

ANTVAREST - 82

THE FUNGUS FLORA OF MT. HOOD,  
WITH SOME NEW SPECIES\*

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DURING the autumn of 1922, the writer, accompanied by Mr. L. E. Wehmeyer, collected and studied the fungi in a small area at the western base of Mt. Hood. By the advice and through the kindness of the men of the Portland Office of the United States Forest Service, accommodations were obtained at the ranch-house of Mr. and Mrs. W. J. Faubian, just inside the western entrance to the Oregon National Forest, and on the first lap of the Mt. Hood Highway. For numerous courtesies extended by the men of the Portland Forestry Office, the writer wishes to make grateful acknowledgment.

The foothills rise in abrupt ridges at this point, and represent a portion of radiating outposts of the great mountain peak visible beyond. Near by two of the valleys are well watered by the Zigzag River and the Sandy River, with their sources in the glaciers and snow-fields about twelve miles from our station. Smaller streams also abound. Some of the valleys and ridges are still covered by forests of Douglas fir, western hemlock, white fir, some scattered cedars, and in low places two species of maple and one of alder. The topography and water-relations are such as to produce a variety of habitats favorable to fungi of all sorts, and as the rainy season was well started when we arrived, it was not surprising that within the single month of our stay a large mass of material came to hand. The collecting was started on September 21 and terminated October 24. The area covered was scarcely more than a two- to three-mile radius from the ranch.

\* Paper from the Department of Botany of the University of Michigan, No. 228.

In order to take complete notes and obtain the photographs, little time was left for longer excursions, and in any case, a small area well covered is likely to yield a high percentage of the possibilities of a larger area.

Aside from collections of parasite fungi, our knowledge of Oregon fungi in the past has been brought about in three ways. Occasionally a local amateur sent specimens to Dr. Peck at Albany, Professor Atkinson at Cornell University or to Dr. Burt at St. Louis. In this way certain basidiomycetes and rarely species of the other groups received names; the more common fungi of interest to forest pathology were also occasionally gathered and studied by the pathologists at Washington or elsewhere. Secondly, Dr. Murrill of the New York Botanical Garden, on an exploring expedition for material for the *North American Flora*, gathered a considerable number of Oregon fungi which he later described and named. The latest additions to the flora of the State were compiled by Zeller (21) and it is to be hoped that this author will find opportunity to continue his research in this, an almost unstudied part of our country.

Two mycological features impress an eastern mycologist when he enters the Pacific states west of the Cascade Range. In the first place, many species, if one is at all familiar with northern European plants, are found to be old Friesian species. In the second place he is astonished — nay, somewhat alarmed at his own ignorance — to find so many that appear to be undescribed. Such meager information as we have of that fatal trip to the state of Washington, by the late Professor Atkinson, indicates that he, too, was impressed by the multitude of new forms, and his anxiety to waste no second in this fascinating country is believed to have lured him to overtax his strength and to overlook the signs of physical exhaustion.

It has been the author's policy to refrain as much as possible from the business of describing species. During 1915, with two assistants, the writer spent two months in the mountains of Washington, and obtained a large number of (new) species. After ten years of contemplation about a considerable number of forms then seen, and in frequent cases again collected in 1922, it

seemed highly desirable in the interests of the future of Pacific Coast mycology, that these species should be described. The more outstanding forms have, therefore, been selected and are given below. In order to keep this paper within bounds, only the basidiomycetes are included; if possible the other groups will be presented later.

All material and type-specimens are deposited in the Herbarium of the University of Michigan.

## BASIDIOMYCETES

### AGARICALES

#### THELEPHORACEAE

HYMENOCHAETE BADIO-FERRUGINEA (Mart.) Lév. — On dead stems of *Vaccinium parviflorum*.

HYMENOCHAETE FULIGINOSA (Pers.) Bres. — On decorticated wood of some frondose tree.

HYMENOCHAETE SPRETA Pk. — On decayed wood. Only the first setigerous layer is present.

SEBACINA DENDROIDEA (Pk. & Cke.) Lloyd. — On *Fomes applanatus*.

STEREUM HIRSUTUM Fr. — On dead branches of *Abies oregona*.

THELEPHORA CARYOPHYLLEA Fr. — On decayed wood remnants and humus.

THELEPHORA INTYBACEA Fr. — On debris on the ground in conifer woods.

#### HYDNACEAE

CALDESIELLA CRINALIS (Fr.) Bourd. & Galatz. — On very rotten wood.

HYDNUM AURISCALPIUM Fr. — On cones of Douglas fir. Frequent.

HYDNUM CAPUT-URSAE Fr. — On alder log.

HYDNUM COMPLICATUM Banker. — On debris under conifers. The odor is definitely and agreeably aromatic when the fresh plants are bruised. Young or growing plants are white on and

near the margin, "cinnamon-rufous" (R.<sup>1</sup>) or darker on disk, all parts becoming dark-brown to reddish-blackish-brown after bruising or in age, so that the colors vary considerably in different plants. The texture is hard and tough in the interior portions. The spores are as given by Banker (3).

HYDNUM GRAVEOLENS Delast. var. — The same species as that reported from Colorado by Kauffman (13, p. 116).

HYDNUM FULIGINEO-VIOLACEUM Kalchbr.-Bres. — This is without doubt the species described and figured by Bresadola (6).

MUCRONELLA AGGREGATA Fr. — On bark of decaying birch sticks. Spores short, ellipsoid, 4-5 × 3 μ, smooth, hyaline.

PHLEBIA CINNABARINA Schw. — On decayed wood.

PHLEBIA RADIATA Fr. — On decayed wood.

#### CLAVARIACEAE

CLAVARIA CINEREA Fr.

CLAVARIA DENSA Pk.

CLAVARIA FLAVULOIDES Burt.

CLAVARIA FUSIFORMIS Fr.

CLAVARIA LIGULA Fr.

*Clavaria nebulosoides*, sp. nov. — FRUIT BODY simple, fleshy, cylindrical, stipitate, fertile portion 3-5 cm. long, 1.5-2 mm. thick, "wood brown" to "fawn color." STIPE slender 1.5-3 cm. long, minutely pruinose. SPORES oblong, 5-6 × 2.5 μ, hyaline, smooth; cystidia 65-70 × 7-12 μ, fairly abundant, hyaline, thin-walled, lanceolate, pedicel long and slender; basidia 4-spored, 30 × 5 μ.

On mosses in conifer forest. Mt. Hood, Oregon. October 15. Collected by L. E. Wehmeyer.

Distinguished by its habit, color and the presence of cystidia.

LACHNOCLADIUM ORNATIPES (Pk.) Burt. (See Plate II, Fig. 1.) — The synonymy of this species is given by Burt (8, p. 66). Both because the descriptions have been meager, and because Burt finds the spores of the type-specimens quite a little smaller

<sup>1</sup> "R." as used in this paper refers to Ridgway's *Color Standards and Nomenclature*, 1912.



than in our specimens and as given by Peck, I include here a more complete description: FRUIT BODY 4-8 cm. tall, dichotomously branched, with few to several main branches. FERTILE BRANCHES occupying mostly only the upper half of the plant, subfleshy, smooth, "avellaneous" (R.), or paler towards the tips, dilated and compressed-subrugose upwards, terminal branches attenuated-acute, with pointed apices in two's or three's. STEM and sterile branches 3-4 cm. long, 3-8 mm. thick, rather tough, clothed by a strigose-hairy thick covering, "army-brown" (R.) to "avellaneous," subterete or compressed upwards; context solid, subspongy, similar to, but of a deeper color than, the hymenium. SPORES spherical, with abrupt slender apiculus, hyaline, smooth, granular within, 9-10  $\mu$  (11.5 with apiculus); basidia 1-2-spored, rarely 3-spored, on long subcurved sterigmata; cystidia none. ODOR none; taste mild or slowly somewhat bitter.

Growing on mossy humus or very rotten debris under conifers. October.

*Pistillaria fusiformis*, sp. nov. (See Plate II, Fig. 2).—FRUIT BODY fleshy, white, subfusiform-acuminate, 3-5 mm. tall, somewhat curved, fertile portion subcompressed, sometimes furrowed on the flattened side. STEM slender, scarcely more than 1 mm. long, terete, minutely hairy, white; sclerotium none. SPORES oval-elliptical to subglobose, 7.5  $\times$  6  $\mu$ , hyaline, smooth; basidia 45  $\times$  8-9  $\mu$ , 2- to 3-spored with prominent, slender sterigmata; cystidia none.

On decayed coniferous wood. Gregarious. Mt. Hood, Oregon. October 7. Collected by L. E. Wehmeyer.

The body is entirely fleshy, spongy and homogeneous within. The general shape and appearance are like that shown by Patouillard (18) for *P. rosellae* var. *ramosa*, Fig. 53, but otherwise different.

TYPHULA PHACORRHIZA Fr. — In alder thickets.

*Typhula cystidiophora*, sp. nov. — FRUIT BODY simple; fertile portion cylindrical, 2-5 cm. long, 1-1.5 mm. thick, obtuse, subpruinose or almost glabrous under a lens, white or tinted pale yellowish; context soft, fleshy, subfragile. STEM filiform, 2-2.5

cm. long, .5-1 mm. in diameter, tough, concolor, minutely hirsute. SPORES narrowly elliptic-subovate, guttate, smooth, subhyaline and tinged ochraceous,  $5-6.5 \times 2.5-3 \mu$ ; basidia 4-spored, slender,  $45-50 \times 4-5 \mu$ ; cystidia abundant, lanceolate to subcylindric below, subacute to subcapitate above, hyaline, thin-walled; pedicel slender,  $50-75 \times 8-12 \mu$ . SCLEROTIUM fuscous, depressed-subglobose, 4-6 mm. diameter.

On moist soil among mosses in conifer forest. Subgregarious. Mt. Hood, Oregon. October 12. Collected by C. H. Kauffman.

This differs from *T. gyrans* Fr. and other related species in the presence of cystidia throughout the hymenium and by the elongated fertile portion of the plant.

TYPHULA MUCOR Pat. — FRUIT BODY white, 1-1.5 cm. tall; fertile portion oblong, 2-3 mm. long, 2-3 mm. thick, glabrous. STEM very slender, filiform, .1-.3 mm. thick, glabrous, composed of parallel hyaline hyphae,  $2.5 \mu$  diam. SCLEROTIUM minute, subglobose, dark brown. SPORES subcylindric, hyaline, smooth,  $7-9.5 \times 2.5-3 \mu$ ; cystidia none; basidia 4-spored,  $24-26 \times 4-5 \mu$ .

On decaying leaves of frondose trees. October.

This minute species is so close to that figured and described by Patouillard (18) that it must be considered at most merely a taller form.

#### POLYPORACEAE

FOMES IGNIARIUS Fr. — On trunks of alder and willow. This is the form usually found on poplar.

MERULIUS FUGAX Fr. — On conifer wood.

MERULIUS HEXAGONOIDES Burt. — On decayed wood and bark. Fertile portion when fresh "tawny" to "Saccardo-umber" (R.), sterile margin white.

MERULIUS PINASTRI (Fr.) Burt. — On rotten wood in conifer forest.

MERULIUS TREMELLOSUS Fr. — On decayed sticks and branches.

POLYPORUS AURANTIACUS Pk. — On hemlock log.

POLYPORUS ELEGANS Fr. — On dead branches.

POLYPORUS CINNAMOMEUS Fr. — On sandy ground.

POLYPORUS FRAGILIS Fr. — On logs of Douglas fir.

POLYPORUS GALACTINUS Fr. — On very rotten wood, among alder and maple.

POLYPORUS GUTTULATUS Pk. — On conifer log.

POLYPORUS (GANODERMA) OREGONENSIS Murrill. — On conifer log.

POLYPORUS HIRTUS Fr. — On the base of a dead Douglas fir stub.

POLYPORUS PERENNIS Fr. — On the ground, conifer forest.

POLYPORUS PICIPES Fr. — On conifer logs.

POLYPORUS RADIATUS Fr. — On dead alder trunk.

POLYPORUS BENSOINUS Fr.—Lloyd. — On decayed log of Douglas fir.

POLYPORUS SCHWEINITZII Fr. — On roots of Douglas fir.

POLYPORUS SULPHUREUS Fr. — On Douglas fir logs.

POLYSTICTUS HIRSUTUS Fr. — On alder branches.

PORIA FERRUGINOSA Fr. — On fallen branches of *Acer circinatum* and *Acer macrophyllum*.

PORIA MEDULLA-PANIS Fr. var. COLORATA Overh. — On decayed wood of Douglas fir.

PORIA MOLLUSCA Fr. — On much decayed wood, probably of frondose trees.

TRAMETES CARNEA Nees. — On Douglas fir logs.

BOLETACEAE

BOLETINUS PICTUS Pk.

BOLETUS GRANULATUS Fr. — Whitish form.

BOLETUS LUTEUS Fr.

BOLETUS SUBTOMENTOSUS Fr.

BOLETUS TOMENTOSUS Kauff.

BOLETUS MIRABILIS Murrill. (See Plate III.) — PILEUS fleshy, firm, 5-12 cm. broad, "maroon" (R.) colored, dry, densely velvety tomentose, with an incurved, sterile, narrow, membranous margin; flesh compact, pale yellowish, becoming reddish-tinted or shot through with red streaks when cut or bruised. TUBES "citron-yellow" (R.) when young, becoming "olive-yellow" when bruised or in age, 10-15 mm. long, adnate, narrowly depressed around the stem, not stuffed, regular;

mouths angular, 1-1.5 per millimeter, dissepiments thick, entire. STEM stout and often rather long, 10-12(15) cm. long, tapering upwards from the clavate base, very abruptly short-pointed at base, subviscid, pale yellow and more or less reticulate at apex, conspicuously and longitudinally streaked by "maroon" color, white at the very base, 1-2.5 cm. thick above, 2-5.5 cm. thick below, solid; flesh yellowish upwards, at length tinged with reddish, whitish downwards. SPORES 18-24(27)  $\times$  6-9  $\mu$ , ventricose-fusiform, smooth and even, yellowish-ochraceous, exospore tinted reddish; basidia 4-spored, 48-50  $\times$  12-15  $\mu$ ; cystidia fairly abundant, ventricose-lanceolate, hyaline, 90  $\times$  15-24  $\mu$ , obtuse at apex, pedicel slender. ODOR and taste mild.

On the ground in fir forests. Mt. Hood, Oregon. September 28 and 30. Collected by L. E. Wehmeyer.

Only *B. russelli* and *B. Betula* have spores approaching in size those of this species. By the stem characters, however, its relationship is elsewhere. In the fresh condition the stem is covered by a delicate hoariness, of cobweb-like texture, which is responsible for the slight viscosity in wet weather, and which is continuous at first with the incurved delicate membranous margin of the pileus. Occasionally the tubes verge into the reticulations at the apex of the stem, so as to appear slightly decurrent. The flesh and tubes do not turn blue when wounded. Under the arrangement of Dr. Peck, the species inclines towards the *Calopodes*, although the stems in the specimens seen were reticulate only at the apex. It departs from the characters assumed for the *Edules* in the tubes not being at first stuffed, although it approaches such large species as *B. eximius* and *B. edulis* in color and size. Murrill (*Mycologia*, 4: 98, 217) named and described this species, but evidently under other weather conditions, as its pileus is said to be bay color and its surface composed of floccose, but rigid, conic persistent papillae.

#### AGARICACEAE

*AMANTHA JUNQUILLEA* Quél. — This is reported from North Carolina by Beardslee (4), also as *A. gemmata* (Fr.) Gill. by Coker (9). I have collected the North Carolina plant a number

of times in Virginia and Maryland. The collections from that region have spores which tend to average below  $9\ \mu$  long, while in the European plant the spores are given  $10-12 \times 7-8\ \mu$  by Ricken (20) and  $11-13 \times 7-9\ \mu$  by Boudier (5). In the West, a very similar species is found, with the spores measuring  $10-12 \times 7-8\ \mu$ . The latter I believe to be the genuine *A. junquillea* as described in Europe. I do not feel sure that the plant from the Eastern United States can properly be referred here, although it is certainly close to *A. junquillea* in most of its characters. One can of course find occasional longer spores in the Eastern plant, but to record such merely confuses the record. In this connection, I should like to reiterate (12, p. 617) that *A. russuloides* Pk. is a different and distinct species, and should not be included in any synonymy under *A. junquillea* or *A. gemmata*. Some of my collections in the East are very probably genuine *A. gemmata* (Fr.) Gill.

*AMANITA MUSCÁRIA* Fr.— The scarlet-capped form of Europe. Frequent.

*Amanita silvicola* sp. nov. (See Plate IV.) — PILEUS 6-10(12) cm. broad, at first broadly convex, then plane to subrepand, white, subviscid, when young covered by a soft, floccose, continuous white universal veil which later is irregularly disposed in flat patches or masses, not warty, margin persistently incurved, even, and at maturity crenate from the appendiculate veil-remnants; flesh abruptly thin on margin, scarcely over a centimeter thick near stem, soft. GILLS reaching stem, free except by decurrent lines, or obscurely and very narrowly adnate, white, crowded, medium broad, 6-7 mm., edge distinctly flocculose. STEM 6-10 cm. long, at first with the pileus seated on a subnapiform bulb and surrounded by the smooth, floccose universal veil, at length elongated and subequal, 15-25 mm. thick, bulb up to 3 cm. thick, white, surface at maturity covered by obscure floccose-silky remains of the veil, at times terminating in a narrow, quickly evanescent floccose annulus, bulb edged by a circular indistinct line which is the edge of the separated veil, solid, rather compact and firm. ODOR and taste none. SPORES  $9-10(12) \times 5-5.5(6)\ \mu$ , elliptical, smooth, white, obliquely apiculate; basidia

clavate,  $48-50 \times 8-9 \mu$ . 4-spored; sterile cells on edge of gills large, globose-pyriform,  $24-30 \mu$  wide.

In thick forests of hemlock and cedar. Mt. Hood, Oregon. September 30. Collected by C. H. Kauffman.

The whole plant is pure white. The volva, although about a millimeter thick on the young pileus, because of its soft texture leaves only thin remnants on the stem; it is circumscissile. Because of the napiform bulb, one might think of it as belonging to the *A. solitaria* group. However, the universal veil is very different from those of that group; the bulb is not rooting, the pileus is without warty scales, and the spores are distinctly narrower than those of *A. solitaria*, while the absence of any odor separates it from *A. chlorinosma*.

AMANITA TOMENTELLA Kromb. — In forests of hemlock and cedar. See Kauffman (12, p. 607).

AMANITOPSIS STRANGULATA Fr. — On mosses in hemlock forest. Stout and massive specimens.

ARMILLARIA ALBOLANARIPES Atk. — In hemlock and fir forest.

ARMILLARIA VISCIDIPES Pk. — For a full discussion of this species see Kauffman (14, p. 62). It may reach a huge size; pileus up to 20 cm. broad; stem up to 12 cm. long and 4 cm. thick at apex; gills up to 15-18 mm. broad.

ARMILLARIA CINNABARINA (Fr.) Kauff. — (See 14, p. 60.)

CANTHERELLUS AURANTIACUS Fr.

CANTHERELLUS CIBARIUS Fr.

CANTHERELLUS FLOCCOSUS Schw.

CANTHERELLUS INFUNDIBULIFORMIS Fr.

CANTHERELLUS MULTIPLEX Underw. (See Plate V.) — I have collected and studied this curious species several times. It occurs in the Rocky Mountains of Wyoming and Colorado, in the Olympic Mountains of Washington and in the Cascade Mountains of Washington and Oregon, including Mt. Hood. It was originally collected at Mt. Desert, Maine. It may be looked for in coniferous forests of the higher latitudes of North America or in the mountains southward. Murrill (17) erected the genus Polyzellus for it. It is, however, only a very extreme growth-condition of *C. clavatus*, and typical individuals of the latter spe-

cies are to be found with the — often abundant — “multiplex” plants. The photograph is of the intermediate type. E. T. Harper in *Mycologia*, Volume 5, Plate 94, has illustrated what is undoubtedly the same plant, and properly referred it to *C. clavatus*.

CANTHERELLUS PRUINOSUS Pk. — On debris under coniferous trees. Although this determination may be open to question, yet in the absence of any recorded microscopic characters for Peck's species, it seems to me more than probable that we have here the species so briefly described by him (*N. Y. State Mus. Rep.*, 28: 51. 1876). Patouillard (18), in *Tabulae Analyticae*, figured (No. 651) a species from Guinea, South America, of which the slender specimens there shown well illustrate the size and shape of our plant. That species, however, has different spores and grows in the tropics. The western plant is white throughout, 2.5 cm. tall, shaped like the slightly curved horn of a cow, flaring slightly at the top, depressed-subinfundibuliform, and externally with narrow, longitudinal ridges; a few of these may be forked. The spores are spherical, hyaline and smooth; the basidia are 4-spored, elongated, subclavate 90–100  $\times$  4  $\mu$ .

COLLYBIA ACERVATA Fr.

COLLYBIA ALBIFLAVIDA (Pk.) Kauff. var. MONTANUM Kauff.

COLLYBIA ALBIPILATA Pk. — On cones of Douglas fir. Common. This is without doubt Peck's species. However, it is very likely to turn out to be only a somewhat smaller American form of one of the European species. The idea of the spore-size for *C. esculenta* and *C. conigena* as given by Bresadola (6), 6–8  $\times$  3–4  $\mu$ , has not been followed by later European authors, e.g. Ricken (20), Rea (19) and Lange (16). The spores of my collection measure 3.5–4  $\times$  2  $\mu$ , and the cystidia are “fusoid-ventricose,” capitate. In this latter respect it agrees with Bresadola's conception of *C. esculenta*. The pileus, however, is “pale cinnamon-pink” when fresh, becoming “pinkish-cinnamon” in age, and is *pruinose*; this pruinosity is due to erect cystidia-like cells projecting from the corticate surface layer of the pileus. All this is distinctly a character of the American species. The

European species, *C. esculenta* and *C. conigena*, have entirely glabrous caps. Lange (16) recognizes only *C. tenecella* and *C. conigena*, and gives the larger spore-size to the former, the small spore-size to the latter. Evidently Murrill is right in saying that no typical material of these European species has as yet turned up in America. *C. albopilata* occurs on various cones, although usually reported only on pine cones. The other similar thing in the United States is *C. conigenoides* Ell. on magnolia cones. See Kauffman (11).

COLLYBIA CONFLUENS Fr.

*Collybia cylindrospora*, sp. nov. — PILEUS subpliant, 4-6(7) cm. broad, convex-expanded and soon irregularly repand, obsoletely umbonate or obtuse, glabrous, even, moist, with a tough cuticle, dull "antimony yellow" (R.), disk tinged "cinnamon rufous"; flesh of equal thickness, 1-1.5 mm., white. GILLS broadly adnate, rather broad, narrowed in front to a point and not reaching the edge of the pileus, subarid, slightly tough, close, occasionally interveined, whitish. STEM 8-10(12) cm. long, 4-6(8) mm. thick, irregularly twisted, striate to furrowed-compressed, hollow, glabrous, "cinnamon" (R.), sometimes darker downwards, subrooting at base. ODOR and taste slightly disagreeable, earthy. SPORES subcylindric, smooth, hyaline, 5-6  $\times$  1.5-2  $\mu$ ; cystidia none; sterile cells on edge of gills filiform, about 2  $\mu$  wide; basidia 4-spored, 30  $\times$  5-6  $\mu$ .

On debris and very rotten wood in conifer forest. Mt. Hood, Oregon. October 5. Collected by C. H. Kauffman.

It is distinguished from its near relatives, like *C. fusipes*, *C. lancipes* and *C. distorta*, especially by its narrow, cylindrical spores. The stems are sometimes connate part way. Its general appearance is like that of *C. rugulosiceps*.

COLLYBIA PLATYPHYLLA Fr.

COLLYBIA PROLIXA Fr.-Ricken

COLLYBIA PROTRACTA Fr.-Ricken

*Collybia rugulosiceps*, sp. nov. (See Plate VI.) — PILEUS 3-5 cm. broad, very pliant, convex-plane, with a distinct obtuse umbo, at length depressed around umbo, moist, hygrophanous, glabrous, radiately and finely rugulose to umbo, "cinnamon



drab" to "avellaneous" (R.), umbo "sayal-brown" (R.), becoming somewhat paler when dry, margin thin, substriate, splitting radially in age, acute, soon spreading; flesh thin, concolor. GILLS narrowly adnate, soon sinuate and decurrent, rather narrow, and narrowed in front to a point, 3-6 mm. broad, whitish with indistinct gray tints, close to subdistant, here and there intervenose. STEM 4-8(10) cm. long, 3-5 mm. thick, slender, equal, abruptly dilated at apex, sometimes twisted, hollow, terete or compressed-furrowed, glabrous and naked, entirely even, tough-cartilaginous, almost horny, "wood-brown" to "avellaneous" or darker, white-substrigose at the very base. ODOR and taste entirely lacking. SPORES broadly elliptical; smooth, hyaline, 8-9(12)  $\times$  5-7(8)  $\mu$ , variable; basidia 4-spored, 32-34  $\times$  5-6  $\mu$ ; cystidia none; sterile cells on edge of gills oval, short and indistinct.

Always on decayed logs or wood remains of conifers, caespitose or subcaespitose. Common. Mt. Hood, Oregon. October 3. Collected by C. H. Kauffman.

It belongs to the section Tephrophanae, although neither the hygrophanous character, nor the gray tints of the gills are strongly marked. In its relationship, it verges towards *C. lancipes* Fr., but the stem is not atriate and the gills are not broad. From *C. rugosiceps* Atk. and *C. subrugosa* Murrill it differs in the character of its gills and spores as well as in its colors and habitat. It has much the appearance of some of the *Tricholoma melanaleuca* group, but lacks cystidia, has different colors and the stem is truly cartilaginous. The surface layer of the pileus is corticate, composed of one or two series of globose-pyriform, brown cells.

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|----------------------------|-------------------------------|
| CLAUDOPUS BYSSISSEDUS Fr.  | CLITOCYBE MEDIA Pk.           |
| CLITOCYBE AMARA Fr.        | CLITOCYBE NEBULARIS Fr.       |
| CLITOCYBE ATRIALBA Murrill | CLITOCYBE OCHROPURPUREA       |
| CLITOCYBE CLAVIPES Pk.     | Berk.                         |
| CLITOCYBE DECORA Fr.       | CLITOCYBE PITHYOPHILUS Fr.    |
| CLITOCYBE ECTYPOIDES Pk.   | CLITOCYBE SUAVEOLENS Fr.      |
| CLITOCYBE GALLINACEA Fr.   | CLITOPILUS NOVABORACENSIS Pk. |
| CLITOCYBE LACCATA Fr.      | CLITOPILUS WOODIANUS Pk.      |

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| COPRINUS ATRAMENTARIUS Fr.     | Cortinarius montanus, sp. nov.   |
| COPRINUS FIMETARIUS var.       | (Bulbopodium). (In press,        |
| MACRORRHIZA Fr.                | North American Flora, Vol. 10)   |
| CORTINARIUS AMARUS Fr.         | CORTINARIUS MUCIFLUUS Fr.        |
| CORTINARIUS ANOMALUS Fr.       | CORTINARIUS OBTUSUS Fr.          |
| CORTINARIUS BADIUS Pk.         | CORTINARIUS PALEACEUS Fr.        |
| CORTINARIUS BULBOSUS Fr.       | Cortinarius pyriodoris, sp. nov. |
| Cortinarius clandestinus, sp.  | (Inoloma). (In press, North      |
| nov. (Dermocybe). (In press,   | American Flora, Vol. 10)         |
| North American Flora, Vol. 10) | CORTINARIUS RENIDENS Fr.         |
| CORTINARIUS DILUTUS Fr.        | CORTINARIUS RIGIDUS Fr.          |
| CORTINARIUS EVERNIUS Fr.       | CORTINARIUS SATURNINUS Fr.       |
| CORTINARIUS FUCATOPHYLLUS      | CORTINARIUS SUBSIMILIS Fr.—      |
| Lasch-Ricken                   | Ricken                           |
| CORTINARIUS LANIGER Fr.        | CORTINARIUS VIOLACEUS Fr.        |
| CORTINARIUS LONGIPES Pk.       | CORTINARIUS WHITEI Pk.           |

DICTYOLUS RETIRUGIS (Fr.) Quél. — On species of Hypnum mosses. SPORES elliptical, smooth, hyaline,  $7-8 \times 4-4.5 \mu$ ; cystidia none; basidia clavate, 4-spored,  $40 \times 6 \mu$ . The hymenial surface may be provided with radiating vein-like ridges which do not reach the margin of the pileus, or it may be even without any sign of gill development. FRUIT BODY 4-6 mm. wide, sessile, convex-subreniform to orbicular, surface of pileus "cartridge-buff" (R.) when fresh, tinged grayish on drying, indistinctly pruinose under a lens. Although departing slightly from the species to which it is here referred, it seems too close to it to be considered a distinct species.

Eccilia bispora, sp. nov. — PILEUS 1-2.5 cm. broad, convex-depressed or umbilicate, sometimes subumbonate, rather elastic but somewhat brittle, glabrous, with a separable gelatinous pellicle and slightly viscid in wet weather, "avellaneous" (R.), indistinctly striatulate on margin, which is at first incurved rather than decurved; flesh concolor, rather thin, tapering to margin. GILLS broadly adnate, sometimes with decurrent tooth, broad, close to almost subdistant, becoming deep flesh-color, edge entire. STEM 4-5(8) cm. long, 3-6(8) mm. thick, equal or tapering downwards, often compressed-furrowed, dilated at apex, cartilaginous, brittle, almost glassy, hyaline-white, hollow, even,

white-mycelioid at base. ODOR and taste rancid-farinaceous. SPORES obtusely angular, broadly ellipsoid,  $10-12 \times 8-10 \mu$ , deep flesh-color under the microscope; basidia 2-spored  $45 \times 8-9 \mu$ ; hymenium with abundant, sterile, cystidia-like cells which are acutely pointed, but scarcely project beyond the basidia; true cystidia none.

On wood debris. Mt. Hood, Oregon. October 5. Collected by C. H. Kauffman.

Nearly all of the cartilaginous-stemmed species of *Leptonia*, *Nolanea* and *Eccilia* have slender and equal stems. In this species the stem has a tendency to be irregularly undulate and subcompressed, in the larger specimens quite thick, while in contrast to its length, the caps are narrow. The pellicle of the pileus, the stem features and the microscopic characters set it off from other species. The slight tooth of the gills may induce one to look for it under *Leptonia*, and the stem character at first sight suggests an *Entoloma* or *Clitopilus*. The two-spored basidia and other microscopic characters were a constant feature in two different collections.

|                          |                          |
|--------------------------|--------------------------|
| ENTOLOMA NIDOROSUM Fr.   | FLAMMULA LIQUIRITIAE Fr. |
| ENTOLOMA NITIDUM Quél.   | FLAMMULA SAPINEA Fr.     |
| ENTOLOMA SPECULUM Fr.    | FLAMMULA SPUMOSA Fr.     |
| FLAMMULA ASTRAGALINA Fr. | GALERA HYPNORUM Fr.      |

*Galera martipes*, sp. nov. — PILEUS 5-8 mm. high and wide, conical, obtuse, hygrophaneous. "clay color" (R.) and long-striate (moist), "pinkish buff," even and atomate (dry); flesh very thin, concolorous. GILLS adnate, ascending, ventricose but rather narrow, subdistant. STEM 8-10 cm. long, 1 mm. thick, slender, equal, "mars-brown" (R.), clay-color at apex, minutely pruinose throughout, pruinosity due to minute, spreading hairs, fistulose, mars-brown within, cartilaginous, flexuous. ODOR and taste none. SPORES oval-subventricose, smooth, ochraceous,  $8-9 \times 4-5 \mu$ ; cystidia abundant on edge of gills and near, scattered on sides, rounded-ventricose above the slender pedicel, neck abruptly narrow, lance-shaped to aciculate, hyaline,  $60-75 \times 12-18 \mu$ .

Attached to mosses and decayed needles, in forest of hemlock and Douglas fir. Mt. Hood, Oregon, September 2. Collected by C. H. Kauffman.

The pileus is homogeneous in structure, not corticate. The species is closely related to *G. hypnorum*, but differs constantly in its longer and pruinose stems, smaller spores and the character and distribution of the cystidia. See Atkinson (2) for relationships of the species of *Galera*.

*Gomphidius ochraceus*, sp. nov. (*Mycologia*, 17: 119. 1925)

*Gomphidius subroseus*, sp. nov. (*Op. cit.*, 17: 120. 1925)

*GOMPHIDIUS TOMENTOSUS* Murrill (*Op. cit.*, 17: 124. 1925)

*HEBELOMA ELATUM* Fr.

*HYGROPHORUS COCCINEUS* Fr.

*HEBELOMA PUNCTATUM* Fr.

*HYGROPHORUS CONICUS* Fr.

*HYGROPHORUS CERACEUS* Fr.

*HYGROPHORUS PARVULUS* Pk.

*Hygrophorus mollis* (B. & Br.), comb. nov. — PILEUS 5-12 mm. broad, at first discoid, then broadly convex, obtuse, moist, "mikado orange" (R.), decorated by fine, pointed, concolorous fascicles of fibrils which suggest a minutely echinulate appearance, margin at first incurved, even; flesh relatively thick, thinner on margin, concolor. GILLS adnate, rather narrow, of equal width, subdistant, waxy, "light orange-yellow." STEM 1-2.5 cm. long, 1.5-2 mm. thick, "light orange-yellow" (R.), equal, glabrous, hollow, toughish, concolorous within, apex naked but attached at base by delicate radiating, pure white hairs; cortina none. SPORES elliptical, smooth, hyaline,  $8-9 \times 4-4.5(5)$ ; basidia  $48-50 \times 7-8 \mu$ ; cystidia none; gill-trama of interwoven hyphae; trama of pileus floccose, homogeneous, composed of concolorous hyphae; sterile cells inconspicuous.

On a very decayed log under Douglas fir. Subcespitate. Mt. Hood, Oregon. October 16. Collected by L. E. Wehmeyer.

This species departs in such minor particulars from the European form which goes under the name of *H. turundus* var. *mollis*, that it seems clearly to be the same. I have here raised the variety to specific rank on microscopical grounds. The whole plant has a waxy lustre. No cortina was visible even in the youngest specimen. The decoration of the cap gives a white

shcen when reflecting the light. It belongs to the subgenus *Camarophyllus*.

*Hygrophorus fimbriatophyllus*, sp. nov. — PILEUS 2-3 cm. broad, at first oval-hemispherical then broadly convex, obtuse, uniformly "apricot-yellow" (R.), fibrillose-floccose or broken into soft and small scales, margin even, at first incurved and silky from the cortina; flesh moist, concolor, 2 mm. thick near stem, narrowed to the margin of the pileus. GILLS broadly adnate or at length spuriously subdecurrent, rather narrow, 2-4 mm., "apricot-yellow," waxy, edge concolorous and fimbriate. STEM 4-7 cm. long tapering upwards, 2-3.5 mm. thick at apex, 3-6 mm. at base, concolor, even, flexuous, at first silky-fibrillose, glabrescent. ODOR and taste none. SPORES subglobose to broadly elliptical, smooth, hyaline,  $7-8(9) \times 6-7 \mu$ ; cystidia none; sterile cells on the edge of the gills prominent, cylindrical, obtuse,  $100-120 \times 4-5 \mu$ , hyaline; gill-trama interwoven.

On very rotten wood in conifer forest. Mt. Hood, Oregon. October 13. Collected by L. E. Wehmeyer.

The pileus although fleshy is thin and somewhat pliant, but the waxy gills preclude the genus *Clitocybe*. The young plant is surrounded by the continuation of the pileus covering, thus indicating a universal veil. *H. intermedium* Pass.-Ricken has a similar covering. Our plant belongs to the subgenus *Camarophyllus*.

*Hygrophorus multifolius*, sp. nov. (See Plate VII.) — PILEUS 1.5-4 cm. broad, pliant, at first broadly convex and discoid, at length plane to depressed with a small umbo and a decurved margin, *viscous*, with a thin, separable pellicle, soon dry and subtomentose, putty-colored to "drab" (R.), margin at first incurved and persistently translucent-striatulate, incurved portion subtomentose; flesh rather thin, 1.5 mm. near stem, tapering gradually to margin, concolor, fading. GILLS adnate-subdecurrent, at length decurrent by elevation of cap-margin, narrow, 3-4 mm., almost linear, close or subcrowded, "echru-drab" (R.) or paler, waxy, edge entire. STEM 3-5 cm. long, 2-3.5 mm. thick, equal, terete or compressed, hollow, slightly viscid when fresh from the thin hyaline evanescent universal veil, sometimes white-silky or lacerate-silky in upper portion, "light drab" within and without,

fading, toughish. ODOR strongly farinaceous, taste similar. SPORES suboblong, smooth, hyaline,  $6-6.5(7) \times 3-3.5 \mu$ ; cystidia none; basidia 4-spored  $45-50 \times 4-5 \mu$ ; sterile cells on edge of gills inconspicuous; gill-trama with parallel-diverging hyphae, those in axis parallel.

On deep moss and on needle beds in hemlock, cedar and fir forest. Gregarious to subcespitose. Mt. Hood, Oregon. October 1 to 15. Collected by L. E. Wehmeyer.

This species has much the appearance and habit of *Clitocybe*. It is, however, a true *Hygrophorus*, as shown by its viscid veil and by its gill structure. It belongs to the subgenus *Limacium*. Its near relatives all have distant gills. When artificially dried after collecting, those growing in wet weather dry dark while those already wind-dried retain their colors.

*HYPHOLOMA FASCICULARE* Fr.

*HYPHOLOMA OLIVAESPORA* Ellis. — See *H. vinosum* Kauff. (12, p. 261), which is a synonym.

*Hypholoma canocephs*, sp. nov. — PILEUS 1-2 cm. broad, about 1 cm. high, fragile, conical-campanulate to broadly conical, hygrophanous, "cinnamon-drab" (R.) when moist, but this ground-color almost hidden except on umbo by an appressed radially disposed, white-villose innate silkiness, slowly fading, at length subglabrescent, margin at first straight, appressed silky, not striate; flesh thin, concolor. GILLS adnate, rounded behind, seceding, narrow, 2 mm., crowded, "cinnamon-drab;" white-flocculose on edge. STEM 4-6 cm. long, 2.5-3 mm. thick, equal, white, fragile, straight or curved at base, hollow, even, at first covered by a rather persistent white-silky floccosity, at length glabrescent, whitish within, rather cartilaginous. ODOR and taste none. SPORES elliptic-oblong, subobtuse, smooth, purplish-brown,  $8-9.5 \times 3.5-4.5 \mu$ ; cystidia on sides of gills are lacking; sterile cells on edge short cystidia-like, ventricose-subglobose above pedicel, with abruptly narrowed, cylindric neck, thin-walled, hyaline,  $40-50 \times 8-12 \mu$ , neck  $4 \mu$  diameter.

On very rotten pieces of wood mixed with black alluvial moist soil in conifer forest. Mt. Hood, Oregon. October 14. Collected by C. H. Kauffman.

This species has two characters which might lead one to place it in the genus *Psathyra*, viz. the cartilaginous stem and straight margin of the young pileus. The innate character of the pileus covering which represents a universal veil is, however, a *Hypholoma* character. The universal veil in the indusiate *Psathyras* is detersile and usually only scattered loose flecks of it are found on the young pileus. This species is to be placed in the section of *Hypholoma* to which *H. velutinum* and *H. melanthinum* belong, in spite of the fact that the spore characters are different from those species. It forms a connecting link between *Hypholoma* and *Psathyra*.

*Hypholoma tsugaecola*, sp. nov. (See Plate VIII.) — PILEUS 3-7 cm. broad, thin and pliant, convex then subexpanded-discoid, finally depressed on disk and margin elevated, *subviscid*, with a separable subgelatinous pellicle, *hygrophanous*, "buckthorn brown" to "ochraceous-tawny" (R.) when moist, "yellow ochre" to "antimony-yellow" when dry, *glabrous*, but margin narrowly appendiculate from the veil, margin at first incurved, very thin and acute, pellucid-long-striatulate; flesh about 1 mm. thick, thicker on disk, concolor, fading. GILLS adnate-subdecurrent, close, narrow, almost linear, 5-7 mm., soon "ochraceous-tawny" (R.) with a darker sheen by reflected light, edge entire. STEM curved-ascending, 5-8 cm. long, subequal, 5-8(10) mm. thick, apex conspicuously dilated in the region of gill-attachment, "snuff-brown" (R.) within and without, surface at first with scattered, scurf-like detersile scales up to the obsolete annulus, then longitudinally fibrillose, rigid, fibrous with subcartilaginous cortex, solid below; firmly stuffed, finally hollow at the apex. ODOR none; taste bitterish. SPORES 6-7.5 × 4-4.5 (5)  $\mu$ , short ellipsoid, smooth, purplish-brown under the microscope, dark purplish in mass; cystidia none; sterile cells indistinct; basidia 4-spored, 32 × 4-5  $\mu$ .

Cespitose on dead hemlock stub. Mt. Hood, Oregon. October 9. Collected by C. H. Kauffman.

There are relatively few viscid or pelliculose species of *Hypholoma*; two rare British species have been described. *H. incomptum* Massee is similar to ours, but differs in the much

more ferruginous colors, different gill-attachment and narrower spores. Its detailed microscopic characters are not sufficiently known.

|                            |                                 |
|----------------------------|---------------------------------|
| INOCYBE ALBODISCA Pk.      | INOCYBE LACERA Fr.              |
| INOCYBE CALAMISTRATA Fr.   | INOCYBE LANUGINOSA Fr.-Bres.    |
| INOCYBE DECIPIENTOIDES Pk. | INOCYBE LILACINA (Boud.) Kauff. |
| INOCYBE FALLAX Pk.         | INOCYBE PALLIDIPIPES E. & E.    |
| INOCYBE FASTIGIATA Fr.     | INOCYBE PRETERVISA QuéL.        |
| INOCYBE GEOPHYLLA Fr.      |                                 |

INOCYBE PROMINENS Kauff. forma longistriata, f. nov. — The rimosity is more extensive than in the typical form.

|                      |                        |
|----------------------|------------------------|
| INOCYBE RADIATA Pk.  | INOCYBE SORORIA Kauff. |
| INOCYBE SCABELLA Fr. | INOCYBE VIRGATA Atk.   |

INOCYBE GEOPHYLLA Fr. forma perplexa, f. nov. — This form has the stature and all the other characters of *I. geophylla*, except that the pileus, gills, stem and flesh become slowly — finally entirely — diffused with an "apricot buff" or pinkish color after picking, and this color is retained in the dried specimens. This form occurs throughout the eastern Rocky Mountain region and thence westward to the Pacific Coast. When fresh or in a growing condition it is white like *I. geophylla*.

|  |   |
|--|---|
| LACTARIUS ALPINUS Pk.                  | LEPIOTA CRISTATA Fr.                              |
| LACTARIUS AURANTIACUS Pers.<br>-Ricken | LEPIOTA FLAMMEOTINCTA Kauff.<br>See Kauffman (15) |
| LACTARIUS LIGNYOTUS Fr.                | LEPIOTA GLOIODERMA Fr.                            |
| LACTARIUS MUCIDA Burl.                 | LEPIOTA PETASIFORMIS Muirill                      |
| LACTARIUS PARVUS Pk.                   | LEPIOTA PULCHERRIMA Graff.<br>See Kauffman (15)   |
| LACTARIUS SUBDULCIS Fr.                | LEPIOTA RUBROTINCTA Pk.                           |
| LACTARIUS SUBPURPUREUS Pk.             | LEPTONIA ASPRELLA Fr.                             |
| LACTARIUS TORMINOSUS Fr.               | LEPTONIA FORMOSA Fr.                              |
| LACTARIUS TURPIS Fr.                   | LEPTONIA OCCIDENTALIS Muirill                     |
| LACTARIUS UVIDUS Fr.                   |   |
| LEPIOTA ACUTAESQUAMOSA Fr.             |   |
| LEPIOTA CLYPEOLARIA Fr.                | LEPTONIA SERRULATA Fr.                            |



*Leptonia subeuchroa*, sp. nov. — PILEUS 1.5–2 cm. broad, subpliant, convex, subumbonate, “dark purple-drab” (R.), densely hairy-scaly, even on margin which is at first incurved; flesh thin, concolor towards cap surface, whitish towards gills. GILLS adnate, subventricose, rather broad, close (or subdistant in age), pure white at first, becoming “seashell pink” (R.), edge concolor, entire. STEM 2–3 cm. long, 1.5–2.5 mm. thick, straight or curved, equal, “dark madder blue” (R.), glabrous and even, naked at apex, stuffed to hollow, whitish within. ODOR not noted. SPORES almost even, obscurely angled, ellipsoid-almond-shaped, bright pink under microscope, 8–9(11) × 5.5–7  $\mu$ ; basidia 4-spored, about 45 × 7  $\mu$ ; cystidia none; sterile cells on edge of gills indistinct.

On mossy log, in forest of cedar, hemlock and maple. Gregarious. Mt. Hood, Oregon. October 16. Collected by C. H. Kauffman.

This species stands apart from all its relatives by its obscurely angular spores. As to individual species, it differs from *L. placida* by the absence of black squammules at apex of stem; from *L. subplacida* and many others, in spore-size and color; from *L. euchroa* in the white young gills; from *L. chalybea* by its habitat and color; and from *L. chloropolia* and *L. lazulina* by the non-striate margin of the pileus.

*Leptonia trivalis*, sp. nov. — PILEUS 2–4 cm. broad, subpliant, flattened-convex, finally plane and margin elevated, obscurely depressed-papillate, subviscid from a subgelatinous, subseparable pellicle, glabrous, pellucid-striatulate when fresh, “saya brown” (R.), slowly fading; flesh concolor, fading, subhygrophanous, margin at first incurved. GILLS adnate-seceding, rarely with decurrent tooth, close, rather narrow, 2–4(5) mm., white at first, “light pinkish cinnamon” at maturity, edge entire or suberose. STEM 4–8 cm. long, 2–4 mm. thick, equal, elastic, cortex cartilaginous, toughish, hollow, flexuous, even, very glabrous, easily splitting lengthwise, hyaline-white. ODOR and taste none. SPORES globose, obscurely angular, pale under microscope, 7–8  $\mu$  diameter; basidia 4-spored, 25 × 8–9  $\mu$ ; cystidia none; sterile cells on edge of gills indistinct.

On decayed wood in a cedar swamp. Mt. Hood, Oregon. October 9. Collected by C. H. Kauffman.

It seems to be nearest to *L. glabra* Murrill, a species from Maine, but differs from it by the gelatinous surface of the pileus, the adnate gills, the much thicker stem and its generally larger size. *L. semiglobata* Murrill also from Maine, a species with a slightly viscid pileus, has squammules on the pileus, a yellowish-gray stem and ellipsoid, angular spores. Our species has a general nondescript appearance that allies it to many species of this genus.

*Marasmius limonispora*, sp. nov. — PILEUS 1-2 cm. broad, submembranous, pliant, "light grayish olive" to "pale smoke gray" (R.) when growing, dingy "pinkish-buff" after reviving in rains, at first even, obscurely radiate-wrinkled in age, the glabrous margin at first incurved; flesh thin, concolor. GILLS broadly adnate, relatively rather broad, close, subdistant when pileus expands, whitish, pruinose. STEM 7-10 cm. long, about 2-2.5 mm. thick, equal, flexuous below but rather strict otherwise, entirely "natal brown" at maturity, or with white apex, pruinose throughout, tubular, concolor within, with a subfibrous cortex, white-myceloid at the base where it is intergrown with moss and humus. ODOR and taste none. SPORES limoniform in one view, subplano-convex in other view, 9-12 × 6-7  $\mu$ , hyaline, smooth; cystidia scattered on sides and edge of gills, lanceolate-subventricose, capitate, hyaline, 65-75 × 12-15  $\mu$ ; basidia 4-spored, 40 × 6-7  $\mu$ .

On mosses and humus on the ground in conifer forest. Gregarious. Mt. Hood, Oregon. October 16. Collected by C. H. Kauffman.

*Marasmius subnauseosus*, sp. nov. — PILEUS 5-15 mm. broad, submembranous, broadly convex to flattened, obtuse, "mars yellow" (R.) on margin, "sudan brown" on disk, glabrous, dry, even, margin at first incurved; flesh concolor, of uniform thickness. GILLS broadly adnate, occasionally with a tooth, color "warm buff," crowded, rather broad behind, narrow in front, edge entire. STEM 2-4 cm. long, 1-1.5 mm. thick, tapering down from a somewhat dilated apex, instititious, soon

tubular, "raw umber" (R.) except the yellowish apex, covered with a ferruginous pruinosity which is denser at base, even, "mars yellow" within. ODOR none; taste tardily nauseous, at length definitely so. SPORES minute, narrow, subcylindric, 5-6 (7)  $\times$  1-1.5  $\mu$ , smooth and hyaline; cystidia none; basidia 24  $\times$  5-6  $\mu$ ; pileus corticate, the surface layer of thick-walled brown cells.

On decayed wood in conifer forest. Gregarious or scattered. Mt. Hood, Oregon. September 28. Collected by C. H. Kauffman.

*Marasmius umbilicatus*, sp. nov. — PILEUS 2-4 cm. broad, slightly fleshy, at very first pale pinkish buff, soon milk-white, *deeply umbilicate*, radiately rugose-wrinkled, glabrous, margin membranous, at first incurved and white pruinose on edge, then repand; flesh concolor. GILLS subdecurrent, arcuate, narrow, acuminate at ends, close to subdistant, intervenose, becoming crisped, whitish. STEM 3-5 cm. long, 2-3 mm. subequal, dilated at apex, tough-cartilaginous, hollow, irregularly compressed and longitudinally furrowed, dark fuscous, darker at base, pallid at apex, glabrous except the scurfy apex, with brownish tomentum at base. ODOR and taste none. SPORES narrow, elongated-pointed at one end, 9-10  $\times$  3-3.5  $\mu$ ; cystidia scattered on sides and edge of gills, subfusiform-acicular, about 60  $\times$  7  $\mu$ .

Attached to fir needles and debris in fir and hemlock forests. Rather frequent in the mountains of Oregon and Washington. October 5. Collected by C. H. Kauffman.

This has the general appearance of *M. delectans* of the Eastern United States, but the pileus is deeply umbilicate, the gills are subdecurrent, the spores of a different shape and it grows in a different habitat.

|                             |                           |
|-----------------------------|---------------------------|
| MYCENA ACICULA Fr.          | MYCENA LUDEA Fr.—Ricken   |
| MYCENA AMICTA Fr.—Ricken    | MYCENA PELIANTHINA Fr.    |
| MYCENA AMMONIACA Fr.        | MYCENA PURA Fr.           |
| MYCENA CLAVICULARIS Fr.     | MYCENA ROSELLA Fr.        |
| MYCENA EPIPTERYGIA Fr.      | MYCENA RUBROMARGINATA Fr. |
| MYCENA HAEMATOPODA Fr.      | MYCENA VITILIS Fr.        |
| MYCENA INCLINATA Fr.—Ricken | MYCENA VULGARIS Fr.       |

MYCENA STROBILINOIDES Pk.— This was a most satisfactory find, and made it possible to record the character of this species in detail. Peck described it from the Olympic Mountains, Washington. It is a striking little plant, about 3–4 cm. tall, with a “flame-scarlet” (R.) pileus, and an “orange” stem; the gills are colored “light salmon-orange” with a flame-scarlet edge. The spores are elliptical, smooth, hyaline, and measure  $7-8 \times 5-5.5 \mu$ . The sterile cells on the edge of the gills are broadly clavate, not very much larger than the basidia, but are colored fiery-orange, and their surface is echinulate-dotted; similarly decorated sterile cells, less highly colored, are scattered through the hymenium elsewhere, and although they have the size of basidia they are clearly differentiated by these markings. This is a case, entirely apart from other findings, which supports Buller (7, p. 279) in his contention that paraphyses are always paraphyses and here these sterile cells are surely of the nature assumed by him, i. e. they are “paraphyses” and never become basidia. No types of cystidia are present. This collection grew on needle beds of the Douglas fir.

MYCENA PTERIGENA Fr.— This dainty little plant, beautifully illustrated in Fries, *Icones*, Plate 85, Fig. 4, occurs in this country in the Eastern mountains as well as in the West. I have collected it in the Adirondacks and then again at Mt. Hood. It was attached to dead fern fronds lying on the ground. The pileus is only 2–5 mm. broad, scarcely higher, and at first delicately rose-tinted. At maturity or in age the pileus becomes grayish-brown either entirely or only on the umbo; it is at first subcylindric-subconic, then subhemispherical, and the margin is pellucid-striatulate when fresh. The gills are distant, ascending, rather narrow, whitish. The stem is 3–4 cm. long, half a millimeter or less in thickness, filiform, tough, flaccid, becoming grayish-brown after the rosy tints fade, and is attached by small hairs at the base. The spores measure  $8-10 \times 4-4.5 \mu$ , and are oblong or oblong-subfusiform and hyaline. The surface layer of the pileus is composed of large horizontal hyphae.

*Mycena tinctura*, sp. nov. (See Plate IX.) — PILEUS 1–2.5 cm. broad, subfleshy, conic-campanulate, obtusely umbonate, “pale

pinkish buff" to "drab gray" (R.), umbo "fuscous," at length tinged avellaneous, striate-subplicate, striae subdistant, subhygrophanous, scarcely fading, glabrous, margin at first straight; flesh submembranous, equal, concolor. GILLS ascending, adnate-seceding, rather narrow, without decurrent tooth, *subdistant*, distinct, white, at length gray-tinted, edge entire. STEM 4-7 cm. long, 1-2 mm. thick, equal, even, glabrous, naked at the apex, pale "echru-drab" to "wood brown" (R.), terete or twisted, sometimes compressed-sulcate, cartilaginous, *tough*, strict and elastic, *with a watery juice, becoming dark vinaceous when crushed*. ODOR and taste none. SPORES 9-11(12)  $\times$  5-6(7)  $\mu$ , ellipsoid, acute at apiculate end, hyaline, smooth; cystidia none; sterile cells on edge of gills saccate but indistinct; surface layer of pileus corticate, composed of 3 to 4 rows of subglobose, vesiculose, rather large cells.

On decayed wood and needle beds of hemlock. Cespitose to solitary. Mt. Hood, Oregon. October 7 and 16. Collected by C. H. Kauffman.

It belongs to the section Lactipedes by virtue of the rather copious watery juice of the stem, which stains the crushed flesh wine color. In other respects, it could be referred to the Filopedes. In age the drab and fuscous colors of the cap may fade. In addition to the juicy stem it is distinguishable from its relatives by the lack of odor, the narrow, subdistant gills, the spore characters and the absence of cystidia. When growing on wood, the stems may be dwarfed.

NAUCORIA MELINOIDES Fr.—Ricken

NAUCORIA SIDEROIDES Fr.—Ricken

*Naucoria belluloides*, sp. nov. — PILEUS 8-20 mm. broad, convex, obtuse, dry, glabrous, "chestnut" to "hays russet" (R.), not hygrophanous, margin at first involute, then spreading, even when moist; flesh thin, concolor to ochraceous. GILLS *adnexed*, rounded behind, not broad, 3 mm., crowded, "chamois" to "honey-yellow" (R.), edge entire. STEM 2-3 cm. long, 2-3 mm. thick, equal or tapering slightly upwards, "cinnamon-rufous" within and without, stuffed axis paler, apex pruinose, glabrous elsewhere, even. ODOR none; taste distinctly bitter. SPORES broadly

ellipsoid to oval, rough; dark rusty under the microscope,  $7-8 \times 5-5.5(6) \mu$ ; cystidia none, or few to scattered, short subcylindrical and subcapitate, hyaline; sterile cells on edge of gills nine-pin-shaped, hyaline, obtuse; basidia  $32-34 \times 6-7 \mu$ ; surface of pileus corticate, composed of pyriform, brown cells.

On decayed coniferous wood. Mt. Hood, Oregon, October 10. Collected by L. E. Wehmeyer.

Very similar in size and coloring to our eastern species, *N. bellula* Pk., but differs by its larger spores, adnexed gills, etc.

*NOLANEA PASCUA* Fr.—Ricken. — This is a rare species, at once distinguished microscopically by its cruciate-angled spores.

*Nolanea latifolia*, sp. nov. — PILEUS 2-3 cm. broad, campanulate-hemispherical, apex truncate-depressed, in age sometimes markedly umbonate but umbo truncate, glabrous, hygrophanous, striatulate to subeven and "hair-brown" when moist, quickly fading to "drab-gray" or ashy on losing moisture, then even, margin at first straight; flesh submembranous, concolor. GILLS broadly adnate-seceding, broad, ventricose, abruptly sinuate near stem, close, at first gray-tinted, then "vinaceous-fawn" (R.), somewhat crisp. STEM 5-6 cm. long, 2-3 mm. thick, strict, equal, elastic, cartilaginous, stuffed to hollow, fragile, persistently grayish-brown to "hair-brown," variegated with silky-white innate fibrils, white-myceloid at the slightly enlarged base. ODOR and taste none or slightly subnauseous. SPORES spherical, obtusely angular, tinged flesh-color, 8-9  $\mu$  diameter, (10  $\mu$  with apiculus); cystidia none; basidia 4-spored,  $40-42 \times 11-12 \mu$ .

Among moss and debris in forest of fir and hemlock. Solitary or subgregarious. Mt. Hood, Oregon. October 7 and 25. Collected by C. H. Kauffman.

I am not at all sure that this may not be *N. occidentalis* Murrill, but if so, that species is very imperfectly described. It differs from Murrill's account by the definitely adnate gills which are closely spaced, not at all distant, and by the fact that they are at first grayish.

*OMPHALIA CAMPANELLA* Fr.      *OMPHALIA MAURA* Fr.—Ricken  
*OMPHALIA DUMOSA* Fr.—Ricken      *OMPHALIA ONISCA* Fr.  
*OMPHALIA GRACILLIMA* Fr.

OMPHALIA UMBELLIFERA Fr. forma ochraleuca, f. nov. — Plant "cream-color" (R.) in all parts. SPORES ovoid-elliptical, smooth, hyaline,  $6-8 \times 4-5 \mu$ ; cystidia none. GILLS distant, broadly decurrent, broadest in middle, few forked. STEM sloid, more or less pruinose. PILEUS convex-umbilicate to subinfundibuliform, striate-plicate, with a white-appressed pruinosity. Collected several times with the characters constant. It differs from the other forms of this variable species mostly in color.

|                             |                          |
|-----------------------------|--------------------------|
| PANUS STIPTICUS Fr.         | PLEUROTUS SEROTINUS Fr.  |
| PAXILLUS ATROTOMENTOSUS Fr. | PLUTEUS GRANULATUS Fr.   |
| PHOLIOTA ADIPOSA Fr.        | PLUTEUS CERVINUS Fr.     |
| PHOLIOTA EREBIA Fr.         | PLUTEUS LEONINUS Fr.     |
| PHOLIOTA DISCOLOR Pk.       | PLUTEUS NANUS Fr.        |
| PHOLIOTA MARGINATA Fr.      | PLUTEUS TOMENTOSULUS Pk. |
| PLEUROTUS ALBOLANATUS Fr.   | PSALLIOTA ARVENSIS Fr.   |

*Psalliota subrutilescens*, sp. nov. (See Plate X.) — PILEUS 7-12(15) cm. broad, oftener 7-9 cm., fleshy, firm, at first hemispheric-oval, at length broadly convex, obtuse or obsolete subumbonate, at first uniformly covered by a continuous, appressed, fibrillose-hairy cuticle which is "hays brown" to "sorghum brown"; during expansion this cuticle is broken up into very numerous, small and appressed, hairy areolae, scarcely in form of scales, and the color changes slowly to shades of vinaceous, e. g. "light russet vinaceous," "brownish-vinaceous," "vinaceous-brown" (R.), etc., remaining darker on disk, the whitish flesh scarcely showing between the areolae, margin even, indistinctly virgate. GILLS free, at first reaching the stem, becoming subremote, narrow, 4-5 mm., sublinear, crowded, "safrano pink" (R.) when immature, later "vinaceous fawn," finally "sorghum-brown" (R.) or darker, glistening, edge entire. STEM 8-12 (15) cm. long, oftener 8-10 cm., tapering upwards from a subclavate base, 7-10(12) mm. thick at apex, 12-18 mm. at base, often subdecurrent at base, at first peronate by a rather thick, densely silky-interwoven, snow-white sheath, which becomes lacerate-torn forming pointed or squarrose scales, and terminating above in the annulus, apex of stem even, silky or minutely

sublaccate, stuffed to hollow, tinged vinaceous or subrufescent within, soon soft and putrescent at base. ANNULUS at first erect-flaring and white, then deflexed, thick, interwoven-silky, smooth above, densely floccose-scaly and vivescent beneath, with a broad floccose rim when normal, double, persistent, superior. ODOR none, taste tardily bitterish-subnauseous. SPORES oval-oblong, 5-6(6.5)  $\times$  3(3.5)  $\mu$ , obtuse, smooth, purplish-brown; cystidia none; basidia 4-spored, 30-34  $\times$  5-6  $\mu$ .

In low moist conifer forests or near alders, usually in humus. More frequently solitary or few. Not uncommon. Mt. Hood, Oregon. October 11. Collected by C. H. Kauffman.

This was the only forest Psalliota seen, and although not abundant it occurred singly with some frequency. It is superficially similar to *P. rutilescens* Pk.-Kauff. (13), but fundamentally is quite distinct. It differs from that species by its double annulus, stuffed to hollow, non-bulbous stem, the narrower spores and the highly developed blematogen. The differentiation of the concrete surface layer of the pileus and of the sheath and annulus take the same course during development as in the case of *P. rodmani* Pk. studied by Atkinson (1). The sheath on the young stem, along with the portion up to the margin of the pileus, includes the partial veil as an interior layer — thin along the stem — and this composite sheath can be easily peeled off from the stem at this stage.

PSATHYRA PENNATA Fr.-Ricken

PSATHYRA PERSIMPLEX Britz.-Kauff. (12, p. 270)

*Psathyra fragilissima*, sp. nov. (See Plate XI.) — PILEUS 2-5 cm. broad, 1.5-3 cm. high, very fragile, at first broadly conic and obtuse, conic-campanulate at maturity, hygrophanous, "light cinnamon drab" (R.) and even when young and moist, later "benzo brown," at first covered by snow-white evanescent floccose-fibrillose, small and superficial scales, "pale pinkish buff" and even when dry, soon glabrous, margin at times evanescently appendiculate; flesh thin, equal, fragile, concolor. GILLS ascending, adnate-seceding, relatively narrow, 3-5 mm., crowded, soon "hair-brown" then "fuscous" (R.), edge at first minutely white-flocculose. STEM long and slender, extremely fragile, 10-15(18)



cm. by 3-5(6) mm., equal or tapering slightly upwards, pure white, glabrous, scurfy and substriate at apex, hollow, even, strict but becoming flexuous, cartilaginous, easily splitting. ODOUR and taste mild or slightly nutty. SPORES elliptical, regular, obtuse, smooth,  $13-15 \times 6-7 \mu$ , purple brown; *cystidia* none; sterile cells on edge of gills short and broadly nine-pin-shaped, i.e. capitate,  $45 \times 12-15 \mu$ ; basidia 4-spored,  $30-32 \times 12 \mu$ ; upper layer of pileus slightly differentiated, composed of 3-4 rows of vesiculose, hyaline cells, forming a subseparable pellicle, interior trama slightly tinged with drab.

On decayed leaves, needles and humus in mixed forest. Gregarious. Mt. Hood, Oregon, October 12. Collected by C. H. Kauffman.

This differs from both of the preceding by lacking cystidia on the sides of the gills. It is distinguished in general, by the pure white universal veil, long white stems, non-striate pileus, large spores and by the shape of the sterile cells on the edge of the gills. It belongs to the section Fibrillosae.

*Psilocybe ochraiceps*, sp. nov. — PILEUS 1-3 cm. broad, at first broadly oval, at length subhemispherical, obtuse or obscurely short-pointed on centre, unexpanded, about 1 cm. high at maturity, pelliculose, lubricous, subhygrophanous, at first "yellow-ochre" (R.) to "antimony-yellow," glabrous and even, margin at first incurved and white-cortinate; flesh concolor (moist), whitish (dry), easily split radially, toughish across radial section. GILLS adnate-seceding, ascending, ventricose, rather broad, 3-5 mm., closely spaced at margin of pileus, subdistant near stem, white at first, then "hair-brown," sprinkled by the spores, edge entire. STEM 4-9 cm. long, 1-2.5 mm. thick, equal above the tomentose-enlarged base, reddish-fuscous within, pale-fuscous beneath a distinct cortinate white coating of fibrils, narrowly white-stuffed in the axis, very slightly viscid. ODOUR and taste slight, subnauseous. SPORES  $8-9 \times 4-5 \mu$ , elliptic-oblong, smooth, obtuse, purple-brown; *cystidia* none; sterile cells inconspicuous.

Base of stems imbedded in humus or rotten wood. Gregarious. Mt. Hood, Oregon, September 28 and October 7. Collected by C. H. Kauffman.

It belongs to the section Tenaces. A very distinct plant, whose pileus remains unexpanded and on drying *in situ* becomes radially undulate-plicate, its margin closing in on the stem. The stem is distinctly sticky to the tongue, indicating an outer veil continuous with the pellicle of the pileus. At first and for a time, the cortinate covering gives the stem the appearance of being white.

*Psilocybe olivaceotincta*, sp. nov. — PILEUS 1.5–3 cm. broad, fragile, at first obtusely campanulate, then expanded to plane, hygrophaneous, "citrine-drab" (R.) and faintly striatulate when moist, "olive-buff" or "pinkish-buff" and atomate when dry, glabrous, margin at first incurved, flesh thin, .5–1 mm., concolor. GILLS broadly adnate, close to subdistant, thin, rather broad, at first "pale olive buff," then "citrine drab" (R.), edge very entire. STEM 3–5 cm. long, 1.5–2.5 mm. thick, equal or tapering downwards, toughish, becoming rigid-brittle, "cinnamon-rufous" upwards, "chestnut brown" downwards, glabrous except the minutely scurfy apex, concolor and minutely tubular within. ODOR and taste none. SPORES elliptical, smooth, 10–12  $\times$  5–6  $\mu$ , distinctly purple-brown under the microscope; cystidia none; sterile cells on edge of gills, filiform, cylindrical, hyaline, 3–4  $\mu$  diameter; trama of pileus homogeneous.

On moist thick humus and rotten debris in conifer forest. Mt. Hood, Oregon, October 6. Collected by C. H. Kauffman.

Sharply distinct by the contrasting colors of pileus and stem.

|                         |                                 |
|-------------------------|---------------------------------|
| RUSSULA BOREALIS Kauff. | RUSSULA PECTINATOIDES Pk.       |
| RUSSULA DELICA Fr.      | RUSSULA RAOULTII Burl.          |
| RUSSULA EMETICA Fr.     | RUSSULA SUBOLIVASCENS Burl.     |
| RUSSULA EXPALLENS Gill. | RUSSULA XERAMPELINA Fr.         |
| RUSSULA FALLAX Cke.     | STROPHARIA AMBIGUA (Pk.) Zeller |
| RUSSULA FLAVA Romell    |                                 |
| RUSSULA MURRILLII Burl. | STROPHARIA STERCORARIA Fr.      |

*Stropharia fragilis*, sp. nov. (See Plate XII.) — PILEUS very fragile, 3–7 cm. broad, at first subhemispherical then campanulate-expanded, obtuse, at length plane-subrepand, very hygrophaneous, "army-brown" to "wood brown" (R.) and striatulate on

margin when moist, fading to "pinkish buff" and even when dry, finally becoming finely radiately wrinkled, at very first with concentrically disposed, superficial, hairy-silky to subfloccose, white, evanescent scales, soon denuded, disk brownish in age, margin at first incurved; flesh thin, 1-1.5 mm. thick, concolor. GILLS adnate-seceding, medium broad, 4-6 mm., nearly plane, close, soon "drab"-colored, then "hair-brown" or darker, edge white-flocculose. STEM very fragile, 7-10 cm. long, 4-5 mm. thick, thicker at base, tapering slightly upwards, from the subclavate base, white, lacerate floccose-silky up to the annulus, apex pruinose, silky above ring, stuffed to hollow, with cartilaginous cortex, white within. ANNULUS membranous, soon deflexed, white, coronillate on upper surface, densely silky or floccose below, distant about one third from apex of stem, derived from the universal veil, partial veil very scanty. SPORES elliptic-oblong,  $6.5-8 \times 3.5-4(4.5)$ , smooth, dark purplish-brown under the microscope; cystidia on sides and edge of gills, ventricose-sublanceolate, obtuse, hyaline, thin-walled, pedicel rather stout. ODOR and taste mild or slight.

On the ground in a swampy cedar and hemlock forest. Cespitose or subcespitose. Mt. Hood, Oregon, October 16. Collected by C. H. Kauffman.

It belongs to the group *Spintrigera*. Without a knowledge of the detailed characters, it could easily be identified with *S. spintrigera* Fr. It has not at all the habit of *Hypholoma appendiculatum* with which Fries (10) compares his species. Our species differs from *S. spintrigera* in its striatulate, scaly pileus, the longer stems, broader gills, and, as far as is known, by the presence of cystidia on the sides of the gills. The spores are of the same size as given by Rea (19) for *S. spintrigera*, but Rea departs from the sizes of the plant given by Fries and others by including here a long-stemmed plant. According to Fries (*l. c.*) the gills are very narrow, 2-4 mm. wide, although this conception has also been varied by later authors. Lange (16) describes a variety of *S. spintrigera* and has kept close to the Friesian conception with respect to the habit assigned to it by Fries.

STROPHARIA SQUAMOSA Fr. (See Plate XIII.) — Reading between the lines one soon realizes that mycologists are continually beset with the query: What is the typical *S. squamosa*? The method pursued in the past, of attaching several varieties under this name, has but complicated the situation, for it seems easier to collect the varieties than to get clear the correct idea of the Friesian species, at least in this country. In support of these statements is the uncertainty shown in the works of various authors concerning the microscopic characters of this plant and its varieties. Persoon is still given credit for naming it — in fact he named it twice — but no descriptions can be found which are at all complete, which do not practically copy that of Fries from *Monographia*. Ricken (20) publishes a figure that gives the general appearance of the plant, but since it is difficult to reproduce the changing colors during the development or under different weather conditions, one does not get a very clear idea from such a figure.

The plants shown in our photograph agree well with the Friesian description and that of Ricken. The stems are slender, 10–15 cm. long and 3–6 mm. thick, at first strict, tough, and lacerate floccose-scaly up to the annulus. The pileus is at first hemispherical with a subconic umbo, viscid when wet, and covered by scattered, superficial, evanescent, silky-white scales, beneath which it is colored “echru-olive” (R.), darker towards the “chestnut”-colored umbo; the umbo later becomes much less prominent, or the pileus may be merely obtuse. It is 3–5 (6) cm. broad, and when it loses moisture, by drying *in situ*, it becomes “ochraceous-buff” and finally, “yellow-ochre.” The gills are broadly adnate, 6–10 mm. broad, at first “pale mouse-gray” (R.), then finally “fuscous”-colored. The odor is slight, but occasional penetrating whiffs of it can be easily noticed. The taste is mild. These plants have spores measuring 12–14 × 6–7.5  $\mu$ , elliptical, smooth and purple-umber under the microscope. Cystidia are lacking on the sides of the gills, while the edge is provided with filiform obtuse sterile cells, 50–60  $\mu$  long, and 3–4(5)  $\mu$  thick. The annulus is somewhat distant from the pileus, at first erect-flaring, then deflexed, rather narrow, and

strongly coronillate on its upper surface; at first it is white-lutescent, then stained above by the spores, and floccose-silky on the under side. The plants grow loosely gregarious on humus or very rotten wood in open coniferous forests. They were my first collection of the species which seemed to me to be typical, rather than varieties.

|                              |                           |
|------------------------------|---------------------------|
| TRICHOLOMA EQUESTRE Fr.      | TRICHOLOMA ROSEIBRUNNEA   |
| TRICHOLOMA FARINACEA Murrill | Murrill                   |
| TRICHOLOMA PANOEOLOM Fr.     | TRICHOLOMA RUTILANS Fr.   |
| var. CESPITOSUM Bres.        | TRICHOLOMA SUBPESSUNDATUM |
| TRICHOLOMA PERSONATUM Fr.    | Murrill                   |
| TRICHOLOMA PESSUNDATUM Fr.   | TRICHOLOMA SYLVATICA Pk.  |

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PLATE II



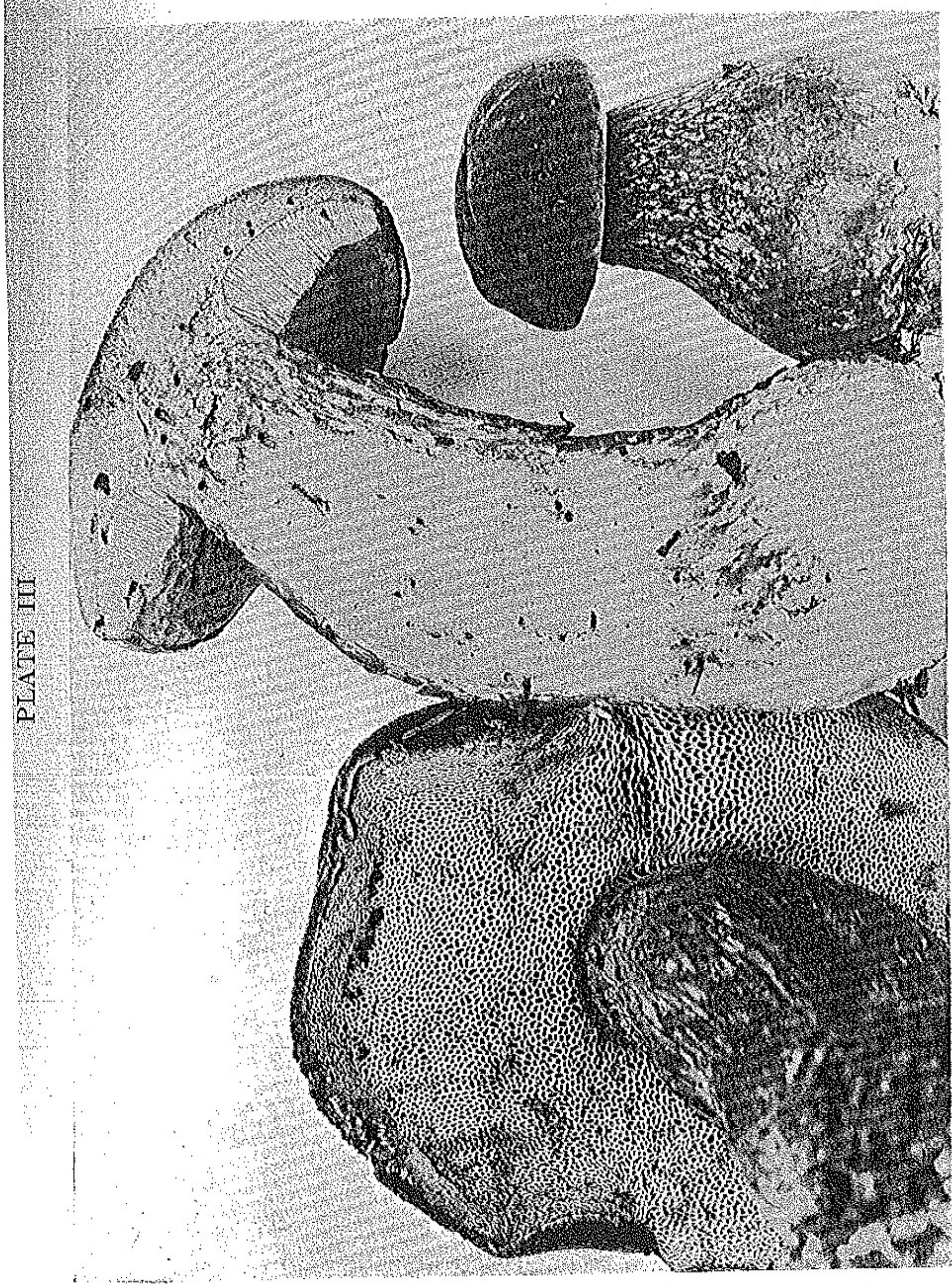
FIG. 1. LACHENOCADIUM ORNATIFES



FIG. 2. PISTILLARIA FUSIFORMIS



PLATE III



*BOLETUS MIRABILIS*



PLATE IV



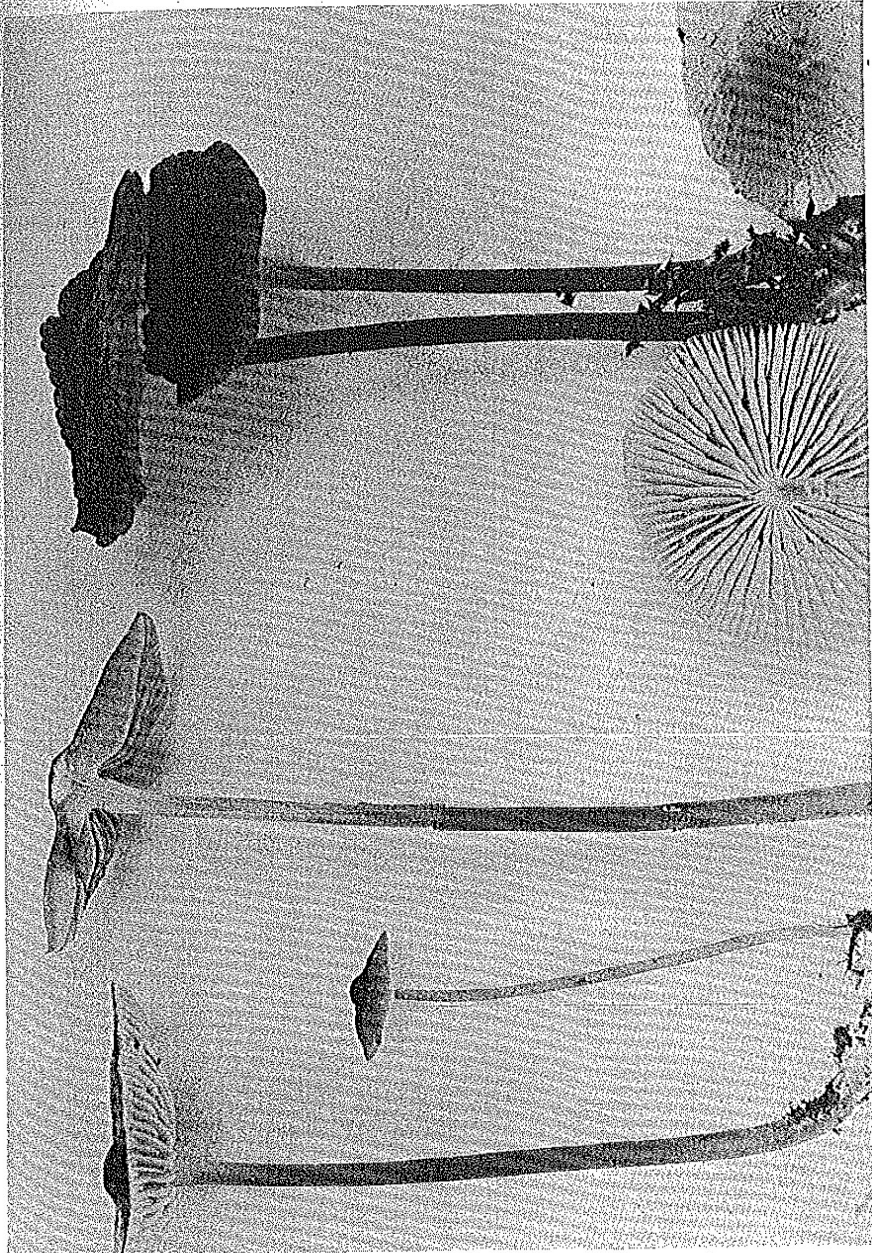
AMANITA SILVICOLA

PLATE V



CANTHERELLUS MULTIPLEX

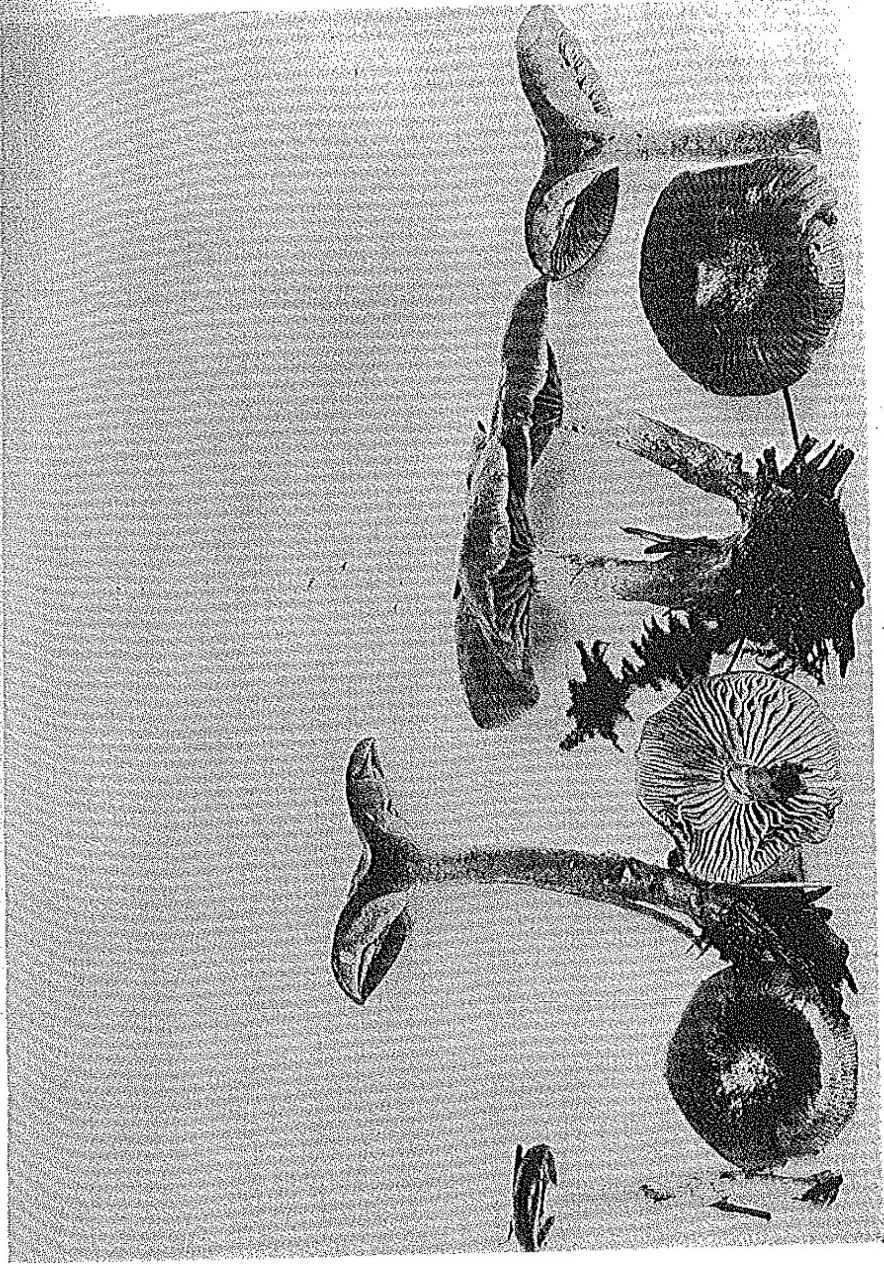
PLATE VI



*COLLYBIA RUGULOSICEPS*



PLATE VII



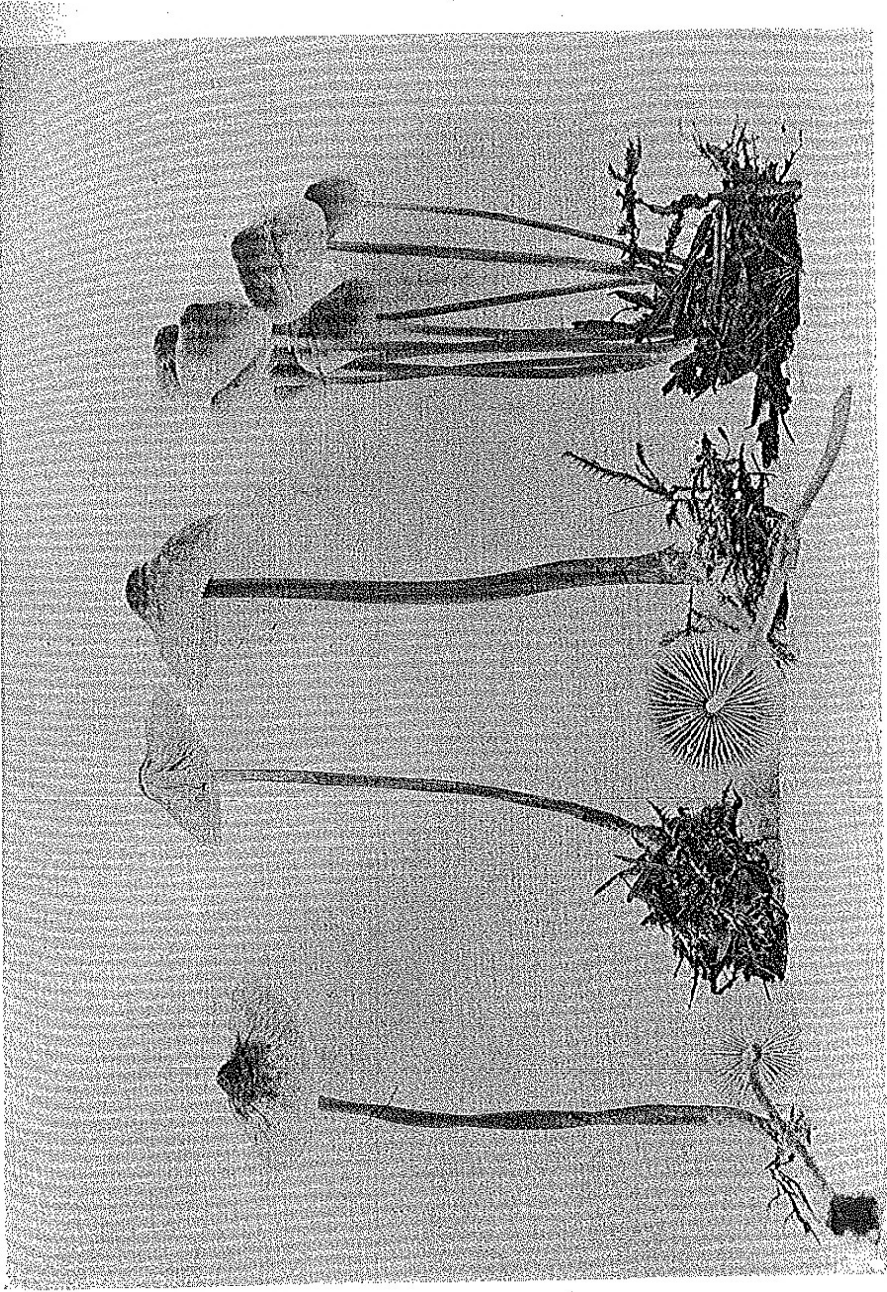
*HYGROPHORUS MULTIFOLIUS*

PLATE VIII



HYPHOCHOERIS TSUGAECOLA

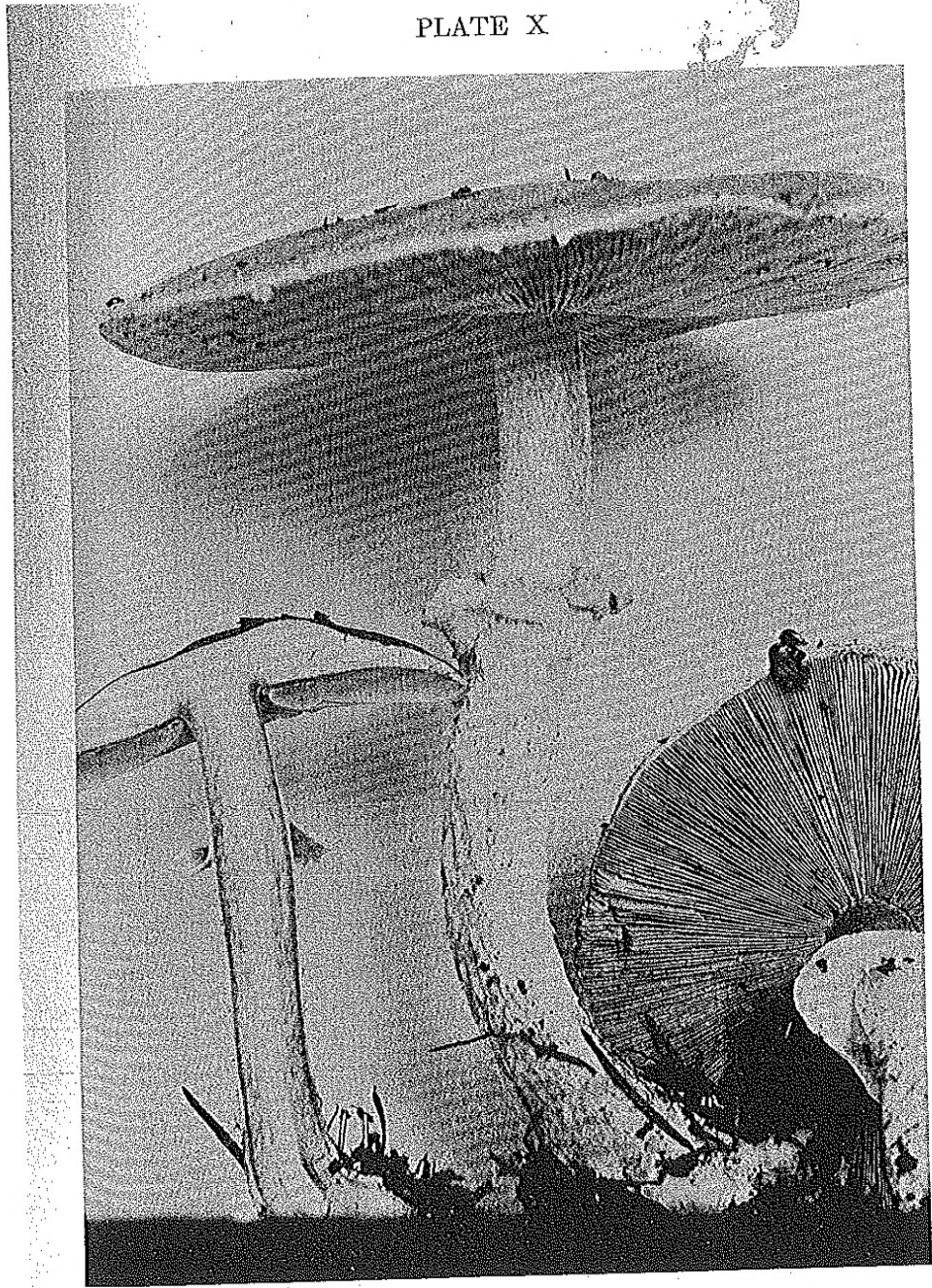
PLATE IX



MYCENA TINCTORIA

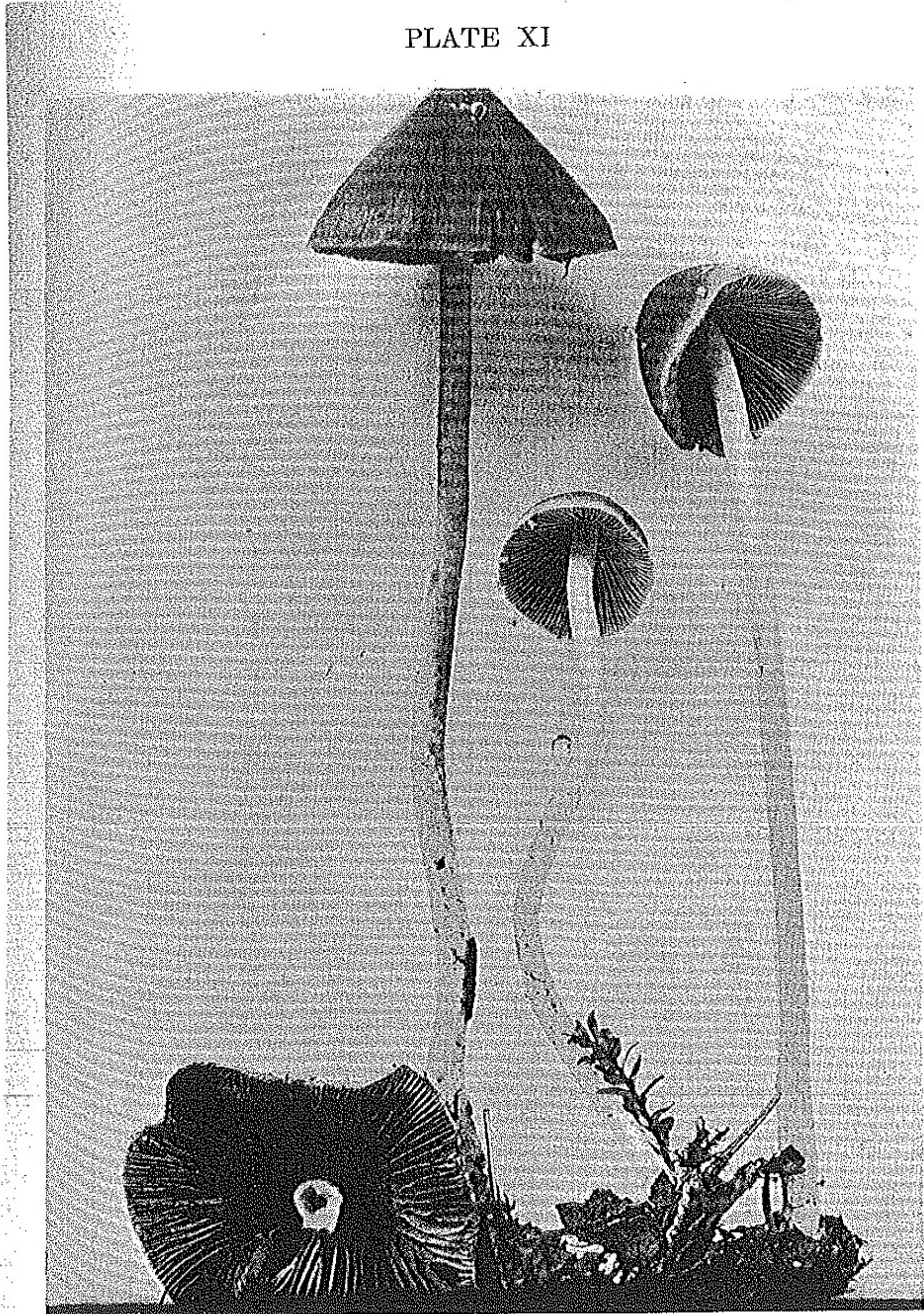


PLATE X



*PSALLIOTA SUBRUTILESCENS*

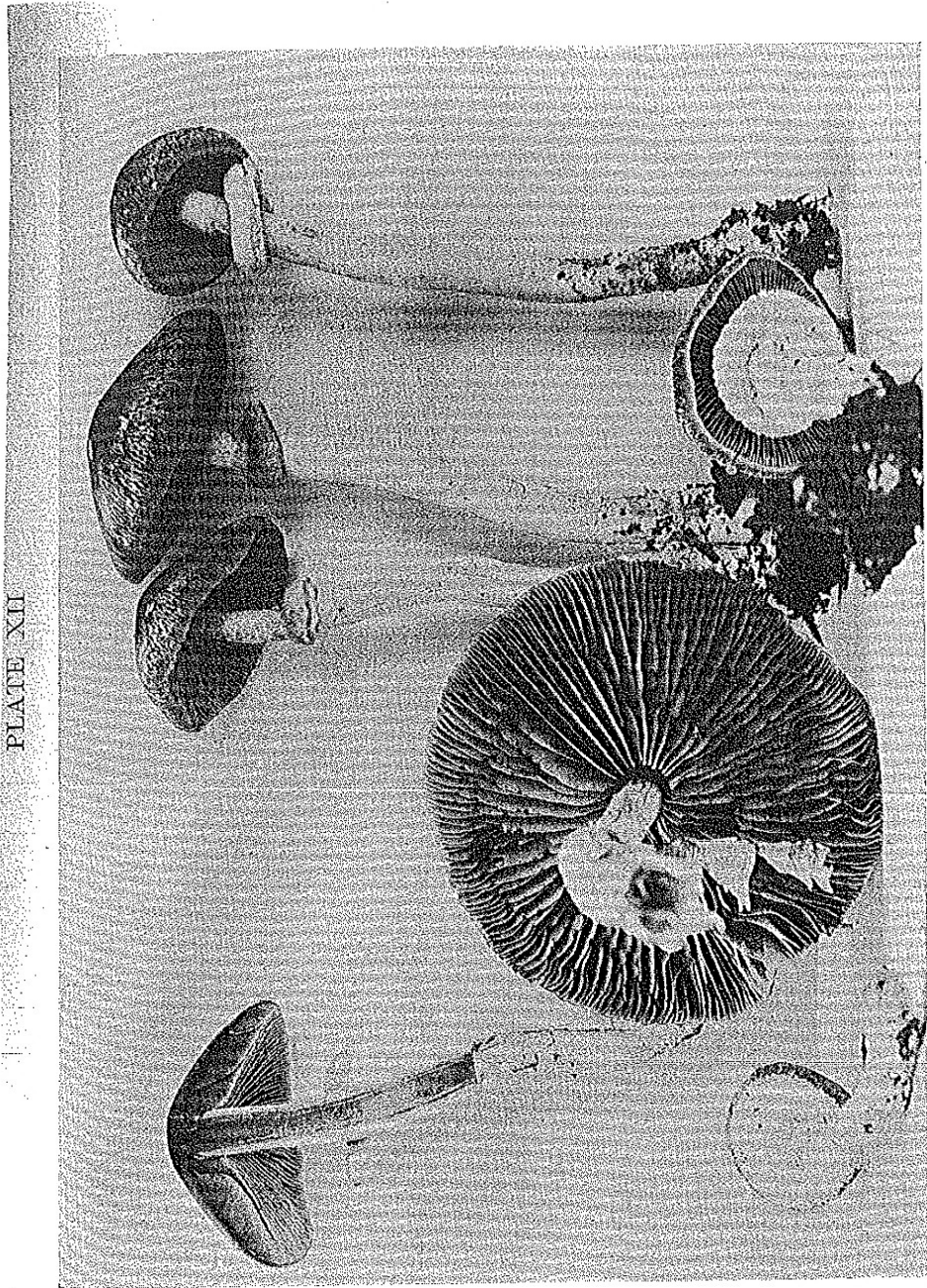
PLATE XI



*PSATHYRA FRAGILISSIMA*



PLATE XII



STROPHARIA FRAGILIS

PLATE XIII



*STROPHARIA SQUAMOSA*