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Hygrocybe Notebook 3

L. R. Hesler

HYGROPHORUS PAPILLATUS Dennis

Kew Bull. 2:263. 1953

Illustration:

Dennis, Kew Bull. 2, fig. 8.

Pileus 2 cm. broad, campanulate, acutely umbonate, luteus, umbo luteus-ochraceus, minutely fibrillose. Context yellow, thin.

Lamellae arcuate-subdecurrent, luteus, subdistant.

Stipe luteus, pallid and strigose below, elsewhere glabrous, solid.

Spores 9-12 x 6-8 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 48-60 x 10-12 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama more or less parallel, of large cells, 30 x 75 x 9-20 μ, globose, ovoid, irregular. Cuticle of more or less erect hyphae, 5-12 μ broad. Clamp connections none.

Habit, habitat, and distribution. - On humus, in woods, Trinidad.

Material studied. - TRINIDAD: Dennis 49 (type, from Northern Range).

Observations. - This species is related to H. cantharellus from which it is separated by its mammose umbo. Other differences, if any, may be found ~~after~~ when further microscopic studies of fresh material have been made. The description of microscopic characters given above is based on our study of the type. Essentially our description agrees with that of Dennis (1953).

HYGROPHORUS PARVULUS Peck

New York State Mus. Ann. Rept. 28:50. 1879

Hydrocybe parvula (Pk.) Murr., N. A. Flora 9:378. 1916.

Illustrations:

Plate

Peck, N. Y. State Mus. Ann. Rept., pl. 1, fig. 20-24.

Smith and Hesler, Lloydia 5, pl. 15b.

Pileus 1-3 cm. broad, obtuse to convex, sometimes with a depressed disk, glabrous, moist, at times subviscid, hygrophanous, "amber yellow," "apricot yellow," "light cadmium," "straw yellow," or "wax yellow," opaque and a paler yellow when faded, sometimes "orange" to "cadmium yellow" moist, fading to "baryta-yellow," translucent striate. Context brittle, waxy, thin, concolorous with the surface, unchanging; odor and taste mild.

Lamellae decurrent, subdistant, broad, subtriangular, intervenose, whitish or pale yellowish to "wax yellow," edges even.

Stipe 3-6 cm. long, 2-3 mm. thick, "citron yellow" to "amber yellow," base frequently becoming tinged "Grenadine" or dull rufous, at times the lower half or more tinged rufous or ochraceous-salmon, terete or compressed, narrowed at the base or equal, fragile, glabrous, dry or moist, not viscid, hollow.

Spores 5-7 (8.5) x 3.5-5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 26-40 x 5-7 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia not differentiated.

Gill trama of subparallel hyphae, the cells 8-20 μ long, 10-30 μ broad. Cuticle of repent hyphae, a few surface hyphae appearing slightly gelatinous, some free ends more or less erect. No hypodermium. Pileus trama of radial hyphae. Clamp connections present on the cuticular hyphae.

Habit, habitat, and distribution. - Gregarious on soil and humus, in deciduous and mixed woods, and under rhododendron, Maine, Massachusetts, New York, Tennessee, North Carolina, Michigan, Oregon, California, and Canada, June-October.

Material studied. - CALIFORNIA: Smith 8545; MAINE: Bigelow 3986, 4047, 4074, 4619, 4620, 4621, 4622; Rea 486; Rea & Woodbury, Denmark, Aug. 6, 1940; MASSACHUSETTS: Bigelow 7656, 7879, 8603, 8604, 8833, 8902, 9055; MICHIGAN: Kauffman, Bay View, July 19, 1905, and Marquette, Aug. 27, 1906; Mains 32628; Smith (Brooks 1290, 1304), 15216, 57133; NEW YORK: Peck (type, from Northville, August), also from Lake Pleasant, August; NORTH CAROLINA: Hesler 14349, 17948, 19351, 20513, 22302, 23209; Kauffman, Hots Springs, Aug. 22, 1924; Smith & Hesler 11324; OREGON: Kauffman, Mt. Hood, Oct. 14, 1922; TENNESSEE: Hesler 4453, 17695, 18602, 22409, 23504; G S M N P: Hesler 17213; Smith 9844, 10745; CANADA (Quebec): Bigelow 4846, 6065.

Observations. - A noticeable feature in this species, as pointed out by Peck (1907), is found in the stipe which is often more highly colored (pinkish-red) than the pileus.

Notes on the type follow: Spores 5-7 x 3.5-5 μ, ellipsoid,

smooth, non-amyloid. Basidia 30-39 x 6-7 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama subparallel to parallel, hyphal cells 20-63 x 10-27 μ. Cuticle of appressed or a few more or less erect hyphae. Clamp connections present on the cuticular hyphae.

6065 – Hygrophorus parvulus PK.

X 1.6

(Photo by Bigelow)

8902 - Hygrophorus parvulus PK.

(Photo by Bigelow)

23209 - Hygrophorus parvulus PK.

HYGROPHORUS PERPLEXUS Sm. & Hes.

Sydowia 8:328. 1954

Pileus 1-3 cm. broad, obtusely conic with the margin curved in against the gills at first, expanding to broadly campanulate or plane with an obtuse umbo, "Prout's brown" to near "Rood's brown" and slowly developing an olivaceous to orange tinge on margin and also becoming translucent-striate, gradually changing to pale orange-tan or pinkish tan, hygrophanous and fading to buff pink ("light ochraceous salmon" to "light ochraceous buff"), very slimy-viscid. Context very thin and fragile, concolorous with cap and fading like it; odor and taste none.

Lamellae ascending and adnate with a tooth or when full expanded depressed-adnate (never decurrent), "amber yellow" young, finally "apricot yellow," broad, close to subdistant, edges even.

Stipe 3-5 cm. long, 2-5 mm. thick at apex, slightly thicker below or equal, slimy-viscid over all, "ochraceous buff" at base, pallid watery grayish above, finally yellow over all (never seen to have olive tints).

Spores 6-8 x 4-5 μ, ellipsoid to ovoid, smooth, hyaline in KOH, yellowish in Melzer's reagent. Basidia 36-44 x 7-9 μ, 4-spored. Pleurocystidia and cheilocystidia none seen. Gill-trama subparallel to very slightly interwoven, hyphae 6-12 μ broad,

subhymenium not distinctive. Pileus trama homogeneous beneath a gelatinous cuticle of narrow, branched hyphae arranged in a turf 75 to 100 μ high, composed of slender hyphae (1.5-2.5 (6) μ broad), - an ixotrichodermium. No hypodermium. Pileus trama ~~interwoven, more or less gyriclinally disposed.~~ of radially disposed hyphae. Clamp connections present on the cuticular hyphae, but small and difficult to demonstrate.

Habit, habitat, and distribution. - Gregarious to subcaespitose under aspen and beech on thin sandy soil, Michigan, June.

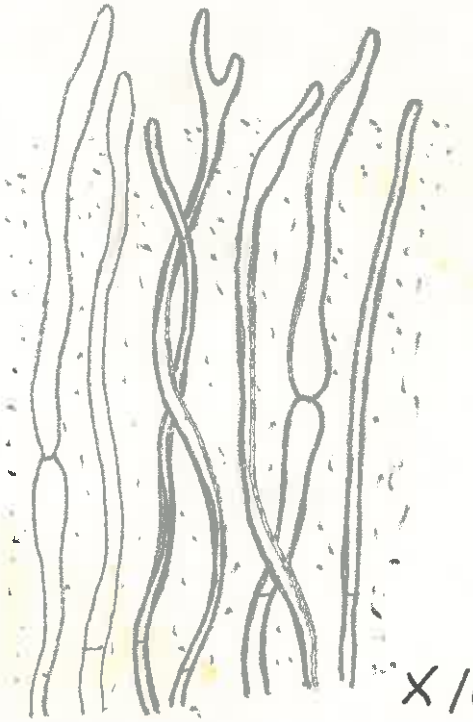
Material studied. - MICHIGAN: Brooks and Smith 21491 (type, Univ. Mich. Biological Station, Cheboygan County, June 26, 1946); McKnight, Pellston, July 2, 1953; Singer, Cheboygan Co., July 1, 1953; Smith 21615, 32279, 34029, 36442, 39000; Smith & Brooks 1098, 1099.

Observations. - This species has the stature of H. psittacinus and the colors of the dried fruiting bodies are similar, but is not to be considered a color-form of that species. The dark brown to vinaceous brown young pilei are significantly different as species go in this group. This agaric has been observed in the Great Lakes Region for the last twenty years, but it was not until the mycological program was started at the University's Biological Station that localities were found where the fungus fruited regularly and could be observed from season to season. Some would very likely refer this species to H. sciophanus, but we believe that there is a fundamental difference

between it and the true H. sciophanus. Fries (1874) placed the latter between H. colemanianus and H. laetus in his subsection containing species with "Lamellis decurrentibus" whereas H. psittacinus was placed in the following section with gills adnexed to somewhat seceding. H. perplexus is so like H. psittacinus in gill characters that Fries certainly would have placed it beside that species if he had seen it. J. Lange's (1940) account of H. sciophana establishes a concept closely in line with that of Fries, and to us indicates a species different from H. perplexus. Confusion may have been caused by the description of Fries (1863) in his "Monographia" where (p. 18) the gills are described as "attenuato-adnatae, primities leviter adscendentes" but even here he placed the species next to H. laetus. In the same description he described the stipe of H. sciophanus as "lubricus" but this should not be misinterpreted as he applied the same term to the stipe of H. laetus in the following description. The H. sciophanus of Kühner and Romagnesi (1953) is probably H. perplexus since they arranged it next to H. psittacinus but they carefully omitted any reference to the type of gill attachment.

Hygrophorus perplexus

Paratype (Sm - 36442)



X 1000

Epicutis of gelatinous, narrow (2.5-6μ), arranged in a loosely-tangled to erect turf, — an ixotrichodermium. Hypodermium none.

Pileus trama homogeneous, interwoven, ± radially disposed.

Hygrophorus perplexus

HYGROPHORUS PSEUDOPARVULUS SP. NOV.

Pileus about 1 cm. broad, convex-depressed, glabrous, moist, hygrophanous, watery-pallid and translucent striate, fading to white and drying white. Context thin, white; odorless.

Lamellae decurrent, distant, narrow, white, near "cinnamon buff" as dried.

Stipe about 1 cm. long, 1.5 mm. thick, equal, white, unpolished and dry, no veil present.

Spores 5.5-6.5 (7) x 2.8-3.5 μ, narrowly oblong, hyaline in KOH and Melzer's, smooth. Basidia 4-spored, 23-28 x 5-6 μ, narrowly clavate. Pleurocystidia and cheilocystidia none. Gill trama of subparallel hyphae the cells somewhat inflated. Epicutis of pileus of narrow (2-4 μ) hyaline non-gelatinous hyphae. Clamp connections present.

Habit, habitat, and distribution. - Solitary on a very rotten log, Michigan, July.

Material studied. - MICHIGAN: Smith 37024 (type, from Tahquamenon Falls State Park, July 23, 1951).

Observations. - This species is a true Hygrophorus of ~~subgenus~~ section Hygrocybe, and keys out closest to H. subaustralis from which it differs in the decurrent gills and narrowly oblong small spores, in addition to lacking pleurocystidia. It is most

closely related to H. parvulus from which it is readily separated by its narrower spores and lack of pigment. The very narrow spores preclude its being classified as an albino H. parvulus.

HYGROPHORUS PSITTICINUS VAR. CALIFORNICUS VAR. NOV.

Pileus 2-4 cm. latus, caeruleus demum ruber, disco fuscus, glutinosus, margine striatus; lamellae adnatae, vinaceo-coriaceae, caeruleo tinctae, deinde ostendunt hinnuli colorem, demum basi flavae, subdistantes, latae; stipes 6-9 cm. longus, 3.5-6 mm. crassus, apex sub-caeruleus, luteus demum infra pallido-aurantius, glutinosus; sporae 8-9 (10) x 4-5 (5.5) μ, ellipsoideae. Specimen typicum in Herb. Univ. Mich.; lectum in Prairie Creek State Park, Calif., Dec. 5, 1956, A. H. Smith n. 56310.

Pileus 2-4 cm. broad, obtusely conic with an incurved margin, expanding to plano-umbonate, "Gobelin blue" on margin and disk "Hays brown," becoming "mineral red" with a paler disk, "pompeian red" at times fading out to yellowish, some olive showing at times, glutinous overall, margin striate when moist. Context thin; odor and taste none.

Lamellae depressed-adnate to nearly free, vinaceous buff with a bluish cast when young, soon "light vinaceous fawn" to "fawn color," gradually yellowish, subdistant, broad, ventricose.

Stipe 6-9 cm. long, 3.5-6 mm. thick, apex bluish to bluish vinaceous, pale orange downward but first passing through yellowish, equal or slightly enlarged downward, glutinous, tubular and cartilaginous.

Spores 8-9 (10) x 4-5 (5.5) μ, ellipsoid, smooth, pale

yellowish in Melzer's reagent. Basidia 42-60 x 7-9 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama subparallel to slightly interwoven, hyphae 6-15 μ broad. Cuticle a turf of narrow (2-3.5 μ) gelatinous, - an ixotrichodermium. No hypodermium. Pileus trama of radial hyphae. Clamp connections none or rare and small on the cuticular hyphae.

Habit, habitat, and distribution. - Gregarious under conifers, California, December.

Material studied. - CALIFORNIA: Smith 56310 (type, Prairie Creek State Park, December 5, 1956), 56523.

Observations. - This variety is distinguished from the typical H. psitticinus by its blue colors and larger basidia. Smith has collected a form (57304) from Michigan which is blue in age and which may belong here.

HYGROPHORUS PSITTICINUS (Fr.) Fr. var. PSITTICINUS

Epicr. Myc., p. 332. 1838

Agaricus psitticinus Fr., Syst. Myc. 1:102. 1821.

Hygrocybe psitticina (Fr.) Kummer, Der Führer in die Pilzkunde, p. 112. 1871.

Illustrations:

Plate

Boudier, Ic. Myc., pl. 42.

Bresadola, Icon. Myc., tab. 346, fig. 1.

Bulliard, Herb. Fr., pl. 545, fig. 1 (as Agaricus cameleon).

Gillet, Champ. Fr., pl. 137 (346).

Hussey, Ill. Brit. Myc., 1. pl. 49.

Juillard-Hartmann, Icon. Champ., pl. 47, fig. 4.

Lange, Flora Agar. Dan., 5, pl. 168 D (as Hygrocybe).

Murrill, Mycol. 2, pl. 27, fig. 4.

Ricken, Die Blätterp. Deutschl., pl. 8, fig. 6.

Schaeffer Fung. Bavar., pl. 301.

Smith, Mushrooms in their Natural Habitats, Reel 12, No. 79.

Sowerby, Engl. Fungi, pl. 82.

Wakefield and Dennis, Common British Fungi, pl. 34, fig. 5.

Pileus 1-3 cm. broad, conic to campanulate or finally convex to plane, sometimes remaining umbonate, glutinous or viscid, appearing as if varnished when dry, color dark green or "parrot-green" when young and fresh, soon fading or changing color to ochraceous-buff, rufous, tawny, pinkish flesh-color, yellow-ochre, sordid yellowish, or olivaceous-orange, usually

drying bright pale incarnate, translucent striate at first, opaque when faded. Context thin, concolorous with the surface, fragile (but somewhat tenacious because of the thick pellicle); odor and taste not distinctive.

Lamellae adnate, "light celandine green" at first, soon reddish or "cadmium yellow" to "light cadmium," narrow to broad, subdistant, edges even.

Stipe 3-7 cm. long, 2-5 mm. thick, green above of almost over all when very young, soon changing to yellow or orange, in age pinkish like the pileus, slimy viscid throughout its entire length, equal or tapering upward slightly, hollow.

Spores 6.5-8 (10) x 4-5 (6) μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 28-46 x 6-8 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia not differentiated. Gill-trama subparallel or very slightly interwoven, hyphae 5-12 (20) μ broad, yellowish in Melzer's reagent. Cuticle of narrow (1.2-2.5 μ) hyphae forming a turf, - an ixotrichodermium. No hypodermium. Pileus trama of radial hyphae. Clamp connections none.

Habit, habitat, and distribution. - Gregarious to scattered in coniferous and deciduous woods, in pastures, along roadsides, Nova Scotia, Ontario, and British Columbia in Canada; Maine, Massachusetts, New York, Maryland, North Carolina, Tennessee, Michigan, Washington, Oregon, and California, spring, summer, and autumn. Singer (1950) reports it from Argentina.

Material studied. - CALIFORNIA: Smith 3688, 8898, 9174, 9429, 56916; MAINE: Bigelow 3433; Rea 990; MARYLAND: Kelly 1003; MASSACHUSETTS: Bigelow 7133, 7198, 8420, 9011; MICHIGAN: Imshaug 4804, 4851; Kauffman, Ann Arbor, July 29, 1927; Mains 32767; Smith 1208, 1355, 1412, 1425, 1469, 1499, 6813, 7126, 21320, 25680, 33755, 36456, 37519, 41599; Thiers 2755, 2943, 3288, 3330, 3415, 3625; NORTH CAROLINA: Coker 5110; Sharp & Hesler 9315, 10720; Smith & Hesler 7409, 11774; OREGON: Gruber 39; TENNESSEE: Hesler 4440, 11512, 12426, 13841, 14175, 17493, 18292, 23070; Kauffman, Elkmont, Sept. 19, 1916; Sharp & Hesler 9127, 12818; WASHINGTON: Imshaug 1015, 1089; Smith 3106, 14243, 16517, 17366, 17966, 29817, 29894; BELGIUM: Heinemann 2971; CANADA: Bigelow 5541; Smith 660, 4890; DENMARK: J. P. Jensen (H-23944, 23945, 23946, 23947); NETHERLANDS: Bas 2304.

Observations. - Spore measurements vary in collections from one region to another. Kauffman (1918) finds them 6-7.5 x 4-5 µ, Lange (1935-40) reports 8 x 5.5 µ, and Bresadola (1928) 8-12 x 4.5-6 µ. There is little possibility that H. psitticinus var. psitticinus would be confused with any other species or variety if the young stages are found. After the carpophores have changed color, they might be confused with H. laetus, and dried specimens of these two species are macroscopically indistinguishable. The collector is reminded that in age or particularly on being dried, all traces of the typical parrot-green color disappear.

HYGROPHORUS PUNICEUS (Fr.) Fr.

Epicr. Myc., p. 331. 1838

Agaricus puniceus Fr., Syst. Myc. 1:104. 1821.

Hygrocybe punicea (Fr.) ~~P. Karst., Bidr. Finl. Nat. Folk. 32:235. 1879.~~ Kummer, Der Führer in die Pilzkunde, p. 112. 1871.

Illustrations:

Plate

Bøhme, Norsk Soppbok, pl. 2, fig. 13.

Bresadola, Icon. Myc., tab. 345.

Fries, Sv. Aetl. Svamp., pl. 77.

Juillard-Hartmann, Icon. Champ., pl. 47, fig. 2.

Kauffman, Agar. Mich., pl. 30 (as H. coccineus)

Lange, Flora Agar. Dan., 5, pl. 167 B.

Murrill, Mycol. 2, pl. 27, fig. 5.

Peck, N. Y. State Mus. Bull., 5, pl. 58, figs. 1-7.

Peck, N. Y. State Mus. Mem., 3, pl. 52, figs. 1-7.

Ramsbottom, Mushrooms and Toadstools, pl. 12.

Ricken, Die Blätterp. Deutschl., pl. 8, fig. 2.

Smith and Hesler, Lloydia 5, pl. 11.

Thomas, Field Book of Common Gilled Mushrooms, pl. 10, fig. 62.

Wakefield and Dennis, Common British Fungi, pl. 36, fig. 2.

Pileus 2-4 (7) cm. broad, obtusely conic and the margin incurved when young, becoming umbonate to plane, the margin sometimes remaining decurved and sometimes spreading or recurved, color deep blood red over all at first, fading in streaks (as if

hygrophanous) to near "zinc orange," in age pale orange over all, glabrous, viscid, margin sometimes translucent striate. Context thin, fragile, waxy, sordid watery-reddish orange, becoming pale orange-yellow, unchanging; odor and taste mild.

Lamellae bluntly adnate with a decurrent tooth at first, becoming adnexed and sometimes seceding in age, reddish orange to pale yellow, subdistant, broad, edges even.

Stipe 2-7 cm. long, (5) 10-15 mm. thick, reddish but soon fading to orange or yellow, base white or yellowish, yellow to orange within, more or less fibrillose-striate, equal or narrowed slightly at the base, sometimes slightly ventricose, stuffed to hollow.

Spores (7) 8-11 (12) x (3.5) 4-6 μ, subellipsoid to oblong, smooth, yellowish in Melzer's reagent. Basidia 32-65 x 6-11 μ, usually 4-spored, at times 1-, 2-, or 3-spored. Pleurocystidia and cheilocystidia none. Gill-trama subparallel, hyphae 8-20 μ broad, the cells long and cylindric, basidia, subhymenium, and trama all yellow in Melzer's reagent. ~~Pileus trama homogeneous beneath~~ Cuticle a gelatinous ~~pellicle, which is~~ zone 125-175 μ thick, the hyphae 3-5 μ broad, and isocutis. No hypodermium. Pileus trama of radial hyphae. Clamp connections present on the cuticular hyphae.

Habit, habitat, and distribution. - Gregarious to scattered under hardwoods and conifers, Nova Scotia to Manitoba in Canada; ~~and~~ Maine, & Bogelow Massachusetts, New York, Pennsylvania, Virginia, North Carolina, Tennessee, Alabama, Michigan, Washington, Oregon, and California, June-December; also Europe.

Bigelow 8523, 8705;

Maine: Bigelow 4675;

Material studied. - ALABAMA: Burke 84, 2075; CALIFORNIA: Smith 3803, 3867, 3930, 8358, 8508, 9013, 9170, 9416; MASSACHUSETTS: Davis, Stow, Sept. 19, 1911; MICHIGAN: Kauffman 381; Smith 1203, 1448, 6049, 7689, 15447, 32478, 33090, 33244, 33554, 33937, 37086, 38696, 50243, 58285; Thiers 3310, 3556, 3585, 4234, 4289; NEW YORK: Kauffman & Mains, Adironack Mts., Sept. 12, 1914; House, Newcomb, Sept. 21, 1924; Smith 418; NORTH CAROLINA: Smith & Hesler 7404, 10198; G S M N P: Smith 10220; OREGON: Gruber, Eugene, Jan. 25, 1944; PENNSYLVANIA: Kauffman, Mt. Gretna, Sept. 7, 1924; Overholts 16018; TENNESSEE: Hesler 4393, 4394, 4395, 7848, 10944; Rice 4438; Smith & Hesler 7450, 11332; VIRGINIA: Kelly 1559; CANADA: Bowerman 45188; Burlingham, Ontario, Aug. 1920; Groves & Hoare 27619; Smith 675, 814, 4738; Denmark: J. P. Jensen (H-23948, 23949, 23950); Austria: Moser (H-24133).

Observations. - The viscid pileus, its deep blood red color, and the somewhat fibrillose striate margin are the important diagnostic characters of the species. We have not been able to verify the differences between H. coccineus and H. puniceus as pointed out by Kauffman. For a critical comparison of these two see H. coccineus (page). The spore size varies considerably in specimens with four-spored basidia. This added to the fact that two-spored forms are also known to occur (also one- and three-spored), makes spore size a rather poor character to use in distinguishing this species from its close relatives.

Hygrophorus puniceus hy 9170

Hygrophorus puniceus (Fr.) Fr.

Smith 8358

Hygrophorus puniceus Fr.

HYGROPHORUS PURPUREOFOLIUS Bigelow

Rhodora 62:190. 1960

Illustration:
Plate -
Bigelow, Rhodora 62, pl. 1253.

Pileus (0.7-) 1-5 cm. broad, conic or campanulate at first, umbo obtuse and rather broad, margin incurved and slightly inrolled, not striate, becoming convex to broadly convex, finally plane, margin often somewhat undulate, surface opaque and dull watery-appearing, glabrous, moist and hygrophanous, not viscid, dark reddish-orange when young ("vinaceous rufous," "Hays russet," "Kaiser brown," "Mars orange"), becoming paler and more orang~~ish~~-like when expanded ("burnt sienna," dull "Mars orange," "orange rufous"), usually fading from the disk outward, fading slowly and appearing radiate-streaked or squamulose, becoming a rather bright yellowish-orange "deep chrome"); ~~flesh~~ Context thin, brittle, concolorous with pileus when moist, fading to whitish or a pale yellowish, odor and taste not distinctive.

Lamellae broadly adnate to short decurrent, close to subdistant, broad (2-6 mm.) waxy-appearing, rather brittle, dull lavender to purple ("pale purple drab," "pale vinaceous drab," "purple drab," "vinaceous drab," at times nearly "deep dull lavender"), yellowish cast in age, edges even.

Stipe 2.5-7 cm. long, 4-9 mm. thick at apex, equal or either end enlarged, sometimes ventricose, often compressed

and with a vertical groove, usually curved or flexuous, hollow (yellowish on interior of cortex), fibrous-brittle and splitting longitudinally, surface glabrous, concolorous with moist pileus and not fading appreciably, base with slight whitish tomentum or more rarely the tomentum lilac colored.

Spores 7-11 x 4-5.5 μ, elliptic to elliptic-oblong, at times obovate, apicular end often curved in side view, smooth, not amyloid, spore print not obtained. Basidia 42-55 x 6-8 μ, 4- and 2-spored. Pleurocystidia and cheilocystidia none. Gill trama regular to subparallel. Clamp connections present.

Habit, habitat, and distribution. - Gregarious to subcespitose, on humus, under birch and maple or in mixed woods (with hemlock), Massachusetts, August.

Material studied. - MASSACHUSETTS: Bigelow 8361, 8362, 8363 (type, from Savoy Mt. State Forest, Florida, Mass., Aug. 17, 1959), 8364, 8365, 8421, 8422, 9086.

Observations. - As Bigelow states (1960), the purplish gills are unusual for species in Hygrocybe. At this point, gill-color in H. troyanus and H. mephiticus is recalled. In H. troyanus the gills are violaceous, according to Murrill (salmon orange according to Dennis), but the hemispheric to convex, ferruginous pileus, and shorter spores will separate it from H. purpureofolius. In H. mephiticus the gills are grayish-violaceous to grayish-purple, but the gills are sinuate, and the pileus yellowish-brown with a mephitic odor.

Notes on the type: cuticle of repent hyphae, 3-5 μ broad, non-gelatinous, hyphae undifferentiated from those of the pileus trama. No hypodermium. Pileus trama of radial and subparallel hyphae; septa relatively numerous and close together.

8361 - Hygrophorus purpureofolius Bigelow
slightly reduced
(Photo by Bigelow)

8361 - Hygrophorus purpureofolius Bigelow

slightly reduced

(Photo by Bigelow)

Hygrophorus purpureofolius Bigelow

(Bigelow-8423; UT-23579)

HYGROPHORUS PURUS Peck

New York State Mus. Ann. Rept. 26:63. 1874

Hydrocybe pura (PK.) Murr., N.A. Flora 9: 394. 1916.

Illustrations:

Plate

Smith & Hesler, Elisha Mitchell Sci. Soc. Jour. 56, pl. 9, below.

Pileus (2.5) 4-7.5 cm. broad, conic, conic-campanulate, broadly conic, or with the margin recurved in age, white, tinged pinkish red where wounded, glabrous, viscid, finely rivulose, margin pellucid-striate. Context thin, white, very waxy; odor and taste mild.

Lamellae uncinate, snow-white, subdistant, rather broad, ventricose, edges even.

Stipe 4-8 cm. long, 3-8 mm. thick, white and shining, base tinged pinkish red where wounded, equal or tapered slightly either way, sometimes flexuous or curved at the base, glabrous, glutinous, hollow.

Spores 7-9 x 4-5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent, white in deposit. Basidia 37-58 x 6-7 (8) μ, 4-spored, rarely 2-spored. Pleurocystidia and cheilocystidia not differentiated. Gill-trama subparallel to very slightly interwoven, hyphae 8-13 μ broad, yellowish in Melzer's reagent. Cuticle of colorless, gelatinous hyphae, 3-6 (10) μ broad. No hypodermium. The pileus trama is of broad, 6-10 (20) μ, hyphae

which are loosely and radially disposed. Even though radial, the hyphae tend to be interwoven. Clamp connections present on the cuticular hyphae.

Habit, habitat, and distribution. - In deep humus, mixed woods, New York, North Carolina, and Alabama, August-October.

Material studied. - ALABAMA: Burke 86; NEW YORK: Peck (type, from Crogham, Lewis County); NORTH CAROLINA: Hesler 12290.

Observations. - Notes on the type: spores 7-9 x 4.5-5.5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 41-53 x 7-8 μ, 2- and 4-spored. Gill-trama subparallel to very slightly interwoven, hyphae 4-8 (12) μ broad. Cuticle of gelatinous hyphae. Clamp connections rare on the cuticular hyphae. Our No. 12290, from North Carolina, agrees with the type.

In section the stipe shows a thick outer coating of slender, gelatinous hyphae similar to that found in H. psitticinus. Similar hyphae project from the surface of the pileus and become matted together forming the viscid pellicle. H. purus has much the stature of H. calyptraeformis, but its white pileus and glutinous stipe at once distinguishes it. Peck (1907) says that H. calyptraeformis var. niveus Cke. scarcely differs from H. purus.

HYGROPHORUS RAVENELII Berk. & Curt.

Ann. Mag. Nat. Hist. II:12:424. 1853

Pileus 4-6.5 cm. broad, convex, orange-red, moist, smooth.

Lamellae deeply emarginate but attached, paler than the pileus, ventricose.

Stipe 10-12.5 cm. long, 6 mm. thick, yellow, whitish and attenuated below, brittle, fistulose.

Spores 8-9 x 4.5-5.5 μ, rather numerous, ellipsoid, smooth, colorless in Melzer's reagent. Basidia 41-49 x 4-8 μ. Pleurocystidia and cheilocystidia none. Gill-trama composed of subparallel hyphae, 3.5-6 μ broad, many are collapsed and do not revive in 2% KOH, yellowish-brown in Melzer's reagent. Pileus cuticle hyphae with a few clamp-connections, repent to somewhat erect, not gelatinous. Pileus trama yellowish-brown in Melzer's reagent.

Habit, habitat, and distribution. - On wet soil, South Carolina.

Material studied. - SOUTH CAROLINA: Ravenel (type, on deposit in the Herbarium at Kew Gardens, 2889).

Observations. - The description of microscopic characters given above are based on our study of the type.

Although there are two collections at Kew, only the type, No. 2889, according to Dr. G. Taylor at Kew, was definitely determined by Berkeley as H. ravenelii.

The single carpophore is dark-red and is cemented to the sheet. There seems to be no umbo.

The second collection, Kew No. 3444, may be a different species. The spores are similar to those of the type, but the basidia are smaller, the pileus is pallid-brownish with very thin flesh, and the gills are thin.

Coker (1929) reports in some detail on an agaric from North Carolina which he describes and figures under the name H. ravenelii. We have studied Coker's Nos. 3590, 3780, 3757, and 3790. In all of these the spores are 9-14 x 5.7-8 μ, the basidia 2- and 4-spored, clamp connections absent, and the pileus is strongly umbonate. In our opinion, Coker's specimens are H. acutoconicus. So far as we know, the type is the only reported collection of the true H. ravenelii. Further search may yield additional collections of it.

HYGROPHORUS REAI Maire

British Myc. Soc. Trans. 3:170. 1910.

Hygrocybe reai (Maire) J. Lange, Studies in Agarics of Denmark, V. Dank Bot. Arkiv. 4:4:25. 1923.

Illustrations:

Lange, Flora Agar. Dan. 5, pl. 168A (as Hygrocybe).

Wakefield and Dennis, Common British Fungi, pl. 36, fig. 3.

Wakefield and Dennis, British Myc., Soc. Trans. III, t. 11.

Pileus 1-3 cm. broad, convex when young, becoming broadly convex in age, "Grenadine red" to "flame scarlet" (brilliant red) on the disk, "deep chrome" (brilliant orange) toward the margin, in age fading to "deep chrome" over all, glabrous, viscid, faintly translucent striate toward the minutely crenate margin. Context concolorous with the surface and fading with it, brittle, thin (1.5-2.5 mm. near the stipe); odor none, taste very bitter.

Lamellae bluntly adnate and soon seceding, "light buff" when young, becoming "straw yellow" (whitish and becoming pale yellow), subdistant (18-24 reach the stipe), 2 tiers of short individuals, broad (4-6 mm.), edges even.

Stipe 3-5 cm. long, 1.5-3.5 mm. thick, concolorous with pileus or paler, usually narrowed below, very fragile, glabrous, viscid, shining, often translucent, surface undulating.

Spores 6.5-8 (9) x 4-5.5 μ, ellipsoid, many irregular and variable in shape in dried carpophores, smooth, pale yellow in Melzer's reagent. Basidia 34-43 x 6-8 μ, mostly 4-spored, some 2-spored. Pleurocystidia and cheilocystidia none. Gill trama subparallel, hyphae 6-15 μ broad. Cuticle of a thin layer of gelatinous repent hyphae, - an ixocutis. Hypodermium none. Pileus trama of radial hyphae. Clamp connections on the cuticular hyphae.

Habit, habitat, and distribution. - Gregarious under conifers, New York, Michigan, and Washington, July-October; also Europe.

Material studied. - MICHIGAN: Porter & Smith 21149; Smith 32918, 42670; NEW YORK: Stewart, Adirondack Mts., Sept. 1921; WASHINGTON: Imshaug 775, 1286; Smith 18009; DENMARK: J. P. Jensen (H-23951, 23952, 23953); Austria: Moser (H-24126).

Observations. - The bitter pellicle of the pileus distinguishes this species from H. minutulus. In other characters they are similar. Further search may reveal its occurrence in areas additional to those given above.

HYGROPHORUS ROSEUS (Murr.) Murr.

Mycologia 4:332. 1912

Hydrocybe rosea Murr., Mycologia 3:197. 1911.

Pileus 1 cm. broad, 5 mm. high, convex with an umbilicate center, resembling Omphalia in shape, roseus to incarnate, glabrous, smooth, margin entire or rarely lobed, decurved. Context very thin, allowing the lamellae to show through on the upper side.

Lamellae decurrent, arcuate, white, stained red, medium broad, subdistant.

Stipe 1.5 cm. long, 1 mm. thick at the base, much enlarged at the apex, deep red at the apex, paler than the pileus below, smooth, cylindric.

Spores 8-13 x 6-9 μ, broadly-ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 33-48 x 8-10 μ, 4-spored, sterigmata 4-5 μ long. Pleurocystidia and cheilocystidia none. Gill-trama parallel.

Habit, habitat, and distribution. - In moss on a decayed log, Jamaica, January.

Material studied. - JAMAICA: Murrill 811 (type, from Sir John Peak, 6000 feet elevation, January 5, 1909).

Observations. - The microscopic characters given above are based on our study of the type.

The type is too meagre to section; the structure of the cuticle was therefore not observed. A painting accompanies the type. It is somewhat related to H. subcaespitosus but differs in larger spores and colors.

HYGROPHORUS RUBER Pk.

New York State Museum Bull. 116:32. 1907

Hydrocybe ruber (Pk.) Murr., North Amer. Flora 9:379. 1916.

Pileus 1.5-5 cm. broad, thin, conic, usually not expanded, acute or subobtuse, cuspidate or narrowly umbonate, bright red, not turning black in drying, viscid or glutinous.

Lamellae adnexed, yellow or yellowish-brown, narrow, ascending, subdistant.

Stipe about 2 cm. long, 2 mm. thick, colored like the pileus, equal, viscid, hollow.

Spores 7-9 x 4.5-6 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 31-44 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama subparallel to parallel, with scattered lactifers. Cuticle of gelatinous, more or less repent hyphae, 2.5-5 μ broad. No hypodermium. Pileus trama of radially disposed hyphae, lactifers present, 3-4 (5) μ broad. Clamp connections present on the cuticular hyphae. Surface hyphae of stipe gelatinous.

Habit, habitat, and distribution. - On soil among moss, in swampy woods, Massachusetts and Florida, September and October.

Material studied. - FLORIDA: Murrill F 18739; MASSACHUSETTS: Morris (Peck's type, from Ellis, Massachusetts, September).

Observations. - This species is distinct from H. conicus, which it resembles in shape, in its usually smaller size, more viscid pileus, bright red stipe, and persistent, unchanging color on drying; and from H. cuspidatus by its viscid stipe and small spores. Although in the Florida collection the spores tend to be slightly larger, and some basidia were 2-spored, it otherwise closely resembles the type.

The microscopic characters given above are based on our study of the type. In the original description Peck (1907) gives the spores as 6-7.5 x 4-5 μ, but we found them larger than described by him.

HYGROPHORUS RUGULOSUS Sm. & Hes.

Sydowia 8:330. 1954

Pileus 8-12 mm. broad, convex when young, broadly convex in age, surface glabrous and rugulose, "buffy brown" to dark avellaneous in buttons, becoming olive buff and finally fading to whitish as if subhygrophanous. Context unchanging when bruised, firm but very brittle; odor and taste none.

Lamellae arcuate-decurrent, pinkish buff when young, becoming avellaneous, concolorous with the pileus in age, thickish, subdistant, medium broad, edges even.

Stipe 1-2 cm. long, 1.5-2 mm. thick, equal or narrowed downward, olive brown or grayer at apex, paler (pallid) below, in age more or less concolorous with the gills (no yellow anywhere at any time), naked, translucent.

Spores 4-5 μ, globose or nearly so, smooth, hyaline, yellowish in Melzer's reagent. Basidia 28-40 x 6-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama somewhat interwoven, hyaline in KOH. Cuticle a trichodermium but terminating in an hymeniform layer of vesiculose to pedicellate-inflated cells (end-cells of more or less upright hyphae), thin-walled and readily collapsing. No hypodermium. Pileus trama radial, more or less parallel to interwoven. Cell content of carpophore hyphae not distinctively colored in Melzer's reagent. Clamp connections absent.

Habit, habitat, and distribution. - Gregarious on humus, Michigan, August.

Material studied. - MICHIGAN: Smith 37565 (type, from Pellston, Michigan, August 10, 1951).

Observations. - The cuticle of the pileus does not become broken into squamules as in H. cantharellus series, and the gill trama is more interwoven than in the other species of this section.

HYGROPHORUS SCHULZERI Bres.

Fungi Trident. 1:57. 1884

Camarophyllus schulzeri (Bres.) Ricken, Vademecum f. Pilzfreunde, p. 198 1920.

Hydrocybe schulzeri (Bres.) Joss., Bull Soc. Myc. Fr. 53:206. 1937.

Illustrations:

Bresadola, Fungi Trident. 1:pl. 67, fig. 3. 1884.

Bresadola, Icon. Mycol. p. 332. 1928.

Pileus 10-25 mm. broad, convex to somewhat hemispheric then expanded, sometimes depressed or with wavy-lobed margin when old, yellowish cinnamon to brownish cinnamon or chocolate gray, dry, minutely adpressedly silky-tomentose or velvety under lens when dry, cuticle sometimes cracking in places when old. Context whitish to concolorous; odor and taste none.

Lamellae decurrent, whitish then tinged grayish or brownish, edges even but sometimes rather thick and blunt.

Stipe 1.5-3 cm. long, 3-6 mm. thick, up to 10 mm. when compressed, equal or attenuated downward, concolorous with pileus or paler, apex furfuraceous, elsewhere minutely pruinose at first but soon smooth and shiny, stuffed then hollow.

Spores 4-5 (6) x 4-4.5 (5) μ, globose, subglobose, or ovoid, smooth or at times appearing faintly rough, pale yellow in Melzer's reagent. Basidia 22-33 x 4-6 μ, 4-spored. Pleurocystidia and

cheilocystidia none. Gill trama somewhat parallel, composed of large more or less rectangular cells, at times appearing somewhat interwoven, the cells 17-55 x 6-15 μ. Cuticle a surface zone of inflated cells, 12-33 x 15-23 μ, irregularly-dispersed often scattered but at times hymeniform. Clamp connections none.

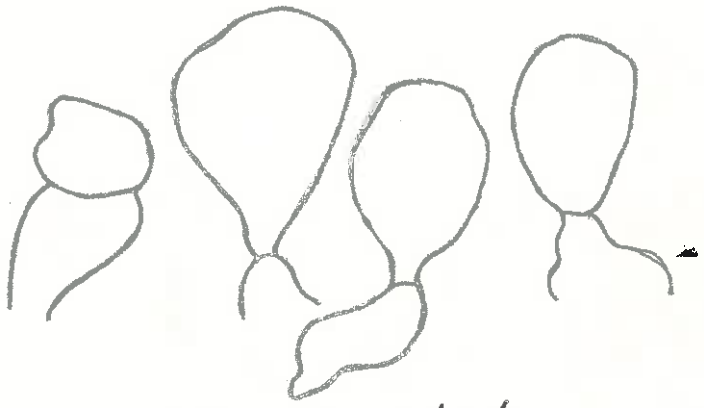
Habit, habitat, and distribution. - On soil, Michigan, August; also in Europe. It has recently been reported and re-described from England by Orton (1960).

Material studied. - MICHIGAN: Smith 50294, from Tahquamenon, Upper Peninsula.

Observations. - The spores of Smith's Michigan collection are slightly larger than is given for British and other European specimens. Orton (1960) says that in Britain, it appears to be a grassland species, and points out that Bresadola gives the habitat as larch woods (perhaps in grass). It resembles H. nitratus in color and habit but is smaller and more tough.

Hygrophorus *schulzeri* Bres.

Sm-50294



cells of cuticle
x1000

HYGROPHORUS SINGERI Sm. & Hes.

Sydowia 8:331. 1954

Hygrocybe singeri (Sm. & Hes.) Sing., Sydowia 11:355. 1957.

Pileus 1-3 cm. broad, conic, becoming broadly conic, color reddish orange to yellow, translucent-striate to disk, blackening in age, glabrous, slimy viscid. Context very soft, greenish yellow, blackening when cut or bruised; odor and taste not distinctive.

Lamellae ascending and attached at very apex of stipe, pale orange when young and finally greenish-yellow, blackening where bruised, close, broad, 2 tiers of lamellulae.

Stipe 4-6 cm. long, 3-5 mm. thick, equal, pale orange yellow becoming greenish yellow, blackening where bruised, slimy viscid over entire length (as in H. laetus).

Spores 9-12 x 5-6 μ, elliptic in face view, in side view slightly bean-shaped, smooth, yellowish in Melzer's solution. Basidia 36-42 x 9-11, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama parallel. Cuticle a gelatinous zone of narrow, repent hyphae, - an ixocutis. No hypodermium. Pileus trama of radial hyphae. Clamp connections present. Stipe with narrow hyphae (3-5 μ), gelatinous in KOH and present as an outer layer. Clamp connections present.

Habit, habitat, and distribution. - Scattered on a wet bank under herbaceous plants, Oregon, Washington, Michigan,

Mexico, and Argentina.

Material studied. - MICHIGAN: Smith 43520, 43618, 49825; OREGON: Smith 19162 (type, from East Fork, Salmon River, Mt. Hood, more or less 4300 ft.), 19606; WASHINGTON: Stuntz, Mt. Rainier Nat. Park. Oct. 2, 1952; MEXICO: Singer M1538a; ARGENTINA: Singer M 15.

Observations. - This species is obviously in the H. conicus series, but the character of the viscid stipe is so unusual and striking that it cannot be regarded as other than a major character. One frequently finds specimens of H. conicus in which the stipe is soft to the touch and hence subviscid (or even doubtfully viscid in wet weather). These forms, however, are not to be confused with H. singeri. The latter often fruits during dry weather and yet the stipe is as viscid as in H. laetus so slimy that it is difficult to hold. The distribution of this species as far as it is known at present is peculiar. Singer (1953a) was the first to report it but he did not publish a description or name it, and when we mentioned our collections to him he expressed the wish that we publish it. Hence it is fitting to dedicate the species to him.

HYGROPHORUS SINGERI VAR. ALBIFOLIUS VAR. NOV.

Pileus 2-5 cm. broad at base, conic, conic-umbonate when expanded, glutinous, ochraceous orange beneath the gluten, becoming darker and then greenish, blackening in drying.

Lamellae white, bluish and finally black when dried, narrow, ascending.

Stipe 10-12 cm. long, 4-6 mm. thick, equal, glutinous, yellow over all or orange at apex, smooth, greenish and then blackening when bruised.

Spores 9-13 x 6-7.5 μ, elliptic to oblong, hyaline in KOH or content pale bister (from darkening process?), yellowish-hyaline in Melzer's reagent. Basidia 2-spored, 38-50 x 9-14 μ, content often bister in KOH. Pleurocystidia and cheilocystidia none seen. Epicutis of gelatinous narrow interwoven hyphae. Clamp connections absent.

Habit, habitat, and distribution. - Under fir, Oregon, November.

Material studied. - OREGON: Frank P. Sipe 1057 (type, from Willamette area, Nov. 16, 1957).

Observations. - The specimens had been pressed which very likely accounts for their completely blackened condition. There are no clamps at the base of the basidium or on the cuticular hyphae. The floccose tissue of the cap revived poorly and the apparent absence of clamps there could be a failure to find them due to the condition of the material.

HYGROPHORUS SPADICEUS VAR. ALBIFOLIUS VAR. NOV.

Pileus 2.5-5 cm. latus, convexus, se expandens conico-convexum vel campanulatum et acute umbonatus, viscidus, "Dresden brown," discus niger, virgatus, demum rimosus. Odore et gustu mitis. Lamellae adnexae, albae, confertae vel subdistantes, latae. Stipes 3-6 cm. longus, 5-10 mm. crassus, albus, fragilis, siccus, cavus, aequalis vel sub-bulbosus. Sporae 8-10 x 4.5-6 μ, ellipsoideae, albae demum luteae. Pleurocystidia et cheilocystidia desunt. Specimen typicum in Herb. Univ. Tenn.; lectum prope Knoxville, Tenn., October 7, 1957, L. R. Hesler n. 22705.

Pileus 2.5-5 cm. broad, convex, soon expanding conic-convex or campanulate and acutely umbonate, splitting and margin upturned, viscid. "Dresden brown," disk blackish, virgate, becoming rimose. Context thin, fragile, watery to pallid; odor and taste mild.

Lamellae adnexed, narrowly attached, white, unchanging, close or subdistant, broad, ventricose, edges even.

Stipe 3-6 cm. x 5-10 mm., white, fragile, splitting easily, dry, somewhat fibrillose-striate, hollow, equal or sub-bulbous.

Spores 8-10 x 4.5-6 μ, broadly ellipsoid, smooth, white becoming "naples yellow" to "mustard yellow" a few weeks after being stored in the herbarium, yellowish in Melzer's reagent. Basidia 42-56 x 8-10 μ. Pleurocystidia and cheilocystidia none.

Gill-trama parallel or subparallel, hyphae 6-20 μ broad.

Habit, habitat, and distribution. - On soil, lawn, adjacent to oak-pine woods, Tennessee, October.

Material studied. - TENNESSEE: Hesler 22705 (type, from near Knoxville, October 7, 1957).

Observations. - This appears to be H. spadiceus with white, instead of yellow, gills, flesh, and stipe. Murrill (1944) has described Tricholoma hygrophorum (from Florida) which resembles our var. albifolius and the two should be compared in the fresh state.

HYGROPHORUS SPADICEUS Fr. f. ODORUS Sm. & Hes.

Sydowia 8:322. 1954

Pileus 1-5 cm. broad, conic young, expanding to conic umbonate or with a spreading to recurved margin, surface "brownish olive" on disk to "Isabella color" on margin, the yellow flesh showing through in streaks, margin often lobed or split, viscid when wet but soon dry (not glutinous), in age finally darkening to date brown and becoming rimose. Context very soft and fragile; odor sharp and somewhat raphanoid, taste mild, not blackening when injured.

Lamellae ascending and nearly free, "pale olive buff" becoming "deep colonial buff" at maturity, not staining, close, thickish, narrow but in age fairly broad and ventricose.

Stipe 3-6 cm. long, 4-7 mm. thick, "olive buff" to "marguerite yellow" to "colonial buff," equal, very fragile and splitting longitudinally, moist but not viscid, not staining, no dark fibrils present.

Spores 8-11 x 5-6 μ, oblong in face view and side view, hyaline in KOH, yellowish in Melzer's reagent. Basidia 36-48 x 8-11 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama parallel, yellowish in water-mounts of fresh material. Pellicle of pileus a layer of narrow (2-5 μ) gelatinous radial hyphae with pale bister content and clamp connections at the septa, the hyphae appressed and the layer thin. No hypodermium. Pileus

trama of radially disposed hyphae 6-10 μ broad.

Habit, habitat, and distribution. - Scattered to gregarious in a freshly burned area in company with H. conicus, Michigan, July.

Material studied. - MICHIGAN: Smith 41403 (type, near Rees' Bog, Cheboygan County, July 1, 1953), 41432.

Observations. - ~~The~~ a very light fire occurred about six weeks before the date of collection, ~~and was very light~~. The soil ~~is very~~ was sandy, and the agaric was abundant in the area for a few days following adequate rains, and then was not seen for the rest of the season. It differs from the type of spadiceus as we know the latter in the sharp odor and glabrous stipe.

HYGROPHORUS SPADICEUS (Fries) Fries var. SPADICEUS

Hymen. Eur., p. 420. 1874

Hygrocybe spadicea (Fr.) Karst. 1879.

Illustrations:

Plate

Cooke, Illus. Brit. Fungi, pl. 1194 (1161).

Bresadola, Icon. Mycogr., Tab. 351.

Pileus 3-4 cm. broad, conic, with a straight margin, expanding to broadly conic, "olive brown" at first but a lemon yellow reflection finally pervading in the marginal area causing it to appear near "citrine drab," viscid, often splitting radially along the margin. Context pale greenish yellow, not blackening when bruised; odor and taste mild.

Lamellae ascending-adnate, "chartreuse yellow" and scarcely changing, broad, ventricose, close, edges eroded.

Stipe 4-6 cm. long, 6-8 mm. thick, concolorous with the gills or paler and some whitish at base, overlaid with a thin layer of "olive brown" fibrils to give it a dusky appearance, usually more or less lacerate, equal.

Spores 8-10 x 5-5.5 μ, ellipsoid, smooth, hyaline to yellowish in Melzer's reagent. Basidia 32-40 x 9-12 μ, clavate, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama

parallel, yellow in water mounts of fresh material. Pileus with a gelatinous pellicle of hyphae having fuscous content. Clamp connections at the septa.

Habit, habitat, and distribution. - Scattered under sumac on dry soil after heavy rains, Michigan, July; also Europe.

Material studied. - MICHIGAN: Smith 32387, 39219.

Observations. - We have identified this material as H. spadiceus knowing that the spacing of the gills is not typical, and that the cap is not truly glutinous as described by European authors. Bresadola, under this name, illustrates an agaric with a stipe like that of our f. glabripes, and with close gills, but in the description he adheres to the idea of a fibrillose stipe and distant gills. The important characters are the dark pileus toned beneath the cuticle with yellow, the yellow gills, unchanging flesh and pale olive-yellow stipe. We did not get a good spore deposit and hence cannot verify that the deposit is yellowish as Bresadola indicated. He also gives the spores as larger than we found them. Since the species appears to be very rare in North America, we hesitate to describe our material as new on differences that could so easily turn out to be inconstant variations.

HYGROPHORUS SPHAEROSPORUS Peck

Torrey Bot. Club Bull. 22:486. 1895

Camarophyllus sphaerosporus (Peck) Murr., North Amer. Flora 9:386. 1916.

Pileus 12-24 mm. broad, subconic, convex, obtuse or slightly umbonate, whitish, inclining to reddish-brown, the margin incurved. Context thick at the center, firm, white; odor unpleasant in drying.

Lamellae adnate or slightly decurrent, white, broad, subdistant.

Stipe 2.5-5 cm. long, 4-6 mm. thick, colored like the pileus, glabrous, floccose above, flexuous, often slightly thickened at the base, solid.

Spores 5-7 x 4.5-7 μ, globose to subglobose, smooth, at times one or more sides faintly flattened, pale yellowish to colorless in Melzer's reagent. Basidia 28-38 x 6-8 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama parallel to subparallel, hyphae 5-14 μ broad. Cuticle a gelatinous zone, 40-150 μ thick, with scattered areas of brownish hyphae on the surface. Subjacent hyphae colorless. Cuticular hyphae radially disposed, 2-3.5 μ broad. No hypodermium. Pileus trama of radial hyphae. Clamp connections absent.

Habit, habitat, and distribution. - Communicated to Peck by C. McIlvaine, from Iowa, October.

Material studied. - IOWA: McIlvaine (Peck's type).

Observations. - The microscopic characters given above are based on our study of the type.

Peck says: "The fresh plant is said to have no decided odor, but when partly dried it emits a slight but rather unpleasant odor. It belongs apparently to the Section Camarophyllus, and is related to Hygrophorus peckii." Murrill followed Peck in placing this species in Camarophyllus, but it clearly belongs in ~~the~~ Section Hygrocybe.

HYGROPHORUS SUBAUSTRALIS Smith & Hesler

Lloydia 5:46. 1942

Illustrations:

Plate

Dennis, Kew Bull. 2, fig. 5.

Pileus 1-4 (5) cm. broad, more or less conic, then convex to plane, with low conic umbo, margin incurved slightly at first, moist or dry, not viscid, at times atomate, densely matted-fibrillose (under lens), becoming rimose, shining white, disk at times slightly yellowish, opaque, margin even. Context white, unchanging, waxy; odor mild, taste bitter.

Lamellae adnexed to emarginate, pure white, finally cream-tinted, broad, close to subdistant, thin, distinctly waxy, edges even.

Stipe 2-7 (11) cm. x 2-6 mm., equal, shining white, white within, dry, appressed-fibrillose over all or the apex delicately pruinose, often curved, equal, stuffed becoming hollow.

Spores 5-6.5 x 3-4 μ, ellipsoid to more or less pip-shaped to subovoid (from deposits), smooth, hyaline, yellowish in Melzer's reagent, white in mass. Basidia 24-30 x 5-6 μ, 4-spored. Pleurocystidia scattered to abundant, fusoid-ventricose with obtuse apices, more rarely subcylindric, thin-walled, hyaline, 36-75 x 6-16 μ; cheilocystidia similar, few. Gill-trama parallel

to subparallel, hyphae 5-12 μ broad. Cuticle of repent hyphae, - a cutis. No hypodermium. Pileus trama of radial hyphae. Clamp connections present on the cuticular and gill trama hyphae.

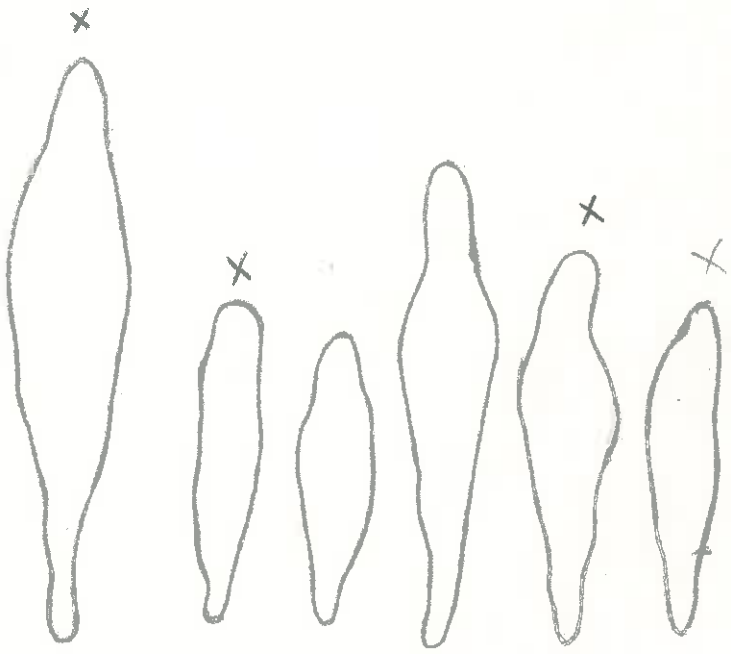
Habit, habitat, and distribution. - On bare soil or in deep humus, in deciduous and mixed woods, Tennessee, North Carolina, and Trinidad, August and September.

Material studied. - NORTH CAROLINA: Smith 10844 (type); Hesler 14423, 17951, 18628, 20463; TENNESSEE: Hesler 22663, 23195, 23221; Hesler & Sharp 14423; Smith 14872; TRINIDAD: Dennis 51.

Discussion. - This is a handsome, small, white species with pleurocystidia and cheilocystidia. In the original description, a spore-deposit was not available, and the spore measurements were erroneously reported to be 4-5 x 3-4 μ, subglobose. Subsequent collections yielded spore-deposits in which the spores are 5-6.5 x 3-4 μ, ellipsoid to pip-shaped or subovoid. Spores from the lamellae are at times found to be immature and smaller than those from deposits. Although the basidia are short for an Hygrophorus, the obvious waxy consistency of the lamellae influences us to place it in this genus rather than in Tricholoma.

Dennis (1953) reports this species from Trinidad. He finds the spores subglobose, 4.5-7 x 4-5.5 μ; basidia 2- or 4-spored, 25-30 x 6-7 μ; pleurocystidia and cheilocystidia similar, delicate, ventricose, with long tapering apices, 45-60 x 8 μ below, 2-3 μ above.

Hygrophorus subaustralis Sm. & Hes.

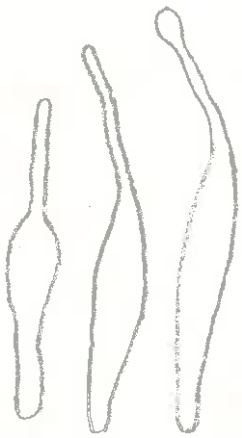


Pl. – x 1000

Hygrophorus subaustralis Sm. + Hes.

Dennis No. 51, Trinidad, Sept 25, 1949

Bl. x 1000



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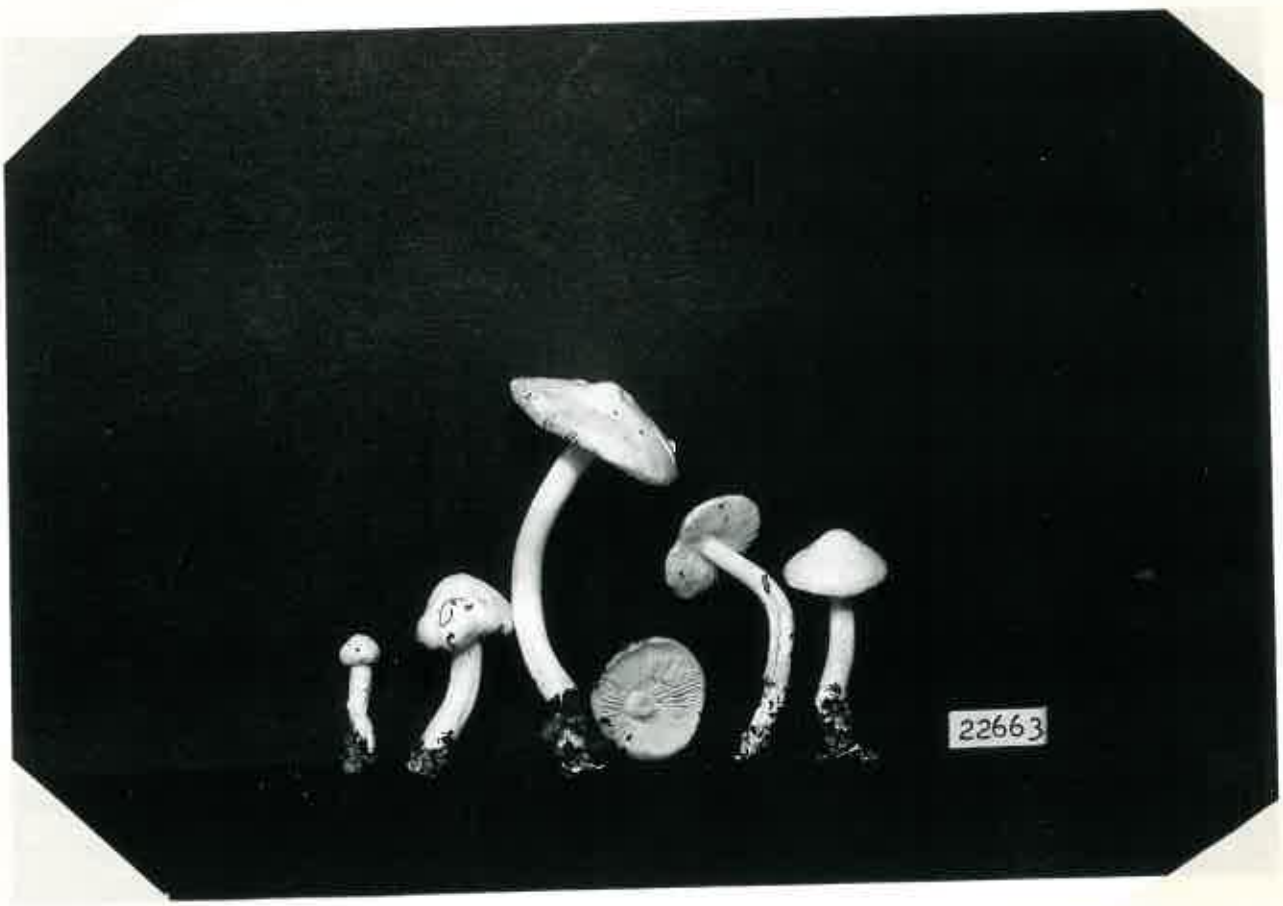


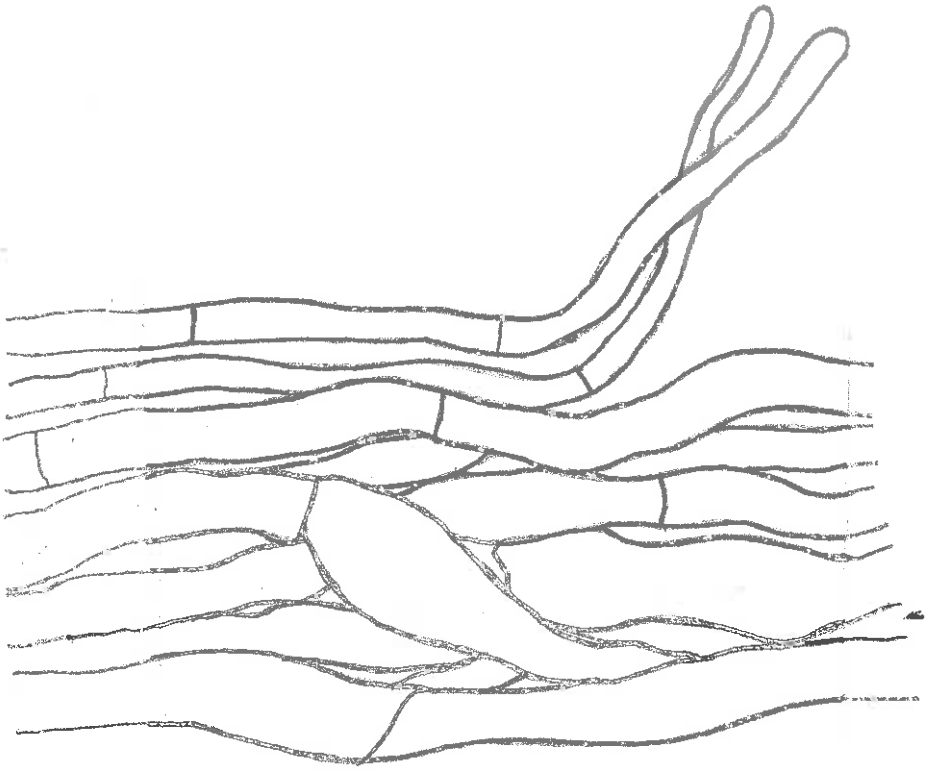
22663 - Hygrophorus subaustralis Sm. & Hes.
x 3/4

23221 - Hygrophorus subaustralis Sm. & Hes.

20463 - Hygrophorus subaustralis Sm. + Hes.

H. subaustralis

UT_ 2266 B



X 1000

Cuticle a cuticle, - not differentiated from the subjacent trama

HYGROPHORUS SUBCAEPITOSUS (Murr.) Murr.

Mycologia 4:332. 1912

Hydrocybe subcaespitosa Murr., Mycologia 3:197. 1911.

Pileus 2-3 cm. broad, convex to plane or depressed, ruber when young, miniatous when older, subcaespitose.

Lamellae adnate or slightly decurrent, white to stramineous, broad, almost distant, inserted.

Stipe 3 cm. long, 5 mm. or more thick, luteous or paler yellowish, cylindric to slightly flattened, smooth, glabrous.

Spores 7.5-10 x 4.5-6 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 32-46 x 6-9 μ, 2-spored. Pleurocystidia and cheilocystidia none. Gill-trama subparallel to slightly interwoven. Cuticle of repent hyphae, - a cutis; at times with some free ends erect. No hypodermium. Pileus trama of radial hyphae. Clamp connections present on the cuticular hyphae.

Habit, habitat, and distribution. - On rich soil under tree-ferns, Jamaica, December-January.

Material studied. - JAMAICA: Murrill 750 (type, from Morce's Gap, 5000 ft. elevation, December 29, 30, January 2, 1908-09).

Observations. - The microscopic characters given above are based on our study of the type.

This species is related to H. coccineus and H. ravenelii, but differs in its colors and habit of growth.

HYGROPHORUS SUBCERACEUS (Murr.) Murr.

Elisha Mitchell Sci. Soc. Jour. 55:372. 1939

Hydrocybe subceracea Murr., Elisha Mitchell Sci. Soc. Jour. 55:371. 1939.

Pileus 1-3 cm. broad, convex to subexpanded, at times with a small, broad umbo, viscid, glabrous, hygrophanous, "buff yellow" to "apricot yellow," flavous, tinged luteous when young and at the center when mature, pale chrome yellow when faded, margin even to translucent-striate when moist, entire to slightly lobed. Context very thin, flavous, unchanging; odor none, taste mild.

Lamellae short-decurrent to adnate, arcuate, broad or medium broad, inserted, medium distant, pale yellow, unchanging, edges even.

Stipe 2-4 cm. long, 2-4 mm. thick, concolor to the pileus or paler yellow, base at times slightly orange chrome, glabrous, not viscid, subequal, flattened, hollow.

Spores 5-7.5 x 2.5-3.5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 30-42 x 4.5-7 μ, mostly 4-spored, a few 2-spored. Pleurocystidia and cheilocystidia none. Gill-trama subparallel, hyphae 4-8 (10) μ broad. Cuticle of repent to more or less erect, somewhat gelatinous hyphae. No hypodermium. Pileus trama of radial hyphae. Clamp connections present on the cuticular hyphae.

Habit, habitat, and distribution. - On soil, under hardwoods, Florida, Michigan, and Oregon; also Quebec, Canada; July-November.

Material studied. - FLORIDA: West & Murrill F 18374 (type, from Newnan's Lake, November 15, 1938); MICHIGAN: Smith 58053; OREGON: Gruber & Smith 20118; CANADA (Quebec): Bigelow 5512; Netherlands: Geesteranus 13478.

Observations. - The stipe of the type lacks a gelatinous layer, and its surface is therefore dry. The dry stipe and more narrow spores separate this species from H. ceraceus Fr. In the Michigan collection (Smith-58058) the carpophores (dried) are somewhat brighter yellow than those of the type; otherwise there is agreement.

Notes on the type: spores 5-7 x 2.5-3.5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 30-40 x 5.5-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama subparallel, hyphae 4-8 μ broad. Cuticle of more or less gelatinous hyphae. Clamp connections present on the cuticular hyphae.

The microscopic characters given above are based on our study of the type.

HYGROPHORUS SUBFLAVIDUS (Murr.) Murr.

Mycologia 4:332. 1912

Hydrocybe subflavida Murr., Mycologia 3:197. 1911.

Pileus reaching 5 cm. broad and 3 cm. high, conic to subcampanulate, umbonate, pale-flavous, dull-luteous in very young stages and on the umbo, moist, smooth, becoming striate in old or wet specimens.

Lamellae adnate with a decurrent tooth, pale-yellow, broad, ventricose, rather distant.

Stipe 4-5 cm. long, 4-7 mm. thick, pale-flavous, glabrous, cylindric, equal.

Spores 8-12 x 4.5-6.5 (7) μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 40-57 x 8-12 μ, 2- and 4-spored, sterigmata stout. Pleurocystidia and cheilocystidia none. Gill-trama parallel to subparallel. Cuticle of appressed, non-gelatinous hyphae, 3-5 μ broad. No hypodermium. Pileus trama of radially disposed hyphae. Clamp connections absent.

Habit, habitat, and distribution. - Gregarious on the ground, under tree-ferns, Jamaica, Trinidad, and Michigan, September-January.

Material studied. - JAMAICA: Murrill 674 (type, from Morce's Gap, 5000 ft. elevation, December 29, 30, and January

2, 1908-09); MICHIGAN: Smith 58287; TRINIDAD: Dennis 50, 160 (as H. earlei).

Observations. - The microscopic characters given above are based on our study of the type.

It should be noted that Murrill erred in his report of spore-measurements. He describes them as globose, 5 μ in diameter. We found them to be 8-12 x 4.5-6.5 μ. Dennis had also written on the type sheet that he observed the spores to be 9-12 x 5-7 μ.

Dennis (1953) describes this species from his Trinidad collection, J 75. He reports that the pileus becomes finely fibrillose-scurfy, yellow to flame scarlet, the flesh thin, concolor; the spores 9-12 x 5-7 μ; the basidia 45 x 8-9 μ, 2- and 4-spored; clamp connections present on the cuticular hyphae. Dennis points out that H. subflavidus is near H. puniceus Fr. which differs in its viscid pileus.

HYGROPHORUS SUBLURIDUS Murr.

Torrey Bot. Club Bull. 66:159. 1939

Pileus about 3 cm. broad, convex to expanded, broadly umbonate, fuscous, slimy-viscid, glabrous, delicately reticulate in part, margin even. Context rather thin, white, unchanging; odor none.

Lamellae adnexed, rounded behind, narrow, ventricose, pallid to fuscous, crowded, inserted, entire.

Stipe 6 cm. long, 4 mm. thick, subconcolorous, equal, glabrous.

Spores 3-4.5 x 3-3.5 μ, globose to subglobose, smooth, pale yellow in Melzer's reagent. Basidia 24-37 x 4.5-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama subparallel, in some sections slightly interwoven. Cuticle of closely interwoven hyphae bearing an ixotrichodermial turf, or palisade, 75-110 μ high, and composed of narrow, non-septate hyphae, 2-5 μ broad; pileus trama interwoven, the hyphae more or less radially disposed. Clamp connections present.

Habit, habitat, and distribution. - Solitary on soil, under oak, Florida, September.

Material studied. - FLORIDA: Murrill F 18292 (type, from Hunter's Station, near Gainesville, September 6, 1938); ~~U~~ H- 18457, from Gainesville, August 16, 1944.

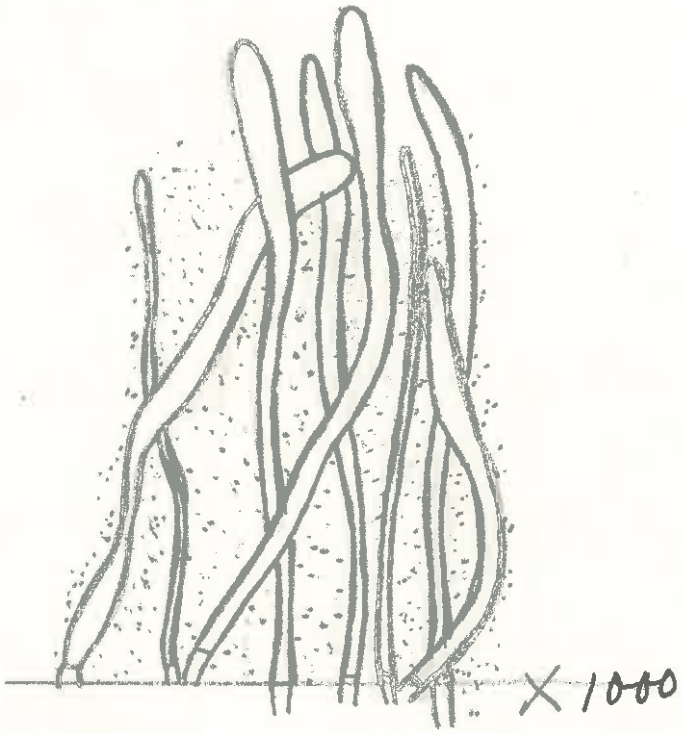
Observations. - The description of microscopic characters given above is based on our study of the type.

Sections of the stipe of the type showed no gelatinous hyphae on the surface, despite Murrill's statement which accompanies the specimens that the stipe is viscid.

Murrill states that this species suggests H. subpratensis, a Cuban species, but the gills are not sinuate and the pileus does not fade. Murrill correctly interpreted H. subpratensis as a member of the Section Hygrophorus. The globose spores of H. subluridus sharply separate it from H. unguinosus Fr.

Hygrophorus subluridus

Type



Epicutis an ixotrichodermium (a turf, or palisade) of clavate to cylindric hyphae, 2-5μ broad, unbranched, non-septate, cystidioid. No hypodermium.

Pileus trama interwoven, the hyphae tending to be ~~peripherally~~ ~~tangentially~~ radially disposed.

HYGROPHORUS SUBMINIATUS (Murr.) Murr.

Mycologia 4:332. 1912

Hydrocybe subminiata Murr., Mycologia 3:198. 1911.

Pileus 1.5 cm. broad, convex to plane, at length irregular, miniatous, varying slightly in places, viscid, smooth, margin undulate.

Lamellae decurrent, whitish to ochraceous, medium broad to narrow, subdistant.

Stipe 3 cm. long, 2 mm. thick, luteous, terete, crooked, slightly enlarged above, glabrous.

Spores 7-9 x 3.5-5 μ, sub-cylindric to more or less allantoid, at times slipper-shaped, more or less constricted, ends obtuse, smooth, pale yellowish in Melzer's reagent. Basidia 26-37 x 6-8 μ, 2-spored. Pleurocystidia and cheilocystidia none. Gill-trama subparallel. Cuticle a narrow gelatinous zone (20-40 μ thick), the hyphae repent, - an ixocutis, or at times more or less erect. No hypodermium. Pileus trama of radial hyphae. Clamp connections present on the cuticular hyphae.

Habit, habitat, and distribution. - On soil on a shaded bank, Jamaica, December-January; possibly from Cuba, and from North Carolina, Michigan, and Washington, July-September.

Material studied. - JAMAICA: Murrill 369 (type, from

Add Sm - 31070

Chester Vale, 3000 ft. elevation, December 23, 1908); MICHIGAN: Sawyer, Gorge UBS, July 14, 1955; Smith 18681; NORTH CAROLINA: Hesler 12316; WASHINGTON: Smith 17170, 17421, 17928, 29510.

Observations. - The description of microscopic characters given above is based on our study of the type. This species differs from H. miniatus in its viscid pileus, decurrent gills, and more or less constricted spores. Actually, it is more closely related to H. laetissimus and H. puniceus.

One collection, Smith-31070, is a variant in which the pileus fades to yellow, the margin striate, and the lamellae tinged reddish.

HYGROPHORUS SUBMINUTULUS (Murr.) Orton

Trans. Brit. Mycol. Soc. 43:~~268~~ 176. 1960

Hygrocybe subminutula Murr., Bull. Torrey Bot. Club 67:233. 1940.

Pileus 7-10 mm. broad, convex to subexpanded, rarely depressed, gregarious, viscid, glabrous, red, soon fading to yellow but often retaining the red color in the center, margin even.

Lamellae arcuate-decurrent, pale yellow, distant, broad, inserted.

Stipe 1.5-2.5 cm. long, 1-2 mm. thick, red, not soon fading, viscid, glabrous, tapering downward.

Spores 5-7 x 2.5-3.5 μ, ellipsoid, smooth, yellowish in Melzer's reagent. Basidia 28-35 x 5-7 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama subparallel. Cuticle of gelatinous hyphae which are subparallel radially, with several free ends. Clamp connections few.

Habit, habitat, and distribution. - On soil, under hardwoods, Florida, November. Orton (1960) reports it from England.

Material studied. - FLORIDA: Murrill F18392 (type, from Gainesville, Nov. 7, 1938).

Observations. - The description of microscopic characters

given above is based on our study of the type.

Murrill states that the short stipe and small spores separate it from near relatives. Aside from spore-size, there is little by which to distinguish it from H. minutulus Pk. Additional collections are needed to assist in clarification whether or not it can always be separated from H. minutulus on spore-size. Orton (1960) gives a full description of British collections and points out that the stipe-apex nearly always is persistently red, as Murrill (1940) observed. Orton gives the spores as 5-7 (8) x 2.5-3.5 (4) μ. We find those of H. minutulus to be 7.5-9 (10.3) x 4-5 (6) μ.

HYGROPHORUS SUBOVINUS SP. NOV.

Illustration:

Plate

Pileus 1.5-3 cm. latus, convexus, cinereo-fuscus, hygrophanus, madidus sub-ater; odore suavis, gustu alkalinus; lamellae adnexae, albidae vel cineraceae, contusae rufo-fuscae, latae, distantes; stipes 3-6 cm. longus, 4-8 mm. crassus, cineraceus, siccatus, sub-ater; sporae 5-6 (7) x 5-6 μ, globosae vel subglobosae; pleurocystidia 56-115 x 6-10 μ, cheilocystidia 46-52 x 2-3 μ. Specimen typicum in Herb. Univ. Tenn.; lectum in Cades Cove, Great Smoky Mts. National Park, Tenn., June 8, 1957, L. R. Hesler n. 22583.

Pileus 1.5-3 cm. broad, convex, expanding more or less convex, gray-brown near "pale drab gray" (not matched), blacksih when wet, somewhat fibrillose, disk becoming more or less squamulose, moist (not viscid), somewhat rimose, margin even. Context thick on disk, thin on margin, pallid to brownish, unchanging when bruised, brittle, fragile; odor fragrant, taste slightly alkaline.

Lamellae adnexed then emarginate, whitish to grayish, becoming pinkish to reddish-brown when bruised, broad (up to 12 mm.), distant, many short, edges even.

Stipe 3-6 cm. x 4-8 mm., grayish (not matched), unchanging

when handled, drying blackish, at times compressed, flexuous, base attenuated, holow.

Spores 5-6 (7) x 5-6 μ, globose, subglobose, subovoid, or rarely short-ellipsoid, smooth, white in deposit, pale yellowish in Melzer's reagent. Basidia 34-48 x 6-8 μ, 2- and 4-spored. Pleurocystidia 56-115 x 6-10 μ, scattered, cylindric to sub-fusoid, projecting; cheilocystidia similar, few, Gill trama subparallel, hyphae 7-18 μ broad. Cuticle of more or less erect hyphae (turf),- a trichodermium, or at times repent hyphae which are septate, pale fuscous, the terminal elements with rounded apices. Hypodermium none. Pileus trama of radially disposed hyphae. Clamp connections rare on the cuticular hyphae. Lactifers brown, in the trama of the gills and pileus.

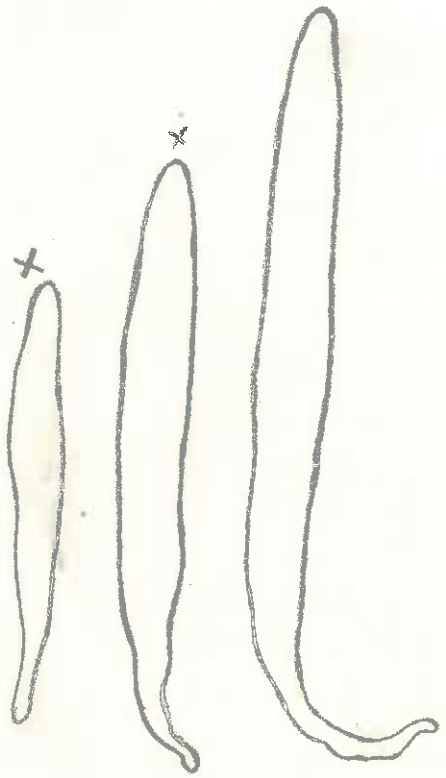
Habit, habitat, and distribution. - Gregarious on soil in deciduous woods, Massachusetts, North Carolina, and Tennessee, June-August.

Material studied. - MASSACHUSETTS: Bigelow 7542; NORTH CAROLINA: Hesler 13982; TENNESSEE: Campbell and Hesler 21824; Hesler 22583 (type, on soil in deciduous woods, Cades Cove, Great Smoky Mountains National Park, June 8, 1957); Hesler 24404.

Observations. - This is close to H. ovinus, differing in its globose to subglobose spores, and in the presence of cystidia on the gills. The brown lactifers in the trama of the pileus and gills are conspicuous.

Hygrophorus No. 22583 (subovinus) – Type

(Same as 13982 + 21824)



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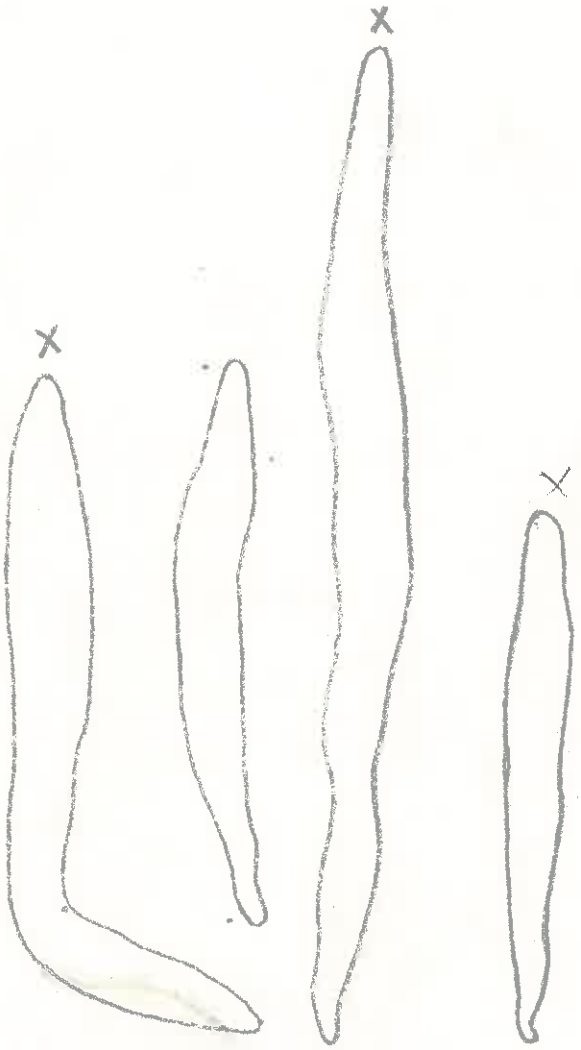
Hygrophorus 13982

(Same as 27583 & 24824)



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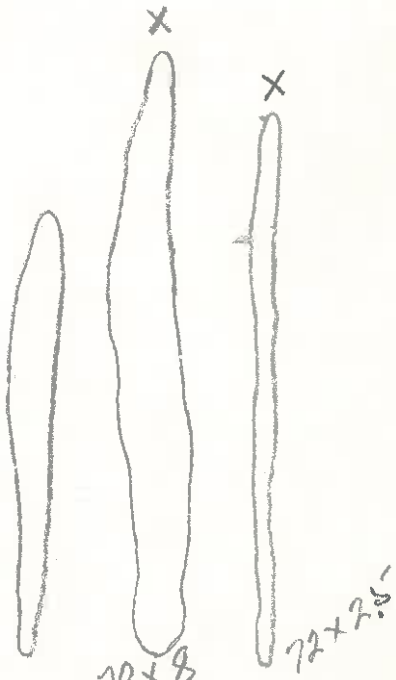


Ch X 1000

24404 – Hygrophorus subovinus sp. nov.

24880 - Hygrophorus subovinus sp. nov.

21824 - Hygrophorus subovinus sp. nov.

HYGROPHORUS TAHQUAMENONENSIS Sm. & Hes.

Sydowia 8:331. 1954

Pileus 2.5-5 cm. broad, obtusely conic with a flaring margin, color evenly pale ocher yellow and fading to "pinkish buff" or "pale pinkish buff", surface moist and hygrophanous, when faded minutely squamulose, margin opaque, soon blackish along the edge where bruised. Context thin, yellowish then dingy pallid; odor and taste nitrous.

Lamellae ascending, adnate to adnexed, pale yellow when young, fading to pale pinkish buff or near it, broad and ventricose, distant, edges even.

Stipe 4-5 cm. long, 4-7 cm. thick, pallid to yellowish-pallid, discoloring to brownish where handled, drying to more or less pale fuscous, equal or slightly enlarged below, soon hollow, glabrous and naked (including the apex).

Spores 7-9 x 5-5.5 μ, oblong to subovoid, smooth, hyaline, pale yellowish in Melzer's reagent. Basidia 45-50 x 8-9 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill trama subparallel, nearly hyaline in KOH, yellowish in Melzer's solution, and lacking any dark granules. Cuticle a trichodermium of more or less erect, to repent, septate hyphae, the apical cells not differentiated as to size and shape. No hypodermium. Pileus trama of radially disposed hyphae. Clamp connections present.

Habit, habitat, and distribution. - Scattered to isolated in a mixed hardwood and conifer forest, Michigan, August.

Material studied. - MICHIGAN: Hesler & Smith 41821 (type, Upper Falls, Tahquamenon Fall State Park, August 3, 1953); Smith 41982.

Observations. - This species would be identified as H. nitratus if it were not for the yellow ocher pileus and gills, and to some extent the stipe, as well as the staining cap-margin and stipe. H. nitratus is essentially a gray species. H. helvella Boud. is close in having ocher-gray colors and in blackening, but is described as having more or less globose spores and a farinaceous odor. Boudier's (1905) illustration is not at all suggestive of our fungus. ~~Kühner and Romagnesi (1953) described H. nitratus as reddening when bruised but as having a "gris-jaunatre" cap. These characters are not those of our species.~~

HYGROPHORUS TROYANUS (Murr.) Murr.

Mycologia 4:332. 1912

Hydrocybe troyana Murr., Mycologia 3:198. 1911.

Pileus 1-1.5 cm. broad, 3 mm. high, sub-hemispheric to convex, ferruginous, not viscid, smooth.

Lamellae decurrent, violaceous, distant, rather broad, two or three times inserted.

Stipe 4 cm. long, 2.5 mm. thick, latericious above, paler below, changing to flavous at the base, glabrous, cylindric.

Spores 7-9 (10) x 3.5-5 μ, more or less ellipsoid, many constricted (peanut-shaped) much as in H. subminiatus, smooth, pale yellow in Melzer's reagent. Basidia 30-42 x 5-7 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama subparallel, hyphae 7-12 μ broad, clamp connections none. Cuticle poorly differentiated, hyphae repent or more or less erect, hyphae 3-5 μ broad, no gelatinous layer, - a cutis. No hypodermium. Pileus trama of radial hyphae. Lactifers scattered in the gill-trama. Clamp connections rare on the cuticular hyphae.

Habit, habitat, and distribution. - On soil, Jamaica and Trinidad, September to January.

Material studied. - JAMAICA: Murrill & Harris 1078, 1090 (type, from Troy, January 12-14, 1909); TRINIDAD: Dennis 74.

Observations. - The description of microscopic characters given above is based on our study of the type.

Dennis (1953) reports having found this species in Jamaica and Trinidad. Without studying fresh material, we are unable to evaluate the meaning of the discrepancy between the violaceous gills reported by Murrill and salmon orange gills described by Dennis. We agree that Murrill erred in describing the pileus as viscid. As Dennis says, the pileus surface is lubricous but not truly viscid. Our sections of the type showed a non-gelatinous cuticle. Dennis found the pileus up to 2.5 cm. broad, scarlet shading to orange; context yellow; the spores 6-9 x 3-4 μ; the basidia 4-spored; cystidia none; the gill trama parallel. Further, Dennis points out that H. subcaespitosus Murr. differs in its white to straw-colored gills and broader spores (9-10 x 4.5-5.5 μ).

HYGROPHORUS TURUNDUS f. SPHAGNOPHILUS (Peck) Smith & Hesler

Sydowia 8:324. 1954

Hygrophorus miniatus var. sphagnophilus Pk., New York State Mus. Report 53 (for 1899):856. 1901.

Hygrophorus miniatus f. sphagnophilus (Pk.) Hongo, Jour. Jap. Bot. 27:160. 1952.

Illustration:

Plate

Pileus 1-3.5 cm. broad, at first broadly convex or flattened, soon broadly and often deeply depressed, at first "nopal red" to scarlet, fading to yellow or brownish orange, the tips of the scales often darkening somewhat, margin decurved and frequently becoming scalloped or wavy, in age the margin sometimes spreading, dry, minutely and densely floccose at least on the disk or in the depression, usually becoming somewhat scaly. Context thin or farily thick, soft, concolorous with the pileus; odor and taste mild.

Lamellae at first adnate, remaining so or becoming deeply decurrent, sometimes red or orange, or sometimes pallid or faintly yellow, distant, broad or medium broad, at times forked near the margin, edges even.

Stipe 4-12 cm. x 1-3 mm., vermilion-red or yellowish, whitish where buried in the moss, equal, usually flexuous, fragile,

glabrous, or silky, not viscid, stuffed solid or becoming tubular.

Spores (9) 10-14 x 5-9 (10) µ, subellipsoid to subreniform, smooth, pale yellow in Melzer's reagent. Basidia 41-68 x 7-12 µ, 2- and 4-spored, sterigmata long, prominent. Pleurocystidia and cheilocystidia buried, scattered (see notes on type, below). ~~not differentiated.~~ Gill-trama subparallel to slightly interwoven, hyphae 12-32 x 7-18 µ, yellowish in Melzer's reagent. Pileus-trama homogeneous beneath a turf-like covering of the surface hyphae which have slightly clavate end-cells, no palisade, all tissues yellowish in Melzer's reagent, in water mounts of fresh speciens the cells of the flesh and gill-trama are filled with a bright orange fluid. Clamp connections present on the hyphae of the pileus trama.

Habit, habitat, and distribution. - Gregarious to scattered in sphagnum bogs throughout northern and eastern United States and in Ontario and Quebec, in Canada, June-October. Singer has collected it in Europe. ~~in Europe. It also occurs in New York, North Carolina, and Michigan, June-October.~~ Hongo (1958a) reports it from Japan.

Material studied. - Massachusetts: Bigelow 6206; MICHIGAN: Smith 1101, 25602, 25801, 32233; NEW YORK: Peck (type of H. miniatus var. sphagnophilus Pk., from Kasoog Swamp, July); NORTH CAROLINA: Hesler 4409, 10448, 12163; WEST VIRGINIA: Sharp 12562; CANADA (Quebec): Smith 61528; (Ontario) Smith 4548; (Newfoundland) Saville & Vaillancourt 28523.

Observations. - This form was originally described as H. miniatus var. sphagnophilus Pk. Kühner and Romagnesi (1953) describe H. turundus as having fibrils on the pileus which become

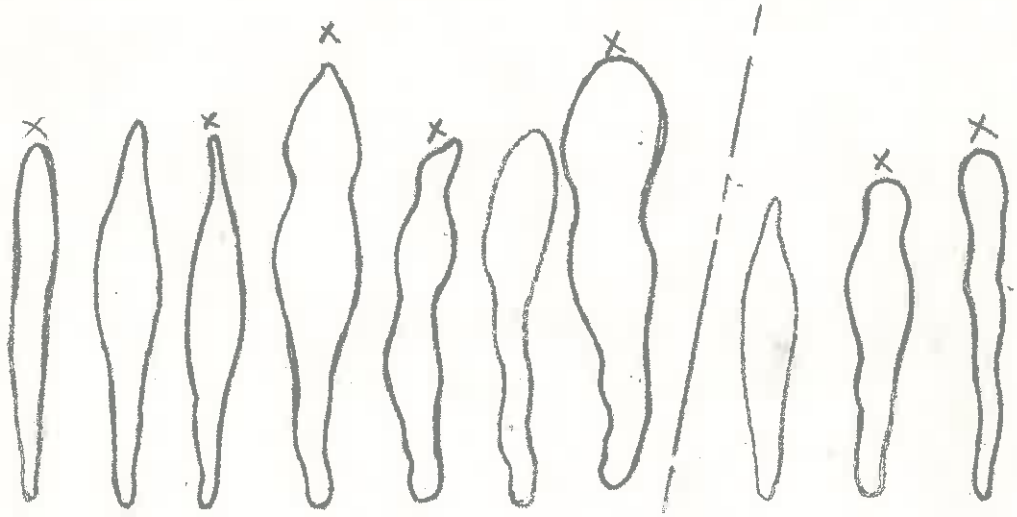
dark colored. Since the fibrils in f. sphagnophilus tend to darken and because of its spore size, it seems to us that the form is more closely related to H. turundus than to H. miniatus; therefore we have attached it to H. turundus. It has also been attached to H. miniatus as f. sphagnophilus by Hongo (1952).

Notes on the type of H. miniatus var. sphagnophilus Pk.: Spores 9-12 (14) x 5.5-7 (8.5) µ, ellipsoid, subovoid, or broadly cuneate, smooth, yellowish in Melzer's reagent. Basidia 46-60 x 8-11 µ, 2- and 4-spored. Pleurocystidia 44-57 x 6-12 µ, buried, scattered, versiform (clavate, fusiform, irregular); cheilocystidia 37-48 x 5-12 µ, few, versiform. Gill trama subparallel, rarely slightly interwoven, hyphae 5-12 µ broad. Cuticle bearing a mat of semi-erect to more or less repent, septate, constricted, fuscous hyphae, the terminal elements clavate. Clamp connections present on the cuticular hyphae.

Orton (1960) has recently described H. coccineocrenatus sp. nov., from England, ~~a white seems to be~~ which is very close to if not the same as this form.

Hygrophorus turundus ~~f. sp.~~ sphagnophilus (PK.) Sm. & Hes.

Type : (as H. miniatus var. sphagnophilus PK.)



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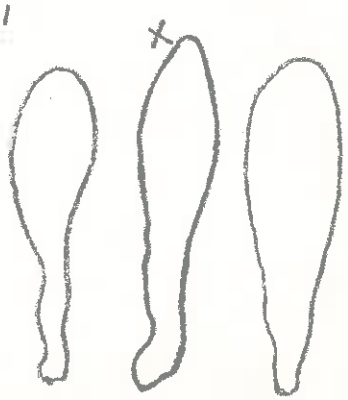
Ch. - X 1000



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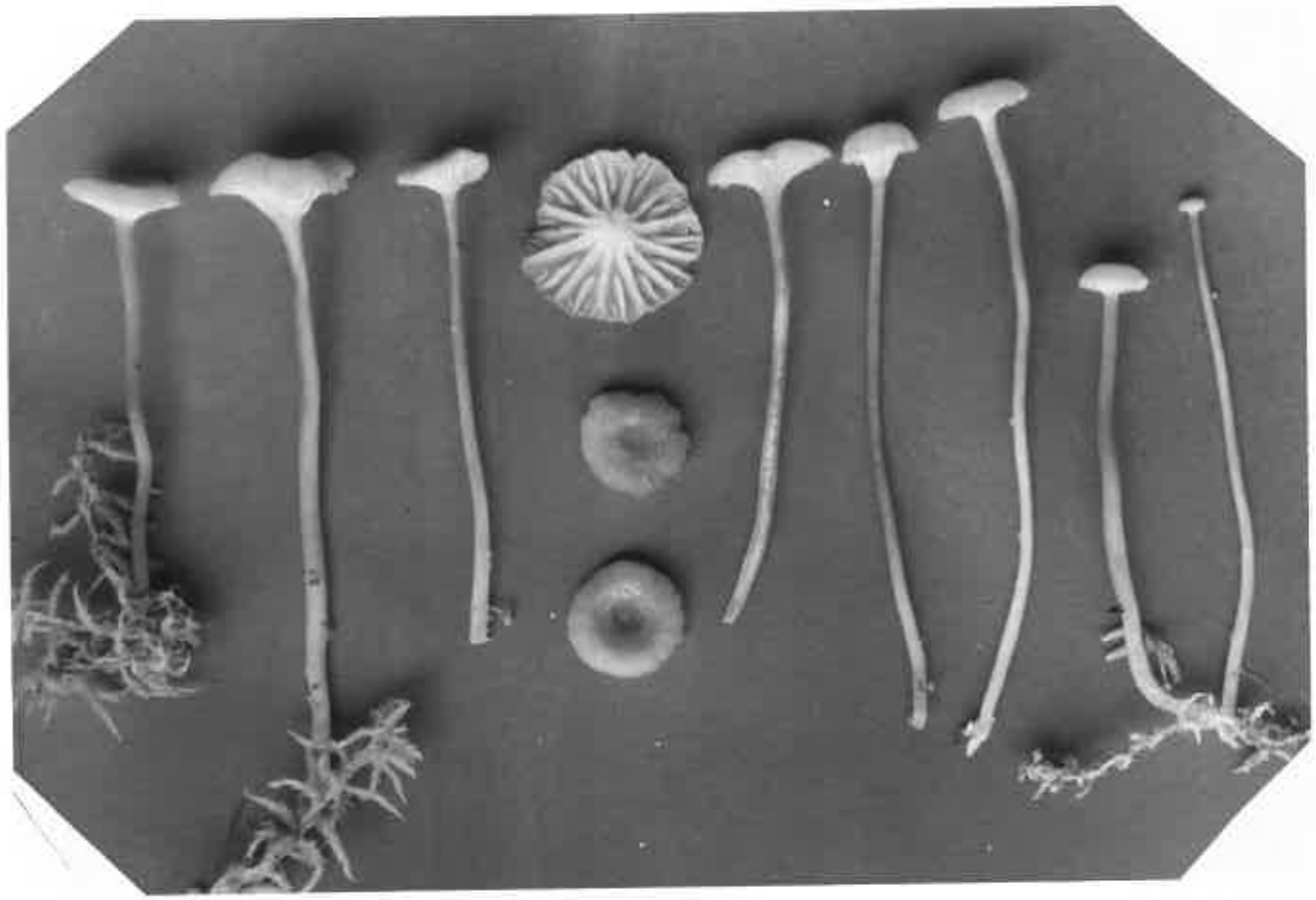


4409 - Hygrophorus turundus var ophaeophilus

turundus
Hygrophorus sphagnophilus

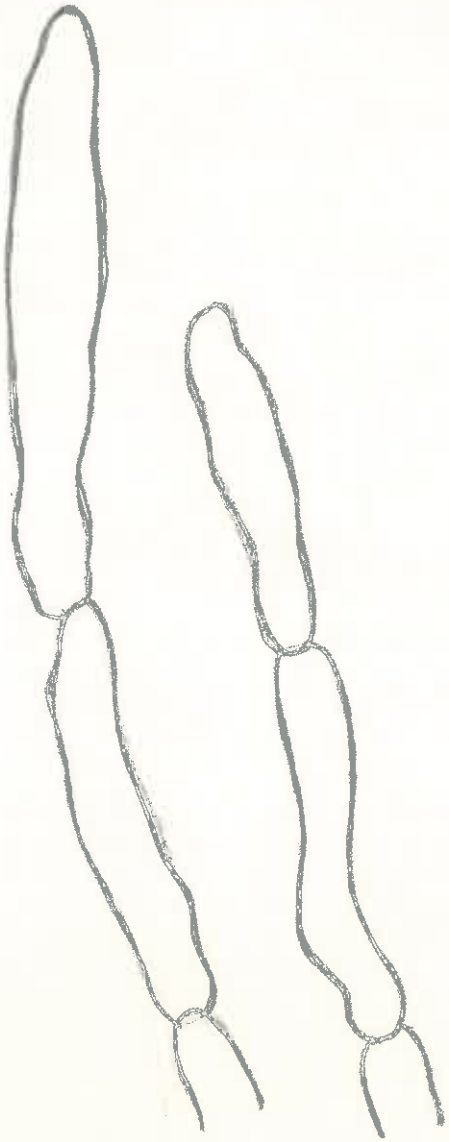
Sm - 42571

turundus
Hygrophorus sphagnophilus

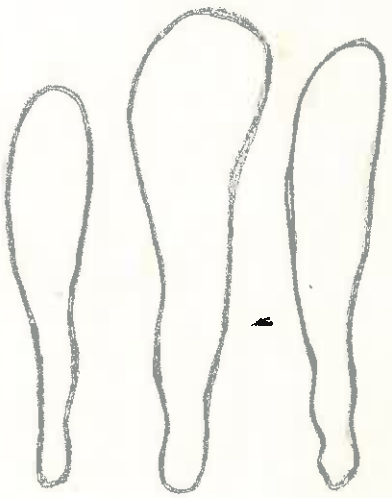
Sm - 42479

Hygrophorus tyrundus Fr.

Sm - 54329



cuticular hyphae
x 1000



Pl — x 1000

HYGROPHORUS TURUNDUS (Fr.) Fr. ~~var. TURUNDUS~~

Epicr. Myc., p. 330. 1838

Agaricus turundus Fr., Syst. Myc. 1:106. 1821.

Hygrocybe turunda (Fr.) Karst., ~~1879.~~ Bidr. Finls. Natur Folk 1: 235. 1879.

Pileus 1-3 cm. broad, convex to flattened or the disk shallowly depressed, margin curved in slightly, expanding to more depressed in the disk and the margin arched, the ground color variable, scarlet to orange to yellow, brightest when young and dingy in age, buttons which have not developed fast may be dingy yellow, in age sometimes grayish over all from appressed fibrils, surface dry and fibrillose-squamulose, the squamules fuscous to earth brown. Context thin, waxy firm, orange, odor and taste mild.

Lamellae decurrent, "cream buff" or more pallid (pale dingy yellow to pallid), distant to subdistant, broad.

Stipe 3-6 cm. long, 2-3.5 mm. thick, orange in midportion, pale above and below, equal or slightly enlarged at base, naked, glabrous, translucent.

Spores 9-14 x 5-8 μ, variable in size, ellipsoid to somewhat bean-shaped (in side view), smooth, hyaline in KOH and Melzer's reagent. Basidia 2- or 4-spored, 38-52 x 9-11 μ, sterigmata 6-8 μ long. Pleurocystidia and cheilocystidia similar, sporadic in appearance and often difficult to locate, 40-60 x 12-20 μ, clavate to broadly clavate-subcapitate, hyaline, thin-

walled, buried in the hymenium. Gill-trama subparallel to somewhat interwoven, hyaline in KOH. Cuticle a trichodermium of enlarged hyphal cells with cystidioid to elliptic end-cells often having secondary septa. Hypodermium none. Pileus trama of radial hyphae. Clamp connections present at primary septa.

Habit, habitat, and distribution. - Scattered to gregarious on moist soil and wet moss, often on sphagnum at high elevations, Massachusetts, Michigan, Idaho, Montana, Oregon, and Washington, summer and fall; also in Greenland, Iceland, Faeröes, Europe, and Japan.

Material studied. - IDAHO: Smith 46281, 54329; MASSACHUSETTS: Bigelow 8252; MICHIGAN: Kauffman, Ann Arbor, July 8, 1924; Smith 1101, 7581, 42571, 43362, 50893, 57493, 58028; MONTANA: Mains 6045; OREGON: Smith 24052, 26962; WASHINGTON: Imshaug 1790; Simmons 1583; Smith 29365, 29528, 29560, 29585, 29586, 29865, 29902, 29943, 29953, 29959, 30558, 40152, 40342, 40852, 42481, 43923.

Observations. - This species fruits during both the summer and fall. We reported (1942) it from North America on the basis of a Kauffman collection. It now appears that this report is incorrect. The squamules of the true H. turundus are fuscous to brown (dark colored). The Mt. Rainier collections showed conclusively that this color was not a discoloration. Möller's (1945) account covers the Mt. Rainier collections very well, even including the inflated cells which we regard as cystidia. At Mt. Rainier both a two-spored and a four-spored form occur, and there is a corresponding difference in spore size. Clamp connections

are present at the base of the basidia in both forms, but are often difficult to demonstrate on the hyphae of the carpophore. Here they appear to be fairly regular at the primary septa, but absent at the secondary septa.

Kühner & Romagnesi (1953) described H. turundus as having fibrils which become dark colored. We have a collection from among cranberries and other heath plants on wet sand between two sand dunes at Whitefish Point on Lake Superior (Smith-42481), which appears to check exactly with their account. It was growing in great quantity. The pileus was deep scarlet over all when young but became squamulose and in age the squamules were more or less fuscous. H. sphagnophilus Pk., in the light of this study, should be attached to H. turundus. Singer (1940) thought they were identical but we have found it to be constant as a form which differs chiefly from the type form in the squamules not darkening.

Lange (1935-1940) gives a beautiful illustration of brilliantly colored specimens. His treatment of Hygrocybe had not come to our hands at the time we first published our account of the species. At present we are inclined to regard Kauffman's collection as a variety of H. cantharellus but prefer to restudy it from fresh material before reclassifying it.

Hongo (1958a) reports H. turundus from Japan (July & September), and says that the gill trama hyphae are interwoven, 9-30 μ broad, and that clamp connections are present. Morten Lange (1955) reports it from Greenland.

HYGROPHORUS UNGUINOSUS var. SUBAROMATICUS Sm. & Hes.

Lloydia 5:81. 1942

Pileus 2-5 cm. broad, convex with an incurved margin, becoming plane or nearly so, color "buffy brown" on the disk, "pale olive-buff" near the whitish margin (a dull olive grayish brown to pallid), glabrous, slimy viscid, margin striatulate. Context thin, very soft and fragile, whitish; odor faint but disagreeably subaromatic, taste mild to slightly disagreeable.

Lamellae bluntly adnate with decurrent tooth, white with a faint gray cast, broad, subdiatant, edges even.

Stipe 5-6 cm. long, 6-10 mm. thick, concolorous with the gills when fresh but drying pale gray like the pileus, equal, hollow, fragile, slimy viscid as in H. laetus, glabrous.

Spores 7-9 x 4-5.5 μ, ellipsoid, smooth, pale yellow in Melzer's reagent. Basidia 42-55 x 7-9 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia not differentiated. Gill-trama subparallel, hyphae 7-14 μ broad, yellow in Melzer's reagent. Cuticle a thick (180-300μ), gelatinous zone, the hyphae narrow, colorless, more or less interwoven,-an ixotrichodermium. Hypodermium a rather well-defined brownish zone. Pileus trama of radial hyphae. Clamp connections absent.

Habit, habitat, and distribution. - On soil under redwoods, California, November.

Material studied. - CALIFORNIA: Smith 9167 (type, from Prairie Creek State Park, Orick, November 28, 1937).

Observations. - The faint but disagreeably subaromatic odor distinguishes this variety from the species.

HYGROPHORUS UNGUINOSUS (Fr.) Fr. var. UNGUINOSUS

Epicr. Myc., p. 332. 1838

Hygrophorus luridus B. & C. sensu Coker, Elisha Mitchell Sci. Soc. Jour. 45:168. 1929.

Hygrocybe unguinosa (Fr.) Karst, ~~1879~~. Bidr. Finls. Natur Folk 1:237. 1879.

Illustrations:

Plate

Coker, Elisha Mitchell Sci. Soc. Jour. 45, frontispiece and pl. 23.

Bresadola, Icon. Myc., tab. 352.

Juillard-Hartmann, Icon. Champ., pl. 48, fig. 3 (as H. irrigatus var. unguinosus).

Lange, Flora Agar. Dan., 5, pl. 168I (as Hygrocybe).

Smith and Hesler, Lloydia 5, pl. 15a.

Wakefield and Dennis, Common British Fungi, pl. 33, fig. 2.

Pileus 2-5 cm. broad, hemispheric becoming convex and finally nearly plane, occasionally obtusely conic, slightly umbonate when expanded, hygrophanous, blackish to umber or dark grayish brown, near "drab," "pale smoke gray," glabrous, at times minutely rivulose, glutinous to slimy viscid when moist, shining when dry, becoming smoke gray on the disk and pallid along the margin in age, translucent striate. Context thin, soft, fragile, grayish or white; odor none, taste mild.

Lamellae adnate to slightly adnexed, at times emarginate, with a decurrent tooth, broad (up to 10 mm.), at times subventricose, thick, subdistant, intervenose, white or shaded pale gray, at times

"cinereous," edges even.

Stipe 3-9 cm. x 2-5 mm., concolorous with or paler than the pileus, equal and flexuous, fragile, glabrous, slimy or viscid when moist, varnished when dry, tubular.

Spores (6) 7-10 x 4-5 (6) μ, ellipsoid, smooth, white in mass, yellowish in Melzer's reagent. Basidia 36-55 x 5-8 μ, 1-, 2-, and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama subparallel to slightly interwoven, hyphae 7-20 μ broad, yellowish in Melzer's reagent. Lactifers numerous in the pileus- and gill-trama. Cuticle an ixotrichodermium composed of a zone of repent, brownish hyphae bearing more or less erect and tangled, almost colorless hyphae 2-4 μ broad (not a palisade). Hypodermium rather distinct. Pileus trama of radial hyphae. Clamp connections absent.

Habit, habitat, and distribution. - Gregarious to scattered on humus and soil, in coniferous and mixed woods, in swamps, Nova Scotia and Ontario in Canada, Maine, Massachusetts, New York, North Carolina, South Carolina, Tennessee, Florida, Michigan, Washington, and California, June-December; also Europe.

Material studied. - CALIFORNIA: Smith 3781, 9376, 9406; FLORIDA: Murrill F 17268; MAINE: Bigelow 3696, 3970, 4306; MASSACHUSETTS: Bigelow 8417, 9117; MICHIGAN: Brooks 1251; Saunders 32547; Smith 4983, 6723, 6828, 9619, 18472, 18616, 21859, 25953, 26050, 33590, 37806, 37773, 39221, 39273, 39333, 39578, 39653, 42610; Thiers 1117, 1238, 3327; NEW YORK: Bigelow

5060, 5066; NORTH CAROLINA: Hesler 8199, 10874, 12361, 17045; Holland 3353; Sharp & Hesler 9320; Smith 9767; Smith & Hesler 7440; TENNESSEE: Hesler 12170, 12757; Smith 9903, 10084; Smith & Hesler 7452, 11333, 13734; WASHINGTON: Smith 17965; CANADA: Cain, Ontario, Sept. 7, 1936; Smith, Nova Scotia, 875; BELGIUM: Heinemann, near Brussels, Nov. 1, 1960; DENMARK: J. P. Jensen (H-23954). Austria: Moser (H-24123)

Observations. - This is a striking species because of its contrasting gray to dark umber colors and whitish to pale gray gills. It appears to be rare but widely distributed. Bresadola (1928) has found a two-spored form with spores 8-9 x 7 μ. H. irrigatus was placed by Fries in Camarophyllus but Konrad (1936) places it in synonymy with H. unguinosus, a disposition which, in accordance with its gill-trama structure, is correct. H. luridus B. & C. sensu Peck (1907) and sensu Coker (1927) does not appear to be distinct from H. unguinosus. Both are characterized by their dark colors, very viscid stipes and whitish to pale grayish gills. Neither Coker nor Peck discussed H. luridus in relation to H. unguinosus. Our specimens are all referrable to the Friesian species.

Although Josserand (1959) reports clamp connections, we have not found them.

Hygrophorus unguinosus

(Smith)

9117 - Hygrophorus unguinosus Fr.

(Photo by Bigelow)

Hygrophorus unguinosus

Sm - 7453

Hygrophorus unguinosus

Sm-3781

Hygrophorus unguinosus

Sm-33-590

8199 - Hygrophorus unguinosus F.

HYGROPHORUS FLORIDANUS Murr. (= an Herbarium name)

(=H. unguinosus Fr.)

In Murrill's mimeographed list of Florida fungi, he entered the name H. floridanus. In January, 1955, I wrote him stating that I had not found that he had published it. In a post-card reply, dated February 3, 1955, he said that he had it ready to publish when he read a description of H. unguinosus Fr. He then decided to hold up publication until he could compare the two species.

In February, 1960, I examined the type of his H. floridanus and found it to be H. unguinosus as he suspected, and as Singer had later determined it. My notes follow: Most of the spores are 6-8 x 4-5.5 μ, a few smaller (6 x 3.5), and a few larger 9-11 x 5-6 μ, ellipsoid, smooth, yellowish in Melzer's solution. The smallest ones are doubtless immature. Basidia 34-46 x 5-7 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama subparallel, hyphae 8-14 μ broad. Cuticle of loose hyphae, gelatinous. Clamps not found. Apparently Murrill did not see mature spores.

Specimen from the University of Florida Herbarium: Type: Hygrophorus floridanus Murr. F 17268, on ground under hardwood, Planera Hammock, 2 Aug. '38. Labelled sp. nov. (in pencil marked by Murrill =unguinosus Fr.) and determined later as unguinosus by Singer. Murrill never published it. The collection consists of one carpophore badly broken. Murrill's

follow
notes (although many words are abbreviated I have spelled them out): (Pileus) "2 cm. diam., fuligineus, very slimy-viscid, black in center where slightly depressed, striate. Stipe pale umber, tapering down, viscid but not as slimy as cap, smooth, glabrous, 3.5 cm. x 0.4 cm. Lamellae squarely adnate, ventricose, white, thin, entire, inserted (1/2 as wide) venose-connected. Flesh membranous, opaque. Cystidia none. Spores about 5 x 3, ellipsoid, hyaline."

HYGROPHORUS VIRESCENS SP. NOV.

Illustration:

Plate

Pileus 2-4.5 cm. latus, luteus obscuro-aurantio colore inmixtus, mox viridis, non viscidus, rimosus, lobatus; lamellae adnexae, pallido-virides, marginibus serratae; stipes 3-6 cm. longus, 3-8 mm. crassus, viridis; sporae 7-9 (10) x 5-6.5 μ, ellipsoideae. Specimen typicum in Herb. Univ. Mich.; lectum prope Trinidad, Calif. Dec. 14, 1956, A. H. Smith n 56649.

Pileus 2-4.5 cm. broad, obtuse when young, becoming plane or nearly so, the margin often up-curved in age, color variable; when young near honey yellow with dull orange variously present, soon becoming "lime green," glabrous, in age the margin rimose, often variously lobed and splitting. Context lime green, unchanging where bruised, very fragile; odor and taste not distinctive.

Lamellae adnexed, attached to the stipe apex by a tooth, whitish with lime green tones near the pileus, edges palest, serrate.

Stipe 3-6 cm. long, 3-8 mm. thick, lime green, base whitish, moist or dry, somewhat striate in age. Tubular to hollow, terete or compressed.

Spores 7-9 (10)x 5-6.5 μ, ellipsoid, smooth, yellow in

Melzer's reagent. Basidia 40-55 x 7-10 μ, 2- and 4-spored. Pleurocystidia and cheilocystidia none. Gill trama parallel to subparallel, hyphae 8-20 μ broad. Cuticle of repent, non-gelatinous hyphae, not sharply differentiated from the pileus-trama, - a cutis. No hypodermium. Pileus trama of radial, parallel to subparallel hyphae, in tangential view the ends of the hyphae present a pseudoparenchyma appearance. Clamp connections present.

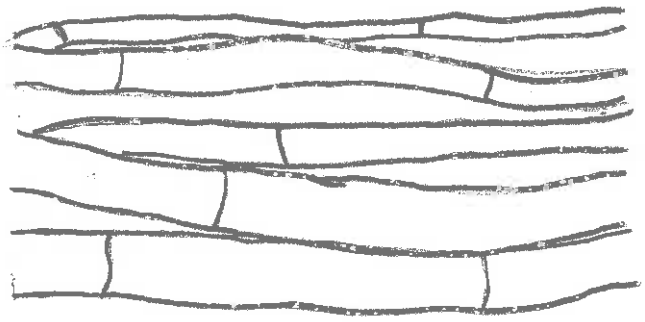
Habit, habitat, and distribution. - Caespitose under redwood, California, December.

Material studied. - CALIFORNIA? Smith 56649 (type, from Trimidad, December 14, 1956).

Observations. - Although this species has been collected only once, it is very distinctive. Because of its non-gelatinous cuticle in both the pileus and stipe, it can not be placed in H. psitticinus. When dried, the pilei of H. virescens are near warm buff in color. Moreover, the green color developes as the carpophore matures, whereas in H. psitticinus the green pigment is present in young buttons.

H. virescens

Sm - 56649 (Type)



Radial Section — × 1000

Cutis, with non-gelatinous hyphae which are undifferentiated from subjacent pileus tramal tissue

HYGROPHORUS WESTII Murr.

Lloydia 5:139. 1942

Pileus 2.5-4 cm. broad, convex, expanding-convex, slightly umbilicate, slimy-viscid, glabrous, pallid with a yellowish tint, disk slightly darker, margin involute, even. Context white, thin; odor somewhat disagreeable, taste mild.

Lamellae adnexed, arcuate, white, close, narrow, tapering behind.

Stipe 2-3 cm. x 5-10 mm., white, slimy-viscid, apex white-floccose, enlarged above or below.

Spores (5.5) 6-8 x 3.5-4 μ, ellipsoid to subpyriform, smooth, non-amyloid. Basidia 40-48 x 5-9 μ, 4-spored. Pleurocystidia and cheilocystidia none. Gill-trama composed of parallel to subparallel hyphae. Cuticle an ixotrichodermium, 250-400 μ thick, the hyphae more or less erect, densely tangled, 2-4 μ broad. No hypodermium. ~~Pileus trama of periclinal hyphae.~~ A few lactifers present. Clamp connections on the cuticular hyphae, and occasionally on the lactifers.

Habit, habitat, and distribution. - On soil under oaks, Florida, January.

Material studied. - FLORIDA: West, F-19307 (type, from near Hogtown Creek, Gainesville, January 11, 1940).

Observations. - The description of microscopic characters given above is based on our study of the type.

In appearance, the dried carpophores resemble those of H. discoideus (which has a divergent gill-trama), and Murrill erroneously regarded it as a member of the Section Hygrophorus (Limacium). The pilei of the type (dried) are "ochraceous tawny" to "buckthorn brown," and the lamellae "cinnamon." In a general way, it is perhaps closer to H. perplexus Sm. & Hes. than to any other species of this viscid to glutinous stipe group.

HYGROPHORUS H-685

from Maine, Aug. 21, 1940. Collector?

Spores 7-8 x 4-5.5μ, ellipsoid, smooth. Basidia 43 x 54 x 6-8μ, 4-spored. Pl. and ch. none. Gill trama subparallel. Cuticle a narrow zone of colorless, gelatinous hyphae, some hyphae more or less erect. Clamp connections on the cuticular hyphae. Pileus trama radial, more or less parallel.

Near *H. flavescens*.

23773

Hygrophorus

on leaf litter, deciduous woods

Cherokee Farm, U. T.

October 9, 1960

Coll. T. H. Campbell (C-71)

Pileus 2.0-3.0 mm., waxy, conic, buff becoming pink to rose where handled. Lamellae adnexed, white, subdistant. Lamellulae in several series. Stipe 1.0-1.5 cm. x 1 mm. or less, white, waxy. No spore print.

24766 HYGROPHORUS

Pileus 12-18 mm. broad, plano-convex, not umbonate, yellowish with tinge of orange, viscid, margin striate.

Lamellae free or nearly so, orange, narrow, subdistant.

Stipe 2-3 cm. x 1.5-2.0 mm., yellow, dry, equal, fragile.

Spores variable in a given mount: (a) small, 7.5-8.5 x 5-5.5 μ; (b) large, 10-13 x 6-8.5 μ. Larger spores dominating, about 5 to 1. Basidia 32-46 x 8-12 μ, 1-2-4-spored (mostly 2-spored; 1- and 4-spored rare). (Not dimorphic; larger basidia 1-2-4-spored; smaller basidia 2-4-spored). Pleurocystidia none; cheilocystidia 32-38 x 5-7 μ, cylindric, subcapitate. Gill trama subparallel, hyphae 6-11 μ broad. Pileus trama radial. Cuticle an ixotrichodermium, epicuticular hyphae loosely tangled, variable in width from 6-18 μ. Clamps connections none.

24924 HYGROPHORUS

Pileus 8-15 mm. broad, convex, expanding-convex, disc depressed, slightly hygrophanous, pallid, densely covered with "tawny-olive" fibrils, often densely scaly on the center, margin even. Context thin, pallid, soft; odor mild, taste promptly bitter.

Lamellae adnate to subdecurrent, seceding, whitish, close, broad, thick, many lamellulae.

Stipe 2-3 cm. x 1-2 mm., dingy, apex densely white-pruinose, base white-mycelioid, equal, hollow.

Spores 7-8 x 4-5 μ, ellipsoid, smooth, non-amyloid. Basidia 37-46 x 6-8 μ, 2-4-spored. Pleurocystidia and cheilocystidia none. Gill trama nearly parallel, hyphae 7-12 μ broad. Cuticle of repent, brownish hyphae, with scattered, brownish, clavate pilocystidia, 37-44 x 5-7 μ.

24944 - Hygrophorus