November 2013

Hygrophorus Notebook 4

L. R. Hesler

Section: †Hygrophorus

Misc. Notes

UT-23853 HYGROPHORUS AGATHOSMUS

(from France, Bas-1105)

Notes by Bas

Cap 40-65, pale gray, minutely felty when young, slightly viscid when old.

Gills very pale greyish cream.

Stalk 50-90 x 8-20, white to very pale greyish brownish, minutely granular floccose.

Smell strong, like almond oil.

Notes by Hesler

Agrees with material here.

HYGROPHORUS CERASINUS (Berk.) Fr. (= agathosmus)

Dennis, R. W. G. Some little-known British species of Agaricaceae. British Myc. Soc. Trans. 31:191-209. 1948.

(by Dennis) Rein

A study of the type led to the following conclusions: Pileus surface hyphae imbedded in mucilage. Basidia apparently 4-spored. Spores hyaline, broadly elliptical, and strongly apiculate, 8-9 x 4-6 μ. There seems no adequate grounds for separating this from H. agathosmus (Fr. ex Secretan) Fr., the valid name (p. 196).

HYGROPHORUS CERASINUS (Berk.) Fr.
(= H. agathosmus)

Ellis. North American Fungi.

907. Hygrophorus cerasinus Berk.

on ground, in pine woods,

Iona, New Jersey, November 1882

(Specimen borrowed from New York Botanical Garden)

Spores (7.5) 9-11 x (4.5) 5-7 μ, ellipsoid, smooth, non-amyloid, at times faintly yellow in Melzer's reagent. Basidia 41-60 x (5) 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama of divergent hyphae. Epicutis of loosely tangled, gelatinous hyphae. Clamp connections present on the cuticular hyphae.

Resembles material I have seen of H. agathosmus. — AHS

HYGROPHORUS CERASINUS (Berk.) Fr. = agathosmus

Hymen. Eur., p. 410. 1874

Agaricus cerasinus Berk., in Smith, Engl. Fl. 5^2:12. 1836.

(adapted from Rea, p. 296)

Pileus 4-6 cm. broad, convex, broadly umbonate, often more or less undulate, sometimes depressed, pale umber, then gray, viscid, shining when dry, margin minutely tomentose. Context odor of cherry laurel leaves.

Lamellae decurrent, white then tinged pink, broad, sometimes forked, very distant.

Stipe 2.5-8 cm. long, 10 mm. thick, white, attenuated below, sometimes ventricose, punctate-squamulose above.

Spores 8 x 4 μ, ellipsoid.

Habit, habitat, and distribution. - On the ground, in pine woods.

Material studied. - NEW JERSEY: Ellis 907, North American Fungi, Iona, November 1882.

Observations. - The following notes were made during a study of Ellis' 907, New Jersey collection: Spores (7.5) 9-11 x (4.5) 5-7 μ, ellipsoid, smooth, non-amyloid, at times faintly yellow in Melzer's reagent. Basidia 41-60 x (5) 6-8 μ, 4-spored.

Pleurocystidia and cheilocystidia none. Gill-trama of divergent hyphae. Epicutis of loosely tangled, gelatinous hyphae. Clamp connections present on the cuticular hyphae.

Dennis (1978) concludes from his study of the type that it is the same as H. agathosmus. Bataille (1910:189) also lists cerasinus as a synonym of agathosmus.

HYGROPHORUS ALBICASTANEUS (Murr.) Sm. & Hes.

Type of Clitocybe albicastanea Murr. (see Mycologia 5:206. 1913)

Coll. James McMurphy, No. 61, among leaves, under oaks, near Searsville Lake, California, Dec. 28, 1902. Type on deposit at the N. Y. Botanical Garden, N. Y. City.

The dried pileus is "ochraceous tawny," the disc "russet". Lamellae dark reddish-brown. Stipe tawny, similar to pileus.

Spores 7-8 (9) x 4-5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 38-50 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-10 μ broad. Cuticle a gelatinous zone, 100-150 μ thick. Pileus trama of radially disposed hyphae, which are somewhat interwoven. Clamp connections present on the cuticular and gill trama hyphae.

The collection is filed in N. Y. Bot. Garden Herbarium with Hygrophorus jossolus as a synonym of H. eburneus. See N. A. Flora 9:391.

- L. R. Hesler

HYGROPHORUS ALBIDUS Karst.

(Sm-526 Mule Prairie, under spruce, Oct. 29 - '44)

Spores 7.5-9 x 4.5-5.5 (6) μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 54-68 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 3-6 μ broad. Cuticle a distinct gelatinous zone 120-200 μ thick. Clamp connections present on the cuticular hyphae.

Stipe (dry) lacking a gelatinous zone on the surface.

HYGROPHORUS ALBIDUS Karst.

Sm-19688 (Oregon)

Spores 6.5-8.5 x 4.5-5 (6) μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 46-62 x 5.5-7 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-8 μ broad. Cuticle a gelatinous zone, 150-250 μ thick. Clamp connections present on the cuticular hyphae.

HYGROPHORUS ALBIDUS Karsten

Sm-54140, in hemlock climax, Idaho, Kaniksu National Forest, October 6, 1956.

Spores 8-10 x 4-5.5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 47-60 x 5-7 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-7 μ broad. Cuticle a zone of gelatinous hyphae. Clamp connections on the cuticular hyphae.

HYGROPHORUS ALBIDUS Karst.

(on needle beds, under spruce and fir, Aroostook Co., Maine, Aug. 25, 1956, Bigelow-4364)

Notes by Bigelow

Pileus: (1) 2-4 (6) cm. broad, convex at first with an incurved margin, becoming broadly convex and finally plane, disc shallowly depressed at times, not striate, surface viscid at first, soon drying and only sticky to touch, opaque, glabrous (but somewhat "frosted" appearing), pure white; flesh thick on disc, white, firm, no odor or taste.

Gills: waxy, short decurrent at first, finally moderately decurrent (unevenly) subdistant when young, finally distant, forked and anastomasing in age, intervenose in age, 2-5 (8) mm. broad, whitish at first soon pale pinkish buff to pale pinkish cinnamon, edges even and straight.

Stipe: 1.5-4 cm. broad, 4-8 (12) mm. at apex, base narrowed, no , solid (whitish inside and soft), surface pruinose at apex, innately fibrillose below, white, often curved near base, central, usually terete, dry.

Notes by Hesler

Spores 6.5-8 (9) x 4-5.5 μ, ellipsoid, smooth, yellowish in Melzer's. Pleurocystidia and cheilocystidia none. Gill trama divergent. Cuticle a clear gelatinous zone of tangled, narrow hyphae. No hypodermium.

HYGROPHORUS ALBIFLAVUS SP. NOV.

(from Mt. Hood, Sept. 29, 1946, A. H. Smith, No. 23910.)

Notes by Hesler

Pileus white over all. Stipe viscid but not slimy, with an apical fibrillose annulus. Spores (9) 10-14 x 6.5-7.5 μ, ellipsoid, smooth. Basidia large, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent. Cuticle a broad (200-325 μ) gelatinous zone with erect surface hyphae, - an ixotrichodermium. No hypodermium. Pileus trama of radial hyphae. Clamps present. This might be H. candidus Quel., in which Bataille gives the spores 13-15 μ long, the stipe fusiform.

Favre (1960) describes H. pleurotoides, a Limacium, and also presents a color illustration, which has an annulus, but his species has a rosy brown pileus.

HYGROPHORUS AMYGDALINUS Pk.

Torrey Bot. Club Bul. 25:322. 1898

(Coker: E.M.S.S. Jour. 64:135. 1948)

"Cap up to 3 cm. wide, when young nearly hemispheric, more or less gibbous with margin strongly inturned, at maturity plane in center with broadly drooping margin, surface gray-drab at all ages, viscid, fibrous, margin felted-spongy like the stem, representing an ephemeral veil which is an extension of the stem covering. Flesh pure white, firm, about 5-6 mm. thick near stem, rapidly thinning toward the margin; odor strong of bitter almonds; taste mild.

"Gills pure white, about 2.5 mm. wide, rounded distally, pointed and either squarely adnate or more commonly slightly decurrent, rather distant and thick, about every other one short.

"Stem up to 5 cm. long and 5 mm. thick in center, concolorous and with same surface as the margin of the young cap, minutely scurfy-squamulose, crooked, terete or somewhat grooved or flattened, stuffed with fibers which may separate, forming irregular hollows; base prevailingly pointed and yellowish but not always pointed and sometimes whitish.

"Spores smooth, subellipsoid, proximal end somewhat narrowed, 5-6.2 x 10-13 μ, with one large droplet except when quite fresh. Basidia clavate, 7.5-9.5 μ thick, projecting up to 11 μ, not

(more, next page)

counting the sterigmata which may be 11 μ long, 4-spored (a few apparently only 2-spored). No true cystidia but some pointed sterile threads present."

Habitat and Distribution. - On sandy soil, pine woods, North Carolina, November.

HYGROPHORUS AMYDALINUS Pk.

Gregarious in pine woods,
Type: Takoma Park, D. C., coll. Mrs. E. M. Williams, November 20, 1897.

Spores 8-11 x 4.5-5.5 μ, ellipsoid or subellipsoid, smooth, yellow. Basidia 42-74 x 7-11 μ, 2- and 4-spored. Pleurocystidia 46-58 x 4-6 μ, subcylindric, slightly constricted, not projecting; cheilocystidia 40-57 x 4-6 μ, similar. Gill-trama divergent, hyphae 5-7.5 μ broad. Cuticle fibrillose, with numerous epicuticular hyphae which are loosely tangled. Clamps present in the epicuticular hyphae.

HYGROPHORUS AMYGDALINUS PK.
Notes on Coker No. 10700

Coker No. 10700, in sandy soil, pine woods, Chapel Hill, N. C., Nov. 21, 1937

Spores 9-12 x 4.5-6μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 50-66 x 7-11μ, sterigmata 7-10μ long, 2- and 4-spored. Pleurocystidia 57-78 x 5-9μ, more or less clavate, often irregular, appendiculate; cheilocystidia 40-62 x 3-7μ, cylindric to ventricose, tapering or appendiculate. gill-trama divergent, hyphae 4-8μ broad. Epicutis a tangle of hyphae; clamps present. Coker (Elisha Mitch. Jour. 64:136. 1948) says: "No true cystidia but some pointed sterile threads present."

Coker No. 10698

Same station, Nov. 14, 1937.

Spores 10-12.7 x 5-6μ.

HYGROPHORUS AVELLANEIFOLIUS SP. NOV.

Pileus 3-5 cm. broad, convex to obtuse then nearly plane, glabrous, glutinous, "buckthorn brown" to dingy dark ochraceous tawny, at times zoned in age; odor and taste none, unchanging when bruised; lamellae "avellaneous," not changing appreciably, moderately broad, thickish, 1-2 tiers of lamellulae present; stipe 4-6 cm. long, 9-18 mm. thick, narrowed below, grayish-pallid, unchanging when handled, dry, neither pruinose nor squamulose; spores 7-9 x 3.5-4.5 μ, ellipsoid to sub-oblong. Specimen typicum in Herb. Univ. Mich. conservatum; lectum prope Seven Devils Mts., Idaho, Aug. 23, 1954, A. H. Smith, n. 46584.

HYGROPHORUS AVELLANEIFOLIUS SP. NOV.

Pileus 3-5 cm. latus, convexus demum obtusus deinde paene planus, glabrosus, glutinosus, "buckthorn brown" demum ochraceo-fulvus, interdum zonatus; absunt odor et gustus, immutabilis laesus; lamellae avellaneae, non insigniter mutantes, modice latae, subcrassae, adsunt una vel duae lamellularum ordines; stipes 4-6 cm. longus, 9-18 mm. crassus, infra constrictus, cinereo-pallidus, immutabilis tactus, siccus, nec pruinosus nec squamulosus; sporae 7-9 x 3.5-4.5 μ, ellipsoideae demum sub-oblongae. Specimen typicum in Herb. Univ. Mich. conservatum; lectum prope Seven Devils Mts., Idaho, Aug. 23, 1954, A. H. Smith, n. 46584.

HYGROPHORUS AVELLANEIFOLIUS sp. nov.

Sm-46584 (type, from Papoose Creek, Idaho, August 23, 1951, coll. Smith & Bigelow)

Spores 7-9 x 3.5-4.5 μ, ellipsoid to suboblong, smooth, yellowish in Melzer's reagent. Basidia 37-48 x 5-8 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-6 μ broad. Cuticle a gelatinous zone 100-140 μ thick, with narrow, interwoven, colorless hyphae. Clamp connections on the cuticular hyphae.

HYGROPHORUS AVELLANEIFOLIUS sp. nov.

List of Collections

Sm-46584, marked type from Papoose Creek, 7 Devils, Idaho, August 23, 1951, coll. Smith & Bigelow.

Sm-53530, under conifers, Payette Lakes, Idaho, September 17, 1956.

Sm-46333, Stanley Lake, Idaho, August 18, 1954, coll. Smith & Bigelow.

Sm-47018, Payette Lakes, Idaho, August 27, 1954, coll. Smith & Bigelow.

Sm-47314, Papoose Creek, 7-Devils, Idaho, September 3, 1954, coll. Smith & Bigelow.

HYGROPHORUS AVELLANEIFOLIUS sp. nov.

Sm-53530, under conifers, Payette Lakes, Idaho, September 17, 1956.

Spores 7-9 x 3.5-4.5 μ, ellipsoid, ~~a few~~ to suboblong, smooth, yellowish in Melzer's reagent. Basidia ~~40~~ 37-52 x 5-8 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-7 (8) μ broad. Cuticle a gelatinous zone (100-140 μ thick) of colorless hyphae, which are more or less erect, 2-3 μ broad, forming an ixotrichodermium. No hypodermium. Pileus trama of radial hyphae. Clamp connections on the cuticular hyphae.

This resembles Sm-46584 in every way, macro- and microscopically.

Hygrophorus calophyllus Sm - 59650

Notes by A. H. Smith

Cespitose under Pinus contorta, Pen Basin, Idaho. 8-5-58 Nancy Jane Smith. A.H.S. 59650. Photo.

Pileus 4-15 cm. broad, obtuse to convex, expanding to plane or margin finally uplifted, surface glutinous but soon dry, glabrous, buttons pallid but with a salmon tint, becoming clouded dark gray as soon as exposed to air, blackish to dark gray mature, margin long remaining incurved. Flesh thick, whitish to faintly salmon tinted. Odor and taste not distinctive.

Lamellae pale salmon tinted young, finally creamy buff to whitish and stained gray on edges in age, distant, 2-3 tiers of lamellulae, narrow to moderately broad, decurrent.

Stipe short, 3-9 cm. long, 1-3.5 cm. thick at apex, equal to clavate but pinched off at base, solid, unchanging when cut, surface whitish with a salmon tint young, whitish to pale cinereous in age, unpolished, surface appressed fibrillose--unpolished, apex faintly pruinose. Not darkening at base.

Spores deposit white.

Sm-59650

Notes by L. R. Hesler

Spores 5.5-8 x 4-5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 40-56 x 6-8 μ, 4-spored, a few 2-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-7 μ broad. Cuticle a well-defined gelatinous turf, 90-120 μ thick. Clamp connections present.

Microscopically this agrees with material of H. calophyllus (Sm-49181). The salmon tint of the young pileus, flesh, and young lamellae is a shade of color slightly different from the colors ~~those which have been~~ mentioned by other authors.

HYGROPHORUS CALOPHYLLUS Karst.

Collection from Oregon-California line, by Smith (8326) (U-T, No. 11014), November 29, 1937.

Spores 6-8 x 4-5 μ, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 40-60 x 6-8 μ, sterigmata stout, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-7 μ broad. Cuticle of gelatinous hyphae. Clamp connections present in the cuticle and gill-trama.

Hygrophorus camarophyllus ordes - Sm-60807 (Type)

With Nebularis taste! And growing under hardwood! Scattered, low ground, maple, beech, etc. Proud Lake. 11-16-58, Ruth Dawson. Sm - 60807.

Pileus 3-7 cm. broad, surface glabrous and moist but not viscid, in age finally slightly squamulose, turbinate throughout its development, margin rimose in age in some, color dark gray to bluish fuscous or in age about "mummy brown", context gray to pallid, odor when crushed and taste like that of Clitocybe nebularis.

Lamellae close, decurrent, thick, wavy, narrow, to moderately broad, whitish becoming cinerous and finally brownish in age, intervenose.

Stipe 3-6 cm. x 10-15 mm. equal to narrowed downward, solid, concolor with cap above, paler (pallid) at base, surface dry and naked.

Spores 6-7 x 5 μ. Gill trama divergent.

14220 HYGROPHORUS CAPRINUS Fr. = camarophyllus (Fr.) Dumée

(Smith's collection No. 17980)

Spores 7.5-10 x 4.5-5.5 (6) μ, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 42-56 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama of divergent, narrow hyphae, 2.5-5 μ broad. Cuticle a cutis of appressed hyphae. Clamps present in cuticle.

Singer (Agar. p. 147) gives H. caprinus (Scop. ex Fr.) Fr. as a synonym of H. camarophyllus (A. & S. ex Fr.) Dumée.

HYGROPHORUS BURNHAMI Pk. = H. caprinus = camarophyllus

Type: In mixed woods, West Fort Ann, Washington County, October. Collected by S. H. Burnham.

Spores 7.5-10 x 4.5-5.5 μ, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 44-55 x 5-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae narrow, 3-5 μ broad. Cuticle of appressed hyphae; no gelatinous pellicle. Clamps present in the cuticle.

A note in the box (marked Type), signed by Dearness, January 1931, states that he fails to find any specific difference in the micro-features of this and the plant that Kauffman, Atkinson, and Peck have labeled Hygrophorus caprinus. Smith & Hesler (Lloydia 5:84) state that "it is properly referred to H. caprinus as a synonym."

HYGROPHORUS CAMAROPHYLLUS

Solheim-3364, Medicine Bow Mts., Wyo., July 8, 1951. W. G. Solheim

Spores 7-9 x 4.5-5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 7-9 μ broad. Cuticle a cutis, non-gelatinous or, at times, there seem to be a narrow zone of slightly gelatinous hyphae. No hypodermium. Pileus trama radial. Stipe cuticle non-gelatinous.

HYGROPHORUS CAPREOLARIUS Kalchbr.

Collected under spruce, Crescent City, California, by Smith (9333) U-T No. 11009)

Spores 6.5-8 x 4.5-5 μ, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 44-58 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-9 μ broad, with an opaque mediostrate. Cuticle of gelatinous hyphae; the appressed scaly-dotted areas on the disk are composed of a slightly convex zone, or concentration, of brownish hyphae. Clamp connections present in the pileus-trama, gill-trama, and cuticle.

In Lloydia 2:53, the spores are given as 7-9 (10) x 5-6 μ. In his notes accompanying his No. 9333 (U-T No. 11009) the spores are given as 6-7 x 3.5-4 μ.

UT-23835 HYGROPHORUS CAPREOLARIUS

(from France, Leiden-12654)

Notes by Bas

Cap dark vinaceous purple at first, later on paler purplish reddish brown, with scattered dark spots, slightly viscid, innate, sub-scaly in centre, innate fibrillose near margin, margin involute and minutely tomentose.

Gills purple-brown with violaceous reflex.

Stalk pale vinaceous purple, white tomentose at base, minutely felty fibrillose, slightly wooly at apex.

Flesh pinkish or violaceous tinged white, purple-brown at base of stalk.

Notes by Hesler

Agrees very well with material here.

HYGROPHORUS CHRYSASPIS Métrod ?

Collected by C. F. Baker, No. 138, California, Dec. 4, 1901. Specimens borrowed from N. Y. Bot. Garden, and filed there as H. jossolus (H. eburneus).

The dried pileus is brownish. Lamellae dark reddish brown.

Spores 7-8.5 x 4-5 μ, ellipsoid. Pleurocystidia and cheilocystidia none. Gill trama divergent. Cuticle a gelatinous zone.

This seems to be H. chrysaspis.

UT-23843 HYGROPHORUS CHRYSASPIS

(from France, Leiden-1098)

Notes by Bas

Cap 40-75 mm. Ø, white to yellowish cream, sometimes brownish at margin, viscid, later on innate fibrillose, slightly grannular centre sometimes, margin involute and tomentose at first.

Gills yellowish cream, white near edge.

Stalk 70-100 x 7-10 (-15), more or less looking white, becoming yellowish or brownish, granular floccose at apex, sub-fibrillose below, with yellowish drops at apex when young.

Smell strong, like Cossus.

KOH - salmon-brown at first, then reddish brown.

Notes by Hesler

This agrees well with a specimen from Josserand, and with our American collections. Spores 7-8.5 x 3.8-5 μ, ellipsoid, smooth, pale yellow in Melzer's. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-7 μ broad. Cuticle a very narrow gelatinous zone, a few hyphae more or less erect. Pileus trama of more or less radially disposed hyphae. Basidia 36-43 x 5-7 μ, 4-spored.

23995 - HYGROPHORUS CHRYSASPIS Metrod

(from Georges Métrod, No. 557, Sept. 1935)

Spores 7-8.5 (9) x (3.5) 4-4.5 (5) μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 45-56 x 5.5-7 (8) μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 5-9 μ broad. Cuticle of repent, gelatinous hyphae, an ixocutis 35-70 μ thick. Clamp connections present. Pileus trama radial, interwoven.

This may (or may not) be part of the type; I am uncertain.

HYGROPHORUS CHRYSASPIS Métrod

Collected and determined by M. Josserand, Lyon, France, 1959.

Spores 7-8 x 3.5-4.5 μ, ellipsoid, smooth, pale yellow or nearly colorless in Melzer's reagent. Basidia 44-52 x 5-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3.5-7 (8) μ broad. Pileus trama radial. Cuticle an ixocutis with some more or less erect hyphae. Clamp connections on the cuticular hyphae.

At my request, M. Josserand sent one carpophore of H. chrysaspis. In all respects it is the same as several collections by both Smith and me, as follows:

Hesler's Nos. 4450, 4452, 9648, 10907, 19438, 22212, 22704.

Smith's Nos. 6060, 39697, 44056, 57873, 58115, 58119, 58120, 58121, 58122.

Sm-44056 HYGROPHORUS CHRYSASPIS Métrod

Under hardwoods, Mackinaw City, Mich.
October 13, 1953

Spores 7-9 x 4-5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 42-54 x 6-7 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 6-10 μ broad, with both long and short cells (latter 10-20 μ in length). Cuticle a zone 100-225 μ thick, of fuscous, broad (6-12 μ), interwoven hyphae, an ixocutis. No hypodermium. Pileus trama of parallel, radially disposed hyphae. Clamp connections on the cuticular and pileus trama hyphae.

Sm-57873 HYGROPHORUS CHRYSASPIS Métrod

Notes by Smith

Pileus 2-4 cm. broad, convex to obtuse with an inrolled margin, surface glutinous, matted-fibrillose beneath the gluten, dull white over all, but gradually "pale pinkish buff" over all with watery yellowish (dingy "cartridge buff") areas showing, opaque at all stages. Context watery yellowish white, unchanging or finally yellowish when bruised; taste mild, odor not distinctive (merely faintly fragrant).

Lamellae adnate to broadly adnate, white when young, "ivory yellow" over all in age, becoming near "napthalene yellow" where bruised, subdistant to close.

Stipe 4-6 cm. long, 4-8 mm. thick, equal, narrowed to a point below, dull white over all at first, glutinous, glabrous, apex pruinose-punctate and beaded with pale yellow drops; becoming "pale pinkish buff" or yellow over all or where bruised.

Spores 7-9 x 4 μ. Basidia 4-spored. Cheilocystidia none. Gill-trama divergent. Cuticle a tangled mass of narrow, gelatinous, hyaline hyphae. Clamp connections at cross-walls on cuticular hyphae.

Notes by Hesler

Spores 7-8 (9) x 3.5-4 μ, ellipsoid to suboblong, smooth, pale yellow in Melzer's reagent. Basidia 39-56 x 5-7 μ, 4-spored. Gill-trama divergent, hyphae 4-7 μ broad. Cuticle of narrow, gelatinous hyphae. Clamp connections present on the cuticular and pileus trama hyphae.

Sm-58115 HYGROPHORUS ~~MELIZEOIDES~~ *Chrysaspis Metrod*

Spores 7-8 x 3.5-4 (4.5) μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 38-52 x 6-7 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-11 μ broad. Cuticle a broad (180-300 μ) gelatinous zone of colorless hyphae, the surface hyphae repent and brownish in KOH. Clamp connections present on the cuticular hyphae. - L. R. Hesler, Apr. 28-'60

Cf. H. chrysaspis Metrod.

Sm-58119 HYGROPHORUS ~~MELIZEOIDES~~ chrysaspis Metrod

Notes by Smith

Pileus 3-7 cm. broad, convex with an incurved margin, becoming depressed with a spreading margin, surface glutinous, snow-white becoming yellowish in age especially on disk, margin cottony and often slightly ribbed. Flesh white, soft, staining yellow where injured (1/2 hour), odor fragrant, taste mild, stains orange then dingy yellow in KOH.

Lamellae subdistant, broad, broadly adnate to short decurrent, white, staining yellow.

Stipe 5-10 cm. long, 8-12 mm. thick, at apex, crooked, solid, beaded with hyaline drops above, glutinous over lower part, staining yellowish in age, no fibrillose veil seen.

Cespitose-gregarious under hardwoods, Mackinaw City Hdwds, Sept. 14, 1957, A. H. Smith and R. Shaffer 58119.

Notes by Hesler

Spores 7-8 (8.5) x 3.5-4 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia and other characters as in Sm-58115.

Cf. H. chrysaspis Metrod

Sm-58120 HYGROPHORUS ~~MELIZEOIDES~~ Chrysopis Métrod

Same as 58119.

Spores 7-8 x 3.5-4.5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 36-50 x 5-7 μ, 2- and 4-spored. Gill-trama divergent, hyphae 4-11 μ broad. Cuticle a broad gelatinous zone, the surface hyphae repent, brown in KOH.

#4450 HYGROPHORUS CHRYSASPIS Métrod

on soil, under beech, Oliver Springs, Oct. 7-1934 - LRH

Pileus 2-5.5 cm. broad, convex and broadly umbonate, becoming convex-expanded to expanded-plane, white, viscid or glutinous, covered with a whitish shining silkiness, margin involute and floccose-pubescent (when young). Flesh thick under disk, thin at margin, firm, white. Gills adnate to adnate-decurrent, subdistant, broad (up to 5 mm.), broadest behind, narrowed in front, arcuate at first, venose at cap, white, dingy yellowish in age, dark red when dried.

Stipe 4.5-10 cm. x 2-5 (9) mm., subequal, base often tapering, subradicate, flexuous, glutinous, silky shining (as cap), stuffed then hollow, apex dotted with white dots or squamules, white dingy in age.

Spores elliptic-cylindric, 6.5-8 (9) x 3.5-5 μ, apiculate. Basidia 38-50 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama of divergent hyphae. Cuticle of gelatinous hyphae, a few more or less erect elements. Clamp connections on cuticular hyphae.

24001 HYGROPHORUS CHRYSASPIS Métrod

(from France. Coll. & det. H S C Huijsman, of Cernier, Switzerland. UT-24001)

Spores 7-9 x 4-5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 42-50 x 6-7 μ, 4-spored. Pleurocystidia none. Gill trama divergent, hyphae 5-8 μ broad. Cuticle a brownish zone of gelatinous hyphae, - some more or less erect.

This agrees well with UT-23995, from Métrod.

HYGROPHORUS CHRYSASPIS Métrod

(from Kew Herb., under beech, Askridge, Aldburg, Herts., D. A. Reid, Sept. 5, 1954)

Spores 7-9 x 4-5 (5.5) μ, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 46-52 x 6-8 μ. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 5-10 μ broad. Cuticle a gelatinous zone of brownish hyphae, some hyphae more or less erect. Clamp connections present on cuticular hyphae. Pileus trama of radially disposed hyphae.

This material resembles other collections I have seen from U. S. and Europe.

(from Kew Herb. Coll. E. M. W. 14-10-36, Gloucester)

This is labelled H. cossus, but is without question H. chrysaspis, and agrees with the above coll.

4452 HYGROPHORUS CHRYSASPIS Metrod

On soil, under beech, Oliver Springs, October 14, 1934

Pileus 2-4 cm. broad, convex, viscid, white with an ivory tint, drying pale dingy brown, disk darker, margin involute, pubescent.

Lamellae white, drying dark reddish.

Stipe white, drying dingy.

22704 HYGROPHORUS CHRYSASPIS Metrod

In deciduous woods, Cades Cove, Oct. 19, 1957.

Pileus dried clay color or darker, the disk usually darker. Lamellae dark reddish. Stipe dingy.

Spores 6-8 x 3.5-4.5 μ, ellipsoid, smooth white in deposit, yellowish in Melzer's.

19438 HYGROPHORUS CHRYSASPIS Metrod

Under beech, Sept. 25, 1949

Pileus dried brown with a reddish tint, disk darker to blackish. Lamellae dried dark reddish. Stipe dingy.

Spores (6) 7-8 x 4-4.5 μ, ellipsoid, smooth, pale yellow in Melzer's. Basidia 40-48 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-9 μ broad. Cuticle an ixocutis of brownish hyphae, some more or less erect. Clamp connections present. Pileus trama chiefly of radial hyphae.

9648 HYGROPHORUS CHRYSASPIS Metrod

Under beech, Oliver Springs, Tenn., Oct. 25, 1936

Pileus and gills white when fresh. On drying the pileus become partially or wholly reddish-brown, the disk often darker, and the gills become purplish-brown.

Spores 7-8 x 3.5-4.5 μ, ellipsoid, smooth. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 3-5 μ broad. Basidia 34-43 x 6-8 μ, 4-spored. Cuticle an ixotrichodermium. Clamp connections present.

22212 HYGROPHORUS CHRYSASPIS Metrod

In beech woods, Nale's Creek, Oct. 30, 1955

Pileus 2-7 (10) cm. broad, obtuse to convex, then plane or umbonate, in age the margin sometimes elevated and the disk depressed, pure white over all, when dried "clay color" to "tawny", the disk darker, glutinous to viscid, glabrous or with a whitish shining silkiness, margin even and at first involute and floccose-pubescent. Context white, thick on the disk, thin toward the margin; odor and taste mild.

Lamellae somewhat arcuate at first, soon decurrent, subdistant to distant, moderately broad, broadest near the stipe, narrowed in front, pure white, when dried reddish-brown.

Stipe 4.5-15 (18) cm. x 2-8 (15) mm., equal to somewhat tapered downward or with a greatly attenuated almost veriform base, flexuous, glutinous, silky beneath the gluten; apex fibrillose, punctate or minutely squamulose, pure white, at times becoming sordid in age, stuffed then hollow.

Spores 6-8 (9) x 3.5-5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent, white in mass. Basidia 42-52 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama of divergent hyphae, 7-12 μ broad. Cuticle of repent hyphae, often with a few to many erect or ascendant free ends; clamp connections present.

HYGROPHORUS CHRYSASPIS Metrod

Rev. Myc. Paris 3:153. 1938

(At Kew I saw a collection by Reid, from Askridge, Sept. 5, 1954. It resembles our specimens in which the gills have turned dark-red, and which we may have filed as H. eburneus. The lamellae dry reddish-brown to blackish; the pileus was when fresh, white but, on drying, became rusty-brown (especially if the specimens were ~~are~~ kept for a day or more.) It can be separated from H. eburneus by staining brown in strong bases (KOH, etc.). Reid apparently thinks H. chrysaspis is the same as H. melizeus Fr. sensu Ricken.)

HYGROPHORUS EBURNEUS var. COSSUS (Sow.) Fr.

(from Kew Herb., Reid 18-9-52. Station-name not legible)

Spores 6-8 (9) x 4-5 μ, ellipsoid, pale yellow in Melzer's. Basidia 40-50 x 6.5-8 μ. Pleurocystidia and cheilocystidia none. Gill trama divergent, 6-11 μ broad. Cuticle more or less an ixocutis. Pileus trama interwoven, more or less radially disposed.

Sm-54207 HYGROPHORUS COSSUS Fr.

Spores 7-9 x 4.5-5 (5.5) μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 41-57 x 7-8 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-9 μ broad. Cuticle a broad, gelatinous zone. Clamp connections on the hyphae of the pileus trama.

I am not familiar with the odor. Some say the odor is strong; others say it is fragrant.

Omit?

HYGROPHORUS DICHROUS Kühner & Romagnesi

Flore Anal. des Champ. Superieurs, p. 60. 1953

(from K. & R.)

Pileus 4-6 cm. broad, dirty brown or greyish, more or less mixed with glaucous or olive, disk darker, the cuticle with two pigments under the microscope: (1) one, intracellular, brownish or tawny olive; (2) the other, extracellular, forming at the surface of certain hyphae small irregular masses, black or olive-black, turning blue or intense blue-green by ammonia (in some cases green in KOH or NH_3), viscid.

Lamellae white.

Stipe apex white, powdery-flaky, elsewhere often variegated with olive-brown flakes, viscid. Veil fibrillose-glutinous.

Spores 9-13 x 5-7.5 µ.

Observations. - This seems to be near olivaceo-albus which, however, lacks the peculiar extracellular pigment which is green in NH_3. But, the blue-green reaction is not constant for British material, according to Orton (1960). Moreover, as Orton points out, Kühner & Romagnesi gave no Latin description.

UT-23861 HYGROPHORUS DICHROUS

(from Netherlands, Bas-955)

Notes by Bas

Cap 30-70 mm. Ø, dark brown, dark olivaceous brown, near margin soon paler, pale greenish grey-brown, glutinous.

Gills pale greenish yellowish.

Stalk 55-85 x 4.5-10 mm., pale greenish yellowish at apex, with glutinous covering and musty brown scales below.

Notes by Hesler

Spores 9-11 x 4.5-5 µ, ellipsoid, smooth, pale yellow in Melzer's. Basidia 48-60 x 8-11 µ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama nearly parallel, only slightly divergent. Cuticle a broad zone (75-240 µ) of gelatinous hyphae, the outermost dark brown, the subjacent hyphae colorless and loosely interwoven. Pileus trama radial. (Did you (Bas) get a green color reaction of the cuticle to KOH when fresh?)

HYGROPHORUS DICHROUS K. & R.

(from Kew Herb. Dennis, under Quercus, Huntingdonshire, England, Oct. 15, 1960)

Spores 9-11 x 5-6 μ, ellipsoid, smooth, pale yellow in Melzer's. Basidia 42-54 x 6-7 μ. Pleurocystidia and cheilocystidia none. Gill trama divergent from a conspicuous mediostrate, hyphae 6-12 μ broad. Cuticle a conspicuous ixotrichodermium, hyphae fuscous, with clamp connections.

A. H. Smith's Collections of "H. discoideus"

1. True discoideus (glutinous universal veil; stipe base glutinous)

   Sm-53229, in swamp, Idaho, September

   Sm-58240, Michigan, September, "Gills grayish"

   Sm-47083, Idaho, August

   Sm-52637, Colorado, August

2. Possibly H. leucophaeus Fr. (dry stipe)

   ~~Sm-(not numbered), Idaho, September~~

   ~~Sm-52637, Colorado, August~~

   Sm-52634, Colorado, August

   Sm-56488, California, December

Sm - 47083 HYGROPHORUS DISCOIDEUS Fr.

Spores 5.5-7.5 x 3.5-4.5 μ, ellipsoid, smooth, yellow in Melzer's. Basidia mostly 4-spored, some 2-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent. Cuticle of pileus a gelatinous zone. Cuticle of stipe a narrow gelatinous zone as in Sm - 52634 and 52637. (which, on the label, are marked "no gluten").

Sm - 52634 HYGROPHORUS DISCOIDEUS Fr.

Spores 5.5-8.5 x 3.5-4.5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 44-57 x 6-7 μ, mostly 4-spored, a few 2-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 5-11 μ broad. Cuticle of pileus gelatinous, zone 70-100 μ broad. Clamp connections present on the cuticular hyphae (of both the pileus and stipe).

Sections at the base of the stipe showed a narrow gelatinous zone.

See notes Sm - 47083.

Sm - 52637 HYGROPHORUS DISCOIDEUS Fr.

Spores 7-8 x 3.5-4.5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 46-62 x 5.5-7 μ, mostly 4-spored, a few 2-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 5-12 μ broad. Cuticle a distinct gelatinous zone of more or less appressed hyphae, the zone 70-100 μ thick. Clamp connections present on the cuticular and pileus trama hyphae.

Sections toward the base of the young stipe showed a narrow gelatinous zone on the surface.

HYGROPHORUS DISCOIDEUS Fr.

Collection from Rees' Bog, Burt Lake, Cheboygan, Michigan, by Smith, 1247, October 11, 1934.

Spores 5.5-7 x 3.5-4.5 μ, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 40-56 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 5-10 μ. Cuticle of gelatinous hyphae. Clamp connections present in the cuticle.

Kühner and Romagnesi, page 57, give H. discoideus Fr. as a synonym of H. leucophaeus Fr. They give its spores 6.5-8.7 x 3.5-4.5 μ. Smith (key) recognizes both species. H. leucophaeus having a dry stipe and H. discoides a viscid stipe.

9578 HYGROPHORUS EBURNEUS Fr.

in mixed hardwood
New Hopewell, 10-17-36

Pileus 2.5-4.5 cm. broad, white, disk darker (near Isabella Color or light brownish olive, R.), convex, finally plane or slightly depressed, covered by a transparent heavy gluten, margin even or slightly crenate. Context white, thick on disk, thin on margin.

Lamellae white, arcuate (at first), decurrent, subdistant, broader inward, narrowed in front, venose.

Stipe 3-8 cm. x 5-8 mm., white, tapering downward, flexuous, glutinous, glabrous except apex which is squamulose, solid then hollow-stuffed.

Spores 5.5-7 x 3-4.5 μ, ellipsoid. Basidia 40-50 x 6-7 μ. Gill trama divergent, cells 5-7.5 μ diam.

11010 HYGROPHORUS EBURNEUS Fr.

Under pine, Kirby, Oregon, Nov. 26, 1937, Sm-9098

Pileus dried "warm buff", disk at times darker. Lamellae dried "light ochraceous buff". Stipe dingy.

Spores 7-8 (9) x 4-4.5 (5) μ, ellipsoid, smooth, pale yellow in Melzer's. Basidia 38-47 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 3-6 μ broad. Cuticle an ixotrichodermium (more erect hyphae than normally found). Clamp connections present.

HYGROPHORUS EBURNEUS Fr.

H-13052

Pileus dingy buff. Lamellae dingy brownish. Stipe dingy brownish.

Spores 7-8 x 3.5-4.5 μ, ellipsoid, smooth, pale yellowish in Melzer's. Basidia 38-47 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, 4-8 μ broad. Pileus trama radial. Cuticle of colorless, loosely interwoven hyphae. Clamp connections present.

17253 HYGROPHORUS EBURNEUS Fr.

on soil, pine woods

Pileus 2.5-5 cm. broad, convex, glutinous, white, (dried: "light buff"), disk pale yellowish-brown, glabrous, even. Context thin, pliant, white; odor and taste mild.

Lamellae adnate-decurrent (often by a long tooth), medium close, not forked, white, unchanging, ("light ochraceous buff" when dried).

Stipe 3-5 cm. x 7-10 mm., equal white, viscid, glabrous below, apex white-mealy to floccose, hollow.

Spores 6.5-8 x 4-4.5 microns, ellipsoid, smooth, pale yellow in Melzer's. Basidia 43-50 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-10 μ broad. Pileus trama of radial hyphae. Cuticle an ixocutis, few or no erect hyphae. Clamp connections present.

HYGROPHORUS EBURNEUS Fr.

Under hemlock, Nordman, Idaho, Oct. 9, 1956, Sm-54348.

Pileus dead white. Lamellae dingy yellowish. Stipe dingy. Small, rather young carpophores.

Spores 6-7.5 x 3.5-4 μ, few, ellipsoid, smooth, nearly colorless in Melzer's. Basidia 40-48 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 2.5-6 μ broad. Pileus trama of radial hyphae. Cuticle a gelatinous zone with colorless loosely interwoven hyphae, some more or less erect. Clamp connections present.

HYGROPHORUS EBURNEUS Fr.

Sm-55423, in mixed hardwoods and conifers, Grant's Pass, Oregon, Nov. 10, 1956. No notes.

The dried specimens: Pileus "naples yellow" or "cream color." Lamellae "warm buff". Stipe dingy.

Spores 7-8 (9) x 4-4.5 (5) μ, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 43-52 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 3-6 μ broad. Pileus trama of radial hyphae. No hypodermium. Cuticle a gelatinous zone with colorless, loosely tangled hyphae, some free ends more or less erect. Clamp connections present.

UT-23836 HYGROPHORUS EBURNEUS

(from Netherlands)

Notes by Bas

Cap white with pale ochraceous or brownish centre, glutinous.

Gills white.

Stalk white, yellowish brownish at base, slightly viscid, with granular scale and drops at apex.

Smell faint, somewhat like butyric acid.

Notes by Hesler

Agrees well with material here.

HYGROPHORUS ELEGANTULUS Pk.

Type: Collected by T. Taylor, Maryland, November.

Spores 7-10 x 4.5-5.5(6.5) μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 38-45 x 6-7 μ, 4-spored. Pleurocystidia and Cheilocystidia none. Gill trama divergent, hyphae 4-6 μ broad. Cuticle of the pileus a broad zone (275-400 μ) of slender (2-3 μ broad) gelatinous hyphae, the outer portion of the zone brownish, the inner portion colorless. Stipe cuticle similar to that of the pileus. Clamp connections present on the cuticular hyphae of the pileus and the stipe.

The single carpophore somewhat resembles H. paludosus in general appearance. The pileus has been almost skeletonized by insects so that the preparation of sections was tedious.

HYGROPHORUS ERUBESCENS var. GRACILIS Sm. & Hes.

Type: under pine, Oregon, November 20, 1935, collected by Smith n. 3564.

Spores 8-11 x 5.5-6 (7) μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 43-62 x 7-10 μ, rarely 2-spored, usually 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-7 μ broad. Cuticle of gelatinous hyphae. Clamp connections present in the cuticle, the gill-trama, and the subhymenium (at the base of the basidia).

HYGROPHORUS FLAVODISCUS Frost

Type: in pine woods, West Albany, November.

Spores 6-8 x 3.5-5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 34-52 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-8 μ broad. Cuticle a gelatinous zone 180-350 μ thick, with tangled, embedded, colorless, narrow (3-5 μ) hyphae, with a conspicuous, surface, yellow pigment-deposit. No hypodermium. Pileus trama hyphae disposed both radially and periclinally. Clamp connections present in cuticle.

HYGROPHORUS FLAVODISCUS Frost

(U-T 23679)

Spores 7-8 (9) x 4-5 μ, ellipsoid, smooth. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-7 μ broad. Basidia 43-52 x 6-7 μ, 4-spored. Cuticle a gelatinous zone, 130-250 μ thick, with colorless, loosely interwoven, imbedded hyphae, with a surface yellow pigment-deposit. No hypodermium. Pileus trama chiefly of radial but also some periclinal hyphae. Clamp connections present.

Sm-62127 HYGROPHORUS FLAVODISCUS Frost

Spores 7-8 x 4-4.5 μ, ellipsoid, smooth. Pleurocystidia and cheilocystidia nome. Basidia 43-50 (58) x 6-8 μ, 4-spored. Gill trama divergent, hyphae 4-8 μ broad. Cuticle a gelatinous zone, 175-400 μ thick, with colorless, loosely interwoven hyphae, inter- and intracellular yellow-deposit throughout the gelatinous zone. No hypodermium. Pileus tramal hyphae mostly radial, some periclinal. Clamp connections present.

HYGROPHORUS FLAVODISCUS Frost

Bigelow-7958

Spores 6-8 x 3.5-4.5 μ, ellipsoid, smooth. Basidia 43-50 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-7 μ broad. Cuticle a broad (200-350 μ) gelatinous zone, hyphae colorless, imbedded, narrow, with a yellow pigment throughout the zone. Pileus trama chiefly of radial hyphae, some periclinal. Clamp connections present.

(Copy: Josserand's letter)

Lyon, ce 29-3-1960

Dr. H. E. Bigelow,
University of Massachusetts
Amherst, Massachusetts

Dear Dr. Bigelow:

I have re-read carefully what you have written about Hygrophorus flavodiscus in "Interesting Fungi from Massachusetts."

1. I know H. chrysaspis Métrod (melizeus sensu Ricken, non Fr.; cossus Bresadola non al.) It is certainly a species different from your H. flavodiscus.

2. I know gliocyclus and I have a good deal of difficulty in thinking it is different from your flavodiscus. As a difference you stress narrow lamellae for gliocyclus. It is true that Fries says "Lamellae. . . sub-narrow, white. . ." but (in) my collections I have observed: "Lamellae . . . rather broad (see the enclosed drawing), cream, cream-yellow with almost a suggestion of incarnate." This does not go badly for your flavodiscus. As for spores, I have observed 7.5-9 x 4.5-6 µ." I have noticed in my herbarium: the pileus has become a warm ochraceous.

As (in my) drawing, my gliocyclus entirely resembles your flavodiscus as represented in your photograph. In the plates (illustrations) of gliocyclus, those of Bresadola (Ic. Myc.) and of Konrad-Maublanc (Ic. Sel. Fung.) are clearly acceptable. On the contrary, that of Gilbert, in Bull. Soc. Myc. de France, 1927, Atlas, Pl. XX, is very good (but in his collections the lamellae are more narrow than in mine!).

I understand (feel) that it is always necessary to be very cautious before inferring synonomy between two species, one from Europe and the other from North America. I often question "parallel" or related species, or "geographic forms". Moreover, I do not hazard a guess that flavodiscus (is) gliocyclus, but if (they) are not identical they are certainly very closely related. It is at least a strong guess (opinion). . . .

M. Josserand

HYGROPHORUS FRAGRANS Murr.

Type: in low coniferous woods, near Corvallis, Oregon, November 6-11, 1911, W. A. Murrill, 1909.

Spores 7.5-9.5 x 4.5-5.5 μ, ellipsoid, smooth, non-amyloid (colorless in Melzer's reagent). Basidia 44-52 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama of divergent hyphae. Epicutis of loosely tangled, gelatinous hyphae. Clamps present on the hyphae of the epicutis and the gill-trama.

HYGROPHORUS FRAGRANS f. PALLIDUS Sm. & Hes.

Type: under hemlock and redwood, California, December 1, 1935, Smith n. 3685.

Spores none found. Basidia none found. Gill-trama divergent, hyphae 4-7 μ broad. Clamp connections present in the gill-trama, pileus-trama, and the cuticle.

HYGROPHORUS FULIGINEUS Frost

Type: in pine woods, West Albany, Charles H. Peck, November.

Spores 8-9 (12) x 4-5.5 (7) μ, several 10-12 x 5-6 μ, ellipsoid to subovoid, smooth, yellow in Melzer's reagent. Basidia 38-55 x 6-8 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama of divergent hyphae, 3-6 μ broad. Cuticle of gelatinous, loosely-tangled hyphae. Clamps present.

HYGROPHORUS FUSCOALBOIDES sp. nov.

Pileus 5-7 cm. latus, convexus demum planus, cinereus, viscidus; lamellae subdecurrentes, albae, subdistantes, latae; stipes 3.5-5 cm. longus, 8-10 mm. crassus, cinereus, siccus, fibrillosus; velum glutinosum; sporae 9-13 x 5.5-7 μ. Specimen typicum in Herb. Univ. Mich. conservatum; lectum prope Cape Horn Summit, Idaho, Aug. 25, 1954, A. H. Smith n. 46726.

Sm-46726 HYGROPHORUS FUSCOALBOIDES sp. nov. Type

(Notes by A. H. Smith)

Pileus 5-7 cm. broad, conic becoming more or less plane, gray, streaked, viscid. Context medium thick on disk, thin on margin; odor slight, taste mild.

Lamellae subdecurrent, white, broad, subdistant.

Stipe 3.5-5 cm. long, 8-10 mm. thick (20 mm. at base), gray, white above, fibrillose beneath line where veil breaks, dry (viscid near cap-margin from cap-gluten), clavate to equal. Veil glutinous (in buttons).

Notes by Hesler

Spores 9-13 x 6-7 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 48-62 x 8-10 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-8 μ broad. Cuticle a gelatinous zone 140-200 μ thick. Clamp connections present on the cuticular hyphae.

HYGROPHORUS FUSCOALBOIDES SP. NOV.

Sm-46904

Spores 10-13 x 5.5 -7μ, ellipsoid, amooth, pale in Melzer's reagent. Basidia 48-62 x 7-9(10)μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-10μ broad. Cuticle a gelatinous zone 120-180μ thick. Clamp connections present on the cuticular hyphae.

Payette North Forest, Ida., Smith, Aug. 27 - '54.

Dry stipe places this in ~~Fall~~ Fuscoalboides.

HYGROPHORUS FUSCOALBUS (Lasch) Fr.

Collected by Charles H. Peck, North Elba, Essex County, New York, September.

Spores 7.5-9 x 4.5-5.5 μ, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 42-56 x 7-9 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama of divergent hyphae, 3-7 μ broad. Cuticle of gelatinous hyphae. Clamps present in the gill-trama.

Moser gives the spores 10-13 x 5-7 μ for H. fuscoalbus. Possibly Peck's collection (above) which he called H. fuscoalbus is in reality H. pustulatus.

Smith's collection (No. 47140) has spores 9-12 (13) x 5.5-7 μ.

This may be H. pustulatus.

Sm-59445 HYGROPHORUS FUSCOALBUS (Lasch) Fr.

Notes by Smith

Gregarious under conifers, Heavens Gate Ridge, 7-Devils Mts., Idaho, August 2, 1958, A. H. Smith 59445, possibly associated with Abies ~~of~~ P. contorta, P. albicaulis; and Picea Englemanii also there.

Pileus 2-4 cm. broad, convex with an incurved margin, expanding to broadly convex or nearly plane, surface glabrous, viscid, pale drab gray on disk and paler to whitish along the margin, margin irregular in age; flesh thick, white, unchanging in age or when bruised, odor and taste none.

Lamellae close, broad, broadly adnate to short-decurrent, white with a pale pinkish buff reflection, edges even.

Stipe 4-6 cm. long, 8-13 mm. at apex, enlarged downward, solid, firm, white over all and throughout, unchanging, surface minutely pruinose to unpolished.

Spores 9-12 x 5.5-6.5 μ. Basidia 4-spored. Gill-trama divergent. Cuticle of narrow gelatinous loosely interwoven hyphae with clamps.

Notes by Hesler

Spores 9-12 x 5-6 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 46-64 x 7-9 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent,

hyphae 4-8 μ broad. Cuticle a zone, 150-250 μ thick, of colorless, more or less interwoven hyphae, the layer resting on a brownish opaque zone. Clamp connections present on the cuticular hyphae of the pileus and stipe. Stipe cuticular brown somewhat gelatinous.

The colors, fresh and dried, the close lamellae, and the slightly viscid stipe strongly suggest fuscoalbus rather than morrisii.

Sm-47140 HYGROPHORUS FUSCOALBUS (Lasch) Fr.

Spores 9-12 (13) x 5.5-7 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 52-77 x 7-9 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 6-12 μ broad. Cuticle a gelatinous zone 90-120 μ thick. Clamp connections present on the cuticular hyphae.

HYGROPHORUS FUSCO-ALBUS var. OCCIDENTALIS Kauff.

Type: in 3rd woods, Ann Arbor, Michigan, August 23, 1912, Kauffman. (Part of type in Univ. Tenn. Herb. #12499)

Spores: 5.5-8 x 3-4.5 μ, ellipsoid, smooth, colorless or only faintly yellowish in Melzer's reagent. Basidia 36-43 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-6 μ broad. Cuticle a zone of gelatinous hyphae which are tangled and variously disposed. Clamp connections present on the cuticular hyphae. No hypodermium. Pileus trama of radial hyphae which are more or less parallel.

HYGROPHORUS GLIOCYCLUS Fr.

Collections, in pine woods, Woodson, Knoxville, Tennessee, Hesler 20241.

Spores 8-11 x 5-6, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 46-57 x 6-8 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-6 μ broad. Cuticle a rather thick layer (125-250 μ thick) of gelatinous hyphae, the surface hyphae yellowish to brownish and appressed. Clamp connections present in the cuticle.

A collections by Kanouse, determined Kauffman (U-T 12502) from Wyoming, September 7, 1923, has spores 7-9 x 4-5 μ.

Sm-46284 HYGROPHORUS GLIOCYCLUS Fr.

Spores 8-10 x 4.5-5.5 (6) μ, ellipsoid, smooth. Basidia 48-60 x 7-9 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-8 μ, often up to 16 μ. Cuticle as in flavodiscus: a gelatinous zone, 275-400 μ thick, hyphae imbedded, loosely interwoven, colorless, but with a yellow deposit throughout the zone. No hypodermium. Pileus trama hyphae chiefly radial, some periclinal. Clamp connections present.

HYGROPHORUS HYACINTHINUS ~~(Q.)~~ Quél.

Included in Smith's Key. I have seen no specimens and no notes. Is it near agathosmus?

HYGROPHORUS HYPOTHEJUS Fr.

Collection: on soil, under pines, Knoxville, January 10, 1953, Hesler 20763.

Spores (from deposit) 7-9 x 4-5 μ, ellipsoid, smooth, bright yellow in Melzer's reagent. Basidia 42-60 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-7 (10) μ broad. Cuticle of gelatinous hyphae. Clamp connections present in the cuticle and gill-trama.

HYGROPHORUS HYPOTHEJUS Fr.

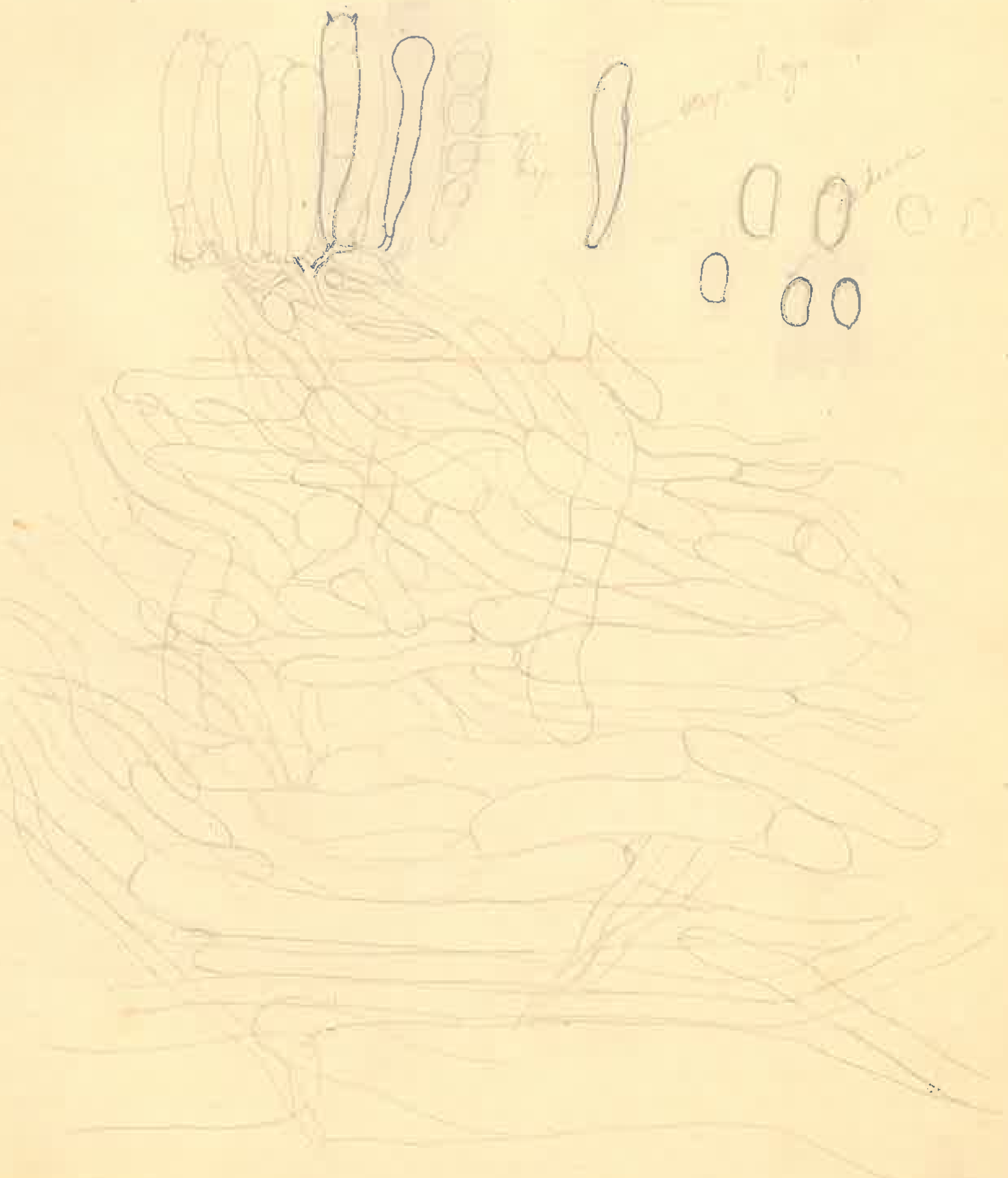
(from Kew Herb. Under conifers, Kent, England, Reid, Oct. 30, 1960)

Spores 7-9 x 4-5 μ, ellipsoid, yellowish in Melzer's. Gill trama divergent from a more or less conspicuous mediostrate. Cuticle an ixotrichodermium, broad, conspicuous, with clamp connections.

Hygrophorus hypothejus Fr.

#17

Tramal cells interwoven but with the general impression of divergence, in both younger and older specimens. 17 µ 18 µ Sterigmata ca 5-6 µ



HYDROCYBE ARENICOLA Murr.

Mycologia 4:208. 1912

List by Murrill as a synonym of H. hypothejus Fr.

in N. A. Flora 9:394, 1916.

Type not located by Dr. Clark T. Rogerson (see letter to Hesler dated Feb. 26, 1960)

UT-23839 HYGROPHORUS HYPOTHEJUS VAR. AUREUS (Arrh.) Imler
Bull. Soc. Myc. Fr. 50: 305. 1934
(from Netherlands)

Omit!
Smith agrees.

Notes by Hesler

This agrees, structurally, with hypothejus var. hypothejus: spores 7-9 x 4-5 μ, ellipsoid. Pleurocystidia and cheilocystidia none. Gill trama divergent. Cuticle a thick (150-300 μ) cuticle of gelatinous hyphae. No well-developed hypodermium. Pileus trama hyphae disposed both radially and periclinally. I assume this is H. hypothejus var. aureus (Arrh. apud Fr.) Imler. I am not sure that I have seen it here.

Is this the same as H. aureus Arrh. apud Fr.?
Must be!

HYGROPHORUS INOCYBEFORMIS Smith ~~sp. nov.~~

Spores 9-14 x 6-8 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 50-72 x 8-11 μ, 4-spored, sterigmata stout (up to 11 μ long). Pleurocystidia and cheilocystidia none. Gill trama slightly divergent, hyphae 4-10 μ broad. Cuticle of more or less erect bundles of septate, fuscous hyphae, the terminal elements with rounded apices (much as in the miniatus-turundus group). Clamp connections present on the cuticular hyphae.

Habit, habitat, and distribution. - On soil, Idaho, July-October.

Material studied. - IDAHO: Smith and Bigelow 46729; 46930; Bigelow 47162; Smith 47067, 54760, 59327, 59882, 60104, 60728. 15919 (type from Pick Creek Summit, Idaho National Forest, Sept. 1943)

Observations. - No. 60104, when collected, was very pale becoming gray, staining ochraceous on the margin. No. 54760 is a slender form, but it has the large spores typical of the other collections.

Sm-46930 HYGROPHORUS INOCYBEFORMIS Smith ~~sp. nov.~~.

Spores 9-14 x 6-8 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 50-72 x 8-11 μ, 4-spored, sterigmata stout (up to 11 μ long). Pleurocystidia and cheilocystidia none. Gill trama slightly divergent, hyphae 4-10 μ broad. Cuticle of more or less erect bundles of septate, fuscous hyphae, the terminal elements with rounded apices (much as in the miniatus-turundus group). Clamp connections present on the cuticular hyphae.

Sm-47067

Spores 11-14 x 6-8 μ.

Sm-47162

Spores 10-14 x 6.5-8 μ.

Hygrophorus inocybeformis Smith ~~Sumner~~.

Sm-46930

X1000

HYGROPHORUS KAUFFMANII Sm. & Hes.

Type: in open oak woods, Ann Arbor, Michigan, Smith 6046 (type), October 13, 1936.

Spores 7-9 x 4-5.5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 48-62 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-7 μ broad. Cuticle of slightly gelatinous hyphae. Clamps in the gill-trama and the cuticle.

HYGROPHORUS LARACINUS Pk.

Type: Davis Swamp, Warrensburg, collected by Charles H. Peck, October.

Spores 7-8.5 x 3.5-4.5 (5) μ (Smith says 6-7.5 x 3-4 μ, in Lloydia 5:86), ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 34-46 x 4-5 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-8 μ broad. Cuticle of appressed, somewhat gelatinous hyphae. Clamps present.

HYGROPHORUS LAURAE Morgan

Collection: on soil, in mixed woods, near Montvale Springs, Blount County, Tennessee, by T. H. Jones, determined by A. H. Smith (U-T No. 4459), November 14, 1934.

Spores 5.5-7 (8) x 3.5-4.5 μ, ellipsoid, smooth, pale yellowish in Melzer's reagent, white in mass. Basidia 38-53 x 5-7 μ, some 2-spored, mostly 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-7 μ broad, with the cuticular hyphae imbedded. Clamp connections present in the cuticular and the gill-trama hyphae.

HYGROPHORUS LEUCOPHAEUS Fr.

Epicr. Myc., p. 323. 1838

Illustration:

Lange, Flora Agar. Dan., pl. 163, fig. G.

Pileus 2-5 cm. broad, slightly umbonate, depressed when old, pale gilvous to orange-brownish, shading to white at the margin, disk deeper fulvous-flesh, silky, viscid, margin even.

from J. Lange

Lamellae somewhat decurrent, color similar to pileus margin.

Stipe 4-7 cm. long, 4-7 mm. thick, tinged like the pileus, dry.

Based on Sm-52634 from Colorado

Spores 5.5-8.5 x 3.5-4.5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 44-57 x 6-7 μ, mostly 4-spored, a few 2-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 5-11 μ broad. Cuticle of the pileus a gelatinous zone 70-100 μ or more broad. Pileus trama of interwoven, more or less radial hyphae. Clamp connections present on the cuticular hyphae of both the pileus and stipe.

Habit, habitat, and distribution. - On soil, Colorado and California, August and December; also Europe.

Material studied. - CALIFORNIA: Smith 56488; COLORADO: Smith 52634; BELGIUM: Heinemann 2965; NETHERLANDS: Bas (H-23859). ENGLAND: Dennis, Surrey, Dec. 14, 1947.

Observations. - This species is closely related to H. discoideus in which the stipe is viscid or glutinous. J. Lange (1935-40) says it is often dwarfish, also at times with a slender stipe. Lange also states that it has been described by different authors under different names, H. mesotephrus, H. discoideus, and H. alutaceo-rubens.

Smith's collections ~~cited above,~~ from California and Colorado, agree with one we have ~~that~~ from the Netherlands. ~~The~~ A collection from Belgium is paler, more delicate, and with a slender stipe; otherwise there is essential agreement.

HYGROPHORUS LEUCOPHAEUS Fr.

(from Kew Herb. In beech litter, Surrey, R W G Dennis, 14-12-47)

Spores 6-8 x 3.5-4.5 μ, ellipsoid, smooth, pale yellow in Melzer's. Basidia 42-53 x 6-7.5 μ. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 6-10 μ broad. Cuticle an ixotrichodermium.

HYGROPHORUS LEUCOPHAEUS Fr.

(from Belgium, Heinemann-2965)

Spores 6-8 x 4-5 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 43-51 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-8 μ broad. Cuticle an ixotrichodermium, 250-375 μ thick, of narrow, colorless hyphae. Pileus trama of more or less radial, interwoven hyphae. Clamp connections on the cuticular hyphae.

UT-23859 HYGROPHORUS LEUCOPHAEUS

(from Netherlands, Utrecht)

Notes by Bas

Cap 33-54, at first dingy salmon in centre, much paler near margin, later on becoming pale brown, margin long remaining incurved, surface minutely felty-fibrillose, not viscid. ? (see below)

Gills pale salmon to pale ochraceous salmon.

Stalk 37-55 x 0-10, pale salmon, later on brownish salmon, white pruinose at apex, slightly fibrillose below.

Smell pleasant, sweetish-fruity, difficult to describe. No veil.

Notes by Hesler

Spores 5.5-8 x 3.5-4.5 μ, ellipsoid, smooth, yellowish in Melzer's. Basidia 40-52 x 6-7 μ. Pleurocystidia and cheilocystidia none. Gill trama divergent. Cuticle of pileus a gelatinous zone. Sections of the stipe show no gelatinous cuticular hyphae. This agrees with what we have under this name; near discoideus in which the stipe is viscid.

HYGROPHORUS LIMACINUS Fr.

(Sm-56311)

Notes by Smith

Pileus 3-7 cm. broad, obtusely umbonate with an incurved margin, surface glutinous from a hyaline slime layer, beneath the gluten "sepia" or darker on disc and paler (near "snuff brown") toward the pallid margin, appearing streaked to appressed-squamulose beneath the slime. Context white, odor and taste mild, unchanging when bruised or in age.

Lamellae decurrent, broad, 2-3 tiers of lamellulae, distant to subdistant, white to whitish in age finally watery grayish.

Stipe 6-8 cm. long, 8-12 mm. thick, equal to enlarged downward, solid, white within, surface covered with a thick layer of hyaline gluten to near apex, apex white, remainder slightly grayish from a thin coating of fibrils or no fibrils evident (no distinct inner veil present).

Notes by Hesler

Spores 12-15 x 7-9 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 67-84 x 10-13 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 7-15 μ broad. Cuticle a turf of gelatinous, fuscous hyphae, with clamp connections.

Sm-56347 HYGROPHORUS LIMACINUS Fr.

Spores 10-17 x 6-9 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 58-80 x 9-12 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 6-12 (22) μ. Cuticle gelatinous, fuscous, 300-450 μ thick. Clamp connections present in the gill-trama.

Smith's label says card 56311 (notes), but I have not seen it.

Bresadola gives the spores 9-10 x 5-6 μ. Can Sm-56347 be limacinus?

Moser gives spores 10-14 x 7-9μ, and K.R 9-13 x 5.5-7.5μ.

Sm-56476 HYGROPHORUS LIMACINUS Fr.

Spores 11-15 x 6-8 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 64-92 x 9-14 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 7-14 μ broad. Cuticle a zone 120-180 μ thick composed of brownish gelatinous hyphae. Clamp connections present on the cuticular hyphae.

Check for megasporus

HYGROPHORUS LIMACINUS Fr.

This surely is H. paludosus

Collected by Charles H. Peck, North Greenbush.

Spores 9-10.5 x 5-6 μ, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 40-55 x 7-11 μ, 4-spored. Pl. + ch. none. Gill-trama divergent, hyphae 3.5-5 μ broad. Cuticle of gelatinous hyphae. Clamps present.

The pilei has a glassy appearance, much as dried H. paludosus, but are "warm buff" to "antimony yellow,"-more nearly the color of dried H. gliocyclus.

In Smith's key (page 6), the spores are given as 12-16 x 6-8 μ. Bresadola (7:315) gives spores 9-10 x 5-6 μ.

HYGROPHORUS LIMACINUS? (Sm-27855)

(from Clear Lake, Mt. Hood Nat. Forest, Oregon, Oct. 17, 1947. A.H.S.)

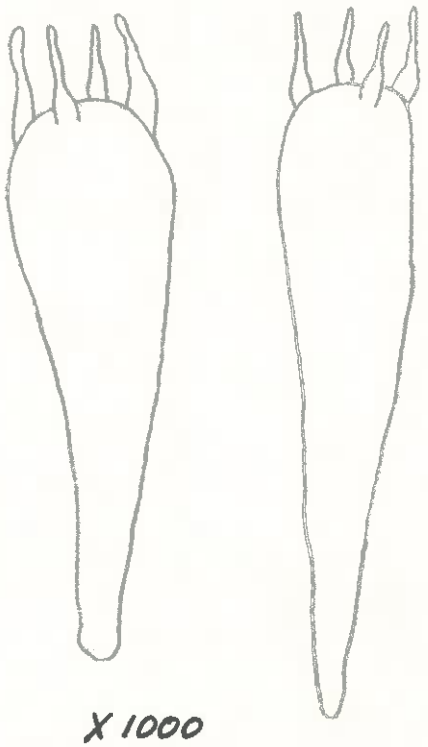
(Notes by Hesler)

Spores 9-11 (12) x 4.5-6 μ, ellipsoid, smooth pale yellow in Melzer's. Pleurocystidia and cheilocystidia none. Gill trama divergent. Cuticle an ixotrichodermium, 200-275 μ thick. No hypodermium. Clamps present. Need full notes.

Spores a bit short for *limacinus*.

Hygrophorus *limacinus* Fr.

Sm - 56476



X 1000

HYGROPHORUS MUCIDUS SP. NOV.

(Sm-52370)

Under spruce, Trout Lake, San Juan Mts., Colo., Aug. 17 - 1956 (Card).

Type

Spores 8-11 (12) x 5-7 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 47-60 x 7-9 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 6-10 μ broad. Cuticle a gelatinous zone 90-140 μ thick, with fuscous, loosely interwoven hyphae, at times repent (ixocutis), or more often more or less erect (ixotrichodermium), hyphae 3-4 μ broad. No hypodermium. Pileus trama of radial, subparallel hyphae. Clamp connections on the pileus cuticular hyphae. Sections of the stipe disclose a broad, gelatinous, cuticular zone, 200-325 μ thick, with loosely interwoven, fuscous hyphae. The cuticular hyphae of the stipe have clamp connections.

~~limacinus~~ var. americanus var. nov.

Hygrophorus Sm-52370 (near olivaceoalbus)

Pileus 3-10 cm broad, convex to plane with an inrolled margin, expanding to slightly umbonate to plane, margin finally uplifted in some, surface glutinous when fresh and streaked beneath the gluten with gray fibrils (paler than "light drab"), in age either streaked or if dried out often slightly squamulose; flesh thick, white, odor none, taste mild.

Lamellae distant to subdistant, decurrent, white becoming pallid ("tilleul buff"), thick, forked and anostomosing, broad, edges even.

Stipe 3-9 cm long, 1-2.5 cm thick, equal, ventricose or narrowly clavate downwards lower two-thirds viscid and with a layer of gray fibrils like those on cap terminating in a superior zone, white and silky above the zone.

Spores 9-12 × 5.5-7 μ, ellipsoid to oblong, hyaline in KOH and yellowish hyaline in Melzer's, smooth but when revived often with refractive material variously distributed just beneath the wall; ~~wall thin;~~ basidia 4-spored, 50-60 × 8-9 μ, with a long flexuous pedicel; pleurocystidia none; cheilocystidia none; gill trama divergent; pileus with a gelatinous cuticle of appressed hyphae 4-6 μ in diam. their content yellowish gray in KOH, beneath this the flesh hyaline and floccose; clamp connections present.

Habit, habitat, and distribution:— Cespitose-scattered under Picea engelmanii, Trout Lake, San Juan Mts. Colorado, Aug. ~~17, 1956. Sm-52370.~~

Observations:— This is essentially a large Hygrophorus of the stature of H. fuligineus but differs in larger spores and a very thin layer of pale gray fibrils beneath the viscid coating of

Material studied.— Colorado: Smith 52370 (type, from Trout Lake, San Juan Mts., Aug. 17, 1956)

of the stipe. In the dried specimens the lower part of the stipe is pale gray (usually paler than the cap) because of this layer. Because of this layer of gray fibrils and the large spores, it would seem to be H. olivaceo albus. However, a species answering well to the description of H. olivaceoalbus is well known to me from the conifer forests of the north coast of California. It hhas an equal (or nearly so) elongated stipe with a conspicuous sheath of dark colored fibrils which breaks up into zones or patches. These two are readily distinguished at sight in both the fresh and dried condition.

Lange (Agar. Danica) comments on a paler form of H. olivaceoalbus which grades into H. limacinus. The Colorado collection certainly fits in this position.

HYGROPHORUS LIVIDOALBUS Fr.

Epicr. Myc., p. 324. 1838

Omit ! (Smith agrees)

Pileus 2.5-5 cm. broad, thin, convex or nearly plane, often irregular or wavy, even, glabrous, viscid, pallid or livid, naked on the margin.

Lamellae distant, adnate or slightly decurrent, white.

Stipe 4-6.5 cm. long, 4-6 mm. thick, slender, nearly equal, glabrous, stuffed, more or less flexuous, whitish, dry.

Spores 6-7.5 x 5-6 μ, subglobose.

Habit, habitat, and distribution. - In woods, rare, New York, September.

Material studied. - NEW YORK: Peck, Voorhees collection.

Observations. - Notes on Peck's collection follow: spores 6-8 x 3.5-4.5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 30-42 x 5-7 μ, four-spored. Pleurocystidia and cheilocystidia none. Gill-trama of divergent hyphae. Cuticle of appressed gelatinous hyphae. Clamps present in the cuticle.

Peck (1907) states that his specimens do not fully agree with the descriptions of the species; in the European plants the spores are larger and more ellipsoid.

Rea (Brit. Basidiomycetae, p. 298) says the spores are 10-11 x 5-6 μ, white. Bresadola, Lange, and others do not treat this species. Bataille (p. 166) gives the spores 9-11 x 6 μ.

We have not seen material from Europe. But, in view of the discrepancy between Peck's description and those of Rea and Bataille, we are assuming that Peck's specimens are incorrectly named. On the proper identity of his collection we are reserving judgment.

HYGROPHORUS LIVIDOALBUS Fr.

Smith agrees that we omit this.

Collection by Charles H. Peck, Voorheesville, October.

Spores 6-8 x 3.5-4.5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 30-42 x 5-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama of divergent hyphae. Cuticle of appressed gelatinous hyphae. Clamps present in the cuticle.

Peck (Bull. 116:54) says the spores are subglobose, 6-7.5 x 5-6 μ. He reports it from Onondaga and Ulster Counties, September, rare, and that in European collections the spores are larger and more elliptical.

Rea (Brit. Basidiomycetae, p. 298) says the spores are 10-11 x 5-6 μ, white. Bresadola, Lange, and others do not treat this species.

Bataille (p. 166) gives the spores 9-11 x 6 μ.

Put in Excluded list + point out that Kalchbr's sp. has a universal veil!

HYGROPHORUS LUCORUM Kalchbr.

Icon. Hymen. Hung., p. 35, 1874

Limacium lucorum (Kalchbr.) P. Henning apud Engler & Prantl 1900

Illustrations:

Bresadola, Icon. Myc., tab. 314.

Kalchbrenner, Icon. Hymen. Hung., t. 19, fig. 4.

Pileus 2-6 cm. broad, campanulate-convex, obtuse or umbonate, explanate or depressed, bright lemon yellow, fading, never fulvous or golden reddish on the disc, viscid, even or rugulose from drying gluten, glabrous, margin often floccose with remnants of the white veil. Context white, lemon yellow under the pellicle, soft, thin on the margin, odor and taste mild.

Lamellae adnate-decurrent, whitish, often lemon yellow toward the margin of the pileus, sometimes entirely lemon yellow, moderately broad, subdistant.

Stipe 3-7 cm. long, 4-12 mm. thick, whitish or pale yellow, equal or irregularly subcompressed, stuffed and soft within, becoming flocculose from the glutinous white veil.

Spores 8-11 x 5-6 μ, broadly ellipsoid, smooth, hyaline. Basidia four-spored. Gill-trama of divergent hyphae.

Habit, habitat, and distribution. - Scattered in boggy places and low woods, Michigan; also in Europe.

Material studied. - BELGIUM: Heinemann 1921.

Observations. - We have not been able to locate Kauffman's collection from which he made the above notes. We have, however, received a collection from Dr. P. Heinemann, Gembloux, Belgium (his No. 1921). Notes on his material follow: spores 7-9 x 4-5.5 μ, ellipsoid, a few ovoid, smooth, yellowish in Melzer's reagent. Basidia 44-52 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama of divergent hyphae, 4-9 μ broad. Cuticle an ixocutis, the zone 75-100 μ or more in thickness. Pileus trama of radial, interwoven hyphae.

It should be readily recognizable by the bright lemon yellow color of the pileus. Nüesch (1922) reports it as growing under larch whereas H. aureus, a species apparently intermediate between this and H. speciosus, is reported as growing under other conifers.

23992 HYGROPHORUS LUCORUM Kalchbr.

(from Belgium, Heinemann-1921)

Spores 7-9 x 4-5.5 μ, ellipsoid, a few ovoid, smooth, yellowish in Melzer's reagent. Basidia 44-52 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama of divergent hyphae, 4-9 μ broad. Cuticle an ixocutis, the zone 75-100 μ or more in thickness. Pileus trama of radial, interwoven hyphae.

Moser (1955) says that the spores are 7-10 x 4-6 μ; the pileus citron-yellow, viscid; the lamellae white than yellowing; stipe slender, pale yellowish, apex whitish, white-flaky from the veil. Kühner and Romagnesi (1953) give spores 8-10 x 4.5-5.5 μ; and the stipe not viscid.

23999 HYGROPHORUS MARZUOLUS (Fr.) Bres.

(from Switzerland. Coll. by - ? Comm. to L H by H S C Huijsman. Mch. 5, 1958)

Spores 6-7.5 (8) x 4-5 μ, ellipsoid, smooth, pale yellow in Melzer's. Basidia 43-52 x 6-8 μ. Pleurocystidia and cheilocystidia none. Gill trama divergent. Cuticle a clear gelatinous zone 125-200 μ thick.

Pileus shows no virgate fibrils as in the American (Sm-58365) and Heinemann collections.

23977 HYGROPHORUS MARZUOLUS (Fr.) Bres.

(Heinemann-2666, from France)

Spores 6-7.5 x 4-5 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 46-54 x 7-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama with a mediostrate (of more or less parallel hyphae), the hyphae on either side more or less interwoven rather than distinctly divergent. Cuticle of repent, non-gelatinous hyphae,-a cutis; or, at times a thin zone of slightly gelatinous hyphae. Pileus trama of parallel or subparallel, radially disposed hyphae.

HYGROPHORUS MEGASPORUS Sm. & Hes.

Type: under conifers, Lake Quiniault, Washington, November 2, 1925; collected by Kauffman; determined by Smith.

Spores (10) 12-18 (20) x 7-9 μ, ellipsoid, smooth, yellowish in Melzer's reagant. Basidia 55-71 x 7-11 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-7 μ broad. Cuticle a broad zone of tangled, brownish, gelatinous hyphae. Clamp connections present on the cuticular hyphae.

UT-23860 HYGROPHORUS MELIZEUS sensu Favre

(from Switzerland, Huijsman)

Notes by Hesler

Spores 6-8 x 4-5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 48-54 x 7-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama irregularly divergent. Cuticle a thick (125-250 μ) gelatinous zone. Pileus trama of interwoven hyphae. (Favre: Zeitschr. f. Pilzk. 8:118. 1957.)

HYGROPHORUS MESOTEPHRUS B. & Br.

Ann. Mag. Nat. Hist. Ser. 2:13:402. 1854

Limacium mesotephrum (B. + Br.) P. Henning apud Engler + Prantl 1900

(Description adapted from P. D. Orton, 1960)

Pileus 21-47 mm. broad, convex then convex-expanded, sometimes slightly umbonate, disk sepia or sepia-horn, margin whitish, very glutinous, smooth, at times the margin striate-sulcate. Context white, whitish horny over the lamellae and in the stipe cortex; odor none.

Lamellae adnate or subdecurrent, white, not crowded, at times slightly ventricose, edges even.

Stipe 5.6-11 cm. long, 4-8 mm. thick, attenuated downward, sometimes slightly fusiform at apex where glutinous veil ends, white then sometimes discoloring whitish or very pale brownish in places, apex white floccose-punctate, stuffed.

Spores 9-11 (12) x 6-8 μ, ellipsoid or broadly ovoid. Basidia 48-60 x 9-10 μ, 4-spored. Gill edges fertile. Pileus cuticle hyphae narrow (1-3 μ), no color change in ammonium hydroxide.

Observations. - This is near olivaceo-albus which, however, has olive-brown gluten on the pileus and stipe, ~~and~~ narrower spores, and broader stipe. (See Orton, 1960: 258-9.)

HYGROPHORUS MESOTEPHRUS B. & Br.

(from Lange and Bataille)

Pileus 3-4 cm. broad, convex, slightly depressed with age livid whitish, disk olive-fuscous, viscid, margin slightly paler and pellucid-striate. Context soft, white; odor and taste mild.

Lamellae adnate-decurrent, white, broad in front.

Stipe slender, 7 cm. long, 4-6 mm. thick, often attenuated downwards, white, with a pallid, smooth, glutinous coating up to the annular zone, apex floccose.

Spores 8-10 x 5-6 μ (K-R: 10-12 x 7-8) ovoid or obtusely obovate (Lange), primiform-ellipsoid (Bataille).

The slender, smooth stipe and the paler subpellucid pileus distinguish this species from H. olivaceoalbus; the pileus color, shape of the stipe, and the larger spores separate it from discoideus.

HYGROPHORUS MICACEUS B. &. Br.

Dennis, R. W. G. Some little-known British species of Agaricaceae. British Myc. Soc. Trans. 31:191-209. 1948.

Dennis

A study of the type led to the following conclusions: Pileus cuticle of brown, globose or braodly pear-shaped cells, approx. 15-20 μ across, which perhaps gave the "micaceous" appearance to the surface. Basidia slender, possibly only 2-spored, with spores subglobose, 4-5 x 3.5-4 μ. No cystidia. A distinct species close to Omphalia atropuncta (Pers.) Quél. which Lange (1935-40) has transferred to Camarophyllus (p. 196-7).

HYGROPHORUS MONTICOLa sp. nov.

Pileus 2-5 cm. latus, convexus, alutaceus, vinaceo-coccineo tinctus, viscidus; odore amygdalinus; lamellae decurrentes, albidae demum tinctae, "pinkish buff", distantes, latae, interdum sub-intervenosae; stipes 3-6 cm. longus, 3-25 mm. crassus, albus demum concolorus cum pileo; sporae 10-14 x 5.5-7.5 µ. Specimen typicum in Herb. Univ. Mich. conservatum; lectum prope Payette Lakes, Idaho, Sept. 9, 1956, A. H. Smith n. 53239.

HYGROPHORUS MONTICOLA (Sm-23537)

(from Payette, Idaho)

Notes by Hesler

Spores 10-14 x 6.5-8 μ, ellipsoid, very pale in Melzer's Basidia 2- and 4-spored, 50-62 x 7-10 μ. Pleurocystidia and cheilocystidia none. Gill trama divergent. Cuticle a thin ixocutis. Pileus trama of interwoval, radially disposed hyphae. Stipe cuticle non-gelatinous.

Sm-61839 HYGROPHORUS MONTICOLA

Notes by Smith

Near monticola. Gregarious under spruce. Lac Jacques Cartier, Laurentide Park, Que. 9-5-59. Sm-61839.

Pileus 3-5 cm. broad, convex with an incurved margin, margin spreading and crenulate in age, surface glabrous, viscid, often with a depressed zone near margin, color buckthorn brown to sayal brown or paler (near snuff brown). Flesh very soft, pallid, taste mild, odor of cherry pits.

Lamellae distant, thick, broad and decurrent, near "pinkish buff" young or old, very intervenose and almost poroid in places, or lacunose.

Stipe 4-6 cm. long, 1-2.5 cm at apex, concolor with gills, hollow, very fragile, not changing color when bruised; equal or tapered downward.

Notes by Hesler

Spores 9-13.5 x 5-7 u, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 46-72 x 7-10 u, 4 spored. Pleurocystidia and cheilocystidia none. Gell trama divergent, hyphae 4-7 u broad. Cuticle a gelatinous zone 100-130 u thick. Clamp connections present on the pileus trama hyphae.

The upper limit on spore-size is suggestive of H. monticola, but most of the spores are 9-11 u or 9-12 u long.

Hygrophorus monticola sp. nov. 53239

Written up - near H. pacificus but cap color different.

Spores 10 - 13.5 μ long, 6-7 μ broad.

Solitary under conifers. Payette Lakes, Idaho, 9-9-1956. A. H. Smith 53239.

Pileus 7.5 cm broad, sloping broadly away from an obscure conic umbo, margin decurved, surface dry when collected and ± diffracted toward margin, fibrillose-streaked over center, grayish brown over center with a faint rosy tinge, diffracted scales on margin, gray-brownish toned with ochraceous; flesh white, unchanging, taste mild. Odor strong of bitter almonds.

Lamellae distant, broad, decurrent, pale pinkish buff or yellower, thickish, edges even.

Stipe 8 cm long, 15 mm thick, narrowed downward solid, white within, surface dry and faintly pruinose over upper half.

HYGROPHORUS MONTICOLA

Sm-53297, under spruce, Payette Lakes, Idaho, Sept. 10 - '56.

This is the best I can do now without notes, and with material of a species I've never seen, and specimens which probably have faded. For now, I call it H. monticola.

Spores (9) 10-13.5 x (5) 6-7.5 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 58-82 x 8-11 μ, 1-, 2-, and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, at times only slightly so and difficult to determine with certainty, hyphae 4-9 (12) μ broad. Cuticle of pileus a narrow gelatinous zone. Clamp connections present on the gill trama hyphae. Stipe cuticle of repent, non-gelatinous hyphae.

Sm-53540 HYGROPHORUS MONTICOLA

under larch, Payette Lakes, Idaho, Sept. 17, 1956

(Observations and notes by L. R. Hesler)

Spores 11-13.5 x 6-7 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 56-70 x 8-11 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-10 μ broad. Cuticle of repent, gelatinous hyphae. Clamp connections on the cuticular and gill trama hyphae.

HYGROPHORUS MONTICOLA Sm-60524

(Notes by A. H. Smith)

Near monticola, but no odor. Gregarious on moss spruce-fir. Middle Fork, Lake Fork Crk. McCall, Idaho 8-26-58. Sm -60524.

Pileus 2-5 cm. broad, broadly convex with an incurved margin, becoming plane or slightly depressed, margin often irregular in age, viscid but soon dry, color cinnamon buff on disc and flushed vinaceous red, in age with salmon to vinaceous tones extending to margin; flesh thick, firm buffy white, unchanging, worm-holes not darkened at borders appreciably; odor none, taste mild.

Lamellae distant, decurrent, moderately broad, whitish, many forked half way to margin, in age becoming flushed with color of cap but paler (not spotting), thickish, interveined (almost gleba like at times).

Stipe 3-5 cm. long, 3-13 mm. at apex, narrowed below or equal, surface dry, no veil, white at first, a few flushed with color of cap in age, not darkening to more than pale salmon buff around worm holes.

(Notes by L. R. Hesler)

Spores 11-14 x 5.5-7.5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Pleurocystidia and cheilocystidia none. Basidia 60-82 x 7-11 μ, 4-spored (few found with sterigmata),

many basidia slender and sterile. Gill trama divergent, hyphae 6-14 μ broad. Cuticle of repent hyphae, the surface hyphae appear somewhat gelatinous. Clamp connections on the cuticular and gill trama hyphae.

The specimens appear slightly aborted or abnormal, as if slightly parasitized while growing. The lamellae are rather narrow compared to other collections of H. monticola, many of the basidia are slender and sterile, and the spores are relatively few.

If these are normal carpophores, which I doubt, this would be an odorless form of H. monticola.

HYGROPHORUS MORRISII (Smith 53937)

Notes by Smith

Pileus 1-4 cm. broad, convex-depressed, becoming broadly depressed, surface glutinous, glabrous, "Isabella color" with a "lustre" disc; context pale yellowish, odor and taste not distinctive.

Lamellae close to subdistant, cream color, becoming near lemon yellow in age or developing an orange-buff tone, decurrent, edges even.

Stipe 3-5 cm. long, 2-5 mm. at apex, equal or nearly so, lacking a glutinous veil, pallid fibrillose from a thin partial veil, silky above, whitish at first, soon pale yellow, cortex in upper part yellow at times.

Notes by Hesler

Spores 8-10 x 5-6 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 40-53 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 3-7 μ broad. Cuticle a broad zone (225-300 μ) of gelatinous fuscous hyphae. Clamp connections present on the cuticular hyphae.

The stipe lacks the white veil-zone of *H. siccipes*. The spores are about 1 μ shy each way for *H. morrisii*, but I favor the latter name somewhat.

Sm-61861 HYGROPHORUS MORRISII Pk. ~~(?)~~

Notes by Smith

Stipe dry, veil brownish-gray-fibrillose to near apex, pallid beneath.

Notes by Hesler

Spores 9-11 x 5-6 u, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 52-63 x 7-9 u, 4-spored. Pleuorcystidia and cheilocystidia none. Gell trama divergent, hyphae 3-6 u broad. Cuticle a gelatinous zone, 17--210 u thick, of fuscous, loosely-interwoven hyphae. Clamp connections few on the cuticular hyphae.

The cap is darker than in other collections labelled H. morrisii, but it agrees ~~Check~~ with the type.

Sm-60800 HYGROPHORUS MORRISII Pk.

Notes by Smith

Gregarious under pine, Higgens Lake, Mich. 10-12-58.

Pileus 2-4 (5) cm. broad, obtusely conic with an incurved margin, expanding to plane with a conic umbo, surface very glutinous, pallid at first but slowly cinereous over all and developing an obscure yellowish tone in places; flesh white, becoming cinereous at least under the cuticle, odor and taste not distinctive, $FeSO_4$ & KOH no reaction.

Lamellae distant to subdistant, broad, white, adnate becoming short-decurrent, yellowish near cap margin in one, grayish there in one old one, not staining appreciably over night.

Stipe 3-9 (11) cm. long, 4-9 mm. at apex, equal to a narrowed base, white, essentially dry but at times with some gluten from cap near apex, apex pruinose, usually minutely white-scurfy to white-pruinose, in age with slight dingy yellowish stains below or nearly to apex.

Clamps present. Spores 9-11 x 6-6.5 μ.

Notes by Hesler

Spores 8-11 x 6-7 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 48-62 x 8-9 μ, 4-spored. Pleurocystidia and cheilocystidia nome. Gill trama divergent, hyphae 5-12 μ broad. Cuticle a broad (150-250 μ) gelatinous zone. Clamp connections on the cuticular hyphae. Stipe cuticle non-gelatinous; hyphae with clamp connections.

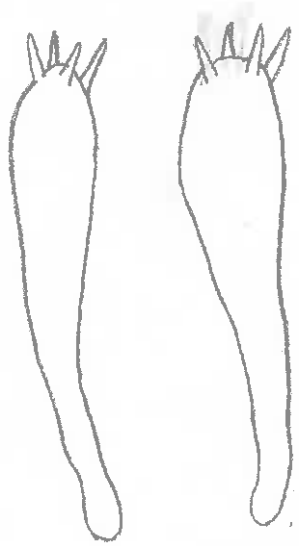
Agrees well with the type in all details.

Sm-56615 HYGROPHORUS MORRISII Pk.

Spores 7.5-9 x 4-5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 54-74 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 5-9 μ broad. Cuticle a well-defined gelatinous zone, 80-120 μ broad. Clamp connections on the gill trama hyphae.

Hygrophorus morrisii Pk.

Type



Basidia — × 1000

Hygrophorus nemoreus Fr.

Omit

Agaricus nemoreus Fr., Syst. Myc. 1: 99. 1821.

(Any Amer. collections reported?)

HYGROPHORUS NIGRIDIUS Pk.

Type: from Prince Edward's Island, Canada, collected by J. MacSwain, October and November.

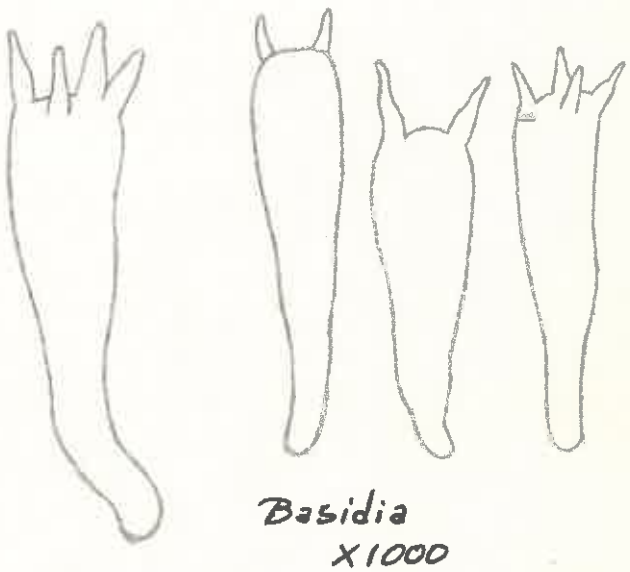
Spores (9) 10-13 x (5.5) 6-8 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 48-65 x 7-12 μ, 2- and 4-spored, sterigmata 4-10 μ long, stout. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 6-9 μ broad. Cuticle of gelatinous hyphae. Clamps present in the cuticle, not abundant.

Hygrophorus nigridius Pk.

Type

Spores

X 3000



Basidia

X1000

HYGROPHORUS OCCIDENTALIS Sm. & Hes.

Type: Saginaw Forest, Ann Arbor, Michigan, October 8, 1936, Smith 5088.

Spores 7-8 x 3.5-4.5 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 32-43 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-7 μ broad. Cuticle of gelatinous hyphae. Clamp connections on the cuticular hyphae.

Sm-54581 HYGROPHORUS ODORATUS (Same as Sm-54781)

Notes by Smith

Pileus pale gray, margin yellowish. Odor of H. agathosmus. Stipe dry, base yellow.

Notes by Hesler

Spores 8-12 x 5-6.5 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 47-66 x 7-9 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent (at times slightly so), hyphae 5-8 μ broad. Cuticle a broad (170-300 μ) gelatinous zone. Clamp connections on the hyphae of the gill-trama and the subhymenium.

This is the best I can do. It resembles the type in general appearance, but the spores are somewhat smaller in No. 54581 than in the type of H. odoratus.

Hygrophorus odoratus Sm-54605

Near H. agathosmus. Scattered under hemlock. Granite Creek, Nordman, Idaho. 10-13-1956. A. H. Smith 54605 Photo

Spores 9-12 x 6.5-7 μ. Sm 54516 also has "small" spores.
55187 - also 9-12 x 7-8 μ

Pileus 2-5 cm broad, obtuse to convex with a curved in margin, expanding to broadly convex or with a low conic umbo, surface glutinous, glabrous, "pale olive buff" to a very pale cinerous and in age often showing a flush of lemon yellow in some part, faintly fibrillose streaked beneath the gluten; flesh thick and soft, odor fragrant (as in H. agathosmus), taste mild. Cap margin often yellow.

Lamellae distant, broadly adnate to decurrent, broad, white and in age some with a pinkish reflection, edges even.

Stipe 4-10 cm long, 5-8 mm thick, equal, solid, white to the yellowish base or here and there with pale lemon areas, dry and unpalish but at times with gluten from cap, no veil in buttons.

HYGROPHORUS OLIVACEOALBUS (Fr.) var. olivaceoalbus

Collection: Trinidad, California, Smith 3635, November 25, 1935, under redwoods.

Spores 9-12 x 5-6 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 46-62 x 7-10 μ, 4-spored, sterigmata stout. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-7 μ broad. Cuticle a rather broad zone of loosely tangled, gelatinous, fuscous hyphae. Clamp connections on the cuticular hyphae.

Sm-56414 HYGROPHORUS OLIVACEOALBUS Fr.

Spores 9-12 x 6-8 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 41-64 x 8-10 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 6-9 (12) μ broad. Cuticle a broad zone (240-400 μ) of interwoven, brown, gelatinous hyphae. Clamp connections on the gill-trama hyphae.

HYGROPHORUS OLIVACEOALBUS (Fr.) Fr.

(from Denmark. Coll. J. P. Jensen)

Spores 12-14 (16) x 7-8 (9) μ, ellipsoid, smooth, yellow in Melzer's. Basidia 75-92 x 9-12 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent. Cuticle an ixotrichodermium, 250-350 μ thick, hyphae fuscous, narrow. Clamps on the hyphae. Pileus trama of radial hyphae.

Spores are larger than in our other collections: Sm-3635, from California: 9-12 x 5-6 μ; Sm-56414, from California: 9-12 x 6-8 μ. Moser, Austria, gives the spores 10-16 x 6-9.5 μ. K & R give them 12.5-15.5 x 7-8.5 μ; and J. Lange, 8-10 x 5-6 μ (Fl. Agar. Dan.). The basidia are also longer than in our collections.

HYGROPHORUS OLIVACEOALBUS var. GRACILIS Maire

Collection from Oregon-California state line, November 29, 1937, Smith 9211.

Spores 10-12 x 5.5-6 μ (Smith says 10-14 x 6-7.5 μ), ellipsoid, at times inequilateral, smooth, pale yellowish in Melzer's reagent. Basidia 42-57 x 7-9 μ, 2-, 3-, and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-6 μ broad. Cuticle of brownish hyphae, imbedded in a gelatinous zone, 150-200 μ thick. Clamp connections present on the hyphae of the cuticle, gill-trama, and subhymenium.

Sm-62065

HYGROPHORUS OLIVACEOALBUS var. GRACILIS Maire

Spores 9-12 x 5.5-7 (8) μ, ellipsoid often ± unequilateral, smooth, yellowish in Melzer's. Basidia 47-57 x 8-10 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 3-6 μ broad. Cuticle a zone, 120-160 μ thick, of fuscous, interwoven hyphae. Clamp connections present on the cuticular and gill trama hyphae.

HYGROPHORUS OLIVACEOALBUS ~~f. MINOR~~ (= var. gracilis Maire)

Smith 8211, 11-29-37, Oregon-California line.

This is the same as Sm-9211, labelled H. olivaceoalbus var. gracilis Maire. The spores, basidia, cuticle, trama, - all as in the latter. An error in labelling (on 11013)?

HYGROPHORUS PACIFICUS Sm. & Hes.

Smith-9054, Crescent City, California. November 24, 1937 (not the Type).

Spores 10-14 x 5.5-7.5 μ, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 50-82 x 7-9 μ, 2- and 4-spored, sterigmata stout. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-8 μ broad. Cuticle of gelatinous hyphae. Clamp connections on the hyphae of the cuticle and gill-trama. Lactifers present in the gill-trama.

Sm-61556 HYGROPHORUS PACIFICUS (?) immature

Notes by Smith

Pileus clay color, viscid. Taste mild. Lamellae adnate, buff, distant. Stipe thick, pallid, dry.

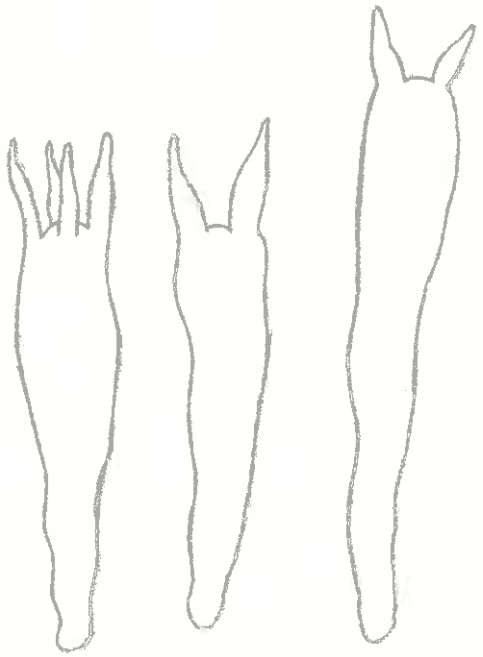
Notes by Hesler

Spores 10-15 x 6-7 μ, not numerous, ellipsoid, smooth, pale yellow in Melzer's. Basidia 51-82 x 8-10 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent (not always distinctly so), hyphae 4-7 μ broad. Lactifers often present in the gill trama. Cuticle a gelatinous zone 60-150 μ thick. Clamp connections present on the gill trama hyphae.

Although nothing is said I assume there was no odor. Otherwise it is near H. pacificus.

The scarcity of spores and appearance of the carpophores suggest that the collection is immature.

Hygrophorus pacificus Sm. & Hes.



Basidia — x 1000

HYGROPHORUS PALUDOSUS Pk.

Hesler 18284, in humus, deciduous woods, Cades Cove, November 8, 1947.

Spores 8-11 x 5-7 μ, ellipsoid, smooth, white in mass, pale yellow in Melzer's reagent. Basidia 42-60 x 7-9 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-12 μ broad. Cuticle a broad zone of fuscous hyphae imbedded in a gelatinous matrix. Clamp connections present on the hyphae of the gill-trama and the cuticle.

Omit

HYGROPHORUS PENARIUS Fr.

Epicr. Myc., p. 321. 1838

Limacium penarium (Fr.) Wünsche. 1877

Illustrations:

Lange, Agar. Flora Dan., pl. 164 D.

Bresadola, Icon. Myc., Tab. 305.

Pileus 5-8 cm. broad, convex, expanding to subumbonate, often viscid around the margin at first, soon dry, pinkish tan, stramineus on the center. Context white, compact; odor none, taste pleasant.

Lamellae slightly decurrent, pale, subdistant.

Stipe 4-6 cm. long, 10-15 mm. thick, white, apex white-furfuraceus, dry.

Spores 5-6 (7.5) x 3.5-4 μ, ellipsoid, smooth, yellowish in Melzer's. Basidia 37-48 x 4-6 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-5 μ (both narrow and broad hyphae abundant). Cuticle a gelatinous zone, 100-150 μ thick. Clamp connections on the cuticular hyphae.

Habit, habitat, and distribution. - In woods, especially beech, Washington, September; also Europe.

Material studied. - WASHINGTON: Kauffman, Rockdale, Sept. 18, 1915; Smith 62135; DENMARK: J. P. Jensen (H-23970); FRANCE:

H. nordidus (from Ann Arbor)

Heinemann 1720.

So this perdidus?

Observations. - We refer our collection (Sm-62135) to H. penarius with an awareness that descriptions of European material are not always in full agreement. Our collection ~~agrees very~~ resembles well ~~with~~ a specimen from France, communicated by Dr. P. Heinemann, Gembloux, Belgium; and with a collection from Denmark, ~~received from~~ by Mr. J. P. Jensen and Dr. Morten Lange, Copenhagen. It is apparent that there is some variation in the width of the spores, and in the thickness of the stipe. Bresadola (1928) states that the odor is slightly butyric, and Nüesch (1922) says that it agreeable.

Nüesch (1922) also says that H. ventricosus Berk. & Br. is identical with H. penarius, but Dennis (1948), after studying the type concludes that it is the same as H. virgineus. (H. ventricosus)

HYGROPHORUS PENARIUS Fr.

(U-T 23974, from France, Heinemann)

Spores 5.5-7 (8) x 4-5 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 40-51 x 5-6 μ. Pleurocystidia and cheilocystidia none. Gill trama divergent. Cuticle at times with a narrow gelatinous zone, at other times non-gelatinous, hyphae repent. Clamp connections present on cuticular hyphae. Pileus trama subparallel, radially disposed.

23970 HYGROPHORUS PENARIUS Fr.

(from Denmark. J. P. Jensen)

Spores 6-8 x 4-5 μ, ovoid to pip-shaped, obliquely apiculate, rarely ellipsoid, smooth, yellow in Melzer's reagent. Basidia 43-50 x 5-6 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae divergent, (4) 10-20 μ broad. Cuticle a narrow ixocutis. Clamp connections small and inconspicuous. Stipe cuticle of non-gelatinous hyphae.

HYGROPHORUS PICEAE Kühner

Bull. Mens. Soc. Linnéene Lyon 18(9):

(from K-R Key)

Pileus 3-6 cm. broad, pure white, remaining white or at most becoming cream on drying in the herbarium, glutinous. Context odor none or slightly fungus.

Stipe 2.5-8.5 cm. x 4-10 mm., tomentose-flaky upward.

Spores 7-8.5 x 4.5-6 μ.

In mountain conifers, often confused with eburneus from which it differs in that it is much less glutinous and smaller.

(Mentioned in Smith's Key)

Omit

HYGROPHORUS PØETARUM R. Heim

In Smith's Key, under Stirps Kauffmanü. Kühner and Romagnesi say (footnote 16) that this is pudorinus of Ricken and of Lange.

(see next sheet - on material from France, via Leiden)

UT-23846 HYGROPHORUS POETARUM

(from France, Leiden-1104)

Notes by Bas

Cap 100 mm. Ø, dry, smooth, centre with some adpressed fibrillose scales, from apricot in centre to ivory near margin.

Gills cream.

Stalk 100 x 13-18 mm. solid, ivory, minutely granular, apex with drops.

Context white, pinkish under cap-surface. Smell faintly like flowers. Taste insignificant.

Notes by Hesler

Spores 7-8 x 5-5.5 μ, broadly ellipsoid, smooth, yellowish in Melzer's. Cuticle of appressed, non-gelatinous hyphae. Pleurocystidia and cheilocystidia none. Gill trama divergent. We have nothing here filed under this name.

Sm-38943 HYGROPHORUS PSEUDOLUCORUM Sm. & Hes.

(UT-23662)

Part of Type, from Mich.

Spores 8-11 x 4.5-6 μ, (from gills, not deposits) ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 43-64 x 7-9 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-8 μ broad. Cuticle a narrow ixocutis, hyphae colorless, narrow. Pileus trama of interwoven, more or less radially disposed hyphae. Clamp connections present.

HYGROPHORUS PUDORINUS Fr.

Smith 1103, Mud Lake Bog, Cheboygan County, Michigan, October 8, 1934.

Spores 6.5-9.5 x 4-5.5 μ, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 41-62 x 5.5-7 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, 4-10 μ broad. Cuticle of gelatinous hyphae. Clamp connections on the hyphae of the cuticle, the pileus-trama, and the gill-trama.

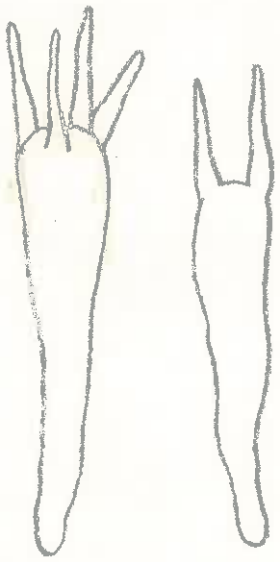
HYGROPHORUS PUSILLUS Pk.

Type: collected by L. F. Henderson, Moscow Mountains, Idaho, November.

Spores 5-7 x 3.5-4 μ, ellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 30-37 x 4.5-6 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama of hyphae only slightly divergent, appearing subparallel in some lamellae, 4-8 μ broad. Cuticle of appressed, somewhat gelatinous hyphae. Clamps present in gill-trama.

In Lloydia 2:34, Smith describes, from large specimens collected in the Northwest, the spores as 7-9 x 4-5 μ; gill-trama of divergent hyphae. Although the type is meagre, one might at first interpret the trama to be subparallel.

Hyppophorus pusillus PK.
Sm - 48898



Paridia × 1000

Sm-48898 HYGROPHORUS PUSILLUS Pk.

Spores 6-8 (10) x (3.5) 4-5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 52-65 x 7-9 μ, 2- and 4-spored, sterigmata 10-17 μ long, stout. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-9 μ broad. Cuticle a narrow gelatinous zone. Clamp connections present on the pileus trama hyphae.

HYGROPHORUS PUSTULATUS Fr.

Smith 3937, Trinidad, California, December 11, 1935.

Spores 7-9 x 4-5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 46-61 x 6-8 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-9 μ broad. Cuticle of gelatinous, fuscous hyphae. Clamp connections present on the cuticular hyphae.

HYGROPHORUS QUELETÜ Bres.

Fungi Trid. 1: 11. 1881.

Included in Smith's Key, Stirps Kauffmanü. I have seen no specimens nor notes.

HYGROPHORUS ROSEIBRUNNEUS Murr.

No. 135. Type: Jasper Ridge, near Stanford University, California, January 11, 1912.

Spores 6-8 x 3.5-4.5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 28-43 x 4.5-5.5 μ. Pleurocystidia and cheilocystidia none. Gill-trama divergent. Epicutis fibrillose. Clamps present on the cuticular hyphae.

No. 176. Under Quercus agrifolia, near San Francsquito Creek, California, February 8, 1912. James McMurphy.

Spores 7-9 x 4.5-5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 34-40 x 4-5.5 μ.

HYGROPHORUS ~~Sm-G-1~~ roseibrunneus

On soil, oak woods, Rocky Nook Park, Santa Barbara, Calif. Feb. 21, 1939.

Notes by Smith

Pileus 2-4 cm. broad, convex to nearly plane, irregular, glabrous and pure white at first, at length a beautiful "coral pink" and then more or less virgate with red fibrils suggestive of those of Cortinarius virgatus, viscid when moist, cuticle separable to disk, margin deflexed, not striate. Context pure white, not colored under cuticle, unchanging, thin (1 mm.), homogeneous, confluent with stipe; taste mild.

Lamellae arcuate-decurrent, white, broad (5 mm.), distant, unequal, usually once-inserted, not forking, occasionally appearing to anastomose, somewhat interveined, edges concolor, thin.

Stipe 9-11 cm. long, 10-17 mm. thick, pure white, pruinose especially at apex, fibrillose-striate, more than half the length consisting of a rooting base covered with a white tomentum, nearly equal, at times compressed, tending to crack longitudinally.

Notes by Hesler

Spores 7-9 x 4-5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent (Smith says white in mass). Basidia 38-47 x 5-6 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-8 μ broad. Cuticle an ixotrichodermium,

with numerous more or less erect free ends. Clamp connections present. Pileus trama hyphae radial.

Observations. - Smith also reports collections at same station Feb. 24 and 28, 1939, with additions to the above notes as follows: caespitose, color as above but variegated with deeper vinaceous and with ochraceous-buff, no virgate red fibrils, with a pseudo-volva formed of the basal tomentum.

Sections of the stipe reveal no gelatinous surface hyphae. Apparently there was no veil.

Sm-57873 HYGROPHORUS RUBROPUNCTUS Pk.

Notes by Smith

Pileus 2-4 cm. broad, convex to obtuse with an inrolled margin, surface glutinous, matted-fibrillose beneath the gluten, dull white over all, but gradually "pale pinkish buff" over all with watery yellowish (dingy "cartridge buff" areas) showing, opaque at all stages. Context watery yellowish white, unchanging or finally yellowish when bruised; taste mild, odor not distinctive (merely faintly fragrant).

Lamellae adnate to broadly adnate, white when young, "ivory yellow" over all in age, becoming near "napthalene yellow" where bruised, subdistant to close.

Stipe 4-6 cm. long, 4-8 mm. thick, equal, narrowed to a point below, dull white over all at first, glutinous, glabrous, apex pruinose-punctate and beaded with pale yellow drops; becoming "pale pinkish buff" or yellow over all or where bruised.

Spores 7-9 x 4 μ. Basidia 4-spored. Cheilocystidia none. Gill-trama divergent. Cuticle a tangled mass of narrow, gelatinous, hyaline hyphae. Clamp connections at cross-walls on cuticular hyphae.

Habit, habitat, and distribution. - Gregarious under hardwoods, Mackinaw City, Michigan, September 3, 1957.

(more, next page)

Observations. - When fresh, stains dark yellow brown in KOH.

Notes by Hesler

Spores 7-9 (10) x 3.5-4 μ, mostly 7-8 μ long, ellipsoid to suboblong, smooth, pale yellow in Melzer's reagent. Basidia 39-56 x 5-7 μ, 4-spored. Gill-trama divergent, hyphae 4-7 μ broad. Cuticle of narrow, gelatinous hyphae. Clamp connections present on the cuticular and pileus trama hyphae.

The spores tend to average slightly smaller than in other collections.

HYGROPHORUS GLUTINOSUS Pk.

(=H. rubropunctus Pk.)

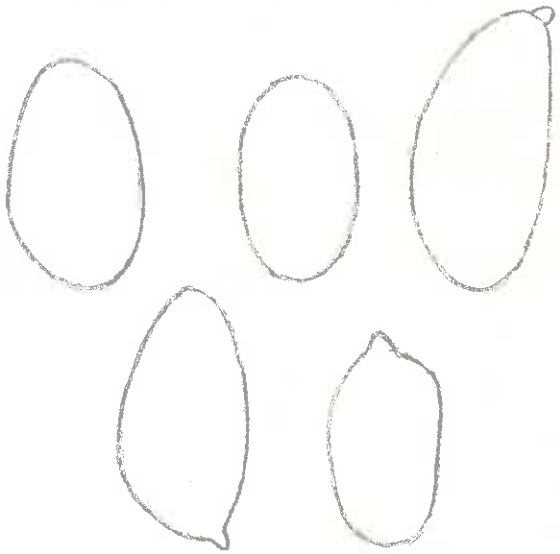
Type: Collected by Charles H. Peck, Bolton, New York, September 12 and 21.

Spores 8-10 (12.5) x 5-6 μ, the larger ones several in each mount, ellipsoid, sub-inequilateral, smooth, pale yellow in Melzer's reagent. Basidia 43-55 x 6-7 μ, 2- and 4-spored (latter predominating). Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-6 μ broad. Cuticle of gelatinous hyphae. Clamps present.

Hygrophorus glutinosus PK.

(Type)

(= *H. rubropunctus* PK.)



X 3000

HYGROPHORUS RUBROPUNCTUS Pk.

(Bigelow-8764)

Notes by Bigelow

Pileus glutinous, margin whitish, next "massicot yellow", disk "old gold". Lamellae decurrent, white, subdistant, broad, arched. Stipe glutinous at base, apex enlarged, beaded with drops of moisture, white, pale yellowish toward base.

Notes by Hesler

Stipe apex drops are amber-colored (dried).

Spores 6.5-8.5 x 4-5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 46-55 x 7-9 μ, (2) 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-7 μ broad, with a darker mediostrate. Cuticle an ixocutis, showing two color-zones: (1) an outer dark brown (80-100 μ thick); (2) an inner zone of nearly colorless (or pale fuscous) hyphae (100-200 μ thick). Clamp connections present.

I don't feel satisfied with calling this rubropunctus. Dried, your 8764 is not quite the right color for rubropunctus. It does no better to call it flavodiscus, for it has some amber-colored punctations at the stipe apex.

HYGROPHORUS RUBROPUNCTUS Pk.

Notes on Coker's Collection

Coker No. 3771, in deciduous woods, Chapel Hill, North Carolina, collected by H. R. Totten, November 18, 1919.

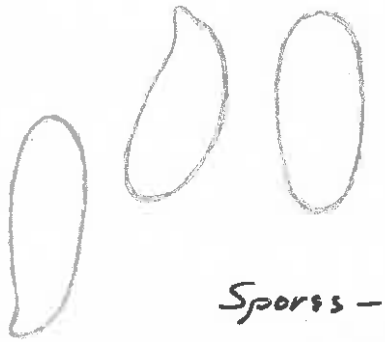
Spores 7.5-11.5 x 5-7 μ, ellipsoid, smooth, yellowish in Melzer's reagent, white in mass (pale cream on white paper, on date observed, November 10, 1959). Basidia 40-52 x 7-9 μ, 2- to mostly 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama slightly divergent. ~~Epicutis~~ Cuticle of loosely tangled, gelatinous hyphae. Clamps few.

Coker No. 4993, on soil, Chapel Hill, North Carolina, December 7, 1921, collected by F. A. Grant.

Spores white (pale cream at this date, November 10, 1959), 7.4-11 x 5-6.7 μ. Agrees with No. 3771.

Coker No. 932, on soil, in mixed woods, Chapel Hill, North Carolina, October 16, 1913, collected? Spores 9-11.5 x 5.8-7 μ, white in mass, pale yellow in Melzer's reagent. Specimens (especially the gills) badly damaged by insects.

Hygrophorus russuliformis Murr.



Sporss – X3000

HYGROPHORUS SAXATILIS Sm. & Hes.

Smith 18156 (type), Lost Creek, Oregon, October 30, 1941.

Spores 7-9.5 x 4-5 (6) μ, subellipsoid, smooth, pale yellowish in Melzer's reagent. Basidia 46-60 (70) x 6-9 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-8 μ broad. Cuticle of narrow, (slightly gelatinous?) hyphae. Clamp connections present on the hyphae of the cuticle, gill-trama, and subhymenium.

HYGROPHORUS SORDIDUS Pk.

Type: in pine woods, Takoma Park, D. C., collected by Mrs. Williams, November 1897.

Spores 6-8 x 4-5.5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 40-52 x 5-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 2-4 μ broad. Cuticle of gelatinous hyphae. Clamps present in the cuticle.

HYGROPHORUS SORDIDUS Pk.

Smith 6113, Dexter, Michigan, October 18, 1936.

Spores 6-8 x 3.5-4.5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 38-50 x 5-7 μ, 4-spored (rarely 2-spored). Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-8 μ broad. Cuticle a gelatinous zone 150-200 μ thick, with narrow hyphae imbedded. Clamp connections present on the cuticular hyphae.

3156 HYGROPHORUS SORDIDUS Pk.

Coker's No. 2004, Chapel Hill, North Carolina, November 27, 1915.

Spores 6-8 x 3.5-4.5 μ, ellipsoid, smooth, pale yellowish in Melzer's. Basidia 36-48 x 5-6.5 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent.

Surface of stipe lacks any sign of a zone of gelatinous hyphae.

This seems to be H. sordidus.

HYGROPHORUS SPECIOSUS Pk.

Type: collected by Charles H. Peck, Greig, Lewis County.

Spores 8-9 x 4.5-5.5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 41-54 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-8 μ broad. Cuticle of gelatinous hyphae. Clamps present in the cuticle.

Sm-44810 HYGROPHORUS SUBALPINUS Smith

Spores 8-10 x 4.5-5 (6) μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 48-62 x 7-9 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-7 μ broad. Cuticle a gelatinous zone, 125-225 μ thick. Clamp connections present on the pileus trama hyphae.

HYGROPHORUS SUBPRATENSIS Murr.

Type: Leg. F. S. Earle 373. In lawns, Santiago de las Vegas, Cuba, June 1, 1905.

Spores 4-5 x 3.5-5 μ, globose to subglobose, smooth, colorless in Melzer's reagent, at times adhering together in fours. Basidia 26-33 x 5-6 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent. Epicutis of loosely arranged, gelatinous hyphae. Clamps present in epicuticular hyphae. Stipe exhibiting a gelatinous sheath.

Also resp (purpurascens), but I doubt it!

Sm-46112 HYGROPHORUS SUBPURPURASCENS (Allesch.) ~~sp. nov.~~ (?)

(Little Payette Lakes, Idaho, Stuntz & Bigelow, Aug. 9 - '54)

Spores 6.5-8 x 3.5-4 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 34-42 x 5-6 μ, 2-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-10 μ broad. Cuticle not well-defined, with an occasional very narrow zone of hyphae which appear gelatinous. Clamp connections on the pileus trama hyphae.

(I found no notes for this collection.)

Bataille refers to H. subpurpurascens Allesch. in his Key.

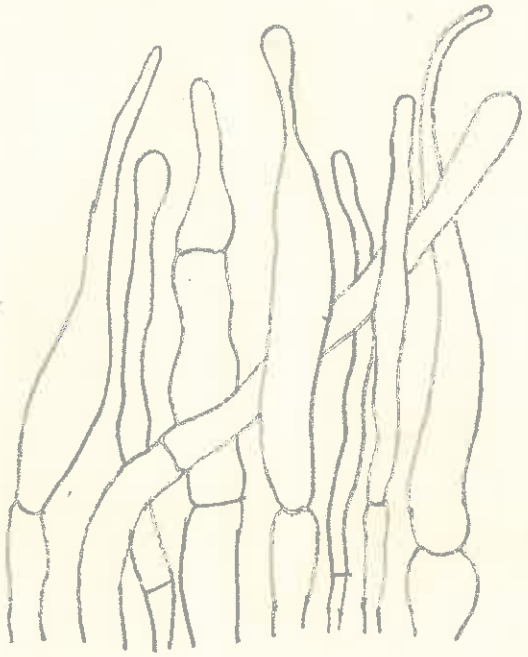
(Collection also in U-M Herb., N.B. Gruber P73, Idaho Nat. Forest, Idaho, Oct 1943)

HYGROPHORUS SUBRUFESCENS Pk.

Type: collected by Charles H. Peck, Port Jefferson, August.

Spores 5.5-8 x 4-5 μ, ellipsoid, smooth, non-amyloid. Basidia 52-68 x 6-8 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 3-7 μ broad. Cuticle fibrillose, hyphae non-gelatinous. Clamps present in the cuticle and gill-trama.

H. subrufescens PK
Type



A trichodermium!
Cut - undiff — many
of the surface
radial, and
hyphae are ± erect
septate 3-10 μ broad
the terminal elements often
cystidioid. No hypodermium.
Ptr — radial.

HYGROPHORUS TENAX SP. NOV.

Pileus 2-4 cm. latus, convexus, deinde ~~palnus~~ planus vel depressus, albidus, discus subluteus, interdum luteus laesus, primum viscidus, cito siccus, glabrosus deinde fibrillosus vel squamulosus; odore et guster blandus; lamellae sub-decurrentes, pallidae demum "pinkish buff," subdistantes, angustae; stipes 3-5 cm. longus, 4-6 mm. crassus, albidus, tarde subluteus laesus, siccus, apice fibroso-punctatus, satis fibrosus, tenax, nullum velum; sporae ~~7-9 x 4.5-5 μ,~~ 6-8 x 3.5-4.5 μ, ellipsoideae. Specimen typicum in Herb. Univ. Mich. conservatum; lectum prope Warren Dunes, State Park, Michigan, Oct. 1, 1955, A. H. Smith, n. 50625.

HYGROPHORUS TENAX SP. NOV.

Pileus 2-4 cm. broad, convex, becoming plane or depressed, dull white, disc slightly yellow, at times with yellow stains where bruised, viscid when young, soon dry, glabrous becoming fibrillose or squamulose; odor and taste not distinctive; lamellae slightly decurrent, pallid to "pinkish buff", subdistant, narrow; stipe 3-5 cm. long, 4-6 mm. thick, whitish, slowly becoming yellowish on bruising, dry, apex fibrous-punctate, rather fibrous tough, veil none. Spores 7-9 x 4.5-5 μ, ellipsoid. Specimen typicum in Herb. Univ. Mich. conservatum; lectum prope Warren Dunes, State Park, Michigan, Oct. 1, 1955, A. H. Smith, n. 50625.

HYGROPHORUS TENAX sp. nov.

(Sm-50625, Warren Woods, Oct. 1, 1955, coll. by Shaffer & Smith)

Notes by Smith
(from Smith's key)

Pileus white (?), viscid; stipe dry, staining yellow when bruised; lamellae colored (?).

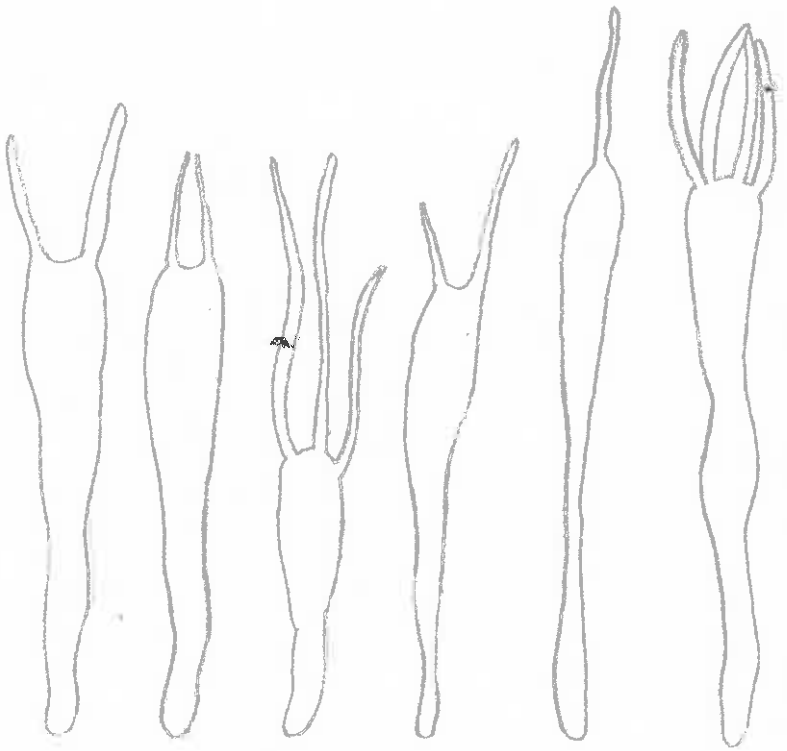
Notes by Hesler

Spores 6.5-8 x 4-4.5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 36-43 x 7-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 6-14 μ broad. Cuticle a rather narrow (60-130 μ) gelatinous zone, of loosely tangled hyphae, many more or less erect, 2.5-4 μ broad, - an ixotrichodermium. No hypodermium. Pileus trama of radial hyphae. Clamp connections present on the cuticular and gill trama hyphae.

On the label (No. 50625), Smith indicates he has notes on a card, but I have not seen a copy.

Hygrophorus tephroleucus var. *aureofloccosus*
Smith & Hesler

No. 23556



X 1000

HYGROPHORUS VARIICOLOR Murr.

Type: No. 802, on ground in low woods, near Mill City, Oregon, November 9, 1911, W. A. Murrill.

Spores 7-8.5 x 4.5-5.7 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 34-48 x 5-6 μ, 2-4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, Cuticle fibrillose, hyphae loosely interwoven, gelatinous. Clamp connections present on the hyphae of both gill-trama and cuticle.

HYGROPHORUS VARIICOLOR Murr.

Smith 8087, Oregon, October 21, 1937.

Spores 7-9 x 4.5-5.5 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 42-54 x 5.5-7 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-9 μ broad. Cuticle a well-defined gelatinous layer, 180-250 μ thick, with loosely interwoven hyphae. Clamp connections on the cuticular and gill-trama hyphae.

HYGROPHORUS VINICOLOR SP. NOV.

Pileus 2.5-5 cm. latus, subviscidus, cito siccus, colore variabilis, disco "wood brown" ~~lignoo-brunnus,~~ "vinaceous buff" prope marginem; odore aromaticus, gustu ingratus; lamellae decurrentes, paene "pale pinkish cinnamon," distantes, latae; stipes 3-5 cm. longus, 10-20 cm. crassus, albus, siccus, rosaceo-pruinosus; sporae 10-~~13~~ 14 x 6-8 µ, ellipsoideae. Specimen typicum in Herb. Univ. Mich.; lectum in Cape Horn Summitt, Sawtooth Mts., Idaho, Aug. 25, 1954, A. H. Smith n. 47116.

HYGROPHORUS VINICOLOR SP. NOV.

Pileus 2.5-5 cm. broad, slightly viscid, soon dry, color variable, "wood brown" on disc, "vinaceous buff" toward the margin; odor aromatic, taste disagreeable; lamellae decurrent, near "pale pinkish cinnamon", distant, broad; stipe 3-5 cm. long, 10-20 mm. thick, white, dry, minutely pinkish pruinose. Spores 10-13 x 6-7 μ, ellipsoid. Specimen typicum in Herb. Univ. Mich.; lectum Cape Horn Summitt, Sawtooth Mts., Idaho, Aug. 25, 1954, A. H. Smith n. 47116.

HYGROPHORUS VINICOLOR sp. nov.

Sm-47116

Spores 11-14 x 6-8 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 52-70 x 6-9 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 4-9 μ broad. Cuticle a narrow gelatinous zone, 30-100 μ thick, hyphae 3-6 μ broad, repent, - an ixocutis. No hypodermium. Pileus trama of intricately interwoven hyphae, extending in various directions.

HYGROPHORUS VINICOLOR sp. nov.

Sm-46714. Type

Spores 11-14 x 6-8.5 μ, ellipsoid, smooth, yellow in Melzer's reagent. Basidia 48-62 x 6-8 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama slightly divergent, hyphae 4-9 μ broad. Cuticle a narrow gelatinous zone 30-100 μ thick (see notes on Sm-47116). Clamp connections present on the cuticular and gill trama hyphae.

~~In Smith's mimeo key, he gives the spores as 9-11 x 6-7 μ.~~

HYGROPHORUS VIRGATULUS Pk.

Type: from North Greenbush, collected by C. H. Peck.

Spores 7-9 x 3.5-5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 32-54 x 5-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-8 μ broad. Cuticle of gelatinous, loosely-tangled hyphae. Clamps few, in the cuticle. Lactifers at times abundant in the gill-trama.

whitei

HYGROPHORUS ~~EBURNEUS Fr.~~ (Sm-56693.)

Under spruce, Patrick Point, Calif., Dec. 15, 1956.

Pileus and lamellae "warm buff". Stipe dingy.

Spores 9-11 x 5-6 (7) μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 44-60 x 6-9 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 6-12 μ broad. Cuticle a gelatinous zone,-an ixocutis, colorless, hyphae mostly repent. Clamps present. Pileus trama radial. No hypodermium.

The spores and basidia are larger, and the gill-trama hyphae are broader than in H. eburneus.

albiflavus Sp. nov

HYGROPHORUS Sm-23910

(from Mt. Hood, Sept. 29, 1946, A. H. Smith.)

(Notes by Hesler)

Pileus white over all. Stipe viscid but not slimy, with an apical fibrillose annulus. Spores (9) 10-14 x 6.5-7.5 μ, ellipsoid, smooth. Basidia large, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent. Cuticle a broad (200-325 μ) gelatinous zone with erect surface hyphae- an ixotrichodermium. No hypodermium. Pileus trama of radial hyphae. Clamps present. This might be H. candidus Quel., in which Bataille gives the spores 13-15 μ long, the stipe fusiform.

HYGROPHORUS ~~Sm-52370~~ mucidus of nov

Under spruce, Trout Lake, San Juan Mts., Colo.,
Aug. 17 - 1956 (Card)

Spores 8-11 (12) x 5-7 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 47-60 x 7-9 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 6-10 μ broad. Cuticle a gelatinous zone 90-140 μ thick, with fuscous, loosely interwoven hyphae. Clamp connections on the cuticular hyphae. Sections of the stipe disclose a broad, gelatinous, cuticular zone, 200-325 μ thick, with loosely interwoven, fuscous hyphae. The cuticular hyphae of the stipe have clamp connections.

HYGROPHORUS Sm-62135 *pudorinus?*

Notes by Smith

Pileus 3-5 cm. broad, pinkish tan. Odor and taste none. Lamellae pale. Stipe dry.

Notes by Hesler

Spores 5-6 (7.5) x 3-3.5 μ, ellipsoid, smooth, yellowish in Melzer's. Basidia 37-48 x 4-6 μ, 2-spored and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama divergent, hyphae 3-11 μ broad, (both narrow and broad hyphae abundant). Cuticle a clear gelatinous zone, 100-170 μ thick, hyphae 2-5 μ broad, more or less erect, tangled, - an ixotrichodermium. No hypodermium. Pileus trama interwoven, more or less radially arranged. Clamp connections on the cuticular hyphae. Stipe cuticle of non-gelatinous hyphae. It does not have a short, fusoid stipe of *H. penarius*, as figures by Lange, Fl. Agar. Dan.

albicarneus ss. nov

HYGROPHORUS Gruber-B

Mt. Hood (Oregon), May 31, 1947.

Notes by Gruber

Pileus white to pink, distinctly sticky. Odor mild, taste none.

Lamellae transparent with pink.

Stipe dry.

Notes by Hesler

Spores 11-13 x 8-9 μ, broadly ellipsoid, smooth, colorless in Melzer's reagent. Basidia 58-88 x 8-13 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-6 μ broad. Cuticle a clear gelatinous zone, 180-320 μ thick, hyphae loosely interwoven. Pileus trama chiefly radial. Clamp connections few.

HYGROPHORUS ~~Sm.~~ *marginal sp. nov.*

On soil, oak woods, Rocky Nook Park, Santa Barbara, Calif. Feb. 21, 1939.

Notes by Smith

Pileus 2-4 cm. broad, convex to nearly plane, irregular, glabrous and pure white at first, at length a beautiful "coral pink" and then more or less virgate with red fibrils suggestive of those of Cortinarius virgatus, viscid when moist, cuticle separable to disk, margin deflexed, not striate. Context pure white, not colored under cuticle, unchanging, thin (1 mm.), homogeneous, confluent with stipe; taste mild.

Lamellae arcuate-decurrent, white, broad (5 mm.), distant, unequal, usually once-inserted, not forking, occasionally appearing to anastomose, somewhat interveined, edges concolor, thin.

Stipe 9-11 cm. long, 10-17 mm. thick, pure white, pruinose especially at apex, fibrillose-striate, more than half the length consisting of a rooting base covered with a white tomentum, nearly equal, at times compressed, tending to crack longitudinally.

Notes by Hesler

Spores 7-9 x 4-5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent (Smith says white in mass). Basidia 38-47 x 5-6 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama divergent, hyphae 4-8 μ broad. Cuticle an ixotrichodermium,

with numerous more or less erect free ends. Clamp connections present. Pileus trama hyphae radial.

Observations. - Smith also reports collections at same station Feb. 24 and 28, 1939, with additions to the above notes as follows: caespitose, color as above but variegated with deeper vinaceous and with ochraceous-buff, no virgate red fibrils, with a pseudo-volva formed of the basal tomentum.

Sections of the stipe reveal no gelatinous surface hyphae. Apparently there was no veil.