Additional new or unusual North American Agarics

By Alexander H. Smith*).

Data on the species presented here has been accumulated over the years since 1935 when the writer first began his intensive study of the agarics of the western United States. The collecting expeditions were financed in a number of ways and it is a pleasure to acknowledge the aid received from the various sources. The Faculty Research Fund of the University of Michigan has supported the work both in the western states and in Michigan with numerous grants over the years. The generosity of Wm. B. Gruber of Portland, Oregon was a major factor in the expeditions to the region around Mt. Hood, Oregon. A grant from the National Science Foundation, which covered the expense of the expedition during the season of 1954 into central Idaho, and Mt. Rainier National Park in Washington, was most important and is gratefully acknowledged. Funds furnished by the Foundation for assistance in the laboratory have been a major help in the study of specimens.

A number of the species published here were collected the summer Dr. Petrak visited the University of Wyoming Science Camp above Centennial, Wyoming where he attended the foray there of the Mycological Society of America.

In all, eight new species, one new variety and four previously described but rare taxa are included. The specimens have been deposited in the University of Michigan Herbarium. Color terms within quotation marks are taken from Ridgeway, Color Standards and Color Nomenclature, 1912, Washington, D. C. Those within brackets are taken from Maerz, A. J. and M. R. Paul, A Dictionary of Color, first edition, New York.

Cystoderma contortipes A. H. Smith and D. E. Stuntz, sp. nov.

Pileus circa 1 cm. latus, 4 mm. altus, obtusus, fusco-violaceus, siccus, subfibrillosus; lamellae distantes, griseo-lilaceae, subdecurrentes, latae; stipes 1.5 cm. altus, 1 mm. crassus, deorsum carnosus et undulatus, incrassatus, pallide argillaceus, sursum griseo-lilaceus; sporae 4—5 μ, amyloideae; hyphae fibulatae.

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*) Papers from the University of Michigan Herbarium and the Department of Botany, University of Michigan, Ann Arbor, Michigan.

Specimen typicum in Herb. Univ. Mich. conservatum: legit prope Martin Lake Trail, Mt. Baker, Wash., Sept. 8, 1941. A. H. Smith n. 16716.

Pileus 8 mm. broad, 4 mm. high, apex obtuse, sides parallel, "light brownish drab" on margin, "dark grayish brown" on disc (very dull purplish on disc, paler lilac gray on margin), appearing innately fibrillose under a lens, margin fringed at first, *not* striate; flesh thin, fragile, concolorous with surface, odor and taste not recorded; lamellae distant, 16 reach stipe, 1 tier of lamellulae (poorly developed), very broad, broadly arcuate-subdecurrent, edges even, "pale vinaceous drab"; stipe 15 mm. long, 1 mm. thick, equal above a cartilaginous pallid cinnamon-buff sclerotoid mass, surface (above sclerotium) minutely fibrillose to squamulose to the apex, squamules grayish, ground color "dark vinaceous drab", sclerotium homogeneous and concolorous throughout.

Spores 4—5 μ, globose, hyaline under mic. in KOH, dull gray in Melzer's reagent, appearing smooth but in Melzer's appearing to have a faintly marbled surface; basidia 4-spored, 20—25 ⇌ 6—7 μ, hyaline in KOH; pleuro- and cheilocystidia none seen; gill trama interwoven, hyaline in KOH; pileus trama with a cuticular layer of large hyphal cells with dull lilac content when fresh (and fuscous walls as revived in KOH), the free ends projecting and the cells showing some tendency toward the *Cystoderma*-type; clamp connections present.

Habit, habitat and distribution: Solitary on a conifer log, Martin Lake Trail, Mt. Baker, Wash., Sept. 8, 1941, Sm-16716.

Observations: The globose amyloid spores, grayish fibrillose-squamulose stipe, sclerotoid base of stipe and generally violaceous color are distinctive. This species appears to be most closely related to *Cystoderma fallax* in the color of the apex of the stipe and lamellae, and in the lack of a typical *Cystoderma*-type cuticle of the pileus. The spores appear somewhat angular in mounts of fresh material in water, but this does not show on spores revived in KOH or Melzer's. This species is to be regarded as a primitive type of *Cystoderma* in which the characteristic aspects of the veil are at best poorly developed.

A second collection of numerous fruiting bodies was found by Stuntz and Smith on the Tacoma Prairies (Stuntz 1170). The data on this collection are more extensive, but because the specimens have not been available for re-examination, the description is given separately. It is as follows:

Pileus 5—18 mm., campanulate to convex, expanding and remaining campanulate, or finally becoming shallowly convex; margin straight from the first, not involute, even, entire, appressed-

fibrillose, remaining so, becoming a little shaggy-fibrillose, in age narrowly reflexed; surface dry, at first smooth, appressed-fibrillose- or tomentose-squarrose at the center, the squarrae tiny, recurved, and of cuticular origin; toward the margin remaining appressed-fibrillose or becoming somewhat shaggy-fibrillose (sub lente); or the cuticle not forming squarrae as above, or forming appressed ones, or merely somewhat lacerate; color "benzo brown", "brownish drab", or "cinnamon drab" at the center; "light drab" at the margin (or neutral tint [361 t.—2,3] to [Parma violet 200 t.—3,4] or "deep brownish drab" at the center): context 1—2 mm. near the disk, soft, fragile, greyish vinaceous, same color as pileus surface; odor none.

Lamellae broadly and squarely adnate and decurrent by a tooth, then becoming truly short-decurrent as the pileus expands; triangular, bluntly pointed at the margin; broad, 2.5 ⇌ 4 mm. to 2 ⇌ 7 mm., subdistant to distant, 15—30 reach the stipe, with about as many inserted in unequal lengths; rather thick, waxy-looking, usually intervenose; edges plane, even, concolorous; color "ecru drab", becoming "light cinnamon drab", "light brownish drab", "brownish drab", "benzo brown", or "deep brownish drab".

Stipe 1.5—3.5 cm. long, 1—3.5 mm. thick (average 1.5 mm.), cylindrical, equal above the peculiar fleshy, swollen, bottle-like base, confluent with other stipe bases and springing from a fleshy tuberous or sclerotium-like mass of fungous material; swollen portion 1—1.5 cm. long, 3—5 mm. thick; soon narrowly hollow, the context fragile, satiny, concolorous with the pileus trama above, cream-color in the swollen base; surface peronate above the swollen base with a floccose coat, forming floccose squarrae or irregular patches, patches smaller and sparser upward, the apex merely sparsely pruinose-fibrillose; satiny and shining under this coating and becoming more satiny as the coating becomes obliterated; base merely matte, dull appressed-fibrillose; color of swollen base "cartride-buff", becoming "cream-buff", "chamois", or "cinnamon-buff", upper part of stipe "pale ecru drab", then "ecru drab" to "drab grey", "light brownish drab", "brownish drab", or "benzo brown".

Spores 4—5.3 μ, globose to subglobose, obscurely angular; no pleurocystidia or cheilocystidia seen; trama of lamellae partly interwoven, mostly parallel, of short, inflated, subellipsoidal cells; cuticle of pileus loosely interwoven, of branched hyphae with conspicuous clamp connections.

Collected October 26, 1941: Tacoma Prairies, Tenino Junction: solitary to caespitose in moss, open places in Douglas Fir woods; A. H. Smith and D. E. Stuntz (Stz. 1170).

Galerina diabolissima sp. nov.

Pileus 3—5 mm. latus, conicus, demum convexus, glaber, hygrophanus, fulvus dein pallide argillaceus; lamellae latae, subdistantes, adnatae; stipe 2—5 cm. longus, 1 mm. crassus, fragilissimus, pileo concolor; velum nullum; sporae 7—8 ⇌ 4.2—4.7 μ, subverrucosae; pleurocystidia 26—38 ⇌ 7—11 μ, fusoideo-ventricosa, ad basin ochraceo-fulva et crasse tunicata; hyphae fibulatae.

Specimen typicum in Herb. Univ. Mich. conservatum: legit prope Shingle Creek, Seven Devil's Mts., Hell's Canyon area, Idaho, July 26, 1954, A. H. Smith n. 45382.

Pileus 3—5 mm. broad, conic becoming convex, glabrous, moist, hygrophanous, near "tawny" moist and cinnamon-buff faded, somewhat striate moist; flesh thin, fragile, tawny.

Lamellae broad and ventricose, ascending adnate, subdistant, reddish tawny, edges even.

Stipe 2—2.5 cm. long, less than 1 mm. thick, terete, equal, delicate, evenly colored and slightly paler than the pileus, no evidence of a veil present on young specimens.

Spores 7—8 ⇌ 4.2—4.7 μ, ovate with a tendency toward a snout-like apex in face view, inequilateral in side view and with a tendency toward a snout-like apex, callus present at apex but not a true pore, surface finely verrucose and plage area as a rule not differentiated (a smooth plage seen in a few spores), dingy clay color to dark cinnamon-buff in KOH; basidia 4-spored, 22—27 ⇌ 7—8 μ, hyaline in KOH; pleurocystidia scattered, 26—38 ⇌ 7—11 μ, fusoid-ventricose, apices subacute, ventricose lower part usually with ochraceous tawny very slightly thickened walls, wall of neck and upper ventricose part hyaline, smooth, and thin; cheilocystidia similar to pleurocystidia; gill trama of interwoven hyphae with ochraceous walls in KOH; pileus trama of greatly enlarged hyphae beneath a thin non-gelatinous pellicle of appressed hyphae, the large cells with tawny to ochraceous encrusting pigment generally heavily encrusted; clamp connections present.

Habit, habitat and distribution: Gregarious on thin moss cover over exposed soil along the road, Shingle Creek, Seven Devil's Mts., Hell's Canyon area, Idaho, July 26, 1954, Sm-45382.

Observations: The pleurocystidia and cheilocystidia with the lower part having tawny to ochraceous walls in KOH, the failure of a smooth plage to develop on most spores, the lack of a veil and the narrow spores separate it from all members of the stirps minima. The presence of clamps in conjunction with the failure of the plage area to become smooth is one of the few instances of intergradation to the section Tubariopsis which has been encountered. Since a plage

is occasionally present, and clamps are abundant, the species is placed in Eugalerina. In the characters of the cystidia it is close to *G. oreina* but the spores of the two readily separate them.

Galerina farinaceae sp. nov.

Pileus 8—15 mm. latus, conicus, demum campanulatus, valde striatus, fulvus; sapor farinaceus; lamellae distantes vel subdistantes, latae, adnatae, pallide fulvae; stipes 3—8 cm. longus, 1—1.5 mm. crassus, pileo concolor, glaber; velum nullum; sporae 8—10(12) ⇌ 5—6 μ, calyptratae; cheilocystidia 26—35 ⇌ 8—11 μ, late fusoideo-ventricosa, obtusa; hyphae fibulatae.

Specimen typicum in Herb. Univ. Mich. conservatum: legit Tahquamenon Falls State Park, Luce County, Michigan, Aug. 25, 1955, Smith n. 50296.

Pileus 8—15 mm. broad, obtusely conic with an appressed margin when young, becoming obtusely campanulate to broadly conic, surface glabrous, moist, hygrophanous, conspicuously striate moist, "tawny" or a richer fulvous varying to "ochraceous tawny", dingy ochraceous faded; flesh thin and membranous, odor none, taste distinctly farinaceous.

Lamellae distant to subdistant, adnate, broad, pale buff becoming ochraceous tawny, edges even.

Stipe 3—8 cm. long, 1—1.5 mm. thick, equal, flexuous, pale ochraceous or almost as dark as the pileus but evenly colored, perfectly naked and moist (no sign of a veil).

Spores 8—10(12) ⇌ 5—6 μ, ovate in face view, inequilateral in side view, dark ochraceous tawny in KOH, calyptrate and occasionally with blisters in addition; basidia 2- and 4-spored, hyaline to yellowish in KOH; pleurocystidia none; cheilocystidia 26—35 ⇌ 8—11 μ, broadly fusoid-ventricose with obtuse to slightly enlarged apices, hyaline in KOH; gill trama subparallel, hyaline to yellowish in KOH; pileus trama of pigment-encrusted hyphae; clamps present.

Habit, habitat and distribution: Gregarious on *Sphagnum*, Tahquamenon Falls State Park, Mich., Aug. 25, 1955, Sm. 50296.

Observations: This species has smaller spores than *Galerina hypnorum* var. *evelata* Singer, and in addition has a farinaceous taste. There is also a distinct difference in the size of the cheilocystidia (26—35 ⇌ 8—11 as compared with 40—50 ⇌ 11—14 μ). *Galerina acicola* is not found on sphagnum and lacks a farinaceous taste. *Galerina sphagnicola* Atkinson is closest but this species has a rudimentary veil and lacks a farinaceous taste. Coll. Sm-50361 from Trout Lake, Michigan in a *Polytrichum* bog, may be an intermediate form. In it, however, numerous capitate cheilocystidia were present as was a slight farinaceous taste.

Galerina psathyrelloides sp. nov.

Pileus 10—15(20) mm. latus, obtusus demum campanulatus, hygrophanus, obscure argillaceus dein pallescens; fragilis; lamellae confertae, latae, adnatae, secedentes; stipes 2—3 cm. longus, 2—2.5 mm. crassus, pileo concolor, velum sparsum, subochraceum; sporae 11—13 ⇌ 6—7.5 μ, calyptratae; cheilocystidia 40—55 ⇌ 7—12 × 5—7 μ, obtusa vel subcapitata.

Specimen typicum in Herb. Univ. Mich. conservatum: legit prope Univ. Mich. Biol. Station, Cheboygan County, Mich., Oct. 5, 1955, Smith n. 50935.

Pileus 10—15(20) mm. broad, obtuse when young, expanding to obtusely campanulate, surface moist, glabrous, hygrophanous, near "snuff brown" moist, soon fading to dingy cinnamon-buff, striate when moist and glabrous except for marginal veil fibrils; flesh very soft and fragile, odor and taste not distinctive.

Lamellae close, broad, adnate, readily seceding, pale buff becoming dingy ochraceous tawny, edges often crenulate.

Stipe 2—3 cm. long, 2—2.5 mm. thick, terete hollow, concolorous with the pileus or a little paler, evenly colored throughout, undulating, with a few pale buff fibrils from the rudimentary veil lower down.

Spores "buckthorn brown" in deposit, 11—13 ⇌ 6—7(7.5) μ, ovate to obscurely angular-ovate in face view, inequilateral in side view, many calyptrate in face view, plage clearly delimited, outer layer smooth to slightly wrinkled under high-dry, occasionally the outer layer extending over the plage as a blister, inner wall thick and dull brown (near "snuff brown") in KOH; basidia 4-spored, 26—28 ⇌ 8—9 μ, clavate, hyaline in KOH; pleurocystidia none; cheilocystidia abundant, fusoid ventricose becoming subcylindric, 40—55 ⇌ 7—12 ⇌ 5—7 μ, apices obtuse to subcapitate, hyaline in KOH individually but pale ochraceous in mass, somewhat agglutinated in KOH, thin-walled, smooth; gill trama somewhat interwoven; pileus trama without a distinctive pellicle, the hyphae near the surface encrusted with pigment and 5—12 μ in diam.; clamps present but not abundant.

Habit, habitat and distribution: Gregarious to subcespitose on muck in a cedar swamp, Tahquamenon Falls State Park, Mich., Oct. 5, 1955, Sm-50755; and Cheboygan County, Oct. 9, 1955, Sm-50935-type.

Observations: This species in the field reminds one of a *Psathyrella* in the *P. obtusata* group because of the dull colors and very fragile *Psathyrella*-like consistency. It is close to *G. agloea* but the stipe is not as dark as in that species, the veil is buff colored, and there is a tendency for the spores to be somewhat angular as seen in face view. It may also be close to *G. cerina* var. *luteovelata* but that variety has cheilocystidia 9—12 μ broad at the apices in some and the apices are broadly rounded. Also, the aspect of the *G. cerina*

variants is typically of *Galerina* whereas that of the present species is decidedly that of *Psathyrella. G. psathyrelloides* is not a moss inhabiting fungus as is *G. cerina* and its variants.

Galerina cedretorum var. **microspora** var. nov.

Var. *cedretorum* differt: sporae 8—10 ⇌ 5—6 μ; basidia bispora.

Specimen typicum in Herb. Univ. Mich. conservatum: legit Wilderness Park, Emmet County, Mich., Oct. 7, 1955, Smith n. 50911.

Pileus 1—2 cm. broad, obtusely conic to convex sometimes campanulate, surface glabrous, moist, translucent-striate, hygrophanous, ochraceous tawny fading to pale "cinnamon-buff"; flesh thin, odor and taste not recorded.

Lamellae narrow, close, adnate, ascending to nearly horizontal, pale buff becoming pale ochraceous tawny, edges fimbriate.

Stipe 2.5—4 cm long, ± 1.5 mm. thick, equal, cartilaginous, dark brown to bister at base and change progressing upward in age, usually pallid honey-color above, glabrous or with a few silky fibrils, apex pruinose; veil not evident — if present rudimentary.

Spores 8—10 ⇌ 5—6 μ, ovate in face view, inequilateral in side view, distinclty roughened (as seen under a 4 mm. dry objective), with a well defined smooth plage, dark ochraceous tawny to rusty brown in KOH; basidia *2-spored,* hyaline in KOH; pleurocystidia scattered, 45—60 ⇌ 10—15 μ, fusoid-ventricose, apices acute to subacute, hyaline, thinwalled, smooth; cheilocystidia 40—55 ⇌ 7—11 μ, narrowly fusoid-ventricose, apices obtuse to subacute, hyaline, smooth, thin-walled; gill trama parallel, hyaline to yellowish in KOH; pileus trama with a hyaline layer of non-gelatinous hyphae 4—6 μ in diam. over the surface, beneath this are hyphae with ochraceous encrusting pigment (hyaline encrusting material may be present on the hyphae of the cuticle); clamps present.

Habit, habitat and distribution: In a clearing through a mixed forest of aspen, birch, balsam, pine and black spruce, on debris in a grassy spot. Wilderness Park, Emmet County, Mich., Oct. 7, 1955, Sm-50911.

Observations: This is the two-spored form of the variety. When the four-spored form is found it is expected to have even smaller spores. I would venture to predict, if the usual ratio between 2- and 4-spored forms holds, that they will measure 6.5—8 ⇌ ± 5 μ.

Kuehneromyces alpinus sp. nov.

Pileus 2—3.5 cm. latus, convexus, badius demum fulvus et subfurfuraceus; lamellae confertae, angustae, adnatae, obscure cinnamomeae; stipes 3—4.5 cm. longus, 1.5—2.5 mm. crassus, glaber, deorsum obscure badius; velum nullum; sporae 8—9.5 ⇌ 5.5—6.5 ⇌ 6.5—8 μ; truncatae, subverrucosae, fulvae; cheilocystidia 16—20 ⇌ 9—13 μ, subglobosa, subochracea; hyphae fibulatae.

Specimen typicum in Herb. Univ. Mich. conservatum: legit prope Papoose Creek, Seven Devil's Mts., Hell's Canyon area, Idaho, Aug. 23, 1954, Smith n. 46580.

Pileus 2—3.5 cm. broad, broadly convex with an incurved margin, becoming plane to shallowly depressed, margin often uplifted in age, surface moist and hygrophanous, "russet" over all when young, fading out to various shades of tawny, margin opaque to faintly striate, surface obscurely innately squamulose at first (before fading), when faded obscurely to distinctly furfuraceous; flesh concolorous with surface, no distinctive odor or taste, no color change.

Lamellae close, 3 tiers of lamellulae, narrow to moderately broad, depressed-adnate to bluntly adnate, rich dark cinnamon when young, nearly concolorous with the pileus in age; edges even at first but becoming wavy to eroded in age.

Stipe 3—4.5 cm. long, 1.5—2.5 mm. thick, equal, fragile, tubular, concolorous with pileus, evenly faintly silky fibrillose but no pruina present and no veil, base darkening to blackish brown in age, coated at and near attachment with white mycelium.

Spores 8—9.5 ⇌ 5.5—6.5 ⇌ 6.5—8 μ, broadly ellipsoid in side view, broadly oval to subcircular in outline in face view, apical pore present but inconspicuous, outer wall yellowish to nearly hyaline and warty-wrinkled, inner wall thickened and rich rusty cinnamon in KOH, the outer wall tending to slough off irregularly; basidia 4-spored, 22—24 ⇌ 7—8 μ, hyaline in KOH; pleurocystidia none; cheilocystidia 16—20 ⇌ 9—13 μ, clavate to nearly globose, mostly with ochraceous content (in KOH), smooth, thin-walled; gill trama yellowish in H_2O and KOH, somewhat interwoven; pileus trama floccose-interwoven, yellowish except for the bay-brown cuticular region, with fascicles of hyphae having ellipsoid to elongate heavily encrusted cells; clamp connections present.

Habit, habitat and distribution: Scattered to gregarious on wet soil, Papoose Creek, Seven Devil's Mts., Idaho, August 23, 1954, Bigelow and Smith-46580.

Observations: The distinctive features are the practically imbedded cheilocystidia, the roughened spores, and the silky stipe which in age darkens at the base. The color of the spores when fresh is that of the section Flammula in *Pholiota*, in other words, typical of the rusty-brown spored group.

Kuehneromyces carbonicola sp. nov.

Pileus 1—3(4) cm. latus, convexus, obscure cinnamomeo-brunneus, hygrophanus, demum fulvus, lubricus, glaber; lamellae latae, adnatae, pallide fulvae demum fulvae; stipes 3—5 cm. longus, 2.5—3.5 mm. crassus, sericeus, deorsum obscure brunneus; sporae 8—11.5 ⇌ 6—6.5 ⇌ 7—9 μ, ferrugineo-fulvae, crasso-tunicatae, subtruncatae;

cheilocystidia 20—26 ⇌ 8—13 μ, fusoide ventricosa, subacuta; hyphae fibulatae.

Specimen typicum in Herb. Univ. Mich. conservatum: legit prope Lick Creek Summit, 7000 ft., Payette National Forest, Idaho, July 5, 1954, S mi t h n. 44640.

Pileus 1—3(4) cm. broad, broadly convex with an incurved margin, expanding to plane or nearly so, color "natal brown" at first but gradually becoming paler (to "warm sepia"), hygrophanous, fading to a bright or a dingy tawny, l u b r i c o u s, glabrous or w i t h a f a i n t m a r g i n a l z o n e of pallid fibrils from the thin veil; flesh fragile, watery brown fading to buff, odor and taste none.

Lamellae broad, adnate, seceding at times, ± ochraceous tawny (paler when young, darker in age) edges somewhat fimbriate.

Stipe 3—5 cm. long, 2.5—3.5 mm. thick above, lower three fourths silky from the remnants of a thin veil and at first with a superior fibrillose zone where the veil breaks, apex naked and shining, watery brown above, darker brown below and becoming bister from the base upward in age.

Spores 8—11.5 ⇌ 6—6.5 ⇌ 7—9 μ, elliptic in side view, angular-ovate to broadly oval in face view or some almost kite-shaped, smooth in KOH, with a very thick wall (0.5—0.8 μ) rich reddish cinnamon in KOH, apical pore present and apex more or less truncate; basidia 23—26 ⇌ 8—10(11) μ, clavate, hyaline in KOH; pleurocystidia none; cheilocystidia present, abundant but readily collapsing and not easily demonstrated on old gills, 20—26 ⇌ 8—13 μ, fusoid-ventricose with short necks and obtuse to subacute apices, hyaline, smooth, thin-walled; gill trama parallel, pale cinnamon in KOH, hyaline in H_2O when fresh but with hyaline incrusting particles along the walls; pileus trama floccose-interwoven; cuticle of compactly appressed enlarged hyphal cells with ochraceous walls in H_2O when fresh and dark rusty brown revived in KOH, the cells ± ellipsoid (10—18 μ in diam.) and hyphae radial, pigment mostly in the wall, encrustations not conspicuous; clamp connections present.

Habit, habitat and distribution: Densely gregarious on burned soil, Lick Creek Summit, Payette National Forest, Idaho, July 5, 1954, H. V. & A. H. S m i t h (Sm-44640).

Observations: The lubricous pileus, dull reddish brown color and mild taste distinguish it. In KOH the color of the spore would seem to suggest a relationship with *Conocybe* but the other characters do not bear this out. The relationship as I see it at present is with the section Flammula of *Pholiota*. For a time I considered erecting a new genus for this species on the basis of spore characters, but I am now convinced that it is better to place it in *Kuehneromyces*. This opinion was influenced in a large measure by a collection Wm. B r i d g e C o o k e made of a third species apparently belonging to

this same group which has the gelatinous subhymenium and pleurocystidia of section *Flammula*. I have not described it here for lack of certain data needed to completely characterize it.

Pleurotus albolonatus (Pk.) Kauffman.

Pileus 5—10 cm. or more broad, resupinate at first lateral, sessile, becoming abovate, reniform or globelliform, broadly convex, to subexpanded, margin long remaining inrolled, surface dry and pulverulent-tomentose, white to whitish or in age pale buff; flesh pliant, thin, odor and taste not recorded.

Lamellae decurrent on the stipe-like base, very crowded, narrow, white to yellowish occasionally forked, thin, edges even.

Stipe lacking.

Spores white in deposit, globose to subglobose 4—6 ⇌ 4—5 μ, hyaline in KOH, yellowish in Melzer's, smooth, thin-walled; basidia 4-spored, 20—23 ⇌ 6—7 μ, hyaline in KOH, yellowish in Melzer'; pleurocystidia none; cheilocystidia abundant to rare, 26—35 ⇌ 5—10 μ, fusoid-ventricose with filamentose necks which vary from flexuous to contorted, hyaline in KOH, yellowish in Melzer's sol., basal ventricose part usually obscured among the basidia; gill trama of intricately interwoven hyaline hyphae, the subhymenium more transparent than the tramal body but not gelatinous; pileus trama entirely of floccose interwoven, hyaline, non-amyloid hyphae very profusely branched and with slightly thickened walls, cuticle not differentiated but a sparse to dense tangled growth of hyphal tips (almost a turf) forming, the filaments 2—4 μ in diam. and with thin hyaline walls; clamps present.

Habit, habitat and distribution: Gregarious on a hemlock log, Houghton, Mich. fide CHK.

Observations: There are no gelatinous layers in the specimens studied, which is in contrast to Kauffman's statement that they are present. This collection looks like *P. porrigens* to me except for the cheilocystidia.

The type from Bay View checks with the Houghton specimens. There are no gelatinous layers in the pileus. The cheilocystidia are fusoid-ventricose as in the Houghton material but in addition some are ventricose-capitate, and some clavate with knoblike projections, all of these, however, are inconspicuous and hard to find.

As a result of the type study it is clear that *C. albolonatus* has no true gelatinous layers in the carpophore or hymenophore. The species is to be regarded as very close to *P. porrigens* if it actually is not identical with it. *P. porrigens* is not considered to have cheilocystidia.

Pleurotus columbinus Quel. sensu Kühner & Romagnesi.

Pileus 4—9 cm. broad, imbricate and ± spathulate to fan-shaped, margin inrolled, surface glabrous, moist, hygrophanous, bluish umber

to greenish gray or finally brownish gray to wood brown (tinge of vinaceous present), pallid grayish incarnate (near "avellaneous") faded; flesh watery grayish pallid fading to whitish, odor fungoid, taste pleasant.

Lamellae close, decurrent, narrow to moderately broad, pallid, often anastomosing on the stipe-like base, edges drying grayish.

Stipe lacking to poorly developed and appearing as a narrowed part of the pileus which is not marginate behind.

Spores 9—12.5 ⇌ 3.5—4.3 μ, subcylindric, with a slight suprahilar depression, smooth, thin-walled, hyaline in KOH, yellowish in iodine; basidia 4-spored, 30—40 ⇌ 5—6 μ, hyaline in KOH, yellowish in iodine; pleurocystidia none; cheilocystidia imbedded and inconspicuous, subcylindric to slightly ventricose at base and 30—35 ⇌ 6—8 μ or basidioid but more irregular in outline; gill trama intricately interwoven, hyaline in KOH, yellowish in iodine; pileus trama compactly interwoven, hyaline in KOH, yellowish in iodine, hyphae unenlarged, thin-walled; cuticle a thick layer of narrower (2.5—4 μ) hyphae mostly with dingy yellowish content in KOH, subgelatinous in KOH; clamps present.

Habit, habitat and distribution: Imbricate on conifer logs. Payette Lakes, Idaho, June 30, 1954, Sm-44436.

Observations: A spore deposit was not obtained. This taxon of the *P. ostreatus* group, when the sum of all its characters is taken into account, appears to me to be worth recognizing at the species level. The color, habitat on conifers, long spores and pigment in the cuticular elements are diagnostic. These characters appear individually in other taxa in the complex, and this has confused the situation in the past at least in North America.

Pleurotus elongatipes Pk.

Pileus 5—10 cm. broad, convex or nearly plane, glabrous, white, margin even; flesh thin, white, odor and taste not recorded.

Lamellae adnexed becoming emarginate, rounded next to the stipe, close, moderately broad, thin, white, edges even.

Stipe 5—15 cm. long, 6—10 mm. thick, stuffed becoming hollow, variously curved or flexuous, usually eccentric, white, glabrous above, more or less tomentose toward the base.

Spores globose or nearly so, 4—5 μ in diam., smooth, hyaline in KOH, yellowish in iodine; basidia 4-spored, 20—25 ⇌ 6—7 μ, hyaline in KOH, yellowish in iodine; pleurocystidia none; cheilocystidia none; gill trama of subparallel to interwoven hyphae, hyaline in KOH and walls appearing somewhat glassy and slightly thickened in KOH, yellowish and thin-walled in iodine; pileus trama of floccose-interwoven hyphae, hyaline in KOH and yellowish in iodine, hyphae 5—12 μ in diam. and with slightly thickened walls in KOH,

some with long thorn-like projections; cuticle a layer of gelatinous narrow (2—5 μ) hyaline hyphae appressed and interwoven; clamp conections present.

Habit, habitat and distribution: On hardwood logs, Wayne County, Mich., Oct. 5, 1907, O. E. Fischer (type).

Observations: The stipe which becomes hollow in age, the tramal hyphae which appear to have slightly thickened walls in KOH, and the gelatinous pellicle are the important characters. The above data are taken from the type and original description.

The following description is drawn from numerous collections from the western United States:

Pileus 4—10 cm. broad, convex with an inrolled margin expanding to plane or slightly depressed, glabrous, lubricous to subviscid and shining, mottled with large watery darker spots over the disc, "vinaceous buff" or nearly so over disc, margin "tilleul buff", cuticle cartilaginous and rigid; flesh watery vinaceous buff to pallid, fairly thick and pliant, odor and taste fugoid — as in *P. ostreatus.*

Lamellae close, narrow, sharply adnexed, white to "tilleul buff", thin and pliant, edges even and not staining appreciably.

Stipe 3—7 cm. long, 1—2.5 cm. thick, eccentric to central stuffed becoming hollow, rather fibrous-cartilaginous, pubescent at base, concolorous with gills, faintly pubescent above, not discoloring appreciably; veil lacking.

Spores 4.5—5.5 ⇌ 4.5 μ, globose to subglobose, smooth, hyaline in KOH and yellowish in iodine; basidia 4-spored, 25—30 ⇌ 6—7 μ, hyaline in KOH, yellowish in iodine; pleurocystidia none; cheilocystidia none; gill trama subparallel to interwoven, the hyphae with slightly thickened walls, hyaline in KOH and yellowish in Melzer's, subhymenium filamentous, narrow and generally indistinctive; pileus trama of floccose-interwoven hyaline hyphae with slightly thickened walls (appearing thin-walled in Melzer's); cuticle a thick layer of interwoven gelatinous hyphae ± 2 μ in diam.; clamp connections present.

Habit, habitat and distribution: Cespitose gregarious on decaying alder, Lower Tahome Creek, Mt. Rainier National Park, Wash., Oct. 15, 1954, coll. Sm-48968 is a typical collection.

Observations: Apparently the hyphal walls of both pileus and gill trama swell slightly in KOH thus giving the impression of a tendency toward the thick-walled condition. It is clear to me that the species is typically western in distribution but does extend to the Great Lakes region. This pattern is exactly parallel to that of *Boletus mirabilis,* only by accident the *Pleurotus* was described from the area where it occurs only rarely instead of from its region of greatest abundance.

Pleurotus inversus Kauff. & Smith.

Pileus 2—4 cm. broad, 3—5 cm. high, marginate behind, at first ± spathulate, becoming somewhat infundibuliform or open part way on one side, watery-brownish, glabrous and gelatinous-viscid in wet weather, margin rolled back over the lamellae; flesh brownish fading to whitish with loss of moisture.

Lamellae unequally decurrent, 4—5 mm. broad, attenuate to a point on the stipe, thin, close but spreading, whitish, edges entire and often crisped.

Stipe eccentric to almost lateral at first, 1—2 cm. long, 4—9 mm. thick, solid terete, tapering downward, equal, curved, subcespitose, pallid, concolorous within, glabrous, even.

Spores 6—7 ⇌ 2.5—3 μ, oblong in face view, cylindric to slightly allantoid in side view, smooth, hyaline in KOH and yellowish in Melzer's sol.; basidia 25—38 ⇌ 5—6 μ, 4-spored, hyaline in KOH and yellowish in Melzer's; pleurocystidia abundant, 60—80(100) ⇌ 5—8 ⇌ 3—4 μ, basal part slightly enlarged, neck long and often flexuous or irregular, apex acute to obtuse, typically thin-walled, smooth, yellowish in iodine; cheilocystidia similar to pleurocystidia some showing some thickening in the wall; gill trama of interwoven, thin-walled, frequently branched hyphae, hyaline in KOH, yellowish in Melzer's; pileus trama of floccose interwoven hyphae mixed with numerous laticiferous hyphae, hyaline in KOH, yellowish in Melzer's, many hyphae giving rise to thorn-like branches, cuticle a compactly interwoven layer of narrower (3—5 μ) hyphae not or only subgelatinous in KOH; clamps present, abundant.

Habit, habitat and distribution: On a beech log, Sept. 22, 1929, Kauffman and Smith No. 254, near Rock River, Mich.

Observations: In the original description Kauffman and Smith commented to the effect that this species was *P. petaloides* in the sense of Ricken. Smith has checked the type in connection with making the present write-up and wishes to point out here that our earlier opinion was erroneous. In the first place the pleurocystidia of *P. inversus* are not metuloids and this one character takes the species out of the *P. petaloides* complex. The lack of a truly gelatinous layer in the pileus, as such occur in the *P. petaloides* complex, is a further character of importance removing *P. inversus* from the *P. petaloides* group.

As I understand the Pleuroti of the *P. porrigens, P. albolonatus* complex at present, *P. inversus* belongs there and differs from *P. alobolonatus* in abundant pleurocystidia and elongate spores. The viscidity of the fresh specimens was doubtless accentuated by the cold wet weather during their development.

Phaeocollybia lilacifolia sp. nov.

Pileus 3—5 cm. latus, obtuse conicus, glutinosus, subhepaticus, hygrophanus; lamellae lilaceae, confertae, angustae, adnatae; stipes 8—15 cm. longus, 8—12 mm. crassus, radicatus, sursum lilaceus, deorsum pileo concolor; sporae 7—8.5 ⇌ 5—5.5 μ, subverrucosae; cheilocystidia 30—35 ⇌ 4—9 μ, subcapitata; hyphae defibulatae.

Specimen typicum in Herb. Univ. Mich. conservatum: legit prope Ipsut Creek Trail, Mt. Rainier Nat. Park, Wash., Sept. 16, 1952, Smith n. 39976.

Pileus 3—5 cm. broad, obtusely conic with an inrolled margin, expanding to plano-umbonate, surface slimy viscid, dark brown ("cinnamon brown" to "Rood's brown"), hygrophanous and fading to dingy pale vinaceous tawny; flesh cartilaginous pallid faded, odor of crushed flesh pungent, taste somewhat disagreeable but not farinaceous.

Lamellae "Lobelia violet", slowly becoming dark rusty brown, close to crowded, narrow, free or attached at the apex of the stipe.

Stipe 8—12(15) cm. long, 8—12 mm. at apex, tapered downward to a long pseudorhiza, hollow, cartilaginous, ± concolorous overall except the apical portion which is concolorous with the gills, lilac gradually fading and then concolorous over all (base not appreciably darker).

Spores 7—8.5 ⇌ 5—5.5 μ, inequilateral in side view with a small pallid apical pore terminating a small snoutlike projection, ovate with an abrupt small apical projection; very sightly verruculose under oil (appearing smooth at ordinary magnifications), dark rusty brown in KOH, inner wall thickened; basidia 4-spored; 26—30 ⇌ 6—7 μ, nearly hyaline in KOH; pleurocystidia none; cheilocystidia 30—35 ⇌ (4)5—9 μ, filamentous-subcapitate with the enlarged part 4—6 μ, or clavate and enlarged part 6—9 μ, walls in narrowed portion flexuous, smooth, thin-walled, hyaline in KOH; gill trama parallel, pallid to pale ochraceous in KOH, hyphal cells mostly equal in width; pileus trama of compactly interwoven hyphae with mostly colorless walls except near surface where a layer of compactly and radially arranged hyphae of a larger diameter than those of the flesh proper is found and from this layer arises a dense turf of long narrow (3—4 μ) hyaline gelatinous filaments; clamp connections absent.

Habit, habitat and distribution: Gregarious under hemlock, Ipsut Creek Trail, Mt. Rainier National Park, Washington, Sept. 16, 1952, MacIntyre and Smith - 39976.

Observations: The lack of clamp connections and lilac gills distinguished this from *P. lugubris.*

Lyophyllum montanum sp. nov.

Pileus 3—6.5 cm. latus, obtusus vel convexus, demum plano-umbonatus, impolitus, murinus demum subalutaceus; lamellae murinae, latae, adnatae, secedentes, confertae; stipes 3—7 cm. longus, 10—16 mm. crassus, subequalis, impolitus, in corticis umbrinus; sporae 6.5—8 ⇌ 3.5—4 μ; hyphae fibulatae.

Specimen typicum in Herb. Univ. Mich. conversatum: legit prope Univ. Wyoming Science Camp, Medicine Bow Mts., Wyo., June 21, 1950, Smith n. 34297.

Pileus (2)3—6.5 cm. broad, obtuse to nearly convex, the margin incurved at first, expanding to broadly convex or with an obscure umbo, the margin even at first but at times becoming crenulate to undulate, surface opaque at first from a hoary "pale smoke gray" coating which gradually disappears exposing the lead color to putty colored naked surface, these colors slowly changing to grayish clay-color or dingy alutaceous, lubricous after glaucous coating has disappeared; flesh thick and soft, umber but soon fading to whitish, unchanging when cut or bruised, odor and taste not distinctive.

Lamellae "drab" to "cinnamon drab" or paler, on aging becoming more cinereous, broad, depressed around stipe or in age nearly free, rounded at the stipe, close, edges even.

Stipe 3—5(7) cm. long, 10—16 mm. thick at apex, subequal, base in many enlarged slightly and mycelioid, surface near apex canescent like that of pileus, umber when canescent coating is removed, interior hollow or soon becoming so and cortex umber in color.

Spores 6.5—8 ⇌ 3.5—4 μ, smooth, white in deposits, yellowish in Melzer's sol., oblong to narrowly ellipsoid; basidia four-spored, 23—27 ⇌ 5—6 μ; pleuro- and cheilocystidia none; gill trama hyaline in KOH, interwoven to subparallel, subhymenium indistinct; pileus trama floccose and interwoven, more compactly interwoven near the surface and surface covered by a very thin poorly defined subgelatinous layer of narrow hyphae (representing all there is of a pellicle), clamp connections present.

Habit, habitat and distribution: Gregarious-subcespitose under spruce and fir, often in close proximity to melting snow banks, Univ. of Wyoming Science Camp, Medicine Bow Mts., Wyo., June 21, 1950, Harry Thiers (A. H. Smith-34297).

Observations: This is one of the characteristic vernal species of Rocky Mountain agaric flora. It frequently comes up through the snow at the edge of snow banks, or may develop under a snow bank only to be exposed after the snow has melted. It is a nondescript sort of mushroom as far as color is concerned, and because the carpophores persist so long in their well-cooled habitat, considerable

change in appearance takes place from the time the specimens mature until they decay or dry up. In Singer's 1951 classification it would go in Section Tephrophana subsection Ellipsoidiosporina. In my own manuscript on this genus, which includes over 100 species, it keys out by virtue of ellipsoid spores more than 6.5 μ long, the thick stipe (3—6 mm. or more), broad gills, no distinctive odor and taste, and adnexed to depressed drab gills. When perfectly fresh it resembles *Clitocybe inornata* in appearance but is readily distinguished on spore characters.

Lyophyllum rancidum (Fries) Singer.

Pileus 1.5—2.5(3) cm. broad, conic with an incurved margin, becoming conic-campanulate or margin spreading and umbo abruptly conic, surface hygrophanous, at first with a distinct hoary-canescent coating, very dark fuliginous to blackish beneath the hoariness, finally merely dark gray and with a faintly striate margin before fading, fading to pallid dingy gray to whitish, fading on umbo first; flesh thin but cartilaginous, dark gray fading to whitish, odor rancid-farinaceous, taste slightly farinaceous. Lamellae close to nearly crowded, depressed-adnate to adnexed, narrow, becoming moderately broad, dark drab when young, paler drab in age and staining slightly darker gray when bruised, edges whitish and even.

Stipe 8—12 cm. long (pseudorhiza 4—8 cm. long), width 2.5—4 mm. at apex, equal or slightly enlarged at ground line, glabrous and polished or white canescent toward the apex, remainder dark to pale drab, pseudorhiza whitish, consistency very cartilaginous, interior stuffed with a white pith.

Spores 7—8.5 ⇌ 3.5—4.5 μ, ovoid to ovate-pointed, hyaline, smooth, thin-walled, nonamyloid; basidia fourspored, 26—30 ⇌ 6—7 μ, hyaline in KOH; pleuro- and cheilocystidia none seen; gill trama subparallel, hyphae scarcely differentiated, color in KOH pallid, subhymenium indistinct and very narrow; pileus trama with a thin subgelatinous pellicle of interwoven, appressed, narrow, hyaline hyphae, remainder of trama of compactly interwoven, ± differentiated hyphae; clamp connections present.

Habit, habitat and distribution: Scattered along trail, Still Creek, Mt. Hood National Forest, Ore., Oct. 17, 1944 (Sm-19843).

Observations: Sections revided in KOH are colorless or nearly so. The western collections check very well with the European descriptions. It seems to be a very rare fungus in North America. Wm. B. Gruber and I found it infrequently during the season of 1944 in the Mt. Hood National Forest, but during all subsequent years it has been found only once or twice during a season or not at all.