



November 2013

Tubaria Notebook 1

L. R. Hesler

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TUBARIA SPECIES IN MYCOLOGIA INDEX

[see also Tubaria: N.A. 7.10:158]

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TUBARIA BREVIPES Pk.

Harriman Alaska Exp. Crypt. 45. 1904.

(Petersen looked for it at Albany, and states that it is not there. Possibly it might be at USDA, Beltsville, Md.)

Zubaria

NAUCORIA CALIFORNICA Murr.

North Amer. Flora 10:181. 1917

Zubaria californica (Murr.) comb. nov.
Type

Pileus cespitose, 2.5 cm broad, convex to plane or slightly depressed, not at all umbonate, hygrophanous, glabrous, uniformly fulvous, fading to pale-isabelline in dried specimens, margin not striate.

Lamellae squarely adnate, becoming brownish-fulvous at maturity, edges whitish pubescent, rather narrow, crowded, plane, many times inserted.

Stipe 1.5-2 cm long, 2-2.5 mm thick, glabrous, concolorous.

Notes by Hesler

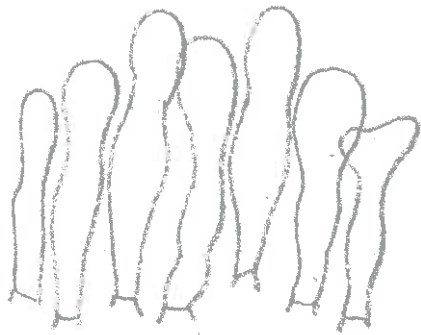
Spores 5.5-7.5 x 4-4.5(5) μ , some obscurely inequilateral in profile, ellipsoid in face view, wall smooth, no germ pore, medium thin, yellowish brown in H₂O, paler in KOH, and in Melzer's reagent. Pleurocystidia none; cheilocystidia 25-36 x 4-9 μ , ventricose, often subcapitate to capitate. Pileus cuticle of dry, repent hyphae. Stipe cuticle of dry, repent hyphae; epicuticular hyphae with scattered, inconspicuous clamp connections.

Type (Murrill 1103) on chips, in a grove, Golden Gate Park, San Francisco, California, November 21, 1911.

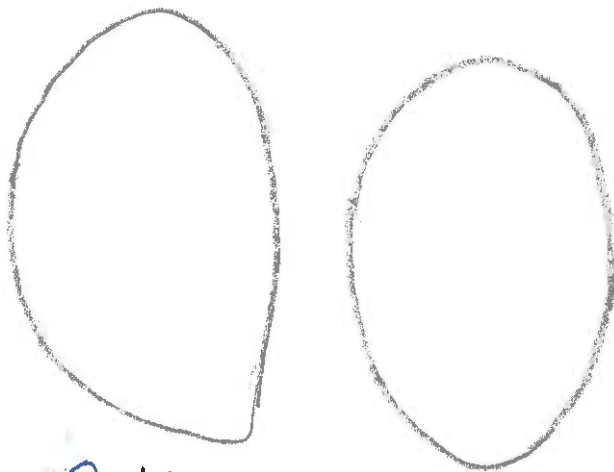
open
The smooth spores exclude it from Gymnopilus.
It is closer to Zubaria than to other genera; true, it is slightly suggestive of Naucoria, which has rough spores, and a heterocellular cuticle.

In Murrill's Key (N. A. Flora 10: 160. 1917)
it falls in the region of Jubaria brevipes PK., in
which the spores are $10-12 \times 7-8\mu$, the lamellae
distant; and J. tenuis PK., in which the lamellae
are distant ^{and} the pileus margin striate or sulcate-striate.

Fubaria *Naucoria californica* Muir.
Type



Ch x 1000



Profile

Face

Spores x 8000

TUBARIA CANESCENS Pk.

New York State Mus. Ann. Rept. 46:104(24). 1893.

Pileus 4-6 mm broad, convex, grayish-white or canescent, coated with minute, whitish fibrils or appressed tomentum, when dry the margin is distantly sulcate or striate. Context very thin.

Lamellae decurrent, cinnamon color, distant.

Stipe 12-16 mm long, slender, whitish, fibrillose, with white mycelium at the base.

Notes on Type (by Hesler)

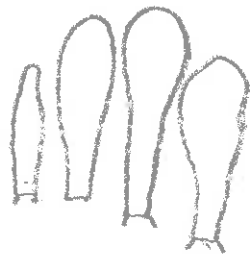
Spores 5.5-7 x 4-4.5 μ , obscurely inequilateral in profile, ellipsoid in face view, very pale yellowish in 2% KOH, wall thin and minutely rough (at x 1100), germ-pore none. Pleurocystidia none; cheilocystidia 18-28 x 5-9 μ ; clavate or subclavate, rather sparse and inconspicuous. Pileus cuticle of dry, repent hyphae, surface fibrillose, the terminal elements sometimes more or less pileocystidioid. Stipe of dry, repent hyphae, surface fibrillose (similar to pileus surface).

Type, on damp naked soil, in woods, Selkirk, New York, July.

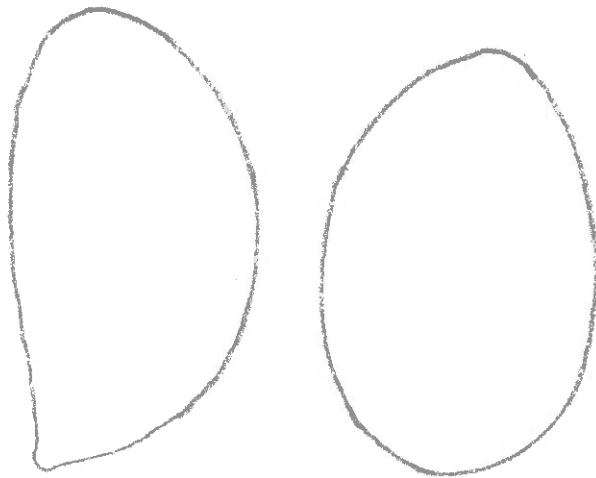
Peck comments that it is closely allied to Tubaria autochthona, from which it is separated by the shape and color of the pileus, the decidedly decurrent lamellae and the fibrillose stipe. As in that species the spores are unusually pale.

The spores and distant, decurrent lamellae place it in Tubaria.

Fubarica canescens PK.
Type



ch x 1000



Spores x 8000

Inbaria (see No 7 10:160)
Inbaria *cranolata* (Batsch) Murr. " "

AGARICUS (NAUCORIA) CONTRARIUS Pk.

New York State Mus. Nat. Hist. Ann. Rept. 30:41. 1879

Type

Pileus 12-20 mm broad, gregarious or subcaespitose, convex, then plane or centrally depressed, sometimes umbilicate, alutaceous, margin sometimes striate, glabrous. Context thin.

Lamellae adnate, very broad behind, becoming ventricose and subtriangular, ochraceous, loose.

Stipe about 2.5 cm long, reddish or reddish-brown, equal, hollow. Veil white, floccose, observed as silky fibrils and fragments on the stipe.

Spores yellow.

Notes by Hesler

Spores 7.5-9 x 4.5-5.5 μ , slightly inequilateral in profile, ovoid in face view, apices sometimes faintly "nose"-like, colorless in water and in 2% KOH, either colorless or with a pale pinkish tint in Melzer's reagent, smooth, thin-walled, no pore. Basidia 24-30 x 5-6 μ , 2-4-spored. Pleurocystidia none; cheilocystidia 33-48 x 7-12 μ , clavate, colorless. Gill trama of slender, subparallel hyphae. Pileus cuticle of dry, repent hyphae. Stipe cuticle of repent, dry hyphae.

Type on grassy ground in pastures, Schenevus and West Albany, N. Y., coll. by Peck, Aug.-Sept.

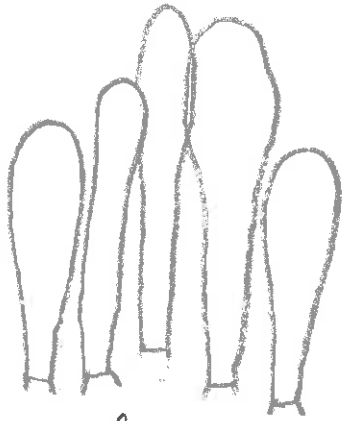
In the packet from Albany there are two collections: (1) from Schenevus, Catskill Mts., Sept. The notes and drawings are from this collection; (2) from West Albany, August. This material has spores similar to those of the Schenevus collection, but I could find no cheilocystidia.

Peck says that the pileus fades a little with age, but the bright color of the lamellae is retained longer.

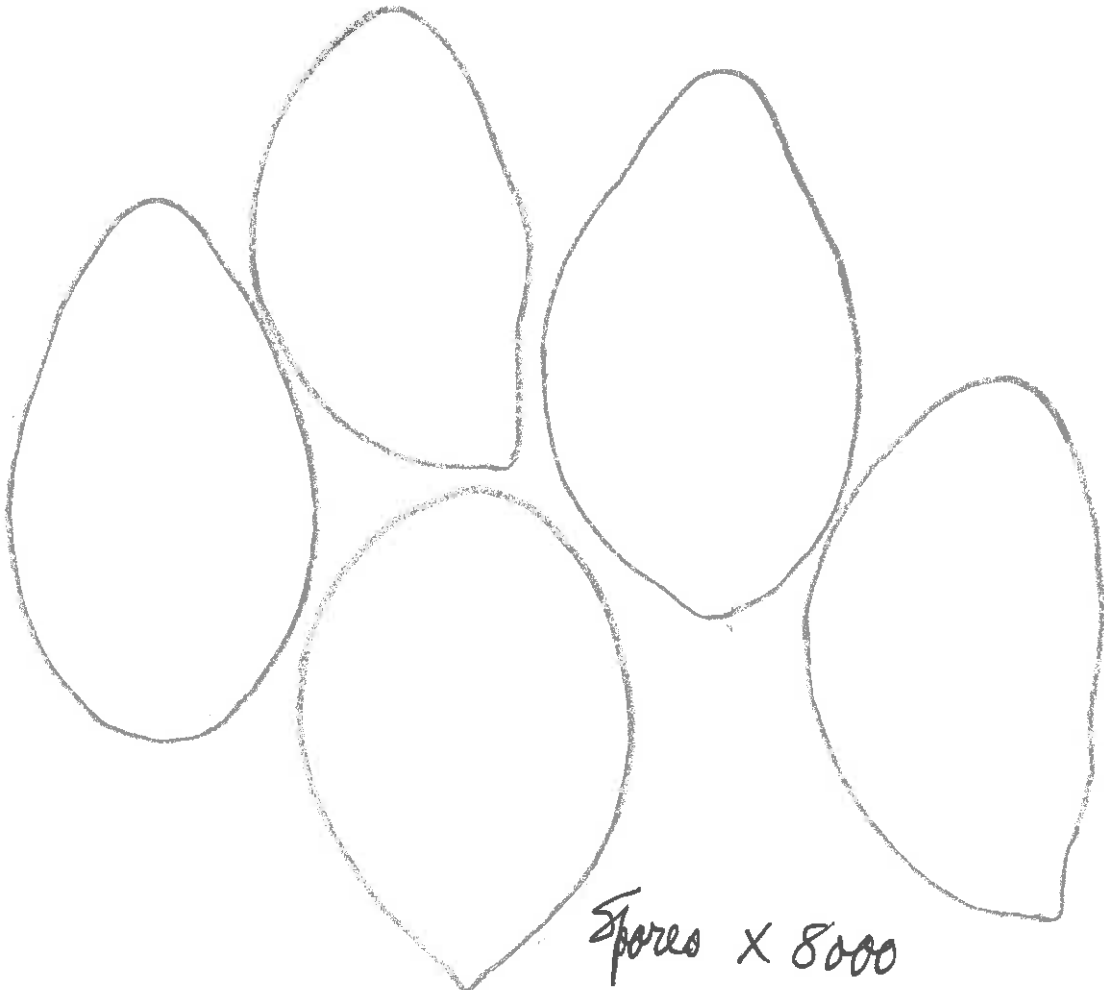
This is not Naucoria; I can not assign it to any brown-spored genus. The veil, yellow (pale) spores, and adnate gills suggest Armillaria, but it does have that appearance. It is not mentioned in N. A. Flora, nor in Singer. In N.A.F. 10:160, Muir lists it as a synonym of Trubaria crenulata (Batsch) Muir. (see his description).

Agaricus (Panicoria) contrarius PK.

Type



ch x 1000



Spores x 8000

TUBARIA DECURRENS (Pk.)Murr.

N. A. Flora 10:159. 1917

Flammula decurrens Pk., Torrey Bot. Club Bull. 22:489. 1895.

(Petersen looked for it at Albany, but could not find it. He suggested that it might be a Bartholomew specimen, and might be at New York Bot. Garden. Or, possibly, at The Farlow.)

TUBARIA DEFORMATA Pk.

New York State Mus. Ann. Rept. 51:290. 1898.

Pileus 12-25 mm broad, convex becoming plane or centrally depressed, hygrophanous, reddish-brown when moist, whitish when dry, glabrous, margin often wavy or irregular. Context thin.

Lamellae adnate or decurrent, brownish-ferruginous, thin, crowded, broader behind, often wavy branched or anastomosing.

Stipe 2.5-5 cm long, 2-4 mm thick, clothed with grayish-white fibrils, tapering downward, firm, hollow.

Notes on Type (by Hesler)

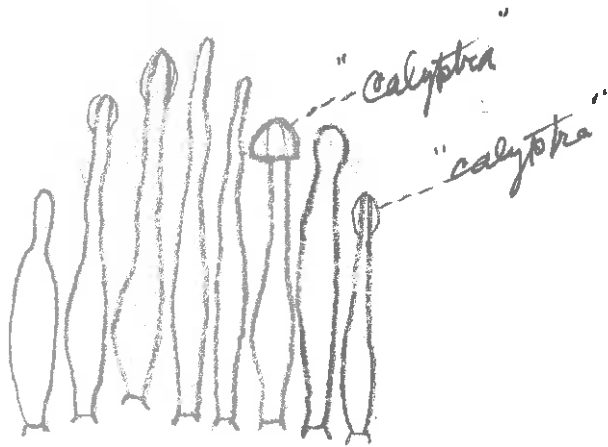
Spores 5.5-7.5 x 4-5 μ , ellipsoid to subfusoid or subovoid, germ-pore present and sometimes appearing more or less truncate, smooth, wall double, yellowish-brown in 2% KOH. Pleurocystidia none; cheilocystidia 30-50 x 4-6 μ , ventricose below, with a slender neck, apices sometimes "calyptrate". Pileus cuticle of dry, repent hyphae. Stipe cuticle of dry, repent hyphae. the surface bearing abundant, slender, colorless hyphae, with clamp connections.

Type on dung, in old roads, Connery Pond, North Elba, New York, August, 1897.

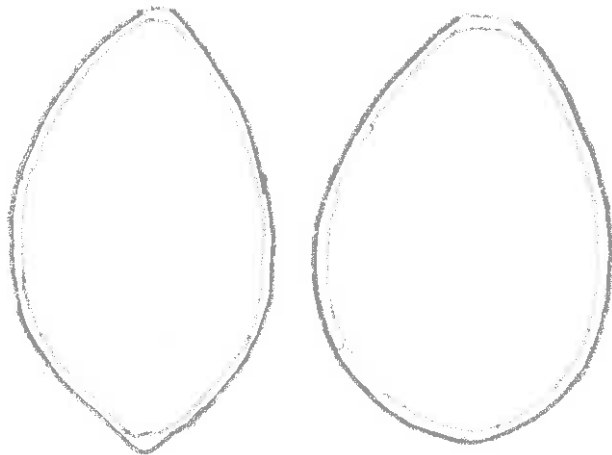
Peck states that the irregular character of the pileus and lamellae give it a deformed appearance.

These same characters are somewhat suggestive of Galeropsis.

Tubaria deformata PK.
Type



Ch x 1000



Spores x 8000

TUBARIA FUSCIFOLIA Murrill

Florida Acad. Sci. Proc. 7:124. 1945.

Murrill's Description

Pileus 1-2 cm broad, conic to convex, not fully expanded, hygrophanous, rosy-isabelline pubescent, margin straight, striate and entire to splitting. Context almost membranous; odorless, taste mild to slightly unpleasant.

Lamellae arcuate, adnate to short-decurrent, pale-rosy-isabelline. When young, fuscous with age or on drying, broad, distant inserted.

Stipe 2-3 cm long, 1-2 mm thick, whitish-pubescent, concolorous with the pileus, equal.

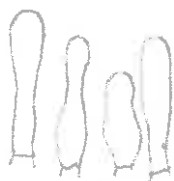
Notes by Hesler

Spores 6-8 x 4-4.5 μ , slightly inequilateral in profile, subvoid to + pip-shaped in face view, wall thin, smooth, no germ-pore, some spores collapsed, colorless in 2% KOH. Pleurocystidia none; cheilocystidia 12-20 x 4-6 μ , clavate to somewhat flask-shaped, inconspicuous, sparse. Pileus cuticle of repent hyphae, with a few colorless epicuticular hyphae. Stipe cuticle similar. Clamp connections on epicuticular hyphae of pileus and stipe.

Type, in moist, sandy soil, near deciduous trees, Gainesville, Fla., Jan. 17, 1943 (F19619).

Zubaria fuscifolia Murr.

Type: 7 19619



ch x 1000



Profile



Face

Spores x 8000

Trubaria

Type material sparse.

NAUCORIA MEXICANA Murr.

North Amer. Flora 10:183. 1917

Type

Pileus 1 cm broad, conic to convex, uniformly fulvous, margin concolorous, dry, densely granular-chaffy.

Lamellae adnate, pallid to fulvous, edges concolorous, broad, ventricose, distant.

Stipe 1-2 cm long, 1-2 mm thick, fulvous, hispid-tomentose, tough, subequal.

Notes by Hesler

Spores 6.5-8 x 3.8-5 μ , smooth, no germ-pore, subreniform in profile, ellipsoid in face view, brown in KOH. Pleurocystidia and cheilocystidia not found. Pileus cuticle structure not determined. Epicuticular elements composed of irregularly-shaped cells (more or less ellipsoid to subfusoid) with incrustations.

The material too sparse for thorough study.

Although Singer (1962) placed this in synonymy with Phaeomarasmium muricatus (Fr.) Singer, (Pholiota muricata), Smith and I avoid using muricata for a North American species because of more than one concept of it in Europe. The difficulty now of a full understanding of N. mexicana is the scarcity of holotype material. It appears to be a Phaeomarasmium, but may or may not belong in that genus. (see: Smith & Hesler, N. A. Species of Pholiota, p. 380 and 60. 1968).

Smith (notes) states that the ch are narrowly clavate, 4-8 μ broad.

[= Tubaria mexicana (Murr.)
A.H. Smith in ed.]

NAUCORIA MEXICANA Murr.

On much decayed wood, at Xuchiles, near Cordoba, Mexico,
Murrill-1140, January 17, 1910

TYPE

Spores 7-8 x 3.8-5 μ , ellipsoid to subovoid in face view,
slightly inequilateral in profile, no germ pore, smooth. No
evidence of cystidia in crushed mount.

The material was originally mixed with Phylloporus rhodoxanthus,
as stated by Singer in a note with the type. Material of N.
mexicana is too sparse and fragmentary to permit a study of the
anatomy of the pileus and gills.

Dennis (Bull. Soc. Myc. Fr. 69: 186. 1953) gives a few
descriptive notes as follows (on the Type): Pileus finely
tomentose, the wall incrustated with reddish brown
granules. Spores 7-8 x 3.5-4 μ , no germ-pore.
Cheilocystidia slightly ventricose, obtuse, 25 x 5-6 μ .
He leaves it in Naucoria.

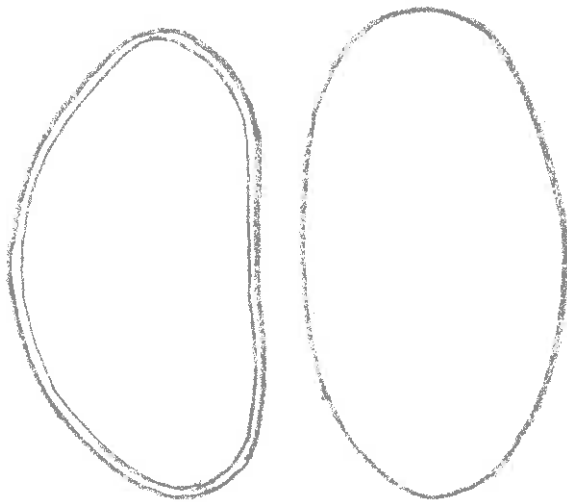
Smith (in his notes) reports his observations on the
Type: Spores 7-9 x 4-5 μ , bean-shaped in profile,
ellipsoid in face view, \pm thin-walled, pale-
yellowish in KOH; ch narrowly clavate, 4-8 μ broad.
This is all he could get out of the Type, and he
feels certain that it is a Tubaria (Cyptotubaria).

Nannaria mexicana Muir.

Type (Fubarina)



Epistylar
elements of filens
x 1000



Spores x 8000

25174

TUBARIA MINUTALIS Romagn.

On soil, above Matrei a. Br., Tyrol, Austria, leg-det.

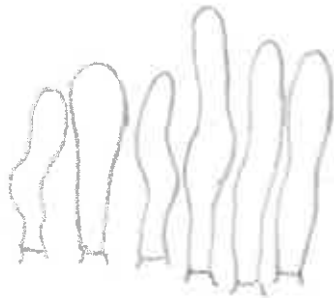
M. Moser, July 8, 1951

Notes by Hesler

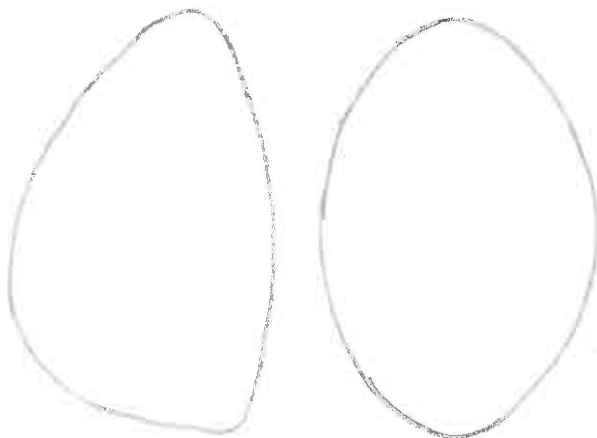
Spores 5.5-7(8-9) x 4-4.5(5.5) μ , slightly inequilateral in profile, ellipsoid to subvoid in face view, smooth, thin-walled, no germ pore, pale yellowish brown in 2% KOH. Pleurocystidia none; cheilocystidia 22-34 x 4-8 μ , clavate, subventricose, rather numerous and moderately conspicuous. Pileus cuticle of repent hyphae, bearing epicuticular hyphae which are more or less repent to sub-erect; pileocystidia none. Stipe cuticle of repent hyphae, bearing epicuticular hyphae which bear some clamps and mostly incrusted. Caulocystidia none.

Zubaria minutalis Romagn.

25174 (ex - Moret)



Ch x 1000



Profile

Face

Spore x 8000

TUBARIA PALLESCENS Pk.

Torrey Bot. Club Bull. 22:202. 1895

Type

Pileus 1-2 cm broad, convex or nearly plane, sometimes slightly depressed at the center, hygrophanous, brick-red when moist, yellowish or cream-colored when dry, glabrous. Context fleshy but thin.

Lamellae adnate or slightly decurrent, tawny-buff, becoming brownish-ferruginous, broad, medium close.

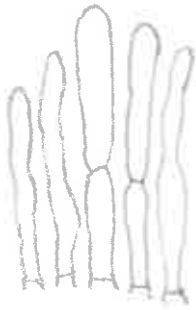
Stipe 2.5-3.5 cm long, 1-2 mm thick, yellowish, with white mycelium at the base, slender, hollow.

Notes by Hesler

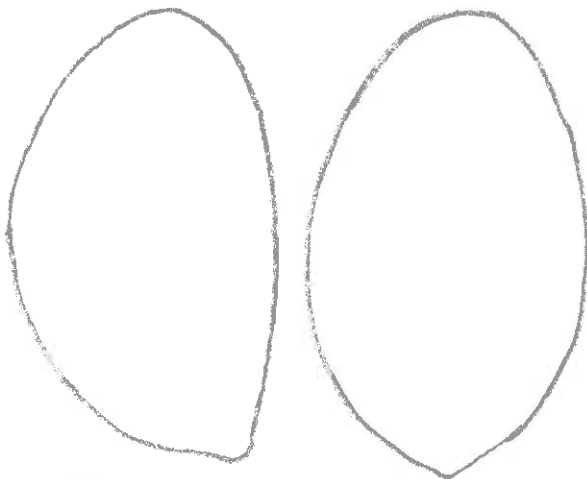
Spores 5.5-7.5 x 4-4.5 μ , slightly inequilateral in profile, ellipsoid in face view, smooth, wall rather thin, pore none. Basidia 22-27 x 5-6 μ , 2-4-spored. Pleurocystidia none; cheilocystidia 25-36 x 3-4 μ , some septate, filamentous-cylindric, in tufts. Gill trama subparallel, hyphae 4-7 μ broad. Pileus cuticle repent; no pileocystidia. Stipe cuticle of repent hyphae; caulocystidia scattered to abundant. Clamp connections present.

Tubaria pallescens PK.

Type



ch x 1000



Profile

Face

Spores x 8000

Inbaria pentstemonis Sing.

Sydowia 11: 368. 1957

Found in Mexico, Paso de Cortes, July 21, 1957.

Full description given in above reference.

Type at U. Mich. Herb.

TUBARIA praecox Muirill
No. 22660

North American Flora 10: 158. 1917

Pileus 8-18 mm. broad, convex becoming plane, deeply umbilicate, hygrophanous, "chamois" when dry, darker when wet, minutely and densely fibrillose, finally squamulose, margin even. Flesh thin, pliant, white; odor and taste none. Lamellae decurrent, arcuate, at first pale buff, finally "warm buff," close, narrow, edges fimbriate. Stipe 1-2 cm. x 1-2 mm., dingy buff, minutely fibrillose, equal, dry, tubular.

Spores 8-10 x 4.5-5 μ , ellipsoid, slightly inequilateral, smooth, in mass: "isabella color," nearly colorless under microscope. Pleurocystidia none; cheilocystidia 22-25 x 7-10 μ , clavate, a few ventricose. Epicutis fibrillose, hyphae brownish.

Habitat and Distribution. - On soil, meadow, Tennessee, September.

Smith finds the spores slightly roughened. Thinks Muirill's type must have consisted of faded specimens.

22660

TUBARIA PRAECOX Merrill

On soil, in meadow, Thornhill, Grainger Co., Tenn., leg.

A. J. Sharp, det. A. H. Smith, Sept. 22, 1957

Pileus 8-18 mm broad, convex becoming plane, deeply umbilicate, hygrophanous, "chamois" when dry, darker when wet, minutely and densely fibrillose, finally squamulose, margin even. Context thin, pliant, white; odor and taste none.

Lamellae decurrent, arcuate, at first pale buff, finally "warm buff," close, narrow, edges fimbriate.

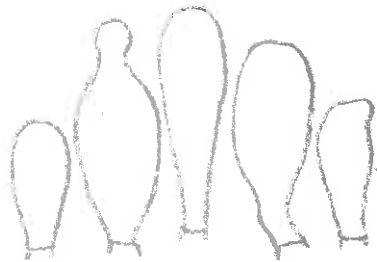
Stipe 1-2 cm long, 1-2 mm thick, dingy buff, minutely fibrillose, equal, dry, tubular.

Spores in deposit: "Isabella color," (6)7-9(9.5) x 4-4.5(5.5) μ , slightly inequilateral in profile, ellipsoid to pip-shaped, or subovoid in face view, minutely rough (under oil), apparently by short rods (examine by higher lens), pale yellowish in 2% KOH. Pleurocystidia none; cheilocystidia 16-30 x 7-11 μ , ventricose or clavate, not abundant. Gill trama of slightly interwoven hyphae, 5-8 μ broad. Pileus trama radial. Pileus cuticle of brown interwoven hyphae, bearing epicuticular hyphae, a few of which are incrustated. Stipe cuticle of ~~the~~ repent hyphae. Caulocystidia 24-52 x 5-10 μ , in tufts or more or less scattered, clavate, ventricose.

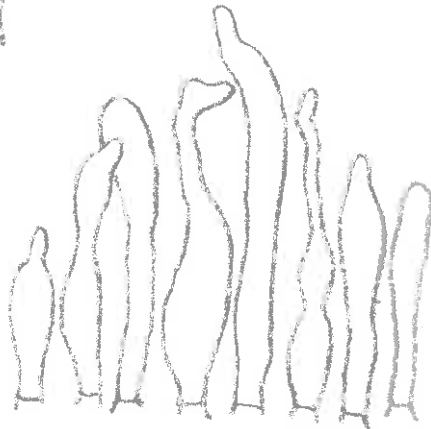
Spore ornamentation should be examined at a magnification much higher than 1100.

Zubania praecox Murr.

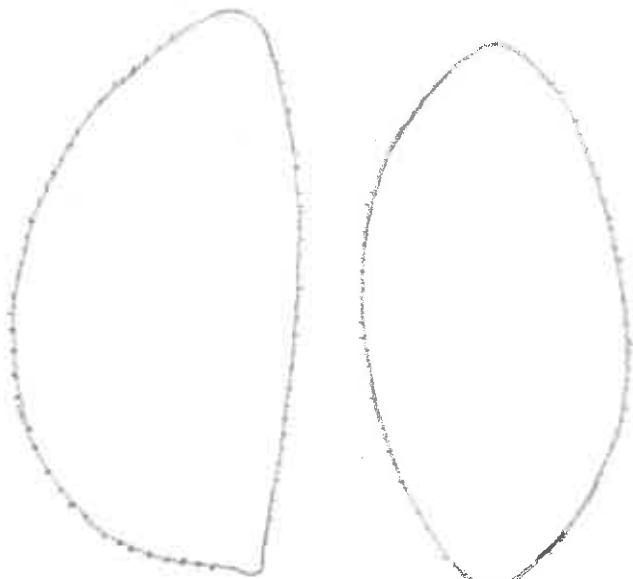
22660



Ch x 1000



Caulo (tuft) - x 1000



Profile

Face

Spores x 5000

Fubaria

NAUCORIA PUBESCENS Murr.

North Amer. Flora 10:179. 1917

Type

The box in a packet marked "Type," showed only gill fragments, and I was able to observe 3 spores, 7-8 x 4.5-5 μ , ellipsoid, no germ pore, apparently smooth, brown in KOH. I was unable to study other micro structures.

~~It might be Polypodium.~~

The \neq Type from Seattle, Wash., collected by Murrill, No. 450, October 20-November 1, 1920.

See Notes herewith by Smith, who calls it Fubaria.

Tubaria pubescens (Murrill)

Nauveoria pubescens Murrill, N.A.F. 10: 179. 1917.

Pileus 1 - 1.5 cm. broad, convex, not fully expanding, surface dry, striate, uniformly isabelline, finely whitish-pubescent, margin thin, entire, concolorous, becoming lacerate with age.

Lamellae adnate, subdistant, ferruginous.

Stipe about 1 cm. long, 1 - 2 mm. thick, subequal isabelline, whitish-fibrillose, cartilaginous, arising from a mat of white mycelium.

Spores 8 - 10 x 5 - 6 μ , ovate in face view, inequilateral in side view or shape \pm irregular - some elongated, nearly hyaline in KOH, thin-walled, many collapsed; cheilocystidia fusoid-ventricose with obtuse apices \pm 35 x 9 μ , hyaline, thin-walled; clamp connections present on hyphae of stipe.

Habit, habitat and distribution: On decayed wood in woods near Seattle, Washington, October-November, 1911, W. A. Murrill 450.

Observations: All I had to work with was a few fragments of gills and stipe - the type was practically destroyed by insects. There is however, no doubt but that the fungus is a Tubaria in the group with large inequilateral spores, and from Murrill's notes it must be a species with relatively pale coloration.

Tubaria
NAUCORIA SIPARIOIDES (B. & C.) Sacc.

Syll. Fung. 5:852. 1887

Agaricus siparioides B. & C., Ann. Mag. Nat. Hist. III.
4:291. 1859.

Murrill's Description

Pileus 12-18 mm broad, hemispheric yellowish brown, minutely and thickly squamulose-verrucose. Context thin, brittle.

Lamellae at first attached but soon separating, plane, distant, broad, edges denticulate.

Stipe 2.5 cm long, less than 2 mm thick, brown, base with a dull-pale-yellowish down and abruptly swollen, fibrillose, fistulose.

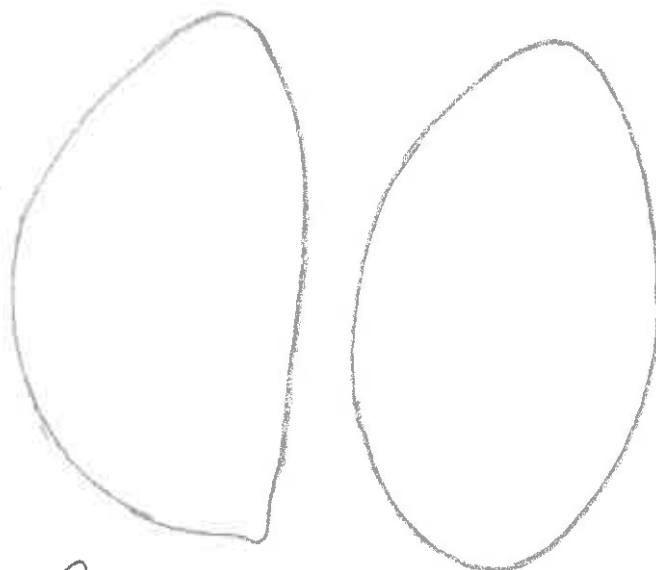
Notes by Hesler (on Type)

Spores 7-9 (10) x 4.5-5 (5.5) μ , slightly inequilateral in profile, ellipsoid or subellipsoid in face view, wall smooth and rather thin, germ pore none, pale yellowish in 2% KOH. Pleurocystidia and cheilocystidia none found. Pileus cuticle of dry, repent hyphae, bearing fascicles of brownish hyphae (no incrustations observed).

Type (5051) from New England, collected by Sprague, on mud of an exsiccated swamp.

I was unable to find any cheilocystidia. Since the spores are very pale and smooth, thin-walled, it might be a Flammulaster, or a Tubaria.

Agaricus (Naucoria) siparioides B. + C.
Type



Profile

Face

Spores x 8000

TUBARIA SUBCRENULATA Murrill

Mycologia 33:284. 1941

Murrill's Description

Pileus cespitose or gregarious, 1-2 cm broad, convex to slightly depressed or subumbilicate, dull rosy-isabelline, somewhat rugulose, finely floccose with whitish scales from the raised cuticle margin concolorous, even, plicate-sulcate with age.

Lamellae short-decurrent, or adnate with a decurrent tooth, fulvous with age, rather distant, broad.

Stipe 2.5-3 cm long, 1-2 mm thick, pale rosy-isabelline; base white-mycelioid, very slightly enlarged upward, shining, subfibrillose to glabrous, cartilaginous. Veil at times forming a slight apical annulus.

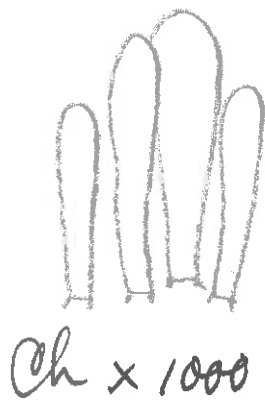
Notes by Hesler

Spores 6-9 x 4-5 μ , slightly inequilateral in profile, subfusoid to subovoid in face view, smooth, no germ pore, wall thin, colorless to nearly so in 2% KOH. Pleurocystidia none; cheilocystidia 25-35 x 5-10 μ , clavate, at times in small tufts. Pileus cuticle of repent hyphae, surface bearing colorless epicuticular hyphae, the terminal elements usually pileocystidioid. Stipe cuticle of repent hyphae, with colorless epicuticular hyphae; no caulocystidia found. Clamp connections on the epicuticular hyphae of both the pileus and stipe.

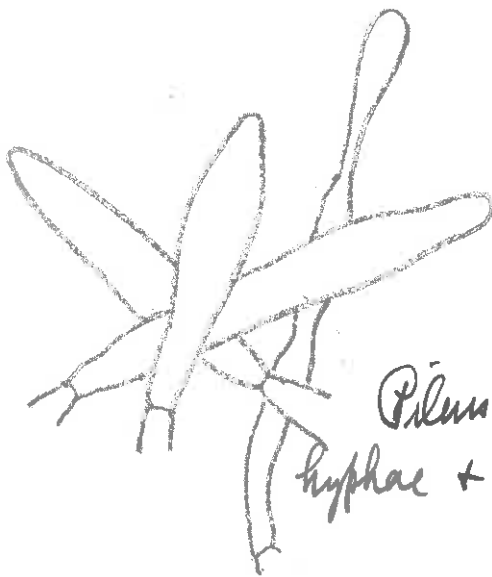
Type (F 10076) in oak woods, Gainesville, Fla., Nov. 12, 1932; closely related to T. crenulata.

Tubaria subarenulata Murr.

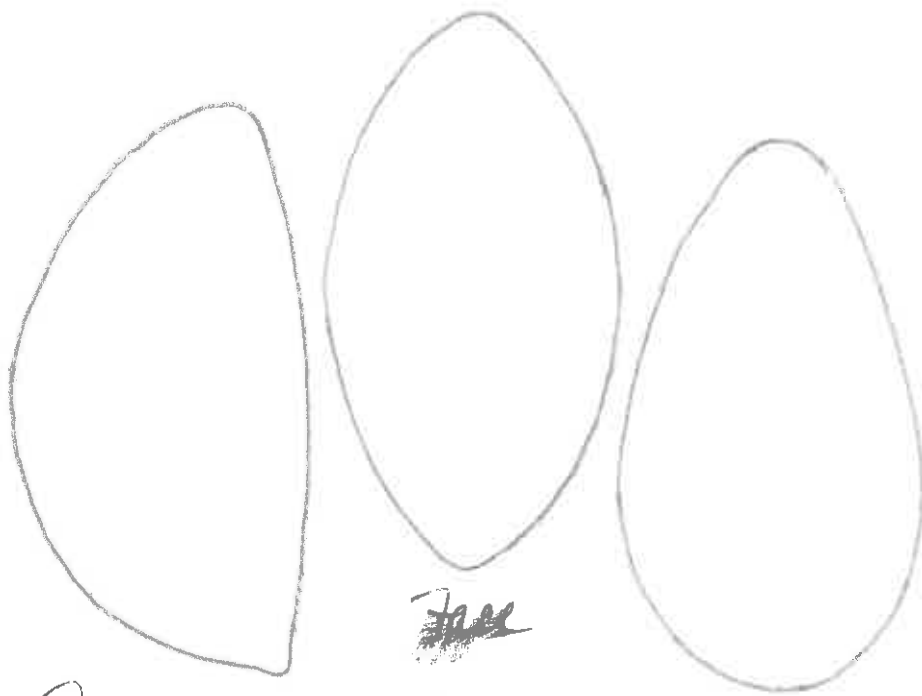
Type: F 10076



Ch x 1000



Pilus epicuticular
hyphae + pileocystidia x 1000



Profile

~~Face~~

Face

Spores x 8000

TUBARIA TENUIS Pk.

Torrey Bot. Club Bull. 23:415. 1896.

Pileus 8-16 mm broad, hemispheric or convex, obtuse or subumbilicate, hygrophanous, reddish-cinnamon when moist, cream color or pale ochraceous when dry, glabrous, margin faintly striate or sulcate-striate. Context membranous.

Lamellae adnate or slightly decurrent, tawny-ochraceous, 2-4 mm wide, ventricose, distant.

Stipe 2.5-5 cm long, about 2 mm thick, pale-yellow or cream color, apex pruinose, often uneven, flexuous, hollow.

Notes on Type (by Hesler)

Spores 7-8 x 4-5 μ , slightly inequilateral in profile, ellipsoid or subovoid in face view, very pale yellowish in 2% KOH, wall thin, smooth, germ-pore none. Pleurocystidia 23-28 x 4-5 μ , ventricose with a neck, widely scattered to rare and inconspicuous; cheilocystidia 16-27 x 3-5 μ , more or less ventricose, more rarely subcapitate, not abundant. Pileus cuticle of repent hyphae. Pileocystidia none found. Stipe cuticle of repent hyphae. Caulocystidia 23-40 x 3-7 μ , ventricose with a neck, often with a capitellum, scattered or in tufts.

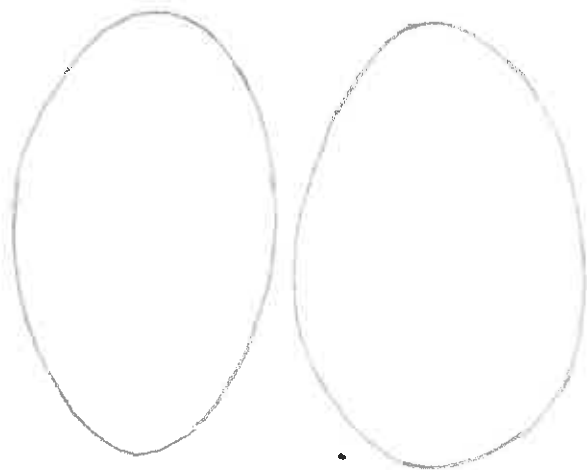
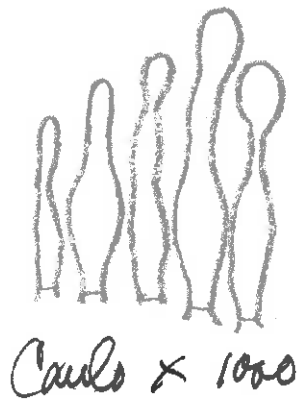
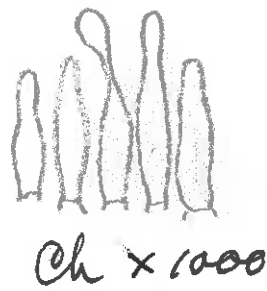
Type, among mosses in gravelly soil, leg. McClatchie, Pasadena, California, January.

Peck comments (p. 416) that this species is variable, and somewhat ambiguous between Naucoria, Galera, and Tubaria, but the attachment of the lamellae indicates a close relationship to the genus Tubaria. From Naucoria melinoides, which it much resembles, it may be separated by its

paler stipe and smaller spores, and by the tendency of the pileus to become centrally depressed or umbilicate. From Naucoria pygmaea and Galera pymaeo-affinis it may be distinguished by its yellowish stipe and adnate or decurrent lamellae.

Peck might have also mentioned the very pale, thin-walled spores and distant gills, features which are characteristic of Tubaria species.

Jabaria tenuis PK.
Type



Profile

Face View

Spores x 8000

Jubaria

Jager (Nydia 5. 1942) says that the type of Clitocybe whetstonae Murr., N.A.F. 9:398. 1916, is a Jubaria, but no species known to him.

On soil, under shrub, lawn, Timberlake Rd., Knoxville,
Tenn., Apr. 28, 1951.

Pileus 1.5-2 cm broad, convex, finally flat or upturned, "pinkish buff" to "cinnamon," somewhat hygrophanous, velvety fibrillose, dry, margin even. Context pallid, thin; odor and taste none.

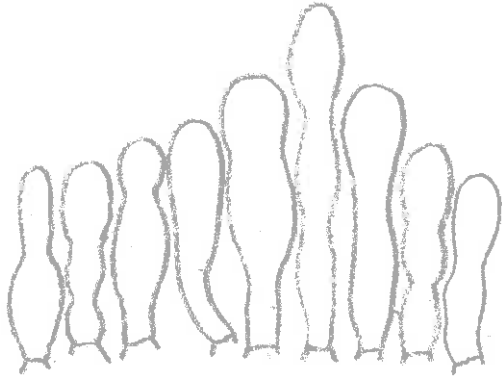
Lamellae adnate, then seceding and pseudo-emarginate, "pinkish buff" (young), finally "Mikado brown," broad behind, narrowed in front, moderately close, transversely rugulose, edges slightly rough.

Stipe 1-2 cm long, 3-6 mm thick, broadened at apex, tapering downward, dry, pallid, fibrillose-striate, hollow. Veil delicate, white, evanescent.

Spores 7-9 x 4-5(5.5) μ , obscurely inequialteral, ellipsoid in face view, very pale yellowish in 2% KOH, thin-walled, germ-pore none, smooth. Basidia 24-27 x 6-7 μ , (2)4-spored, slender-clavate. Pleurocystidia none; cheilocystidia 25-4 x 6-9 μ , clavate, subventricose, rarely flask-shaped, rather abundant. Gill trama of subparallel hyphae, 3-5 μ broad. Pileus cuticle not greatly differentiated, hyphae repent, bearing abundant, epicuticular hyphae, tangled, semierect to repent, many brown, mostly incrustated, the terminal elements usually as clavate-cylindric pileocystidia. Stipe cuticle repent, bearing epicuticular hyphae, some (many) brown, mostly incrustated. Clamp connections scattered, on the epicuticular hyphae of both the pileus and stipe surfaces.

Fubarua

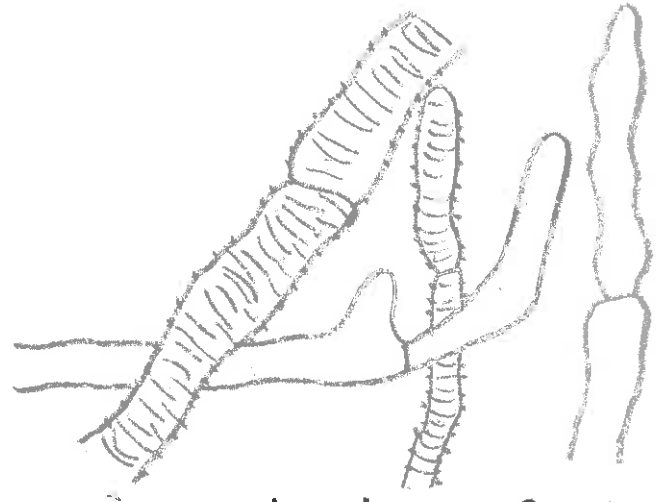
2790



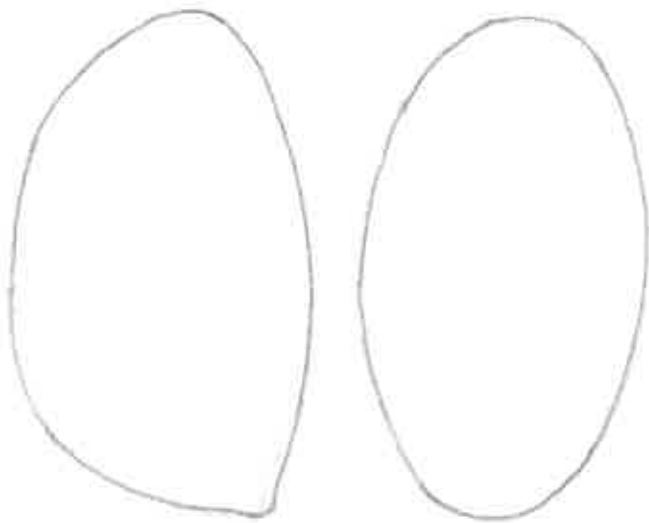
Ch x 1000



Basidia - x 1000



Epicuticular hyphae
of Pileus - x 1000



Profile

Face

Spores x 8000

5320

TUBARIA

On humus (chips, leaves) in deciduous woods, Timberlake Road, Knox Co., Hesler's, December 22, 1956

Pileus 1-2 cm broad, hemispheric-convex, expanding convex, dry, near "pinkish buff," glabrous, margin incurved.

Lamellae adnate-decurrent, close, medium narrow, brown.

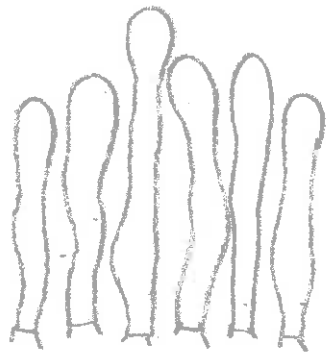
Stipe 3.5-5 cm long, 2-4 mm thick, pale dingy brown, dry, hollow.

Spores in deposit: near "raw sienna," 7-8.5 x 4-5 μ , very pale yellow in 2% KOH, wall moderately thin, smooth, no germ pore, inequilateral in profile, ellipsoid in face view. Pleurocystidia none; cheilocystidia 30-43 x 5-7 μ , subcylindric-subclavate, apices slightly enlarged to subcapitate, sometimes subventricose downward. Pileus cuticle hyphoid, repent, dry, not greatly differentiated from trama, bearing a trichodermium of pale, septate, slightly incrustated hyphae. Stipe cuticle similar to pileus, terminal elements at times as caulocystidia, similar to cheilocystidia.

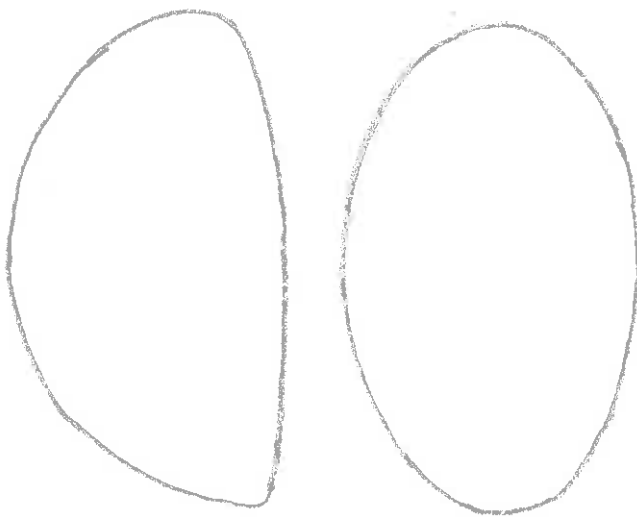
Similar to or same as 20781 (= Smith 33704).

Fabaria

Tem-5320



ch x 1000



Profile

Face

Spore x 8000

9656

TUBARIA

PHOTO

On soil, in woods, near Oliver Springs, Tennessee, October
25, 1936

Pileus 8-16 mm broad, at first convex, finally expanded plane, and disc often slightly depressed, pinkish-cinnamon, widely and rather deeply striate half-way to disc, dry, minutely fibrillose. Context thin, pallid.

Lamellae decurrent to rather long-decurrent, brownish, rather broad, subdistant to nearly so, ~~edges~~ edges whitish.

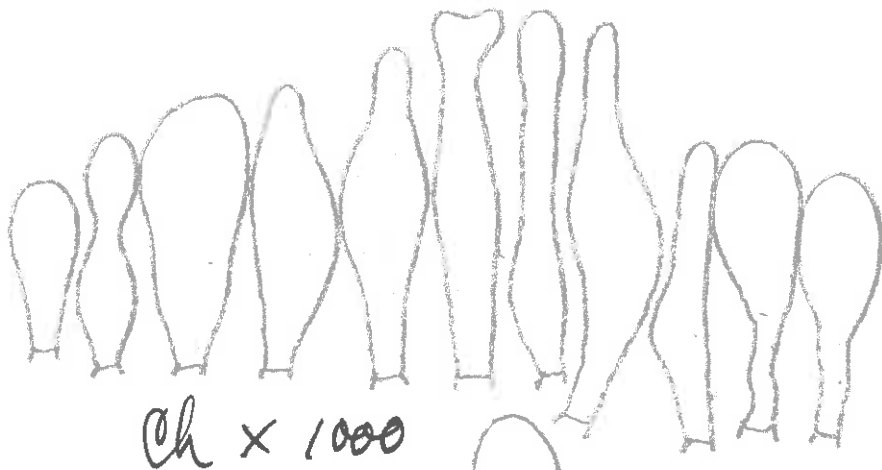
Stipe 24-30 mm long, 1-1.5 mm thick, glabrous, dingy brown to reddish brown, dry, base with (or without) a slight, small bulb.

Spores 7-8 x 4-4.5(5) μ , slightly inequilateral in profile, ellipsoid to ovoid in face view, wall thin, smooth, no germ pore, very pale yellowish in 2% KOH. Basidia 24-26 x 6-7 μ , 2-4-spored. Pleurocystidia none; cheilocystidia 22-52 x 6-15 μ , versiform (pyriform, dumb-bell, ventricose), conspicuous, abundant. Pileus cuticle of repent hyphae, bearing numerous epicuticular hyphae, the terminal elements pileocystidioid, hyphae colorless to brown, often incrustated. Stipe cuticle of repent hyphae, apical zone bearing tufts of caulocystidia 28-75 x 7-17 μ , versiform (ventricose, clavate, apex occasionally forked, at times septate). Clamp connections on pileus epicuticular hyphae.

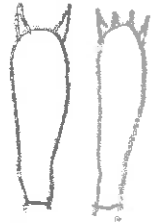
Cf. *T. decurrens* (Pk) Murr., and *T. alabamensis* Murr.

Zubaria

9656



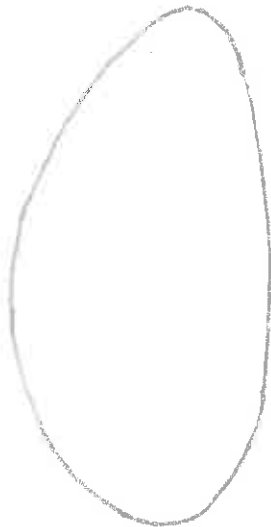
Ch x 1000



Basidia x 1000



Caulo x 1000



Profile



Face

Spores x 8000



Face

11443

[TUBARIA sp. nov.?]

On humus, in deciduous woods, Knox County, det. as *Tubaris* (sp. nov.?) by A. H. Smith, May 26, 1938

Pileus 2-4.5 cm broad, expanded plane, innately silky then glabrous, not viscid, hygrophanous, dark reddish-brown (wet), "cinnamon-buff," (dry), surface tending to become rimose. Context thin, concolorous.

Lamellae adnate to adnate-decurrent, close, narrow, Mars "mars brown," edges serrulate, whitish.

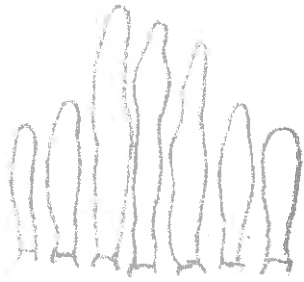
Stipe 7-9.5 cm long, 4-6 mm thick, twisted, flexuous, silky-shining, hollow.

Spores (6) 7-9 x 4.5-5.5 μ , slightly inequilateral in profile, ellipsoid in face view, warty-rugulose, brown in 2% KOH, no germ-pore. Basidia 25-28 x 7-8 μ , clavate 2-4-spored. Pleurocystidia none; cheilocystidia 18-33 x 3-5 μ , subventricose to subclavate, not very conspicuous. Gill trama parallel, hyphae 5-7 μ broad. Pileus trama radial. Pileus cuticle of repent hyphae; no epicutis. Stipe cuticle of repent hyphae; no caulocystidia.

The spore ornamentation and color indicate this may not be a *Tubaria*. Smith called it "Tubaria sp. nov." It might be nearer to Cortinarius.

Fubaria

11443



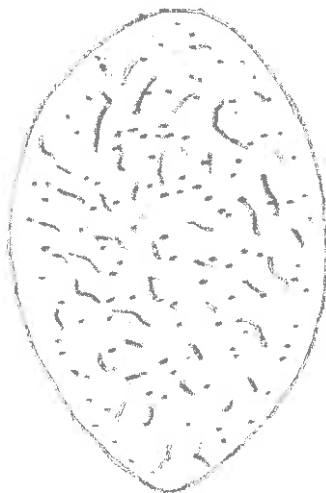
Ch $\times 1000$



Basidia $\times 1000$



Profile



Face

Spores $\times 8000$

20781

TUBARIA

PHOTO

On soil and humus, in deciduous woods, Timberlake Rd.,
Knox Co., January 24, 1953

Pileus 15-30 mm broad, convex, expanding, upturned, hygrophanous, expallent, "cinnamon brown" (wet), pallid (dry), striate when wet, even when dry. Context thin, fragile, concolorous with pileus; odor and taste fungoid, soon slightly bitter.

Lamellae adnate to subdecurrent, seceding in age, "ochraceous tawny," nearly subdistant, medium broad, of three ranks, medium-broad, tapering in front, edges minutely fimbriate.

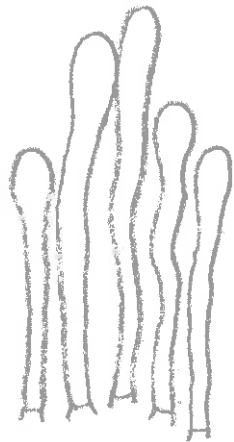
Stipe 3-5 cm long, 2-4(5) mm thick, concolorous with pileus or paler, faintly striate, pruinose at apex, elsewhere scattered white-fibrillose, cartiliginous, fragile, hollow, equal, base curved. Veil leaving remnants on stipe.

Spores in deposit: "raw sienna," 7-9 x 5-5.5(6) μ , slightly inequilateral in profile, ellipsoid in face view, wall thin, smooth, very pale yellow in KOH. Gill trama of subparallel hyphae, 4-7 μ broad. Pleurocystidia none; cheilocystidia (24) 40-63 x 3-7 μ , cylindrical-clavate, apices often subcapitate. Gill trama of subparallel hyphae, 9-16 μ broad. Cuticle hyphoid-trichodermial, hyphae 6-12 μ broad, incrustated. Stipe cuticle repent, bearing tufts of caulocystidia, similar to cheilocystidia.

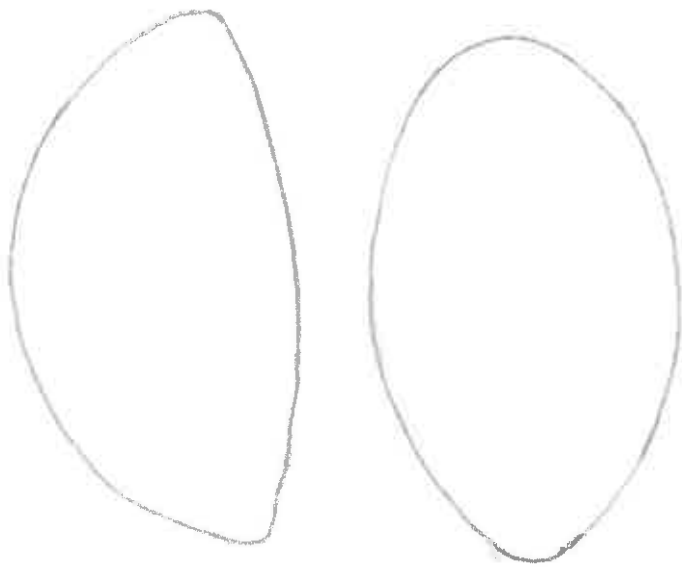
Smith thinks it the same as his No. 33704.

Jubaria

20781



Ch x 1000



Profile

Face

Spores x 8000



20781 - *Tubaria*
~~*Naucoria*~~

22659

TUBARIA

On humus, in deciduous woods, Nale's Creek, Blount County,
Tenn., Sept. 21, 1957

Pileus 1-2 cm broad, convex, expanding, depressed at maturity, hygrophanous, "cinnamon buff" when dry, "saya brown" when wet, fibrillose, striate to disc. Context concolorous with pileus, thick on disc, thin on margin; odor and taste slight or mild.

Lamellae broadly adnate-subdecurrent, very broad, subtriangular, subdistant, at first pallid, soon "saya brown," edges fimbriate.

Stipe 2-3.5 cm long, 1-2 mm thick, pale brown, white-fibrillose, more or less glabrescent, cartilaginous, white-stuffed, equal, base white-mycelioid. Veil white-fibrillose to sub-membranous, temporarily appendiculate, fugaceous.

Spores near "cinnamon buff" in deposit, (5)6-8 x 3.5-4.5 μ , slightly inequilateral in profile, sub-ellipsoid to subfusoid in face view, wall thin, smooth, no germ pore, pale yellowish in 2% KOH. Pleurocystidia none; cheilocystidia 18-23 x 8-12 μ , pyriform, clustered, conspicuous in some sections. Gill trama subparallel. Pileus trama radial. Pileus cuticle of repent hyphae, bearing numerous hyphae and also numerous pileocystidia, 34-52 x 8-12 μ , ventricose, clavate, often incrustated. Stipe cuticle of repent hyphae, with epicuticular hyphae, the terminal elements as caulocystidia, mostly cylindrical, but occasionally ventricose,

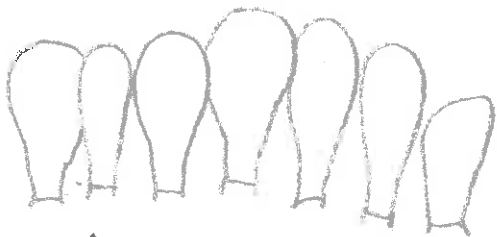
22659

Tubaria - page 2

rarely forked. Clamp connections on the epicuticular hyphae of both the pileus and stipe.

Zubaria

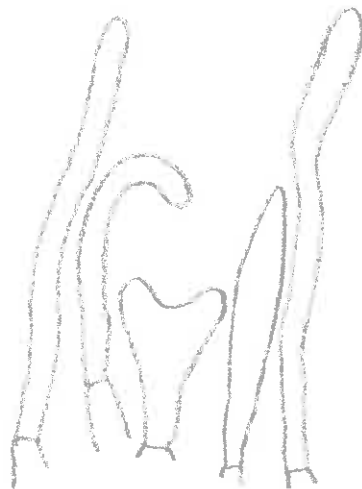
22659



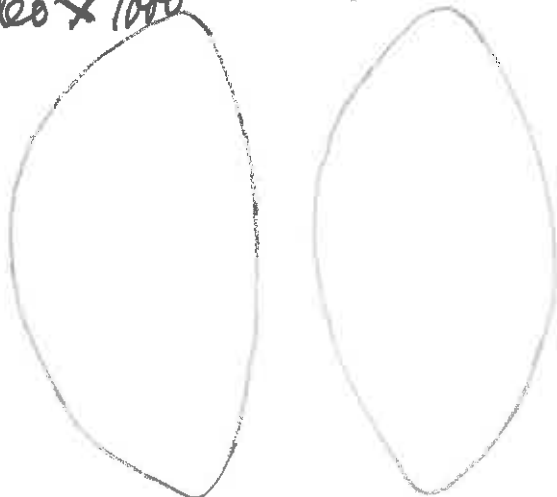
Ch x 1000



Pileo x 1000



Caulo x 1000



Profile

Face

Spores x 8000

23501

TUBARIA

On soil, in deciduous woods, Boarts' place, Timberlake Rd., Knox Co., Oct. 11, 1959

Pileus 5-10 mm, convex-hemispheric, expanding-convex, hygrophanous, "cinnamon" when dry, watery-brown when wet, densely and minutely fibrillose, margin slightly striate. Context pale cinnamon, thin; odor and taste mild.

Lamellae sub-decurrent, "cinnamon," subdistant, broad, edges white-fimbriate.

Stipe 1.5-2.5 cm long, 1-1.5 mm thick, pale cinnamon, apex and base white, slightly silky above, hollow. Veil webby, white, evanescent.

Spores in deposit "yellow ocher," 6-8 x 3.5-4.5 μ , slightly inequilateral in profile, ellipsoid, ovoid, to subfusoid in face view, smooth, no germ pore, pale yellowish in 2% KOH. Pleurocystidia none; cheilocystidia 23-52 x 6-15 μ , versiform, flask-shaped, ventricose, subpyriform. Pileus cuticle of repent hyphae, bearing an epicutis of hyphae, the terminal elements as cylindrical pileocystidia. Stipe cuticle repent, bearing scattered cylindrical to ventricose caulocystidia.

23501

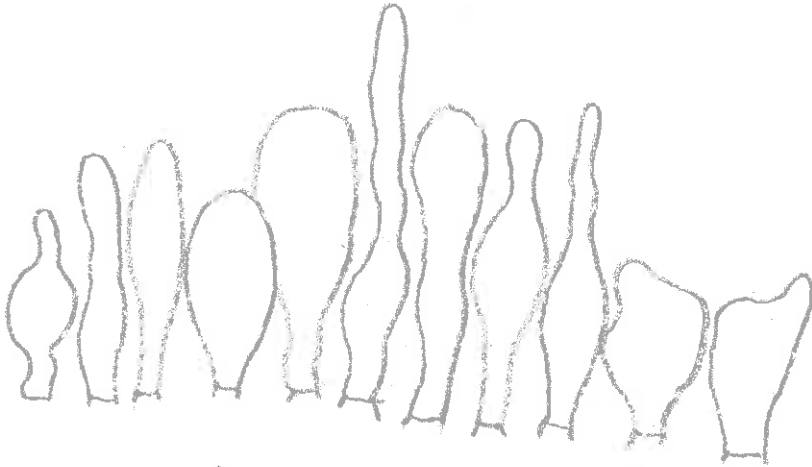
Tubaria
on soil, in deciduous woods
Boarts' place
Coll.: M. Boarts, October 11, 1959

Pileus 5-10 mm., convex-hemispheric, expanding-convex, hygrophanous, "cinnamon" when dry, watery-brown when wet, densely and minutely fibrillose, margin slightly striate. Flesh pale cinnamon, thin; odor and taste mild. Lamellae sub-decurrent, "cinnamon," subdistant, broad, edges white-fimbriate. Stipe 1.5-2.5 cm. x 1-1.5 mm., pale cinnamon, apex and base white, slightly silky above, hollow. Veil webby, white, evanescent.

Spores in mass: "yellow ocher."

Zubaria

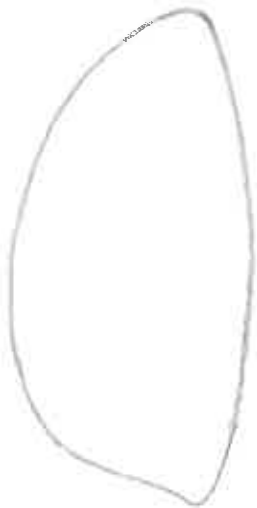
23501



Ch x 1000



~~Caulo~~
Pileo
x 1000



Profile



Face

Spores x 8000

23589

TUBARIA

On soil, in deciduous woods, Timberlake Rd., Knox Co.,
Tenn., November 11, 1960

Pileus 1-3 cm broad, hemispheric, finally expanded-convex, hygrophanous, "verona brown" when wet, "light buff" when dry, silky to minutely fibrillose, margin becoming striate to plicate. Context thick on disc, thin elsewhere, brown (when wet); odor slight, taste somewhat unpleasant.

Lamellae decurrent to adnate-decurrent, pallid at first, soon "saya brown," close, broad, lamellulae numerous, of three ranks, edges rough.

Stipe 2.5-5 cm long, 2-3 mm thick, pale brown above, pallid below, silky-striate, apex white-mealy, flexuous, hollow, equal. Veil white, webby, appendiculate, evanescent, no annulus.

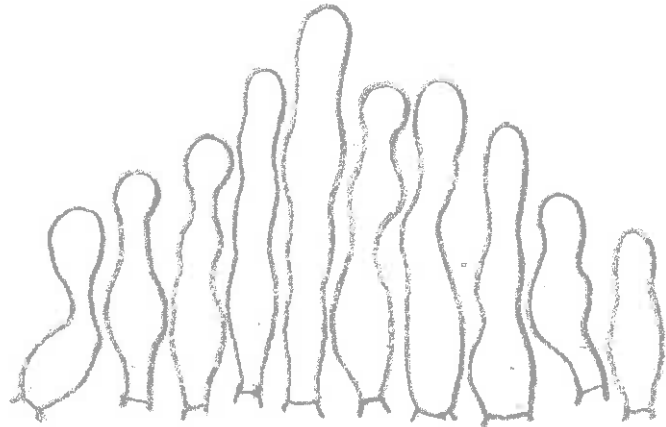
Spores "ochraceous buff" in deposits, 7.5-9 x 4.5-5.5 μ , slightly inequilateral in profile, ellipsoid in face view, smooth, medium thin-walled, no germ-pore, pale yellowish in 2% KOH. Pleurocystidia none; cheilocystidia 24-50 x 6-9 μ , ventricose to sub-flask-shaped, or subcylindric, in some the apices slightly enlarged. Gill trama of subparallel hyphae, 4-8 μ broad. Pileus trama interwoven. Pileus cuticle a trichodermium, the hyphae \times 4-10 μ broad, colorless to brownish, incrustated, terminal elements more or less

pileocystidioid, the cuticular zone hardly differentiated from the pileus trama. Stipe cuticle repeat bearing epicuticular hyphae, the terminal elements often cystidioid. Clamp connections on the epicuticular hyphae of both the pileus and stipe.

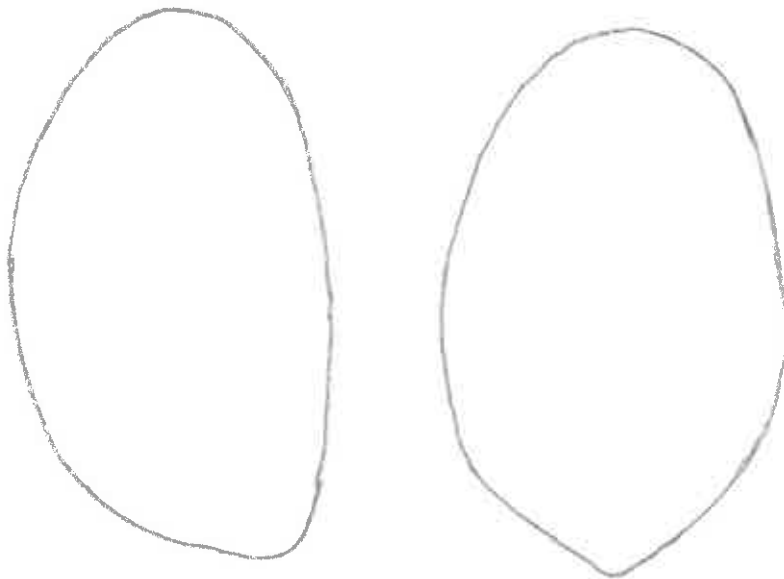
May be near #24319, in which the spores are smaller and of different shape, gills subdistant, taste mild, pileus paler, pileocystidia distinctive.

Subaria

Term. 23589



Ch x 1000



Profile

Face

Spores x 8000

24319

TUBARIA

PHOTO

On humus (sticks, leaves), in deciduous woods, Boarts' woods, Timberlake Rd., Knox Co., Tenn., June 18, 1961

Pileus 1-2 cm broad, convex, expanded, apparently hygrophanous, "light pinkish cinnamon," disc "syal brown," densely and minutely fibrillose, striate. Context thin, soft, concolor; odor and taste none.

Lamellae adnate-subdecurrent to decurrent, at times seceding, whitish, soon "pinkish buff," finally "cinnamon," nearly subdistant, rather broad, many (alternately arranged) lamellulae of two ranks, edges pale-fimbriate.

Stipe 22-25 mm long, 1.5-3 mm thick, concolorous, fibrillose, glabrescent, base white-tomentose, hollow, cartilaginous, equal. Veil remnants on pileus and stipe.

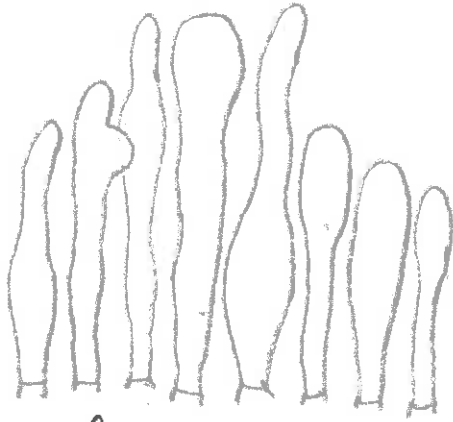
Spores "ochraceous buff" in deposit, 5.5-7.5(8) x 3.5-4.5(5) μ , slightly inequilateral in profile, ellipsoid to subvoid, often the apical end narrower, wall thin, smooth, no germ pore, very pale yellowish in 2% KOH. Basidia 22-25 x 5-6 μ , 4-spored. Pleurocystidia none; cheilocystidia 36-52 x 5-10 μ , clavate, or ventricose, in tufts. Gill trama of subparallel hyphae, 6-10 μ broad. Pileus trama radial. Pileus cuticle a trichodermium, the hyphae accompanied by numerous pileocystidia, 25-60 x 7-18 μ , ventricose, sub-pyriform, clavate, arising either as terminal elements to epicuticular hyphae, or directly

from repent cuticular hyphae. Stipe cuticle repent, with epicuticular hyphae, the terminal elements as caulocystidia. Clamp connections on the epicuticular hyphae of stipe and pileus.

This may close to No. 23589, in which the spores are different (larger and broadly ellipsoid), lamellae close, taste unpleasant, darker (when wet).

Jubaria

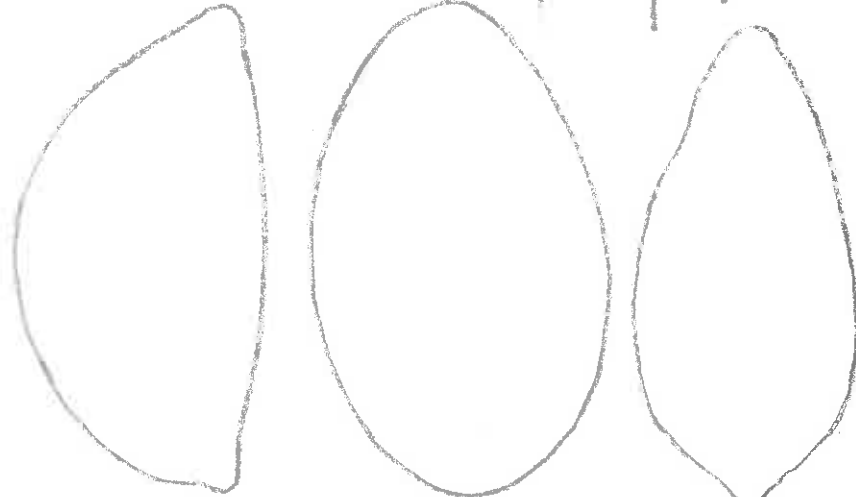
Teun- 24319



Ch x 1000



Pileo x 1000



Profile

Face

Face

Spore x 8000



Epicuticular hypha
(with clamp)



24319 - ~~Hygrocybe~~ Tubaria
(~~Tubaria?~~)

24945

TUBARIA

PHOTO

In humus, in deciduous woods, Hesler's place, Timberlake Rd.,
Knox County, Oct. 12, 1962

Pileus 0.8-2 cm broad, convex, more or less expanding, "pinkish buff" but densely covered by white silky fibrils, not hygrophanous, margin striate. Context thin, concolorous; odor and taste mild.

Lamellae adnate-decurrent, pallid, then "cinnamon," subdistant, broad, lamellulae numerous, edges fimbriate to serrulate.

Stipe 2-3.5 cm long, 1-2 mm thick, "pinkish buff," densely white-silky, equal, tubular. Veil dense, arachnoid, white, leaving remnants along the pileus margin.

Spores 7-8 x 4-4.5 μ , inequilateral in profile, subovoid in face view, smooth, no germ pore, thin-walled, pale yellowish in 2% KOH. Pleurocystidia none; cheilocystidia 36-73 x 8-23 μ , ventricose, clavate, flask-shaped, or subpyriform to versiform. Gill trama subparallel, hyphae 5-8 μ broad. Pileus cuticle repent, with abundant epicuticular hyphae, the cells more or less in chains. The terminal elements often as pileocystidia, 33-68 x 7-22 μ , versiform: fusoid, ventricose, subpyriform, flask-shaped, subclavate. Stipe cuticle of repent hyphae, bearing tufts, of or scattered caulocystidia, 33-60 x 4-14 μ , cylindrical, ventricose, flask-shaped.

24945

Tubaria - page 2

The densely fibrillose pileus, the more or less chain-like epicuticular hyphal-cells, small, pale, thin-walled ~~spores~~ spores suggest Flammulaster.

24945

TUBARIA

Photo

Pileus 0.8-2 cm. broad, convex, more or less expanding, "pinkish buff" but densely covered by white silky fibrils, not hygrophanous, striate. Context thin, concolorous; odor and taste mild.

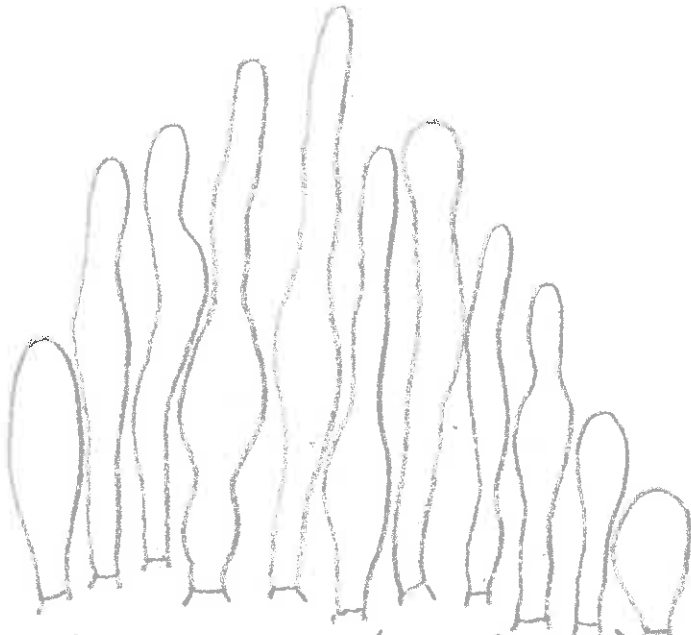
Lamellae adnate-decurrent, pallid then "cinnamon," subdistant, broad, lamellulae numerous, edges fimbriate or serrulate.

Stipe 2-3.5 cm. x 1-2 mm., more or less "pinkish buff," densely white silky, equal, tubular. Veil dense, arachnoid, white, leaving remnants along the pileus margin.

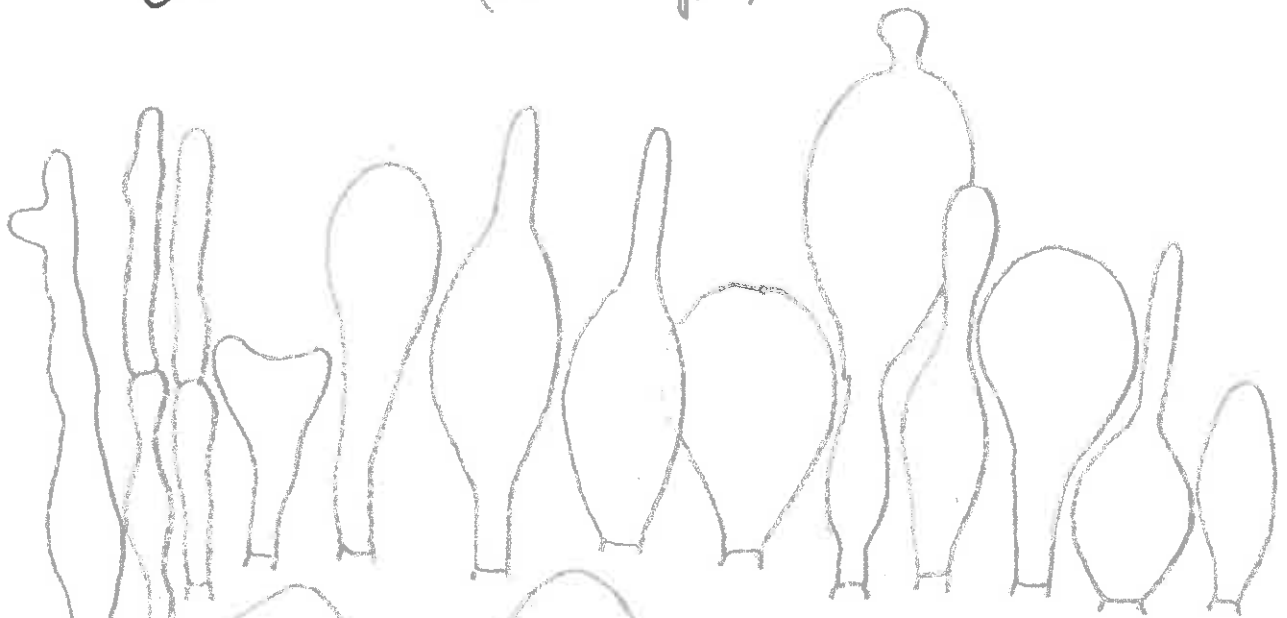
Fubarua

24945

more
another sheet



Ch - x 1000 (usual types)

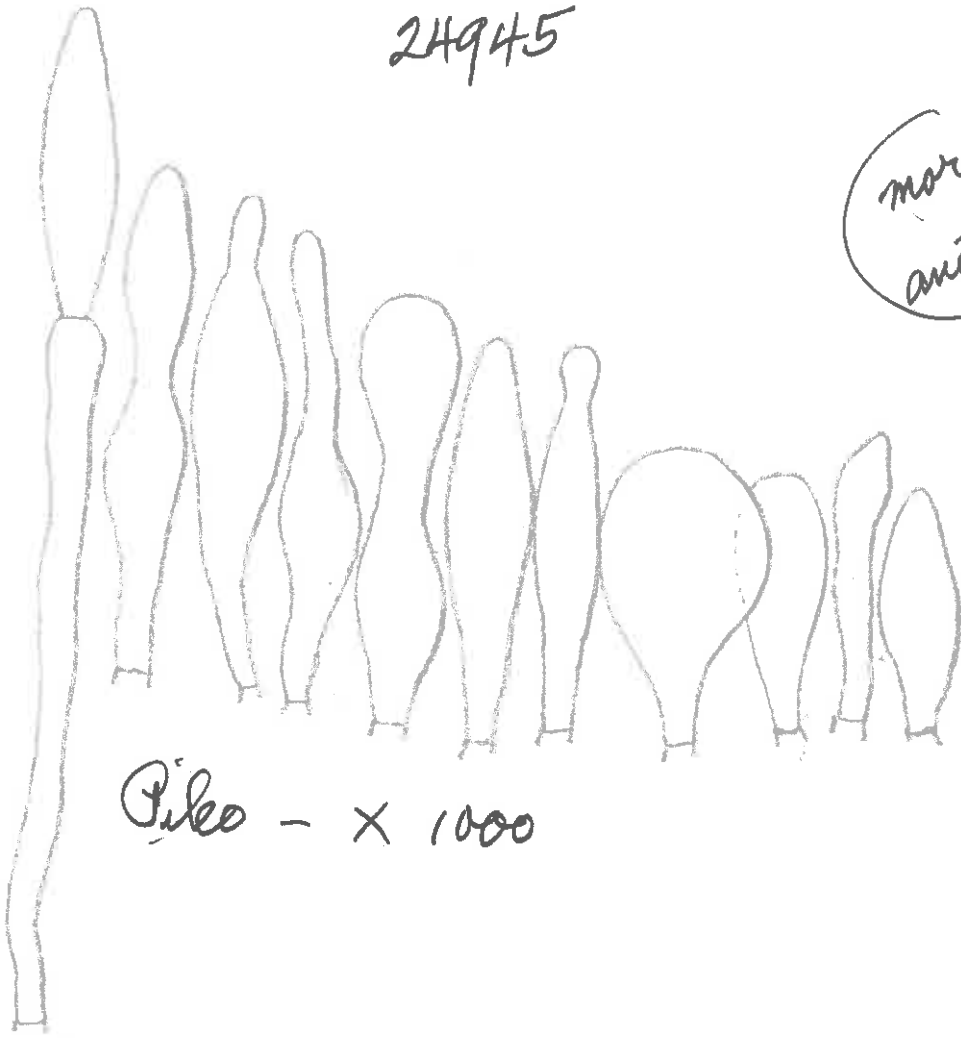


Ch x 1000
(less common types)

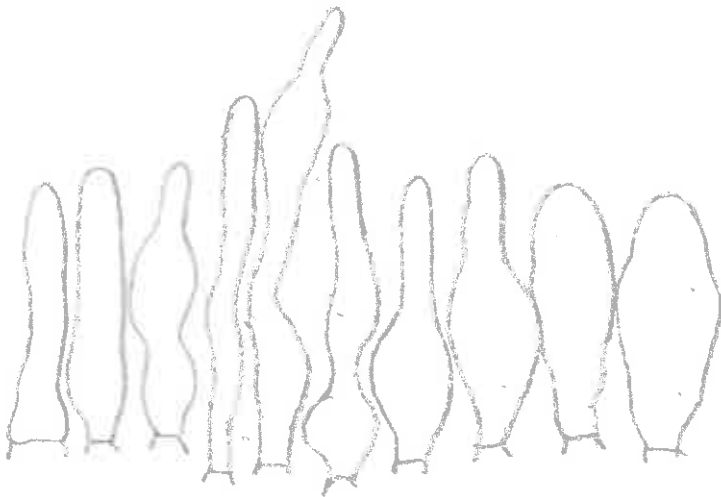
Jubaria

24945

more,
another sheet



Pileo - x 1000



Caule x 1000



24945 - *Tubaria*

25527

TUBARIA

PHOTO

On soil, oak woods, Homer Johnson's, Knoxville, June 5, 1963

Pileus 8-15 mm broad, hemispheric, then more or less expanded, disc depressed, hygrophanous, when dry "verona brown" or fulvous, watery-brown when wet, covered with white fibrils (canescent) giving to the surface a grayish-pink tint, at times subsquamose, even when dry, striate when wet. Context whitish; odor and taste mild.

Lamellae adnate-decurrent to rather deeply decurrent, ventricose, broad, subdistant, at first pallid, finally "saya brown," edges denticulate.

Stipe 2-2.5 cm long, 2-2.5 mm thick, dingy brownish, densely white-fibrillose, equal or enlarged above, stuffed. Veil white, fibrillose, evanescent.

Spores in deposit: "buckthorn brown," 6-8 x 4-4.5 μ , slightly inequilateral and sometimes subreniform in profile, ellipsoid to subovoid in face view, smooth, thin-walled, no germ pore, pallid-yellowish in 2% KOH. Pleurocystidia none; cheilocystidia \varnothing (18) 25-72 x 6-10 μ , versiform, commonly cylindric and rarely septate, often ventricose and several pyriform. Pileus cuticle of repent hyphae, with epicuticular often incrustated hyphae, the terminal elements cystidioid, subventricose to cylindric or subclavate. Stipe cuticle repent, bearing on the apical portion numerous (often

in a turf or a fascicle) caulocystidia, many puriform, other
ventricose and apparently all studded with rod-like
projections (up to 2 μ long), (18)25-46 x 5-12 μ . Clamp
connections on the pileus epicuticular hyphae.

25527

TOBARIA

PHOTO

on soil, oak woods
Homer Johnson's, Knoxville,
June 5, 1963.

Pileus 8-15 mm. broad, hemispheric then more or less expanded, disc depressed, hygrophanous, when dry "verona brown" or fulvous, but covered with white fibrils (canescent) giving a grayish-pink tint, at times subsquamose, watery brown when wet, even when dry, striate when wet. Context whitish; odor and taste mild.

Lamellae adnate-decurrent, ventricose, broad, subdistant, at first pallid, finally "sayal brown," edges denticulate.

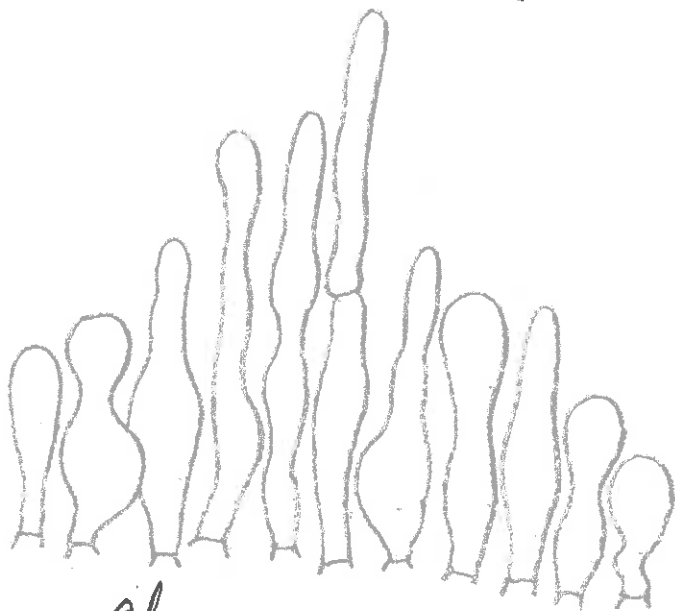
Stipe 2-2.5 cm. x 2-2.5 mm., dingy brownish, densely white-fibrillose, equal or enlarged above, stuffed. Veil white, fibrillose, evanescent.

Spores in deposit: "buckthorn brown."

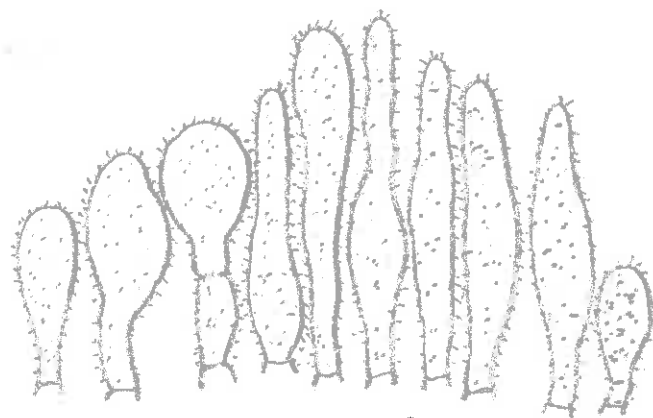
Cf. T. crenulata (furfuracea).

Zubaria

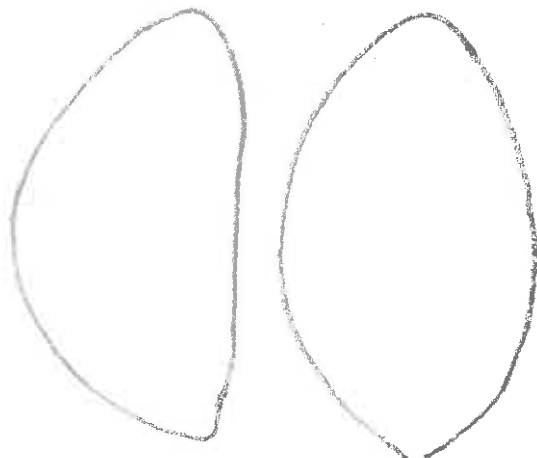
25527



Ch x 1000



Caulo x 1000



Profile

Face

Spores x 8000



25527 - *Tubaria*

TUBARIA No. 25555

PHOTO

on golf green, Cashiers, June 19, 1963.

Pileus 1-2.5 cm. broad, convex-conic, finally expanded, more or less umbonate, hygrophaneous, pinkish buff (dry), "ochraceous tawny" (wet), glabrous, striate to disc. Context thin, pallid; odor mild, taste slightly grassy.

Lamellae narrowly attached or nearly free, rounded behind, broad, ventricose, subdistant, pallid at first, "ochraceous tawny" at maturity, alternately long and short, edges fimbriate.

Stipe 3-4 cm. x 1-2 mm., white and white-pruinose above, dingy and shining below, fragile, hollow, equal.



25555 - Trubaria