encyclop. Mycol. **10**, Le Genre *Mycena*; p. 607. 1938.

*Omphalopsis fibula* (Bull. ex Fr.) Murr. N. Amer. Flora **9**: 314. 1916.

Pileus orange to rufescent, bright colored, pl. 4, 12—B to pl. 11, 12—C, somewhat deeper than pl. 13, 12—A, and then young "Arab" with "nugget" margin, also "mosque" to "feuille morte" in center, and "saffron y." on margin, or "mandarin orange" all over, soon becoming transparently striatulate, over about three quarters of the radius of the pileus, pruinose, later more or less glabrescent, more or less hygrophanous and becoming cinnamon pallid when dry in many caps (which may also be natural bleaching in age), smooth when dry convex with flattened or umbilicate center, eventually subapplanate with umbilicate center in many caps, with the margin incurved when young, 3—9 mm. broad. — Lamellae varying from white to pallid to pale alutaceous or pale orange, descendant, deeply decurrent, broad (1—2 mm.), often somewhat arcuate at the same time as descendant, occasionally rather narrow in larger caps, medium close, or close, occasionally subdistant; spore print pure white. — Stipe lighter orange than the pileus or subconcolorous, at times almost pallid at the apex or almost all over, since the pileus bleaches much less and much later than the stipe, however, in many specimens with white base, stuffed, pruinose, glabrescent, eventually glabrous and hollow, equal, 18—37 × 1—2.5 mm.; veil none; basal tomentum white. — Context subconcolorous in the outer portions, white or whitish in the pith of the stipe and in the interior of the pileus; odor none; taste mild. — Spores 5—6 × 2.3—2.6  $\mu$ , ellipsoid-oblong to ellipsoid, smooth, hyaline, non-amyloid. Basidia 16.5—18 × 4.5—5  $\mu$ , 4-spored. — Cystidia on edges and sides of the lamellae numerous, 35—50 × 9.2—10.3  $\mu$ , hyaline, ventricose at the base and in some of them in the middle, either capitate at the apex or non-capitate, thin-walled, or almost so. Subhymenium very thin but well separated from the trama proper, consisting of small, very thin-walled elements. Hymenophoral trama consisting of very thin-walled, thin connective hyphae and moderately thin-walled (in mature material) and rather voluminous fundamental hyphae, all mainly axially arranged but not quite parallel, and in the basal central portion as it enters the hymenophore from the context of the pileus almost intermixed and at least considerably interwoven, generally with regular to subregular structure. The filamentous hyphae of the surface of the pileus have generally few septa. Above them an interrupted epicutis which consists of numerous erect or semierect dermatocystidia which are mostly like the cystidia of the hymenium, yet often with firmer walls, 42—66 × 8—12.3  $\mu$ , capitate or not. Pigment orange, dissolved in cell sap. All hyphae with clamp connections, non-amyloid.

On mosses around dead trunks and in wet mossy pastures among various mosses, even on mosses growing above a layer of peat, usually very gregarious and rarely somewhat fasciculate, fruiting



from January until May (in the northern hemisphere from May until November); very common in Tierra del Fuego but widely distributed, most probably almost cosmopolitan.

Material studied: Argentina: Tierra del Fuego, R. G., Estancia Nueva Argentina, 10. II. 1950, R. Singer, no. M 173, LIL. — 11. II. 1950, no. M 190, LIL. — 12. II. 1950, no. M 230, LIL. — 19. II. 1950, no. M 356, LIL. — Also observed at Lago Fagnano. — USA: Massachusetts, Arlington, October 1943, R. Singer, FH. — Also seen in many other places in the United States and Canada (see A. H. Smith, *The North American Species of Mycena*, p. 121, 1947). — Likewise numerous collections from Europe and Asia.

One can distinguish several forms according to the habitat. Two are particularly outstanding in Tierra del Fuego: One occurring in open places near the turberas and where the Sphagneta had been retreating comparatively recently, with very deeply and brightly colored pileus and stipe, and not much pallescent, with numerous capitate hymenial cystidia and dermatocystidia, and the other on trunks in the woods, mostly among *Polytrichaceae*, with ampullaceous, less or not capitate cystidia and less bright or more pallescent pileus and stipe. However, there are intermediate forms, and the two forms vary also according to other circumstances, e gr. those growing in very wet places have strongly elongate stipe while a form found on a sunny slope had comparatively short and thick stipe.

Spegazzini observed this species (probably the wood-form) near Mt. Sarmiento, and Bresadola had specimens from Rio Grande.

*Marasmiellus ramealis* (Bull. ex Fr.) Sing., Pap. Mich. Acad. Science, Art, Letter **32**: 130. 1946 (1948).

Bresadola indicated this species on twigs of *Libocedrus tetragona* on Desolación Island in Chile without furnishing any other data but the measurement of the spores ( $6-8 \times 3-4 \mu$  against  $6.8-9.5 \times 2.8-4 \mu$  according to the authors notes on various European and American collections) and basidia ( $30-31 \times 6-8 \mu$ ). With the locality and the host known, it should be easy to check on Bresadola's determination inasmuch as the genus and the section are probably correctly indicated. Bresadola had enough experience with this group, and plenty of material for comparison. *Marasmiellus ramealis* also occurs near Buenos Aires on branches in an *Ulmus* plantation in a park but it is perhaps introduced there with seedlings from Europe.

*Marasmiellus hiemalis* (Osborne ex Fr.) Sing. was indicated from Slogget Bay. No material has been seen to verify this rather dubious indication.

### *Myceneae.*

The Fuegian species of this tribus have mycenoid or collybioid or omphalioid habit and amyloid spores. The trama is likewise amyloid or else the spores are nearly globulose.

#### *Fayodia* Kühner.

This genus has the spores nearly globulose or at any rate very short, and the hyphae non-amyloid. The epicutis and the gill edge are little differentiated, and the hymenium is devoid of conspicuous cystidia. The only species known in Tierra del Fuego occurs on wood.

**Fayodia dusenii** (Bres.) Sing. comb. nov.

*Panus Dusenii* Bres., Overs. Kongl. Vetensk.-Akad. Förhandl. 1900 (2): 312. 1900.

Pileus greyish fuscous, deeper colored in the center, greyish on the margin and pallescent to greyish in the center and pallid on the margin, hygrophorous but not always distinctly bleaching on desiccation, smooth or slightly transparently striate when wet, innately fibrillose when dry, convex, usually with strongly depressed, rarely merely flattened center, eventually sometimes concave, 9—37 mm. broad. — Lamellae white or pallid, always with transverse veins on their sides, with entire edge, not anastomosing or slightly anastomosing, moderately close to (most frequently) subdistant, mostly adnato-decurrent, also planely adnate, or decurrent, rather broad; spore print pure white. — Stipe very pale grey, very slightly pruinose, glabrescent, except at the apex, tapering upwards from a thickened base, or equal, or even tapering downward, sometimes compressed, tubulose, central, rarely slightly subeccentric, 15—45 × 2—7 mm. — Context white; odor none, consistence fleshy. — Spores 5.5—7.2 × 4.7—6.7  $\mu$ , occasionally reaching 8.2 × 8.2  $\mu$ , short-ellipsoid to globose, hyaline, rarely (the largest ones) assuming a guttiform shape, smooth, amyloid, thin-walled. Basidia 35—56 × 6—9  $\mu$ , mostly near the lower limits, clavate and sometimes with a slight constriction near the top section, 4-spored, rarely 1-, 2-, or 3-spored. Cystidia none, but cheilocystidia present although extremely inconspicuous, filamentous to clavate-subcapitulate or basidiomorphous (but "empty"), very scattered, up to 5.5  $\mu$  broad, very rarely broader and then often with horn-like outgrowths; similar bodies also found occasionally up to about one quarter of the breadth of the lamella. Subhymenium subcellular. Hymenophoral trama strictly regular, its hyphae not all equal in diameter and not perfectly parallel, hyaline. Cuticle almost simple consisting of a cuticular layer which corresponds to the hypodermium of related species, consisting of subparallel to parallel radiately arranged hyphae which are filled with brownish dissolved pigment, smooth; some of these



show semi-erect, ascendant or sub-erect hyphal ends or outgrowths which tend to be swollen (vesiculose or broad-pedicellate-capitulate, saccate, reminding one of those of *Hydropus*), also filled with brown sap and measuring  $10-45 \times 7-19 \mu$ . Hyphae of hypodermium and trama with slightly thickened walls; all hyphae non-amyloid, with clamp connections.

On rotting and rotten trunks of *Nothofagus*, especially *N. pumilio*, rarely solitary, usually gregarious or even densely gregarious, not fasciculate nor cespitose, fruiting from February until March. Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, 10. II. 1950, R. Singer, no. M 616, LIL. — Also observed in the Cordillera at the south shore of the east end of Lago Fagnano. — The type was found at the extreme west end of Lago Fagnano on Chilean territory.

The type is not in existence. It is not represented in Bresadola's Herbarium in the Riksmuseet at Stockholm. However, the description fits our plant well enough, and nothing similar has been observed in other genera. I am fully satisfied that this is Bresadola's *Panus Dusenii*. This was first collected by Dusen the 3rd of March 1896 at the Rio Azipardo; it is Dusen's no. 158. I am afraid the type has been lost completely.

Spegazzini observed this species also. He calls it *Omphalia schizoxylon* (Fr.) Sacc. which is a reasonably good determination since Fries's picture looks indeed very much like our Fuegian plant. Spegazzini's material also came from Chile, Dawson Island, where it was collected by M. Doello-Jurado in February 1921.

This is very closely related to *Fayodia oculus* (Peck) Sing. from which it differs in having naked pileus, slightly larger spores, and gregarious rather than fasciculate manner of growing. *Fayodia lacerata* (Scop. ex Fr.) Sing. is even more similar; it differs in shape of the pileus, somewhat rimose margin in age, presence of a slight not disagreeable odor, more cespitose growth, shorter basidia, pallid stipe, and constantly different host (exclusively on coniferous wood in Europe and Caucasus). It seems that the lamellae are usually more distant in *F. dusenii* than in *F. lacerata*, and the stipe less distinctly fibrillose-striate than in *F. lacerata*. Furthermore, I have not noticed the thickenings of the terminal hyphae of the cuticle in *F. lacerata*, and I believe they do not exist there but since they are scattered, this needs confirmation on European material. This character of the Fuegian species seems to indicate a certain relationship with the genus *Hydropus*, but in view of the shape of the spores and the scarcity and shape of the cheilocystidia, the habit of *Fayodia*, etc.,

one cannot speak of *F. duseñii* being transitory between *Fayodia* and *Hygropus*.

Var. **griseilamellata** Sing. var. nov. Lamellis griseis, levibus. — This variety differs in grey, non-venose lamellae. The spores are near the lower extreme of size indicated in the main diagnosis; the cheilocystidia are very rare, basidiomorphous and occur only on the very edge. Otherwise identical with the main form (var. *duseñii*). It was collected together with the type variety, no. M 162, LIL, type of the variety.

### *Mycena* Pers. ex Grey.

The species of the genus *Mycena* in the narrower sense as keyed out in the generic key preceding the present treatment, are rather rare in the eastern part of Tierra del Fuego. The few species encountered are being determined by the well known American specialist of the genus Dr. Alexander H. Smith, and will be treated in the second part of this work, dealing with the remaining *Agaricales*.

### *Marasmius* Fr.

This genus is remarkable for the amyloid reaction of the hyphae of the interior of the stipe whereas the spores never give an amyloid reaction. The genus *Marasmius* is moderately well represented in the temperate regions of the world and immensely abundant in the tropics. In the frigid zones, few *Marasmii* occur. Thus, in the subarctic zones as well as in the subantarctic region, *Marasmii* are rare, even absent in the drier northeastern portion of the wooded area of Tierra del Fuego. However, Spegazzini indicates several species, *M. androsaceus*, *M. antarcticus* (n. sp.!), and *M. sphaeroderma*. The type of *M. antarcticus* is not preserved, and, according to the description it might just as well be a *Marasmiellus* or *Collybia*. The *M. sphaeroderma* material is bad, and evidently not identical with the type of that species. This leaves *M. androsaceus* which, even if it were incorrectly determined still appears to be a *Marasmius*. Yet, without any microscopical data, it cannot be admitted here.

### *Amanitaceae*.

The family *Amanitaceae* is represented, in the Magallanes region, by the genus *Pluteus*. Two species of *Pluteus* were observed.

### *Pluteus* Fr.

This genus is characterized by inverse gill trama, pink spores and lack of a veil. The Fuegian species are very much like corresponding European species, so much so they may easily be confused with them unless studied very carefully.



## Key to the species

- A. Metuloids with horn-like prongs present on the sides of the lamellae;  
hyphae with clamp connections *P. spagazzinianus*
- A. Metuloids with horn-like prongs absent; hyphae without clamp  
connections. *P. defibulatus*

**Pluteus spagazzinianus** Sing. spec. nov.

Pileo fusco, centro paullum squamoso vel nudo, margine glabro sed innate radiatim subfibrilloso, interdum sublubrico vel opimo iove pluvio, 45—57(110) mm. lato. — Lamellis roseis, sub lente fuscido-marginatis sed obsolete inconstanterque, confertis, liberis. — Stipite albo, innate fuligineo-fibrilloso, praecipue subtus, 35—78 × 7—14(20) mm. — Carne alba, miti, inodora. — Sporibus 6.8—9 × 5.5—6.8 μ. Cheilocystidiis late fusoidis vel vesiculosus, nonnullis fuscidulis et nonnullis hyalinis, haud cornutis, 37—55 × 13.7—19.3 μ. Cystidiis metuloideis maturitate plerumque crassotunicatis et cornutis, hyalinis, (55)—96—110 × (6.8)—11—16.5 μ (si tenui-tunicata et incornuta sunt), (50)—83—110 × 11—21 μ (si crasso-tunicata et cornuta sunt). Hyphis fibulatis numerosis. — Habitat ad truncos specierum *Nothofagi* variarum in silvis, Tierra del Fuego, R. Argentina.

Pileus "clove" with darker center, somewhat squamose in a majority of caps, the margin glabrous and merely more or less radiately innately fibrillose, in wet weather often slightly sublubricous or opimous, convex, becoming appanate, then depressed, often slightly umbilicate or umbonate when mature, 45—57(110) mm. broad. — Lamellae pink with a brownish edge which is not noticeable unless several specimens are investigated with the aid of a hand lens, close, free. — Stipe white with innate fuliginous fibrils, especially below, often white except for the fibrillose base, other times the fibrillosity almost reaching the apex, solid, tapering upward, 35—78 × 7—14(20) mm. — Context white, unchanging, fleshy, mild, inodorous. — Spores 6.8—9 × 5.5—6.8 μ, pale pinkish stramineous, smooth, non-amyloid short ellipsoid to ovoid. Basidia 27—41 × 7.5—8.3 μ, clavate, 4-spored. Cheilocystidia 37—55 × 13.7—19.3 μ, broadly fusoid to balloonshaped-vesiculose, some being hyaline and some filled with an intracellular pigment which is dissolved in the cell sap, brownish. Cystidia initially thin-walled and not horned and some remaining so, especially those near the edge of the lamellae (they are hyaline, elongate-fusiform, 55—110 × 6.8—16.5 μ, mostly over 96 μ long and over 11 μ broad) but the majority becoming true metuloids, somewhat thick-walled to distinctly thick-walled, with horn-shaped prongs which are rarely short and obtuse, mostly numbering two or three and rather strongly projecting and acute as in *Pluteus cervinus*; general measurements of the metuloids (50)—83—110 × 11—21 μ. Hymenial trama inverse, hyaline. Epicutis of the pileus consisting of repent hyphae, those with brown cell sap

usually very long and thin, e. gr.  $130-200 \times 12-20 \mu$ . All hyphae with clamp connections, or at least some hyphae with clamp connections.

On trunks of various species of *Nothofagus* in the woods, fruiting in February, growing solitary or in small groups, rather frequent in Tierra del Fuego.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, 10. II. 1950, R. Singer, no. M 153, LIL, paratype. — 16. II. 1950, no. M 303 LIL, type. — 18. II. 1950, no. M 303 a, LIL, paratype.

This species is macroscopically almost completely like *P. cervinus*. It differs merely in having the brownish lamellae edge which is often very inconspicuous. Microscopically it is very similar to *Pluteus atromarginatus* (Sing.) Kühner, having the clamp connections and the brown cheilocystidia of that species but differing macroscopically in being much less pigmented, the color being a rather neutral brown "clove" with slightly deeper colored center and the gill edges being much lighter colored than in *P. atromarginatus*. Besides, the cheilocystidia are not so broad as in *P. atromarginatus*, and the habitat, constantly on rotten conifer wood in the European species, is likewise different in the Fuegian material. The margin of the pileus is much more fibrillose-villous in the European species whereas the Fuegian species is nearly like *P. cervinus*, glabrous forms, having merely completely innate fibrilosity without any superficial fibrils, and often being rather polished, shining and nearly subviscid.

***Pluteus defibulatus* Sing. spec. nov.**

Pileo fusco-fuligineo, breviter sulcato ad marginem, subpruinato-flocculoso plus minusve rugoso, sicco, convexo, plus minusve 33 mm. lato. — Lamellis roseolis, acie fuliginis, confertis, liberis, latis. — Stipite griseolo, furfurello ex integro, farcto, dein cavo, aequali vel subaequali, e. gr.  $30 \times 3.5$  mm. — Carne alba, inodora. — Sporis  $7-7.5 \times 6-6.2 \mu$ . Cheilocystidiis ventricosis, fusoidis, subclavatis vel subampullaceis, succo brunneo impletis,  $38-63 \times 10.3-23.3 \mu$ . Cystidiis hyalinis, ad aciem et in lateribus lamellarum praesentibus, ad aciem saepius minute-cornutis, ceterum plerumque subulatis, rarius vesiculosis vel ampullaceis, sat numerosis,  $(30)-50-55 \times 10-15(20) \mu$ . Epicute fibrillosa, haud cellulari. Hyphis defibulatis.

Pileus fuscous-fuliginous, at the margin short sulcate, subpruinato-flocculose, more or less rugose, dry, convex, more or less 33 mm. broad. — Lamellae pinkish, with soot brown edge, close, broad (7 mm.), free. — Stipe greyish, minutely furfuraceous all over, stuffed, then hollow, equal or subequal, e. gr.  $30 \times 3.5$  mm. — Context white with a watery line above the lamellae; odor none. —



Spores  $7-7.5 \times 6-6.2 \mu$ , short ellipsoid, some ovoid, stramineous, smooth. Basidia  $32-36 \times 8-9 \mu$ , 4-spored, very few 1-, or 3-spored. Cheilocystidia  $38-63 \times 10.3-23 \mu$ , ventricose, more rarely fusoid, subclavate or slightly ampullaceous, broadly rounded and smooth at the apex, with a brown cell sap, making the edge of the lamellae heteromorphous. Cystidia hyaline,  $(30)-50-55 \times 10-15 \mu$ , mostly subulate, more rarely ampullaceous, balloonshaped-vesiculose, and then without prongs, the subulate ones often with one to three very small (e. gr.  $2 \times 1 \mu$ ) prongs at the apex, so especially at the edge and near it. Subhymenium regular, filamentous. Hymenophoral trama inverse, hyaline. Hypodermium of the pileus consisting of appressed hyphae which are more or less parallel with each other, with some of them pigmented with a brown dissolved pigment, and some, especially the terminal cells of hyphal chains, remarkably swollen and broadly rounded, up to  $15 \mu$  in diameter; floccous of the pileus forming an interrupted epicutis of semierect or ascending bunches or fascicles of dermatocystidialike terminal members, some of them fusoid, some of them clavate, and others subcylindric, also filled with brown cell sap. All hyphae without clamp connections.

On decayed trunks of *Nothofagus* in dense woods, Tierra del Fuego, fruiting in February.

Material studied: Argentina: Tierra del Fuego, Estancia Nueva Argentina, R. G., 22. II. 1950, R. S i n g e r, no. M 435, LIL, type. — Also observed at the east end of Lago Fagnano in dense woods at the foot slopes of Cerro Observación, likewise on *Nothofagus* (*N. pumilio*), in February.

This species is very close to *Pluteus umbrosus* (Pers. ex Fr.) Fr. \*) and differs in greyish instead of blackish stipe, smaller cystidia, perhaps also somewhat larger spores and less yellowish color of the cheilocystidia, but mainly by the presence of pronged cystidia although the prongs are inconspicuous and few, and consequently easily overlooked. If the prongs were rather of the type known in *P. cervinus* and *P. atromarginatus* one would compare this species with the latter species, yet, because of the lack of clamp connections, it is easy to distinguish it. *P. defibulatus* differs from *P. spegazzianus* in the characters indicated in the key.

It is remarkable that the only two species known in the Magallanes area have pigmented cheilocystidia.

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\*) Persoon's species is undoubtedly *P. umbrosus* sensu Ricken, non Bres., and Fries who added *Pinus* as a host already in 1821 misdetermined *P. atromarginatus* as *P. umbrosus*, yet left the description in the main as given by Persoon. Bresadola, Quélet and others elevated these misdetermination to the species proper, disregarding the existence of the species Persoon had described.

### *Agaricaceae.*

The *Agaricaceae* are a family represented by numerous individuals in Tierra del Fuego, but the white spored species are rare. The dark-spored species belonging to the genus *Agaricus*, is extremely common from the Port of Rio Grande south to the Beagle Canal. It will be treated in a subsequent paper. There is only one genus with white-spored *Agaricaceae*. This same representation of the family is also characteristic for the Arctic.

### *Cystoderma* Fayod.

The genus *Cystoderma* is easily recognized by the epithelium on both pileus and stipe. Only one species has been discovered. This one species is very close to *Cystoderma amianthinum*, probably another variety of this common species. It will be described with the rest of the *Agaricaceae* in the second part of this paper.

### *Russulaceae.*

Only the genus *Russula* is represented. There are three species occurring in Tierra del Fuego, all treated, in the author's recent survey of the Russulas of Argentina (Revue de Mycologie, 1950. The Magallanian Russulas will be treated also in the second part of the present paper which is in preparation, and contains the families *Agaricaceae*, *Coprinaceae*, *Bolbitiaceae*, *Strophariaceae*, *Cortinariaceae*, *Crepidotaceae*, *Paxillaceae*, and *Russulaceae*, also the genus *Mycena* (*Tricholomataceae*). Aside from the taxonomic treatment of these groups there will be an appreciation of the results.

### Species dubiae.

There are numerous dubious species in the literature on white- and pink-spored agarics collected in Tierra del Fuego and the Magallanes area in general. The types are either in hopeless condition, or else unfit for study, if they have not been lost entirely which is the case in the vast majority of the cases. They are indicated here in form of a key in order to facilitate their reidentification if better material should become available from the type localities. However, it must be expected that most of these species will remain nomina dubia.

A. Habit tricholomatoid, or reminding one of *Russula*.

B. Pileus sordid fulvescent or whitish-subochraceous. *Tricholoma magellanicum* (Speg.) Sacc. (see also note under the genus *Melanoleuca*, above).

B. Pileus sometimes almost ashy grey, sometimes reddish or violet. *Tricholoma pseudorussula* (Speg.) Sacc. (probably a *Russula* spec., see part 2).



- A. Habit not so
- C. Habit of *Laccaria laccata*; basidia large. *Clitocybe fallaciosa* (Speg.) Sacc. (see also notes on this species in Lilloa 23: 1950!).
- C. Habit of *Collybia*, "*Omphalia*", *Mycena*, *Marasmius*, or *Pleurotus*.
- D. On rotting stems and branches of *Compositae*; habit mycenoid *Mycena exquisita* (Berk. in Hooker) Sacc. sensu Speg. *Mycena cilota* (Speg.) Sacc. \*).
- D. On other hosts, or not with mycenoid habit
- E. Habit not pleurotoid; stipe central.
- F. Habit mycenoid (lamellae not distinctly decurrent; margin of the pileus not incurved at first); context not tough.
- G. On branchlets, twigs, leaves, and among mosses; pileus smaller than 10 mm.
- H. Pileus "rufescenti-ochraceus". *Mycena pseudomuralis* (Speg.) Sacc.
- H. Pileus pale or dark grey, fading. *Mycena capillararis* (Fr.) Quél. sensu Spegazzini.
- G. On trunks of trees and on mossy bark; pileus often larger than 10 mm.; edge of the lamellae often more intensely colored than the sides.
- I. On mossy bark in winter; pileus never subviscid and lamellae never with more intensely colored edges. *Mycena hiemalis* (Fr.) Quél. sensu Spegazzini.
- I. Not so. *Mycena insularis* (Speg.) Sacc.
- F. Habit not mycenoid, or else with tough context.
- J. Habit collybioid or marasmioid.
- K. Pileus 4 cm. broad; lamellae broad (10 mm); otherwise similar to *Collybia fuegiana*. *Collybia ushuvaiensis* (Speg.) Sacc.
- K. Pileus much smaller; lamellae much narrower.
- L. Pileus "fuscorufescens"; lamellae venose, few. *Marasmius sphaeroderma* Speg. sensu Speg. 1887 (non ss. orig.).
- L. Not so.
- M. Pileus pure white; lamellae collariate. *Marasmius antarcticus* Speg.

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\*) *Agaricus exquisitus* sensu Spegazzini is different from *Phaeomarasmius chilotrichi* Sing. (= *Naucoria exquisita* (Berk. in Hooker) Sacc., (type!)). No new name is proposed for Spegazzini's fungus since it has not been seen by me, nor is it certain that it is different from *Mycena cilota* (Speg.) Sacc.

M. Pileus not pure white; lamellae not col-  
lariate. *Marasmius androsaceus* (L. ex  
Fr.) Fr. sensu Speg. 1887.

J. Habit omphalioid.

N. Pileus solitary, white, hygrophanous, 5—8 mm.  
broad, striate; lamellae rather broad, white;  
stipe white and mycelioid at the base. On  
lichens and dead branches. *Omphalia novissima*  
(Speg.). Sacc.

N. Not so. *Omphalia stella* Bomm. & Rousseau.

E. Habit pleurotoid.

O. Lamellae reticulately connexed. *Pleurotus aularinus*  
(Mont.) Sacc. sensu Speg. (cf. *Laschia antarctica*  
Speg.).

O. Lamellae simple.

P. Carpophores black or blackish brown. On *Berberis*  
*ilicifolia*. *Pleurotus berberidicola* (Speg.) Sacc.

P. Carpophores nowhere black or blackish brown. On  
dead bark of *Nothofagus obliqua*. *Pleurotus gossy-*  
*pinulus* (Speg.) Sacc.



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Band/Volume: [6](#)

Autor(en)/Author(s): Singer Rolf

Artikel/Article: [The Agaries of the Argentine Sector of Tierra del Fuego and limitrophous Regions of the Magallanes Area. 165-226](#)