



November 2013

Hebeloma Notebook 7

L. R. Hesler

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(Translation)

Pileus 7 - 15cm broad, hemispheric-convex, finally expanded, obtuse, almost tan-colored or pale yellow, ~~viscid~~, sometimes with remains of the veil on the margin, viscid, in wet weather with thick gluten, drying almost glossy, smooth and glabrous, relatively compact-fleshy. Flesh pale, nearly fragrant, mild, not distinctive.

Lamellae sinuate or free, pallid then reddish, finally dingy-brown, close, ventricose, 8-15mm broad.

Stipe 10-15 x ~~5-6~~ 20-30, dingy-pallid, with a thick membranous ring, farinose above, aquarrose-scaly below, almost ventricose or bulbous, in a long spindle-like root projection, solid.

Spores 8-10 x 5-6 μ , almond-spindelshaped, rough. Basidia 25-30 x 7-8 μ . Cystidia on edges 36-40 x 6-8 μ , cylindric-clavate, thin-walled.

HEBELOMA RADICOSUM (Fr.) Ricken

Bruchet No. Ly 65. Br. 26

Notes by Hesler

Spores 8-10 x 5-5.5(6) μ , somewhat inequilateral in profile, subfusoid to slightly limoniform in face view, wall 0.3 μ thick, rugose, in many spores slightly but distinctly calyptrate, some spores with an obscure "nose," yellowish brown in 2% KOH. Basidia 33-38 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 34-55 x 4-9 μ , subcylindric-subcapitate, more rarely filamentous, subventricose below or at the middle. Gill trama of subparallel hyphae, 4-8 μ broad. Pileus trama of broad, loosely interwoven hyphae. Pileus cuticle an ixocutis. Hypodermium a zone of interwoven hyphae (thus appears more or less cellular ^{tangential} in section). Stipe cuticle usual; caulocystidia similar to cheilocystidia but usually longer. Clamp connections at base of cheilocystidia, caulocystidia, and on the stipe epicuticular hyphae.

Bruchet (1970:20) describes the pileus cuticle as follows: Pileus cuticle usual: epicutis very important; cutis slightly developed; subcutis distinct, slightly colored, thanks to its coherent structure and (its) pseudoparenchymatous nature in radial sections.

Hebeloma radicosum (Fr.) Ricken

Bruchet No. Fy. 65. Br. 26



Ch x 1000



Profile



Face

Spores x 8000

25089

HEBELOMA RADICOSUM (Fr.) Ricken

Under Fagus, below Herzwiese (above Rum, Tyrol) Austria,
leg.-det. Moser, October 7, 1951

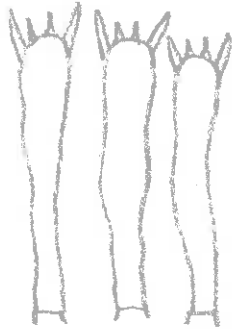
Notes by Hesler

Spores 8-10 x (5)5.5-6 μ , inequilateral in profile, subvoid to subfusoid or slightly sublimoniform in face view, wall 0.4 μ thick and rugulose, no germ pore, pale yellow-brown in 2% KOH. Basidia 34-38 x 5-6(7) μ , 4-spored. Pleurocystidia none; cheilocystidia 28-52 x 3-7 μ , filamentous to ventricose, many subcapitate. Gill trama of subparallel hyphae 3-8 μ broad. Pileus trama of loosely interwoven hyphae. Pileus cuticle a thick ixocutis (500-700 μ); hypodermium of brown interwoven hyphae (thus, appearing cellular at times in both tangential and radial section. Stipe cuticle a thick, dry zone of brown hyphae. Caulocystidia as terminal elements on epicuticular hyphae on the stipe. Clamp connections at base of caulocystidia.

Both Moser (1967:263) and Kühner and Romagnesi (1953: 244) treat this as Hebeloma. Despite its persistent membranous annulus, it is a good Hebeloma (in Subg. Myxocybe).

See Overholts, 1927, Pholiota radicata (Fr.); and N. A. species of Pholiota, p. 385. 1968.

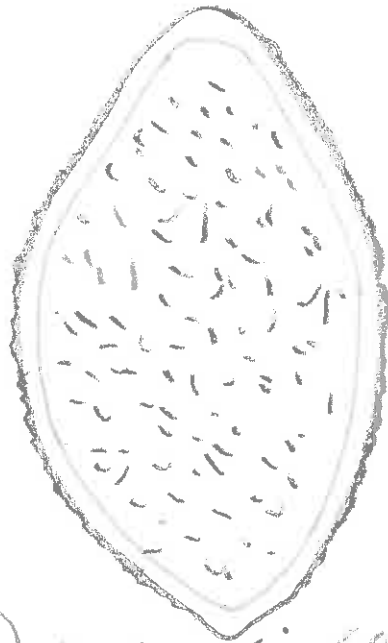
Helvoma radiceum (Fr.) Ricken
leg. Moxer (Term - 25089)



Basidia
x 1000



Ch x 1000



Profile (lateral) Face View (frontal)
Spores x 8000

36910

Hebelema radicosum (Fr.) Ricken

from Belgium, leg. Ren Petersen, Oct. 22, 1972.

Notes by Hesler

Spores 8-10 x 5-5.5 μ , slightly inequilateral in profile, subfiscoid to slightly sublimaniform in face view, slightly rugulose, wall 0.3 μ thick, yellow-brown in 2% KOH. Pl. none; ch 35-52 x 5-9 μ , cylindric-capitate, subventricose below. Pileus trama of loosely interwoven, broad hyphae. Pileus cuticle and ixocutis. Hypodermium of hyphae.

Material not good!

37587 HEBELOMA RADICOSUM (Fr.) Ricken

On Soil, in mixed forest (Pinus, Castanopsis, etc.), leg.-det.
T. Hongo, No. 1001, Mii-dera, Otsu, Japan, September 11,
1956

Singer lists this as H. radicosum (Bull. ex Fr.) Ricken,
with Pholiota radicata (Bull. ex Fr.) Kummer and Myxocybe
radicata (Bull. ex Fr.) Fayod as synonyms (1962:580).

Spores pale yellowish in 2% KOH, 8-9.5(10) x (4)4.5-5.5 μ ,
inequilateral in profile, subfusoid in face view, wall 0.3 μ
thick, minutely rugulose, no germ pore. Pleurocystidia none;
cheilocystidia not found. Gill trama of slender subparallel
hyphae. Pileus trama (material not suitable for study).
Pileus cuticle a thin ixocutis; hypodermium hyphoid. Stipe
cuticle of dry repent hyphae. Clamp connections not found.

This material is not in good condition for critical study.
(See my notes on Tenn-25089, leg.-det. Moser, Austria).

~~Singer lists this as H. radicosum (Bull. ex Fr.) Ricken,
with Pholiota radicata (Bull. ex Fr.) Kummer and Myxocybe
radicata (Bull. ex Fr.) Fayod as synonyms (1962:580).~~

Smith - 80295

HEBELOMA RADICOSUM

In hardwoods, near Beron, Belgium, leg. Vincent Demoulin,
August 24, 1971 (det. Smith)

Notes by Smith

Pileus 3-6 cm broad, obtusely umbonate with a spreading margin, dingy "verona brown" on a pallid ground-color, viscid, agglutinate spotted as if from veil remnants (?). Context pallid, after cutting slowly brownish, in the stipe-cortex becoming brownish; odor slight.

Lamellae adnate-seceding, more or less wood brown (about as in Pholiota albocrenulata to which it is related), broad, close, edges slightly eroded.

Stipe up to 12 cm long and 10 mm thick, rooting, pallid, but overlaid with gray-brown appressed squamules or zones up to the thin dull brown annulus, pallid and faintly pruinose above, stuffed, pith punky and pallid. Veil present, forming a thin dull brown annulus.

Notes by Hesler

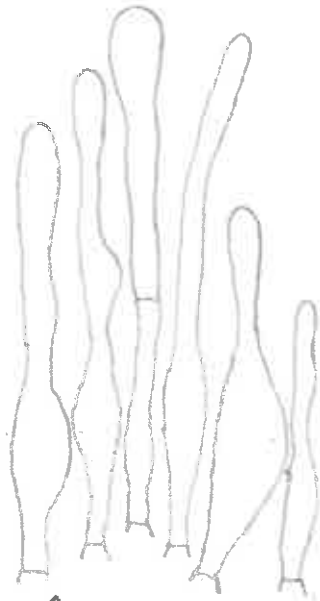
Spores 7-9(9.5) x 4.5-5(5.5) μ , inequilateral in profile, subfusoid to subovoid in face view, wall 0.3 μ thick, warty-rugulose, slightly calyptrate especially on lower (basal) half, brown with a slight tint of yellowish in 2% KOH. Basidia 24-30 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 36-68 x 4-7(10) μ , subcylindric, apices often subclavate, ventricose below on one or both

sides, rarely septate. Gill trama of undulating sub-parallel hyphae, 3-6 μ broad. Pileus trama of interwoven hyphae. Pileus cuticle a thick ixocutis, the hyphae slender, 1.5-3 μ broad. Hypodermium of brown interwoven hyphae. Stipe cuticle a pallid zone of thick-walled hyphae, the surface bearing tufts of rather long, slender cylindric-subclavate caulocystidia. Clamp connections not found.

In Tenn-25089 (from Moser), the spores are 8-~~11~~¹⁰ x 5.5-6 μ ; Tenn-37587 (from Hongo), spores 8-9.5 x 4.5-5.5 μ . In both, the hypodermium is hyphoid. In Bruchet's Ly. 65. Br. 26, labelled H. radicosum, the spores are 8-10 x 5-5.5(6) μ .

Helvella radicosum

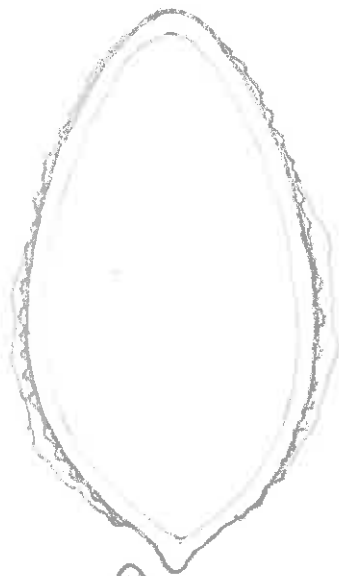
Sm - 80295



Ch x 1000



Profile



Face

Spores x 8000

gregarious under conifers, Independence Pass,
Colorado, leg. Mitchel & Smith-86922, July 27., 1976

Notes by Smith

Pileus 3-5 cm broad, obtuse to convex, expanding to
disc then verona brown,
nearly plane, /more or less dull cinnamon (sayal brown), /margin
paler grayish from a thin coating of fibrils, ~~margin~~ then paler,
viscid. Context watery brown to whitish; odor pungent-raphanoid,
taste mild. FeSO₄ dull olive, KOH ^H 0.

Lamellae adnate, pallid to pinkish buff, then sayal
brown, close, broad, not spotting, thin, edges even.

Stipe 4-6 cm long, 5-9 mm thick, pallid within,
becoming dull dark ~~rusty~~ rusty brown from the base up,
surface ~~thinly~~ thinly fibrillose, white scurfy-pruinose
above, silky over all at maturity, equal, soon hollow.
Veil remnants as evanescent fibrils on stipe.

Notes by Hesler

Spores 9-¹³~~12~~ x 5-6 μ , inequilateral in profile,
subellipsoid to subovoid in ~~profile~~ face view, minutely
rugulose to nearly smooth, wall thin, yellowish brown in ~~K~~
2% KOH. Pleurocystidia none; cheilocystidia of two types:
(a) 35-63 x 5-7 μ , cylindrical ^{clavate to ventricose;} ~~at times obscurely capitate;~~
(b) 34-85 x 7-10 μ , ^{flask-shaped} ~~ventricose~~ with a long, slender neck and
often a long slender stalk. Gill trama of subparallel to
parallel hyphae. Pileus cuticle an ixocutis. Hypodermium
cellular. Stipe cuticle of repent, dry hyphae. Caulocystidia
in tufts, ~~if~~ similar to the two types ~~of~~ cheilocystidia.
Clamps connections present.

over

Habit, Habitat, and Distribution. On soil,
gregarious under conifers, leg. Mitchel and Smith,
July 27, 1976, Smith-86922, (TENN-40410), type.

Observations. This species, with its two
kinds of cheilocystidia, and strong (pungent) raplanoid
odor, is thus distinguished from its close
relative, H. occidentale. The canthocystidia
also exhibit ~~two~~ two types similar to the
cheilocystidia.

40410

HEBELOMA *naphanoides* sp. nov.

(Sm#86922) gregarious, under conifers, Mitchel & Smith,
Independence Pass, Pitkin Co., Colorado,
July 27, 1976

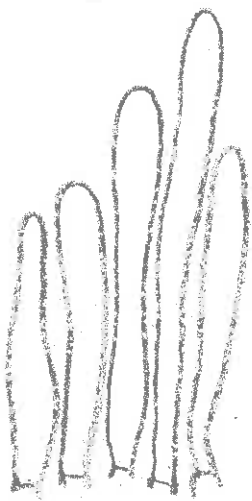
Notes by Hesler

Spores 9-12 x 5-6 μ , inequilateral in profile,
subellipsoid to ~~subspindle~~ ^{subovoid} in face view, ~~thin-walled~~, ~~walls~~
yellowish brown in 2% KOH, wall thin, nearly smooth to
minutely rugulose. Pl none; Ch of two types: (a) 35-63 x 5-7 μ ,
cylindric, at times obscurely capitate; (b) ventricose with a long
slender neck, and often a rather long slender stalk, 34-85 x
7-10 μ . Gill trama ^{of} ~~subparallel~~ parallel to ~~subparallel~~ subparallel
hyphae. Pileus cuticle an ixocutis. Hypodermium cellular.
Stipe cuticle of repent, dry ~~hyphae~~ ^{hyphae}. Caulocystidia in tufts,
similar to (a) and (b) types of cheilocystidia. ~~Clamp~~

Connections present.

Hebeloma raphanoides sp. nov.

H0410 (Sm-86922)

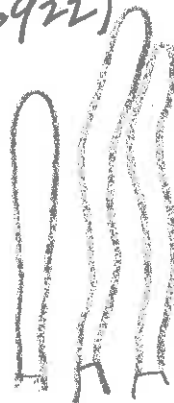


(a)

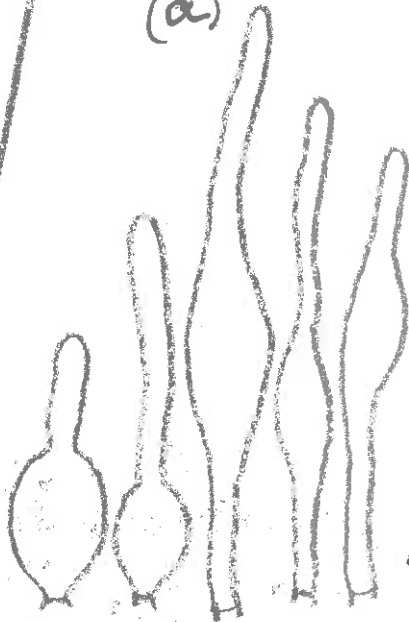


(b)

Ch (a + b types)
x 1000



(a)

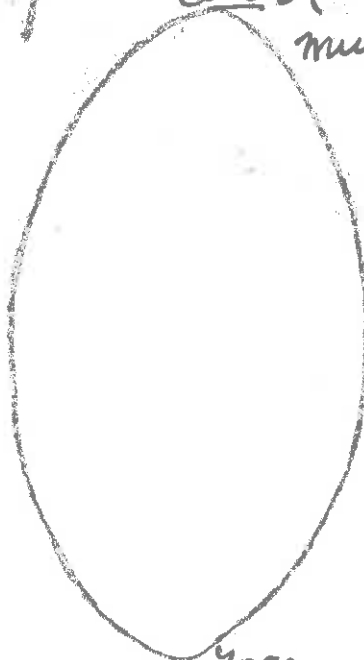


(b)

Cauls (a + b types
much as in ch)
x 1000



Profile



Face.

Spores x 8000

HEBELOMA REMYI Bruchet nom. nov.

Bruchet Ly. 69 Br. 30

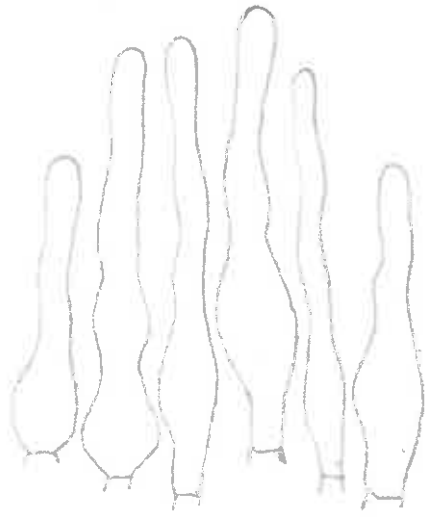
Notes by Hesler

Spores 10.5-14⁽¹⁵⁾ x (5.5)6-7 μ , inequilateral in profile, subfusoid to subovoid in face view, wall 0.4 μ thick, minutely rugulose, apex sometimes with a "nose," yellowish brown in 2% KOH. Basidia 30-42 x 7-10 μ , 4-spored. Pleurocystidia none; cheilocystidia 38-60 x 5-10 μ , flask-shaped or ventricose below, with a slender neck, apex ~~not enlarged~~ (sub-obtuse, not capitate), slightly flexuous. Gill trama of subparallel hyphae, 5-17 μ broad. Pileus trama of loosely interwoven hyphae, 6-18 μ broad. Pileus cuticle a thin ixocutis. Hypodermium a cell-zone. Stipe cuticle a brown zone, covering a zone of pallid, angular hyphae. Caulocystidia subcylindric or base subventricose. Clamp connections occasionally at the base of caulocystidia.

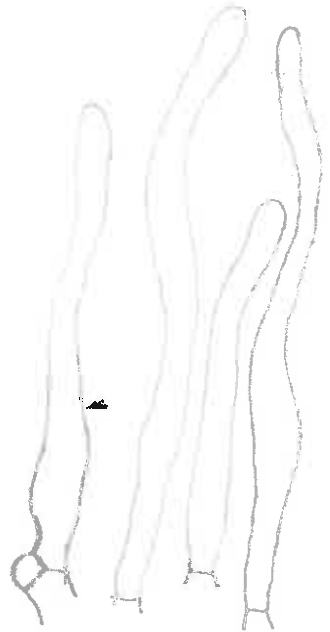
Bruchet (1970:31) describes the pileus cuticle *as follows*: Pileus cuticle usual: epicutis gelatinous but reduced, the hyphae provided with abundant yellowish intracellular structures; cutis not distinct; subcutis strongly pigmented, very distinct, coherent, with a pseudoparenchymatous appearance in radial section.

Hebeloma remyi Bruchet nom. nov.

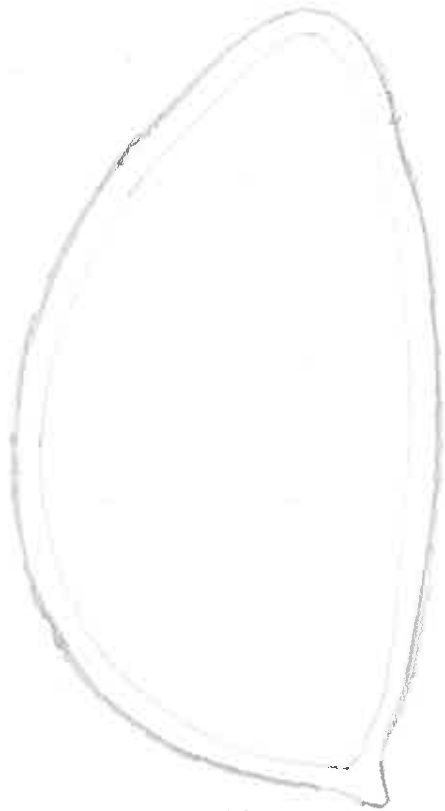
Bruchet Fig. 69. Pl. 30



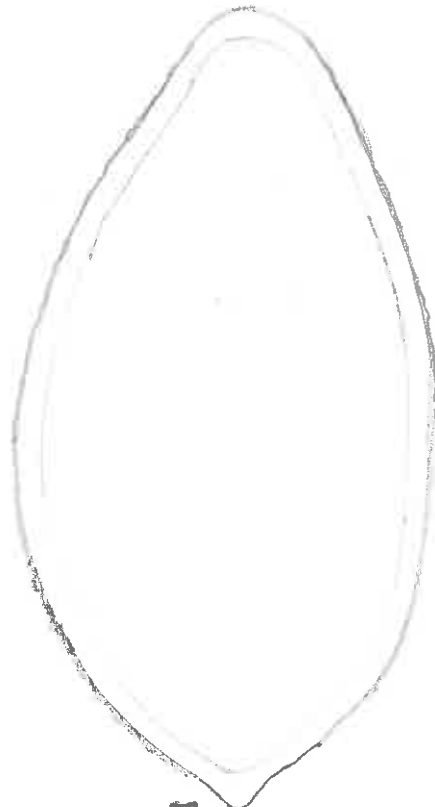
Ch x 1000



Caulo
x 1000



Profile



Face

Spores x 8000

HEBELOMA REPANDUM Bruchet

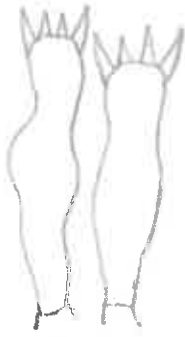
Bruchet No. Ly. 66 Br. 55 (Type)

Notes by Hesler

Spores 8-10 x (4.5)⁶5-~~5.5~~ μ , somewhat inequilateral in profile, subellipsoid to subovoid in face view, wall 0.3 μ thick, minutely and obscurely rugulose to nearly smooth, pale yellowish in 2% KOH. Basidia 28-40 x 7-10 μ , (2) 4-spored. Pleurocystidia none; cheilocystidia 38-94 x 5-12 μ , often flask-shaped or ventricose below, with a long neck, occasionally filamentous, apices not capitate, rather rarely septate, rarely irregularly sub-ramose or misshapened. Gill trama of rather broad to medium broad (6-12 μ) subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle a thin ixocutis. Hypodermium a cell-zone. Stipe cuticle of brown hyphae. Caulocystidia similar to cheilocystidia. Clamp connections on both the cheilocystidia and caulocystidia.

Bruchet (1970) does not describe the pileus cuticle.

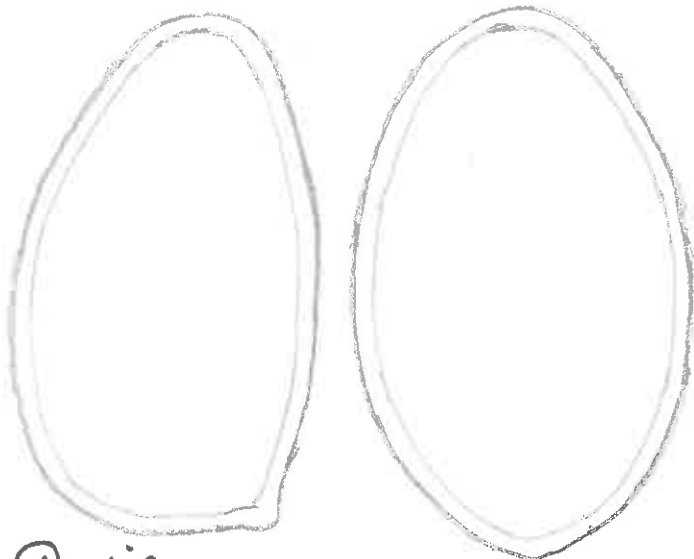
Helveloma repandum Bruchet
Bruchet Fig. 66 Pl. 55 (type)



Basidia x 1000



Ch — x 1000



Profile

Face

Spores x 8000

37510

HEBELOMA RIVULOSUM sp. nov.

On soil, mixed woods, Roaring Fork, ^{55 M N P, above Fat Lumber Co, Tenn.,} leg. Joe Restivo,

September 13, 1972

Pileus 1.5-3.5 cm broad, disc "pinkish buff," elsewhere "pale pinkish buff," minutely rivulose and fibrillose-appressed, viscid, margin even. Context white; odor raphanoid, taste bitter.

Lamellae emarginate, white, finally brownish (not matched), close, broad, no forking, lamellulae of several alternating ranks, edges serrulate-floccose.

Stipe 2.5-4 cm long, 3-5 mm thick, white, apex white-squamulose, equal, hollow, splitting. Veil none, ~~observed~~.

Spores in deposit: "verona brown," near "sayal brown" in 2% KOH, 10-¹⁵~~13~~ x 5-6(7) μ , limoniform in face view, inequilateral in profile, wall 0.3 μ thick, ~~rugose to rugose~~, ^{coarsely rugose to subasperulate,} at times slightly calyptrate, ^{both} ends subacuminate, often with an apical snout, apiculus prominent, with a large ~~g~~ guttule. Pleurocystidia none; cheilocystidia 26-50 x 4-6 μ , subcylindric to subclavate, usually slightly enlarged below, more or less flexuous, in clusters. Gill trama of subparallel hyphae, 6-14 μ broad. Pileus trama of radial hyphae, interwoven. Pileus cuticle an ixocutis, the hyphae slender (2-4 μ broad), colorless, repent but numerous ends more or less erect. Hypodermium of brownish cells. Clamp connections rather numerous on epicuticular hyphae of pileus. Stipe cuticle of repent hyphae, bearing (on apical portion) tufts of slender, colorless, aerial hyphae (scales).

37510

H. rivulosum - 2

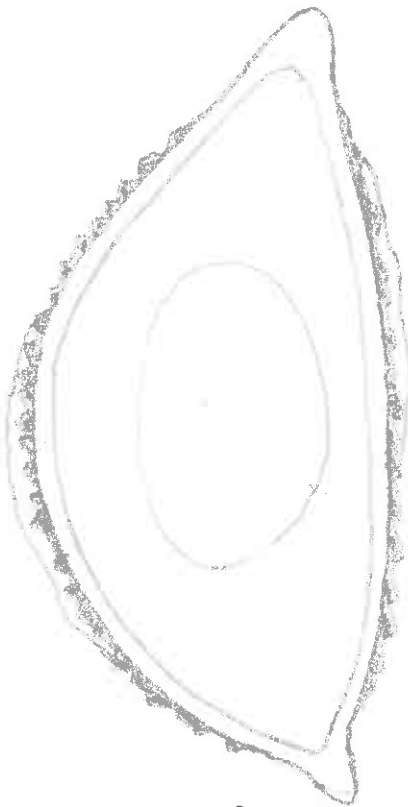
May not be far from H. leucosarx Orton (Brit. Myc. Soc.
Trans. 43:244. 1960).

Heloloma virulosum sp. nov.

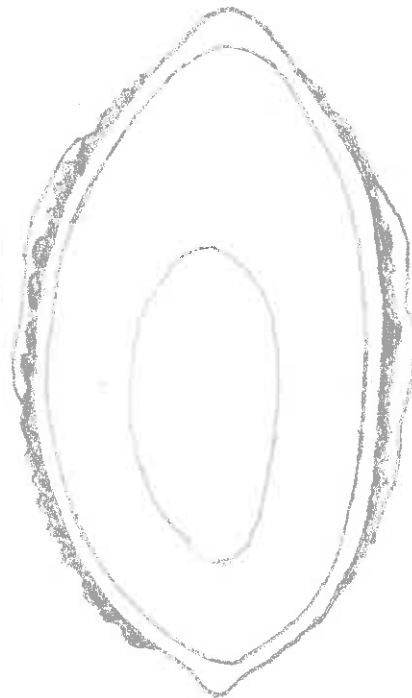
37510 - Type



x ch x 1000

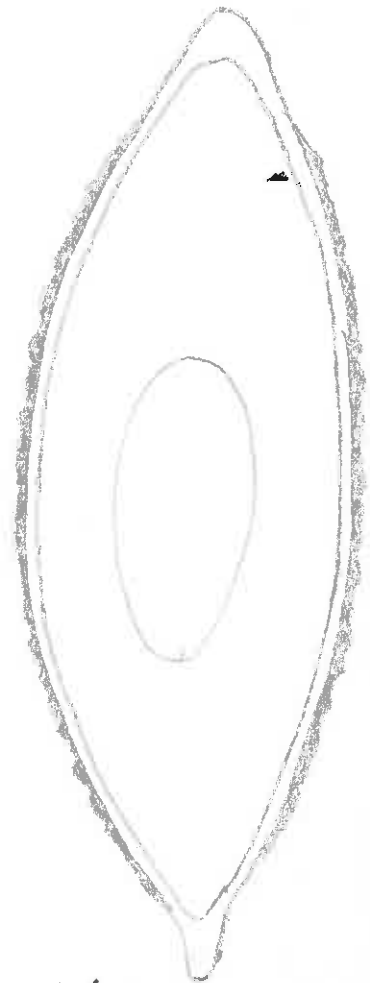


x Profile



Face

Spores x 8000



x face
(several in a mount
are about 15 x 5-6 μ.)

37572

HEBELOMA ROSEO-CINNAMOMEUM sp. nov.

Type

On soil, deciduous woods, New Hopewell, Knox County,
Tennessee, leg. Joe Restivo, October 29, 1972

Pileus 4.5-7 cm broad, convex-hemispheric expanding-convex, "cinnamon buff" to "pinkish buff," viscid, glabrous, with white fibrillose patches near the margin. Context white, thick on disc, firm, thin on margin; odor slight of raphanoid or raw potatoes, taste mild.

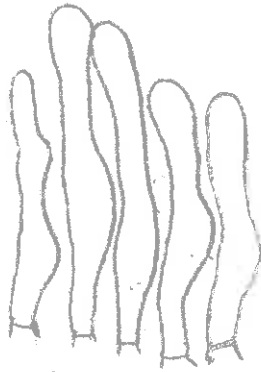
Lamellae adnate, near "saya brown," close, medium broad, lamellulae abundant, edges fimbriate.

Stipe 4-5 cm long, 9-23 mm thick, white, apex white-squamulose, slightly bulbous, solid, dry. Veil remnants as white patches near \neq pileus margin.

Spores in deposit: "dresden brown," 9-10.5 x 5-5.5 μ , inequilateral in profile, limoniform to subfusoid in face view, with a "nose," wall 0.3 μ thick, minutely rugulose, pale yellow brown in KOH. Basidia 26-30 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 32-43 x 5-6 μ , subventricose or enlarged on one side, often subcapitate. Gill trama of narrow subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium of brown cells. Stipe cuticle of dry repent hyphae. Caulocystidia cylindrical-clavate, in tufts. Clamp connections on pileus cuticle hyphae.

Helveta rosei-cinnamomeum sp. nov.

37572 - Fyp



ch x 1000



Profile

Face

Faces x 8000

5
HEBELOMA ROSEIDISCUM~~us~~ sp. nov.

Illustrations:

Pileus (2)3-6 cm broad, obtuse with an inrolled margin, expanding to broadly convex or with a low obtuse umbo, surface viscid to glutinous, disc "cinnamon buff" to "pinkish buff," more avellaneous toward the pallid margin. Context watery gray becoming pallid; odor and taste of radish.

Lamellae adnexed, pallid to "pale pinkish buff," gradually "avellaneous" to "wood brown," close, narrow to only moderately broad.

Stipe 4-10 cm long, 8-12 mm thick, equal above on oblique, marginate bulb, or bulb obsolete, ground color "pinkish buff," with a thin coating of white fibrils the free ends of which cause the fibrillose-pruinosity, ground color darkening to watery cinnamon buff in age below. Veil none.

Spores 9.5-12 x 5.5-6 μ , inequilateral in profile, subovoid in face view, wall 0.5 μ thick, minutely rugulose, yellowish brown in 2% KOH. Pleurocystidia none; cheilocystidia 35-82 x 6-10 μ , cylindric-subcapitate, at times subventricose on one side below. Gill trama of subparallel hyphae, 5-7 μ broad. Pileus trama of loosely interwoven hyphae, 6-20 μ broad. Pileus cuticle an ixocutis, 60-100 μ thick. Hypodermium a brown cell zone. Stipe cuticle a dry pallid-grayish zone of thick-walled hyphae. Caulocystidia similar to cheilocystidia.

Smith - 43418 HEBELOMA ROSEIDISCUM sp. nov.

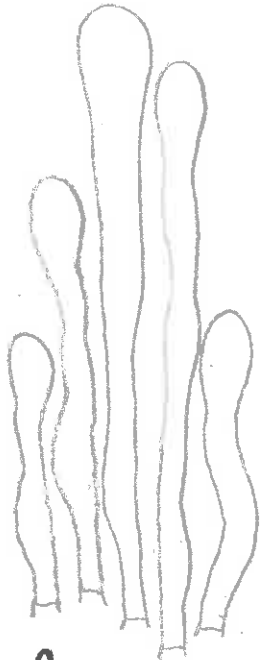
Gregarious, on soil in mixed woods, Gorge, University of Michigan Biol. Station, Cheboygan Co., Michigan, leg. Smith, September 27, 1953

Notes by Hesler

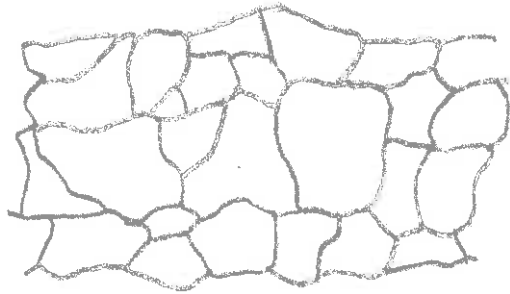
Spores 9.5-12 x 5.5-6 μ , inequilateral in profile, subovoid in face view, wall 0.5 μ thick, minutely rugulose, yellowish brown in 2% KOH. Pleurocystidia none; cheilocystidia 35-82 x 6-10 μ , cylindric-subcapitate, at times subventricose on one side below. Gill trama of subparallel hyphae, 5-7 μ broad. Pileus trama of loosely interwoven hyphae, 6-20 μ broad. Pileus cuticle an ixocutis, 60-100 μ thick. Hypodermium a brown cell zone. Stipe cuticle a dry pallid-grayish zone of thick-walled hyphae. Caulocystidia similar to cheilocystidia.

Heloloma roseidiscus sp. nov.

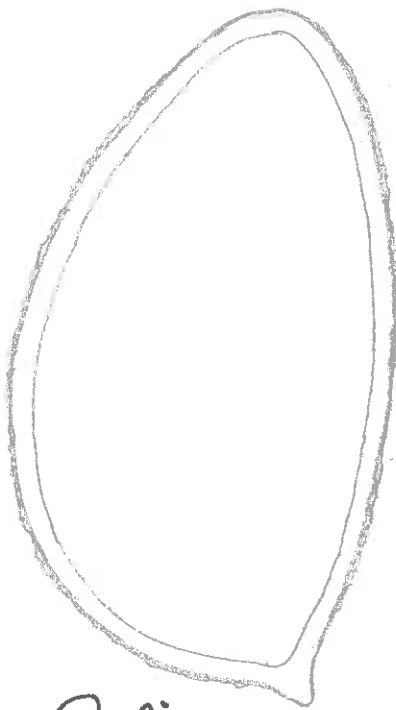
Sm-43418 - Type.



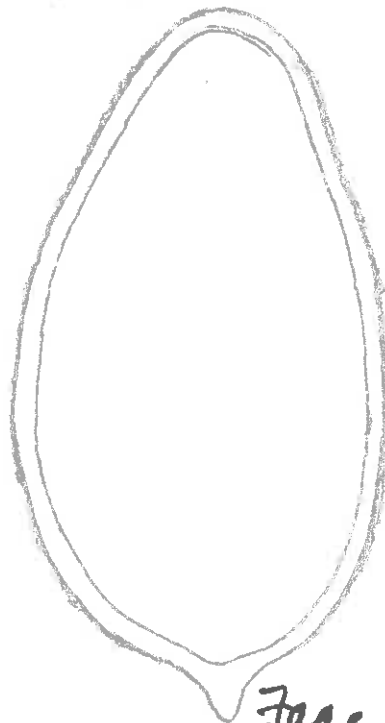
Ch x 1000



Hypodermium x 1000



Profile



Face

Spores x 8000

21096

HEBELOMA ROSEⁱGRISEUM sp. nov.

On soil, in pine woods, Timberlake Rd., Knox County,
Tennessee, January 24, 1954

Pileus 2-5 cm broad, at first hemispheric-convex, finally expanding-convex, grayish to pinkish-gray (not matched), splashed and streaked "snuff brown," viscid, somewhat fibrillose. Context medium thick on disc, thin on margin, dingy to whitish; odor and taste raphanoid.

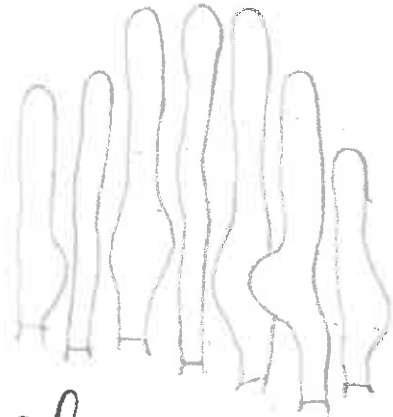
Lamellae adnate to sub-emarginate, pallid to whitish at first, finally "pinkish buff" to "cinnamon buff," broad, ventricose, close, edges fimbriate.

Stipe 3-5 cm long, 6-8 mm thick, pallid to dingy, base not darkening in age, shining, dry, apex mealy-floccose, elsewhere fibrillose-striate, equal or tapering downward, finally hollow. Veil none.

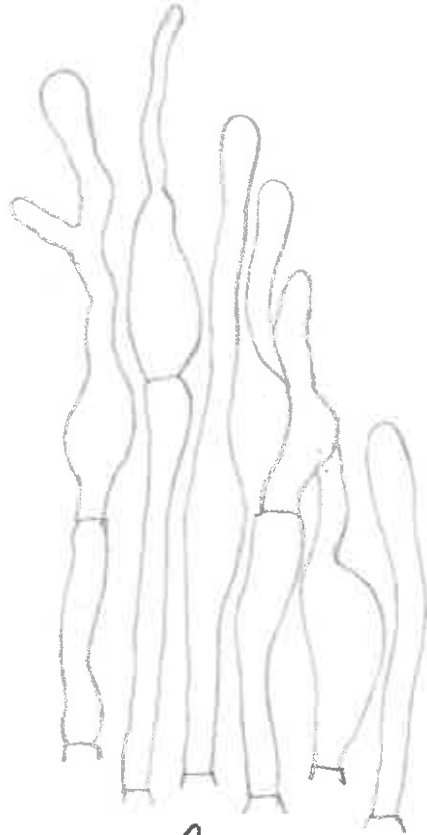
Spores in deposit "antique brown," 8-9.5 x 4.5-5(5.5) μ , slightly inequilateral in profile, fusoid in face view, wall 0.25 μ thick, minutely rugulose to nearly smooth, pale yellow in KOH. Pleurocystidia none; cheilocystidia 32-48 x 4-8 μ , cylindrical to subcylindrical, ventricose below. Gill trama of subparallel hyphae, 3-6(8) μ broad. Pileus trama of radially-disposed and slightly interwoven hyphae. Pileus cuticle an ixocutis. Hypodermium ^{hyphoid} ~~of rather small, rounded, brownish cells~~. Stipe of repent, dry hyphae, bearing surface hyphae at the apex, the terminal elements as caulocystidia, somewhat similar to cheilocystidia. Clamp connections not observed.

Hydroma roseigriseum sp. nov.

21096 - Type



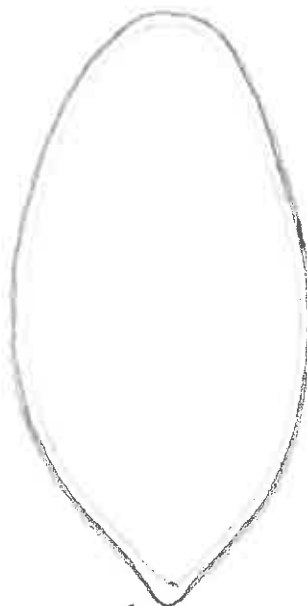
Ch x 1000



Caulo - x 1000



Profile



Face

Spores x 8000

17772

HEBELOMA ROSEUM sp. nov.

On soil, mixed deciduous-conifer woods, New Hopewell,
Knox County, Tennessee, leg. Hesler, November 10, 1946

Pileus 5-8 cm broad, convex, finally plane or upturned,
viscid, "vinaceous buff," disc darker ("clay color"),
appressed-silky, even. Context firm, white; odor of radish,
taste slightly bitter.

Lamellae emarginate, rather broad, crowded, "clay
color," edges floccose.

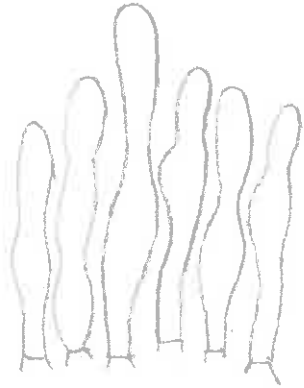
Stipe 3-5 cm long, 12-18 mm thick, whitish, floccose-
scaly, solid. *Veil white, fugacious.*

Spores in deposit: "buckthorn brown," 8-9.5(10) x
4.5-5.5 μ , inequilateral in profile, subfusoid to subovoid
in face view, rugulose, pale yellow in 2% KOH. Pleuro-
cystidia none; cheilocystidia 32-45 x 4-6 μ , subcylindric-
subcapitate to subclavate, not ~~abundant~~ abundant. Gill trama
subparallel, hyphae 5-14 μ broad; subhymenium of slender,
short-celled hyphae. Pileus trama of radial hyphae. Pileus
cuticle an ixocutis. Hypodermium a cell-zone. *Stipe cuticle dry,
repent. Carbo-cystidia few, clavate.*

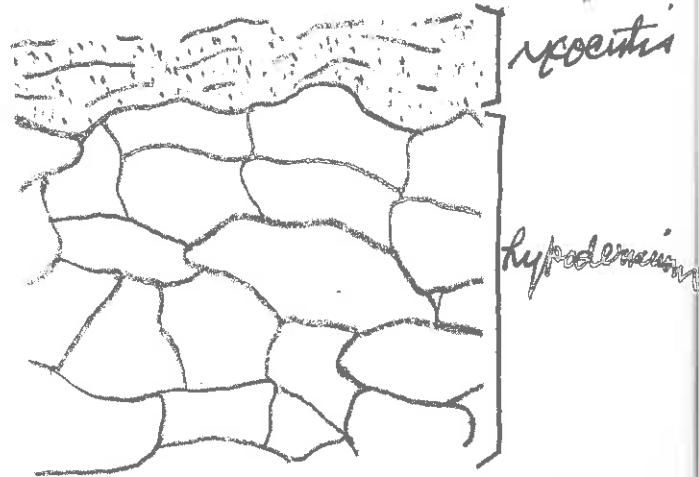
Its vinaceous buff pileus, and cellular hypodermium
exclude it from H. pascuense. *It is far removed from*
H. crustuliniforme.

Near H. subroseum, but pileus margin is even and does
not overhang the gills, the gills are "clay color," stipe
scaly.

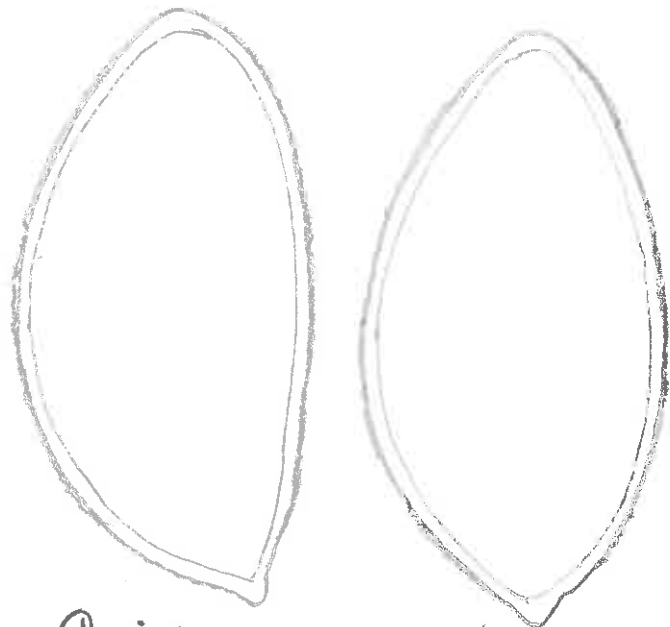
Hebeloma roseum sp. nov.
Tenn - 17772 - Type



Ch x 1000



x 1000



Profile

Face

Spores x 8000

HEBELOMA SACCHARIOLENS Quelet

Bruchet Ly. 64 Br. 34

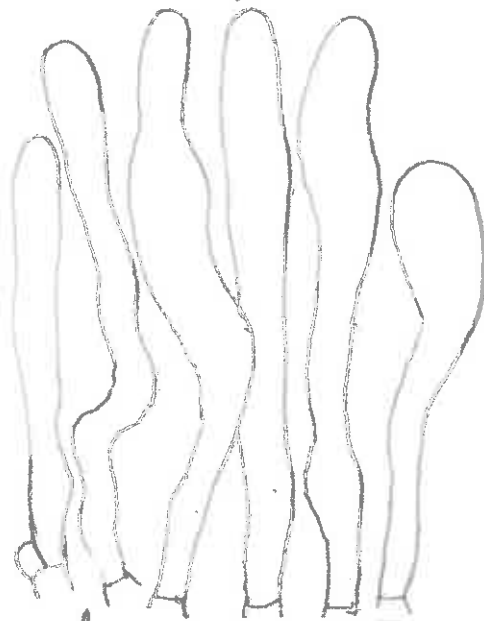
Notes by Hesler

Spores 10-15(17) x 6-7.5(8.5) μ , inequilateral in profile, sublimoniform to subfusoid or subovoid in face view, wall 0.5 μ thick, rugose to rugulose, some slightly calyptrate, some with a "nose," brown with a tint of yellow in 2% KOH. Basidia 34-45 x 7-9(10) μ , 4-spored. Pleurocystidia none; cheilocystidia 56-78 x 7-12 μ ; subcylindric to subclavate, sometimes subventricose below, more or less flexuous, often appearing agglutinated. Gill trama of subparallel hyphae, 5-9 μ broad. Pileus trama of broad (6-24 μ), loosely interwoven hyphae. Pileus cuticle a thin ixocutis. Hypodermium hyphoid. Stipe cuticle usual. Caulocystidia similar to cheilocystidia. Clamp connections at base of cheilocystidia and caulocystidia.

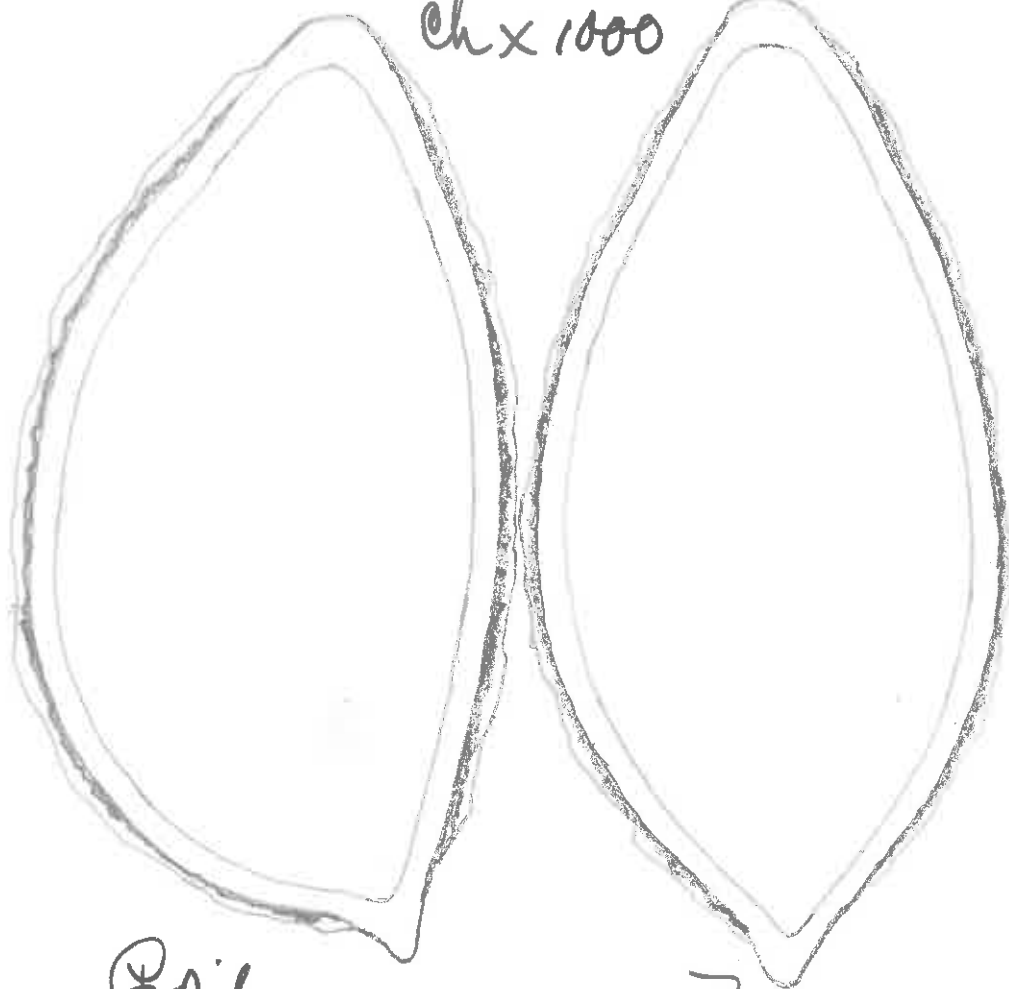
Bruchet (1970:87) describes the pileus cuticle: Pileus cuticle: epicutis well developed of large hyphae, showing yellowish, intracellular granules, rather abundant in the terminal elements; cutis and subcutis not very distinct; with numerous extracellular yellowish formations, visible in the living state, observed in the pileus flesh.

Abdeloma saccharidens Quél.

Bruchet Fig. 64. Pl. 34



Ch x 1000



Profile

Face

Spores x 8000

? does not agree too well
with Brundel's No. 64, 34.

24034 HEBELOMA SACCHARIOLENS Qué1.

On soil, under oaks, Royal Botanic Gardens, Kew, England,
leg.-det. D. A. Reid, August 20, 1960

Spores 10-13 x 6-8 μ , inequilateral in profile, subfusoid to subovoid in face view, wall 0.4 μ thick, rugulose, germ pore none, ^{brownish tinged} yellowish ~~margin~~ in 2% KOH. Basidia 32-40 x 7-9 μ , 4-spored. Pleurocystidia none; cheilocystidia 27-42 x 4-8 μ , subclavate to subventricose. Gill trama of subparallel hyphae, 5-12 μ broad. Pileus trama of radial hyphae. Pileus cuticle an ixocutis; hypodermium not differentiated. Stipe cuticle of repent dry hyphae.

The spores in this (24034) are darker brown, and more warty than in 37588; + no hypodermium.

Moser (1970) describes H. saccharoides var. tomentosum var. nov. (The name first given on p. 69; the Latin diag. on p. 71)

Hebeloma sacchariolum Quel.

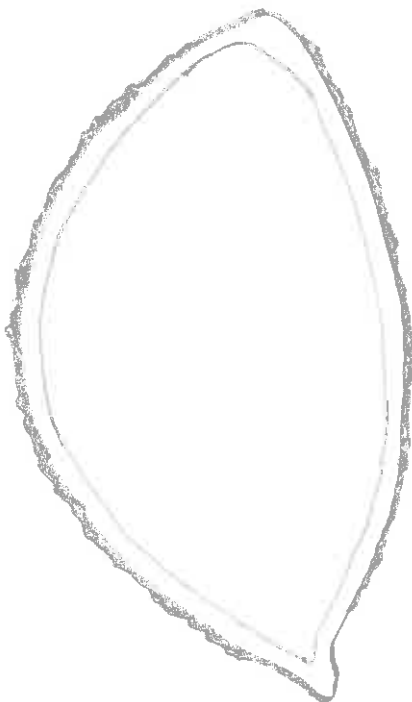
24034 (from Kew)



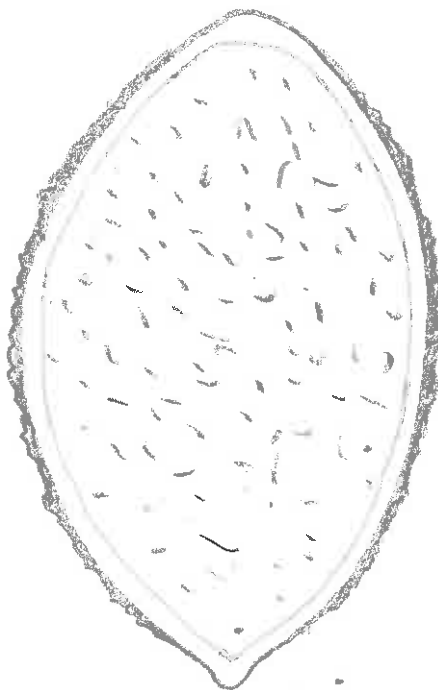
Basidium
x 1000



Ch x 1000



Profile



Face View

Spores x 800

37588

HEBELOMA SACCHARIOLENS Quel.

On soil, in woods of Pinus densiflora, leg.-det. T. Hongo,
No. 3789, Taga-cho, Shiga-pref. October 21, 1968.

(Singer, 1962:381, lists H. fusipes Bres., H. austroamericanum (Speq.) Sacc., and H. odoratissimum (Britz.) Sacc., as synonyms.)

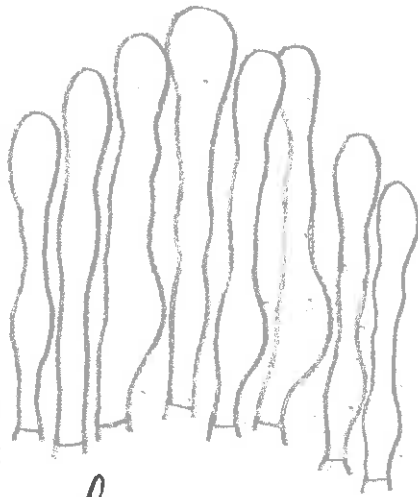
Spores pale yellowish brown in 2% KOH, (10)11-13(15) x 5-7.5 μ , inequilateral in profile, fusoid-sublimoniform in face view, wall 0.4-0.5 μ thick, rugulose, no germ pore, pale yellowish brown in 2% KOH. Pleurocystidia none; cheilocystidia 42-53 x 5-9 μ , subcylindric-capitate, often enlarged on one side below, or both sides near the middle. Gill trama of slender subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis; hypodermium a distinct zone of brown hyphae. Stipe cuticle of dry repent hyphae. Clamp connections not found.

This seems different from 24034, from Kew, in its more limoniform rugulose, paler (in KOH) spores. In 24034, the spores are darker brownish in KOH, more ellipsoid and more warty than in 37588. Hypodermium hyphoid in 37588; none differentiated in 24034.

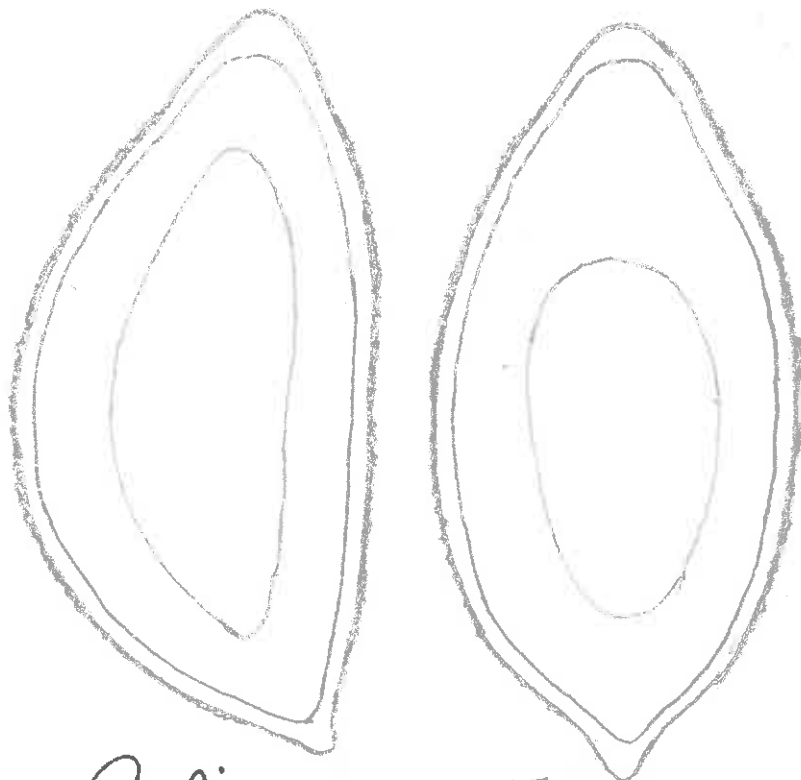
Spores of 37588, in Melzer's pale yellowish (not stained); those of 24034, in Melzer's, reddish brown.

Hebeloma sacchariolum Quel.

37588 (from Hongo, Japan)



ch - x 1000



Profile

Face

Spores

x 8000

H. areophyllum

Collection	Spore	Other	Oil	Hypoderm	Pitana
Boat's Type	7.5-9 5-5.5 (6)	calyptrate	27-36 x 5-7 or 43-51 x 6-9	o	radial hyaline
Basket 65.25	8.5-10 (11) 5-5.5-6	often slightly calyptrate	30-50 x 5-7	hyaline, often obscure	radial
Sm-1637 (from Mich)	8-10 4.5-5.5 (6)	± calyptrate	27-43 4-8	o, or obscure	radial
Tom - 10788	8-11 6-7.5 (8)	± calyptrate	30-45 3-6+	hyaline	radial
Tom - 18935	9.5-10-13 6-7.5 (8)	± calyptrate	21-38 (44) 4-9	cellular	bract loosely interwoven hyaline

HEBELOMA SARCOPHYLLUM (Pk.) Sacc.

leg. Peck, Greenbush, Rensselaer Co., N. Y., June

Notes on Type (Feb. 16, 1973)

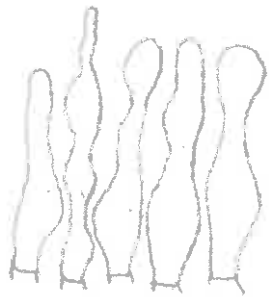
Spores ~~7.5-10 x 4.5-5.5(6) μ~~ ^{7.5-10 x 4.5-5.5(6) μ}, inequilateral in profile, ellipsoid in face view, wall rugulose, calyptrate, 0.2-0.3 μ thick, yellowish brown in 2% KOH. Basidia 24-28 x 6-8 μ, (2)4-spored. Pleurocystidia none; cheilocystidia 27-36 x 5-7 μ (earlier ^{study:} 43-51 x 6-9 μ), ten-pin-shaped to subcylindric and with an enlargement below on one side, at times more or less capitate. Gill trama of narrow, subparallel hyphae. Pileus trama of radially-disposed hyphae. Pileus cuticle a thin ixocutis; hypodermium ^{a cell-zone (owing to the age of the material, the} ~~trama~~ Stipe cuticle of dry, ^{the outlines of the cells are usually rather obscure).} repent hyphae. Clamp connections widely scattered, small and inconspicuous on the cuticular hyphae.

Kauffman (1918:480-481) describes a larger plant (3-6 cm, or 15 cm), stipe 3-8 μ long, odor farinaceous, taste bitterish, cortina none, spores deep flesh-color in mass. He thinks that the structure and shape of the spores would indicate a Cortinarius, except for the absence of a cortina. Further he says it is an aberrant species, and approaches Entoloma (pink gills). He found pleurocystidia, similar to cheilocystidia, but rare.

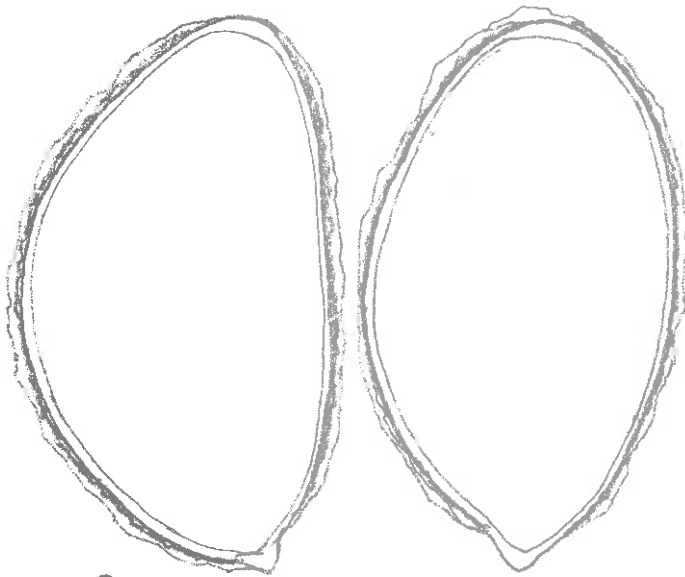
Kühner and Romagnesi (1953:246) add that a veil is present in what they call H. sarcophyllum, but is so fugaceous as to pass unnoticed (but they apparently were dealing with the European H. porphyrosporum). Bruchet (1970:53-56) gives a long account under the name H. sarcophyllum.

Meteloma sarcophyllum (Pk.) Sacc.

Type



ch x 1000



Profile

Face

Spores x 8000

HEBELOMA SARCOPHYLLUM (Pk.) Sacc.

Syll. Fung. 5:804. 1887

Agaricus sarcophyllus Pk. N.Y. State Cab. Ann. Rept. 23:96. 1872.

Pileus 2-4 cm broad, convex, expanding, viscid, "light buff," slightly zoned, innately fibrillose, glabrescent, margin ridged somewhat. Context thick on disc, thin on margin, white; odor slight, taste bitter.

Lamellae adnate to adnexed, white at first, soon dingy pink, finally "light brownish vinaceous" to "fawn color," close, broad behind, narrowed in front, edges fimbriate-serrulate.

Stipe 3-5 cm x 2-5 mm, white with scattered, dingy fibrils, apex mealy, equal, base subbulbous, dry, solid or stuffed. Cortina none (Kühner and Romagnesi p. 246, state that the veil is so fugaceous as to pass unnoticed.)

Spores 8-10(11) x 4.5-5.5(6) μ , sub-amygdaliform, ends pointed, warty-wrinkled, color in mass; "bister." Basidia 28-32 x 8-9 μ , 4-spored. Pleurocystidia none (Kauffman says rare); cheilocystidia clustered, cylindrical, sub-capitate, 40-50 x 5-8 μ .

Notes on Type (Jan. 26, 1956)

~~My No. 10788, from near Knoxville, Tennessee, was compared with the type at Albany and found to resemble it closely.~~

THE TYPE was re-examined January 26, 1956; spores ^{7.5} 8-10 x 4.5-5.5 μ , ovoid, coarsely wrinkled, exosporium tends to loosen, rather

dark brown. Cheilocystidia cylindric, 43-51 x 6-9 μ ;
pleurocystidia none (Kauffman says rare, similar to cheilo-
cystidia.). The type shows no cortina, and Peck says none is
present.

Kauffman (p. 480) says there is no cortina, else the
structure and shape of the spores would indicate a Cortinarius.

HEBELOMA SARCOPHYLLUM (Pk.) Sacc.

Syll. Fung. 5:804. 1887

Agaricus sarcophyllus Pk., N. Y. State Cab. Rept. 23:96. 1873

ILLUSTRATIONS:

Peck, N.Y. State Cab. Rept. 23, pl. 1, figs. 7-11.

Pileus 12-36 mm broad, obtusely conic to convex, white, margin incurved, glabrous, smooth. Context white, taste slightly bitter.

Lamellae attached and deeply emarginate, dingy flesh-color, broad, subclose (not crowded), edges slightly eroded.

Stipe 2.5-5 cm long, 2-4 mm thick, white, apex mealy-squamulose, smooth, equal, firm, stuffed.

Spores 8-10 x 5-6 u, ellipsoid, smooth, very dark ferruginous.

Type on wet grassy soil, Greenbush, Rensselaer County, New York, June.

Peck states that at first sight, it resembles a small Agaricus. The deep-emarginate, flesh-color gills strongly mark this species.

Kauffman (1918:480-481) reports and describes it from Michigan. His description adds to Peck's account, as follows: Pileus 3-6(15) cm, subviscid, odor subfarinaceous, taste bitterish. Gills rather narrow, stipe 3-8 cm x 4-8 mm, cortina none, spores 9-12 x 5-6 u, ventricose-elliptic, subinequilateral, ovate-pointed at both ends, obscurely rough at first deep flesh-

Sm-1637

HEBELOMA SARCOPHYLLUM (Pk.) Sacc.

On grassy soil, in woods, Ann Arbor, Michigan, leg-det

Smith, July 25, 1935

Notes by Smith

Pileus 3-7 cm broad, convex, becoming plane or the margin upturned, pure white but soon becoming sordid reddish gray, glabrous, in age appearing fibrillose under a lens, slightly viscid, not at all striate. Context thick, watery-gray, rather firm and cartilaginous; odor fungoid, taste somewhat bitter.

Lamellae adnate, pure white, then flesh color, finally sordid reddish brown from the spores, edges white-fimbriate or even, close, broad and ventricose, broadest behind, tapering to the margin.

Stipe 4-5 cm long, 3-6 mm thick, pure white, covered by soft appressed fibrils, equal, sordid in age, solid, white within, fleshy, often tapering slightly. (Veil slight. ?)

Spores 8-10 x 4.5-5.5 μ , in deposit: "cameo brown" to "chocolate," roughened. Basidia 28-30 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia cylindrical-contorted, narrowly fusoid, ventricose at first. Pileus cuticle slightly gelatinous; trama homogeneous.

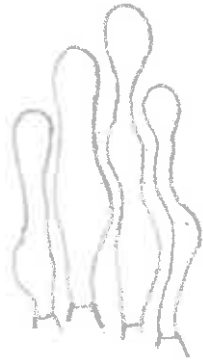
Notes by Hesler

"comes brown" to "chocolate",

Spores [^] 8-10 x 4.5-5.5(6) μ , inequilateral in profile, subovoid to subellipsoid in face view, wall 0.3 μ thick, rugulose, calyptrate to slightly so, moderately brown in 2% KOH. Basidia 25-28 x 6-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 27-~~43~~⁵¹ x 4-8 μ , subcylindric, subcapitate, usually ventricose on one side below or toward the middle. Gill trama of slender, subparallel hyphae. Pileus cuticle a moderately thin ixocutis. Hypodermium not differentiated, or ^{cellular,} only very obscurely so. Stipe cuticle of dry, repent hyphae.

Helvoma sarcophyllum (Pk.) Jacc.

Sm - 1637



ch x 1000



Profile



Face

Spores x 8000

HEBELOMA SARCOPHYLLUM Pk.

(Notes from Bruchet (1970:53-56) on what he describes as
H. sarcophyllum; apparently he is here dealing with
H. porphyrosporum Maire.)]?

Pileus 2.7-4.5 cm, brownish on the disc, grayish-flesh to flesh-sordid-brownish on the margin, glabrous. Context thick, whitish, soft. Odor of Cortinarius purpurascens (Fr.). Taste sweet then slightly raphanoid and bitter.

Lamellae sinuate, narrowly adnate, rosy brown, ventricose behind, decurrent by a line (visible under a lens), edges white, floccose.

Stipe 4-7 cm x 7-12 mm x 14-21 mm, thick, robust, base enlarged but not abruptly, whitish, brownish lightly at the base, lilac above (colored by spores), fibrillose-appressed, densely powdery under the lamellae then finely floccose, solid, flesh whitish.

Spores 9-11(11.5) x ~~5.5-6~~^{*} 5.5-6(6.5) μ , amygdaliform, subtly (obscurely) papillate, verruculose, calyptrate (in cotton lactic). Basidia 30-35 x 7-8 μ , 4-spored, subequal, constricted above. Cheilocystidia (30) 45-50 x 6-9 μ , x 3.5-5 μ , clavate, some ventricose below. Caulocystidia 40-80 x 6-7.5 (8.5) μ , clavate-enlarged at apex.

Pileus cuticle usual, of gelatinous hyphae, more or less slender; cutis indistinct; subcutis of colored cells by a pigment in their membranes. Pileus context aeriferous, with two types of hyphae, one long and slender, and the others (more abundant) larger and short.

* I find the spores 8.5-10 x 5.5-6.5 in Bruchet's No. 65, 25.

Under Pinus halepensis Mill. or Quercus ilex L.

Our fungus is wholly comparable to H. porphyrosporum Maire, appropriately placed as a synonym by Jossierand (1941, Mycologia 33:483-505): of H. sarcophyllum Pk. Nevertheless, a difference lies in the shape of the spores: Maire describes his species (porphyrosporum) as attaining a length of 15 u, ours (as sarcophyllum) rarely more than 11.5 μ . Bruchet found his field collections colored, those in culture whitish (as in the American species - H. sarcophyllum). Maire observed a veil in the young "buttons" in his agaric (porphyrosporum).

HEBELOMA SARCOPHYLLUM Pk.

Bruchet Ly. 65. Br. 25

Notes by Hesler

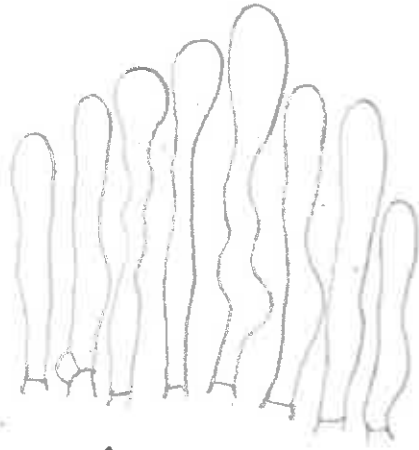
Spores 8.5-10 x (5)5.5-6.5 μ , somewhat inequilateral in profile, subovoid in face view, wall 0.3 μ thick, rugulose to minutely so, often slightly calyptrate, some with an obscure "nose," brown with a faint tint of yellowish in 2% KOH, callus rather distinct in cotton blue. Basidia 28-33 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 30-50 x 5-7 μ , subcylindric to subclavate, apices clavate or at times subcapitate, subventricose below. Gill trama of subparallel hyphae, 4-7 μ broad. Pileus trama of radial hyphae. Pileus cuticle a thin ixocutis. Hypodermium of hyphae, often more or less obscure or almost absent. Stipe cuticle a distinct rim of brown hyphae; caulocystidia similar to cheilocystidia, slightly longer. Clamp connections at the base of some cheilocystidia and caulocystidia.

Spores agree well with those of the Type.

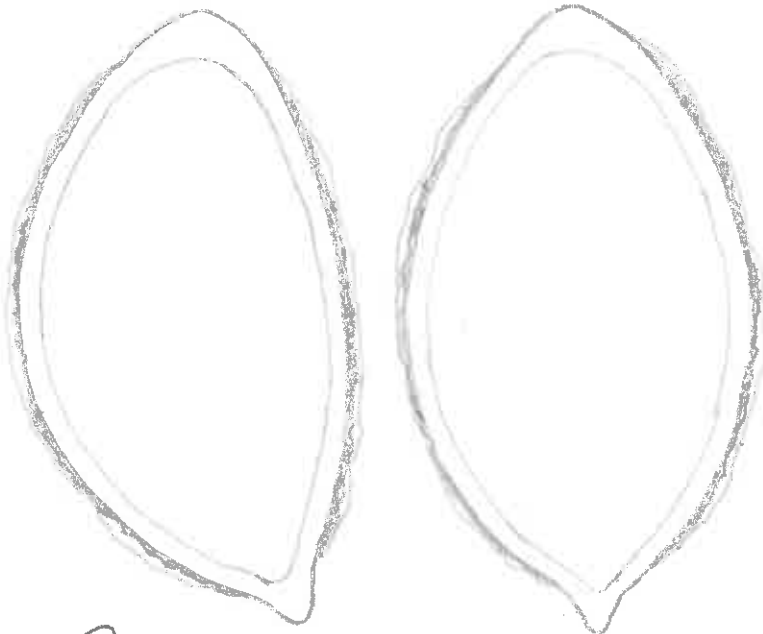
Bruchet (1970:55) says: Pileus cuticle: epicutis important (of considerable development) but usual, composed of more or less slender, gelatinous hyphae; cutis not distinct; subcutis cellular, colored by a pigment in the walls; pileus flesh aeriferous, characterized by the presence of two types of hyphae, one of long, slender elements, the other, more prevalent, of short, larger elements.

Abeloma sarcophyllum PK.

Bruchet Fy. 65 Br. 25



Ch x 1000



Profile

Face

Spores x 8000

Excluded

HEBELOMA SERICIPES Earle

New York Bot. Garden 2:342. 1902

(This is Inocybe)

Pileus 4-7 cm broad, convex-plane or subdepressed, obtuse, deep "honey yellow," glabrous, margin silky-fibrillose, viscid when wet. Context concolorous when moist, whitish when dry; odor none or resembling chestnut flowers, taste none.

Lamellae adnate then sinuate, whitish then "avellaneous," edges white floccose (from prominent sterile cells) crowded and narrow.

Stipe 4-8 cm long, 6-9 mm thick, coated with a conspicuous white silky-fibrillose sheath, apex floccose, subglabrescent in age and becoming fuscescent downward, at first subrigid-subelastic. Universal veil white, arachnoid (N.A.F. 10:224).

Spores 8-10 x 5-6(7) μ , inequilateral, smooth. Pleurocystidia none; cheilocystidia 50-70 x 5-7 μ , broadly filamentous.

Leg. Kauffman, Takilma, Oregon, under oak and fir, December 12, 1925.

(The above description by Kauffman: Mich. Acad. Arts Sci. & Letters 11:192. 1930.)

Murrill (1917:224) adds: pileus pale-olive-brown, stipe solid.

Type among oak leaves, Stanford University, California.

See emended descr. Kauffman: Mich. Acad. Sci. 11:192.

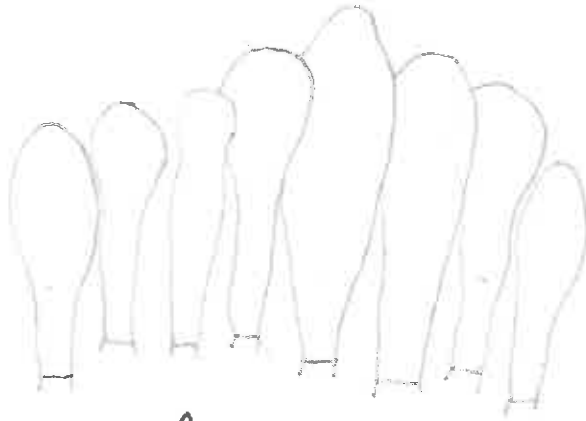
Notes on Type

Spores (7.5)8-10.5 x (5.5)6-7.5 μ , very slightly inequilateral in profile, broadly ellipsoid to subovoid in face view, apiculus small and often obscure, wall 0.3-0.4 μ thick, smooth, pale yellowish brown in 2% KOH under scope, no germ pore. Basidia 34-38 x 8-11 μ , 4-spored. Pleurocystidia none; cheilocystidia 32-46 x 7-15 μ , subclavate to clavate, conspicuously broad. Gill trama of subparallel hyphae. Pileus cuticle of dry repent hyphae; hypodermium of brown hyphae. Stipe cuticle of repent, dry hyphae. Clamp connections on pileus cuticular hyphae.

The cheilocystidia are atypical for Hebeloma; moreover the pileus cuticle is dry. The spores are scarcely typical of Inocybe, but I call it Inocybe for now.

Hebeloma sericipes Earle

Type (an anther)



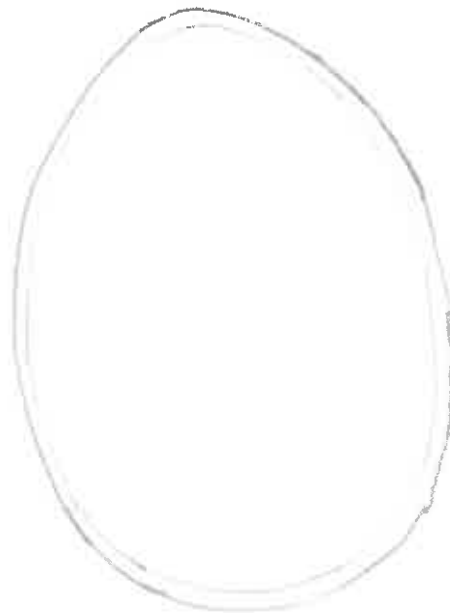
Ch. x 1000



Basidia x 1000



Profile



Face View

Spores x 8000

20166

HEBELOMA SERICEUM sp. nov.

On humus-soil, in deciduous-conifer woods, Hesler's place
leg. LRH, September 27, 1951.

Pileus 4-7 cm broad, convex, expanding, broadly
umbonate, viscid, "chamois," margin darker, surface silky,
margin even. Context thick on disc, thin on margin, white;
odor and taste of radish.

Lamellae emarginate, crowded, medium broad, "avellaneous,"
then "drab," edges fimbriate.

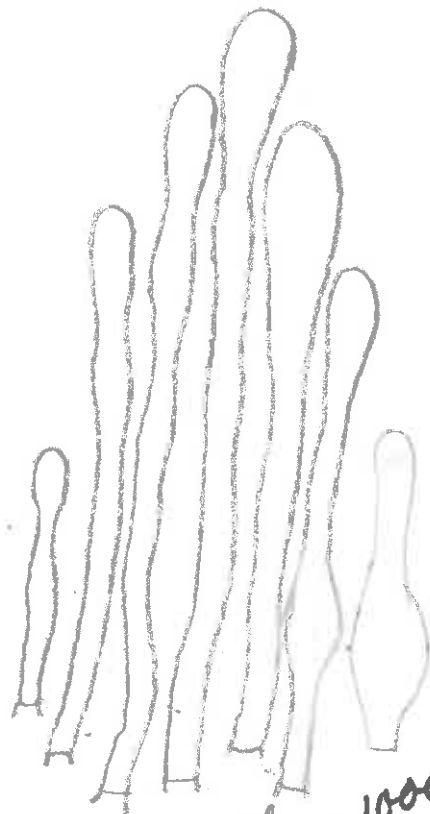
Stipe 6-10 cm long, 7-10 mm thick, white, apex white-
mealy, base curved and rounded-bulbous (bulb up to 2 cm
diameter), becoming hollow. Veil none.

Spores 9-11.5 x (5.5)6-7.0 μ , inequilateral in profile,
subfusoid to subovoid in face view, in some the apex
truncate, wall rugose and calyptrate, brown in 2% KOH.
Basidia 24-28 x 6-8 μ , 4-spored. Pleurocystidia none;
cheilocystidia 34-102 x 4-10 μ , filamentous, apices clavate
to capitate. Gill trama of subparallel hyphae. Pileus
trama of radial hyphae. Pileus cuticle an ixocutis;
hypodermium a brown cell-zone. Stipe cuticle of dry, repent
hyphae. Clamp connections not found.

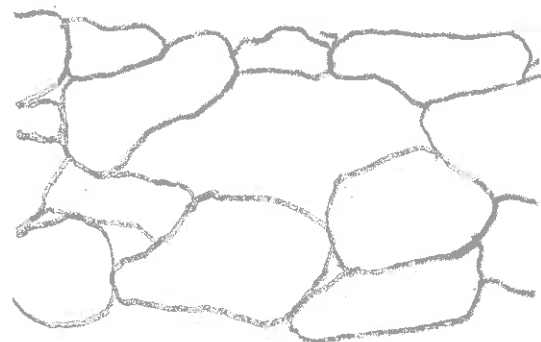
There is a strong tendency for the exosporium to loosen
(as in H. ~~pt~~ porphyrosporum).

Hebeloma sericeum sp. nov.

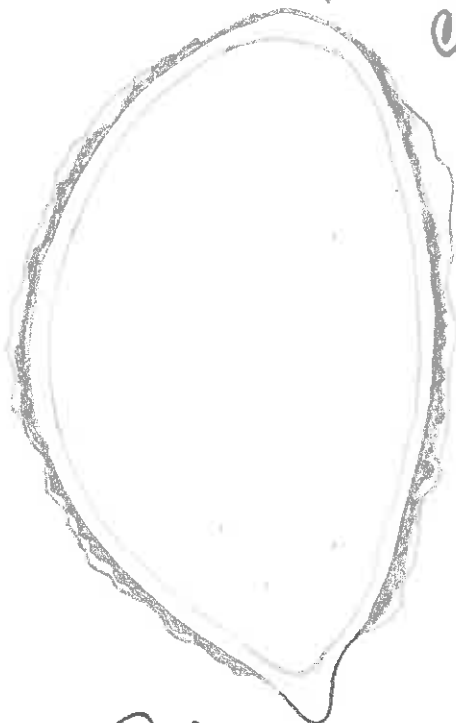
20166 - Type



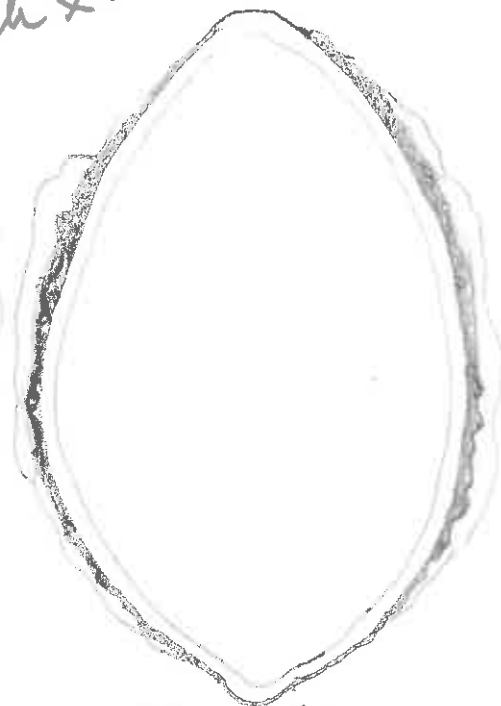
Ch x 1000



Pileus ~~and~~ Hypodermium
x 1000



Profile



Face View

Spores x 8000

Sm-84884 HEBELOMA SIMILE Kauffman

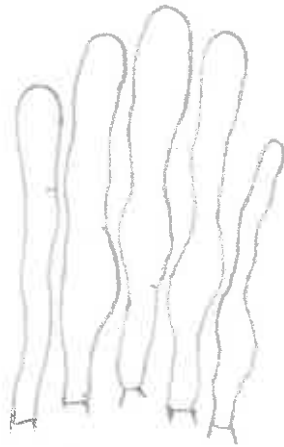
On soil, in woods, grass, Ann Arbor, Michigan, leg. L. H.
Pennington, September 12, 1907, det. Kauffman

Isotype: Notes by Hesler

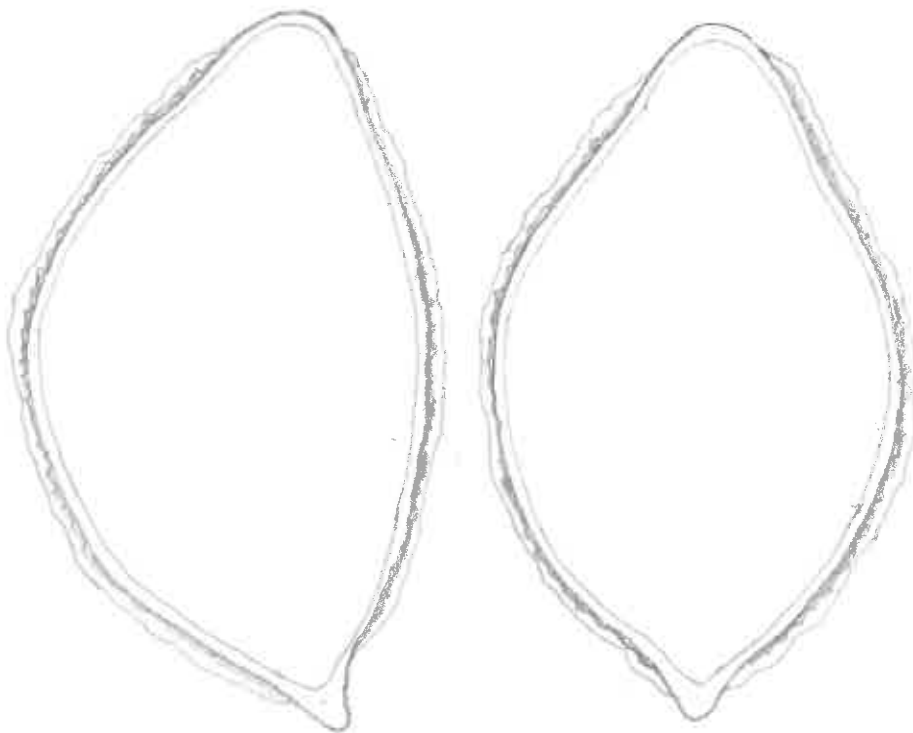
Spores 9-12(13) x 6-7.5 μ , inequilateral in profile, subellipsoid, subfusoid to sublimoniform in face view, often with a "nose," wall 0.3-0.4 μ thick, rugose ~~with a~~ calyptrate, brown to yellowish brown in 2% KOH. Basidia 23-28 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 38-52 x 5-8 μ , clavate, subventricose, conspicuous. Gill trama of slender, subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis, hyphae 1.5-3 μ broad. Hypodermium moderately distinct to obscure, of brown radial hyphae. Stipe cuticle a zone of pallid, slender hyphae, surface bearing a trichodermial epicutis in the apical region; no caulocystidia found.

Helvona simile Kaufman

Isotype (Sm-84884)



Ch x 1000



Profile

Face

Spores x 8000

Sm. 84884

HEBELOMA SIMILE Kauffman

Agaricaceae of Michigan I:479. 1918

Pileus 2-6 cm broad, convex-expanded, whitish, tinged ochraceous, subviscid (moist) and soon dry, lustre dull (dry), glabrous, margin even. Context thick on disc, white; odor and taste of radish.

Lamellae adnate at first, becoming emarginate, rather broad, not crowded, ventricose, thin, whitish then alutaceous, edges minutely floccose-denticulate, not costate.

Stipe 3-8 cm long, 2-5 mm thick, slender, equal, not bulbous, white, floccose to mealy throughout, glabrescent, at length innately fibrillose-striatulate, stuffed with a persistent pith, white within and without, texture fibrous. Veil none.

Spores 11-13 x 6-7 μ , fusiform-elliptical, inequilateral, smooth or obscurely rough, apiculate. Cystidia none. Sterile cells on edge of gills, clavate-thickened at apex, 55-65 μ long.

On soil, in woods, copses, among grass, Ann Arbor, Michigan, leg. L. H. Pennington, September 12, 1907.

Kauffman says it differs from H. neurophyllum Atk. in the lack of costate gills, the persistent pith of the stipe, smaller spores, and broader gills. It differs from H. album Pk. by its broader gills, floccose-mealy stipe, and smaller spores; and from H. albidulum by the lack of cystidia, broader gills, etc.

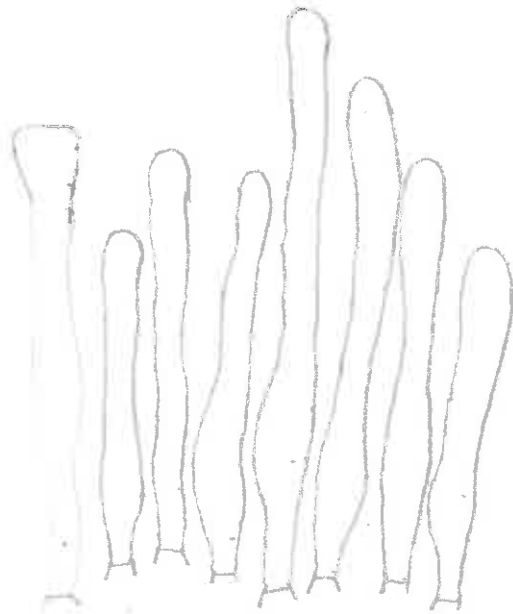
29076

^{-ck}
HEBELOMA SINAPIZANS Fr.

Under Picea and Pinus, near Nassereith, Tyrol, Austria, leg.-
det. Moser, September 22, 1962

Spores 10-13 x 6.5-8(8.5) μ , inequilateral in profile, subfusoid in face view (as in 29077), warty, exosporium loosened somewhat, yellow brown in 2% KOH, no germ-pore. Basidia 26-34 x 8-9(10) μ , (2)4-spored. Pleurocystidia 43-78 x 5-7 μ , subcylindric, ventricose below, scattered, varying from gill to gill (rare or common); cheilocystidia 35-53(68-76) x (5)6-11 μ , subcylindric, often enlarged-flasked shaped below. Gill trama of subparallel hyphae, 4-9 μ broad. Pileus trama of radial hyphae. Pileus cuticle an ixocutis, hyphae only slightly gelatinized. Hypodermium a zone of brown cells. Stipe cuticle of dry repent hyphae; caulocystidia in tufts, similar to those of 29077. Clamp connections present, small inconspicuous, on pileus cuticular hyphae.

Hebeloma sinapians (Fr.) Gillet
ex Moser (Austria), Tern: 29076

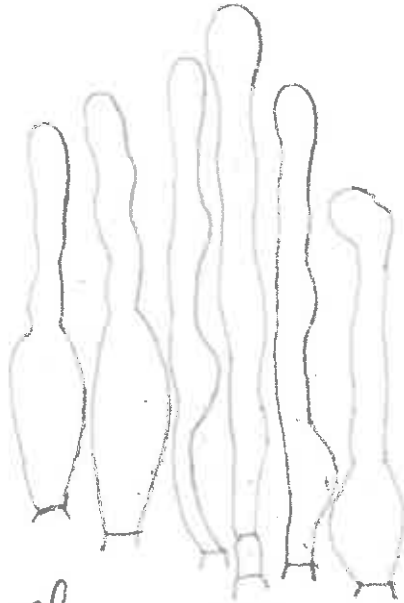


Pl x 1000

more
on another
sheet

Helveloma sinapizans

ex-Moser, Austria (Tenn - 29076)



ch x 1000

[Spores as in ~~29077~~ 29077]
[see PL, another sheet]



Pileus cuticle x 1000

more

29077

HEBELOMA SINAPIZANS (Fr.) Gill.

On soil, conifer forest, Imsterau, Austria, leg.-det.

Moser, October 23, 1962

Notes Translated from Moser's Key

Pileus 7-12 cm broad, ocher-brown, yellowish-rusty to reddish-yellow or dingy brown, more or less convex to flat.

Lamellae coffee-milk-brown to cinnamon-brown, edges concolorous or white-floccose.

Stipe 5-10 x 15-25, squamose, firm and solid. Veil and cortina none.

Spores 10-12 x 6-8 μ .

Notes by Hesler

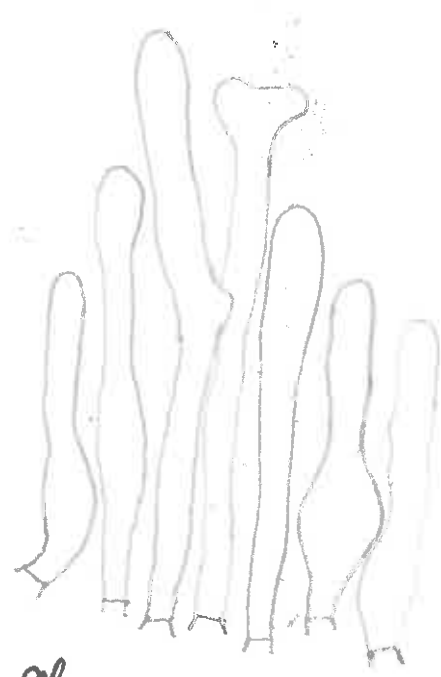
Spores 10-13(14) x 6-8 μ , inequilateral in profile, subfusoid in face view, warty-rugulose, exosporium loosened, no germ-pore, yellow brown in 2% KOH. Basidia 28-40 x 7-9(10) μ , (2)-4-spored. Pleurocystidia 40-70 x 5-7 μ , subcylindric, subventricose below, widely scattered; cheilocystidia 35-78 x 5-10 μ , cylindric, often enlarged downward and then more or less flask-shaped, at times subclavate to subventricose. Gill trama of subparallel hyphae, 5-10 μ broad; subhymenium of slender, short-celled hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis, hypodermium a brown cell-zone. Stipe cuticle of repent, dry hyphae, bearing

conspicuous, scattered tufts of caulocystidia, 36-127 x 8-25 μ , subcylindric-subclavate, often constricted, and often more or less flask-shaped, the neck at times branched. Clamp connections present on pileus cuticular hyphae.

When revived in alcohol and then water, an odor of radish is noticeable (as in other sp. which are raphanoid when fresh).

This is the same as 29076 (also from Moser).

Abeloma sinapians (Fr.) Gill.
leg. Mover (Tenn-29077)



Ch x 1000

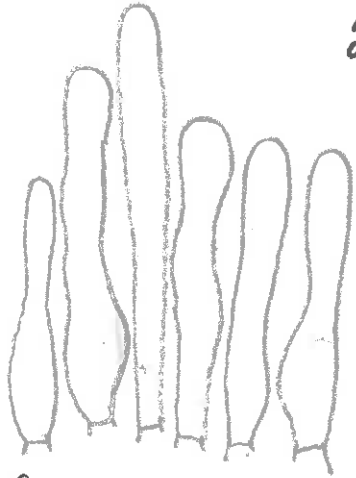
more;
another sheet



Pl x 1000

Hedoma sinapium Fr.

29077 (Moen, Austria)

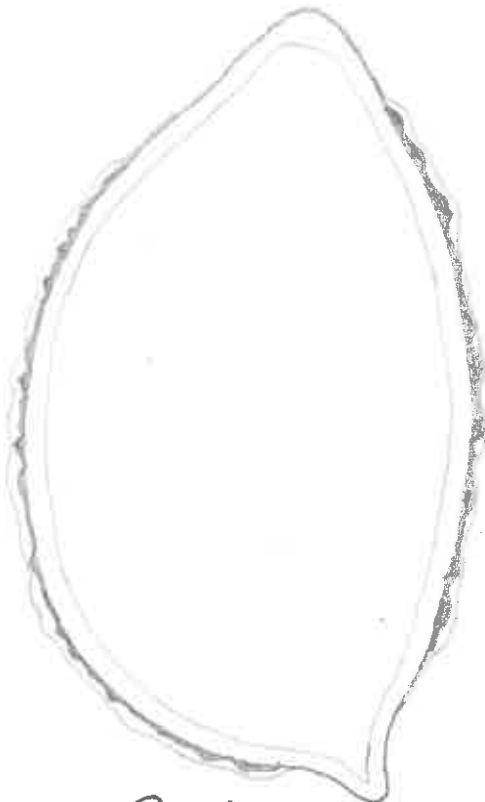


ch x 1000

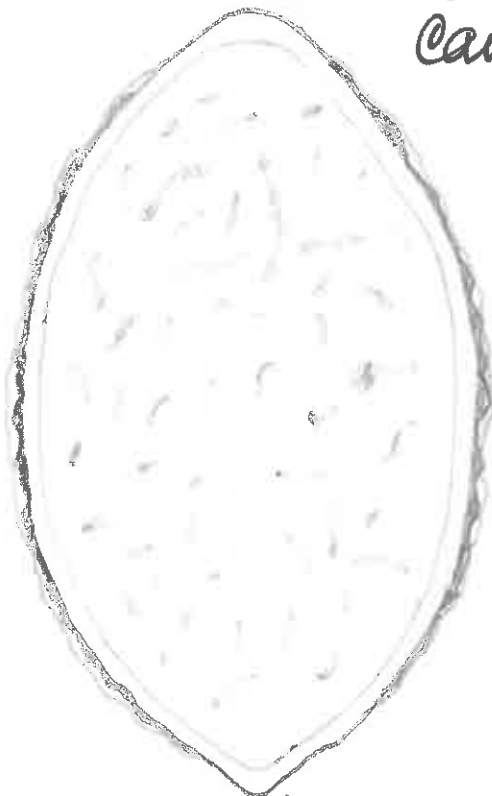
more
next sheet



caulo x 1000

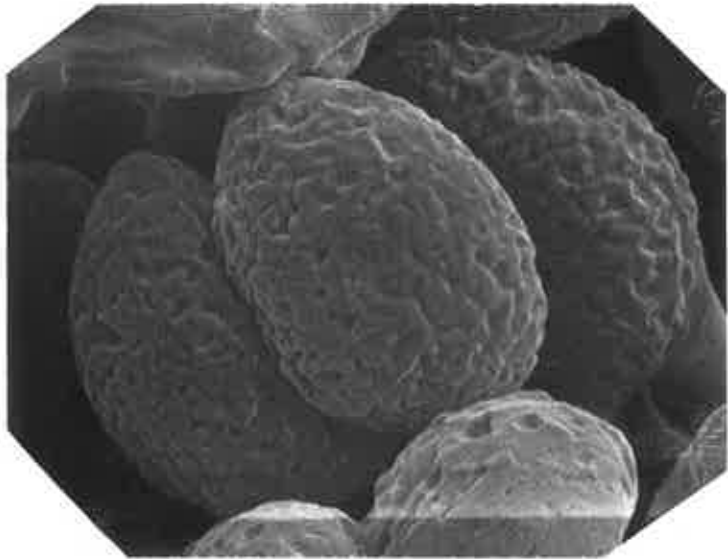


Profile



Face View

Spore x 8000



29077 - *Hebeloma sinapians*
x 5000

Bas-5389

^{-ok}
HEBELOMA SINAPIZANS (Fr.) Gillet

On damp calcareous soil, along brook, in mixed deciduous woods, leg-det Bas, No. 5389, Eifel, near Gus, Germany, September 18, 1970

Notes by Bas

Pileus up to 11 cm broad, flesh-pink-buff, center ochraceous brown. Context whitish, here and there pinkish brown. Odor and taste raphanoid.

Lamellae clay with whitish edges.

Stipe up to 12 cm long, 16 mm thick, bulb up to 30 mm thick, whitish, fibrillose, subsquamulose above, not darkening at base.

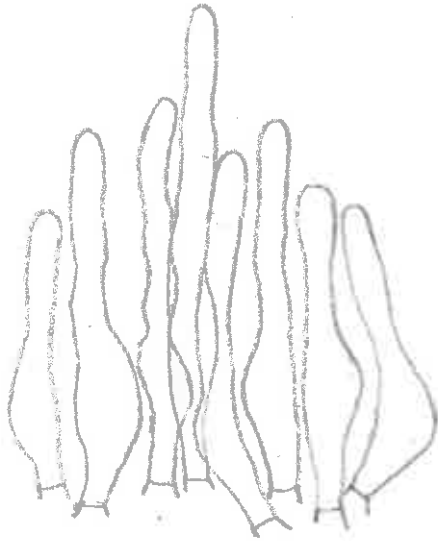
Spores 10.5-12.5 x 6.5-7.5 μ , amygdaliform, warty, more or less papillate. Cheilocystidia base ventricose with a more or less cylindric neck.

Notes by Hesler

Spores (9.5)10-13 x 6-8 μ , inequilateral in profile, subfusoid to subellipsoid in face view, wall 0.3 μ thick, wartyasperulate, slightly calyptrate, yellow brown in 2% KOH. Basidia 35-43 x 7-8 μ , 4-spored. Pleurocystidia 40-52 x 6-7 μ , ventricose, scattered; cheilocystidia 36-62 x 6-8 μ , subcylindric, usually ventricose on one side below. Gill trama of slender subparallel hyphae. Pileus cuticle an ixocutis. Hypodermium a zone of brown, irregularly-shaped cells. Pileus trama of radial hyphae. Stipe cuticle of dry repent hyphae. Clamp connections on pileus cuticular hyphae.

Hebeloma sinapians (Fr.) Gillet

Bas - 5389



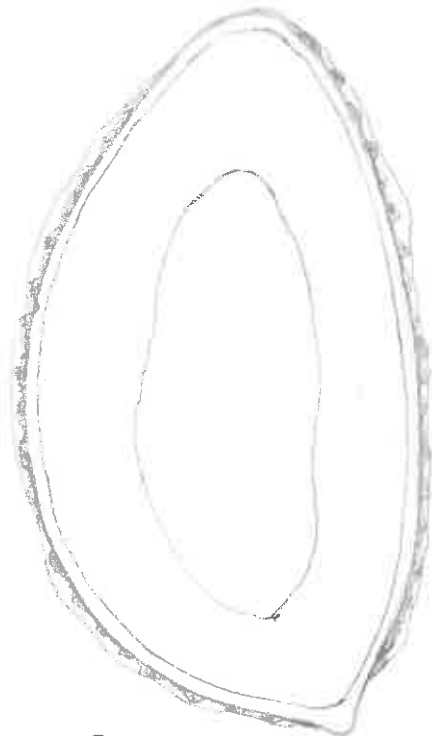
Ch x 1000



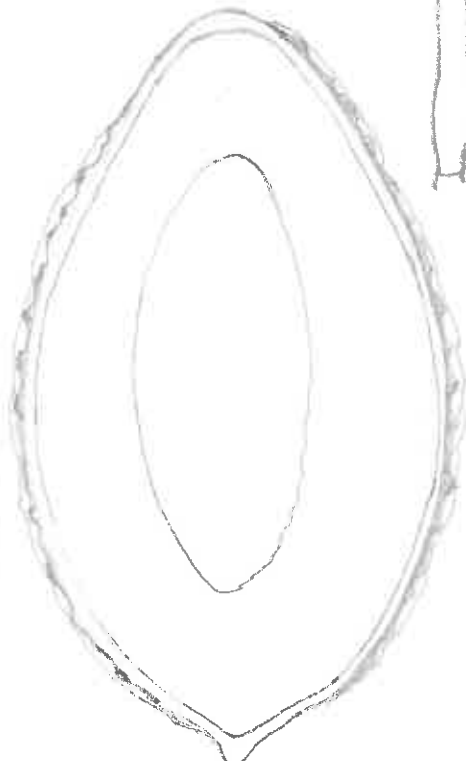
~~Basidia~~
x 1000



Pl x 1000



Profile



Face

Spores x 8000

OK

Maas - 10762 HEBELOMA SINAPIZANS (Fr.) Gillet

On river-clay, neutral or slightly basic, under *Tilia*, Utrecht, Netherlands, leg-det Maas Geesteranus, October 9, 1955, No. 10762

Notes Translated from Dutch by Bas

Cap up to 10 cm, convex, at first with an inflexed then an undulating margin, viscid, at first somewhat shiny, later dull pinkish brown to somewhat orange to tinged yellow-brown at the center, paler and more cafe-au-lait near the margin, without velar remnants. Odor strongly raphanoid.

Lamellae sinuate, edge whitish fimbriate, broad, crowded, thin.

Stipe 7.5-11 cm long, 16-20 mm thick, white, hollow, strongly fibrillose with ascending fibrillose scales with recurved tips, base bulbous. Veil remains none.

Notes by Hesler

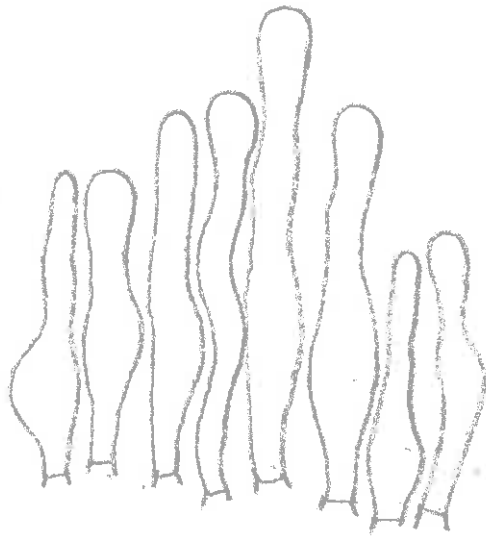
Spores (9)9.5-13.5 x 6-7.5(8) μ , inequilateral in profile, subellipsoid to subovoid in face view, wall 0.3 μ thick, warty-asperulate, slightly calyptrate, yellow brown in 2% KOH. Basidia 27-38 x 7-9 μ , (2)4-spored. Pleurocystidia 38-67 x 6-8 μ , subcylindric, more or less ventricose below, widely scattered; *cheilocystidia 35-60 x 6-9 μ , ampullaceous to subglobose* 6-10 μ , ~~bottle-shaped~~ to ventricose (often so below on one side only), sometimes subcapitate. Gill trama of slender subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium a zone of brown cells. Stipe cuticle of dry repent hyphae;

caulocystidia 48-77 x 7-11 μ , clavate to constricted-cylindric, or variously enlarged and usually with a neck and a capitellum. Clamp connections on the pileus cuticular hyphae.

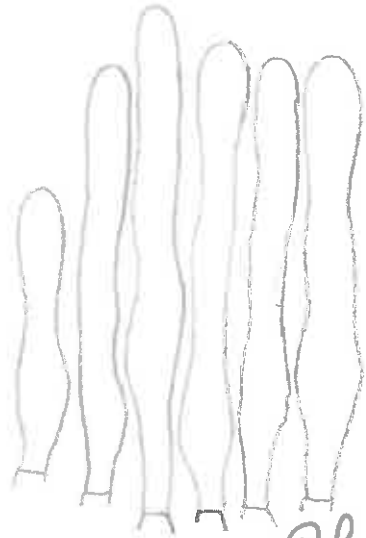
When dried material is soaked in alcohol then water, and sectioned, the odor is raphanoid.

Helvella sinapium (Fr.) Gillet

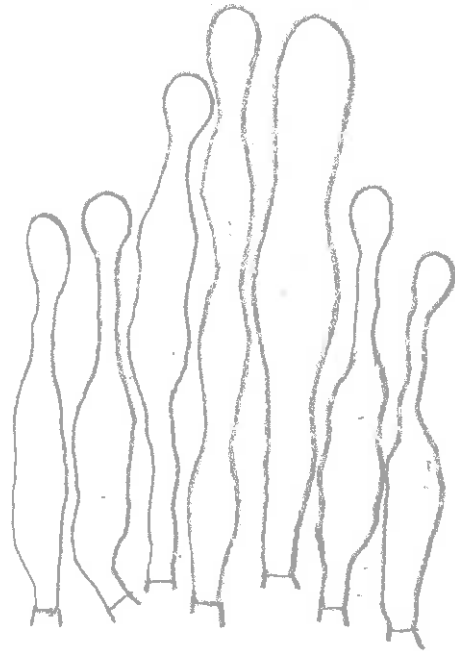
Maas - G 10762



Ch x 1000



Pl x 1000



Caulo x 1000

[Spores as in
Bas - 5389]

OK
HEBELOMA SINAPIZANS (Fr.) Gillet ss. Kühner & Romagn.

Bruchet Ly. 63. BR. 13

Leg. Samoëns, France, Nov. 9, 1964.

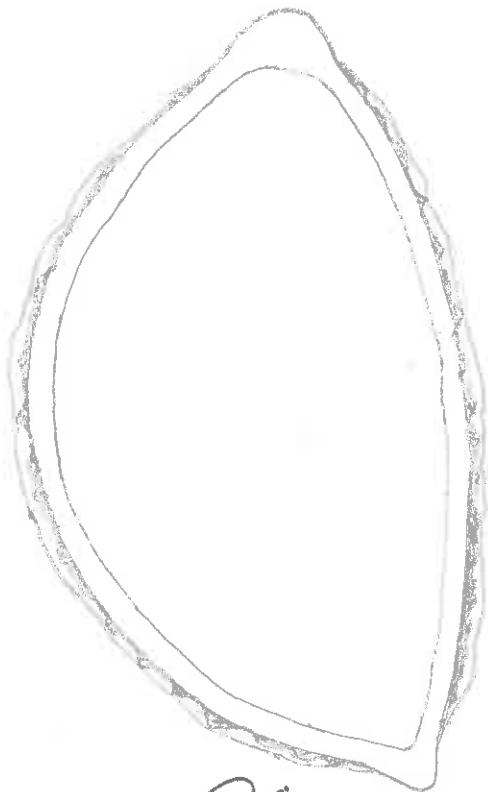
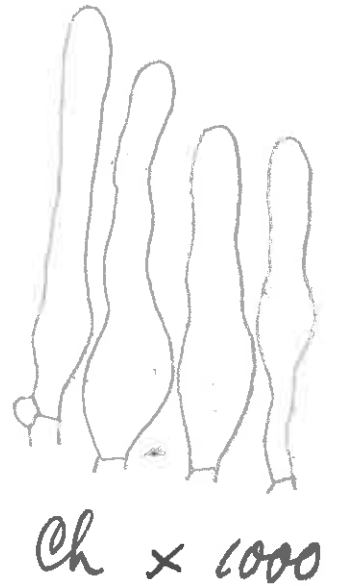
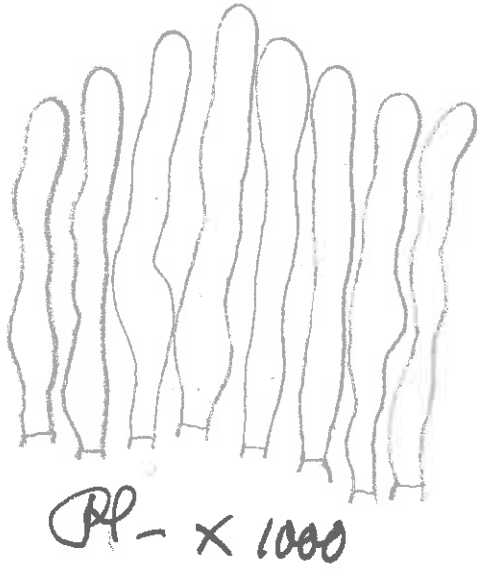
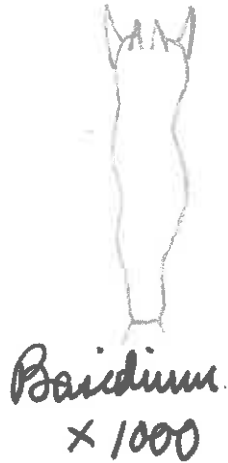
Notes by Hesler

Spores 10-14 x 6-7.5(8) μ , inequilateral in profile, sublimoniform to subovoid (sometimes broadly so), wall 0.4 μ thick, warty-asperulate, slightly calyptrate, apex often with more or less of a "nose," yellowish brown in 2% KOH. Basidia 32-40 x 8-11 μ , 4-spored. Pleurocystidia 44-66 x 5-8 μ , subcylindric, usually subventricose below, apices at times subclavate, rarely subcapitate; cheilocystidia 36-63 x (4)5-9 μ , ventricose below, cylindric above. Gill trama of subparallel ~~hyphae~~ hyphae, 5-10 μ diameter. Pileus trama of rather broad, radial and slightly interwoven hyphae. Pileus cuticle an ixocutis. Hypodermium a brown cell-zone. Stipe cuticle of pallid, slightly angular, dry hyphae. Caulocystidia sometimes present, large. Clamp connections on pileus cuticular hyphae and at base of cheilocystidia.

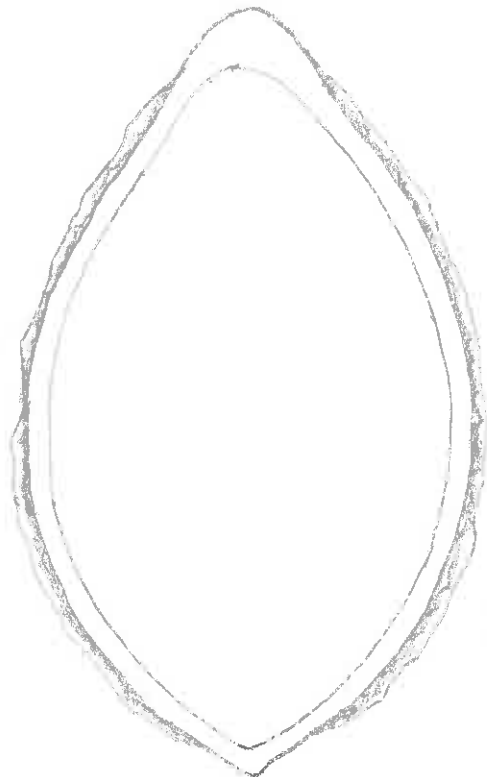
Odor raphanoid (dried specimens, soaked in alcohol then water).

Bruchet Ly. 64. Br. 27 ~~44~~ same as Ly. 63 Br. 13.

Hebeloma sinapizans (Fr.) Gill.
sensu Kuhn + Romagnesi
Bruchet No. Fy. 63. Br. 13



Profile



Face

Spores x 8000

HEBELOMA SINAPIZANS (Fr.) Gillet ss. K. & R.

Bruchet Ly. 958-281-057; leg. Huijsman, *Switzerland*

(and comm. to Bruchet)

Notes by Hesler

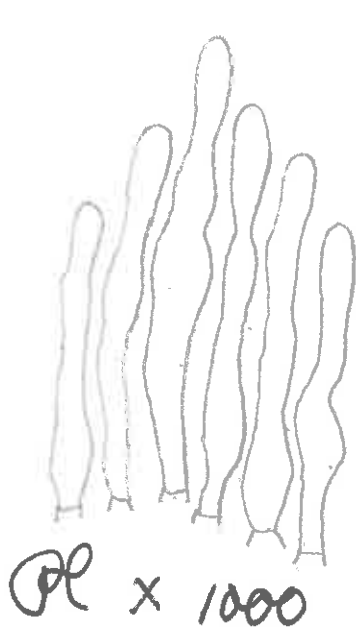
Spores 10-13(14-15) x 6.0-7.5(8) μ , somewhat inequilateral in profile, subfusoid to subovoid in face view, occasionally with an obscure "nose," wall 0.4 μ thick, warty-asperulate, at times slightly calyptrate, yellowish-brown in 2% KOH. Basidia 30-34 x 7-8 μ , 4-spored. Pleurocystidia 40-60 x 5-8 μ , subcylindric, subventricose below or at middle, widely scattered throughout the gill-surface; cheilocystidia 38-82 x 5-8 μ , more or less similar to pleurocystidia, abundant. Gill trama subparallel hyphae 4-7 μ broad. Pileus trama of radial and slightly interwoven broad hyphae. Pileus cuticle an ixocutis, hyphae slender (2-2.5 μ). Hypodermium a cell-zone. Clamps on pileus cuticle hyphae, and at base of cheilocystidia. (No stipe material available.)

Bruchet (1970:121): Pileus cuticle: epicutis (about 60-70 μ), gelatinous, of slender (2-3 μ) and collapsed hyphae; cutis of a collenchymatous aspect in radial section, passing imperceptibly into the epicutis; subcutis (40-50 μ) coherent, pigmented pseudoparenchymatous, very distinct from the subjacent tissues.

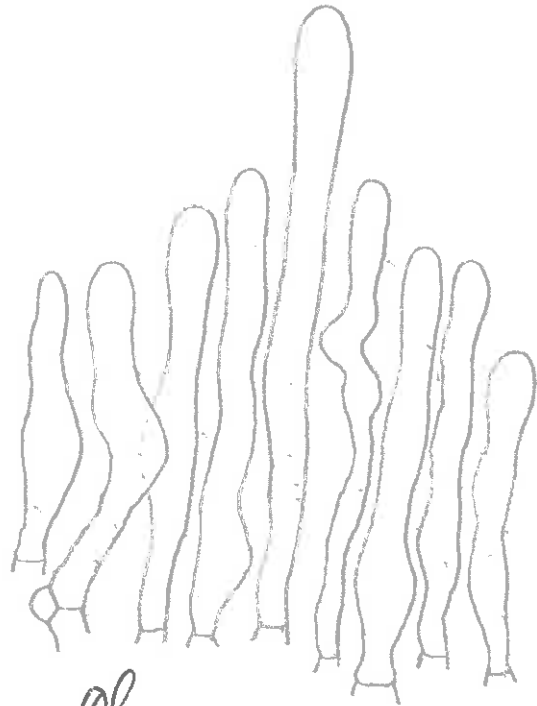
Hebeloma sinapizans (Fr.) Gill. *sensu* K. & R.

Bruchet Herb. (Comm. to Bruchet by
Hujsman, Switzerland)

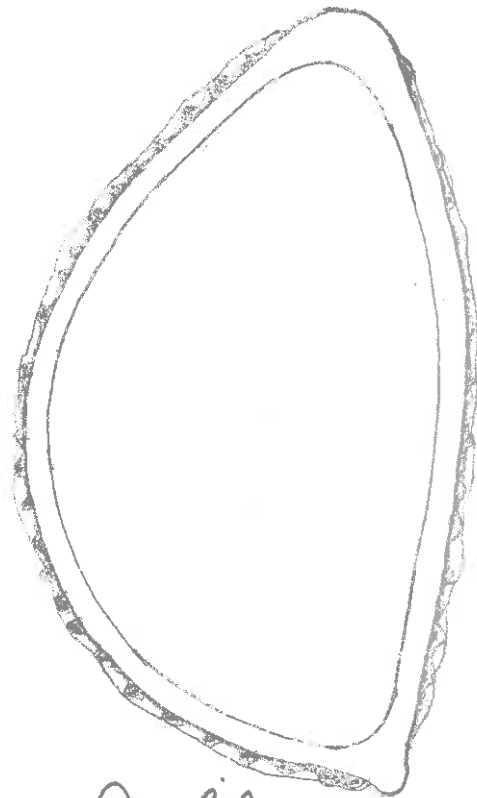
[Bruchet: G. 958 - 281 - 057.]



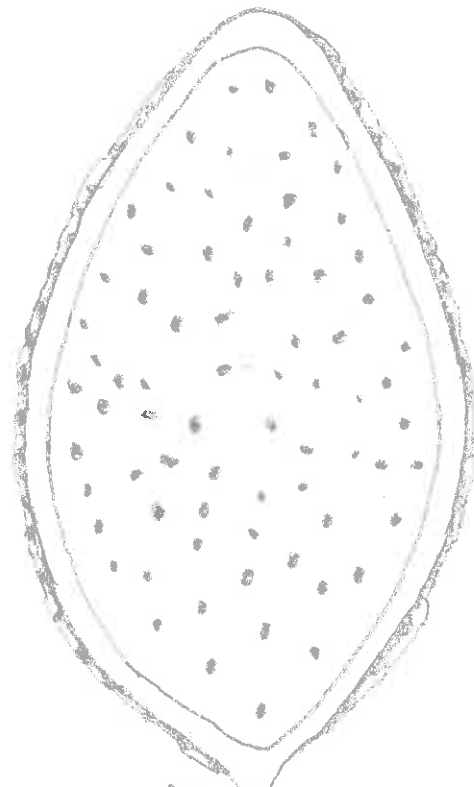
Pl x 1000



Ch x 1000



Profile



Face

Spores x 8000

OK
HEBELOMA SINAPIZANS (Fr.) Gill.

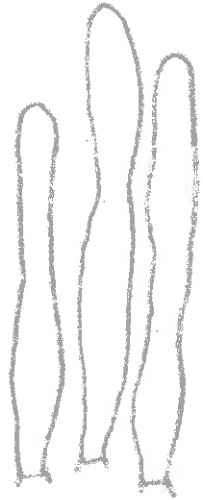
ex-Herb. Edinburgh, leg. Orton, No. 597, Gomshall 3,
Surrey, October 21, 1955

Notes by Hesler

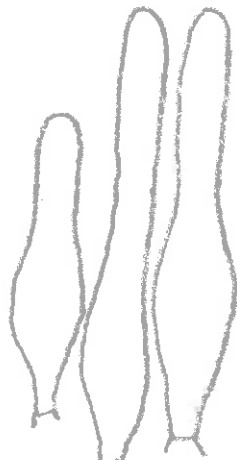
Spores 10-13.5(14) x 6.5-7.5 μ , asperulate, some slightly calyptrate, reddish brown in Melzer's. Pleurocystidia 52-68 x 6-8 μ ; cheilocystidia 32-60 x 7-9(11) μ , ventricose below. Hypodermium cellular.

Seems to be sinapizans!

Hebeloma sinapizans (Fr.) Gill.
Orton No. 597, ex-Hebb. Edinburgh,
Gomshall 3, Surrey



Gl x 1000



Gl x 1000

[Spores usual]

-OK
HEBELOMA SINAPIZANS (Fr.) Gill.

Watling No. 749c, September 15, 1963, under birch and ash,
ex-Herb. Edinburgh, Ross & Cronarty, Scotland

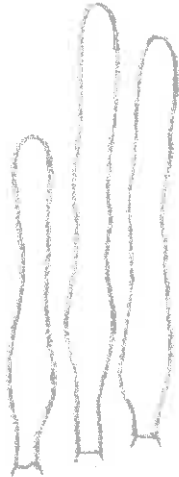
Notes by Hesler

Spores (9)10-14.5 x (5.5)6-7.5 μ , inequilateral in profile, subvoid in face view, no "nose" or very obscure wall 0.25 μ thick, asperulate, obscurely calyptrate, yellowish brown in 2% KOH. Pleurocystidia 42-63 x 6-8 μ , cylindric, ventricose below, scattered; cheilocystidia 34-55 x 5-8 μ , cylindric to 9-pin shaped, ventricose below. Pileus cuticle an ixocutis. Hypodermium cellular.

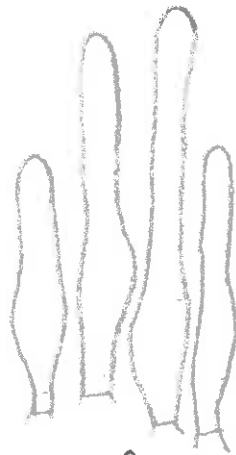
Spores reddish brown in Melzer's.

This seems to be sinapizans!

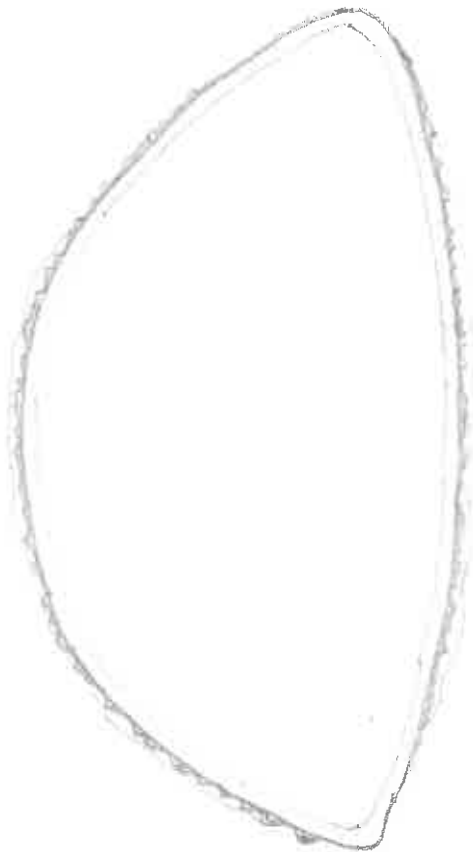
Helveloma sinapium (Fr.) Gill.
Watling No. 749c



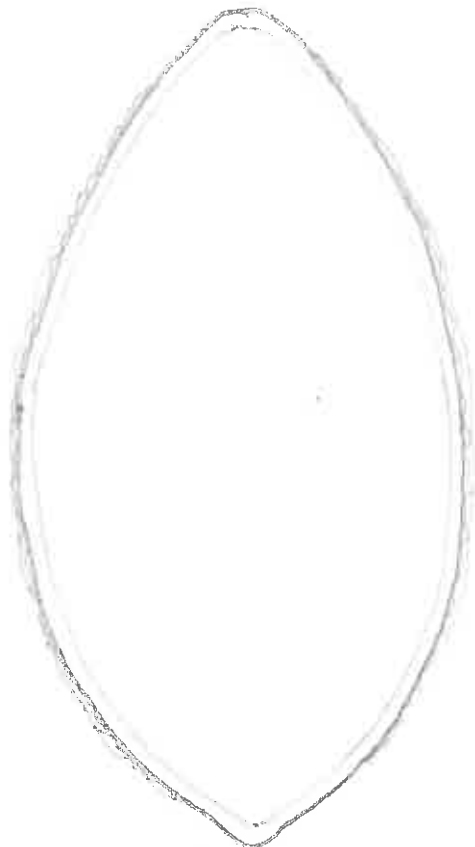
As x 1000



Ah x 1000



Profile



Face

Spores x 8000

ck
HEBELOMA SINAPIZANS (Fr.)

ex-Herb. Stockholm, leg.-det. L. G. Bresadola, October, 1899.

Notes by Hesler

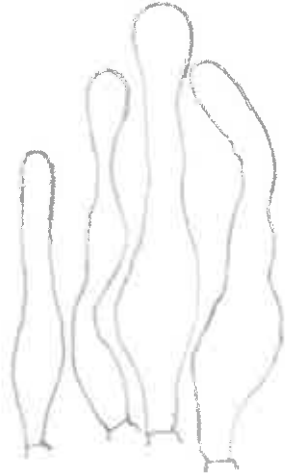
Spores 10.5-12.5(14.5) x 7-8.5 μ , inequilateral in profile, subvoid in face view, wall 0.4 μ thick, obscurely asperulate, yellowish brown in 2% KOH, reddish brown in Melzer's. Basidia 25-34 x 8-9 μ , 4-spored. Pleurocystidia 48-60 x 6-8 μ , cylindric, ventricose below, sparse; cheilocystidia 38-55 x 6-11 μ , flask-shaped to irregularly cylindric and ventricose. Gill trama subparallel, hyphae 4-11 μ broad. Pileus trama loosely interwoven. Pileus cuticle an ixocutis. Hypodermium cellular. Stipe cuticle of dry, pallid hyphae (as usual). Caulocystidia similar to cheilocystidia.

This differs from the Suber collection in its larger spores, and scarcity of pleurocystidia.

Helvoma sinapians
leg. Bresadola, Oct. 1899
ex - Herb. Stockholm.



Pl $\times 1000$



Ch $\times 1000$



Basidia $\times 1100$

? no pl.

HEBELOMA SINAPIZANS Fr.

ex-Herb. Stockholm, leg.-det. L. G. Bresadola, Aug. 1900

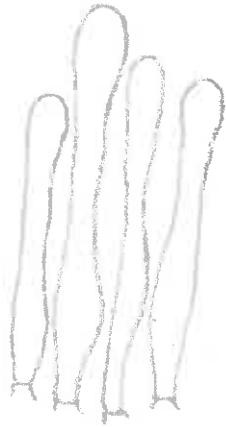
Notes by Hesler

Spores (9.5)10-12 x 6-7.5 μ , inequilateral in profile, subovoid in face view, some with a slight "nose," wall 0.3 μ thick, minutely asperulate, none calyptrate, yellowish brown in 2% KOH, reddish brown in Melzer's reagent. Pleurocystidia none; cheilocystidia 37-52 x 4-7 μ , sub-cylindric, apices subcapitate, base ventricose. Gill trama of slender subparallel hyphae. Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium hyphoid.

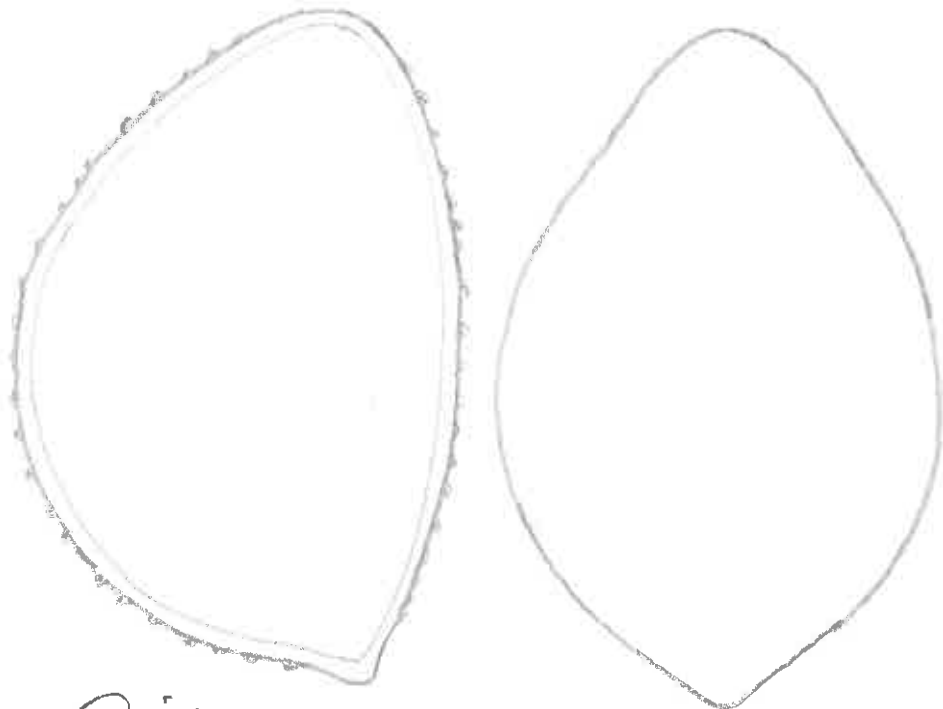
Not H. sinapizans of Bruchet, Moser, et al: *spores smaller, minutely asperulate, none calyptrate; pleurocystidia none; hypodermium hyphoid. No name for it yet.*

Hebeloma sinapians F. (?)

ex: Herb. Stockholm, K. G. Bresadola, Aug. 1900



ch x 1000



Profile

Face

Spores x 8000

? No Pl.

HEBELOMA SINAPIZANS

Leg. Seth Lundell, No. 9937, Lena, Storvreta, August 6, 1920.
ex-Herb. Stockholm

Notes by Hesler

Spores 7-10 x 4.5-5.5 μ , slightly inequilateral in profile, subfusoid in face view, wall rugulose, not calyptrate, 0.3 μ thick, pale yellowish brown in 2% KOH, ~~rd~~ reddish brown in Melzer's reagent. Pleurocystidia none; cheilocystidia 36-74 x 4-7 μ , irregularly sub-cylindric, often constricted, more or less ventricose below. Gill trama of slender subparallel hyphae. Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium cellular.

The spores are smaller than in other European collections; moreover, no pleurocystidia present.

No name yet.

HEBELOMA SINAPIZANS (Fr.) [var. SUBERI var. nov.]
ex-Herb. Stockholm, leg.-det. Nils Suber, October 10, 1970

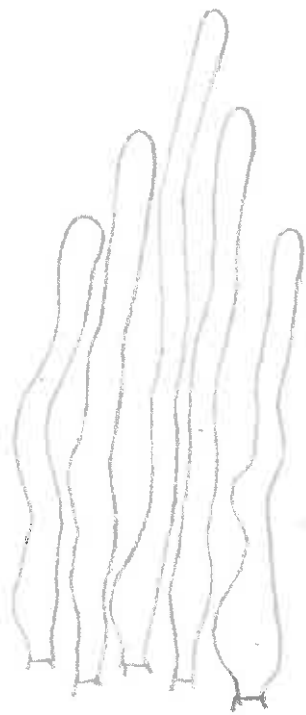
Notes by Hesler

Spores 9-11 x 5.5-7 μ , slightly inequilateral in profile, subvoid in face view, wall 0.3 μ thick, asperulate, mostly not calyptrate, a few slightly calyptrate, yellowish brown in 2% KOH, reddish brown in Melzer's α reagent. Pleurocystidia 56-87 x 5-7(9) μ , filamentous, apex sometimes subcapitate, base more or less ventricose, conspicuous and rather numerous; cheilocystidia 37-55 x 5-12 μ , flask-shaped to subcylindric with a ventricose base. Gill trama subparallel, hyphae 5-12 μ broad, rather short-celled. Pileus trama of loosely interwoven, broad (5-14 μ) hyphae. Pileus cuticle an ixocutis. Hypodermium a cell-zone. Stipe cuticle of rather thick (300-400 μ) zone of dry, pallid-grayish, angular, thick-walled hyphae. Caulocystidia not found. Clamp connections on pileus cuticular hyphae.

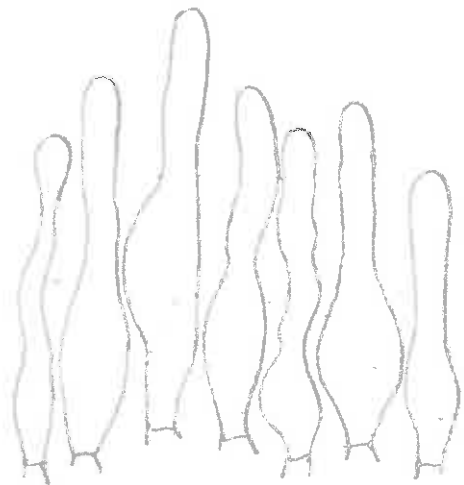
Differs from H. sinapizans (of Bruchet, Moser, et al) in which the spores are 10-14 x 6-7.5(8) μ , with more or less or a "nose"; the pileus trama more nearly radial (and not loosely interwoven).

This (Suber collection) is perhaps a variety of sinapizans.

Hebeloma sinapium (Fr.)
Reg.-Det. Nils Suter, Oct 10, 1970
ex-Herb. Stockholm



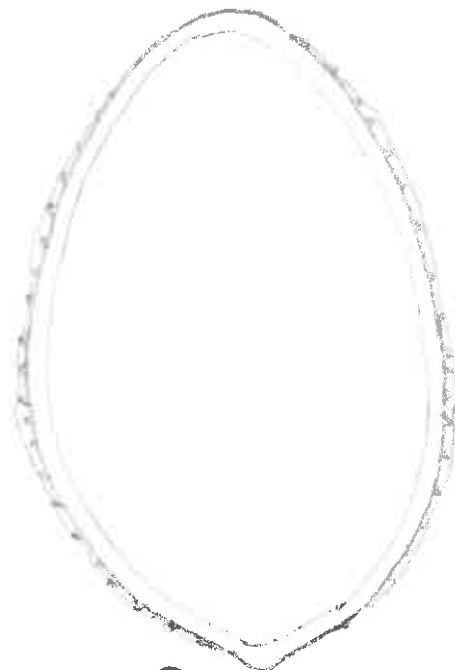
Pl x 1000



Ch x 1000



Spore



Face

Spores x 8000

HEBELOMA SINAPIZANS Fr. (2)

ex-Herb. Stockholm, leg-det C. O. Smith, Forest Home,
Ithaca, New York, No. 5525, Nov. 1, 1900

Notes by Hesler

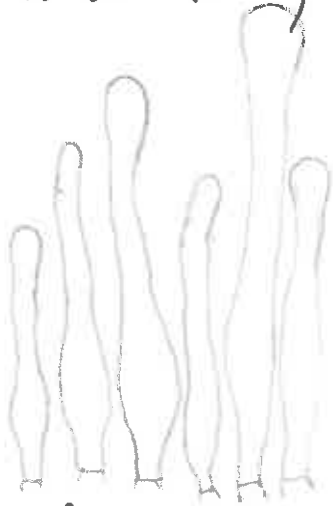
Spores 11-14.5(18.5) x 6-7.5(8) μ , inequilateral in profile, limoniform in face view, with a "nose" and prominent apiculus, asperulate, slightly calyptrate, wall 0.4 μ thick, yellowish brown in 2% KOH, red-brown in Melzer's. Pleurocystidia none; cheilocystidia 34-63 x 5-9 μ , subcylindric, apices subcapitate, base ventricose. Gill trama subparallel, hyphae narrow. Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium hyphoid. Stipe cuticle usual.

This is not H. sinapizans of Bruchet et al: spores too large and wrong shape; pleurocystidia none; hypodermium hyphoid. It seems to be H. pseudo-sinapizans

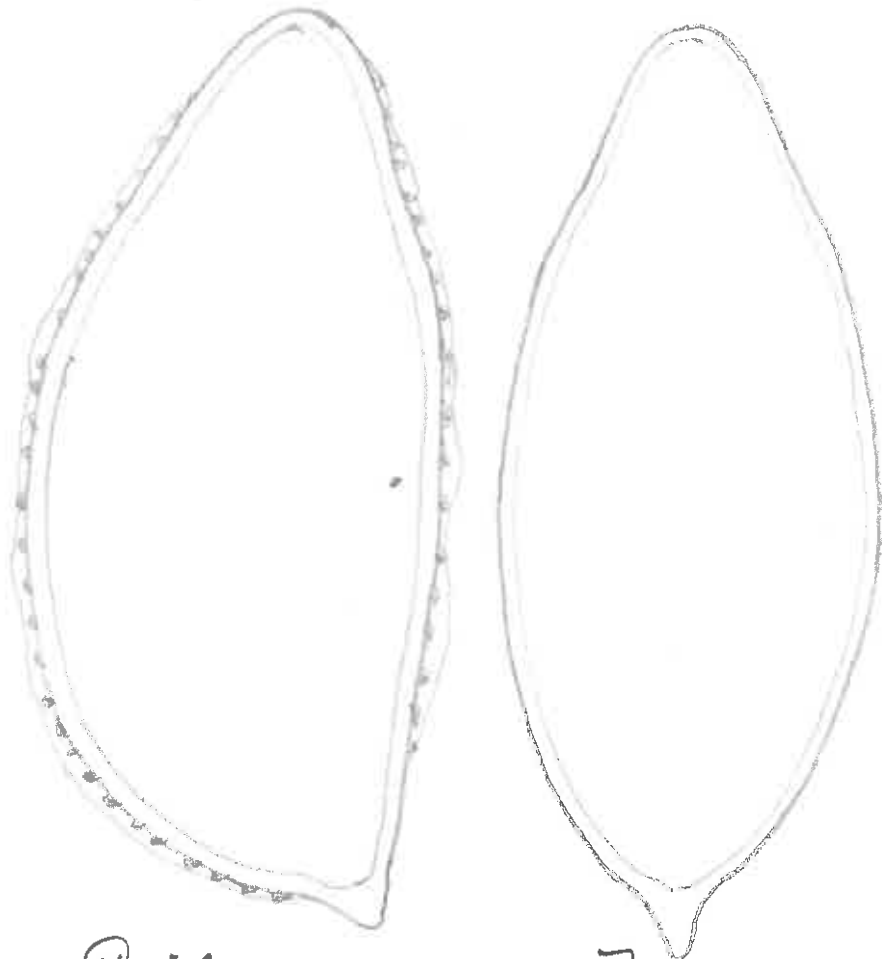
sp. nov., but without Smith's notes on the macroscopic ~~forma~~ characters of fresh specimens, I shall probably have no name for it.

Hebeloma sinapizans Fr. (?)

ex-Herb. Stockholm, leg-det. C. O. Smith, No. 5525,
Forest Home, Ithaca, N.Y., Nov. 1, 1900



ch x 1000



Profile

Face

Spores x 8000

? No pl., spores rugulose

HEBELOMA SINAPIZANS

ex-Herb. N.Y. Bot. Garden, leg. Miss Webster, det. Murrill, Canandaigua,
N.Y., (date?)

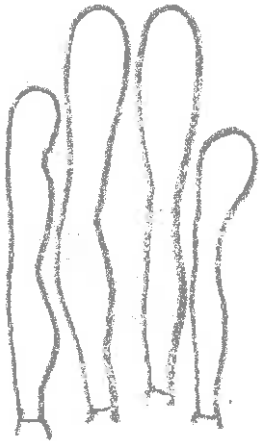
Notes by Hesler

Spores 9.5-13(15) x 6-7.5(8) μ , slightly inequilateral in profile, ellipsoid-sublimoniform in face view, with a "nose", wall 0.4 μ thick, rugulose, brown in 2% KOH. Pleurocystidia none; cheilocystidia 32-45 x 5-9 μ , apex subcapitate, base more or less subventricose. Pileus cuticle an ixocutis. Hypodermium hyphoid. Pileus trama of radially disposed hyphae. Stipe cuticle of repent, dry hyphae. Caulocystidia at apex, 34-78 x 5-8 μ , more or less cylindrical or similar to cheilocystidia.

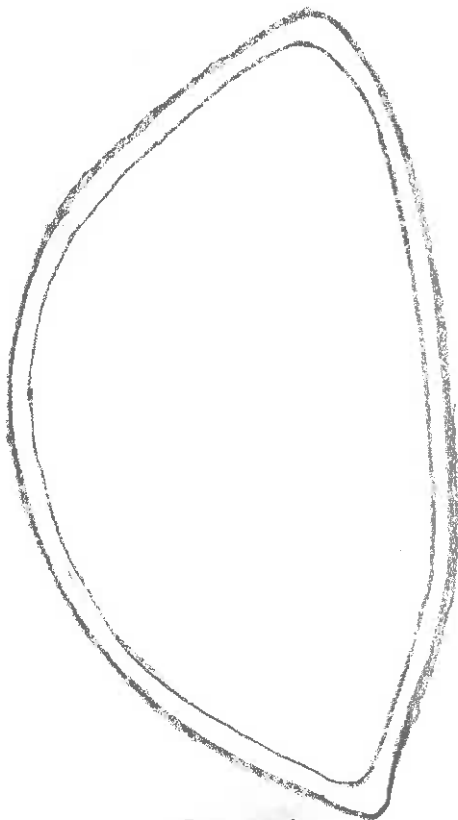
This collection is not H. sinapizans of Bresadola. In his material (at Stockholm), and in that of some other European agaricologists differs from Murrill's collection (above) in two important characteristics: (1) the European sinapizans has coarsely warty, more or less calyptrate spores, and (2) it has pleurocystidia which are large and always conspicuous. I suggest that this collection is near H. subfastibile Murr., or possibly something near some other species.

Heloloma sinapizans (sensu Merrill)

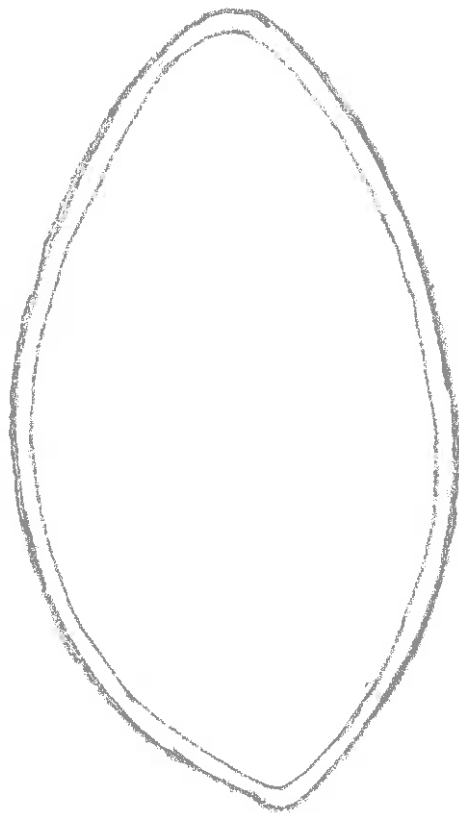
St. Herb. N.Y. Bot. Garden, No. 1018



Ch x 1000



Profile



Face View

Spores x 8000

HEBELOMA SINAPIZANS [sensu Murrill]

ex-Herb. N.Y. Bot. Garden, No. 1253, Leg. W.A. Murrill and L.S. Abrams,
LaHonda, Palo Alto, California, Nov. 25, 1911, det. Murrill.

Notes by Hesler

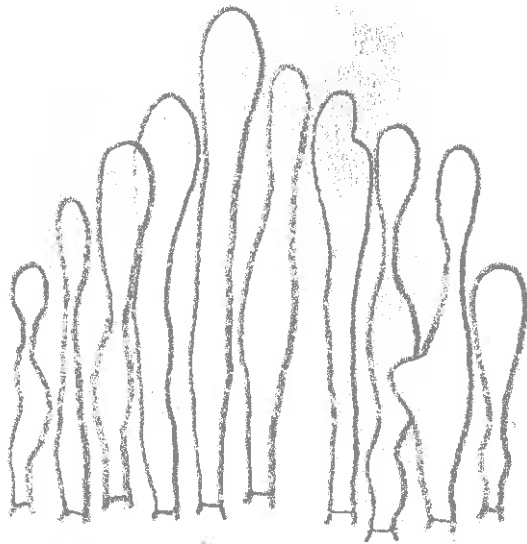
Spores 9-12 x 6-7.5(8) μ , slightly inequilateral in profile, ellipsoid-subovoid to faintly sublimoniform in face view, wall 0.3 μ thick, rugulose, brown in 2% KOH. Pleurocystidia none; cheilocystidia 32-66 x 4-10 μ , clavate or ventricose below, more or less subcapitate, at times slightly irregular in shape (age?). Pileus cuticle an ixocutis. Hypodermium hyphoid. Stipe cuticle of dry, repent hyphae. Caulocystidia in tufts near apex, 44-58 x 8-14 μ , clavate-capitate.

This is not H. sinapizans of Bresadola, which has pleurocystidia, and warty, calyptrate spores. Although rather near H. subvaticosoides Murrill, there are some differences which suggest that this collection (No. 1253) may be new species.

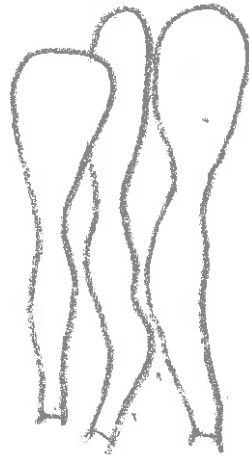
Although labelled H. sinapizans, it has different spores from those of the Canandaigua collection by Miss Webster; these two collections are hardly the same species.

Without notes on fresh material, I shall probably have no name for it.

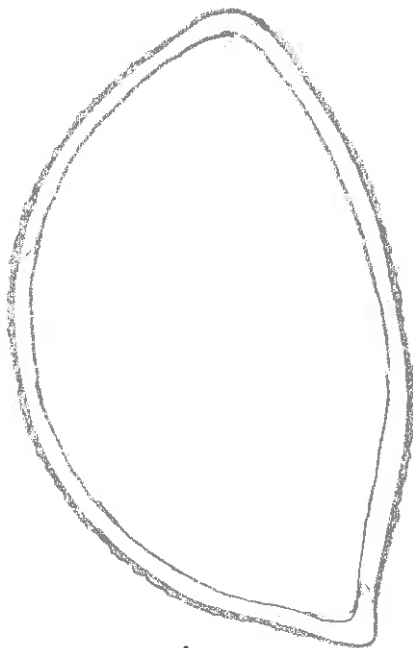
Helvella sinapigans (senon *Murrill*)
California, *Murrill-Abrams*
ex - Herb. N.Y. Bot. Garden



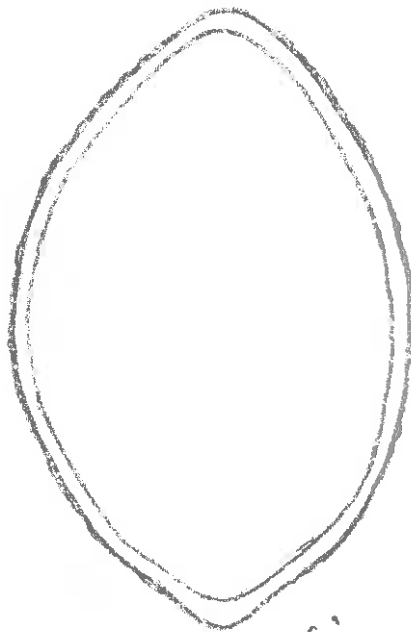
Ch x 1000



Conls x 1000



Profile



Face View

Spores x 8000

HEBELOMA SINAPIZANS [sensu Murrill]

ex-Herb. N.Y. Bot. Garden, leg. W.A. Murrill, det. Murrill, near
Corvallis, Oregon, Nov. 6-11, 1911.

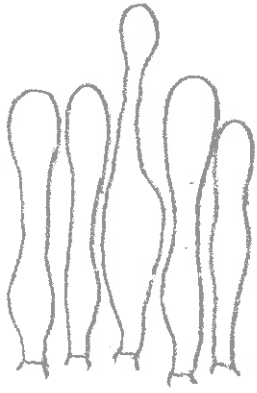
Notes by Hesler

Spores 10-12.5(15) x 6-7.5(8) μ , slightly inequilateral in profile,
^{to \pm limoniform}
subvoid in face view, wall 0.3 μ thick, rugulose, pale brownish in 2%
KOH. Pleurocystidia none; cheilocystidia 38-53 x 6-9 μ , clavate, at
times somewhat capitate, often slightly ventricose below, ^{more rarely subcylindric.} (Stipe mater-
ial not available for sectioning.)

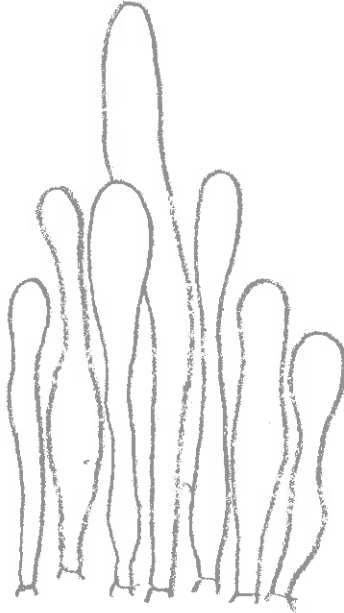
This differs from ^{the European} ~~the European~~ H. sinapizans, which has pleurocystidia,
and has warty, calyptrate spores. ^{Without notes on fresh}
specimens, I shall not have a name for it.

Hebeloma sinapizans (sensu Murrill)

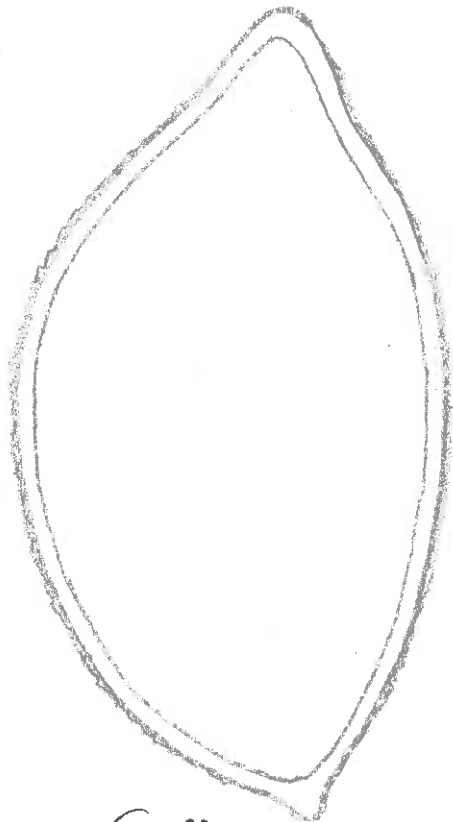
Canandaigua (N.Y.), ex-Herb. N.Y. Bot. Garden
leg. Webster, det. Murrill



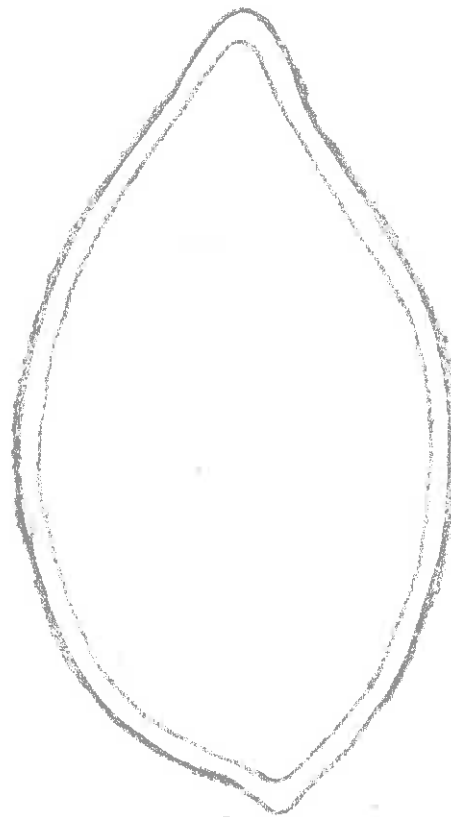
Ch x 1000



Caulo (turf) x 1000



Profile



Face

Spores x 8000

25090 HEBELOMA SINUOSUM (Fr.) Qué1. (= H. edurum Metrod.)

In conifer forest (Pinus sylvestris & Picea abies),

Gnadenwald, Tyrol, Austria, leg.-det. Moser,

September 30, 1951.

Spores 8.5-10.5(11) x 5-5.5(6) μ , inequilateral in profile, ^{at times slightly sublimoniform,} subovoid-subellipsoid, rugulose, wall 0.4 μ thick, yellowish in 2% KOH, no germ-pore. Basidia 24-28 x 6-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 26-34 x 3-5 μ , cylindrical to subventricose, inconspicuous. Gill trama of subparallel hyphae, 4-10 μ broad. Pileus trama of interwoven hyphae. Pileus cuticle an ixocutis, hyphae interwoven and slightly gelatinized; hypodermium of brown cells. Stipe cuticle of dry repent hyphae.

When revived in alcohol then water, the flesh has a raphanoid odor.

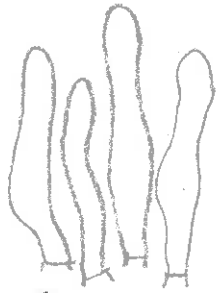
In his Key, Moser gives spores 9-13 x 5-7 μ ; I found none more than 11 μ long in his material (25090).

Dennis, Orton, and Hora (1960:215) list this as H. sinuosum ss. J. Lange.

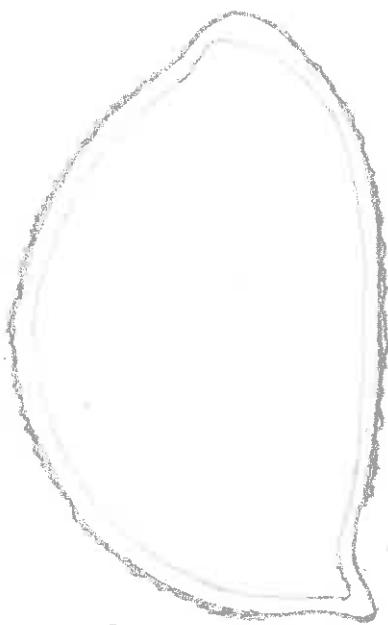
Bruchet (1970) lists H. sinuosum (Fr.) Qué1. ~~as~~ ss Kowrad & Maublanc, Icones selectae fungorum, Paris, 1924-37, as a synonym of H. edurum Metrod.

Nebeloma sinuosum Fr.

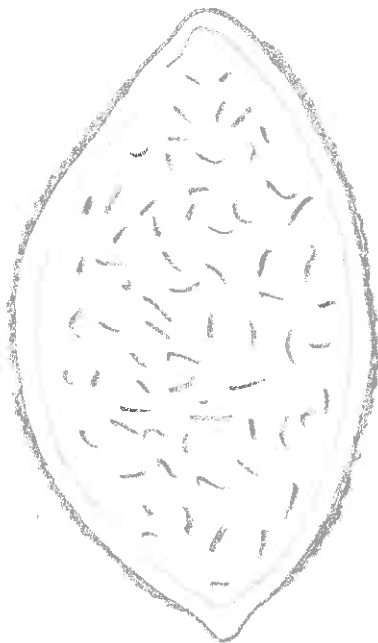
25090 (from Mower)



Ch x 1000



Profile



Face View

Spores x 8000

Epilute

HEBELOMA SOCIALE Pk.

New York State Mus. Bull. 75:15. 1904

Pileus gregarious to subcespitose, 1.5-3 cm broad, convex becoming plane or nearly so, dingy yellowish white, slightly viscid when moist, glabrous. Context yellowish white, taste nauseous.

Lamellae adnexed, whitish then yellowish, finally brownish-ferruginous, close or crowded.

Stipe 2.5-3.5 cm long, 3-6 mm thick, white, hollow with a small cavity, fibrous, floccose-fibrillose.

Spores 6-8 x 4-5 μ , elliptic, brownish ferruginous.

Type among short grass in pastures, Menands, New York, October. Peck says it is distinguished from other white or whitish species by its peculiar habitat and mode of growth and by its small spores.

Search for the Type at Albany, failed to find it. ^{by S.J. Smith.}

HEBELOMA SORDIDULUM (Pk.) Sacc.

Syll. Fung. 5:806. 1887

Agaricus sordidulus Pk., New York State Mus. Ann. Rept. 38:
88. 1885.

Illustrations:

Pileus 2-4 cm broad, convex, brownish red or tawny brown, paler or whitish on the margin, viscid when moist. Context, thin, firm, white; odor radish-like.

Lamellae slightly adnexed, rounded behind, pallid becoming brownish-ochraceous, broad, close.

Stipe about 2.5 cm long, 3-4 mm thick, ~~wh~~ white, apex pruinose, slightly fibrillose, stuffed or hollow, equal. Veil ~~no~~ none.

Spores 12-15 x 6-7 μ , subellipsoid.

Type on sandy soil, in open places, Karner, Albany County, New York, October.

HEBELOMA SORDIDULUM (Pk.) Sacc.

On sandy soil, Karner, N.Y., leg. Peck, October

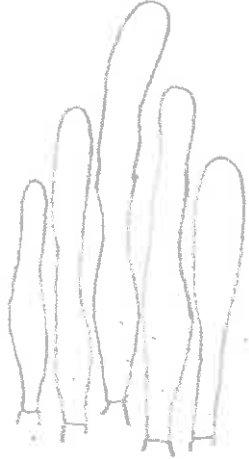
Type (Feb. 17, 1973)

Spores (9)11-14(16) x (5)5.5-7 μ , inequilateral in profile, fusoid to subovoid in face view, some obscurely truncate, pale yellowish brown in 2% KOH, wall 0.25 μ thick, minutely rugulose to nearly smooth. Basidia 20-25 x 6-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 32-50 x 5-7(9) μ , subcylindric to subclavate, at times ventricose downward, at the middle, or above and clavate. Gill trama of subparallel hyphae, 5-12 μ broad. Pileus trama radial. Pileus cuticle an ixocutis; hypodermium a cell-zone. Stipe cuticle of repent, dry hyphae. Clamp connections not observed.

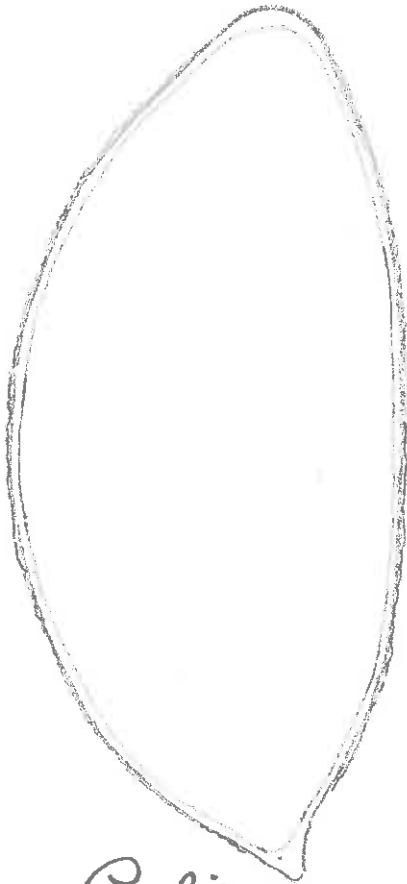
When soaked in 95% alcohol, then water, the odor is raphanoid.

Hebeloma sordidulum (Pk.) Sacc.

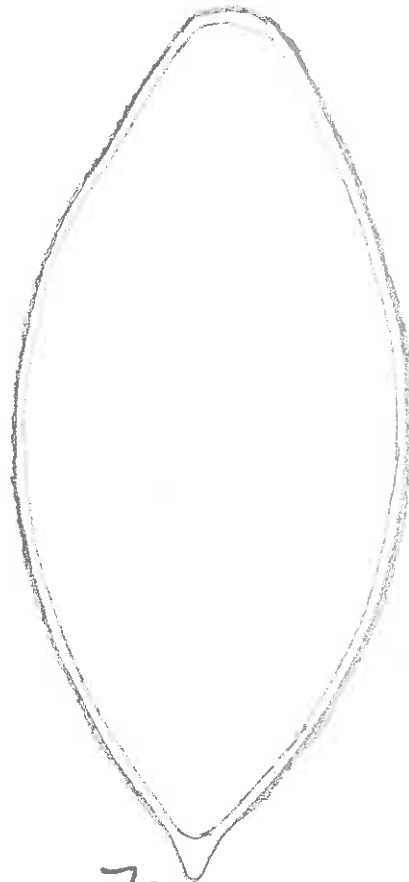
Type



Ch x 1000



Profile



Face

Spores x 8000

Smith - 64680

HEBELOMA SPHAGNICOLOR^a sp. nov.

On sphagnum, Mud Lake Bog, Wash. County, Michigan, October 16,
1961 (H. elongatum?, Smith probably meant elatum)

Notes by Smith

Pileus 2-5 cm broad, obtuse with an inrolled margin, becoming convex to plane or the margin elevated and wavy, with or without an umbo, dull "verona brown" with a pallid margin, in age becoming more or less cinnamon buff, often near "saya brown" but with more "clay color" especially in age, viscid. Context thick on the disc, white; odor and taste strongly of radish (noted also when dried and sectioned); KOH - 0; FeSO₄ - pale olivaceous brownish.

Lamellae adnate to adnexed or short-decurrent, pallid becoming "clay color" or darker, close, narrow to moderately broad, edges eroded.

Stipe 6-12 cm long, 10-15 mm thick at apex, pallid, lower portion becoming brownish in age, equal or slightly bulbous and white-mycelioid at base, thinly fibrillose, apex fibrillose-pruinose, at times twisted-striate. Veil none.

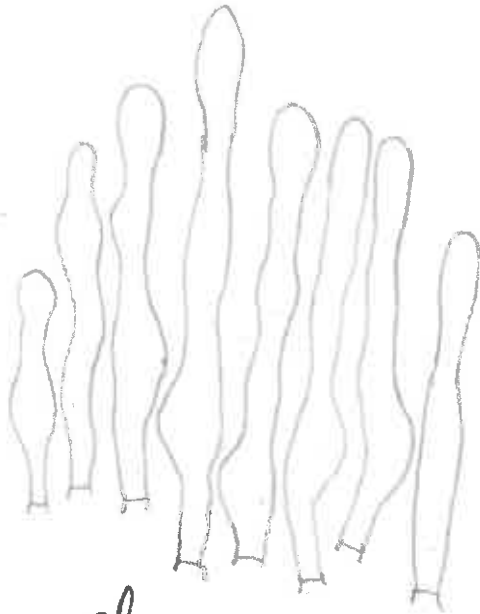
Notes by Hesler

Spores 8.5-10.5 x 4.5-5.5(6) μ , inequilateral in profile, subovoid to subfusoid in face view, wall 0.4 μ thick, minutely rugulose, yellowish brown in 2% KOH. Basidia 26-32 x 6-7 μ , (2)4-spored. Pleurocystidia none; cheilocystidia 30-72 x 5-9 μ , subcylindric, ventricose below usually on one side.

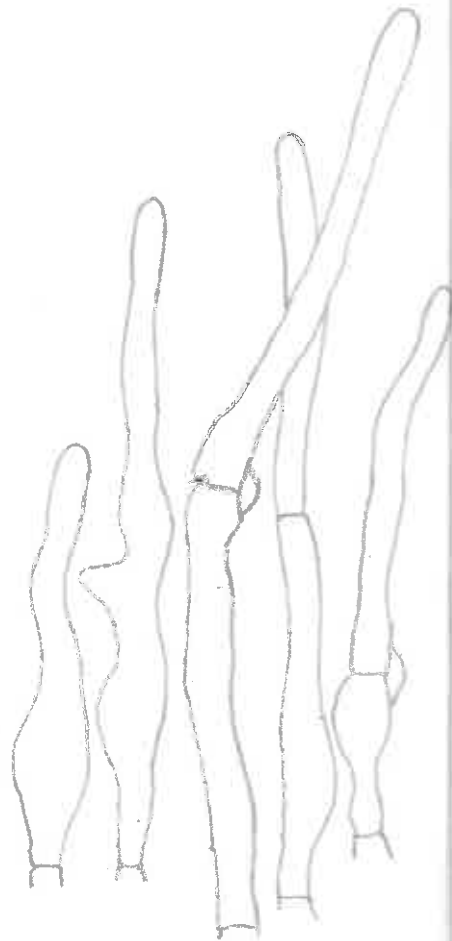
Gill trama of subparallel hyphae, 5-8 μ broad. Pileus trama of radially-disposed but somewhat interwoven hyphae, 5-12 μ broad. Pileus cuticle an ixocutis, hyphae 1.5-4 μ broad. Hypodermium a brownish cell-zone. Stipe cuticle a dry, pallid-grayish zone of thick-walled hyphae, the surface bearing tufts or a turf of caulocystidia, 55-127 x 7-10 μ , somewhat similar to caulocystidia, often septate and with an occasional clamp connection.

Helveloma sphagnicolum sp. nov.

Sm-64680 - Fyfe



Ch x 1000



Caule x 1000
(a few clamps, +
septa)



Profile

Face

Spores x 8000

SM-84886

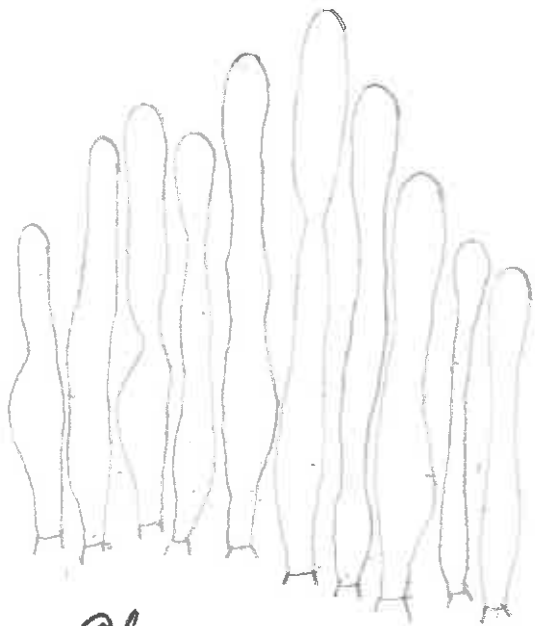
PHOTO

HEBELOMA (~~CRUSTULINIFORME~~ var.) SPHAGNOPHILUM (Kauff.) stat. nov.
Mud Lake, Washtenaw Co., Michigan, on Sphagnum, October 20, 1906

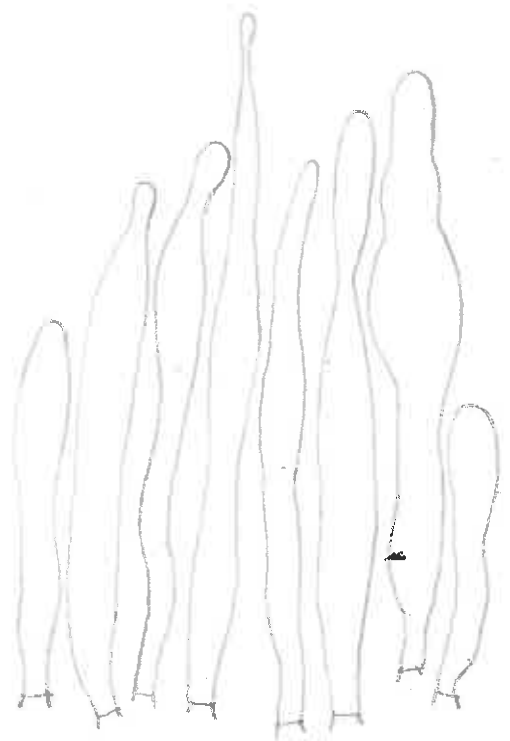
Notes by Hesler - TYPE

Spores 9-11 x (5)5.5-6 μ , inequilateral in profile, subovoid in face view, wall 0.4 μ thick, minutely rugulose, yellowish with a tint of brown in 2% KOH. Basidia 25-28 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 42-74 x 4-7 μ , subcylindric, often subcapitate, usually more or less ventricose below, in tufts. Gill trama slightly interwoven. Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium of brown radial hyphae. Stipe cuticle a distinct yellowish brown, dry zone, the surface bearing tufts or a turf of caulocystidia, more or less similar to cheilocystidia, 38-90 x 6-12 μ . Clamps present.

Helvoma (*crustuliniforme* var.) *sphaerophilum* (Kauff.)
stat. nov.
Type (Em-84886)



Ch x 1000



Caulo x 1000



Profile

Face

Spores x 8000

7968

HEBELOMA [CRUSTULINIFORME] f. SPHAGNOPHILUM (Kauff.) stat. nov. 2

Agar. Mich., p. 477. 1918.

whitish, disc tawny;

Pileus 4-7 cm broad, [^]gill edges distill drops. Stem 7-9 cm x 5-8 mm. Pleurocystidia none; cheilocystidia slender, slightly thickened below, cylindric above. Cortina none.

Odor of fresh plants similar to alcohol ethers.

Otherwise as in the Type. (from Kauffman)

Notes on Tenn-7968 (DAOM-50231)

Spores 9-11 x 5.5-7 μ , inequilateral in profile, sub-fusoid to subovoid in face view, wall 0.3-0.4 μ thick, minutely rugulose, no germ pore, yellowish to yellowish-brown in 2% KOH. Basidia 25-28 x 6-7 μ , (2)4-spored. Pleurocystidia none; cheilocystidia 37-93 x 4-5 μ , cylindric-filamentous, in tufts. Gill trama of subparallel hyphae.

Pileus trama of radial hyphae.

Pileus cuticle ~~subbrown, colorless zone bearing~~ an ixocutis; *hypodermium a brown cell-zone.*

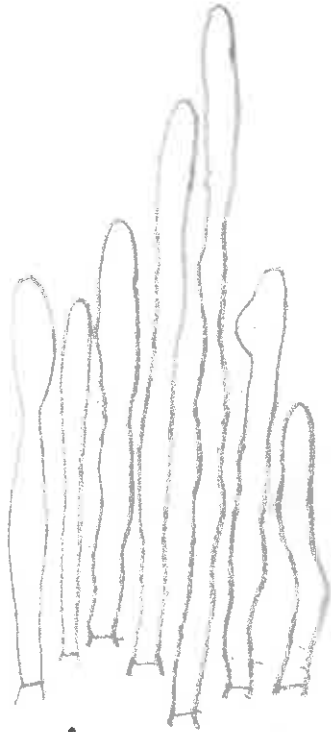
Stipe cuticle of dry repent hyphae, the surface bearing more or less a turf of caulocystidia, which are septate, at times forked. Clamp connections ~~present~~ *(see Smith's notes) ..*

~~Spore ornamentation and~~ ⁷ *hypodermium* the pileus ~~cuticle~~ structure in H. ~~form~~ sphagnophilum differs markedly from that of ~~var.~~

~~crustuliniforme (TENN-16572, det. Smith).~~ *the Jones collection (7968) from Canada. His collection is not same as Kauffman's sphagnophilum.*

Hebeloma crustuliniforme var. *sphagnophilum* Kauff.
Tern 7968 (Canada)

Not same kind
of hypodermium as
in the Type.



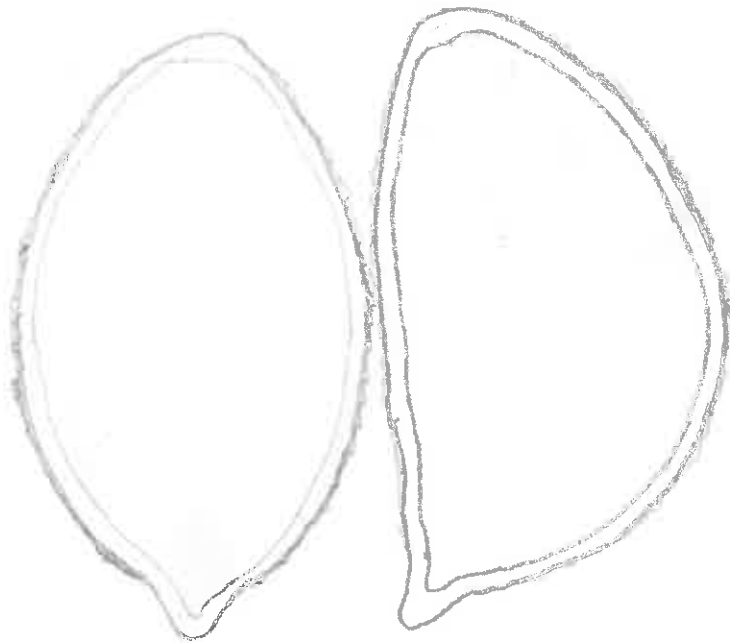
Ch $\times 1000$



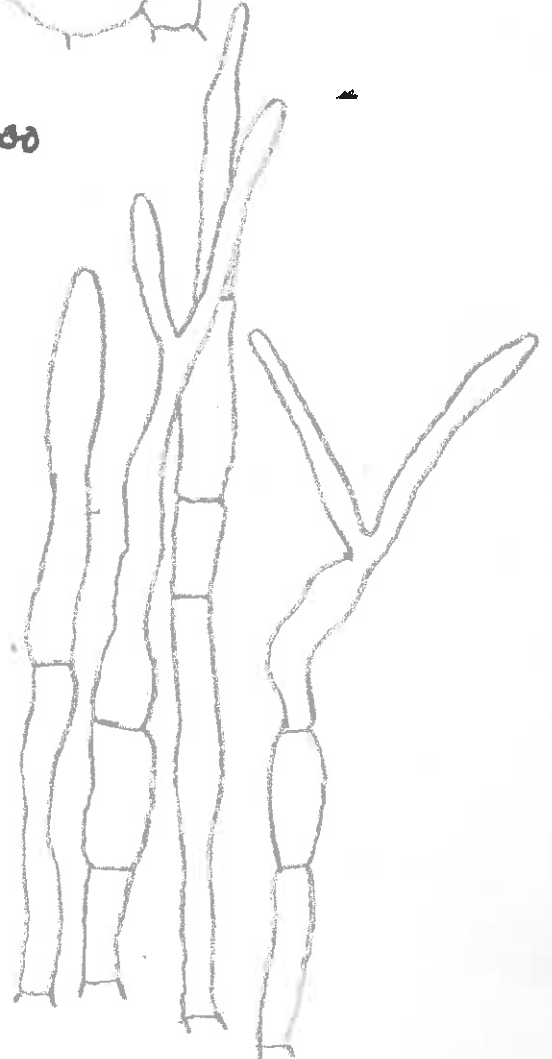
Pileus
Cuticle $\times 1000$

Cuticle

Hypodermium
(cellular)



Spores $\times 8000$



Caulis

HEBELOMA SPOLIATUM (Fr.) Karsten

Agaricus spoliatus Fr., Epicr. Myc., p. 182. 1838.

(Description translated from Fries' Hymen. Europaei, p. 143. 1874.)

Pileus testaceous-alutaceous, plano-convex, obtuse, viscid, smooth, glabrous. Context odor not unpleasant.

Lamellae sub-free then attenuate-adnexed, whitish then dilute-ferruginous, rounded, broad, close.

Stipe 1-2 unc. (2.5-5 cm) long, 2 lines (4 mm thick), white, fuscous, equal, fistulose, firm, glabrous, apex pruinose, radicate. Veil none (Fries treats it under "group" II: "cortina primitus nulla").

HEBELOMA SPOLIATUM (Fr.) Karst.

Bidr. Finl. Nat. Folk 32:474. 1879

Agaricus spoliatum^S Fr., Epicr. Myc., p. 182. 1838.

(Deser. from Smith, Mycol, 30:33. 1938)

Pileus 2.5-5 cm broad, convex or obtusely umbonate, plane or broadly convex in age, "army brown" to "tawny", fading to "pale vinaceous buff", margin inrolled and whitish at first, viscid, opaque, glabrous. Context thick and cartilaginous, pale or dark watery brown; odor and taste none.

Lamellae rounded adnate, or in age rather broad and adnexed, pallid becoming "avelaneous" or brighter at maturity, close, narrow.

Stipe 6-9 cm long, 3-9 mm thick, whitish to pallid above, darker below (near "bistre" at times), longitudinally appressed silky, in age often/twisted striate. Veil none.

Basidia 4-spored.

Spores 7-10 x 4-5 μ, nearly smooth. / Pleurocystidia not differentiated; cheilocystidia 30-35 x 8-10 μ, cylindrical to clavate or the mid-portion slightly inflated. Pileus trama homogeneous beneath a thick gelatinous pellicle.

Gregarious under spruce, Lake Tahkenitch, Oregon, Nov. 11, 1935 (3430). This species resembles ~~Mycorhiza~~ Hebeloma lubriciceps Kauff. & Smith in stature, but is readily distinguished by the gelatinous pellicle over the surface of the pileus. The above collection represents the form figured by Fries and Bresadola. Ricken and Fries described it as having a long pseudorhiza.

Bruchet, gives it senan fungi.

Smith, ~~Bruchet, et al.~~ gives it as H. spoliatum (Fr.) Gill. senan Bres.

But, Dennis Drum + Hora, + Moore as H. spoliatum (Fr.) Karst.; over

Broucher gives the sensu range.

SPOLIATUM (Fr.) Karsten
Smith-1139 HEBELOMA ~~RUGOSUM xxxxxxxx~~

Gregarious among moss in cold bogs, Cheboygan County,

Michigan, October 11, 1934 (identified by AHS as spoliatum)

Notes by Smith (on Sm-1139)

Pileus 2-3.5 cm broad, convex with an inrolled margin young, expanding to broadly convex or nearly plane, viscid, glabrous, near "pinkish buff" on the disc, near avellaneous over the margin, colors more dingy if watery soaked and especially so after freezing.

Lamellae depressed-adnate, close, moderately broad, dull pinkish cinnamon, edges more or less serrate, lamellulae numerous.

Stipe 5-6 cm long, 3.5-5 mm thick, equal, solid rather brittle, apex mealy to pruinose, fibrillose below, longitudinally striate above, concolorous with gills above, becoming bister from the base up in age. ~~Hair sparse,~~
~~leaving fibrillose remnants on the stipe,~~

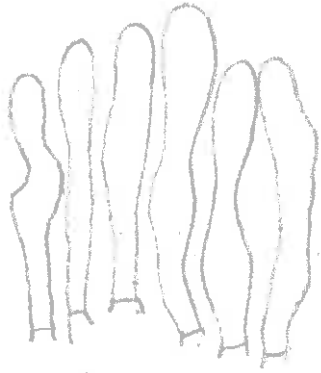
Notes by Hesler

Spores (8.5)9-10.5 x 5-6 μ , inequilateral in profile, subvoid in face view, occasionally subtruncate, sometimes with a "nose," wall 0.3 μ thick, rugose, yellowish brown in 2% KOH, reddish brown in Melzer's reagent. Basidia 26-32 x 6-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 32-45 x 5-7 μ , subcylindric, subclavate, to nine-pin, usually ventricose below or at the middle. Gill trama of slender,

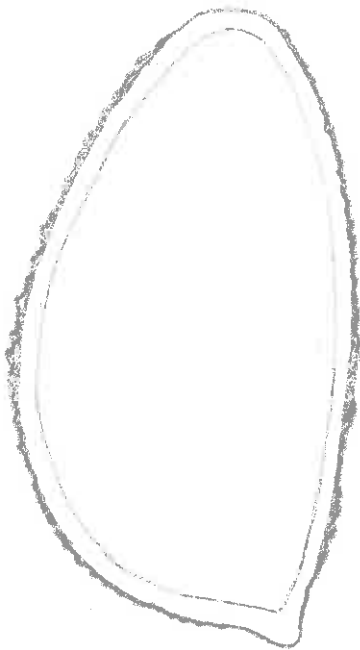
over

subparallel hyphae. Pileus trama radial. Pileus cuticle an
ixocutis. Hypodermium cellular. Stipe xcuticle of repent, dry
hyphae.

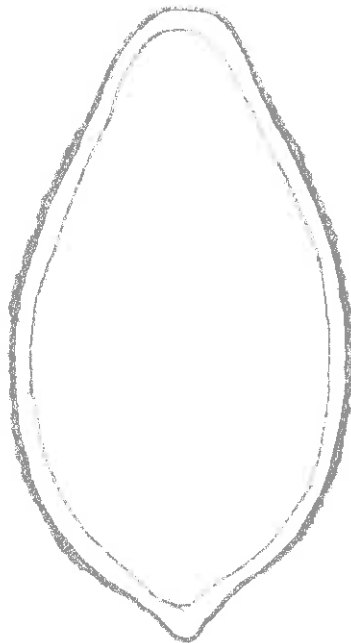
Hebeloma rugosum sp. nov. ~~spoliatum~~
Sm - 1139



Ch x 1000



Profile



Face

Spores x 8000

HEBELOMA SPOLIATUM (Fr.) Gillet ss Lange

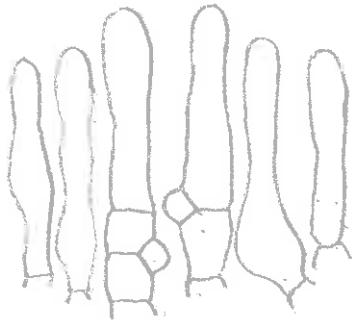
Bruchet Ly 64. BR. 38

Notes by Hesler

Spores 9-10.5 x 5-5.5(6) μ , somewhat inequilateral in profile, subvoid in face view, apices often subtruncate and with a slight "nose," wall 0.3 μ thick, rugose to $\bar{\mu}$ rugulose, at times slightly calyptrate, yellowish brown in 2% KOH. Basidia 28-34 x 7-8 μ , 4-spored, often subventricose below. Pleurocystidia none; cheilocystidia 28-40 x 4-8 μ , flask-shaped to subcylindric, often subventricose below, at times 1-2-septate. Gill trama of subparallel hyphae, 3-6 μ broad. Pileus trama of radial ^{and} more or less interwoven hyphae. Pileus cuticle an ixocutis. Hypodermium of cells. Stipe cuticle of brown hyphae. Caulocystidia more or less cylindric, 47-80 x 4-6 μ , scattered. Clamp connections on the cuticular hyphae of the pileus, the cheilocystidia, caulocystidia, and stipe epicuticular hyphae.

Bruchet (1970:109) says: Pileus cuticle: epicutis important but usual; cutis not very distinct; subcutis of rather large hyphae, well pigmented, presenting the appearance of a regular and coherent pseudoparenchymatous zone in radial section.

Hebeloma spoliatum (Fr.) Gill. ss Sange
Bruchet Fy. 64 Br. 38



Ch x 1000



Ch. Caulo - x 1000



Profile



Face

Spores x 8000

HEBELOMA SPOLIATUM (Fr.) Karsten

On sandy soil, under Quercus, Gelderland, The Netherlands,
leg. E. Kits v. Waveren, August 6, 1960

Notes Translated by Bas

Pileus up to 4.2 mm broad, hemispherical to plano-convex with a rounded conical umbo, at first with the margin inflexed, shiny flesh-red-brown, when young the color of red copper (more uniform than in Lange's plate), center not or hardly darker, margin short-striate when young, subviscid, pileipellis peeling up to center. Context tinged pale brownish in the cap, slightly pinkish, rather tough, not darker in base of stem. Odor weak and indistinct (not unpleasant); taste immediately bitter.

Lamellae adnexed, rather dark dull isabella-brown, with slight flesh-pink tinge with a pale edge, crowded, narrow (3.5 mm).

Stipe up to 6 cm long, 6 mm thick, with the "root" 55 mm long, very pale with a slight brownish tinge; somewhat sordid near the base, slightly thickened at the apex and base, sometimes the base bulbous, with scattered fibrillose scales on a fibrillose background, somewhat shiny, with a narrow cavity.

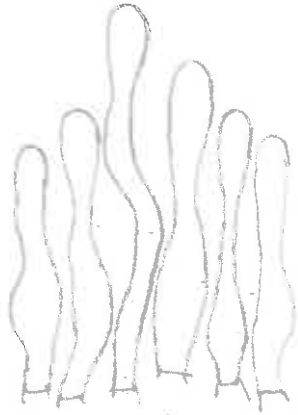
Notes by Hesler

Spores 9.5-11(13) x 5.5-~~7~~⁶⁽⁷⁾ μ , inequilateral in profile, subovoid to subfusoid in face view, wall 0.3 μ thick, rugulose, yellowish brown in 2% KOH. Basidia 25-30 x 5-6 μ , 4-spored.

Pleurocystidia none; cheilocystidia 32-50 x 5-7 μ , somewhat cylindrical to flask-shaped, often ~~enlarged on~~ ^{ventrally on} one side below. Gill trama of subparallel hyphae, 5-7 μ broad. Pileus trama of ~~loose~~ ^{radial, \pm} interwoven ~~loose~~ ^{massive} 5-20 μ hyphae. Pileus cuticle an ixocutis. Hypodermium a zone of brown cells. Stipe cuticle of repent dry hyphae. Clamp connections ~~none~~ ^{at the base of cheilocystidia.}

Hebeloma spoliatum (Fr.) Karsten

v. Waren, Gelderland, Aug 6, 1960



ch x 1000



Profile



Face

Spores x 8000

37589

HEBELOMA SPOLIATUM (Fr.) Karst.

On soil, in oak-pine forest, Shibahara, Otsu, Japan, leg.-det.

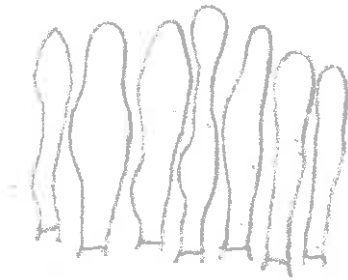
Hongo, no. 4060, October 29, 1969

Spores yellowish brown in 2% KOH, 8-9.5(10) x 5-5.5 μ , inequilateral in profile, ellipsoid to sublimoniform in face view, wall 0.25 μ thick, minutely rugulose, no germ pore. Basidia 24-28 x 5-6 μ , (2)4-spored. Pleurocystidia none; cheilocystidia 25-32 x 5-8 μ , clavate, ventricose or at times slightly inflated downward on one side, sparse and inconspicuous. Gill trama of slender, subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium a zone of brown hyphae*. Stipe cuticle of repent, dry hyphae. Clamp connections present, but inconspicuous, on the stipe epicuticular hyphae.

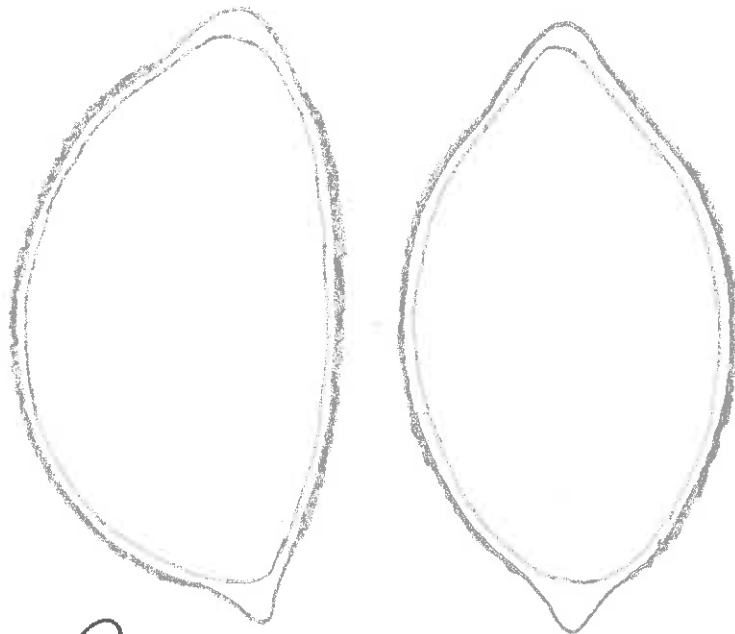
* Hypodermium cellular in European material studied.

Abelona spoliatum (Fr.) Karst.

37589 (from Hongq; Japan)



Ch x 1000



Profile

Face

Spores x 8000

Sm - 5050 HEBELOMA SPORADICUM Smith

On soil, under spruce, Saginaw Forest, Ann Arbor, Michigan,
leg.-det. A. H. Smith, No. 5050, October 7, 1936

Notes by Hesler (on isotype)

Spores 9-11(12) x 5-6(7) μ , inequilateral in profile, ~~*~~ subovoid to subfusoid in face view, wall about 0.3 μ thick, rugulose, yellowish brown in 2% KOH. Basidia 28-32 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 35-52(70) x 6-8(10) μ , clavate-subcylindric, the basal half or more slender, at times subventricose below or near the middle. Gill trama of subparallel to slightly interwoven, slender hyphae. Pileus trama of radial hyphae. Pileus cuticle a rather thin ixocutis (35-50 μ), hyphae slender (2-4 μ). Hypodermium a zone of hyphae with brown pigment. Stipe cuticle of repent, dry hyphae, bearing tufts of erect hyphae which at times are slightly cystidioid. Clamp connections occasionally found at the base of the cheilocystidia.

HEBELOMA SPORADICUM Smith

Mycologia 30:34. 1938

ILLUSTRATIONS:

Smith, Mycologia 30, figs. 1 p, 4.

Pileus 5-10(13) cm broad, convex, remaining broadly convex or becoming plane, at times the margin wavy and slightly elevated, "pale ochraceous buff" to "pinkish buff" or whitish, becoming darker at maturity, disc "cinnamon buff," "avellaneous" or "tawny olive," the margin remaining whitish or at times with dark honey colored zones or spots, margin long inrolled and pruinose, viscid, glutinous after rains, in age sometimes only subviscid. Context white, thick, firm; odor and taste not distinctive.

Lamellae adnexed, pure white, becoming "wood brown" as the spores mature, edges at first white crenulate, beaded with drops of moisture until near maturity, in age deeply eroded, close, narrow to moderately broad in large specimens.

Stipe 4-8(10) cm long, 10-20 mm thick, pure white, base sordid brownish in age, lower portion silky, upper portion at first pruinose, upper half or two thirds more or less scaly in age because of the breaking up of the cuticle, apex usually beaded with drops of moisture. Veil none.

Spores 9-12 x 5-6.5 μ , somewhat almond shaped, smooth or very slightly roughened. Basidia 4-spored. Pleurocystidia (not mentioned); cheilocystidia 50-70 x 8-10 μ , clavate above an

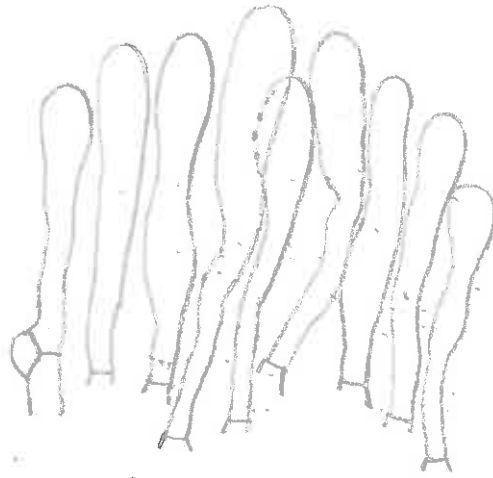
elongated basal portion, thin walled. Pileus trama homogeneous below a gelatinous pellicle.

In arcs, under spruce, Ann Arbor, Michigan, August 10, 1925, and October 1 and October 7, 1936, leg. Kauffman (type 5050).

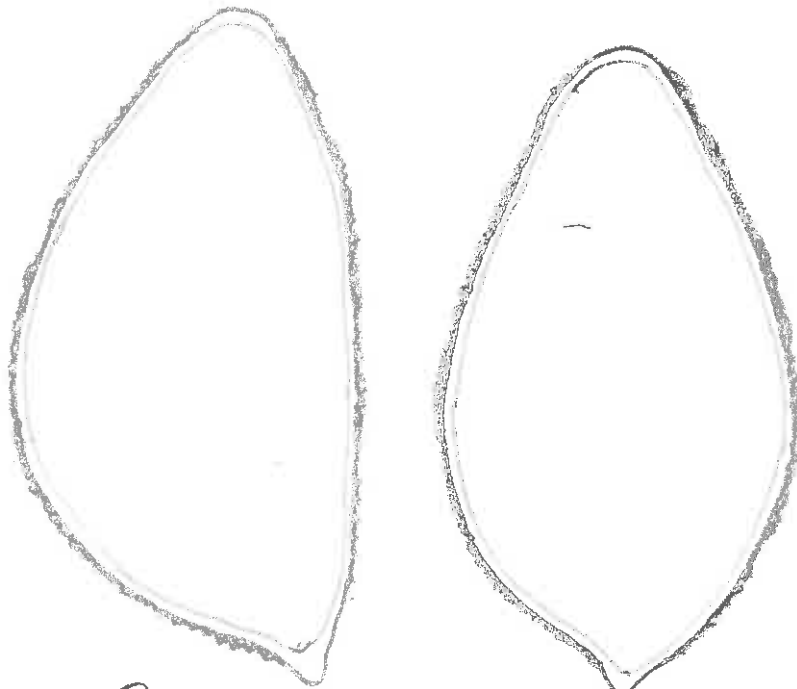
Distinguished by lack of veil, beads of moisture on gills and stipe, slightly rough spores, robust stature and scaly stipe, pale color, zoned or spotted pileus. H. crustuliniforme near but has an odor (radish). Has stature and scaly stipe of H. sinapizans but its (latter) colors, rougher spores and odor (radish) distinguish it.

Spores of H. sporadicum appear almost smooth when fresh, but after drying and re-moistening in KOH the outer coat remains quite wrinkled.

Hebeloma sporadicum Smith
Isotype (Smith - 5250)



Ch x 1000



Profile

Face

Spores x 8000

Smith - 27986 HEBELOMA SQUAMATUM sp. nov. PHOTO
Gregarious under conifers, East Fork, Salmon River, Mt.
Hood, Oregon, leg. Smith, October 20, 1947 (near
sinapizans; check avellaneifdia).

Notes by Smith

Pileus 6-12 cm broad, obtuse with an inrolled margin, becoming broadly umbonate, margin often remaining incurved, "warm sepia" to "verona brown" becoming "cinnamon" to "pinkish buff" in places when faded, margin becoming tinged fawn color (or more testaceous), glabrous or with a pallid hoary sheen when partly shaded, viscid, soon dry. Context pallid, rather firm; odor and taste fungoid (not radish).

Lamellae depressed-adnate in age, "pale vinaceous fawn" to "vinaceous buff" or "avellaneous," finally darker and vinaceous, close to crowded, narrow or finally moderately broad, edges uneven.

Stipe 5-8 cm long, 10-25 mm thick at apex, at first whitish, in age dull brownish from the base up, equal to clavate, soon hollow, upper half lacerate to squamulose. Veil none.

Spores 7-9 x 5 μ . Cheilocystidia present.

Notes by Hesler

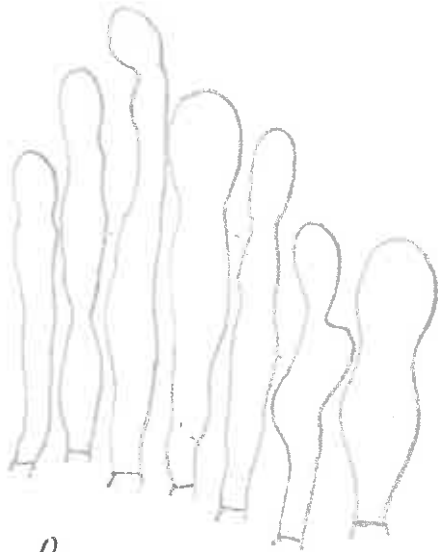
Spores 7.5-9 x 4.5-5 μ , inequilateral in profile, fusoid or subfusoid to subvoid, wall 0.4 μ thick, minutely rugulose, yellowish brown in 2% KOH. Basidia 24-28 x 6-7 μ , 4-spored.

Pleurocystidia none; cheilocystidia 33-62 x 5-10 μ , subcylindric and slightly constricted or subcapitate, often more or less ventricose on one or all sides. Gill trama of subparallel hyphae, 5-8 μ broad. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium a cellular zone: the cells longer in radial view than in tangential view. Stipe cuticle a pallid-grayish zone of thick-walled hyphae; caulocystidia larger and conspicuous, 50-108 x 7-12 μ , subcylindric to subclavate, in most the apices irregularly forked. Clamp connections not observed.

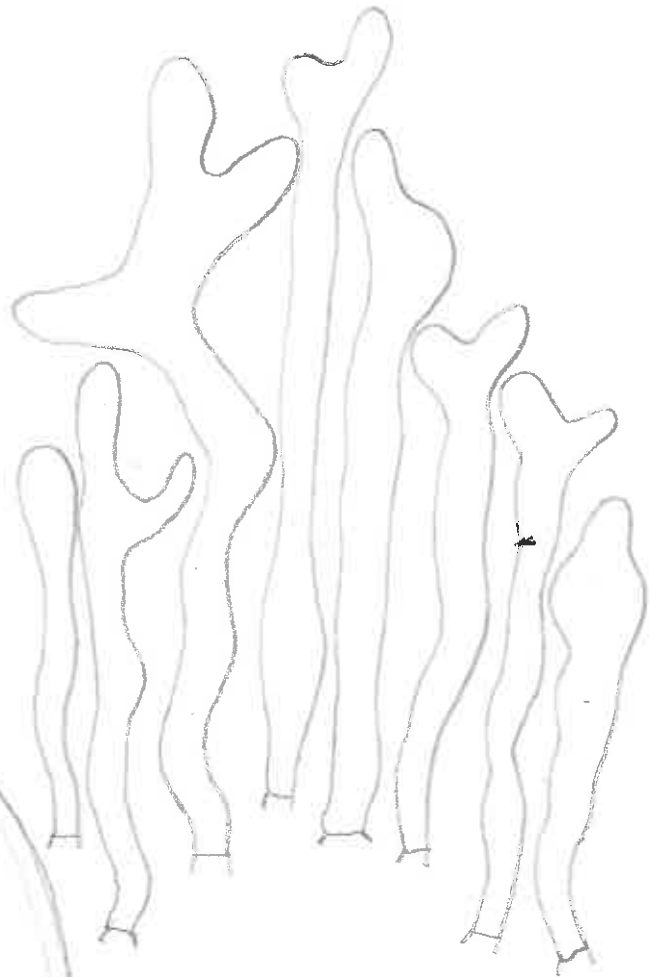
Smith's notes say: check avellaneifolia; perhaps he means avellaneum Kauff.

Nebeloma squamatum sp. nov.

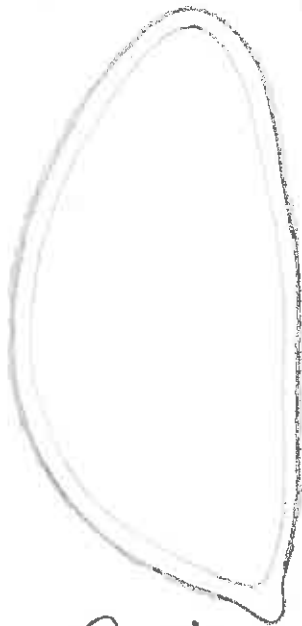
Jm-27986 - Type



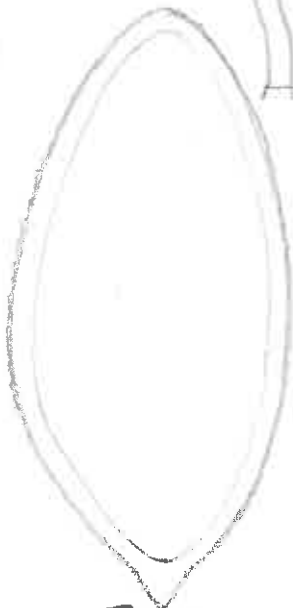
Ch x 1000



Cono - x 1000



Profile



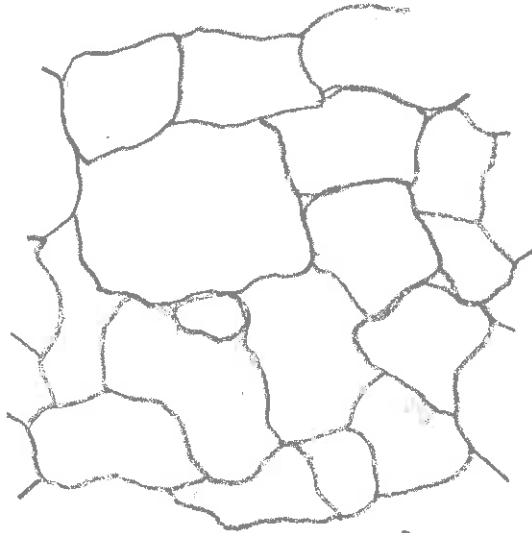
Face

Spores x 8000

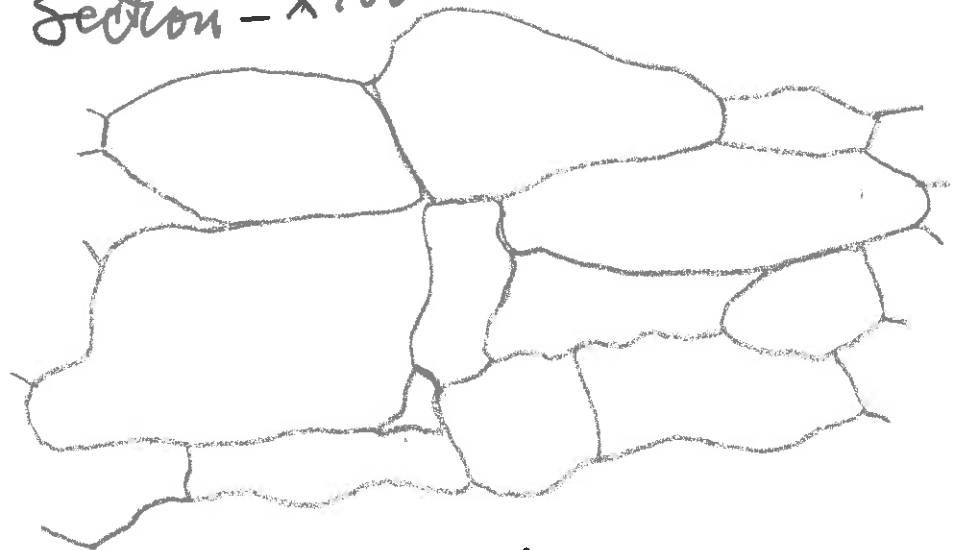
[more drawings,
next sheet]

Abeloma squamatum sp. nov.
Sm - 27986 - Fyfe

Pileus Hypodermium



Tangential Section - $\times 1000$



Radial Section - $\times 1000$

22215

HEBELOMA SQUAMOSIPES sp. nov.

On soil, in deciduous woods, Nales Creek, Sevier County,
Tennessee, October 30, 1955

Pileus 4-6.5 cm broad, convex then plane, "vinaceous-buff," appressed-fibrillose, margin with white veil-remnants, viscid. Context ~~thick~~ thick, white, firm; odor and taste of radish (not becoming bitter).

Lamellae rounded-adnate, nearly free, "snuff brown," medium broad, close, edges floccose-fimbriate.

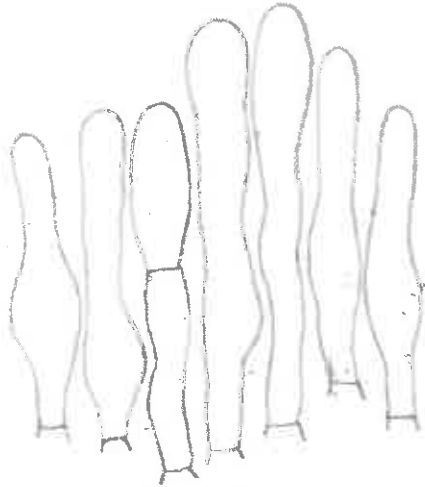
Stipe 5-7 cm long, 10-12 mm thick, white, conspicuously scaly, equal above the ovoid bulb, bulb 15-20 mm diameter, hollow. Veil white, copious, rather fugacious, leaving no annulus.

Spores in deposit "cinnamon brown," 10-13(14) x 6.5-7.5(8) μ , inequilateral in profile, limoniform in face view, with a "nose," 0.5 μ thick, rugose, often more or less calyptrate, yellowish brown in KOH. Basidia 26-30 x 7-9 μ , 4-spored. Pleurocystidia none; cheilocystidia 38-57 x 7-10 μ , cylindrical-clavate, more often ventricose or enlarged toward the base, or flask-shaped, rarely septate. Gill trama of slightly interwoven hyphae, 3-7 μ broad; subhymenium of narrow (2-4 μ) hyphae, rather short-celled. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium a brown hyphoid zone. Stipe of dry repent hyphae. Clamp connections not observed.

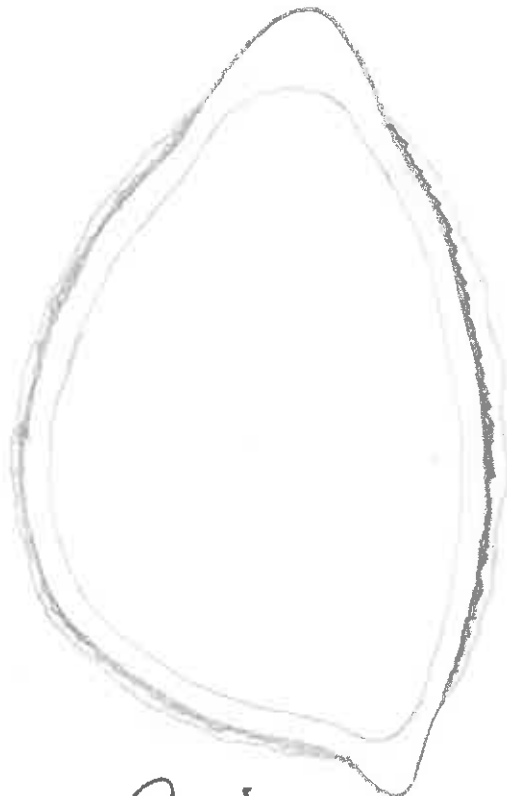
The dried material, when soaked in 95% alcohol and then water, gives off a raphanoid odor.

Heloloma squamosipes sp. nov.

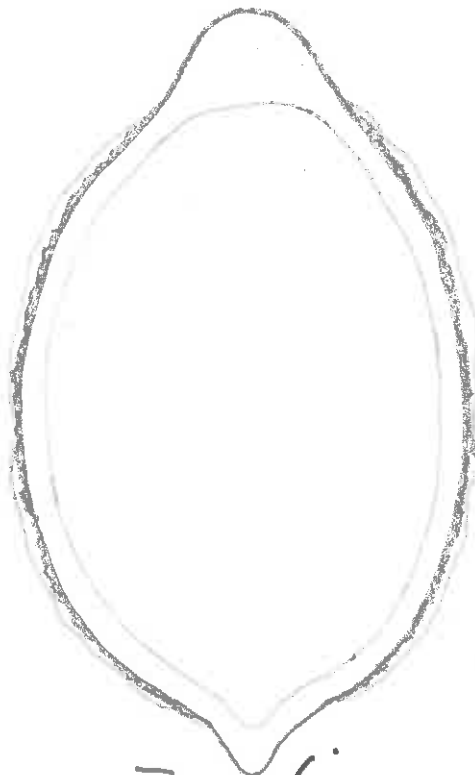
22215 - Type



Ch x 1000



Profile



Face View

Spores x 8000

HEBELOMA STELLATOSPORUS ?

Leg. by Peck, East Berne, N. Y., August. On the packet it is labelled Ag. (Hebeloma); inside on a piece of paper it is labelled Ag. stellatosporus?

Notes by Hesler

Spores 7-10 x (4.5)6-8 μ , somewhat angular, strongly nodulose. Pleurocystidia none found; cheilocystidia 20-40 x 8-15 μ , more or less inflated-clavate, clavate-cyst-like, obpyriform. Pileus cuticle of repent, dry hyphae bearing tufts of brown, thick-walled, septate hyphae, at times more or less constricted at septa, the cells 10-40 x 7-15 μ , the terminal elements sometimes as clavate pileocystidia.

This is doubtfully labelled H. stellatosporus. Kauffman (1924) treats stellatosporus as an Inocybe, and reports pleurocystidia 65-75 x 15-20 μ . I could not find pleurocystidia, even after several sets of sections were made.

The Type of H. stellatosporus could not be located at Albany.

Sm-9339

HEBELOMA ~~SPERICUM~~ *stercoreum* sp. nov.

PHOTO

Gregarious on cow dung, Crescent City, California, leg.

Smith, December 3, 1937

Notes by Smith

Pileus 3-7.5 cm broad, obtuse to convex, broadly convex in age, "verona brown" to "cinnamon" or darker reddish brown on the disc, margin usually paler, not hygrophanous but fading slowly to "pinkish buff," glabrous, sometimes radially rugulose, margin inrolled and very faintly pruinose or cottony fibrillose, viscid. Context whitish to pallid, thin toward the margin; odor faint but not distinctive, taste bitterish.

Lamellae adnate becoming adnexed, pallid brownish, becoming "Rood's brown" to "walnut brown," almost subdistant in young caps then close, broad, edges even.

Stipe 3-6 cm long, 4-9 mm thick, whitish above, brownish below, becoming bister from the base upward, apex with small innate scales, rather densely appressed silky fibrillose overall, at times more or less fibrillose-scaly overall, equal, solid or with a narrow pith. Veil rudimentary, observed only on caps more or less 1 mm from stem.

Spore 7-9 x 4-5 μ . Cheilocystidia filamentous. Pileus cuticle a gelatinous pellicle.

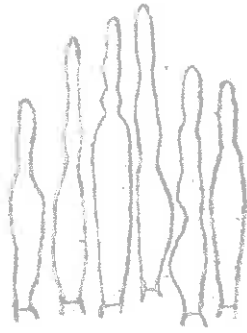
Habitat and small spores should distinguish it.

Notes by Hesler

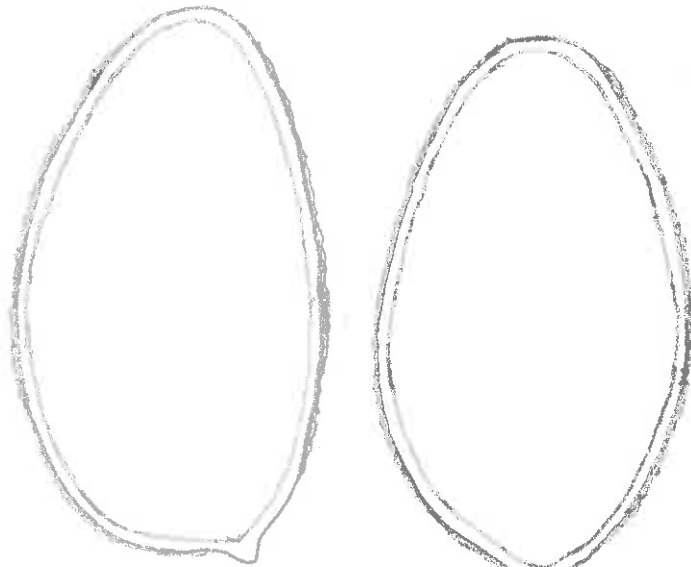
Spores 7-9 x 4-5 μ , inequilateral in profile, subovoid to subellipsoid in face view, wall 0.4 μ thick, minutely rugulose, some subtruncate at apex, pale yellowish brown in 2% KOH. Basidia 27-34 x 6-7 μ , (2)4-spored. Pleurocystidia none; cheilocystidia 28-38 x 4-5 μ , subcylindric and sub-ventricose on one side below, or subclavate with a neck, not very conspicuous. Gill trama of subparallel hyphae, 3-7 μ broad. Pileus trama of radially-disposed hyphae. Pileus cuticle an ixocutis, 50-80 μ thick. Hypodermium of brown-pigmented cells. Stipe cuticle a dry, pallid zone of thick-walled hyphae; caulocystidia not found.

Near ~~Tenn 24608~~, (Sect. Hebeloma) H. compressipes, which grows on soil, is hygrophanous and dries in radial streaks, odor and taste of radish, gills become "snuff brown," veil rather conspicuous, slightly larger and differently shaped cheilocystidia.

Febeloma ~~*capitatum*~~ *sp. nov.*
strobiliforme
Sm-9339 - Type



ch x 1000



Profile

Face

Spores x 8000

HEBELOMA STERLINGII (Pk.) Murr.

N. A. Flora 10:217. 1917

Inocybe sterlingii Pk., Bull. Torrey Club 33:217. 1906.

Pileus solitary or gregarious, 1.5-2.5 cm broad, convex to nearly plane, gray or clay-colored, center brownish, glabrous, slightly viscid at the center when moist, margin incurved and obscurely fibrillose-appendiculate. Context taste farinaceous, edible.

Lamellae adnexed, pallid, becoming cinnamon, thin, broad, crowded.

Stipe 2.5-3.5 cm long, 2-4 mm thick, white, interior bay-red, solid, floccose-fibrillose, equal or slightly thickened at the base. Veil fibrillose or webby, adhering partly to the margin of the pileus and partly to the stipe on which it forms a slight fibrillose evanescent annulus.

Spores 10-12 x 6-8 μ , ellipsoid, smooth.

Type from Trenton, New Jersey, under spruce trees (NYS).

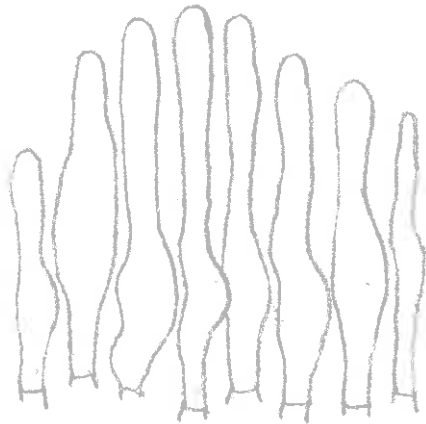
HEBELOMA STERLINGII (Pk.) Murr.

Under spruce, Trenton, N.J., leg. E. B. Sterling, Nov. 1905

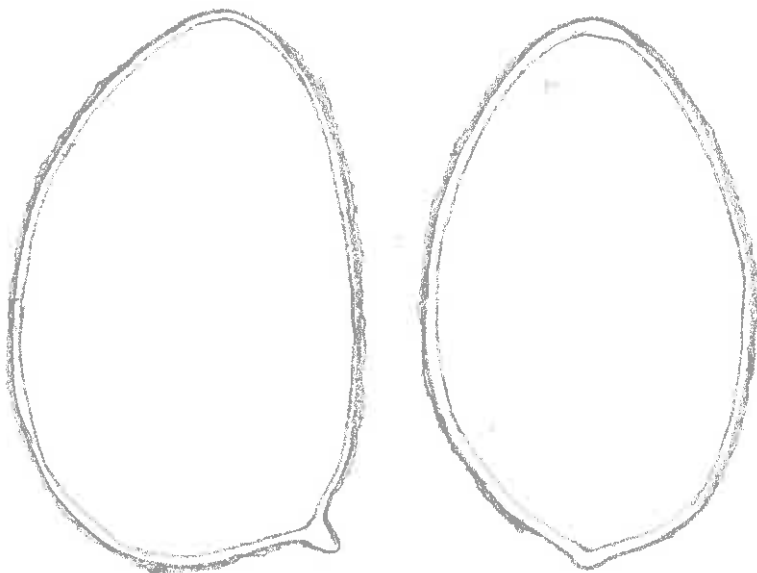
Type

Spores 9-12 x 5.5-7 μ , inequilateral in profile, ellipsoid to subovoid in face view, wall 0.3 μ thick, obscurely rugulose, pale yellow in 2% KOH. Basidia 28-32 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 32-53 x 4-8 μ , cylindric, usually slightly enlarged near the base or ventricose. Gill trama of narrow subparallel hyphae. Pileus trama of radially disposed hyphae. Pileus cuticle an ixocutis. Hypodermium cellular. Stipe cuticle of repent dry hyphae. Clamp connections widely scattered, on the cuticular hyphae of both the pileus and the stipe.

Helvella sterlingii (Pk.) Murk.
(= Inocybe sterlingii (Pk.)



Ch x 1000



Profile

Face

Spores x 8000

Smith - 19282

HEBELOMA STRIATULATUM sp. nov.

Scattered on swampy ground, East Fork, Salmon River, Oregon,
leg. Smith, September 30, 1944. (near lubriciceps but
cap not lubricous)

Notes by Smith

Pileus 2-5 cm broad, plane to broadly convex, at first with an inrolled margin becoming nearly plane or retaining a slight umbo, hygrophanous, color between "cinnamon" and "clay color," fading to "pinkish buff" on the disc, margin remaining moist and faintly striatulate, finally fading to near "avellaneous," slightly viscid, margin, inrolled and glabrous. Context firm, brittle, concolorous with surface, unchanging when bruised; odor slightly fungoid, taste not distinctive.

Lamellae sharply adnexed, pallid brownish when young, in age "saya brown," medium broad, close but distinct, two tiers of lamellulae, edges even but becoming eroded.

Stipe 4-6 cm long, 3-6 mm thick at apex, terete or compressed, whitish, gradually clay color to bister from base upward, solid, stuffed with paler pith, glabrous to silky near apex. Veil none.

Spores 9 x 5 μ . Cheilocystidia obtuse. Cap trama homogeneous.

Notes by Hesler

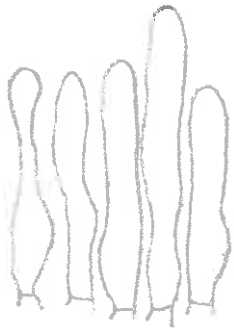
Spores (7)8-9.5 x 4.5-5.5 μ , inequilateral in profile,

subvoid in face view, many obscurely subtruncate, wall 0.4 μ thick, minutely rugulose, yellowish brown in KOH. Basidia 26-30 x 6-7 μ , (2)4-spored. Pleurocystidia none; cheilocystidia 28-42 x 4-5 μ , subcylindric, ventricose on one side below. Gill trama of slightly interwoven hyphae, 2-4(8) μ broad. Pileus trama of radial hyphae. Pileus cuticle a thin ixocutis, 15-24 μ thick. Hypodermium a brown cellular zone. Stipe cuticle of brown, repent, dry hyphae, with widely scattered caulocystidia, similar to cheilocystidia. Clamp connections not observed.

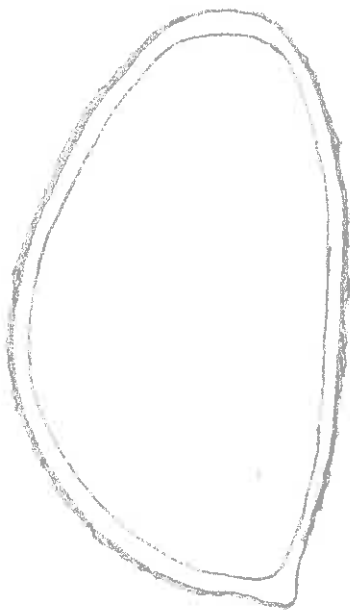
Smith (in notes, black binder) records pileocystidia, 30-50 x 9-14 μ , clavate, ventricose, apices broadly rounded, thin-walled, subgelatinous.

Heloloma striatulum sp. nov.

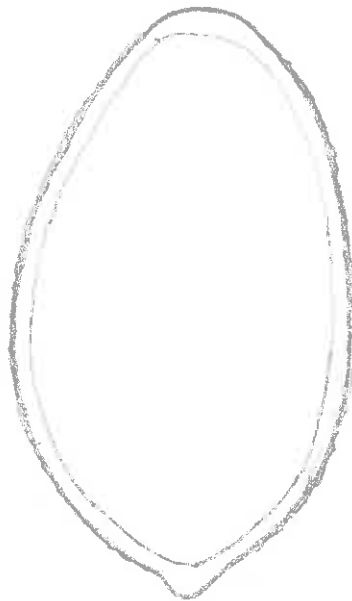
Sm-19282 - Type



ch x 1000



Profile



Face

Spores x 8000

Bas-1354

HEBELOMA STROPHOSUM (Fr.) Sacc. (?)

Under pine, Holland, leg-det Bas, No. 1354, October 31, 1957

Notes by Bas

Pileus 1.9-4.4 cm, when young plano-convex, soon depressed in the center, margin slightly undulating, more or less uniformly flesh-pink tinged, rusty reddish brown, the center sometimes slightly deeper, moist or subviscid, with sparsely appressed whitish velar fibrils along the margin. Context white in the cap, pale sepia tinged in the stem, later darker. Odor raphanoid when crushed, taste bitter.

Lamellae slightly attenuate-adnate to deeply emarginate, 38-54, 3(7) lamellulae, rather distant, remarkably irregular in width when mature, remarkably thick at the base, when young pale beige, later rusty reddish beige with whitish irregular edges, soon ventricose.

Stipe 3.5-6.7 cm long, 315-7 mm thick, strongly isabella fibrillose with thick ochraceous zones of velum, cylindric or slightly attenuated downward, sometimes slightly strangulate below the cap, often wavy, soon hollow, near the base darker brown with age.

Notes by Hesler

Spores 8.5-11 x 5-6 μ , inequilateral in profile, sub-ellipsoid in face view, wall 0.3 μ thick, minutely rugulose, pale yellowish in 2% KOH. Pleurocystidia none; cheilocystidia 34-63 x 5-7 μ , filamentous and more or less of uniform diameter

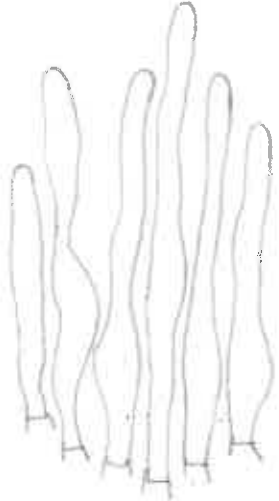
Also change
to stipe

or subcylindric and enlarged downward on one side. Gill trama of slender subparallel hyphae. Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium a zone of brown cells. Stipe cuticle of dry repent hyphae.

Bas labelled the species-epithet in pencil which suggests to me that he had reservations as to its identity. The spores of Bas-1354 are larger and the lamellae broader and more distant than in his 2458. These two differences would seem significant.

Nebeloma strophosum (Fr.) Sacc. (?)

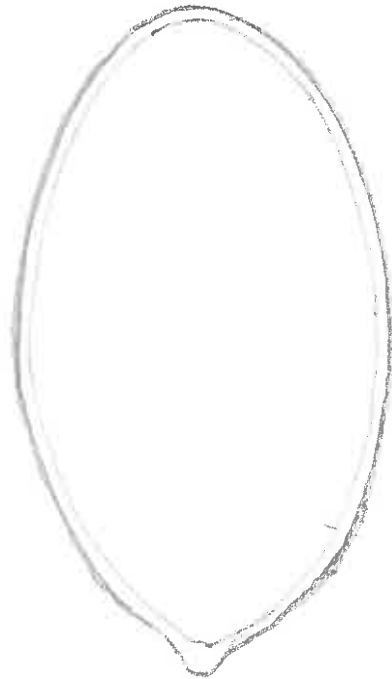
Bas. 1354



Ch $\times 1000$



Profile



Face

Spores $\times 8000$

(Bas. 2458)

HEBELOMA STROPHOSUM (Fr.) Sacc.

On peaty soil, among grass, under Salix, Rotterdam, Holland,
leg.-det. Bas, No. 2458, September 30, 1961

Notes by Bas

Pileus when young dark reddish brown, covered with thick woolly isabella veil for 1/3 from margin toward center, pileus becoming paler. Odor weak; after crushing somewhat sourish-raphanoid; taste distinctly bitter. Context pale; in the stem base pale sordid pinkish brownish.

Lamellae at maturity dark clay brown, edges whitish.

Stipe: the veil leaving no ring or zone, but a more or less shiny pale isabella covering of stem that from the base up becomes sordid isabella to sordid rusty.

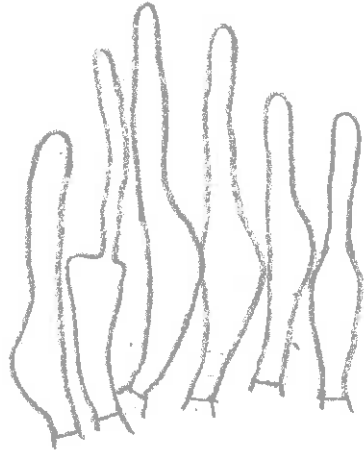
Notes by Hesler

Spores 7-9.5 x 4-5 μ , slightly inequilateral in profile, subfusoid in face view, wall 0.3 μ thick, very slightly rugulose (at times appearing nearly smooth), pale yellowish in 2% KOH. Basidia 22-26 x 5 μ , 4-spored. Pleurocystidia none; cheilocystidia 37-50 x 6-8 μ , subcylindric, enlarged on one side below, occasionally flask-shaped. Gill trama of slender subparallel hyphae. Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium of brown cells. Stipe cuticle of dry repent hyphae. Clamp connections on the pileus cuticular hyphae.

Moser (1967:263) gives the spores 7.5-9 x 4.5-6 μ .

Hebeloma strophocum (Fr.) Sacc.

Bas - ~~2450~~²⁴⁵⁸



ch x 1000



Profile



Face

Spores x 8000

HEBELOMA STROPHOSUM (Fr.) Sacc.

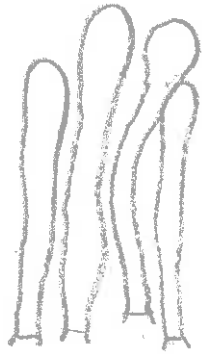
ex-Herb. Edinburgh, Denay Area, New Forest, leg. Watling

No. 155c, September 6, 1958

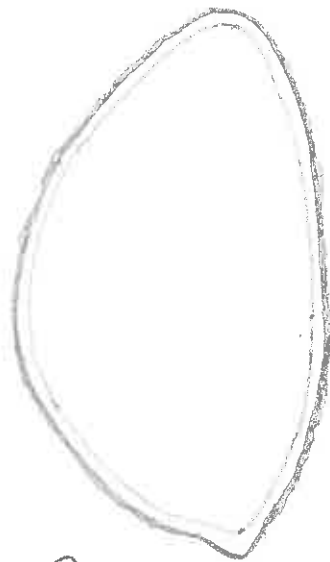
Notes by Hesler

Spores 7.5-9 x 5-5.5 μ , inequilateral in profile, subvoid to subellipsoid in face view, wall 0.3 μ thick, rugulose, a few obscurely subtruncate, yellowish brown in 2% KOH, reddish brown in Melzer's reagent. Pleurocystidia none; cheilocystidia 36-48 x 4-8 μ , cylindric, subcapitate or not, at times ventricose below. Pileus trama radial. Hypodermium of irregular brown cells, ~~S~~ seems to agree with other material studied.

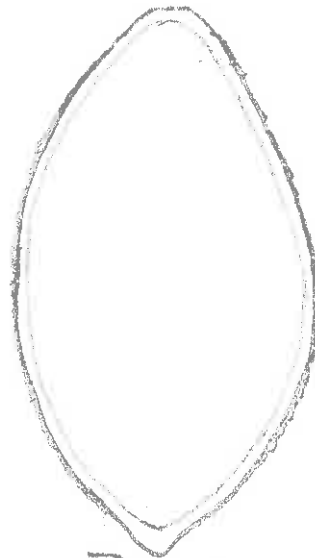
Hebeloma strophosum (Fr.) Face. (?)
Watling No. 155c, ex-Hert. Edinburgh



Ch x 1000



Profile



Face

Spores x 8000

Strophorum (Fr.) Sacc.

Sm - 14443

HEBELOMA (~~near HOLOPHAEUM?~~)

PHOTO

Gregarious under cedar and fir, Heart O' Hills, Port Angeles,
Washington, leg. Smith, 14443, June 19, 1939

Notes by Smith

Pileus 4-7 cm broad, obtuse, becoming broadly umbonate with an inrolled margin, in age plane or with the margin upturned forming a cup in some, surface "ochraceous buff" on disc, "pinkish buff" to "pale pinkish buff" toward the white pubescent margin, marginal area with one to several rows of coarsely fibrillose patches (glabrescent in some, and in others a single row of felty fibrils), fibrils near "cinnamon buff," glutinous when wet. Context thick, tapering slightly, pallid watery grayish brown; odor and taste slightly of radish.

Lamellae bluntly adnate, not seceding, at first "tilleul buff," becoming "vinaceous buff" and finally rusty brown, close (60-65), narrow to moderately broad (4-6 mm), equal.

Stipe 6-8 cm long, 8-18 mm thick, lower 2/3 covered by patches or zones of veil remnants, equal, solid. Veil leaving an apical, fibrillose ring.

Spores 7-9 x 4.5-5 μ , smooth, very pale yellowish under the microscope. Basidia 4-spored. Cheilocystidia 50-65 x 8-12 μ , very abundant. Pileus trama homogeneous below a gelatinous pellicle.

Spores 8-10 x 4.5-6 μ , ovoid to subellipsoid, very pale in KOH, smooth or nearly so, Basidia 4-spored. Pleurocystidia not seen; cheilocystidia 46-65 x 8-12 μ , fusoid-ventricose with a long nearly cylindrical often somewhat flexuous neck. Gill trama ~~is~~ homogenous, of subparallel hyphae. Pileus trama homogenous beneath a gelatinous pellicle or the region directly beneath the pellicle with slightly enlarged hyphae.

Gregarious to subcespitate under conifers, Mt. Angeles, Olympic Mts., Washington, June 19, 1939(14443, 14451); same locality, Sept. 21 & 22, 1941(17096, 17184).

Lange's illustration(1938) is excellent for small specimens.

Sm-14443

HEBELOMA STROPHOSUM (Fr.) Sacc.

Syll. Fung. 5:808. 1887

Pileus 3-7 cm broad, obtuse with an inrolled margin when young, becoming broadly umbonate to nearly plane or in age with an elevated and often wavy margin, viscid or glutinous when fresh, marginal area usually decorated with one or several rows of floccose-fibrillose patches of veil tissue, or streaked with fibrils, somewhat glabrescent, the veil remnants buff-colored, surface "cinnamon buff" to "ochraceous tawny" on the disc, paler toward the margin, yellowish brown on the disc, buff or pale buff along the margin), sometimes more or less clay color or even darker on the center. Context thick on the disc, thinner on the margin (6 mm), pliant, watery avellaneous; odor when crushed pungent to subraphanoid, taste slightly raphanoid to bitter.

Lamellae bluntly or depressed adnate, at times with a slight tooth, "tilleul buff" (pallid) when young, becoming "avellaneous" and finally "vinaceous buff" to "saya brown," or a darker more rusty brown, sometimes stained along the edges, edges even or becoming eroded, narrow to moderately broad, close.

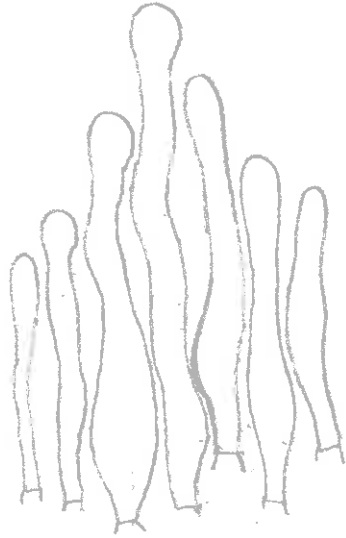
Stipe 5-8 cm long, 8-18 mm thick, pallid and silky above, darkening from the base upward, equal or narrow at the base, solid but becoming hollow. Veil well-developed, fibrillose, whitish, forming a conspicuous apical ring; universal veil covering the stipe up to the ring.

Notes by Hesler

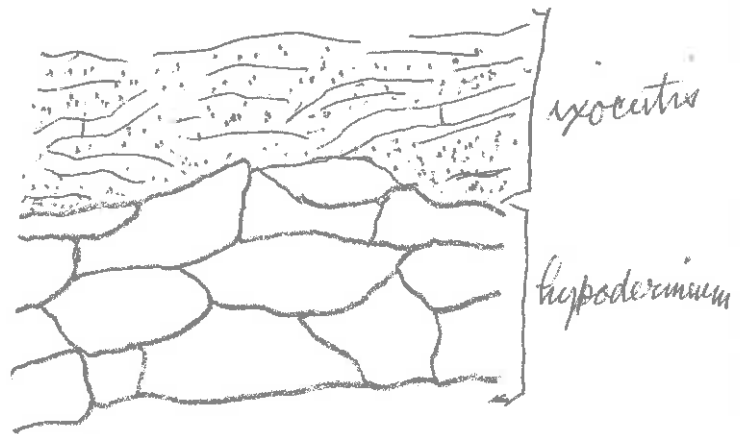
Spores 7.5-9 x 4.5-5.5 μ , inequilateral in profile, subellipsoid in face view, wall 0.25 μ thick, minutely rugulose to almost smooth, pale yellow in 2% KOH. Basidia 24-28 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 32-66 x 3-10 μ , subcylindric, base ventricose or not, apex subcapitate or not. Gill trama of slender, subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium a brown cell-zone. Stipe cuticle of dingy brownish, repent hyphae. Clamp connections few and inconspicuous.

Hebeloma strophoecum (Fr.) Sacc.

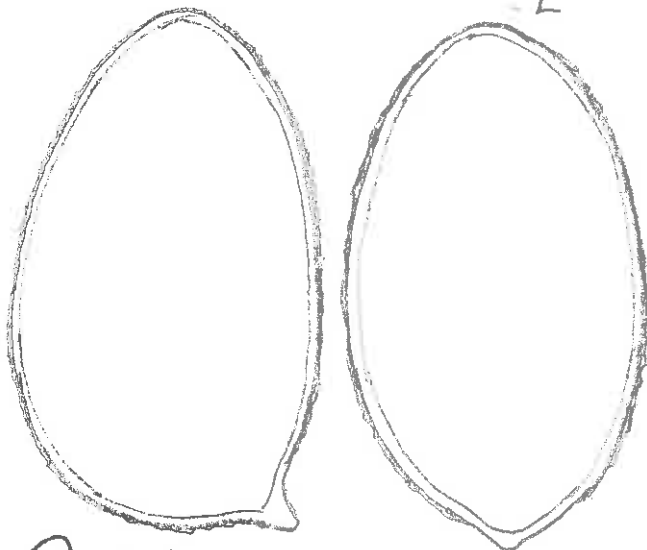
Sm. 14443



Ch x 1000



(Pileus) Hypodermium
x 1000
[radial view]



Profile

Face

Spores x 8000

Sm-86776

HEBELOMA STROPHOSUM (Fr.) Sacc.

Gregarious under brush, Island Lake, Washtenaw County, Michigan,
October 1, 1975 (near strophosum); det. Smith, confirmed by LRH.

Notes by Smith

Pileus 3-6 cm broad, obtuse to convex, becoming broadly convex to plane, margin inrolled at first, viscid, disc "warm sepia" to "verona brown", margin grayish from veil remnants arranged in patches or appendiculate. Context watery gray-brown, fading to pallid; odor and taste more or less sharp; FeSO_4 - gray in stipe base, KOH none on cuticle and context.

Lamellae adnate, more or less "tilleul buff" but soon a pale dull brown, slowly becoming vinaceous buff to "avellaneous", close, finally more or less broad, not spotting.

Stipe 4-8 cm long, 5-9 mm thick, white to pallid above the veil line, slowly avellaneous at base; FeSO_4 cortex whitish above, stuffed soon becoming hollow. Veil present leaving copious grayish fibrils on stipe, and as patches on or appendiculate to the pileus.

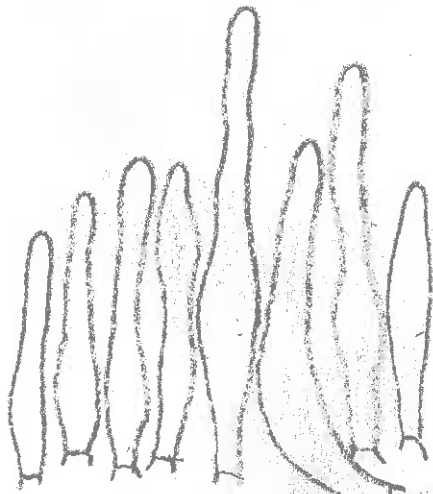
Notes by Hesler

Spores 7.5-9 x 4-5 μ , only slightly inequilateral in profile, ellipsoid in face view, nearly smooth to finely rugulose, very pale yellowish in 2% KOH. Pleurocystidia none; cheilocystidia 33-62 x 4-7 μ ,

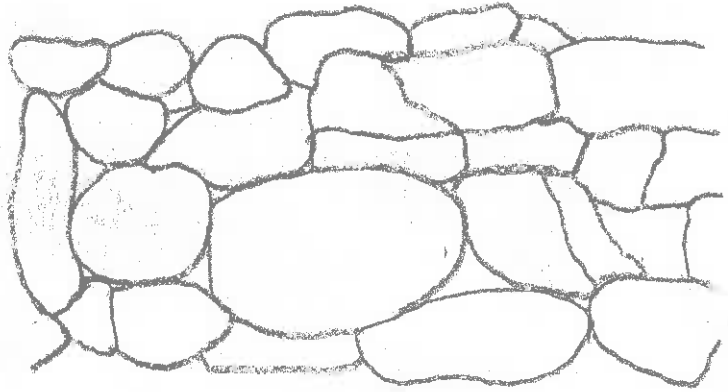
Sm-86776, Hebeloma strophosum (Fr.) Sacc., page 2

ventricose, rarely subfusoid, rather abundant. Gill trama of subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium cellular. Stipe cuticle of repent, dry hyphae. Caulocystidia in a turf or often in a palisade, 34-73 x 3-7 μ , cylindric, ventricose, or slender-clavate.

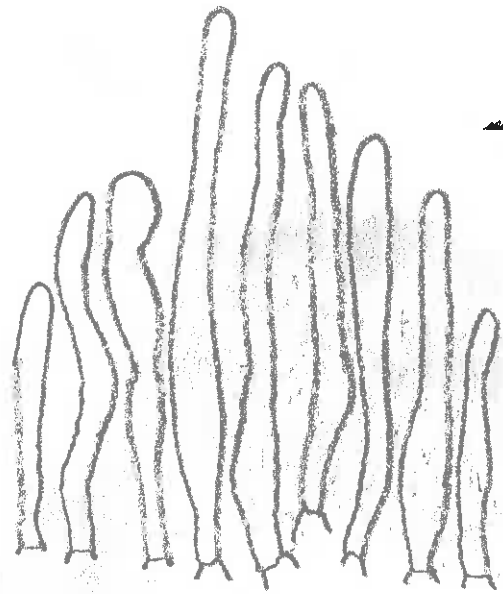
Hebeloma strophosum (Fr.) Sacc. c. Photo
Sm - 86776 Sensu J. Ränge



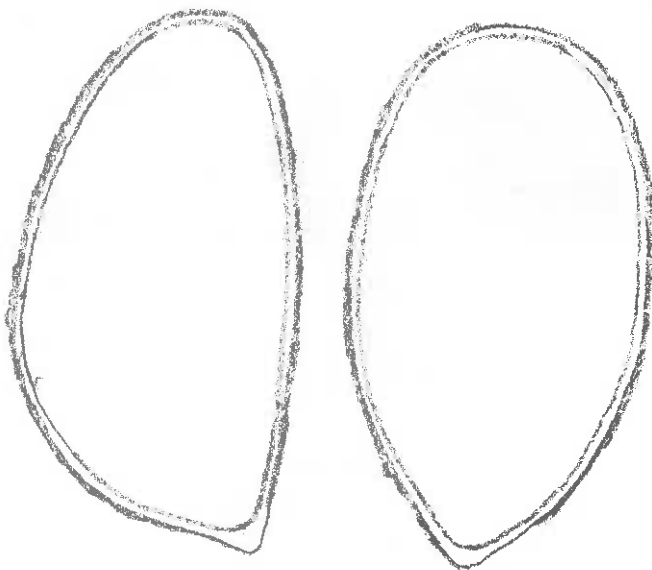
ch x 1000



Hypodermium x 1000



Conulo x 1000



Profile Face
Spores x 8000