



November 2013

Hebeloma Notebook 3

L. R. Hesler

Follow this and additional works at: https://trace.tennessee.edu/utk_hesler

Recommended Citation

Hesler, L. R., "Hebeloma Notebook 3" (2013). *L. R. Hesler's Mushroom Notebooks*.
https://trace.tennessee.edu/utk_hesler/65

This Hebeloma is brought to you for free and open access by the University of Tennessee Herbarium at TRACE: Tennessee Research and Creative Exchange. It has been accepted for inclusion in L. R. Hesler's Mushroom Notebooks by an authorized administrator of TRACE: Tennessee Research and Creative Exchange. For more information, please contact trace@utk.edu.

Sm-42918

HEBELOMA ABERRANS sp. nov.

On sandy soil, edge of dunes, Wilderness Park, Emmet County,
Michigan, September 21, 1953

Notes by Smith

Pileus 2-3 cm broad, convex becoming broadly convex, "syal brown" but appearing grayish from fibrils, decorated over the margin with thin veil-fibrils, margin fibrillose-appendiculate, viscid. Context watery brownish; odor and taste mild.

Lamellae adnate-seceding, "avellaneous" when young, becoming dull cinnamon, broad, subdistant, edges crenulate.

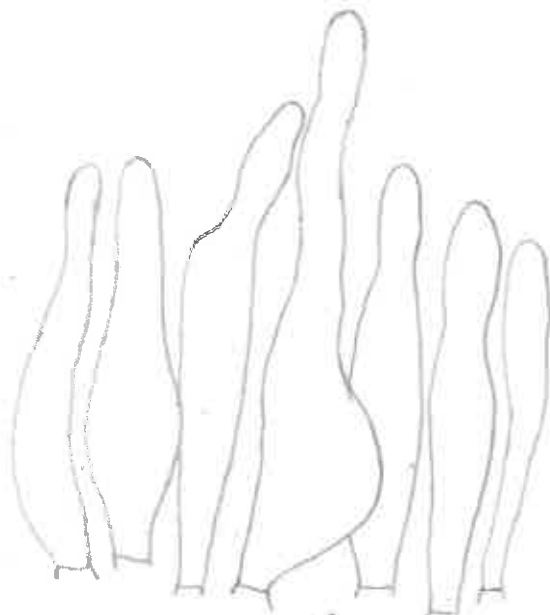
Stipe 3-5 cm long, 3-5 mm thick, apex pallid, base brownish, fibrillose, sand adhering to base but not bulbous, stuffed-solid. Veil fibrillose.

Notes by Hesler

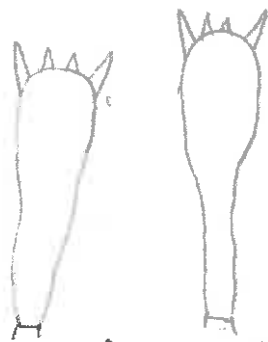
Spores 11-15.5 x 7-8.5 μ , very slightly inequilateral in profile, broadly ellipsoid in face view, wall 0.6-0.7 μ thick, very minutely rugulose, usually appearing smooth or nearly so, yellowish brown in 2% KOH. Basidia 34-38 x 9-10 μ , 4-spored. Pleurocystidia none; cheilocystidia 46-77 x 5-16 μ , ventricose at the middle or below on one or both sides. Gill trama of subparallel to slightly interwoven hyphae, 4-7 μ broad. Pileus trama of loosely interwoven hyphae. Pileus cuticle an ixocutis. Hypodermium a brown zone of interwoven hyphae. Stipe cuticle a zone of pallid thick-walled hyphae. Clamp connections present. Some stipe epicuticular hyphae incrustated.

Helvella aberrans sp. nov.

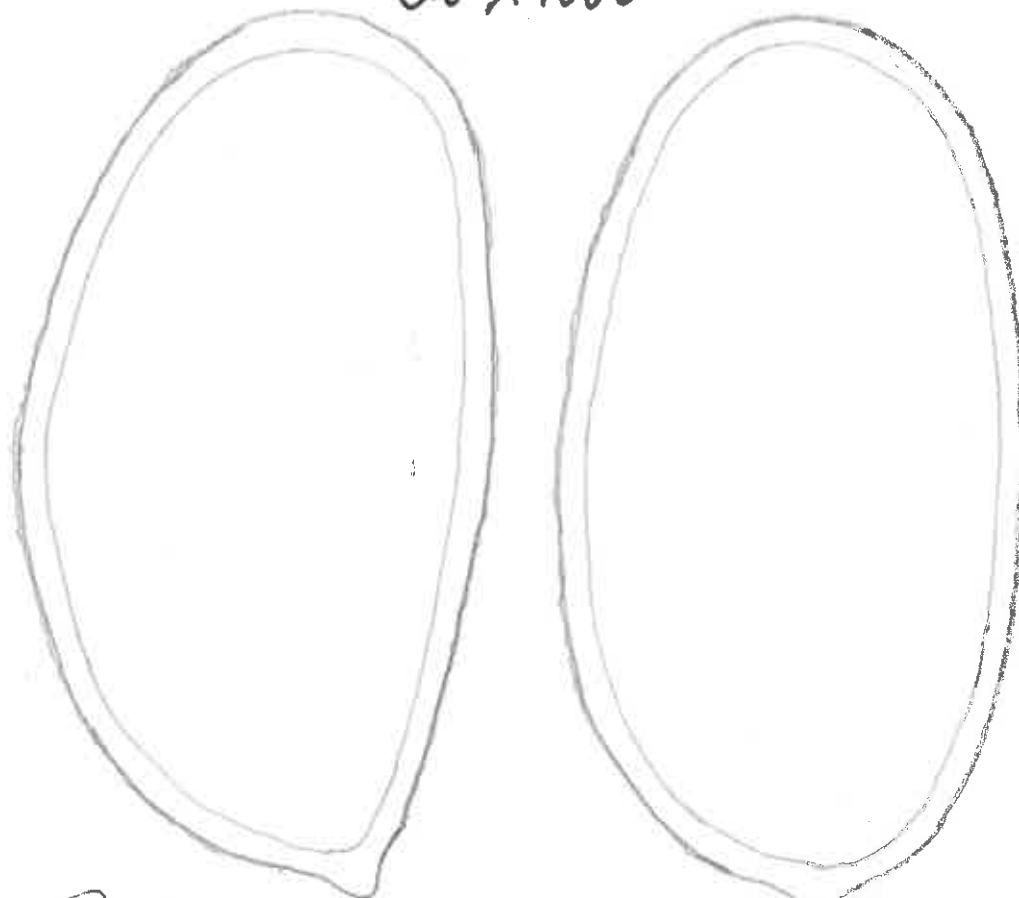
Fr. 42918 - Fyp



Ch x 1000



Basidium x 1000



Profile

Spores x 8000

Face

Sm-2845

HEBELOMA ABIETICOLA ^{um} sp. nov.

In an arc under young fir, Crescent Beach, Washington, leg.

A. H. Smith, doubtfully labelled crustuliniforme?

("near crustuliniforme but spores smooth"),

October 3, 1935

Notes by Smith

Pileus 3-7 cm broad, convex then plane, or in age the margin upturned, "cinnamon buff," margin "light buff," viscid, glabrous, opaque, margin even, when young the margin inrolled and pruinose. Context 5-7 mm on the disc, tapering abruptly near the margin, firm: odor of radish, taste faintly sharp.

Lamellae adnate, pallid brownish, ^{edges} ~~margins~~ minutely ~~crenate~~ crenulate, edges beaded with drops in young caps, narrow, crowded.

Stipe 4-7 cm long, 6-10 mm thick, white, apex furfuraceous, elsewhere fibrillose, solid, equal above and abruptly enlarged base. Veil none.

Spores 10-12 x 6-7 μ . Cystidia on edges 50-70 x 6-8 μ . Pileus cuticle and ixocutis: a layer of very narrow gelatinizing hyphae; below this a narrow layer of pseudoparenchyma, and below it floccose tissue.

Smith's notes also say: No. 2992 - spores 9-11 x 6-7 μ ; No. 3114, when wet avellaneous on margin, disc "cinnamon buff."

Notes by Hesler

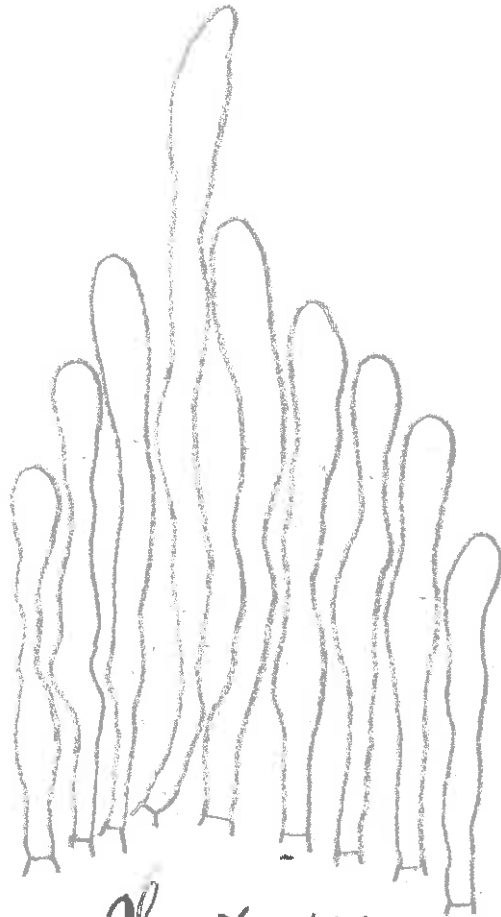
Spores 10-12 x 5.5-7 μ , inequilateral in profile, subovoid to subellipsoid in face view, wall 0.3-0.4 μ thick, rugulose to minutely so, at times nearly smooth, yellowish brown in 2% KOH. Basidia 27-32 x 6-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 48-102 x 6-7 μ , cylindrical, apex clavate to subcapitate, occasional slightly ventricose below or mid-way, abundant, clustered. Gill trama of subparallel hyphae, 4-9 μ broad. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium ~~of rather thick (1-2 cells) rows of brown-pigmented cells~~ ^{of cells and hyphal fragments.} Stipe a thick (350-600 μ) zone of perpendicular, thick-walled, colorless or pallid hyphae, surface of dry repent hyphae; caulocystidia similar to cheilocystidia, in tufts. Clamp connections on pileus cuticular hyphae.

~~Near sinapizans but lacks pleurocystidia, and is smaller, spores smaller, and with different ornamentation. Near H. angustifolium, but spores rugose and calyptrate.~~

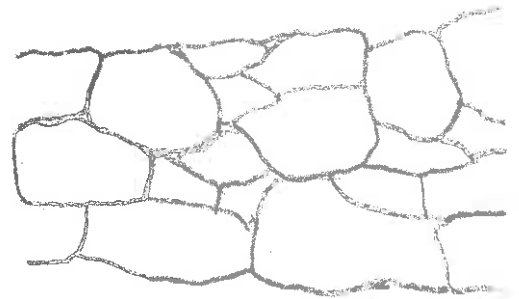
It has several of the features of H. crustuliniforme, but differs in its faintly sharp taste, + its abrupt bulb.

Abeloma abieticolum sp. nov.

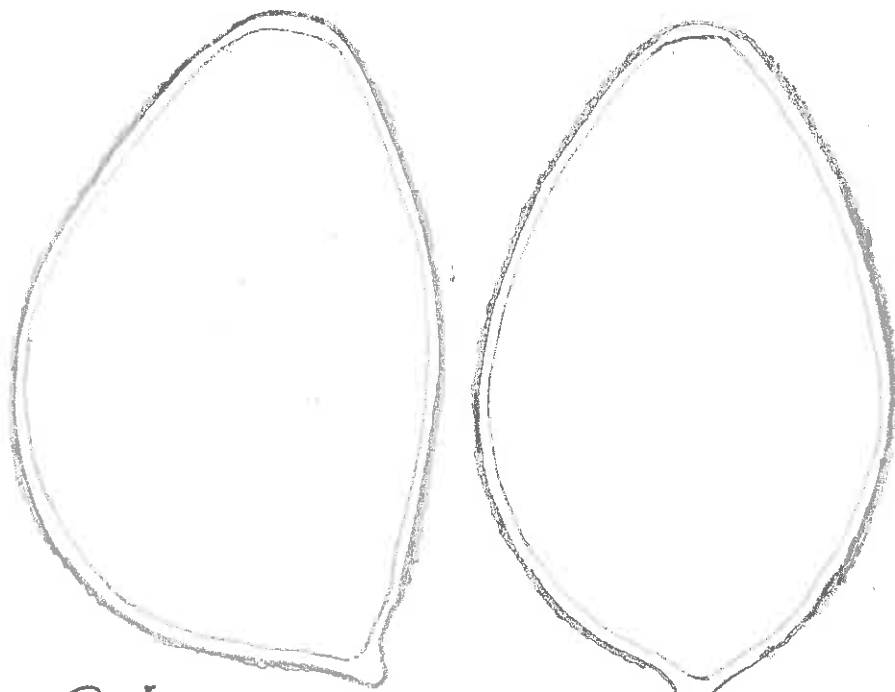
Sm-2845



Ch x 1000



Hypodermium — x 1000



Profile

Face

Spores x 8000

Exclude

HEBELOMA AERUGINOSUM Murrill

North American Flora 10:224. 1917

(To be Excluded)

Pileus 3 cm broad, convex, not fully expanding, not umbonate, aeruginous, glabrous, extremely viscid, margin involute, broadly overhanging, concolorous.

Lamellae adnate with a decurrent tooth, white to pale yellowish, edges concolorous and entire, very broad, sub-triangular, not crowded.

Stipe 4 cm long, 7 mm thick, caesions-caeruleous, equal, solid, dry, apex glabrous, coarsely squamose below.

Spores 8-9 x 6 μ , ovoid, smooth, pale-yellow under the microscope.

Type from among humus, in fir forest, Glen Brook, Oregon, leg. Murrill 772 (NY), November 7, 1911.

Notes on Type

On opening the specimen box marked TYPE, on September 25, 1972, I found only a few notes. No basidiocarps nor fragments were found.

Exclude (material unavailable)

HEBELOMA ALABAMENSE Murrill

North American Flora 10:221. 1917

(Probably a Cortinarius)

Pileus 3 cm broad, expanded, bright yellowish brown, disc reddish-brown, subviscid, glabrous, margin thin, not striate, crenulate or wavy. Context thin, rather fragile.

Lamellae sinuate-adnate, ferruginous-cinnamon, broad behind, subdistant.

Stipe 5-6 cm long, 4-5 mm thick, whitish, slightly silky-fibrillose, hollow, fragile.

Spores 7-8 x 5-6 μ , broadly ellipsoid.

Type collected by F. S. Earle (NY), on rich soil in woods, Auburn, Alabama, October 12, 1900.

Notes on Type

Spores darker brown than ^{for Hebeloma} usual (in 2% KOH under scope), 7-9 x 5-5.5 μ , slightly inequilateral, subellipsoid to ellipsoid in face view, ^{minutely tuberculate, no germ-pore,} ~~winkled~~, apiculus small. (No spore-print found).

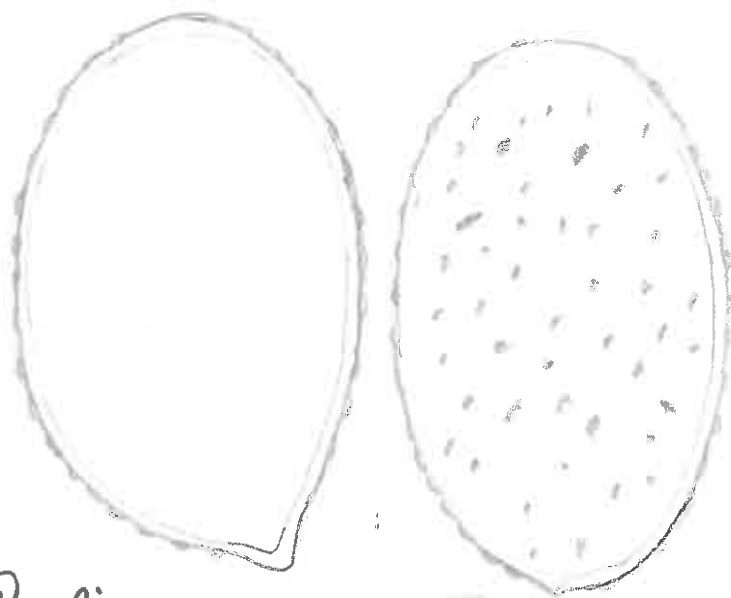
Material reduced to powder, and no sections were possible.

The spores suggest a Cortinarius rather than a Hebeloma.

Heloloma alabamense Murr.

Type (a Cortinarium?)

[No material for sectioning;
presence or absence of pl + ch,
and nature of cuticle could
not be determined.]



Profile

Face View

Spae x 8000

Exclude

HEBELOMA ALACHUANUM Murrill

Lloydia 5:149. 1942

(EXCLUDED: see notes on Type)

Pileus about 3 cm broad, convex to expanded, uniformly pale-reddish-brown, slightly viscid, glabrous, margin even, sometimes upturned in age. Context thin, pallid; odor none, taste mawkish and somewhat bitter.

Lamellae sinuate, pallid to subfulvous, medium broad, medium distant, lamellulae present, entire.

Stipe 3-4 cm long, 4-6 mm thick, white, equal, glabrous, smooth.

Spores 8.5-9.5 x 4-5 μ , elongate-ellipsoid, smooth, pale-yellowish-brown. Cystidia none.

Type collected by Murrill (F16042, FLAS), on soil, in loblolly pine grove, Gainesville, Florida, January 11, 1938.

Notes on Type (F16042)

This is a mixed collection: (1) one basidiocarp had small, Pholiota-like spores, ellipsoid, smooth, no evident germ-pore; pileus cuticle dry; (2) another showed rather longer, Inocybe-like spores, 8-12 x 3.5-4.5 μ , elongate to irregularly so, smooth, no germ-pore; (3) another had spores 7.5-9.5 x 4-5 μ , pale yellowish brown, faintly rugulose, somewhat Hebeloma-like but the pileus is dry. It is not possible to determine to which one of these the description

of macroscopic characters applies.

Notes on F16052

Labelled H. alachuanum, coll. and determined Murrill, Gainesville, December 20, 1942. But not same as any of the three species in the Type packet.

Spores 9-12 x 6-7.5 μ , wrinkled, inequilateral, ovoid, no pore. Pleurocystidia none; cheilocystidia 33-43 x 4-6 μ , more or less cylindrical, numerous and conspicuous. Pileus cuticle an ixocutis.

This has large spores which are rough, large (different) cheilocystidia, and a thick ixocutis. Clamps none.

Notes on F19539

From Gainesville, Florida, det. Murr., December 20, 1942

(Not the same as any in the Type packet)

Spores 10-13 x 5.5-7 μ , inequilateral, wrinkled, no germ pore, apex acute. Pleurocystidia none; cheilocystidia 33-53 x 5-8 μ , subcylindric, more or less capitate. Pileus cuticle an ixocutis; hypodermium brownish.

This is different from F16052, and also differs from F16042.

Conclusions on Murrill's H. alachuanum. It appears that Murrill may have entered five different taxa under the name

H. alachuanum:

(1) The packet containing the collection which he designated as the Type (F16042) is a mixed collection of three different taxa (one may be a Pholiot, one an Inocybe, and one a Hebeloma); (2) Murrill's F16052 is a Hebeloma, but different from that in the Type packet; (3) Murrill's F19539 is a Hebeloma, but different from any of the others.

Without notes on the macro characters, I hesitate to place a species-epithet on his F16052 and F19539.

HEBELOMA ALACHUANUM Murrill

Lloydia 5:149. 1942

(EXCLUDED: see notes on Type)

Pileus about 3 cm broad, convex to expanded, uniformly pale-reddish-brown, slightly viscid, glabrous, margin even, sometimes upturned in age. Context thin, pallid; odor none, taste mawkish and somewhat bitter.

Lamellae sinuate, pallid to subfulvous, medium broad, medium distant, lamellulae present, entire.

Stipe 3-4 cm long, 4-6 mm thick, white, equal, glabrous, smooth.

Spores 8.5-9.5 x 4-5 μ , elongate-ellipsoid, smooth, pale-yellowish-brown. Cystidia none.

Type collected by Murrill (F16042, FLAS), on soil, in loblolly pine grove, Gainesville, Florida, January 11, 1938.

Notes on Type (F16042)

This is a mixed collection: (1) one basidiocarp had small, Pholiota-like spores, ellipsoid, smooth, no evident germ-pore; pileus cuticle dry; (2) another showed rather longer, Inocybe-like spores, 8-12 x 3.5-4.5 μ , elongate to irregularly so, smooth, no germ-pore; (3) another had spores 7.5-9.5 x 4-5 μ , pale yellowish brown, faintly rugulose, somewhat Hebeloma-like but the pileus is dry. It is not possible to determine to which one of these the description

of macroscopic characters applies.

Notes on F16052

Labelled H. alachuanum, coll. and determined Murrill, Gainesville, December 20, 1942. But not same as any of the three species in the Type packet.

Spores 9-12 x 6-7.5 u, wrinkled, inequilateral, ovoid, no pore. Pleurocystidia none; cheilocystidia 33-43 x 4-6 u, more or less cylindric, numerous and conspicuous. Pileus cuticle an ixocutis.

This has large spores which are rough, large (different) cheilocystidia, and a thick ixocutis. Clamps none.

Notes on F19539

From Gainesville, Florida, det. Murr., December 20, 1942

(Not the same as any in the Type packet)

Spores 10-13 x 5.5-7 u, inequilateral, wrinkled, no germ pore, apex acute. Pleurocystidia none; cheilocystidia 33-53 x 5-8 u, subcylindric, more or less capitate. Pileus cuticle an ixocutis; hypodermium brownish.

This is different from F16052, and also differs from F16042.

Conclusions on Murrill's H. alachuanum. It appears that Murrill may have entered five different taxa under the name

H. alachuanum:

(1) The packet containing the collection which he designated as the Type (F16042) is a mixed collection of three different taxa (one may be a Pholota, one an Inocybe, and one a Hebeloma); (2) Murrill's F16052 is a Hebeloma, but differant from that in the Type packet; (3) Murrill's F19539 is a Hebeloma, but different from any of the others.

Without notes on the macro characters, I hesitate to place a species-epithet on his F16052 and F19539.

HEBELOMA ALBIDULUM Pk.

New York State Mus. Ann. Rept. 54:148. 1901

Pileus 2.5-6 cm broad, broadly convex, or nearly plane, dingy white or grayish white, slightly viscid, glabrous. Context white, firm.

Lamellae adnexed, whitish becoming brownish ferruginous, close, narrow, edges denticulate and white.

Stipe 3-6 cm long, 4-6 mm thick, concolorous with the pileus, apex mealy or pruinose, elsewhere glabrous, firm, hollow, equal or sometimes the base slightly bulbous.

Spores 10-12 x 6-7.5 μ , subellipsoid, obtuse.

Type from Westport, N.Y., among fallen leaves in woods, October. The spores are a little darker in color, shorter, and more blunt at the ends than in H. album Pk.

Notes by Hesler - Type

Peck (1910) places this species in his Denudata (those lacking a veil). Notes on Type (made February 2, 1973):

Spores 10-12.5 x 6-7.5 μ , inequilateral in profile, subovoid to ellipsoid in face view, rugulose to rugose, at times obscurely calyptrate, yellowish brown in 2% KOH. Basidia 27-32 x 7-9 μ , 4-spored. Pleurocystidia none; cheilocystidia 40-105 x 6-9 μ , more or less flask-shaped, neck bearing more or less a capitellum, at times with a clamp connection at the base. Gill trama of narrow, subparallel

hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium a zone of cells. Stipe cuticle of repent, dry hyphae, apex of stipe with caulocystidia similar to cheilocystidia. Clamp connections on the epicuticular hyphae, and at base of cheilocystidia.

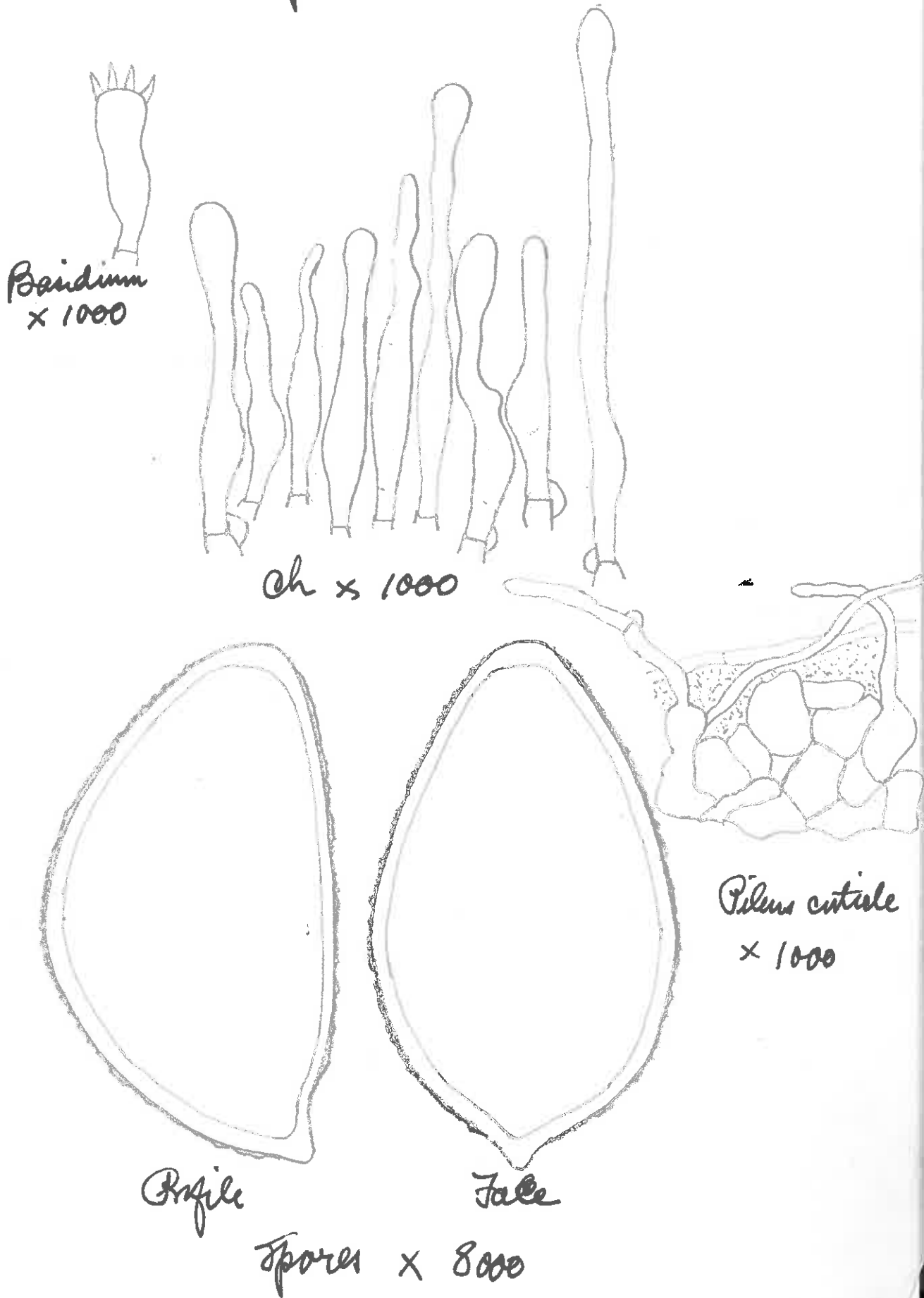
In his description, Peck (1901) does not mention odor or taste; it is assumed, therefore, that both are mild or not distinctive. Nor does he mention a veil; but he places it in *Sett. Denudata* (Peck~~s~~ 1910).

This species is similar to H. album, but there are specific differences: in H. albidulum the spores are somewhat shorter and slightly darker (in 2% KOH), than in H. album, and not sublimoniform, the cheilocystidia are much longer (up to 105 μ long), the stipe hollow and concolorous with the pileus. In H. albidulum there is sometimes a grayish pigment in the pileus, whereas in H. album, a pigment when present is yellowish.

Kauffman (Agar. Mich. 1:479) states that cystidia are rather abundant on the sides and edges of the gills, cylindrical, 75 x 5-6 μ . We found no pleurocystidia on the type!

Hebeloma albidulum PK.

Type



40403

HEBELOMA ALBOCAULIS sp. nov.

on wet soil, under conifers, Independence Pass,
Colorado, leg. Smith-86884, July 20, 1976

Notes by Smith

Pileus 4 cm broad, plano-umbonate, margin incurved and white-pruinose, evenly verona brown, glabrous, thinly viscid. Context watery pallid, fading to whitish; odor and taste raphanoid. $FeSO_4$ brownish in stipe.

Lamellae depressed-adnate, to nearly free, brown, similar to pileus but pale narrow, ^{close,} edges even, not spotting.

Stipe 8 cm long, 10 mm thick, surface dull white, watery around base where handled but not darkening, apex furfurascent, silky-fibrillose below, ^{equal.} Veil: no evidence of its presence seen.

Notes by Hesler

Spores 10-13.5 x 6-7.5 μ , inequilateral in profile, ^{broadly} subvoid to naviculiform in face view, wall medium thin, more or less rugulose to obscurely so, pale yellowish brown in 2% KOH. Basidia 44-56 x 9-14 μ , 4-spored. Pleurocystidia none; cheilocystidia 44-72 x 5-7(10) μ , cylindrical or subclavate, frequently ventricose below, in tufts, at times extending up the sides of the gills for a short distance. Gill trama ^{of} of subparallel hyphae. Pileus trama ~~is~~ interwoven hyphae. Pileus cuticle an ixotrichodermium. Hypodermium cellular. Stipe cuticle ~~is~~ of dry, repent hyphae. Caulocystidia similar to cheilocystidia, as terminal elements on epicuticular hyphae, not abundant.

Over

Habit, Habitat, and Distribution. On wet soil,
July 2-, 1976,
under conifers, Independence Pass, Colorado, /Smith-86884 (TEHN-
40403), type.

Observations. The dull white stripe suggested
its specific epithet. It is somewhat related to
H. nevadensis but the latter has minutely warty
spores.

40403

HEBELOMA *albicaulis* sp. nov.

(Sm-86884) on wet soil of seepage, under conifer, Independence Pass, Colorado, leg. Smith, July 20, 1976

Notes by Hesler

Spores ¹⁰ ~~9-5~~ = 13.5 x 6-7.5 μ , inequilateral in profile, ^(boat-shaped) naviculiformis, [^] to subvoid in face view, wall medium thin, ^{the wall of} most spores rugulose to obscurely so, ~~is~~ 1-guttulate, pale yellowish brown in 2% KOH. Pl none; ch ⁽¹⁰⁾ 44-72 x 5-7 μ , cylindric ^{or} long subclavate, frequently ventricose at the base, in conspicuous tufts, extending a short distance up the gill-sides, ~~at times~~. Gill trama of subparallel hyphae. Pileus trama of interwoven hyphae. Pileus cuticle an ixotrichodermium. Hypodermium cellular. Stipe cuticle of dry, repent hyphae. Caulocystidia ^{present,} not abundant, ^{similar to cheilocystidia,} arising as terminal elements on spicuticular hyphae near the very apex of the stipe.

Caulocystidia 44-56 x 9-14 μ , 4 spored.

40415

HEBELOMA *albocaulis*

(Sm-86960) wet soil, under spruce, Independence Pass,
 Pitkin Co., Colorado, leg Smith, July 29, 1976

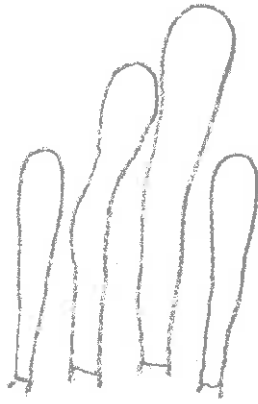
Notes by Hesler

Spores 10 - 13.5 (14, 5) x 6-~~7~~⁷~~8~~⁸ μ , ~~xi~~ inequilateral
 in profile, subovoid, sublimiform ~~xi~~ in face view, nearly
 smooth but minutely rugulose, yellowish brown in 2% KOH.
 Pl none; ~~ch~~ ^{ch} 28-50 x 6-9 μ ,
 subcylindric to subclavate, the apices usually
 slightly capitate, in tufts and extending up the sides
 40-50 μ . Gill trama subparallel. Pileus trama of loosely
 interwoven hyphae. Pileus cuticle an ixocutis or at times
 an ixotrichodermium. Hypodermium cellular. Stipe cuticle
 of dry, repent hyphae. Caulo similar to ch but longer (38-75
 x 3-5 μ).

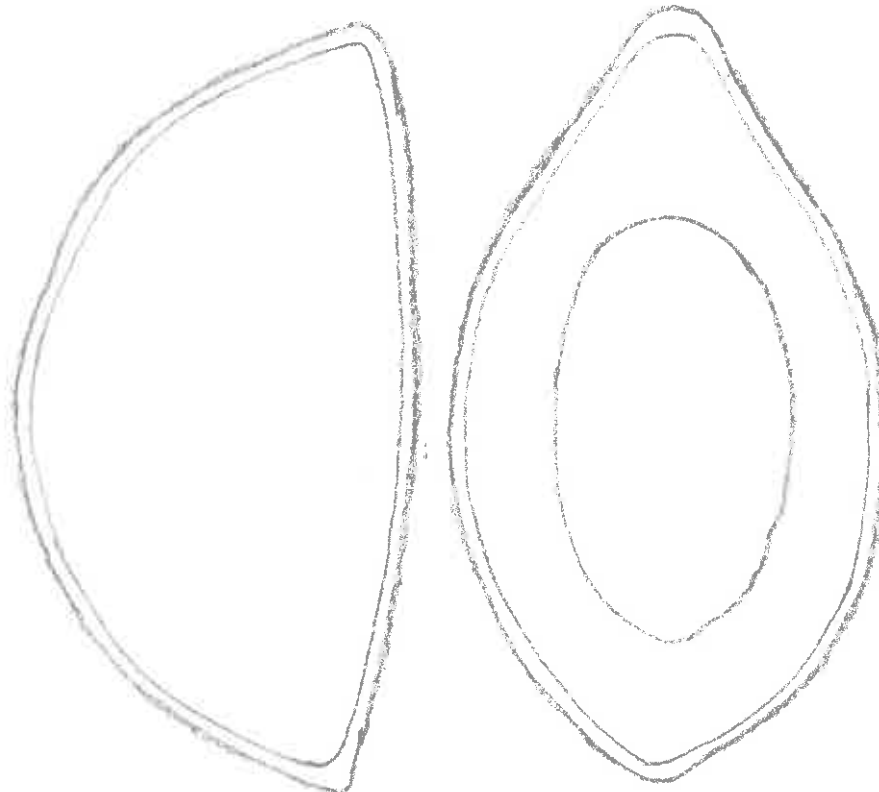
(Compare with Sm-86960a)

The spores and ch are quite similar to Sm-86960a
 but the dried basidiocarps do not resemble each
 other in stature: Smith 86960a is a larger plant
 with thicker flesh, and more bulky stipe. One
 problem is that there seem to be no notes on
 86960a.

Hebeloma
40415 (Sm-86960)



Ch x 1000



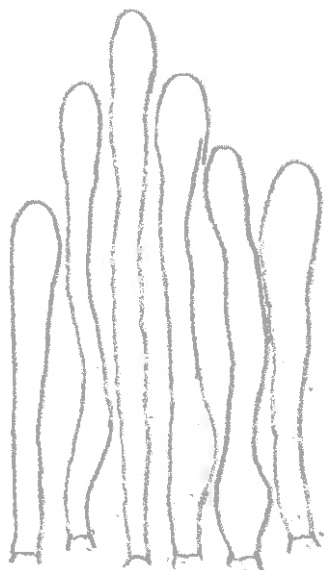
Profile

Face

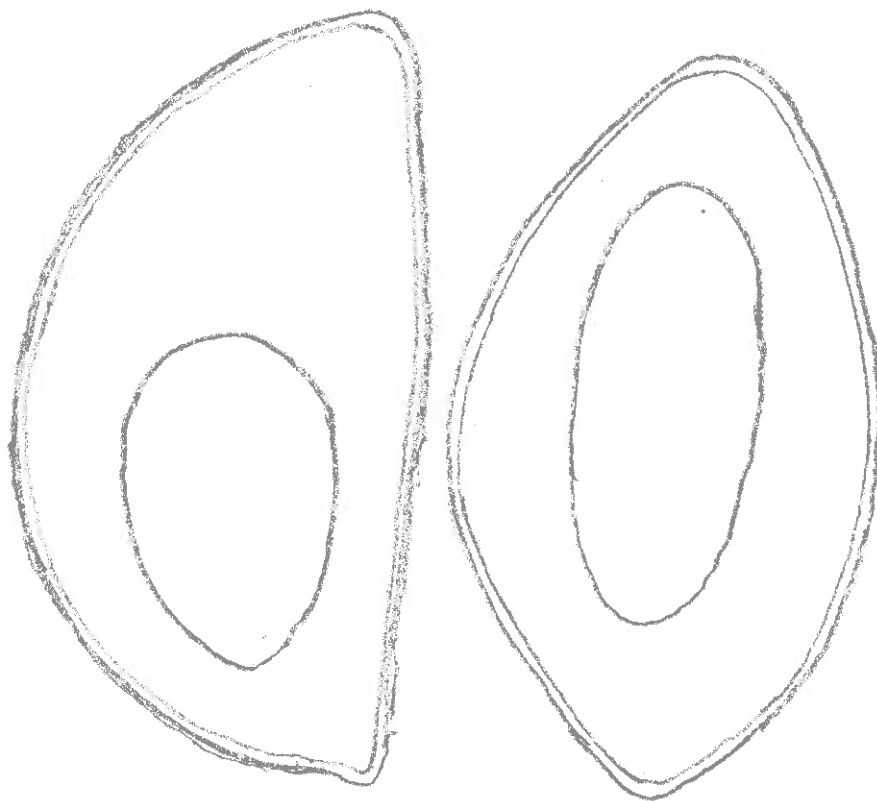
Spores x 8000

Hebeloma

H0403 (Sm-86884)



Ch x 1000



Profile

Frontal
(Face)

Spores x 8000

20207 *HEBELOMA ALBOMARGINATUM* sp. nov.

On soil, near Greenwood Cemetery, Knoxville, Tennessee,

October 9, 1951

Pileus subcaespitose, 4-8 cm, broad, viscid, "light cinnamon-drab," rivulose-reticulate under lens, disc floccose-matted, margin even. Context firm, white; odor and taste of radish (radish odor very distinct when dried material is soaked in alcohol then water).

Lamellae adnexed, white at first, then "pale ochraceous buff," finally near "dresden brown," medium-broad, close, edges fimbriate.

Stipe 3-4 cm long, 12-15 mm thick, dry, white, floccose-scaly, sub-bulbous, solid. Veil none.

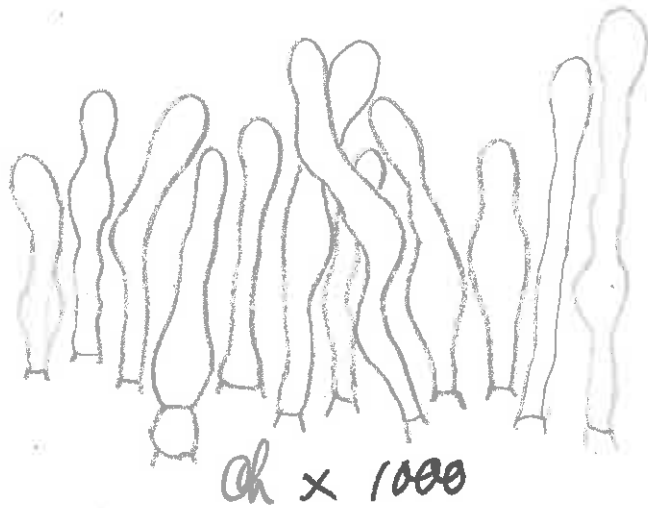
Spores (9) 10-13 x 7-8 μ , inequilateral in profile, ovoid to fusoid-ellipsoid in face view, often with more or less of a "nose," wall 0.4-0.5 μ thick, asperulate, slightly calyptrate, yellowish brown in 2% KOH. Basidia 27-40 x 7-9 μ , 4-spored. Pleurocystidia none; cheilocystidia 34-55 x 5-9 μ , cylindrical-capitate or subcapitate, flask-shaped, often constricted, enlarged at intervals and often more or less flexuous. Gill trama of subparallel broad hyphae, 4-10 μ . Pileus trama of radial and somewhat interwoven hyphae. Pileus cuticle an ixocutis. Hypodermium of brown hyphae, often incrustated, interwoven, and sometimes appearing more or less cellular in section. Stipe cuticle of dry, repent hyphae. Clamp connections found on pileus cuticular hyphae.

20207

H. albomarginatum - page 2

Differs from H. sinapizans which has pleurocystidia,
and a cellular hypodermium.

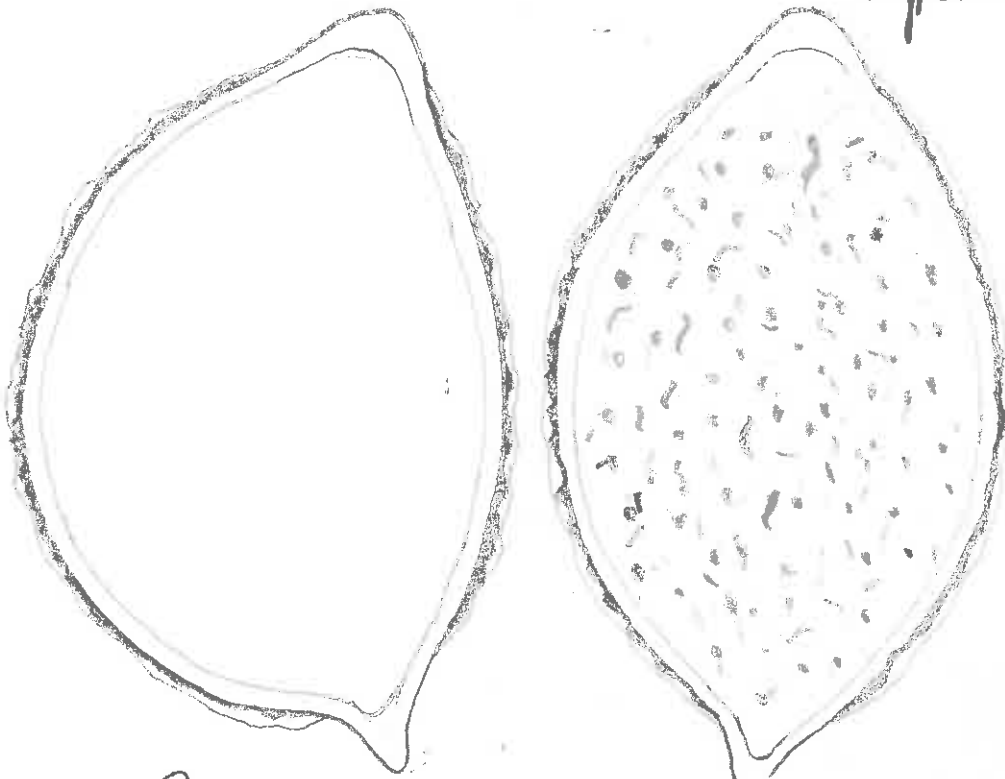
Helvella ~~marginata~~ (Fr.) Gillet
20207 *mantoliformis*
albomarginatum sp. nov.



more,
next sheet.



Incrusted hyphae -
hypodermium x 2000



Profile

Face View

Spore x 8000

29405

HEBELOMA ALBOMARGINATUM sp. nov.

PHOTO

On soil, in mixed deciduous-hemlock woods, Cades Cove, GSMNP,
Tennessee, September 30, 1966

Pileus cespitose, 3-5 cm broad, convex, "light cinnamon
drab," marginal zone white, viscid, fibrillose and more or
less reticulate (under lens), margin ~~even~~ even. Context
thick, firm, white; odor and taste raphanoid.

Lamellae adnate to rounded-adnate, at first white,
becoming brownish,
close, medium-narrow, edges fimbriate.

Stipe 1-2.5 cm long, 8-16 mm thick, white, white-scaly
above, somewhat bulbous, solid. Veil none.

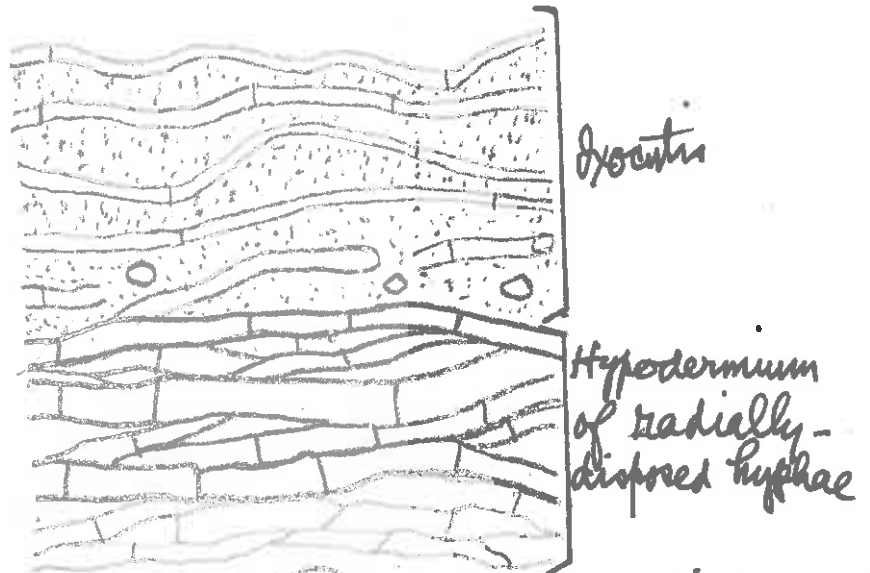
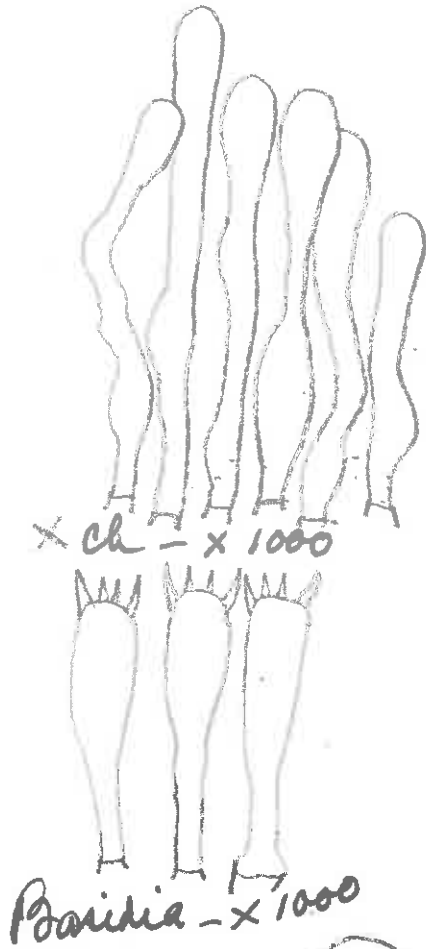
Spores 9-12 x 6-7.5(8) μ , inequilateral in profile,
subvoid to subfusoid in face view, with a "nose," wall 0.4-
0.5 μ thick, asperulate, *more or less* ~~or~~ calyptrate, brownish in KOH.
Basidia 28-37 x 7-8 μ , 4-spored. Pleurocystidia none;
cheilocystidia 38-68 x 5-10 μ , subcylindric, ~~capitate to~~
subcapitate, often *ventricose below.* ~~enlarged downward.~~ Gill trama of slender
subparallel hyphae. Pileus trama of radially-disposed,
somewhat interwoven hyphae. Pileus cuticle an ixocutis,
hyphae with clamp connections. Hypodermium a distinct brown
zone, 75-100 μ thick, of dark brown, septate hyphae which
extend radially (appear "cellular" in tangential sections).
Stipe cuticle of dry repent hyphae, bearing scattered clusters
of caulocystidia, similar to cheilocystidia. Clamps on stipe
epicuticular hyphae.

(Over)

Spores asperulate; and the pileus-~~cuticle~~
is
hypodermium ~~xxx~~ distinctive in that it is composed
of a zone of brown, radially-disposed hyphae.

Hebeloma albomarginatum sp. nov.

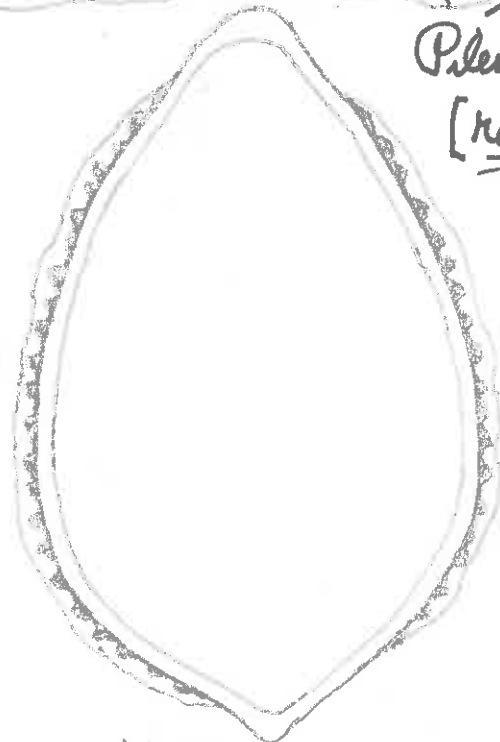
29405 - Type



Pileus cuticle x 1000
[radial section]



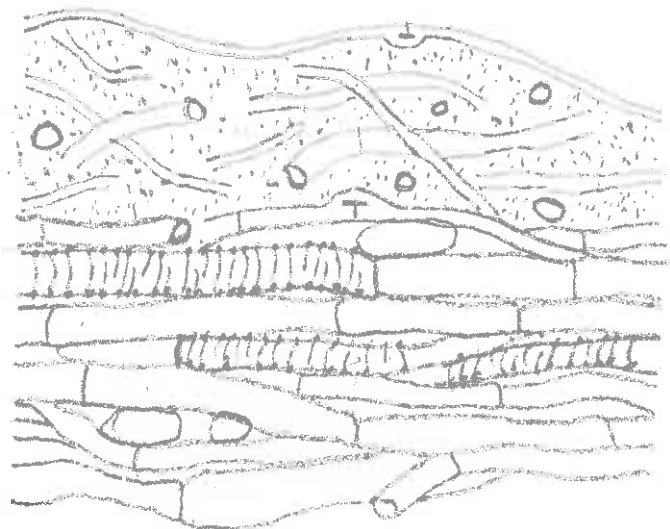
x Profile



x Face

Spores x 8000

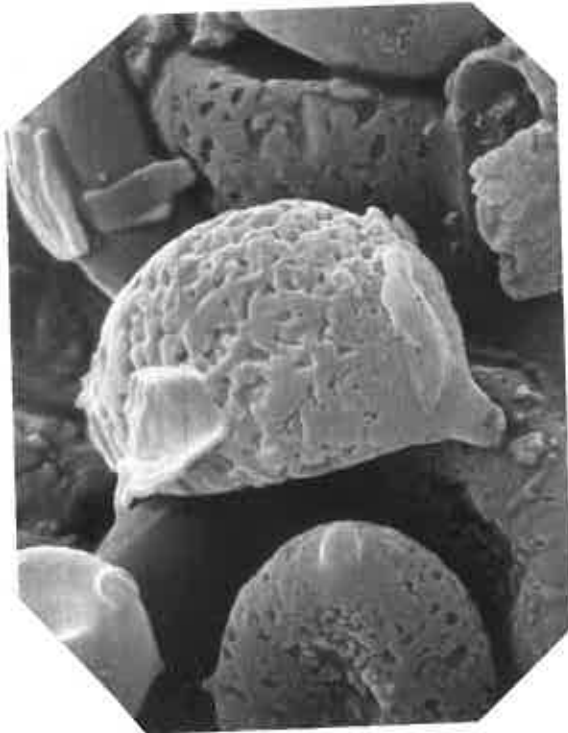
Hebeloma ~~amplicornis~~ ~~crustuliniforme~~
albomarginatum sp. nov.
20207



X Hypodermium + Cuticle (exocutis)
of pileus - X 1000



29405 - *Hebeloma albo-marginatum* - x1



29405 - *Hebeloma albomarginatum* sp. nov.

x 5000

alboroseum

Smith - 52848 HEBELOMA ~~ERUBESCENS~~ sp. nov. PHOTO

Scattered under aspen, Ophir, Colorado, August 26, 1956

Notes by Smith

Pileus 1.5-5 cm broad, convex with an incurved margin, expanding to plane, margin finally wavy at times, white becoming "pale pinkish buff" to "pinkish buff" at least on the disc, glabrous, viscid. Context soft, white; odor and taste raphanoid.

Lamellae adnate becoming adnexed, white, becoming dull cinnamon, close, broad, edges minutely fimbriate, not beaded.

Stipe 3-6 cm long, 3-6 mm thick, white and unchanging, or in age more or less pale honey (but no true discoloration), fibrillose-pruinose, especially above, less so below, equal or base slightly enlarged. Veil none.

(This bothered me all season but it is a distinct species under aspen, characterized by slender stature, scattered mode of fruiting, and white fruiting body.)

Notes by Hesler

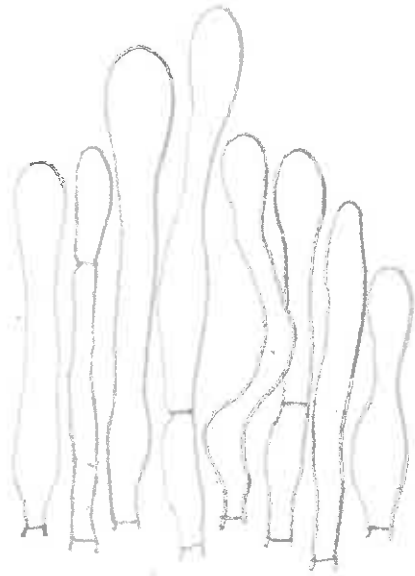
Spores 10-13 x 6-7 μ , inequilateral in profile, sublimoniform to subovoid in face view, apex usually with a "nose," wall 0.5 μ thick, rugose to rugulose, usually obscurely or slightly calyptrate, yellowish brown in 2% KOH. Basidia 28-34 x 8-9 μ , 4-spored. Pleurocystidia none; cheilocystidia 34-70 x 5-10 μ , subcylindric, capitate or

Smith - 42848

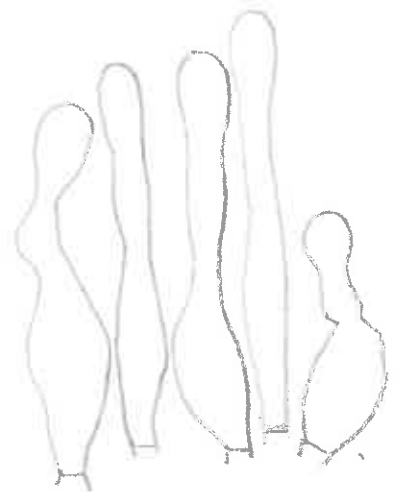
alboroseum
H. ~~erubescens~~ - 2

subcapitate, usually ventricose below on one or all sides, occasionally septate. Gill trama of subparallel hyphae, 5-12 μ broad. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium ^{a cell-zone.} ~~is brownish~~. Stipe cuticle a pallid-grayish zone of thick-walled hyphae, the surface bearing a turf of caulocystidia, 28-56 x 6-11 μ , subcylindric-subcapitate, ventricose below on one or both sides. Clamp connections not observed.

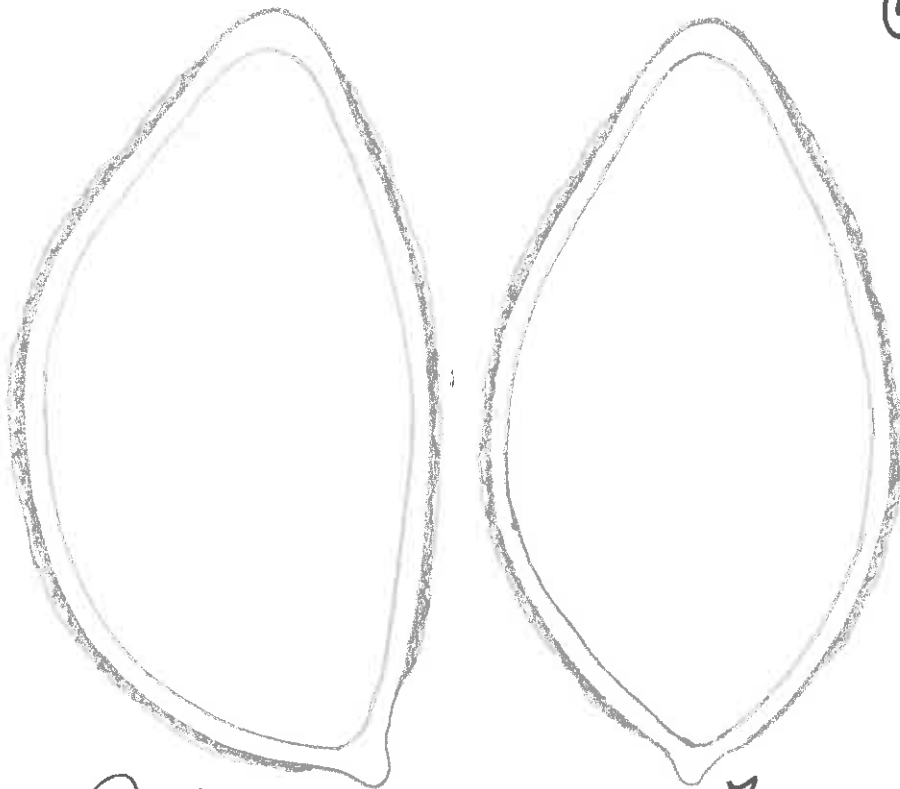
Abeloma ~~alba~~ rubescens sp. nov.
albrosensis
Sm-52848 - Type



Ch x 1000



Caule x 1000



Profile

Face

Spores x 8000

HEBELOMA ALBUM Pk.

New York State Mus. Ann. Rept. 54:147. 1901

ILLUSTRATION:

Peck, Rept. 54, Pl. G, figs. 1-7; also Bull. 139, Pl. 117, figs. 1-6.

(Peck's Description)

Pileus gregarious, 2.5-5 cm broad, convex, becoming nearly plane or concave, white or yellowish white, glabrous, subviscid, margin curving upward. Context white, firm.

Lamellae adnexed, emarginate, thin, whitish then brownish ferruginous, narrow, close, edges not serrate.

Stipe 3.5-7 cm long, 4-6 mm thick, white, apex slightly mealy, equal, firm, solid or stuffed.

Spores 12-16 x 6-8 μ , subellipsoid, pointed at one or both ends.

Type from Westport, New York, on soil, among fallen leaves.

Related to such species as H. elatius and H. longicaudum.

Notes on Type by Hesler (Feb. 1973)

Spores (9) 10-15 x 6-7.5 μ , slightly inequilateral in profile, sublimoniform to subfusoid and with a slight "nose" in face view, wall 0.4-0.5 μ thick, rugulose, not calyptrate,

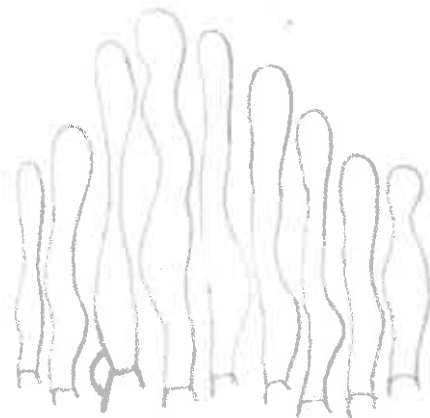
pale yellowish tinged brown in 2% KOH. Basidia 26-30 x 8-9 μ , 4-spored. Pleurocystidia none; cheilocystidia 28-48 x 4-7 μ , more or less filamentous, often or usually enlarged on one side near base, usually subcapitate. Gill trama subparallel. Pileus ~~trama~~ trama of radial hyphae. Pileus cuticle of gelatinous, more or less repent to semi-aerial hyphae forming a slight ixocutis. Hypodermium a cell zone, similar to that of H. albidulum. Stipe cuticle of repent, dry hyphae, bearing caulocystidia similar to cheilocystidia. Clamp connections few on the epicuticular hyphae of the pileus, and rare at the base of the cheilocystidia.

This species is close to H. albidulum, but in H. album the spores are longer, paler, and more sublimoniform, the cheilocystidia shorter (up to 48 μ long), the stipe solid or stuffed and white. Peck says that the pileus in H. album is white or yellowish white; in H. albidulum it is dingy white to grayish white.

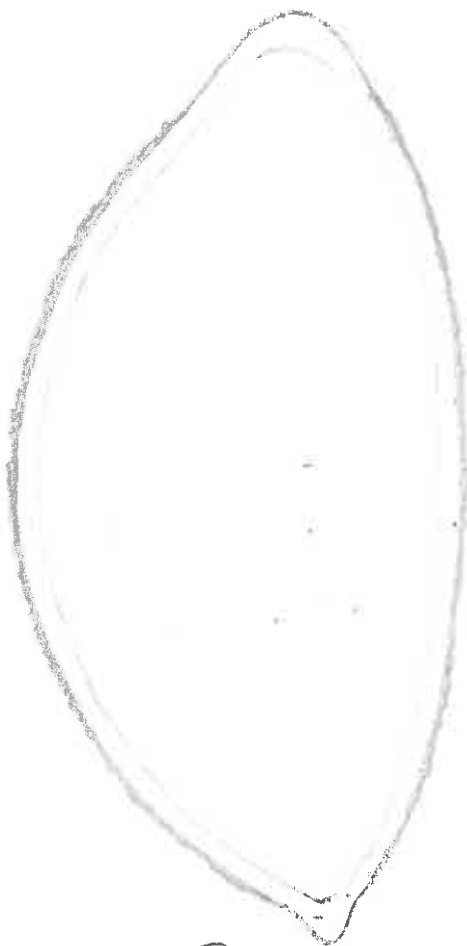
The material sent me (H. album Pk) by Bruchet, from France shows spores smaller than in the Peck type. I found that Bruchet's material shows spores 9-11(12) 5-6(7) μ ; whereas those of the type are 10-15 x 6-7.5 μ . In Bruchet's description he reports the odor of this H. album as none when collected, raphanoid when sectioned, the taste raphanoid and bitter. It appears that Bruchet's collection is not the same as H. album Pk.

Hebeloma album PK.

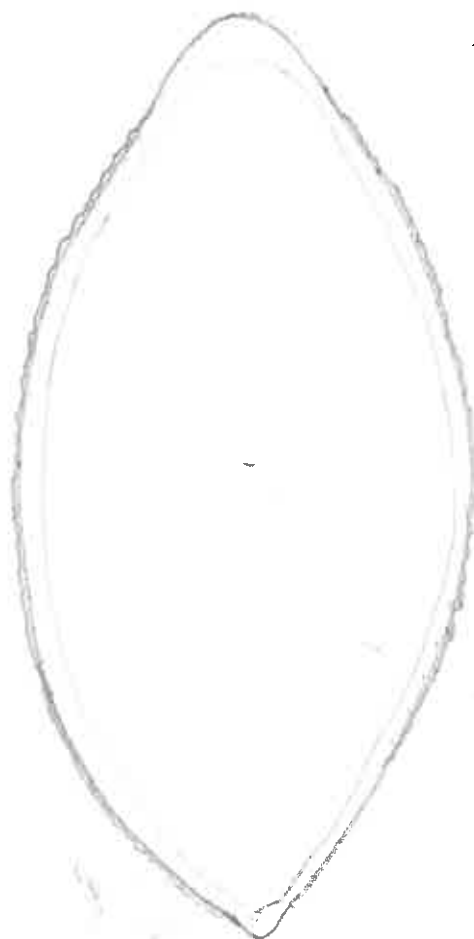
Type



Ch x 1000



Profile



Face

Spores x 8000

HEBELOMA ALBUM Pk. (?)

Leg. Bruchet, No. 65. BR. 37, Oct. 20, 1965

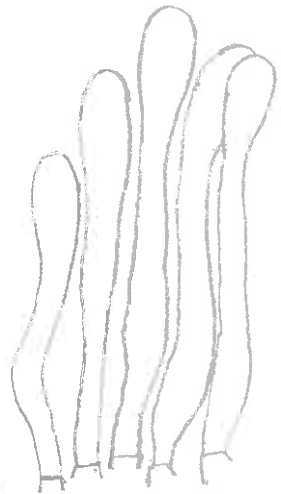
Notes by Hesler

Spores 9-11(12) x 5-6(7) μ (rarely 12-13 μ long), inequilateral in profile, subvoid to subfusoid in face view, wall 0.3 μ thick, minutely rugulose, yellowish brown in 2% KOH. Basidia 25-30 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 42-60 x 6-8 μ , more or less clavate or subcylindric-subcapitate, a few slightly ventricose below. Gill trama of slender, subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium a brownish cell-zone. Stipe cuticle a pale zone of thick-walled hyphae. Caulocystidia none. Clamp connections none observed.

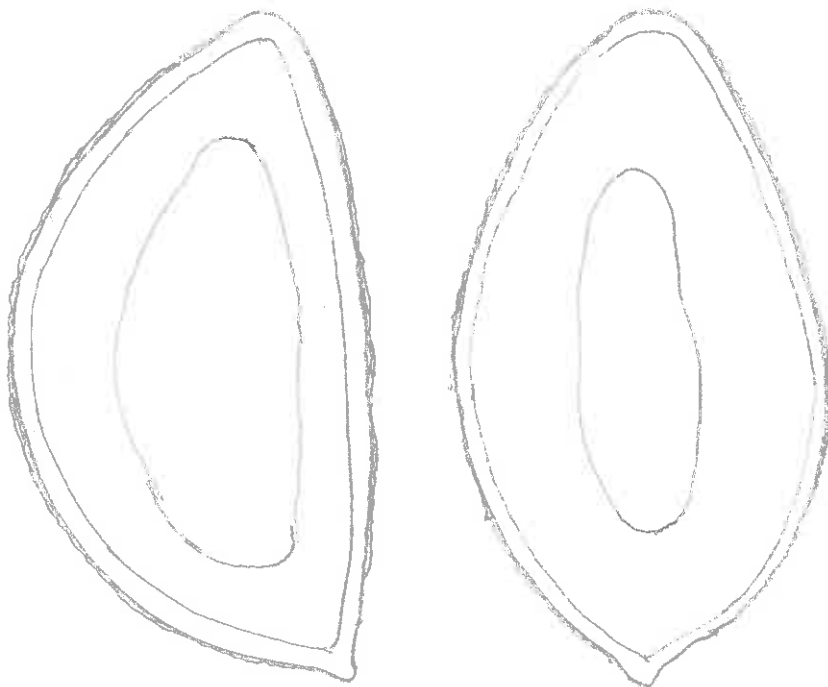
The spores are described by Bruchet (1970) as (11.5) 12.5-14.5 x 6-7 μ ; but in the material sent by Bruchet, I found the spores to be 9-11(12) x 5-6(7) μ . When spores of Peck's type and of Bruchet's No. 65-37 are compared, those of Peck are notably longer, 10-15 x 6-7.5 μ . It appears that Bruchet's collection is not the same as Peck's H. album.

Hebeloma album PK. (?)

Bruchet No. 65. BR. 37 (France)



ch x 1000



Profile

Face

Spores x 8000

HEBELOMA ALPINUM (Favre) Bruchet

Bruchet No. 64, BR. 6 (France)

Notes by Hesler

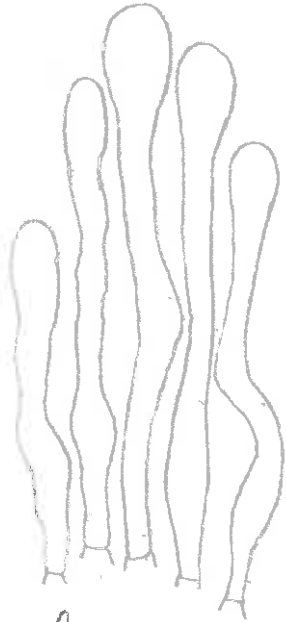
Spores (9)10-12(16) x (5.5)6-7.5(8.5) μ , inequilateral in profile, broadly subfusoid to subellipsoid in face view, a slight apical nose in some, wall ~~1.0-1.5~~^{0.25} μ thick, rugulose, yellowish brown in 2% KOH. Basidia 27-30 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 44-73 x 6-9 μ , sub-cylindric-capitate, often slightly ventricose below. Gill trama of subparallel or slightly interwoven hyphae, 4-8 μ broad. Pileus trama of somewhat loosely interwoven hyphae, 6-15 μ broad. Pileus cuticle a moderately thin ixocutis (25-50 μ thick). Hypodermium hyploid. Stipe cuticle a pallid zone of thick-walled hyphae, surface bearing some epicuticular hyphae, but no caulocystidia observed. Clamp connections none seen.

Bruchet (1970) reports caulocystidia, (50)55-75(85) μ long 7-10(12) at the summit, 4-6 μ at base.

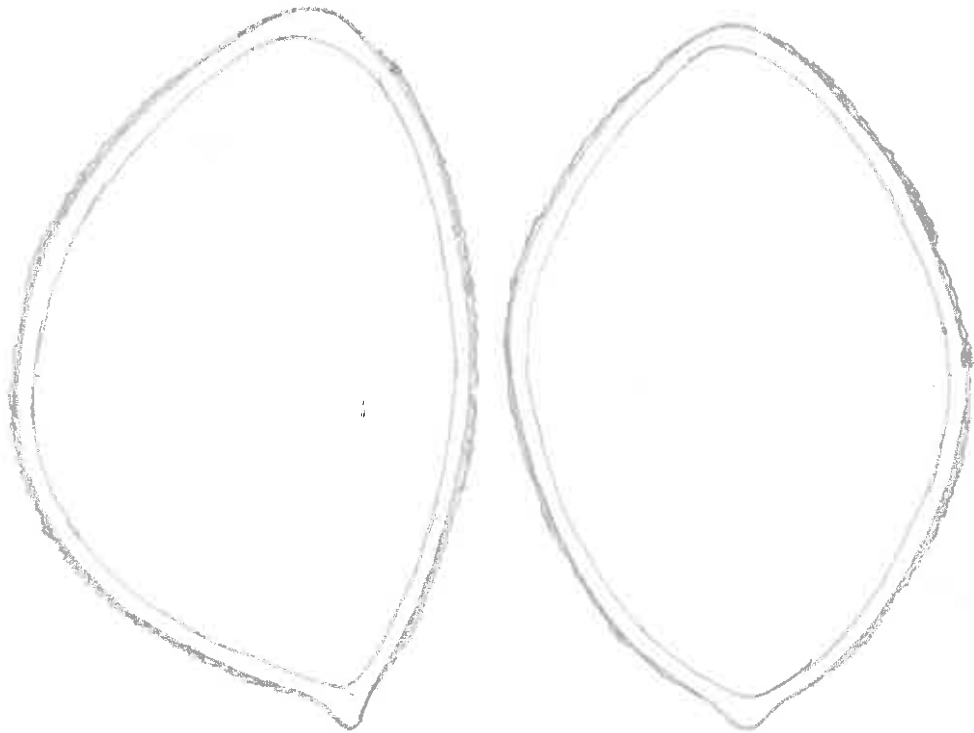
Bruchet (1970:71) says of the cuticle: as in most species exposed to extreme climate, the pileus cuticle and more especially the epicutis is greatly reduced; the pileus cuticle is usual but quite thin (about 40-50 μ).

Hebeloma alpinum (Farre) Bruchet

Bruchet No. 64. Br. 6 (France)



Ch x 1000



Profile

Face

Spores x 8000

Smith - 79845 HEBELOMA AMARUM sp. nov.

Gregarious on debris, Otis, Lincoln County, Oregon,
November 12, 1970 (stipe like sinapizans).

Notes by Smith

Pileus 3-4.5 cm broad, convex with the margin inrolled, becoming broadly convex, "walnut brown," glabrous, viscid-glutinous. Context watery brownish fading to dingy brownish-pallid; odor pungent, taste bitter. FeSO₄, weakly olive-gray.

Lamellae depressed-adnate, pale dull vinaceous cinnamon, narrow to moderately broad, close.

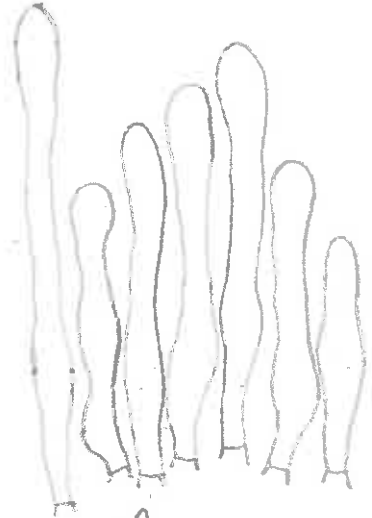
Stipe 3-6 cm long, 7-9 mm thick, ^{pale} pinkish buff ~~yellowish~~ ^{to pallid brown} above, dull brown below, ~~brown~~ ~~pale~~ ~~yellowish~~ squamulose. Veil none.

Notes by Hesler

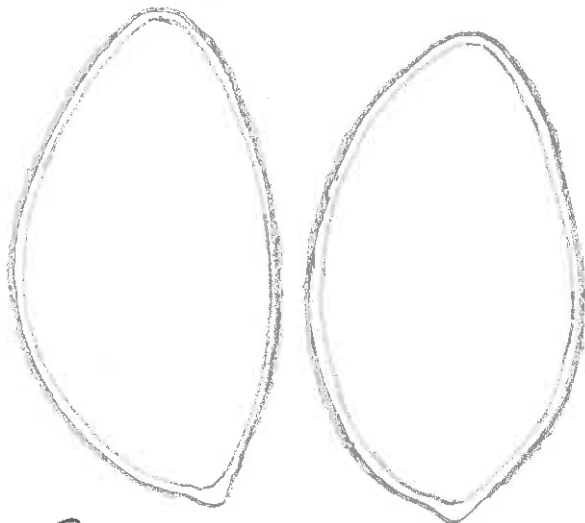
Spores 7.5-9 x 4-5 μ , slightly inequilateral in profile, subfusoid to subovoid in face view, wall 0.25 μ thick, minutely rugulose, yellowish brown in 2% KOH. Basidia 24-28 x 5-6 μ , 4-spored. Pleurocystidia none; cheilocystidia 30-66 x 5-6 μ , subcylindric, apices subcapitate, ventricose below or at the middle on one or both sides. Gill trama of slightly interwoven hyphae, 4-6 μ broad. Pileus trama of radially-disposed but interwoven hyphae, medium broad. Pileus cuticle an ixocutis. Hypodermium a brown cell-zone. Stipe cuticle a pallid zone of thick-walled hyphae, surface bearing clusters of erect hyphae (squamules), the terminal ends of some cylindrical-clavate caulocystidia.

Nebeloma amarum sp. nov.

Sm-79845 - Fyfe



Ch x 1000



Profile

Face

Spores x 8000

(Tenn-39204

Ammirati-6539 HEBELOMA AMMIRATII sp. nov.

Beltsville, Md., April 5, 1974

Notes by Hesler

Spores 8-9.5 x 4.5-5.5 μ , slightly inequilateral in profile, ellipsoid in face view, pale yellow brown in 2% KOH, dilute pale yellowish in Melzer's reagent, not stained in cotton blue, wall minutely rugulose to nearly smooth, 0.3 μ thick, not calyptrate, no germ-pore, not truncate. Basidia 23-26 x 5-6 μ , 4-spored. Pleurocystidia none; cheilocystidia ~~32-67~~ 32-67 x 7-10 μ , ventricose below or more rarely midway or above. Gill trama of subparallel hyphae, 6-15 μ broad. Pileus cuticle an ixocutis, the hyphae colorless, more or less repent to somewhat interwoven, a few incrusted, clamp connections few. Hypodermium brown cellular. Stipe cuticle a zone of grayish-pallid, dry, small, angular, slightly thick-walled hyphae. Surface bearing aerial hyphae, the terminal elements at times cylindrical to subclavate caulocystidia, or a few similar to cheilocystidia.

Same as Tenn-39207 (Ammirati-6546).

39207

HEBELOMA AMMARATII sp. nov.

(Ammirati-6546)

Under pine, Beltsville, Md., Joe Ammirati, May 19, 1974

(Same as Ammirati-6539: Tenn-39204)

TYPE

Pileus 1.4-3.5 cm broad, obtusely conic at first, finally more or less plane with the margin more or less irregular and the center depressed slightly or with a small umbo, edge slightly inrolled to incurved at first then decurved to straight in expanded pilei, in young pilei margin (disc only slightly) covered with a whitish bloom, this gradually lost and hardly noticeable in mature caps (only a slight bloom on disc in one specimen), at first ground color "Pinkish Buff" to "Cinnamon Buff" on the margin, disc slightly darker--shaded "Clay Color" to "Ochraceous Tawny," color of older mature pilei "Pinkish Buff," "Cinnamon Buff" or "light Buff" on the margin (these colors shaded with "Ochraceous Tawny" in places), disc "Ochraceous Tawny" to "Bister" in age. Context solid, firm, whitish or in age sordid with pileus surface colors, expanded pilei more or less fragile and margin readily splitting; taste slightly raphanoid to fungoid, odor similar.

Lamellae adnate to adnexed, more or less separating from stipe in age, close, up to 5 mm broad in expanded pilei, ventricose in age, edges uneven, at first the color pale brownish whitish (a pallid color), when mature "Tawny

Olive" to "brownish Cinnamon" with darker brown spots.

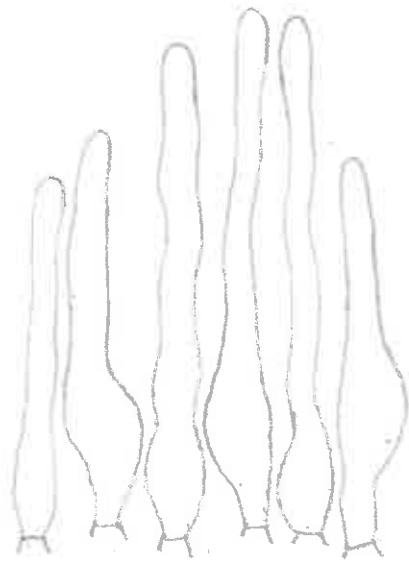
Stipe 2-2.5 cm long, apex more or less 5-6 mm diameter, equal to a slightly enlarged base, surface dry appressed fibrillose or with a few loose fibrils, fibrillose annular zone on one, color whitish to pallid with brownish discoloration below, finally sordid somewhat brownish in most older stipes (surface appears fibrillose streaked at all stages but the brownish discolorations enhance this feature). Context whitish or sordid as stipe surface, context more or less brittle though fibrous. Veil thin, soon fugaceous, sometimes leaving an annular zone on stipe.

Spores 7.5-9.5 x 5-5.5 μ , slightly inequilateral in profile, ellipsoid in face view, minutely rugulose or nearly smooth, pale yellowish brown in 2% KOH. Pleurocystidia none; cheilocystidia 48-70 x 6-10 μ , more or less cylindric, ventricose below, conspicuous. Gill trama subparallel. Pileus cuticle an ixocutis. Hypodermium brown, cellular. Stipe cuticle of repent hyphae, bearing epicuticular hyphae and scattered caulocystidia (similar to cheilocystidia).

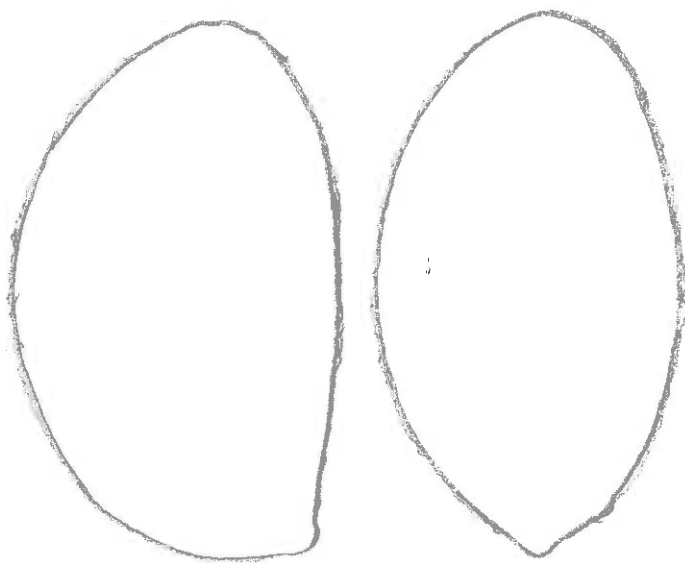
This is the same as Ammirati-6539 (=Tenn-~~3924~~ 39204). It is rather near H. pallens.

Nebeloma aminiratu sp. nov.

Teru ³⁹²⁰⁷~~39204~~ (Aminiratu - 6546) - Type



ch x 1000

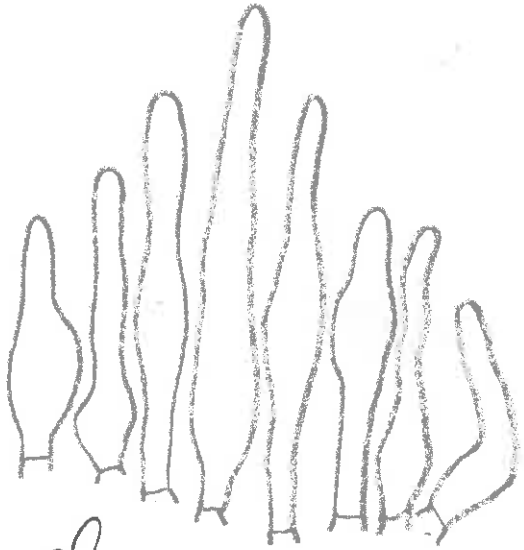


Profile

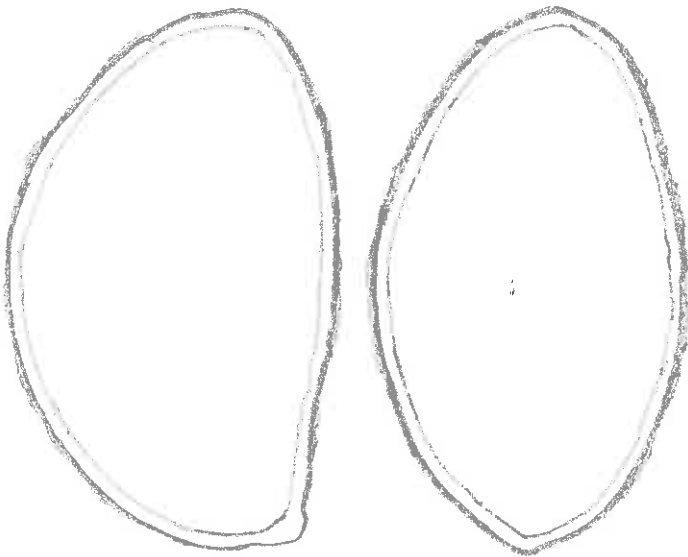
Face

Spores x 8000

Heloloma ammirati sp. nov.
Ammirati - 6539
(Tem - 39204)



Ch x 1000



Profile

Face

Spores x 8000

40429

HEBELOMA

ampulliformis sp. nov.

gregarious under conifers, Independence Pass,
Colorado, leg Kit Scates, August 4, 1976

Notes by Smith

Pileus 1-3 cm broad, obtusely conic, margin incurved, becoming broadly conic or expanded-umbonate, ^{the umbel}blackish-brown, cinnamon brown ^{paler x and} over marginal area, more or less appressed-fibrillose, margin finally grayish pinkish buff (near avellaneous), surface thinly viscid. Context watery brown, thin; odor more or less raphanoid-pungent, taste slight, *not distinctive*. FeSO₄ greenish gray to fuscous.

Lamellae adnexed, more or less verona brown at maturity, ~~xxxx~~ net spotting, broad, close.

Stipe 4-5 cm long, 2.5-4 mm thick, in age dark brown within, ^{silky-}darkening from the base up, fibrillose, soon glabrescent, ^{solid, equal.} Veil silky-fibrillose, ~~xxxxxx~~ evanescent.

Notes by Hesler

Spores 10-14 x 5.5-7.5 μ , inequilateral in profile, ~~solid, equal,~~ ovoid to subellipsoid in face view, rugulose or minutely so, pale brownish in 2% KOH. Pleurocystidia none; cheilocystidia, 33-60 x 4-10 μ , cylindrical to flask-shaped, often the swollen portion ^{on} elongate, often extending up the gill-sides/ 100 μ . Gill trama of subparallel hyphae. Pileus cuticle an ixocutis. Hypodermium cellular. Stipe cuticle of dry, repent hyphae. Caulocystidia none.

over

Habit, Habitat, and Distribution. On soil,
gregarious under conifers, Independence Pass, Colorado,
leg. Kit Scates, August 4, 1976, Smith-87045 (TENN-40429), type.

Observations. The specific epithet here is
based on the conspicuously, flask-shaped, large
Chalcididae. It is near H. subpungens
but the two species are separated in large
part on their fragment colors.

40429

HEBELOMA *ampulliformis* sp. nov.

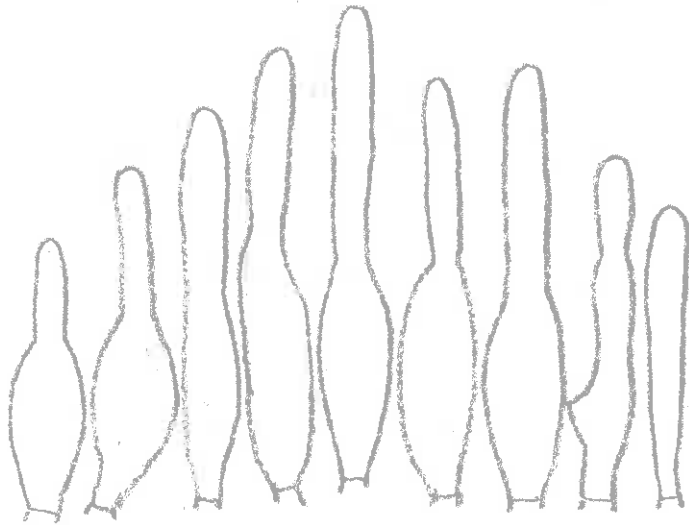
(Sm-87045) gregarious under conifers, Independence Pass,
Pitkin County, Colorado, leg. Kit Skates, Aug. 4, 1976

Notes by Hesler

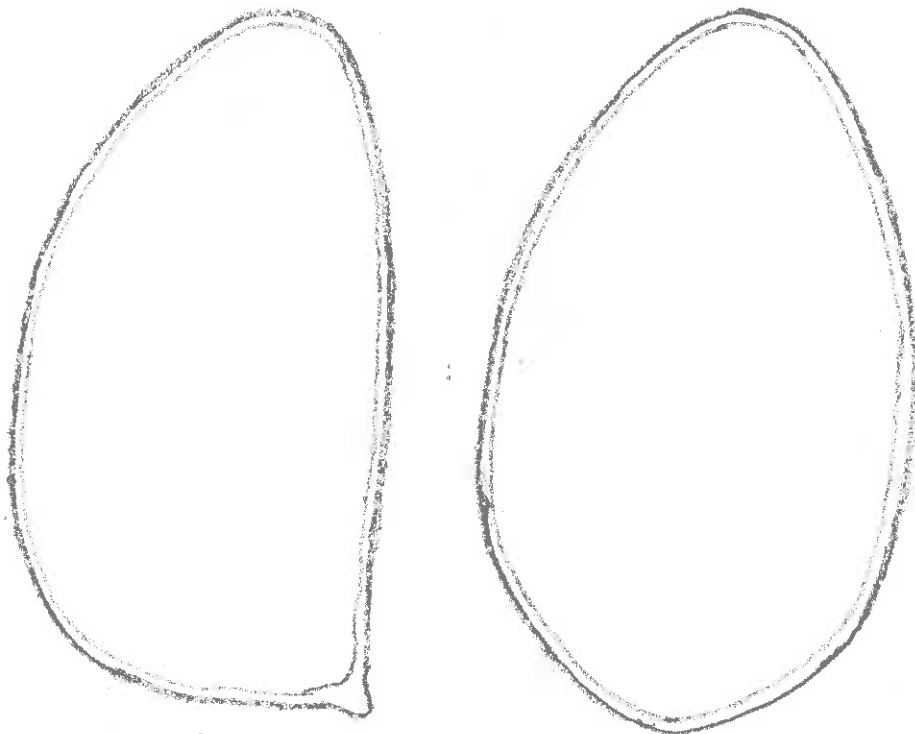
profile
^
Spores 9.5-~~13.5~~¹⁴ x 5.5-7.5 μ , inequilateral in
subellipsoid, in face view,
~~profile, ovoid to subelliptical~~
rugulose to minutely so, pale brownish in 2% KOH. Pl
none; ch cylindric to flask-shaped to nearly so, often the
swollen portion ^S somewhat elongate, 33-60 x 4-10 μ , often
extending up the gill to 100 μ . Gill trama nearly parallel.
Pileus cuticle an ixocutis. Hypodermium cellular. Stipe
cuticle of dry repent hyphae. Caulocystidia none.

Hebeloma

40429 (Sm. 87045)



Ch x 1000



Profile

Face

Spores x 8000

Sm-17096

HEBELOMA ANGELESIANUM sp. nov.

PHOTO

On soil, under conifers, subcespitose, Mt. Angeles, Washington,
leg. Smith, September 21, 1941 (check holophaeum)

Notes by Smith

Pileus 3-6 cm broad, when young subplane with an obtuse disc, in age with or without a low obtuse umbo, or the margin uplifted and the disc depressed, margin becoming wavy, "cinnamon" on the disc, pallid near the margin which becomes sordid, "clay color" or nearly "avellaneous," disc darker when water-soaked, viscid, more or less streaked with fibrils toward the margin, more or less glabrescent. Context thick (6 mm) on disc, tapering evenly to the margin, pliant, watery avellaneous; odor of ~~the~~ crushed flesh pungent-subraphanoid, taste mild or slightly raphanoid.

Lamellae depressed-adnate with a slight tooth, pale avellaneous when young, becoming "syal brown" in age or stained darker on edges, the edges becoming eroded, moderately broad and becoming slightly ventricose (5-6 mm), moderately close.

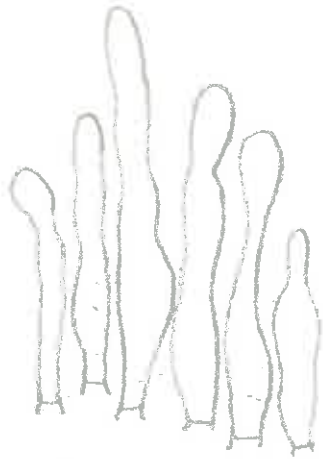
Stipe 5-8 cm long, 8-12 mm thick, pallid above, elsewhere sordid cinnamon buff and becoming bister from the base up, equal or narrowed at the base, bulbous, pallid in the cortex, soon dark brown toward base. Veil present, leaving veil patches on the pileus.

Notes by Hesler

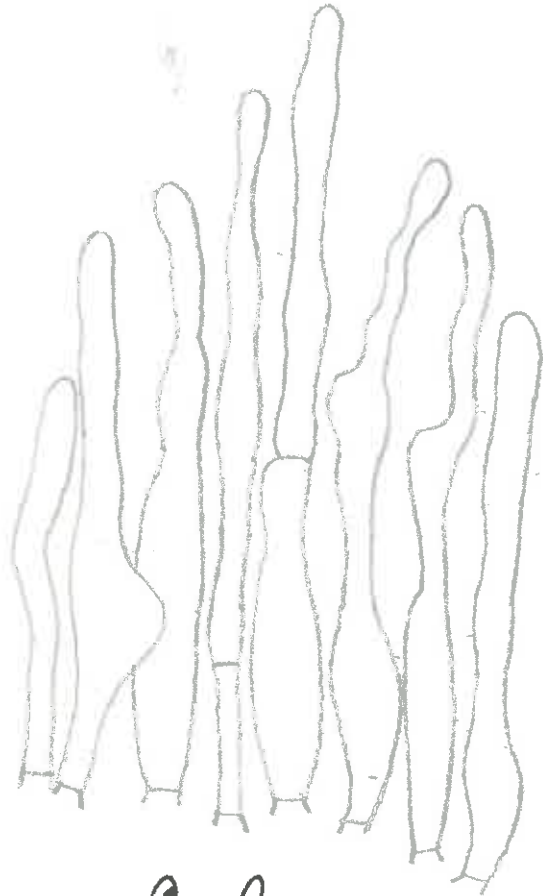
Spores 7-9(9.5) x 4.5-5.5(6) μ , inequilateral in profile, subellipsoid to ellipsoid in face view, minutely rugulose or nearly smooth, wall 0.25 μ thick, pale yellowish in 2% KOH. Basidia 24-30 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 30-52 x 4-7 μ , subcylindric, ventricose near base. Gill trama of undulating, subparallel hyphae, 4-6 μ broad. Pileus trama radial. Pileus cuticle an ixocutis, some hyphae incrustated, and with an occasional clamp connection. Hypodermium cellular, brownish. Stipe cuticle a dry, pallid, grayish zone of thick-walled hyphae, surface bearing a dense turf of long caulocystidia, 53-104 x 6-12 μ , similar to cheilocystidia (but much larger), at times septate.

Hebeloma angelicarium sp. nov.

Sm-17096 - Fyp



Ch x 1000



Cauls x 1000



Profile



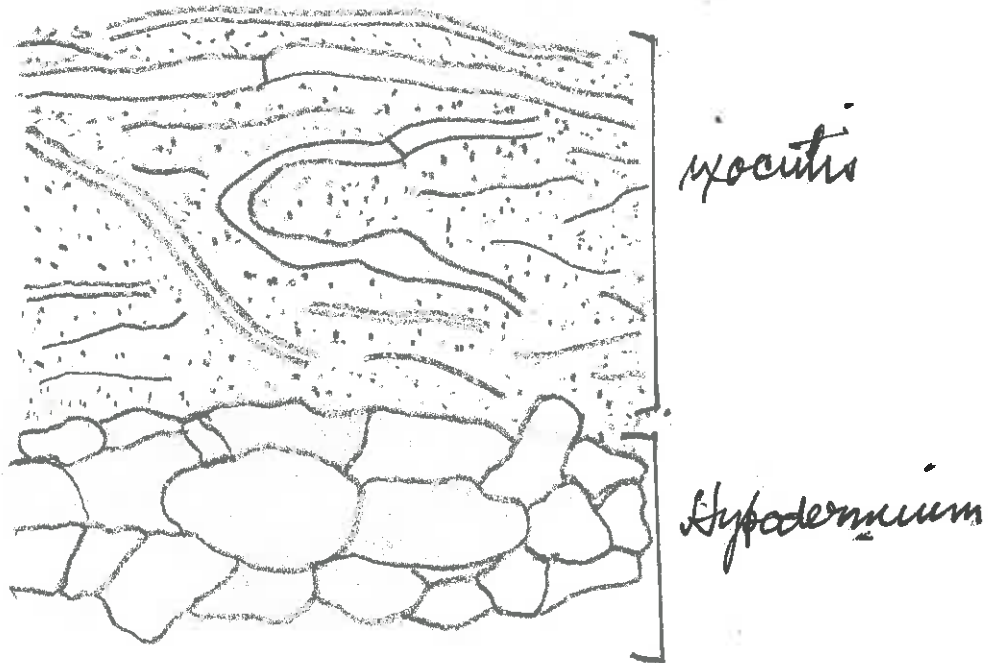
Face

Spores x 8000

more

Heloloma angelianum sp. nov.

Sm-17096 ~ Type



Plens cuticle

+ hypodermium - X 1000

23364

HEBELOMA ANGUSTISPORUM sp. nov.

On soil, woods road, Cades Cove, GSMNP, Tennessee, August 23,
1959

Pileus 2.5-4 cm broad, hemispheric then convex, "light buff," margin whitish, viscid, appressed-fibrillose, margin even. Context white, thick on disc, thin on margin; odor and taste raphanoid (dried material also with raphanoid odor when placed in alcohol then water).

Lamellae adnexed to emarginate, close, medium narrow, at first whitish, finally "pale pinkish cinnamon," edges very thin, at first denticulate-fimbriate.

Stipe 5-7 cm long, 9-11 mm thick, white, pruinose-mealy above, scattered-fibrillose below, slightly enlarged downward, solid, dry. Veil white, sparse, evanescent.

Spores ~~7.5~~ 9 x (3.5) 4-4.5 μ , inequilateral in profile, slender-fusoid in face view, wall 0.25 μ thick, minutely rugulose in mature spores, nearly smooth in younger ones, pale yellowish in KOH. Basidia 24-28 x 5-6 μ , 4-spored, clavate. Pleurocystidia 36-55 x 5-9 μ , clavate-appendiculate, widely scattered, usually inconspicuous; cheilocystidia 27-50 x 4-7 μ , more or less filamentous, but often ventricose toward the base, or at the middle. Gill trama of subparallel, slender hyphae, 3-5 μ broad. Pileus trama of radial hyphae. Pileus cuticle a rather thin ixocutis, the surface hyphae bearing dense more or less aerial branches, the terminal elements pileocystidioid (flask-shaped, cylindrical-subcapitate).

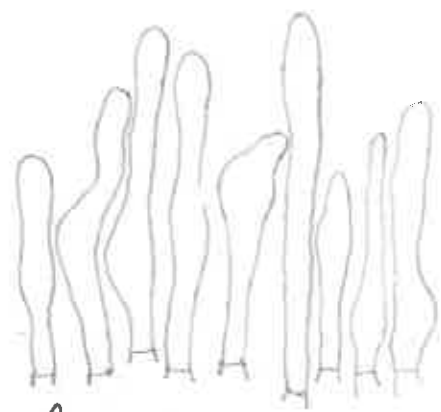
23364

H. angustisporum^{to} - page 2
~~um~~
ium

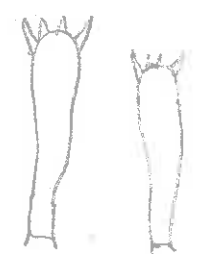
Hypodermium obscure or moderately distinct, of periclinally disposed brownish hyphae. Stipe cuticle of dry repent hyphae, also bearing with dense aerial branches, in turn bearing caulocystidia, similar to those of the pileus surface. Clamp connections on the aerial hyphae of the pileus and stipe.

Hebeloma angustisporum ^{se} ~~um~~ sp. nov.

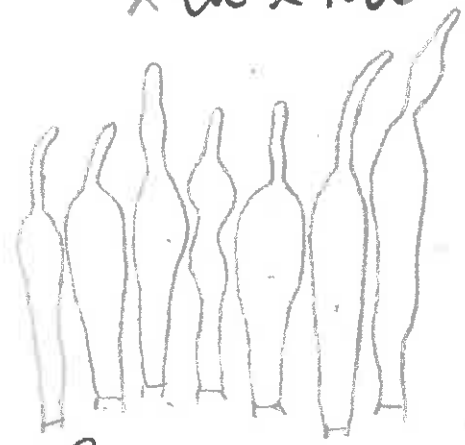
23364 - Type



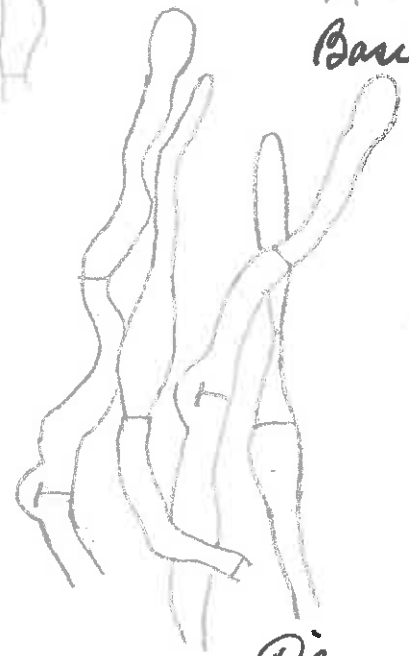
x Ch x 1000



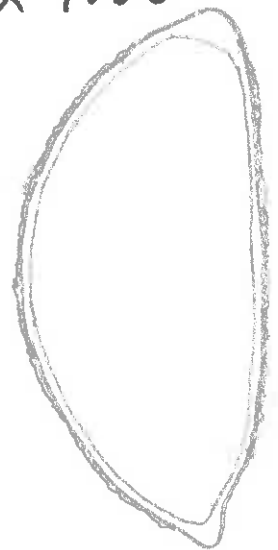
Basidia x 1000



x Pl x 1000



Pileo x 1000



x Profile



x Face

Spores x 8000

HEBELOMA ANTHRACOPHILUM R. Maire

Bull. Soc. Myc. de France 24:57. 1908

(Translation of original Latin description)

[Hebeloma anthracophilum nov. sp. - Flammula carbonaria
Gill., Champ. Fr., pl. t. 364. 1876. Non Fries.]

Pileus 4-5(7) cm broad, campanulate to expanded-hemispheric, more or less umbonate, fulvous, innately grayish cinerascens pruinose-fibrillose, disc fuscous, margin at first involute, white-tomentose, in age expanded and floccose, viscid, then glabrous. Context white, not raphanoid.

Lamellae sinuate-adnate to uncinatae, white-argillaceous, then ferruginous-fuscous, close, ventricose, edges white, scarcely denticulate.

Stipe 5-8 cm long, 5(10) mm thick, hollow, strict, cylindric, white silky-fibrillose, also roughened with concolorous scales. Veil none.

Spores on paper ferruginous-fuscous, pruniform, verruculose, 10-11 x 6 μ . Basidia cylindric-clavate, (2)4-spored; cystidia none.

Confused with Flammula carbonaria Fr. which is distinct by its veil, its cystidia, its smooth spores, etc. Our Hebeloma is related to H. crustuliniforme but is distinguished by its color, shape, its ashy pruinae, its slightly accentuated odor, and its growing on charcoal.

HEBELOMA ANTHRACOPHILUM R. Maire

Bruchet No. 63. BR. 19 (France)

Notes by Hesler

Spores (9) 10-13 x 5.5-6.5(7) μ , slightly inequilateral in profile, subvoid to subellipsoid in face view, apex more or less truncate, wall 0.3 μ thick, asperulate, calyptrate (often over apex), brown in 2% KOH. Basidia 27-32 x 6-8 μ , 4-spored. Pleurocystidia 32-43 x 4-7 μ , subventricose, rare; cheilocystidia 38-45 x 4-5 μ , filamentous, only slightly or not at all ventricose below. Gill trama of subparallel hyphae, 4-7 μ broad. Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium of brown interwoven hyphae. Stipe cuticle of dry hyphae, thick-walled bearing trichodermial hyphae. Caulocystidia not found. Clamps present on stipe epicuticular hyphae.

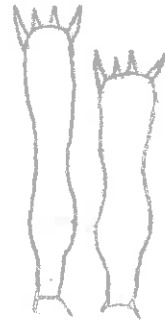
Bruchet calls the ~~hypoderm~~ hypoderm the cutis and says it is subcellular, and pseudocollenchymatous; also that the subcutis is slightly differentiated and passes imperceptably into the pileus flesh.

Nebeloma anthracophilum Maire

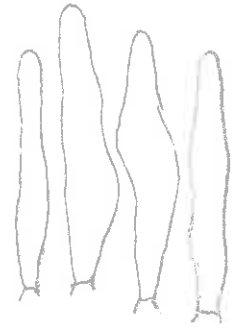
Bruchet 63. BR. 19.



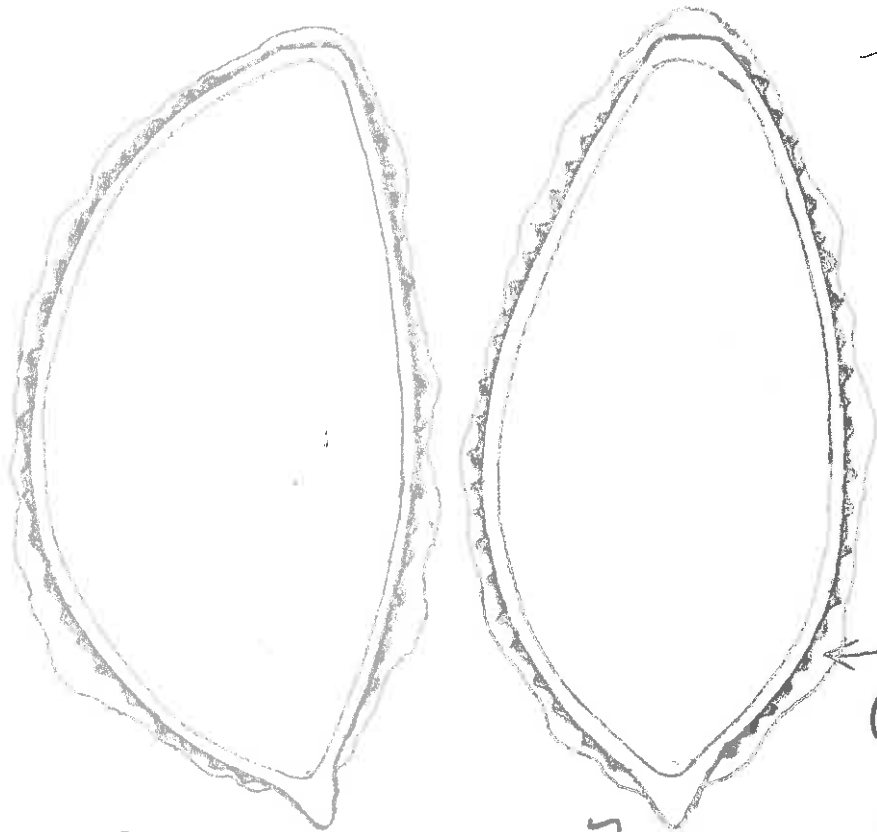
Ch x 1000



Paraphyses -
x 1000



Sp x 1000



Profile

Face

Spores x 8000

← ectoperidium
(of Pether +
Young, 1971)

Bull. Soc. Myc. de France 24:57. 1908

Notes on Tenn-29074, leg. Moser

Spores 10-13 x 5.5-7.5 μ , inequilateral in profile, fusoid to subovoid in face view, some more or less truncate at apex, wall ^{0.6}~~0.5-0.7~~ μ thick, asperulate, ~~no germ pore~~, some calyptrate more or less all over, brownish (near "saya brown") in 2% KOH. Basidia 25-30 x 7-8 μ , 4-spored. Pleurocystidia 30-43 x 5-7 μ , subventricose, subclavate, ^{some} spangled; ~~others devoid of spangled contents~~; cheilocystidia 42-56 x 4-7 μ , cylindrical, ~~some~~ clavate to slightly subcapitate, ^{or} ~~some~~ ventricose below, clustered. Gill trama of subparallel hyphae. Subhymenium not differentiated. Pileus trama of radial and slightly interwoven hyphae. Pileus cuticle an ixocutis of interwoven hyphae, conspicuous. ^{of} Hypodermium ^{of} interwoven brown hyphae. Stipe cuticle of repent, dry hyphae, bearing ~~a dense trichodermium of~~ caulocystidia, similar to cheilocystidia but longer, (40)60-130 x 5-7 μ , occasionally septate with a clamp connection.

Distinguished by its small but distinct, spangled pleurocystidia, long cylindrical caulocystidia, and rather dark brown spores.

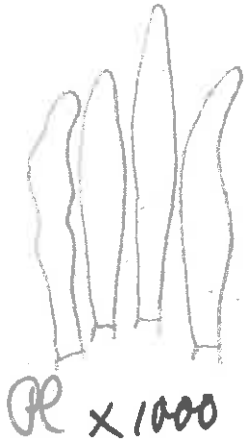
Bruchet (1970) states that the spores are truncate at the apex, with which I agree, but they are without germ-pores.

Moser (1970) also gives a full description of this species. States that the spores are rather strongly warty; does not mention pleurocystidia; says the layer under the ixocutis (hypodermium?) is subcellular (??). Bruchet (1970) states that the spores are subpapillate, truncate at the apex, brown and distinctly verrucose under the oil-immersion objective. He states that the cutis is subcellular, the subcutis little differentiated.

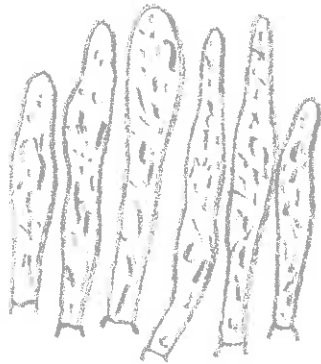
Pegler & Young (1971:97): the ectoperisporium (calyptra) is persistent, particularly in the central regions, but fragmenting to reveal the underlying verrucae towards the apex and base.

Helveta anthracophilum Maire

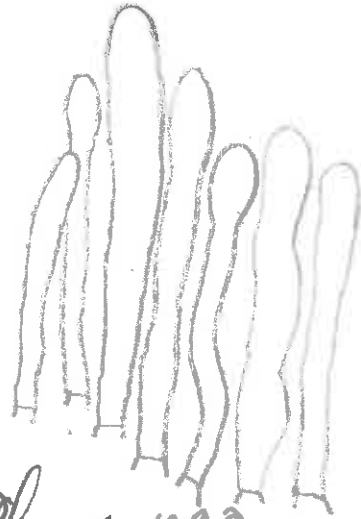
Terun - 29074



Pl x 1000



Pl x 1000

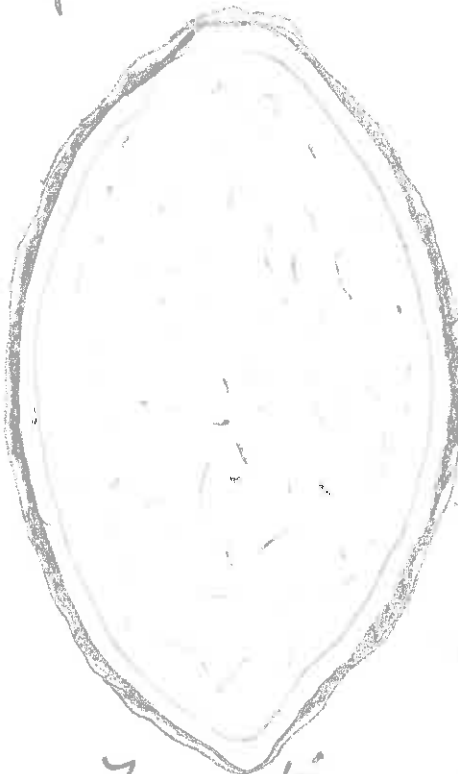


Ch x 1000

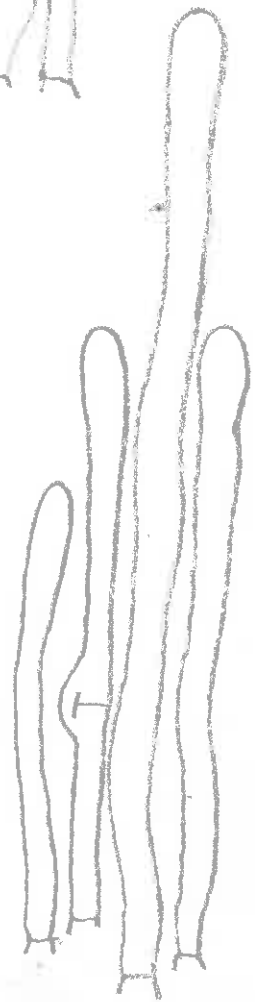
Drawing of Burchet material
most representative (asperulate)



Profile



Face View



Caudo x 1000

Spores x 8000

Exclude

HEBELOMA APPENDICULATUM Murr.

North American Flora 10:220. 1917

(This is Pholiota angustifolia Sm. & Hes.; see N. A. Species
of Pholiota, p. 204-1968.)

Pileus cespitose, 5 cm broad, convex, not fully expanding, slightly gibbous, rosy-isabelline, disc cremeous, viscid, silky and finely imbricate-squamulose, margin deflexed and concolorous, appendiculate with triangular fragments of the slight evanescent veil. Context white, thick at center; taste nutty.

Lamellae sinuate, pale cream colored, not darkening on drying, edges pallid and distinctly crenate or dentate, broad behind, tapering in front, quite narrow, arcuate, very much crowded.

Stipe 4 cm long, 10 mm thick, white above, concolorous with the pileus below, apex glabrous, revolute-squamulose, equal, spongy-stuffed.

Spores 6-7 x 3-4 μ , ellipsoid, smooth, pale-clay-colored in mass, pale-melleous under the microscope.

Type collected by Murrill, on soil, lawn, under maple, New York City, September 4, 1912.

37004

HEBELOMA ARENOSUM sp. nov.

On sandy soil, under Picea abies and P. glauca, Wisconsin
Rapids, Wisc., leg. H. H. Burdsall (No. 7498),
June 3, 1974

Notes by Burdsall

Pileus 1.5-3.5 cm broad, convex to slightly flattened-convex, viscid, light brown (Methuen 6D6) on the disc, fading to brownish-orange toward the margin, in older specimens the margin nearly white, smooth. Context yellowish-gray (Methuen 3C2). Odor none; taste none to slightly radish.

Lamellae adnexed to almost sinuate, at first white, becoming pale brownish-orange, moderately close, rather broad, edges somewhat fimbriate.

Stipe 1-2.5 cm long, 4-8 mm thick, covered with a fine white pubescence, equal. Context dull yellowish gray. Veil none.

Notes by Hesler

Spores 9-12(13) x 5-6 μ , inequilateral in profile, ellipsoid-subfusoid in face view, mature spores subasperulate to rugulose, younger spores nearly smooth, occasionally with a very slight "nose," yellowish brown in 2% KOH. Basidia 27-33 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 30-56 x 5-8 μ , ventricose below (usually on one side), with a neck, apices subcapitate, conspicuous. Gill trama subparallel.

37004

H. arenosum - 2

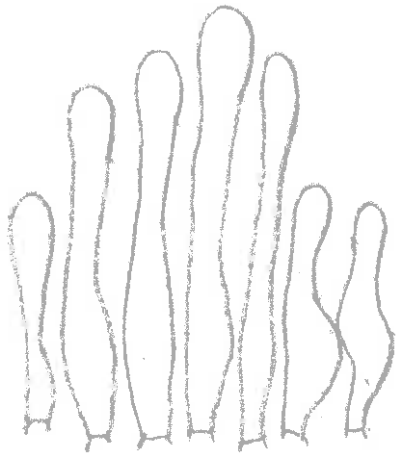
Pileus trama radial. Pileus cuticle an ixocutis.
Hypodermium hyphoid. Stipe cuticle of repent hyphae.
Caulocystidia in numerous tufts, rather cylindrical, at
times septate, apices at times subcapitate, 36-105 x 5-9 μ .
Clamp connections none.

Assuming there is no veil, it is very close to H.
arenosum sp. nov., perhaps the same species. I should like
more material with careful notes on careful observations as
to pileus color; and also on the taste (in Burdsall's notes
he says: "none to slightly radish-like").

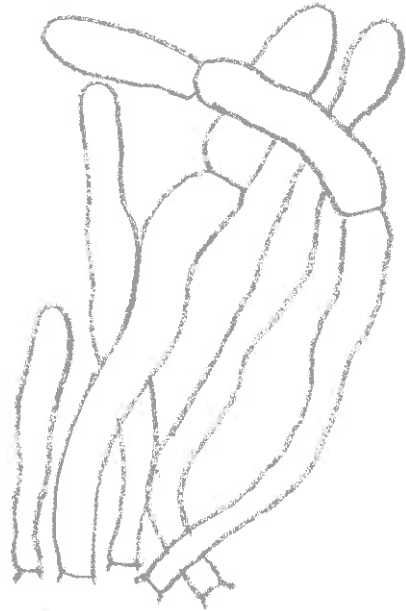
This seems to be the same as Smith-84888, and Smith-
79768.

Nebeloma arenosum sp. nov.

37004 (Burdall - 7498)



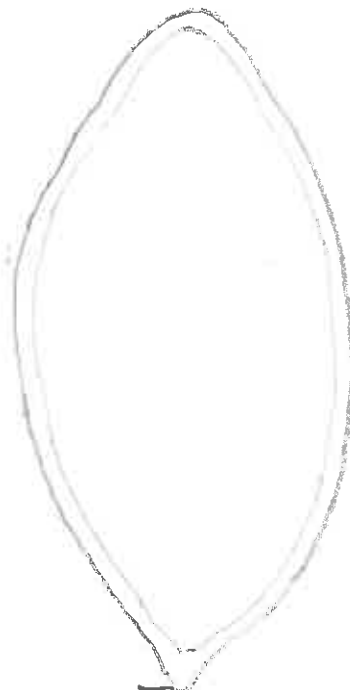
Ch x 1000



Caule tuft (x 1000)



Profile



Face

Spores x 8000

37004

HEBELOMA ARENOSUM sp. nov.

on sandy soil, under Picea abies and P. glauca, Wisconsin Rapids, Wisc., leg. H. H. Burdsall (No. 7498), June 3, 1974

Notes by Burdsall

Pileus 1.5-3.5 cm broad, convex to slightly flattened-convex, viscid, light brown (Methuen 6D6) on the disc, fading to brownish-orange toward the margin, in older specimens the margin nearly white, smooth. Context yellowish-gray (Methuen 3C2). Odor none; taste none to slightly radish ~~permeant~~ ^{pungent}.

Lamellae adnexed to almost sinuate, at first white, becoming ^{pale} brownish-orange, moderately close, rather broad, edges somewhat fimbriate.

Stipe 1-2.5 cm long, 4-8mm thick, covered with a fine white pubescence, equal, Context dull yellowish gray. Veil none.

Notes by Hesler

Spores ¹⁰⁻¹³ ~~various~~ x 5-6 μ , inequilateral in profile, ellipsoid-subfusoid in face view, mature spores ^{nearly} subasperulate to rugulose, younger spores nearly smooth, ~~marginally~~ occasionally with a very slight "nose", yellowish brown in 2% KOH. Basidia 27-33 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 30-56 x 5-8 μ , ventricose below (usually on one side), with a ^{neck,} ~~neck,~~ apices subcapitate, conspicuous. Gill trama subparallel. Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium hyphoid. Stipe cuticle of repent hyphae. Caulocystidia in numerous tufts, rather cylindrical, at times septate, apices at times subcapitate, 36-105 x 5-9 μ . Clamp connections none.

Assuming there is no veil, it is very close to H. arenosum sp. nov., perhaps the same species. I ^R should like more material

with careful notes on careful observations as to pileus color;
and also on the taste (in Burdsall's notes he says: "none to
slightly radish-like).

This seems to be the same as Smith-84888
which was sent to by Burdsall from Wisconsin,
who in turn sent it to me. # No. 37004,
also seems to be the same as Smith-79768,
on sand, from Oregon, sent by Smith to me, &
which I call H. arenosum sp. nov.

Sm-79768

HEBELOMA ARENOSUM sp. nov.

Type

Gregarious on sand, Pacific City, Oregon, Leg. Smith,
November 10, 1970 (labelled doubtfully: colvini)

Notes by Smith

Pileus 3-5 cm broad, convex, expanding to plane, viscid-
with much adhering sand, "pinkish buff", disc near "verona
brown." Context watery-gray when wet; odor more or less
pungent.

Lamellae adnexed, broad, close, pale "verona brown,"
not spotting, edges eroded.

Stipe 4-8 cm long, 8-12 mm thick, deeply sunken in sand,
concolor with pileus margin, oldest one with rusty stains in
mid-portion, lower third heavily coated with sand but no
evidence of darkening. Veil none.

Notes by Hesler

Spores (9) 10-13 x 5-6 μ , inequilateral in profile,
subfusoid in face view, occasionally with a slight "nose," wall
thin (0.25 μ), minutely ^{asperulate or nearly rugulose,} ~~granular~~, yellowish brown in 2% KOH.
Basidia 28-32 x 6-7 μ , 4-spored. Pleurocystidia none;
cheilocystidia 30-62 x 4-7 μ , subcylindric, capitate, the base
more or less ventricose. Gill trama of subparallel hyphae,
5-12 μ broad. Pileus trama radial. Pileus cuticle a thin
ixocutis (30-40 μ). Hypodermium hyphoid, at times only
slightly not differentiated. Stipe cuticle of pallid-grayish,
thick-walled hyphae, dry. Caulocystidia 30-96 x 6-12 μ , more
or less similar to cheilocystidia (sometimes absent). Clamp

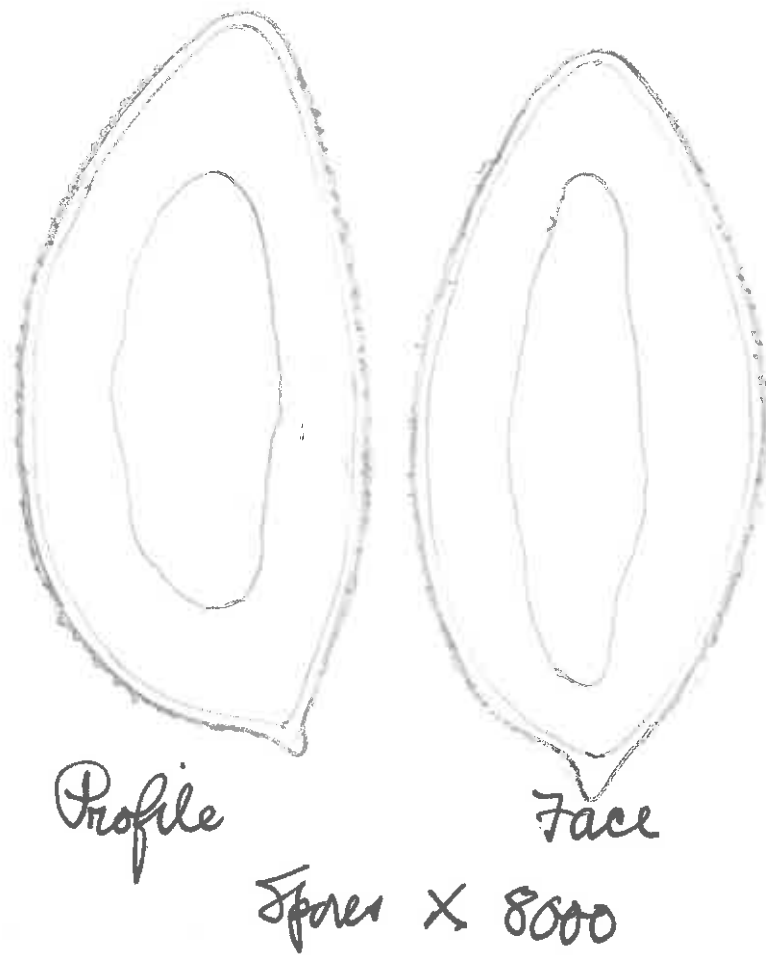
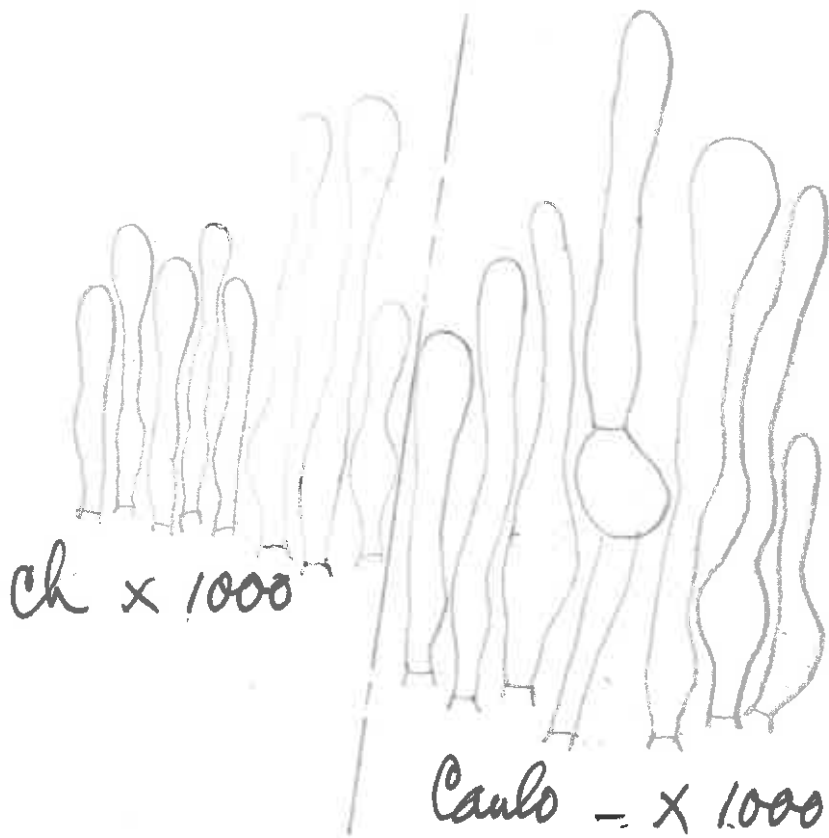
connections not observed.

Smith (says on label) it is doubtfully H. colvini (because of its sand-habitat), but the spores are different in color and shape.

The taste ^{is not described in Smith's notes;} ~~evidently is mild~~, odor more or less pungent; lamellae broad and not beaded; spores rather large, and a bit more brown than usual; cheilocystidia regularly capitate; hypodermium ~~not differentiated.~~ ^{poorly or not at all differentiated.}

Hebeloma arcuosum sp. nov.

Sm - ~~79768~~ 79768 - Type



Sm-84888

HEBELOMA arenosum sp. nov.

? Adn/Harte?

Madison, Wisc., leg. H. Burdsall (date?) [sent by Burdsall to Smith who, in turn sent it on to Hesler]

Notes by Burdsall

Pileus 1.5-4.5 cm broad, pale tan to light brown, viscid, smooth. Context white. (Odor and taste ^{not recorded} probably ^{raphanoid})

Lamellae nearly white at first, light brown at maturity, moderately close, medium broad.

Stipe 1.2-4 cm long, 4-10 mm thick, pallid brownish (paler than pileus), scurfy overall, white-scurfy at apex. Veil none, even in young basidiocarps.

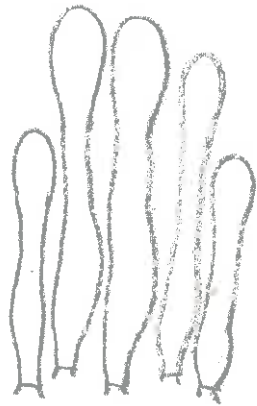
Notes by Hesler

Spores ⁽⁹⁾ 10-~~13~~¹² (~~14~~¹³) x 5-6(7) μ, inequilateral in profile, subvoid to subellipsoid in face view, yellowish brown in 2% KOH, minutely ^{asperulate to} rugulose ^{or} to nearly smooth, some with an obscure "nose." Pleurocystidia none; cheilocystidia 30-48 x 5-7 μ, apex more or less capitate base ventricose (usually on one side). Gill trama of subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium ^{of brown hyphae} ~~cuticular~~. Stipe cuticle dry, of more or less angular, pallid-grayish hyphae, with an over-layer of brown hyphae.

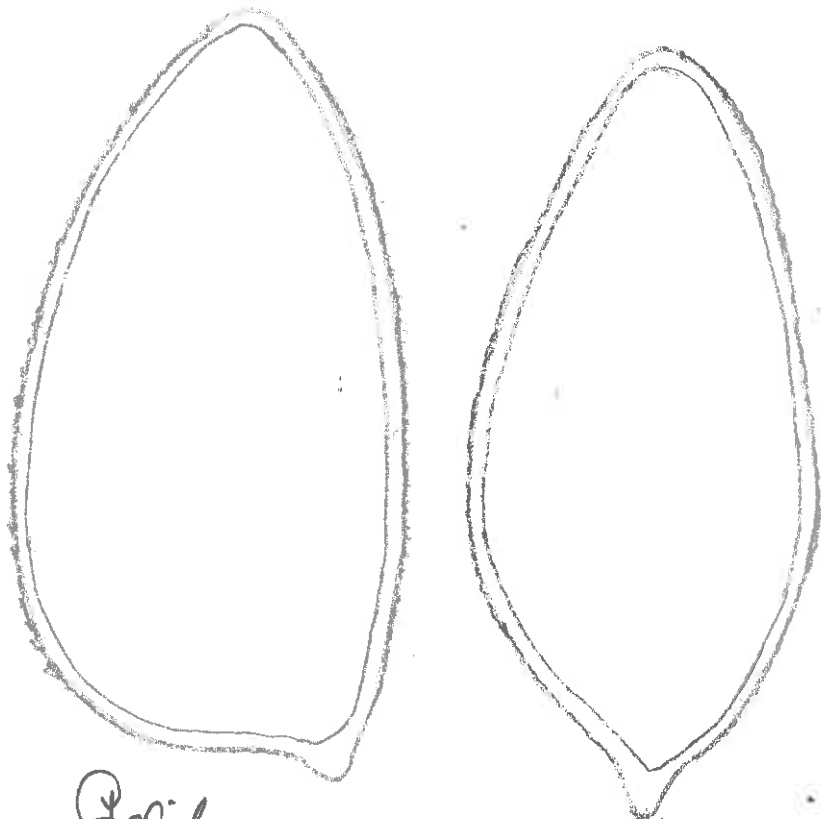
I found no "aborted basidia," as Burdsall sketched. Not H. hiemale, as Burdsall suggested. No notes on odor and taste; so I hesitate to give it a name; ^{double} ~~most~~ ^{both odor & taste are} ~~raphanoid~~ ^{raphanoid, since the odor} ~~was raphanoid when tested.~~
All another coll. (Burdsall-7498)

Abdeloma arenosum sp. nov.

Sm. 84888



Ch x 1000

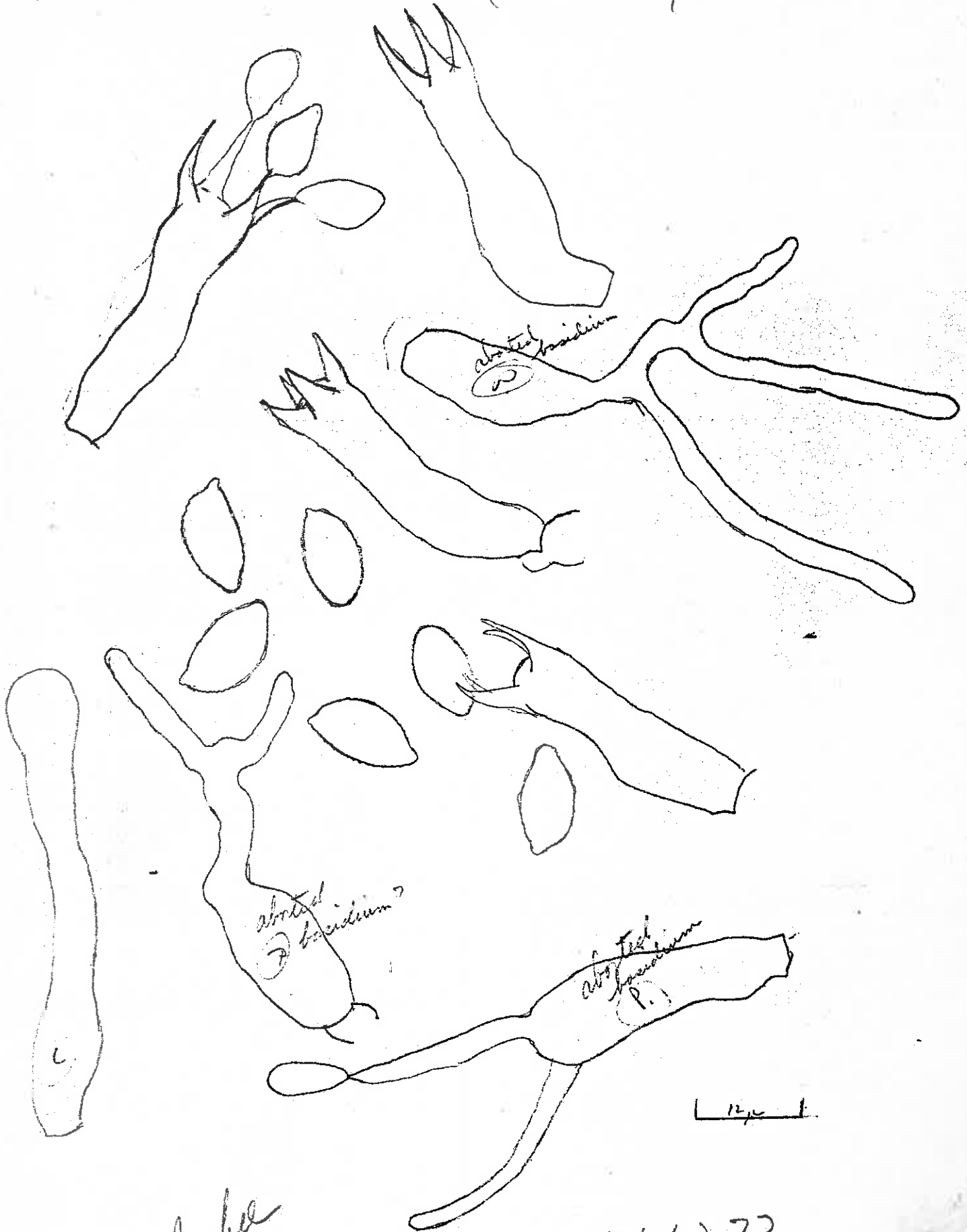


Profile

Spores x 8000

Face view

Helicoma Sm-84888 (Sketches by Purdissall)



Heber
Helicoma hemale (aborted sp.) ??

Burdsall &
Albers - 8312

Tem - 39969

HEBELOMA ARENOSUM sp. nov.

? hardly this! in arenosum the
after minutely asperulate.

on soil, under Pinus strobus, Griffith State Nursery,
Wisconsin Rapids, Wisc., Wood County, Burdsall & Albers,
October 18, 1974.

Notes by Albers

Pileus 12-70 mm broad, convex or slightly flattened-convex, dry when collected, tacky when moistened, smooth, disc Sepia(63) to Buff(45), intermediates near Fawn(87), margin usually paler(near Fawn) and usually wavy or rippled. Context white; odor and taste slightly of radish.

Lamellae adnexed, white at first then near Hazel(88), in age lighter with a pinkish tint.

Stipe 15-40 mm long, 4-18 mm thick, white at first, with a sheen often covered by spores later, solid. Veil none.

Notes by Hesler

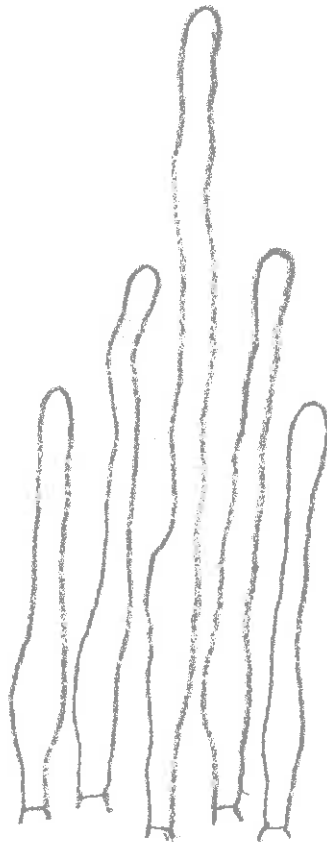
Spores 10 - 12 x 5.5 - ^{6.5}μ, ellipsoid to sub-limoniform in face view, inequilateral in profile, yellowish brown in 2% KOH, rugulose, with a slight nose in many. Pleurocystidia none; usually
^{32-44 x 5-7 μ,} cheilocystidia subclulindric-subcapitate, ~~many/many~~ more or less ^{ventricose} ~~inflated~~ below. Pileus cuticle an ixocutis; hypodermium brown, hyphoid. Caulocystidia 56-110 x 6-8 μ, similar to cheilocystidia, but larger, ~~forming~~ numerous toward the apex of the stipe. Stipe cuticle dry.

Hebeloma arenosum sp. nov.

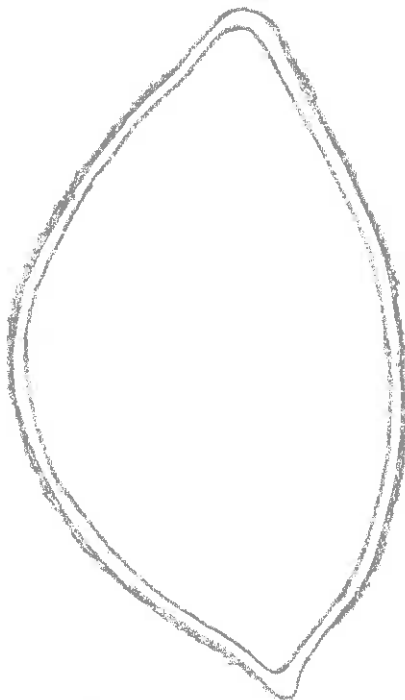
Albers - 8312



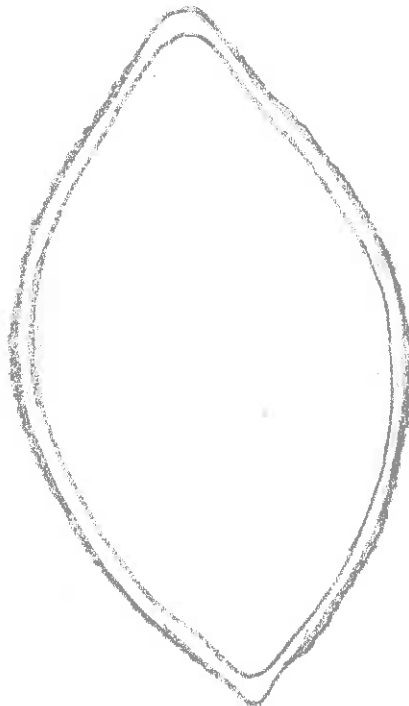
Ch x 1000



Conulo x 1000



Profile



Face

Spores x 8000

~~Tank # 34440~~
Burdsall & Albers
No. 8313

HEBELOMA ARENOSUM sp. nov.

on sandy soil, Griffith State Nursery, Wisconsin
Rapids, Wisc. Oct. 18, 1974.

Notes by Albers

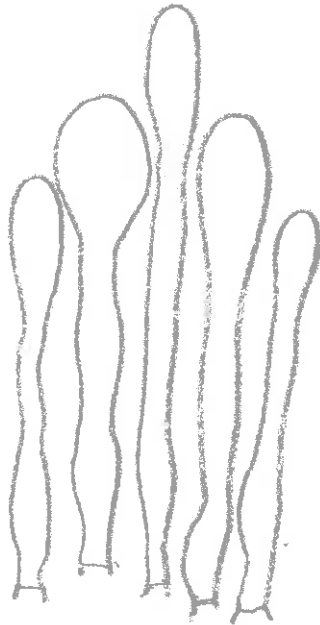
(Albers states that his notes on his No. 8312 apply to 8313.)

Notes by Hesler

Spores 9 - 12 x 5.5- 6.5 μ , inequilateral in profile
and with more or less of a nose, ellipsoid-sublimoniform in face
view. Pl none; ch similar to those of 8312, but ^{larger} ~~larger~~: 46 - 74 x
6 - 12 μ , capitate in most, subcapitate or almost ~~equal~~ equal at
apex in others. Otherwise as in 8312.

Nekeloma arenosum sp. nov.

Purdell + Albers-8313



oh x 1000

[Other micro features as in 8312]

Tam - 39971
Burdsall &
Albers-8314

HEBELOMA ARENOSUM sp. nov.
under Picea glauca,
on sandy soil, Griffiths State Nursery, Wisconsin
Rapids, Wood Co., Wisc., Oct. 18, 1974

(Albers states that his notes for 8312 apply to 8314)

Notes by Hesler

Spores 9 - 12 x 5.5 - 6.5 μ , inequilateral in profile,
ellipsoid to sublimoniform with more or less of a nose in face
view, slightly rugulose, yellowish brown (in 2% KOH). Pl none;
ch similar to those of 8312. Otherwise same as 8312.

Smith - 59200 HEBELOMA AREOLATUM sp. ~~n~~ov.

Under Pinus contorta, 20-mile Creek, Upper Payette Lakes,
Idaho, leg. R. Gilbertson, July 29, 1958

Notes by Smith

Pileus 3-4.5 cm broad, obtuse with an inrolled decurved margin, "verona brown" fading to "cinnamon buff," disc remaining darker, areolate in age, glabrous, slightly viscid but soon dry. Context white, unchanging; odor and taste not distinctive. FeSO₄ (ferric sulphate) greenish gray in stipe base.

Lamellae adnate, pale "avellaneous" when young, becoming pale cinnamon, crowded, narrow, edges fragile.

Stipe 4-6 cm long, 10-15 mm thick at apex, pallid or whitish above, slowly dingy dark cinnamon buff at base, squamulose, slightly enlarged below, solid. Veil none.

Spores 8-10 x 5 μ , nearly smooth. Cheilocystidia present.

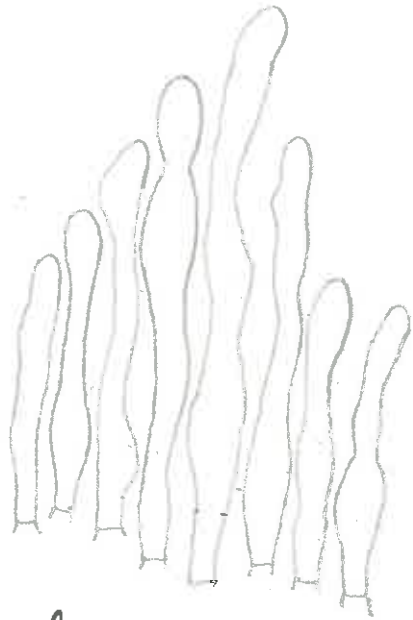
Notes by Hesler

Spores 8-10 x (4)4.5-5.0 μ , inequilateral in profile, subovoid in face view, wall 0.25 μ thick, minutely rugulose, pale yellow in 2% KOH. Basidia 27-30 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 35-74 x 4-7 μ , more or less subcylindric, usually subcapitate, ventricose on one or both sides below, or more rarely above. Gill trama of slightly interwoven hyphae, 2-5 μ broad. Pileus trama of

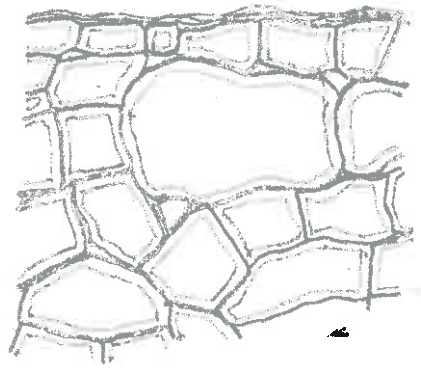
rather loosely interwoven hyphae, 4-12 μ broad. Pileus cuticle an ixocutis, hyphae slender, 1.5-2.5 μ broad. ~~Hypodermium~~ Hypodermium of brown cells. Stipe cuticle a zone of pallid-grayish subparallel hyphae, walls thick. Caulocystidia few, cylindric-clavate. Clamp connections present on pileus cuticular hyphae.

Hebeloma areolatum sp. nov.

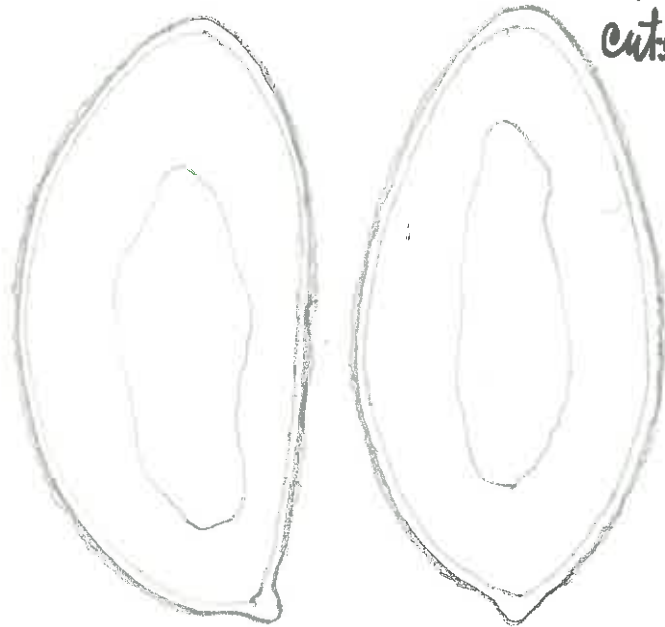
Sm. 59200 - Fyp



Ch x 1000



Stipe cuticle "cells"
(Transverse section showing
cutends of thick-walled hyphae)



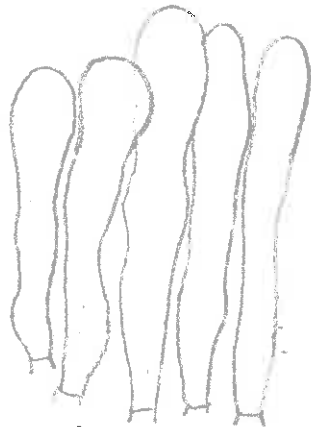
Smith-4299 *HEBELOMA AROMATICUM* sp. nov.

Gregarious on mud in dry bog, Bear Island, Lake Timagami,
Ontario, August 29, 1936, leg H. S. Jackson

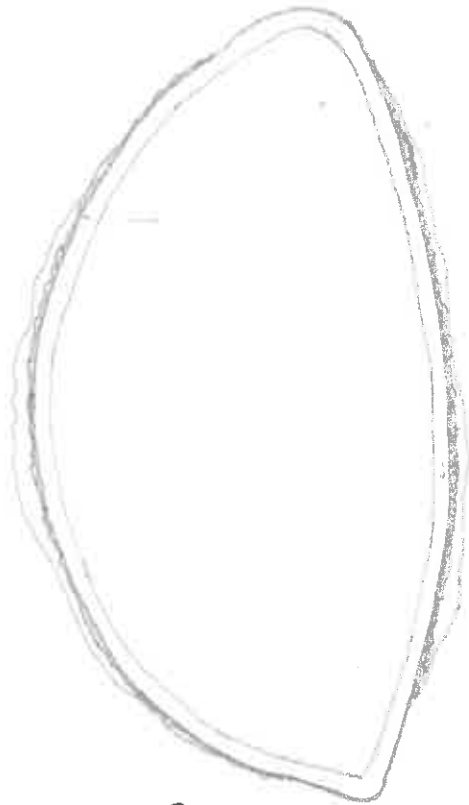
Spores 10-14(17) x 5.5-7.5 μ , inequilateral in profile, subfusoid in face view, at times with an obscure "nose," wall 0.3 μ thick, rugose, sometimes slightly calyptrate, yellowish brown in 2% KOH, reddish brown in Melzer's reagent. Basidia 32-35 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 36-53 x 6-10 μ , subclavate, sometimes more or less capitate, ventricose below. Gill trama of subparallel hyphae, 4-7(10) μ broad. Pileus trama of broad (6-14 μ) radial hyphae. Pileus cuticle an ixocutis. Hypodermium hyphoid. Stipe cuticle dry, hyphae brownish, somewhat angular. Clamp connections present.

Hebeloma aromaticum sp. nov.

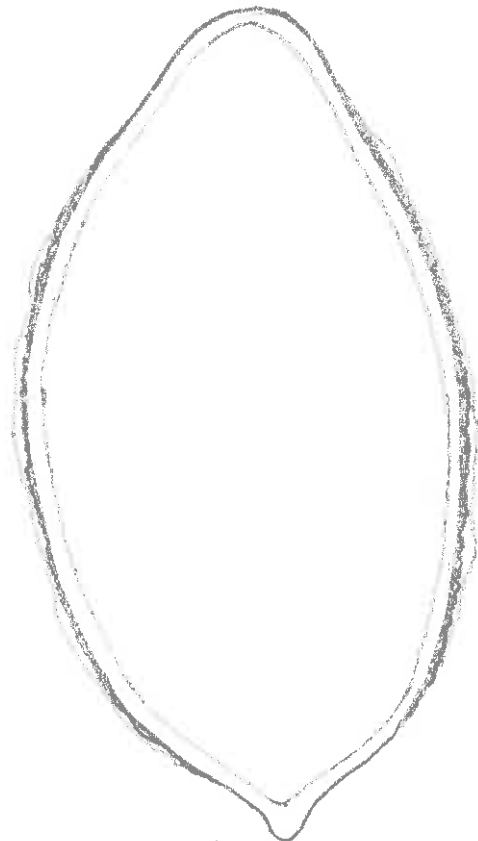
Sm - 4299



Ch x 1000



Profile



Face

Spores x 8000

Agaricus (Hebeloma) ascophorus Pk.

New York State Mus. Ann. Rept. 24: 68. 1872.

Peck describes the spores as produced in ~~xxix~~ asci.
The remainder of his description sounds as if it might be an
Hebeloma; and his colored illustration shows that it is an
agaric. We have not seen the type. Subsequent authors seem
to ~~have~~ overlooked it.

16572

HEBELOMA ASPERULATUM sp. nov.

In deep humus, under rhododendron, Cades Cove, October 22,
1944, leg. LRH.

Pileus 4-6 cm broad, "cream buff" to "light buff" disc darker, margin paler, glabrous, viscid. Context medium thick on the disc, thin on the margin, white; odor raphanoid, taste raphanoid becoming bitter.

Lamellae narrowly adnate, seceding, "pinkish buff," crowded, rather narrow.

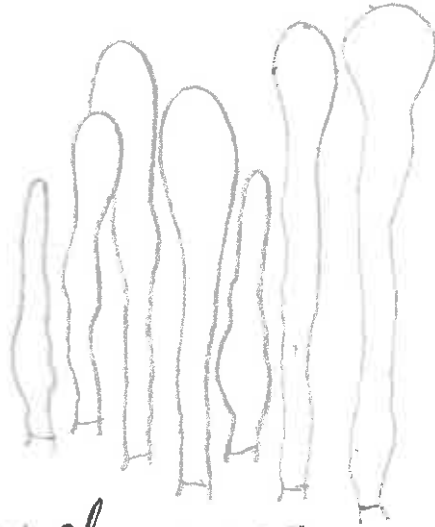
Stipe 6-15 cm long, 7-10 mm thick, whitish, apex mealy, elsewhere glabrous, dry, slightly bulbous, stuffed with a white pith. *Veil none.*

Spores 10-14 x 4.5-6(6.5) μ , ~~rather~~ slender, inequilateral in profile, with a "nose," more or less limoniform in face view, asperulate, yellowish-brown in 2% KOH. Basidia 24-30 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia ~~34~~ 34-66 x 5-12 μ , cylindric-capitate or sub-flask shaped. Gill trama of subparallel hyphae. Pileus trama of loosely interwoven broad (6-18 μ) hyphae. Pileus cuticle an ixocutis*
Hypodermium of brown, interwoven hyphae. Stipe cuticle a zone of repent, colorless hyphae extending perpendicularly; caulocystidia similar to cheilocystidia. Clamp connections present on stipe cuticular hyphae.

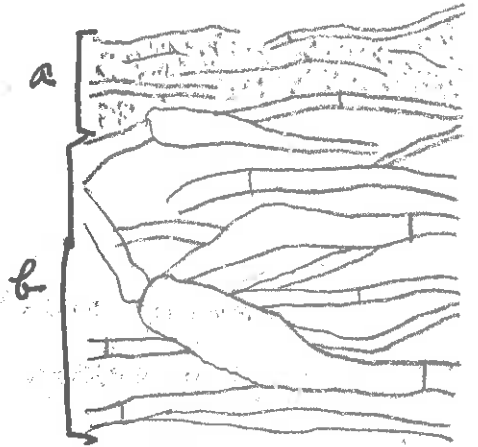
Spores slender, limoniform, asperulate. Pileus thin. Smith called it crustuliniforme, but not that.

Asperyema sp. nov.
Hebeloma crustuliniforme (Fr.) Aman. & Quel.
var. *crustuliniforme*

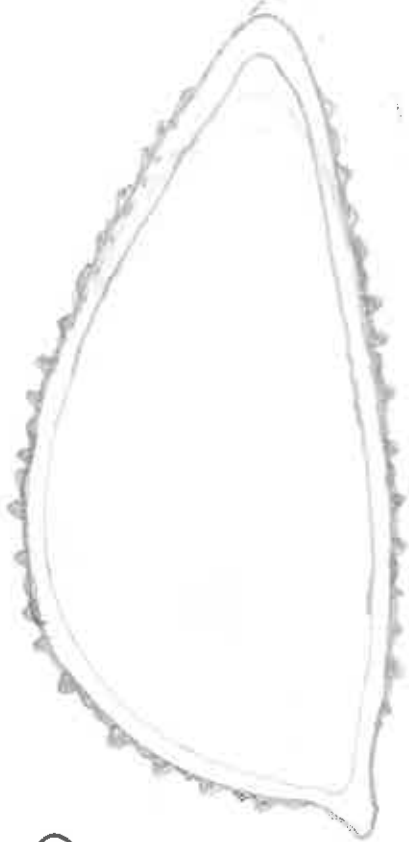
16572



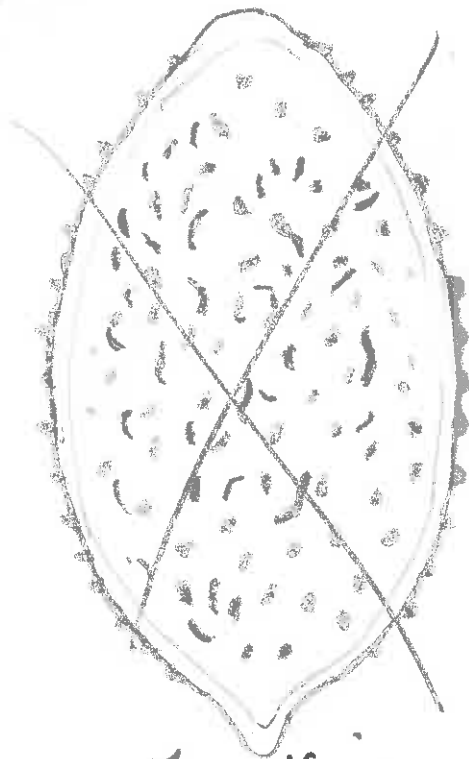
X Ch X 1000



Pileus yoentis, a;
hypodermium, b.



X Profile



Face View



X Face View

Spores X 8000

HEBELOMA ATRIFULVIFOLIUM Murrill

Lloydia 8:285. 1945

Pileus 3-4 ~~cm~~ cm broad, convex to plane, viscid, glabrous, rosy-isabelline, disc darker, margin paler, even. Context very thin, white; odor none, taste mild.

Lamellae sinuate, pallid to dark-fulvous, edges white-fimbriate, close, 10 mm broad, ventricose, lamellulae present.

Stipe 4-6 cm long, 6-10 mm thick, shining-white when young, slightly discolored when older, enlarged upward, not bulbous, fibrillose, furrowed, apex chaffy, hollow.

Spores 13-18 x 5-8 μ , oblong-ovoid, smooth, ochroleucous under the microscope.

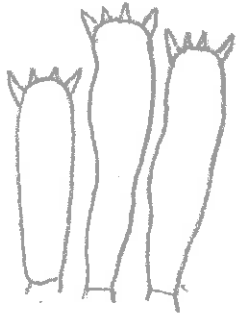
Type in shaded alley, in yard, Gainesville, Florida, January 24, 1944, leg. Weber, det. Murrill, F20151.

Notes on Type

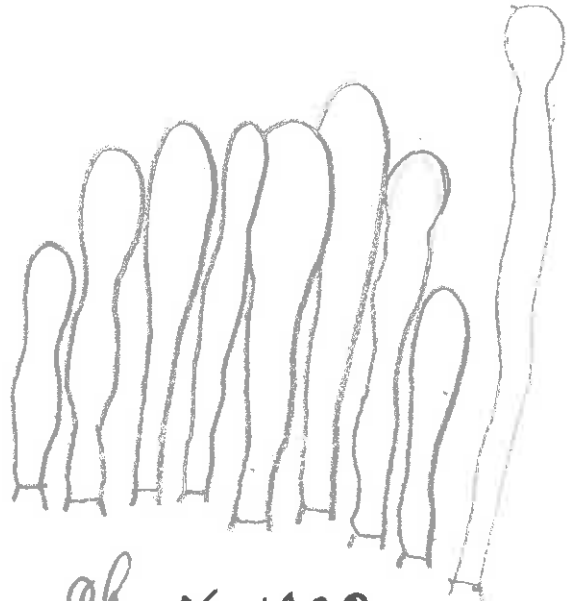
Spores 11-20 x 5.5-8 μ , inequilateral in profile, fusoid to limoniform in face view, at times slightly truncate at apex, wall 0.5 μ thick, rugulose, apex snout-like, yellowish brown in 2% KOH. Basidia 28-36 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 33-54(76) x 5-13 μ , more or less cylindrical-clavate or subcapitate, clustered. Gill trama of subparallel hyphae, 5-12 μ broad. Pileus trama of radial hyphae. Pileus cuticle an ixocutis, hyphae repent and somewhat digested, outer hyphae more or less erect to semi-repent. Hypodermium of radial brown hyphae, at times obscure. Stipe cuticle of

repent, dry hyphae. Clamp connections present but inconspicuous on the cuticular hyphae of the pileus.

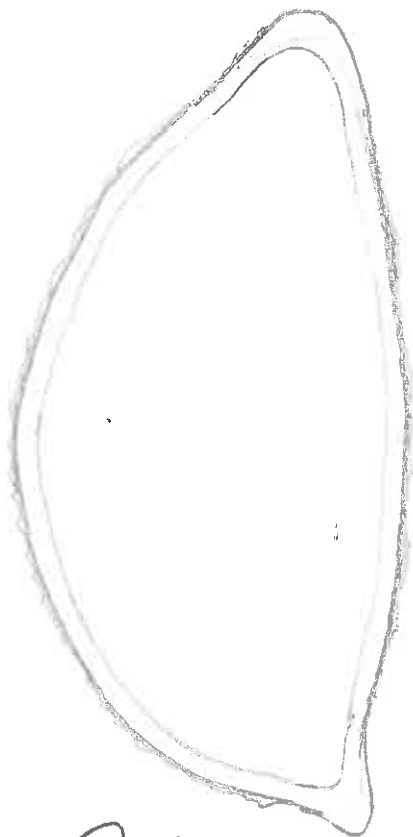
Helvoma atrifolium Murr.
Type



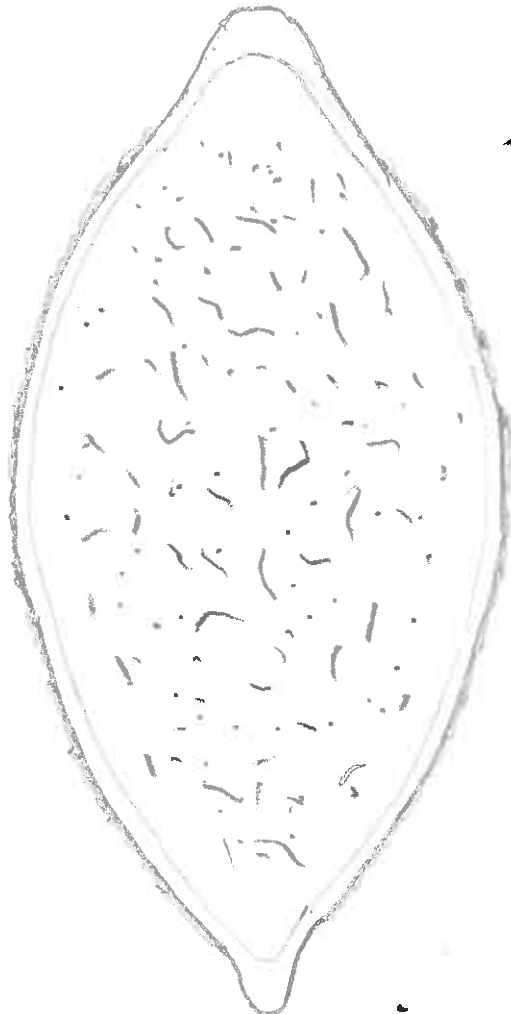
Basidia
x 1000



ch x 1000



Profile



Face View

Spores x 8000

Smith - 38997 HEBELOMA ~~ATHE~~ ATTENUISPORUM sp. nov.
Gregarious on sand, under aspen, edge of Rees Bog, UMBS,
Douglas Lake, Michigan, June 25, 1952

Notes by Smith

Pileus 2-3.5 cm broad, convex, expanding to plane, or margin arched, "cinnamon brown" to "Prout's brown," opaque when moist, glabrous, viscid. Context thin and pliant, concolorous with the surface; odor none, taste bitterish-disagreeable, but not of radish.

Lamellae sharply adnexed, dull "cinnamon brown" at all stages, close, broad, edges in some paler and slightly uneven.

Stipe 2-3 cm long, 6-8 mm thick at apex, enlarged downward to a bulbous base, dull brown, with a pallid sheen at first from a "bloom" of faint, soon-vanishing, appressed fibrils, glabrescent, bister in base of old stipes. Veil none.

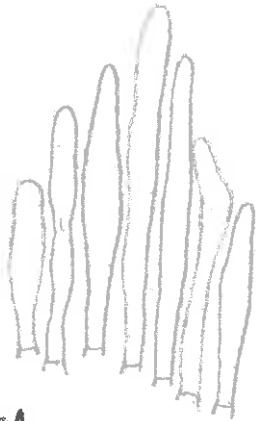
Spores 9-11 x 5-5.5 μ , very minutely roughened. Basidia 4-spored, 6-7 μ broad, subcylindric. Pleurocystidia none; cheilocystidia abundant, 30-46 x 4-7 μ , subcylindric to subfusoid. Gill trama slightly interwoven, nearly hyaline in H₂O when fresh. Pileus cuticle a distinct gelatinous pellicle of narrow, yellowish hyphae, 2.5-3.5 μ diameter. Hypoderm a rusty brown layer, hyphae rampantly interwoven. Context of interwoven hyphae with slightly incrustated brownish walls. Clamps present.

Notes by Hesler

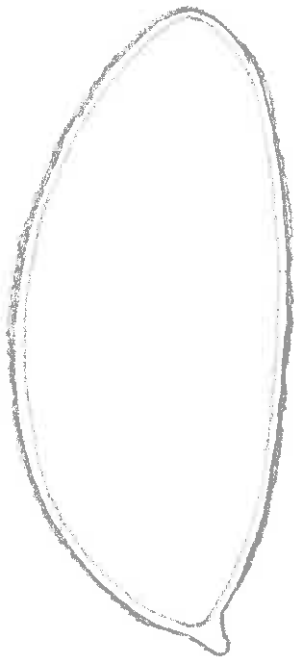
Spores (8)9-11 x (4)4.5-5 μ , slightly inequilateral in profile, subfusoid to oblong-ellipsoid in face view, wall 0.25 μ thick, minutely rugulose, rather pale yellowish brown in 2% KOH. Basidia 22-26 x 5-6 μ , 4-spored. Pleurocystidia none; cheilocystidia 22-48 x 3-5 μ , subcylindric to obscurely subfusoid. Gill trama of slightly interwoven to subparallel hyphae, 4-7 μ broad. Pileus trama of loosely interwoven hyphae. Pileus cuticle an ixocutis. Hypodermium a zone of brown, interwoven hyphae. Stipe cuticle of dry, repent, brownish hyphae. Clamp connections present.

Heloma attenuisporium sp. nov.

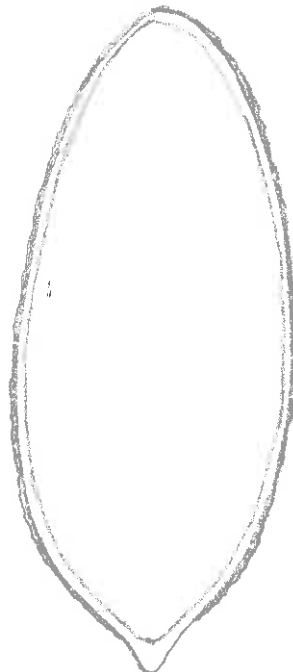
Sm-38997 - Type



Ch - x 1000



Profile



Face

Spores x 8000

HEBELOMA AUSTRALE Murrill

Florida Acad. Sci. Proc. 7:120. 1945

Pileus gregarious, 4-5 cm broad, convex to subexpanded, often slightly elevated at the center, pale rosy-isabelline, glabrous, slightly viscid, margin even, inflexed on drying. Context thin, white; odor none, taste bitter (but not always).

Lamellae adnexed, dull brown when mature and dry, edges white-fringed, lamellulae inserted, crowded, broad.

Stipe ~~4/4~~ 4-5 cm long, 6-8 mm thick, dingy-white, floccose, tapering downward to a small bulb.

Spores 10-12 x 5-6 μ , ovoid, smooth, inequilateral. Cystidia none.

Type collected by Murrill (F 21535, FLAS), under live-oak, west of Newnan's Lake, near Gainesville, Florida, December 28, 1942.

Notes on Type

Spores 9-11(12) x 5-6 μ , inequilateral in profile, ^{sub-} fusoid to subovoid in face view, no germ pore, ^{to nearly smooth,} smooth to ^{brown} minutely rugulose, wall 0.3-0.4 μ thick, pale yellow in KOH. Pleurocystidia none; cheilocystidia 35-47 x 5-7 μ , clavate to subventricose-subcapitate. Gill trama of subparallel hyphae. Pileus trama of slightly interwoven hyphae. Pileus cuticle an ixocutis, the hyphae ~~tp~~ repent and with little or

no digestion, surface hyphae repent to more or less erect. Hypodermium of brown hyphae, not always distinct. Stipe cuticle of dry, repent hyphae. Clamp connections on the pileus cuticular hyphae.

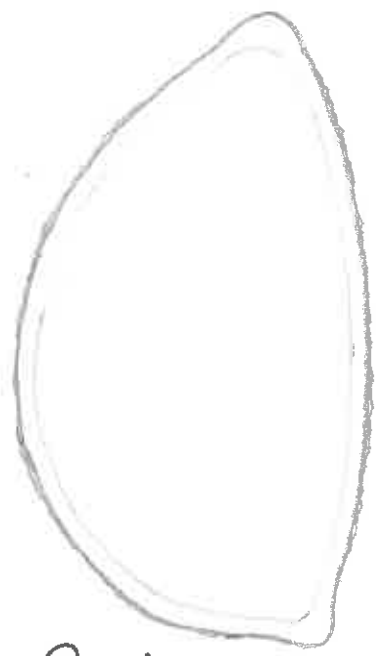
The wall of many spores appears smooth, but in others minutely rough (rugulose).

Nebeloma australe Murr.

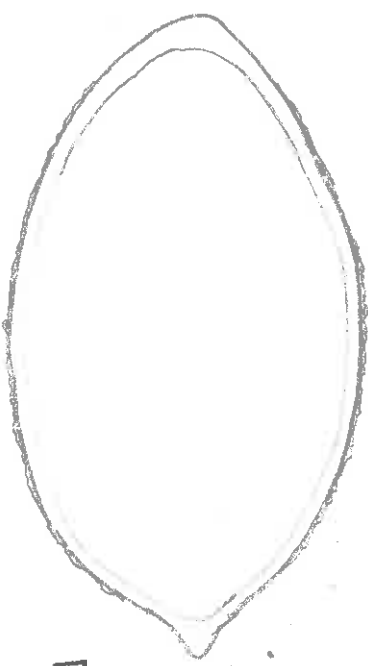
Type (Fl. Acad. Sci. Proc. 7:120. 1945)



Ch x 1000



Profile



Face View

Spores x 8000

16573

HEBELOMA AVELLANEIFOLIUM sp. nov.

On soil, in deciduous woods, Cades Cove, GSMNP, LRH,

October 15, 1944

Pileus 2-5 cm broad, viscid, appressed-silky, "cartridge buff," the disc darker (near "tawny"), margin at first incurved. Context firm, white, medium thick; odor mild, taste bitter.

Lamellae adnexed, at first pallid, finally "avellaneous," close, broad, edges fimbriate.

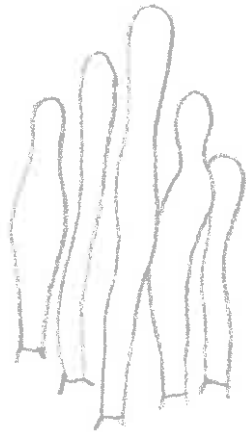
Stipe 1.5-2.5 cm long, 5-8 mm thick, white, dry, squamulose above, equal, solid. Veil none.

Spores 9-12 x 4.5-6(7) μ , inequilateral in profile, sublimoniform in face view, minutely rugulose, with a "snout," wall 0.3-0.4 μ thick, pale yellow brown in KOH. Basidia 27-30 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 30-54 x 5-7 μ , subventricose to subcylindric, sometimes apices slightly enlarged. Gill trama of parallel or nearly parallel hyphae. Pileus trama of interwoven hyphae. Pileus cuticle an ixocutis. Hypodermium of loosely interwoven brown hyphae. Clamp connections present.

Cf. anthracophilum and calyptosporum.

Hebeloma avellaneifolium sp. nov.

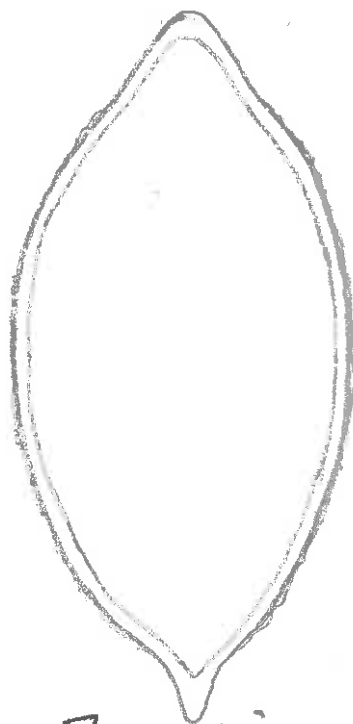
16573 - Type



Ch x 1000



Profile



Face View

Spores x 8000

Smith - 19294 HEBELOMA AVELLANEO-MARGINATUM sp. nov.
Cespitose-gregarious in muck of stream bed, East Fork,
Salmon River, Mt. Hood National Forest, Oregon, leg.
Smith, September 30, 1944

Notes by Smith

PKI "avellaneous,"
Pileus 4-7 cm broad, obtuse with an inrolled, ~~whitish~~
pruinose margin when young, obtusely umbonate to nearly
plane in age, near "sayaal $\phi\phi$ brown," ~~the margin at first~~
~~"avellaneous,"~~ the disc gradually becoming more tawny brown,
viscid, opaque, glabrous. Context whitish, watery next to
the gills; odor and taste faintly radish-like.

Lamellae adnate, pallid but soon brownish and finally
"wood brown," crowded, broad, edges even or slightly wavy.

Stipe 3.5-6 cm long, 6-10 mm thick, surface conspicuously
white pruinose to scurfy over all, equal or only slightly
enlarged downward, stuffed becoming hollow, white within.
Veil none.

Spores 9-12 x 5-6 μ . Cheilocystidia present.

Notes by Hesler

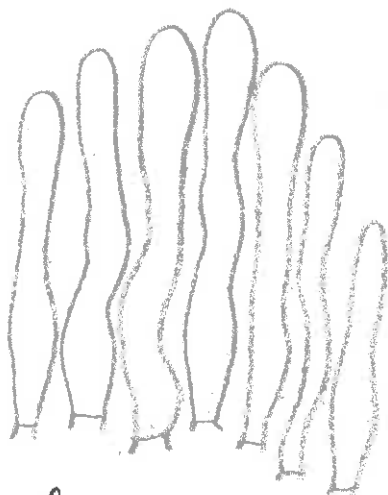
Spores 9.5-12 x 5.5-6.5 μ , inequilateral in profile,
subovoid in face view, wall 0.3 μ thick, rugulose to rugose,
yellowish brown in 2% KOH. Basidia 28-36 x 7-8 μ , 4-spored.
Pleurocystidia none; cheilocystidia 34-53 x 5-7 μ , cylindrical
to subclavate, usually ventricose below on one or both sides.

Pileus trama of broad (4-12 μ) loosely interwoven hyphae. Gill trama of narrow (2-5 μ) subparallel hyphae. Pileus cuticle an ixocutis, the hyphae with occasional clamp connections. Hypodermium a zone of brown cells.* Stipe cuticle a pallid-grayish zone of thick-walled, dry hyphae; caulocystidia similar to cheilocystidia. Clamp connections on pileus cuticular hyphae.

This appears to be near H. sinapizans, but hardly that; it lacks pleurocystidia, has a pileus trama of broad, loosely interwoven hyphae. Near pseudosinapizans, in which the spores are asperulate, stipe is bulbous, hypodermium hyphoid.
* Similar to those in H. abieticola, + roseidivens.

Hebeloma avellaneo-marginatum sp. nov.

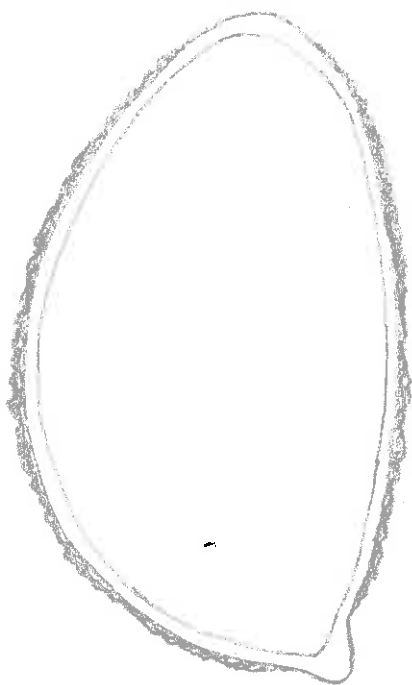
Sm. 19294 - Type



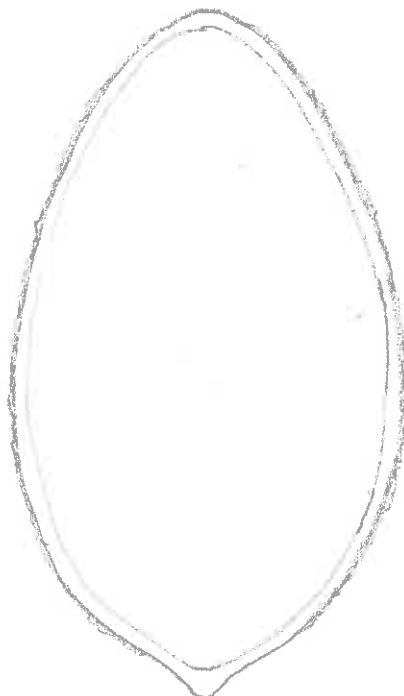
Ch $\times 1000$



Basidium
 $\times 1000$



Profile



Face

Spores $\times 8000$

Sm-84883 HEBELOMA AVELLANEUM Kauffman

Michigan Acad. Sci. Arts and Letters 17:171. 1933

Pileus 3-9 cm broad, oval to ovate-campanulate, soon broadly umbonate, then expanded and the umbo disappearing, "orange cinnamon" or "wood brown" to "avellaneous," the disc "fawn color" or "cinnamon buff," the margin "pinkish buff," becoming dingy "ochraceous buff" to "ochraceous tawny," very viscid, shining, glabrous, margin whitish. Context odor mild, taste faintly bitter.

Lamellae adnate, often emarginate with a decurrent tooth in age, "vinaceous buff" then "avellaneous" with a tinge of cinnamon in age, edges white flocculose, not beaded, crowded, narrow, narrowed to a point in front.

Stipe 5-10 cm long, 6-12 mm thick, covered by a removable floccose or scurfy white mealiness up to the apex, white within, elongated, ovate-bulbous, solid at first then narrowly hollow, somewhat corticate to fibrous. Veil none.

Spores 8-10(11) x 5-5.5 μ , somewhat almond-shaped, slightly roughened, pale brown. Basidia 4-spored, 32 x 6-7 μ . Pleurocystidia none; cheilocystidia 60-80 x 5-8 μ , abundant.

Type collected at Lake Quiniault, Washington, November 8, 1925. Also found in Idaho, September 13, 1922; and Michigan. It is near H. punctatum and H. versipelle but the former is smaller with shorter cheilocystidia and the latter has broad lamellae and larger spores.

Sm-84883

HEBELOMA AVELLANEUM Kauffman

On soil, under conifers, and along borders of swamps,

Lake Quinault, Washington, leg. Kauffman,

November 8, 1925

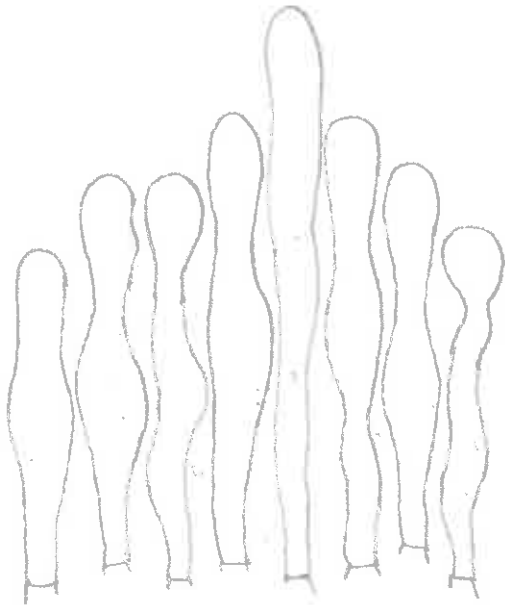
Isotype: Notes by Hesler

Spores 7.5-9(10) x 4-5 μ , inequilateral in profile, subellipsoid to subovoid in face view, minutely rugulose, best observed in cotton blue, wall 0.25-0.3 μ thick, pale yellowish brown in 2% KOH. Basidia 26-32 x 5.5-7 μ , 4-spored. Pleurocystidia none; cheilocystidia (32)40-76 x 5-9 μ , subcylindric, subventricose, abundant, conspicuous. Gill trama of subparallel hyphae, 2.5-5 μ broad. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium a zone of brown pigmented cells. Stipe cuticle a zone of dry, slender, pallid hyphae, bearing tufts of cylindric to subclavate caulocystidia, with clamp connections.

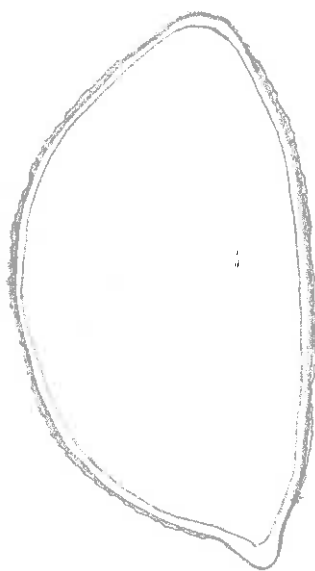
In original description, Kauffman and Smith report finding it in Washington, Idaho, and Michigan.

Hebeloma anellaneum Kauff.

holotype (Sm. 84883)



Ch $\times 1000$



Profile



Face

Spores $\times 8000$

HEBELOMA BAKERI Earle

New York Bot. Gard. Bull. 2:342. 1902

Pileus solitary, 5-7 cm broad, expanded, cream-colored, disc darker, distinctly viscid, glabrous, margin entire. Context white or cream-colored, unchanging; odor and taste mild.

Lamellae deeply sinuate, pale ochraceous-brown, edges white and eroded, crowded, subventricose, lamellulae present.

Stipe 8 cm long, 7 mm thick, concolorous with the pileus, equal, base subglabrous, apex pruinose, solid.

Spores 10-12 x 6-7 μ , ellipsoid-ovoid.

Type from Stanford University, California, on soil in woods, December 4, 1901.

Note in specimen box by Murrill says: "cf. H. albidulum Pk. very closely;" note by Earle: "This is very near H. crustuliniforme."

Notes on Type, by Hesler

Spores 10-12 x 6-7.5 μ , somewhat inequilateral in profile, fusoid in face view, apical end slightly rounded, a few truncate, minutely rugulose or nearly smooth, pale yellowish in KOH. Basidia (not suitable for study). Pleurocystidia none; cheilocystidia 22-72 x 4-8 μ , slender-clavate or at times subcylindric, usually in tufts, thin-walled, often extending up the sides of the gills (about 125 μ).

Gill trama of narrow, slightly interwoven hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis, the hyphae more or less digested. Hypodermium cellular. Stipe cuticle of slender, repent, dry, longitudinally disposed hyphae. Clamp connections present.

My observations, using B. & L. 'scope, oil-immersion giving X1100 magnification showed an apparently smooth spore-wall. Observations were also made with (another) microscope, X3150, which showed the spore-wall minutely rugulose; and the electron photo minutely rugulose (see photo).

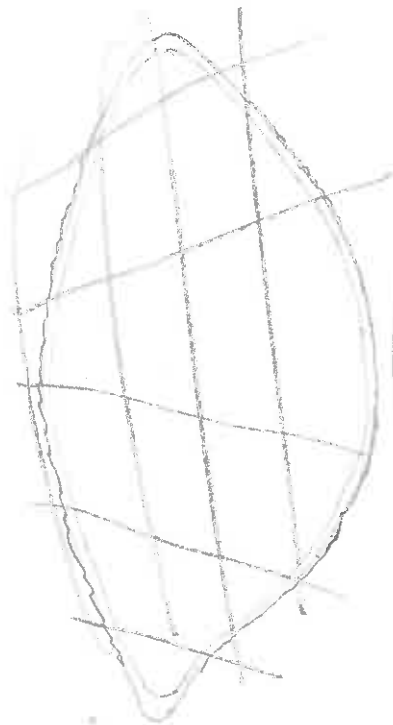
Smith (notes) says it may be a form of H. crustuliniforme but compare cheilocystidia (which he describes as narrowly clavate to ventricose at base with cylindric necks--I found necks rarely).

Neheloma bakeri ~~Mont.~~ Earle

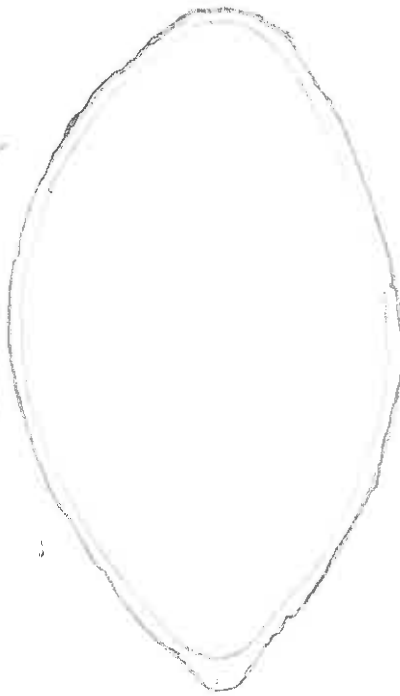
Type



ch x 1000



~~Profile~~



Face View

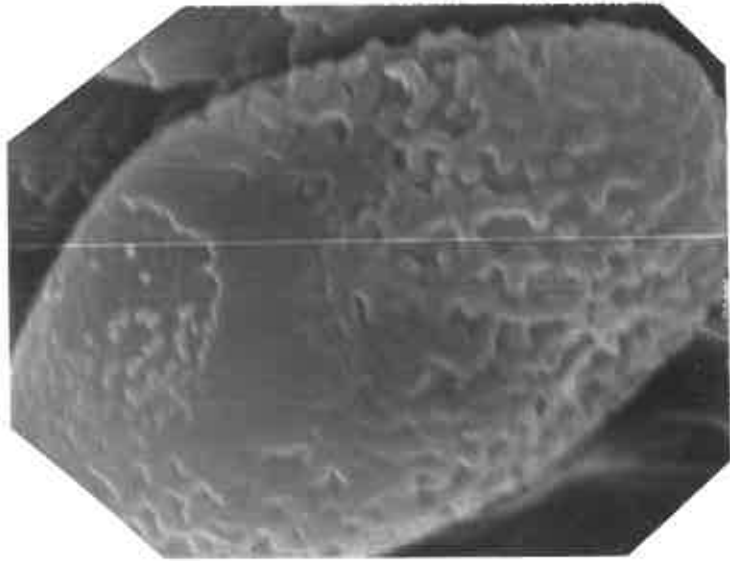


Profile

Spores x 8000



x 5000



x 10,000

Hebeloma bakeri, type, scanning electron
micrograph
(Photo x Ron Pearman)

HEBELOMA (~~CRUSTULINIFORME var.~~) BREVIPES (Murrill) *stat. nov.*

Lloydia 9:327. 1946

"Pileus without umbo, isabelline with fulvous blotches; taste nutty, becoming somewhat astringent; spores subellipsoid, gibbous, 8.5-11 x 5-6 μ ; stipe short and thick, pallid, 2-5 x 1-1.5 cm.

"Type collected by W. A. Murrill on the ground under a live-oak at Gainesville, Florida, January 12, 1938 (F 15937). Forming a fairy ring. Like typical H. crustuliniforme (Bull.) Quel. and having a similar odor, but stipe much too short and pileus not at all umbonate."

Notes on Type (F 15937)

Spores 8.5-11(12) x 5.5-7 μ , inequilateral in profile, subellipsoid in face view, wall 0.3 μ thick, minutely rugulose to obscurely so, pale yellowish brown in 2% KOH. Pleurocystidia none; cheilocystidia 27-63 x 4-9 μ , subclavate to subcylindric, at times subcapitate, in tufts. Gill trama of narrow subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle a distinct ixocutis. Hypodermium ~~obscure~~ ^{of brown} ~~hyphae~~ ^{hyphae} brown. Stipe cuticle of dry repent hyphae. Spore ornamentation differs markedly from that in Bas-2375 (type var.).

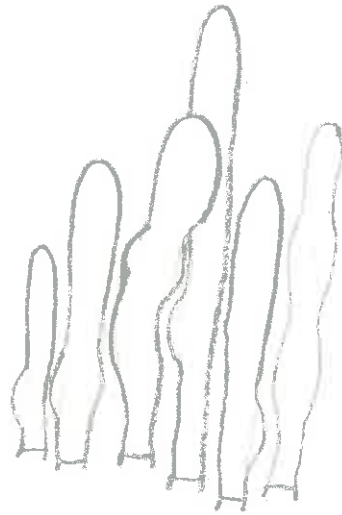
Notes on F 9255 (not the Type)

On lawn, Gainesville, Florida, leg.-det. Murrill,
January 5, 1939.

H. ~~erustuliniforme~~ var.
brevipes - page 2

Spores 7.5-9.5 x 4.5-5.5 μ , inequilateral in profile,
subfusoid to ellipsoid in face view, wall 0.25 ^{μ} thick, rugulose,
no germ pore, near "tawny" in 2% KOH.

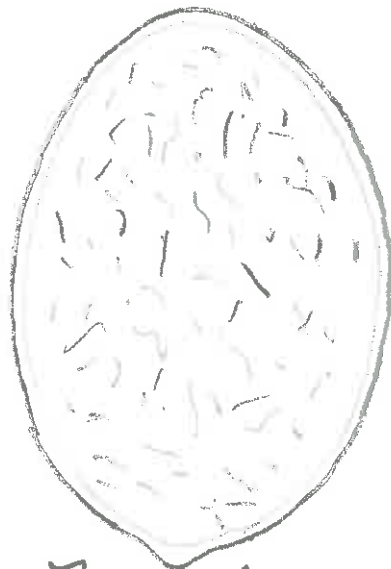
Hebeloma (crustuliniforme var.) brevipipes Murr.
Type (715937)



Ch $\times 1000$



Profile



Face View

Spores $\times 8000$

40402

HEBELOMA

Brunnerdia sp. n.
~~MAITACIUM sp. nov.~~

Independence
on soil, under conifers, ~~Independence~~ Pass, Colorado,
Smith-86872, July 19, 1976.

Notes by Smith

Pileus ^{1.5} ~~3.5~~ - 3.5 cm broad, obtuse to convex, becoming nearly plane, near verona brown on margin, warm sepia on disc, more or less streaked and mottled, viscid and shiny, ~~but~~ with faint patches of grayish fibrils on the marginal area. Context watery brown, soft, moderately thick. Odor pungent, taste mild. FeSO₄ greenish gray; KOH - 0.

Lamellae depressed-adnate, seceding, pallid becoming more or less vinaceous buff, ~~and~~ finally verona brown, edges even and ~~concolorous~~ ^{medium close,} ~~not spotting,~~ ^{moderately broad.}

Stipe 4-7 cm long, 4-7 mm thick, pallid, soon mummy brown from the base upward. equal, fibrous, silky near apex. Veil thin, grayish, all evidence of it on the stipe soon ~~gone~~ ^{disappears}.

Notes by Hesler

Spores 8-10 x 5-6.5 μ , inequilateral in profile, ellipsoid in face view, minutely rugulose to nearly smooth, pale yellowish clay color in 2% KOH. Basidia 33-36 x 8-10 μ , 4-spored. Pleurocystidia none; cheilocystidia 32-60 x 5-9 μ , a few cylindric, mostly ventricose ~~below~~ ^{below,} often the enlargement on one ~~underside~~ ^{underside}. Gill trama of subparallel hyphae. Pileus cuticle an ixocutis. Hypodermium cellular, the cells ellipsoid to elongate. Clamp connections present. Stipe cuticle of dry, septate hyphae. Caulocystidia 36-67 x 6-12 μ , similar to cheilocystidia, or the basal portion more greatly enlarged.

~~(lost)~~

This collection agrees well with H. latifolium, except that it has a pungent odor. In the type of H. latifolium no odor was detected. We do not regard this apparent discrepancy as important, since, in our experience, odor is a rather variable character, and is not to be taken as a critical character, in Hebeloma.

This species is close to H. latifolium, but the galls are more narrow, the pileus colors much darker, and the cheilocystidia more distinctly flask-shaped.

Habit, Habitat, and Distribution. On soil, under conifers, Independence Pass, Colorado, July 19, 1976, Smith 86872(TENN-40402), type.

Observations. This species is near H. latifolium, but the lamellae are more narrow, the pileus colors much darker, ^a and the cheilocystidia are more distinctly flask-shaped.

40402

HEBELOMA *hemacidogenum* sp. nov.

(Sm-86872) under conifers, Independence Pass, Colorado, leg. Smith, July 19, 1976

Notes by Hesler

8-10 x 5-6.5 μ,
 Spores ~~BIFID~~ ^{nearly} inequilateral in profile,
 ellipsoid in face view, ^μ smooth to minutely rugulose, pale
 yellowish ^{clay color} in 2% KOH, no germ pore, ^{one} frequently with a large
 guttule. Pl none; ch 32-60 x 5-9 μ, a few cylindric, mostly
 with an enlarged base and flask-shaped, often the enlargement
 more or less on one side only. Gill trama subparallel.
 Pileus cuticle an ixocutis. Hypodermium ^{of} cellular, the
 cells ellipsoid to ^{elongate cells} elongate. ^{Clamp connections present} (Stipe cuticle of dry, repent
 hyphae. Caulocystidia 36-67 x 6-12 μ, similar to cheilocystidia
 but usually the basal portion ^{with a greater enlargement} greatly enlarged either all around
 or ^{only} on one side.

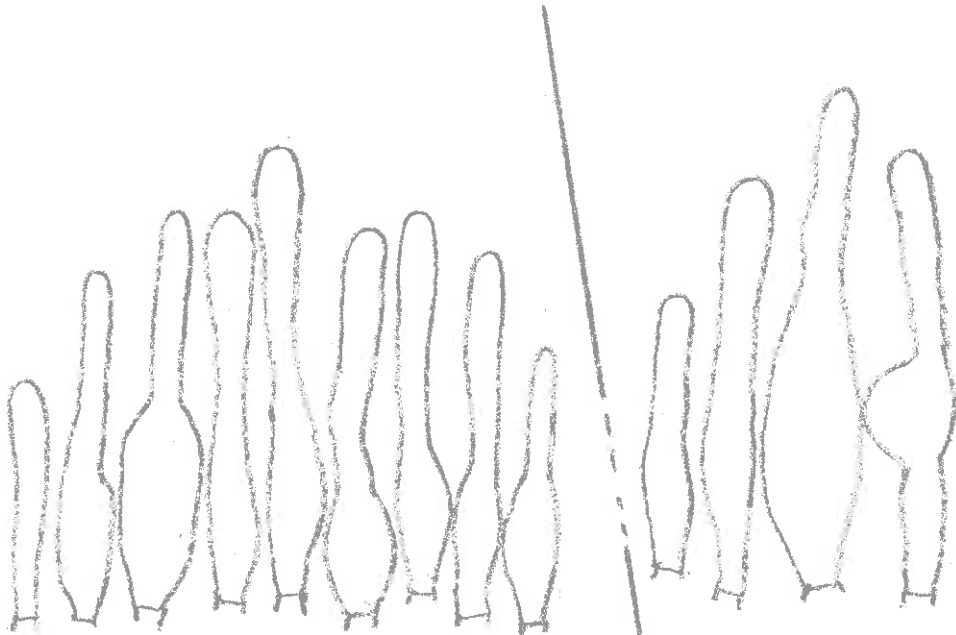
~~H. latifolium is described as having ^{no odor} no odor;
 in this collection (Term - 40402), Smith reports a
 pungent odor. The presence or ^{of odor} absence is hardly a
 reliable character. ^{problem} In some at times, an odor may be
 present, again it may be absent~~

In the type of H. latifolium, no odor was detected.
 In Smith's Colorado collection, however, a pungent odor was
 detected. Despite this odor, ~~we are placing the Antennaria
~~Colorado collection with H. latifolium for the reason that odor~~
 is a variable character, and hardly reliable in ~~its~~ distinguishing
 taxa.~~

Baudia 33-36 x 8-10 μ, clavate, 4-spored.

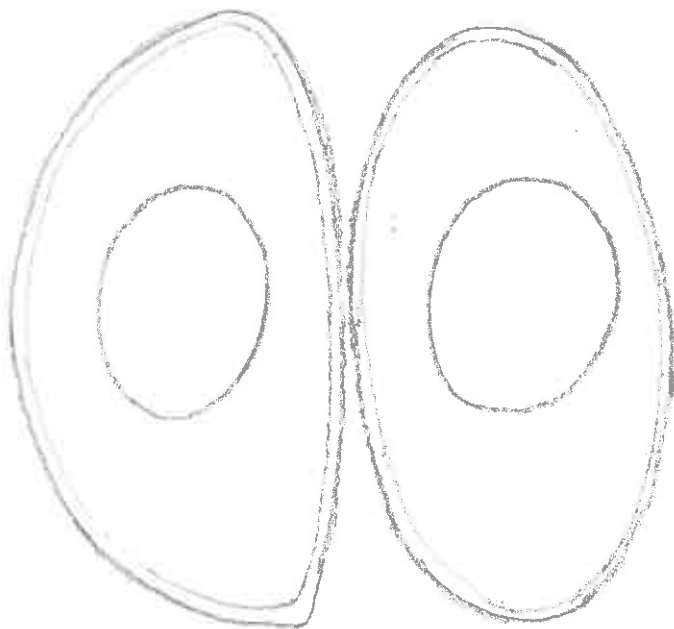
Habeoloma

40402 (Sm-86872)



Ch x 1000

Caulo x 1000



Profile

Face

Spores x 8000

HEBELOMA CRUSTULINIFORME var. BREVIPES Murr.

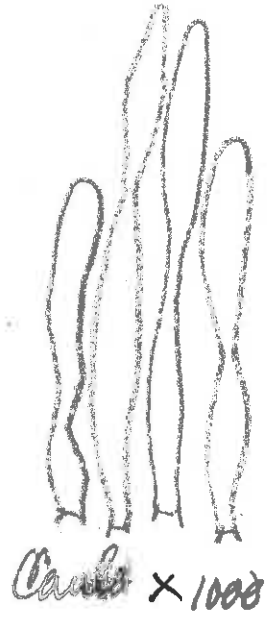
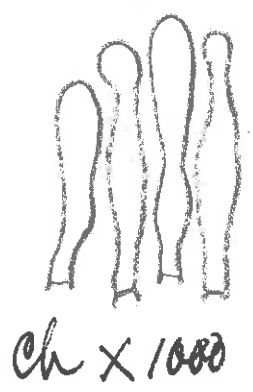
Courthouse lawn, Gainesville, Florida, Dec. 31, 1941, coll & det.
W.A. Murrill. (Specimen: ex-Herb. N.Y. Bot. Garden, N.Y. City)

Notes by Hesler

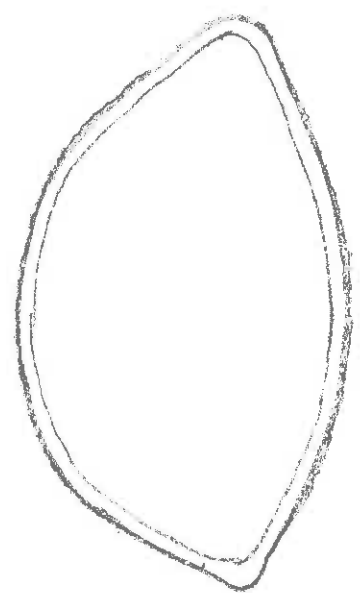
Spores 8-10 x 5-5.5 μ , slightly inequilateral in profile, sub-ellipsoid to obscurely sublimoniform in face view, wall 0.3 μ thick, minutely rugulose, pale yellowish brown in 2% KOH, at times with a very faint "nose". Pleurocystidia none; cheilocystidia 26-35 x 5-6 μ , irregularly clavate to ventricose. Pileus cuticle an ixocutis. Hypodermium composed of cells and a few hyphal fragments. Stipe cuticle of dry repent hyphae. Caulocystidia irregularly subcylindric, often constricted, scattered.

This seems close to var. brevipes, but differs in that it has an ^{slightly smaller spores and} hypodermium of the structure of H. crustuliniforme var. crustuliniforme. It is not the same taxon as the type described by Murrill.

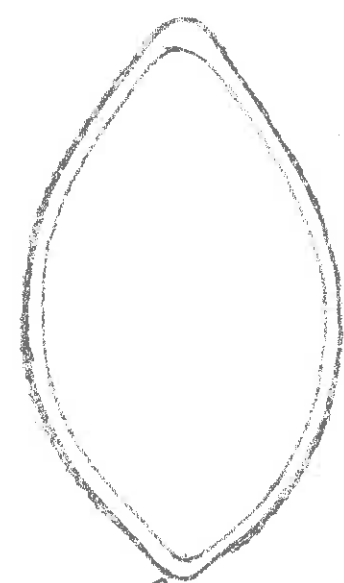
Hebeloma crustuliniforme var. *brevipes* Murr.
Counthouse lawn, Gainesville, Fla., Dec 31, 1941, coll.
& det. W. A. Murrill. [Ex-Herb. N. Y. Bot. Garden]



Pileus cuticle and cellular-hyphoid hypodermium



Profile



Face

Spores x 8000

? *Abeloma crustuliniforme* var. *brevipes* Murr.?

(Not the Type) 79255

(The spore ornamentation ~~is~~ and size
exclude it from brevipes.)



Ch x 1000
(sparse + inconspicuous)



Profile



Face View

Spores x 8000

Brunneifolium

14685

HEBELOMA

~~HIGHLANDENSES~~ sp. nov.

In deep humus, under rhododendron, Highlands, N.C., Smith says
H. colvini Pk., or very close to it. Leg. Hesler,
September 2, 1942

Pileus 3-6 cm broad, convex, plane, slightly and broadly
umbonate, glutinous-viscid, water-soaked, "saya brown," disc
^{marginal area somewhat paler.}
darker, Context thick at center, thin outward; odor and taste
of radish.

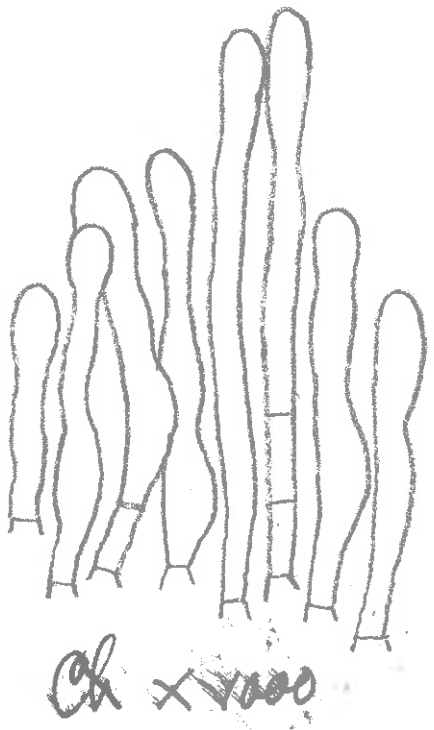
Lamellae emarginate, at first "pale pinkish buff", finally
^{or darker,}
"cinnamon" narrow, crowded, edges fimbriate.

Stipe 4-8 cm long, 5-9 mm thick, fibrillose, apex pruinose,
^{whitish to}
dry, dingy, hollow, ~~bulbous~~ bulbous. ^{Veil} ~~Cortina~~ none.

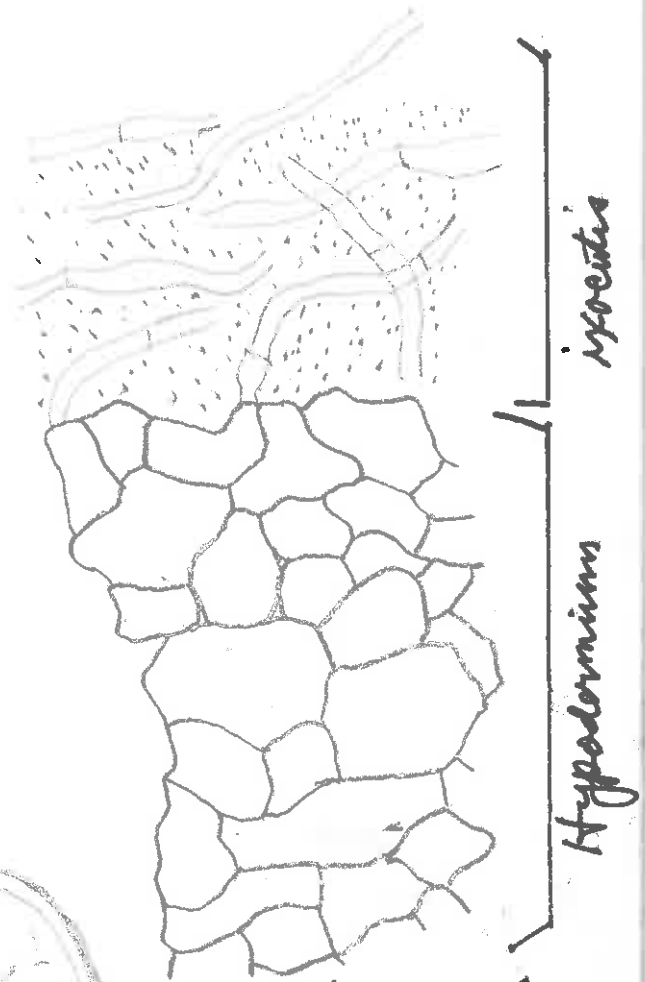
Spores 9.5-¹²~~11~~(13) x 5.5-7 μ , inequilateral in profile,
subovoid in face view, wall 0.25 μ thick, ~~wrinkled~~
^{slightly ecdyrate,}
nearly smooth, yellowish. ~~Basidia~~ Basidia 24-28 x 6-8 μ ,
4-spored. Pleurocystidia none; cheilocystidia 32-86 x 6-8 μ
in tufts, cylindrical to subcylindrical, often subcapitate and also
often with a slightly swollen base. Gill trama of subparallel
hyphae; subhymenium a slightly obscure zone of slender, short-
^{Pileus trama of radial hyphae.}
celled hyphae. Pileus cuticle ~~zone of brownish cells bearing~~
^{of brown cells.}
an ixocutis; Hypodermium ~~and ixocutis~~. Stipe cuticle of dry
repent hyphae, bearing abundant, long caulocystidia, cylindrical,
often with a flask-shaped base. Clamp connections present.

I once thought it to be sordidulum, but the spores are
smaller and less wrinkled than in 15915. Same as 20514.

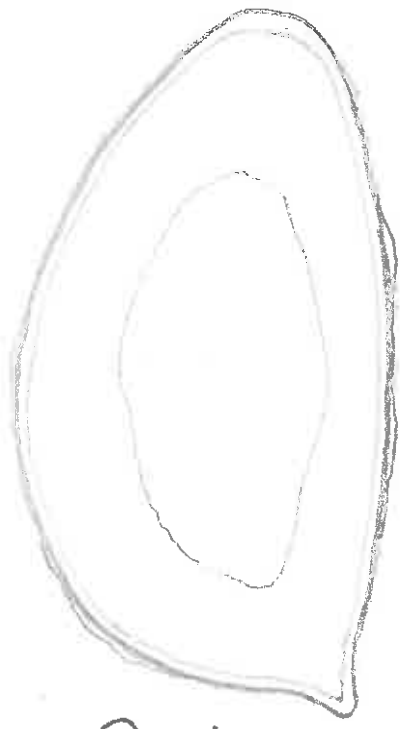
Nebeloma highlandensis sp. nov.
brunneifolium
14685



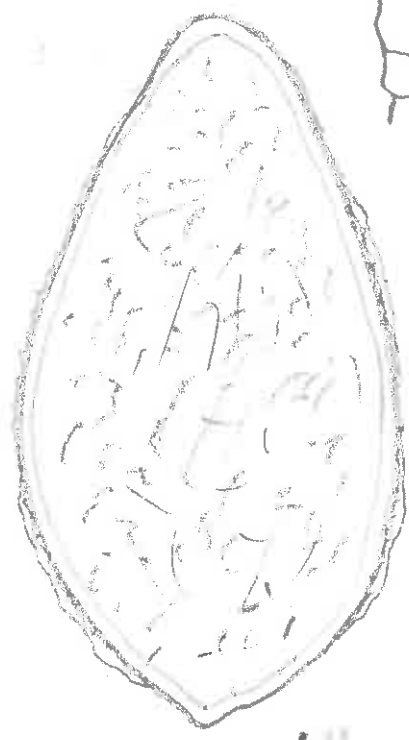
Ch x 1000



Pileus cuticle
x 1000
(tangential section)



Profile



Face View

Spores x 8000

Brunneifolius

20514

HEBELOMA ~~HIGHLANDENSIS~~ sp. nov.

On soil, in mixed woods, Heintooga Overlook, GSMNP, North Carolina, leg. Hesler, August 19, 1952

Pileus 3-5 cm, glabrous, glutinous, "clay color" (young), "saya brown" (mature), margin ~~irregular~~ paler and even. Context ^{thin,} odor and taste of radish.

Lamellae adnate-adnexed, seceding, white, finally "saya brown," crowded, rather narrow, edges whitish, fimbriate.

Stipe 3-4.5 cm long, 4-7 mm thick, whitish, apex pruinose, base bulbous, the bulb up to 17 mm diameter and more or less ~~marginate~~, hollow. ^{Veil none.} ~~Veil none.~~

Spores ^{9.5} ~~(9.5)~~ 11-12.5(13) x (5) 5.5-7(7.5) μ , inequilateral, subovoid in face view, wall 0.3-0.4 μ , ~~marked and rugulose,~~ ^{slightly calytrate,} yellowish in 2% KOH. Basidia 26-32 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 37-93 x 6-10 μ , in tufts, cylindrical at times subcapitate and/or enlarged toward the base. Gill trama of subparallel hyphae. ^{Pileus trama of radial hyphae.} Pileus cuticle an ixocutis; ~~hypodermium~~ hypodermium a cellular brown zone. Stipe cuticle repent, dry, bearing caulocystidia.

~~Similar to or~~ Same as 14685.

Helvoma highlandensis sp. nov.
20514 *brunneifolium*



Basidium
x 2000



ch x 1000

[spores as in 14685]

20588

brunneifolium
HEBELOMA ~~HIGHLANDENSIS~~ sp. nov.

On soil, Abies woods, Clingmans Dome, GSMNP, North Carolina,
September 5, 1952

Pileus 2.5-5 cm broad, "clay color," glutinous, glabrous,
margin even. Context thin; odor and taste of radish.

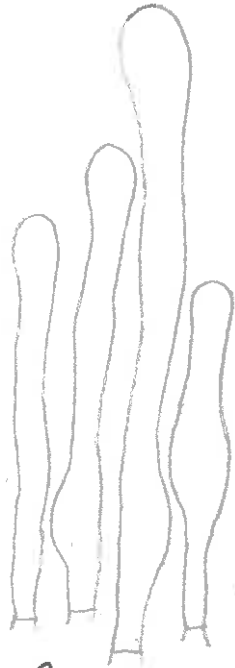
Lamellae adnexed, white then "sage brown," crowded,
rather narrow, edges white-fimbriate.

Stipe 2-3 cm long, 4-6 mm thick, pallid, base slightly
bulbous, dry.

Spores yellowish brown in KOH, ⁹⁻¹³ ~~12-14~~ x 6-7.5 μ ,
inequilateral in profile, subvoid to subfusoid in face view,
wall ^{0.3-} 0.4-~~0.5~~ μ thick, rugulose. Basidia 27-30 x 7-8 μ ,
4-spored. Pleurocystidia none; cheilocystidia 40-84 x 5-10 μ ,
cylindric-capitate, often more or less enlarged on one side
near the base. Gill trama subparallel. Pileus trama of
radial hyphae. Pileus cuticle an ixocutis; Hypodermium a
brown cell-zone.

Same as 14685, 20514, + 37568.

Hebeloma highlandensis sp. nov.
beunneifolium
20588 - ~~20588~~



ch x 1000

[spores as in 14685 + 20514]

23374

brunneifolium

HEBELOMA CAROLINENSIS sp. nov.

~~Illustrations~~
under spruce, Indian Gap (N.C.), GSMNP, Aug 31-59

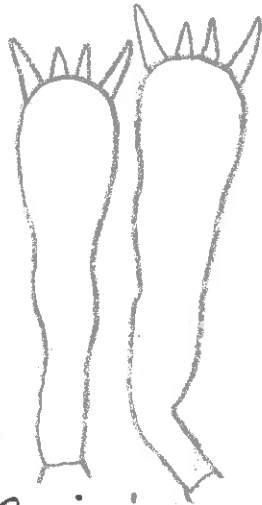
Pileus 4-5.5 cm broad, ~~viscid~~ ^{viscid}, disc "dresden brown,"
paler outward, margin white, ~~viscid~~. Context thick,
thin when dried, firm, watery white; odor and taste of
radish.

Lamellae adnate, close, ^{narrow to} medium broad, pale brown,
edges fimbriate.

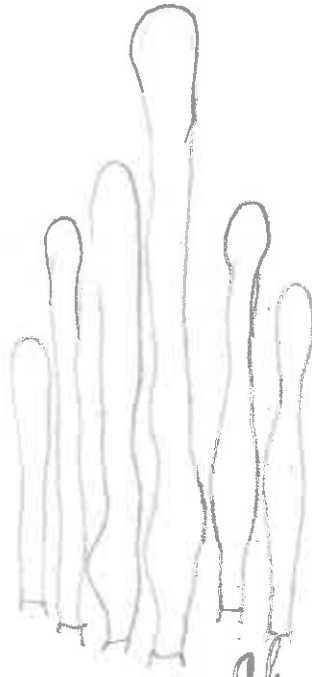
Stipe 5-7 cm long, 7-8 mm thick, white, apex white-
squamulose, equal above the slight bulb, solid. Veil ~~none~~
~~absent~~

Spores 8-¹¹ ~~10~~ x (5) 5.5-^{6.5} ~~6~~ μ, inequilateral in profile,
ellipsoid-subfusoid to subovoid in face view, wall 0.3-0.4 μ
thick, rugulose, yellowish brown in 2% KOH. Basidia 25-28 x
6-7 μ, 4-spored. Pleurocystidia none; cheilocystidia 35-84 x
5-7 μ, cylindrical, or subventricose near the base, ^{± capitate}. Gill trama
of narrow (2-4 μ), undulating interwoven hyphae; subhymenium
not sharply differentiated. Pileus trama of radial hyphae.
Pileus cuticle an ixocutis--the hyphae repent, loosely
interwoven, ~~some more or less aerial, the terminal elements~~
~~pleurocystidioid~~. Hypodermium a zone of dark brown cells.
Stipe cuticle a colorless, distinct zone of dry, rather slender,
closely packed vertically-disposed hyphae, often bearing
aerial hyphae with terminal elements caulocystidioid (as on
the pileus). Clamp connections not observed.

Helveloma cardinaria sp. nov.
23374 - ~~XXXX~~ *brunneifolium*



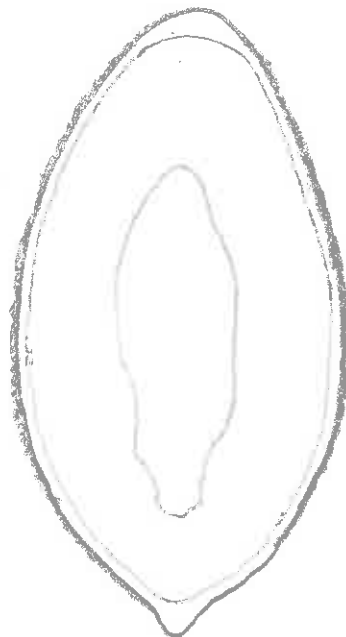
Baidia
x 2000



Ch x 1000



Profile



Face

Spores x 8000

29350

Brunneifolium sp. nov.
HEBELOMA ~~ALBIPES~~ sp. nov.

PHOTO

In humus, in deciduous woods, Cades Cove, GSMNP, Tennessee,
September 23, 1966

Pileus 1.5-2.5 cm broad, obtusely umbonate, disc smoky brown, paler to olive-grayish or whitish outward, glutinous, margin even. Context thin, pallid; odor and taste raphanoid, taste becoming slightly bitter (odor of dried material of radish when soaked in alcohol and then water).

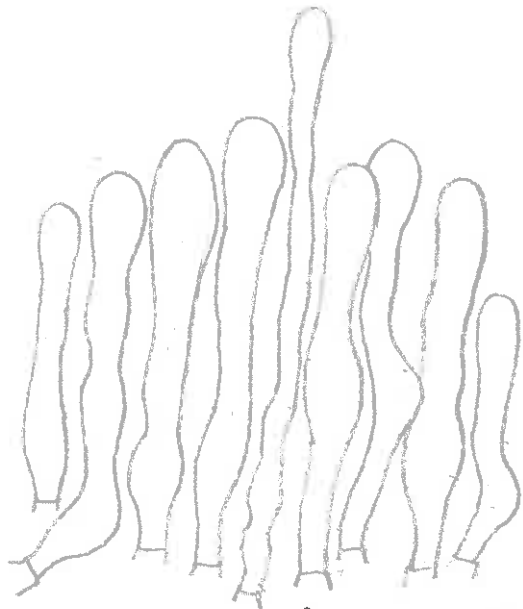
Lamellae emarginate, close, narrow, brown, drying
~~rather~~ rather dark brown, edges fimbriate.

Stipe 4-7 cm long, 5-8 mm thick, white, sometimes flexuous, equal, base bulbous, solid. Veil none.

Spores 9-11 x 5.5-7 μ , inequilateral in profile, ~~obovoid~~ ovoid to subfusoid in face view, ~~in many the apex truncate,~~ wall 0.3-0.4 μ thick, rugulose to rugose, often calyptrate, yellowish brown in KOH. Basidia 26-30 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 35-76 x 5-9 μ , cylindrical-capitate, often ventricose below. Gill trama of slender, subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium a brown cell zone. Stipe cuticle repent, dry; apex with tufts of caulocystidia similar to cheilocystidia.

Hydreloma ^{brunneifolium} ~~altifolium~~ sp. nov.

29350 - ~~29350~~



eh x 1000



Profile

Face

Spores x 8000

29408

HEBELOMA BRUNNEIFOLIUM ^{Heiler} sp. nov.

PHOTO

On soil, in deciduous woods, Cades Cove, GSMNP, Tennessee,

September 30, 1966

-

Type
JFH

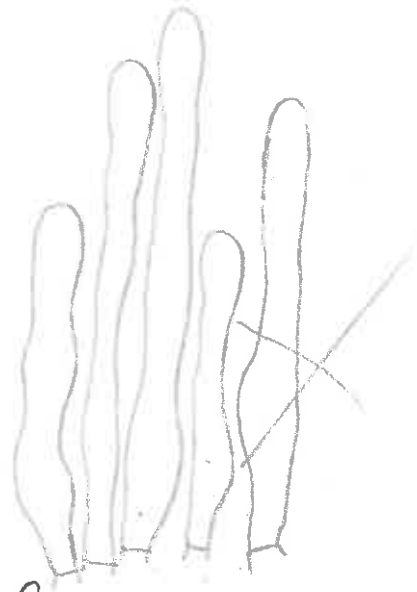
Pileus 2.5-4 cm broad, subconic, expanding, slightly umbonate, disc "clay color," elsewhere "cinnamon buff," paler near margin, viscid, ~~appetizing~~ ^{sometimes} glabrous but minutely ~~reticulate~~ ~~reticulate~~ reticulate under lens, margin even. Context thin, white; odor and taste raphanoid.

Lamellae rounded and narrowly attached, white, then near "buckthorn brown," close, narrow, edges white fimbriate, not beaded.

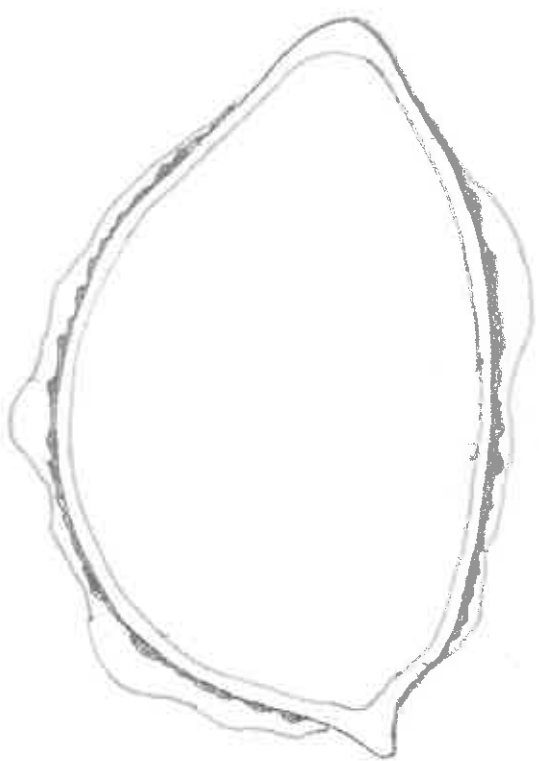
Stipe 4-7 cm long, 4-6 mm thick, white, apex white-mealy, fibrillose below, base bulbous, equal or tapering upward, tubular. Veil none.

Spores 9.5-13 x 6-7 μ , inequilateral in profile, subfusoid in face view, apical and rounded, wall 0.3-0.4 μ thick, ^{sometimes with an obscure "nose"} rugose, calyptrate, yellowish brown in KOH. Basidia 27-30 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 42-72 x 5-7 μ , filamentous, sometimes subcapitate, usually slightly ventricose below. Gill trama of narrow subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium a brown cell-zone. Stipe cuticle of repent dry hyphae. Caulocystidia 150-230 x 5-8 μ , hyphoid or similar to cheilocystidia. Clamp connections on hyphae of both pileus and stipe cuticles.

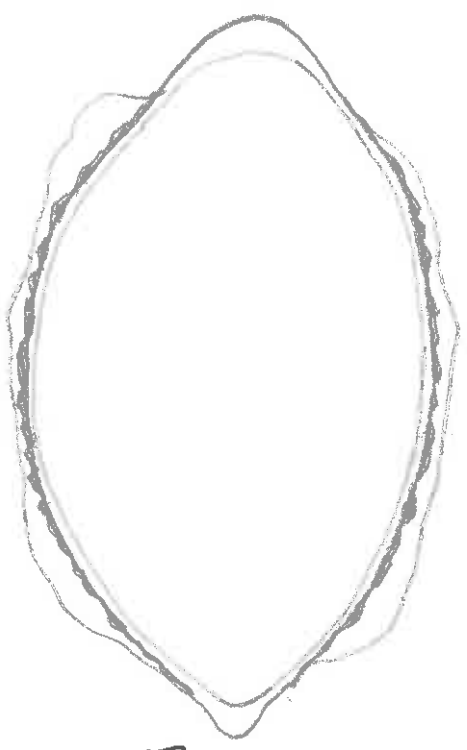
Helveloma brunneifolium
~~*angustifolium*~~ sp. nov.
29408 - Type



x ch x 1000



x Profile



x Face

Spores x 8000

37568

brunneifolium
HEBELOMA ~~HIGHLANDENSIS~~ sp. nov.

On soil, in pine woods, Cades Cove, GSMNP, Tennessee,

October 27, 1972

Pileus 3-6 cm broad, plano-convex, viscid to glutinous, central area "clay color" to "saya^l brown," finely ^{matted-}fibrillose-~~marked~~, margin paler, even. Context thin, whitish; odor raphanoid, taste raphanoid then bitter.

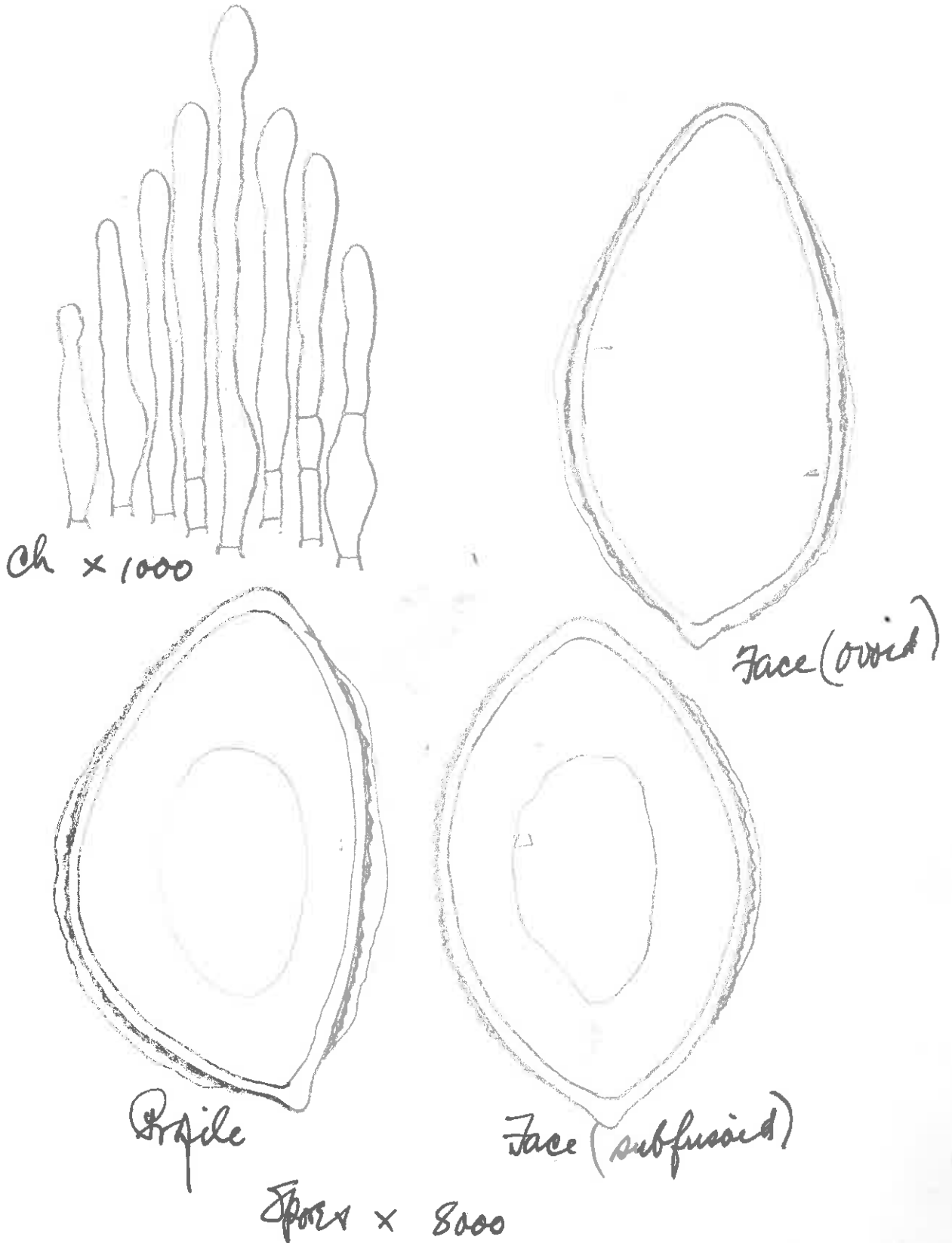
Lamellae adnexed to emarginate, pallid then "pinkish buff," finally "cinnamon," close, ~~wide~~ narrow, lamellulae abundant, edges white-fimbriate.

Stipe 3-8 cm long, 4-9 mm thick, dry, white, striate, apex white-pruinose, equal above the bulbous base, bulb up to 18 mm, and sometimes marginate, tubular. Veil none.

Spores in deposit: "cinnamon brown," 9-12(13) x 5.5-7.5(8) μ , inequilateral in profile, subvoid or subfusoid in face view, wall 0.3 μ thick, rugulose, at times (in most mature spores) slightly calyptrate, yellowish brown in KOH. Basidia 28-32 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 33-93 x 5-10 μ , filamentous, capitate or subcapitate, sometimes ventricose and septate below. Gill trama of subparallel hyphae, 6-12 μ broad. Pileus trama of radially-disposed, slightly interwoven hyphae. Pileus cuticle an ixocutis. Hypodermium a zone of brown cells. Stipe cuticle of dry repent hyphae; caulocystidia in tufts, 52-116 x 7-10 μ , similar to cheilocystidia. Clamp connections on pileus cuticle hyphae.

Hebeloma brunneifolium
~~*highlandensis*~~ sp. nov.

37568 - ~~XXXXXX~~



39053

brunneifolium
HEBELOMA ~~HIGHLANDENSIS~~ sp. nov.

Cades Cove, October 5, 1973

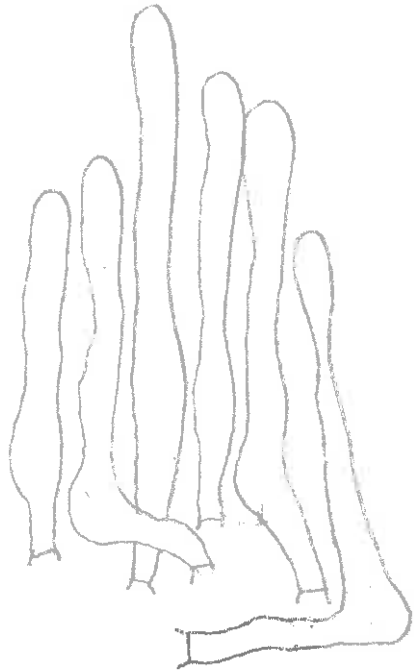
Pileus pinkish buff to pallid brown or cinnamon buff, margin white. Odor raphanoid, taste raphanoid but soon bitter. Flesh white.

Lamellae emarginate, close, narrow.

Stipe white, bulbous, the bulb slightly emarginate.

Spores (8.5)9-12 x (5.5)6-7(7.5) μ , often calyptrate, yellowish-brown. Pleurocystidia none; cheilocystidia 46-74 x 5-8 μ , ventricose below and sometimes crooked (with an elbow). Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium cellular.

Hebeloma highlandensis sp. nov.
brunneifolium
Term - 39053



Ch x 1000

[Spores as in Type]

Brunnerifolium

14685

HEBELOMA ~~HIGHLANDENSE~~ sp. nov.

In deep humus, under rhododendron, Highlands, N.C., Smith says
H. colvini Pk., or very close to it. Leg. Hesler,
September 2, 1942

Pileus 3-6 cm broad, convex, plane, slightly and broadly
umbonate, glutinous-viscid, water-soaked, "saya brown," disc
^{marginal area somewhat paler.}
darker, Context thick at center, thin outward; odor and taste
of radish.

Lamellae emarginate, at first "pale pinkish buff", finally
^{or darker,}
"cinnamon" narrow, crowded, edges fimbriate.

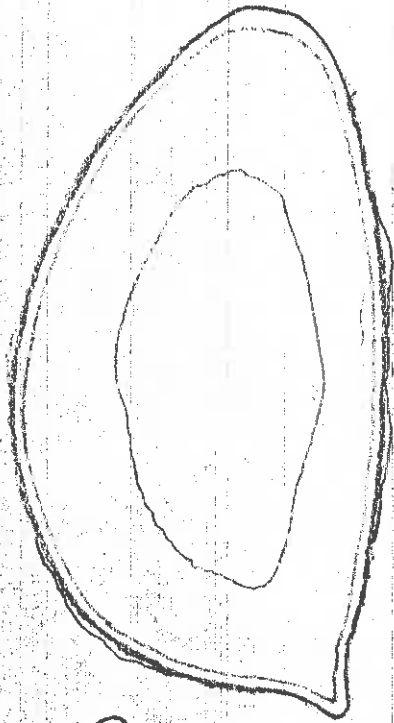
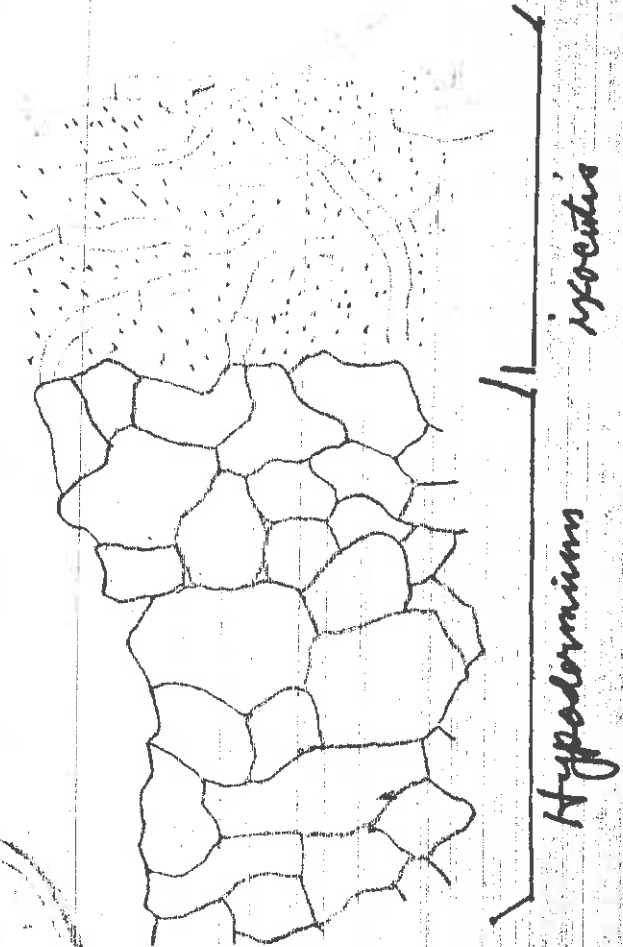
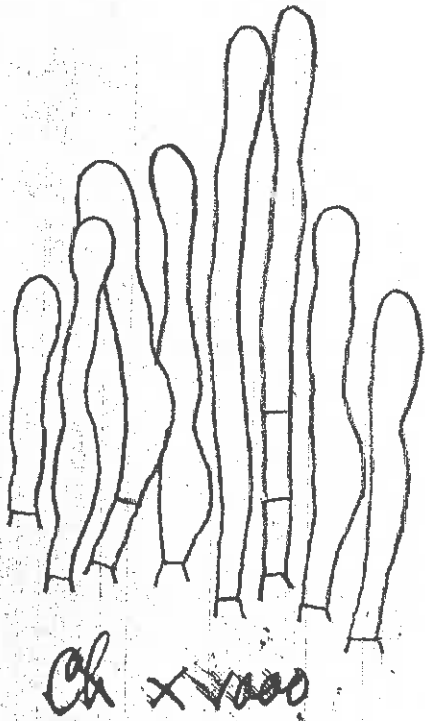
Stipe 4-8 cm long, 5-9 mm thick, fibrillose, apex pruinose,
^{whitish to}
dry, dingy, hollow, ~~bulbous~~ bulbous. ^{Veil} ~~Gertina~~ none.

Spores 9.5-¹²M~~13~~(13) x 5.5-7 μ , inequilateral in profile,
subovoid in face view, wall 0.25 μ thick, ~~wrinkled~~
^{slightly eelystrate,} rugulose to
nearly smooth, yellowish. ~~Basidia~~ Basidia 24-28 x 6-8 μ ,
4-spored. Pleurocystidia none; cheilocystidia 32-86 x 6-8 μ
in tufts, cylindric to subcylindric, often subcapitate and also
often with a slightly swollen base. Gill trama of subparallel
hyphae: subhymenium a slightly obscure zone of slender, short-
^{Pileus trama of radial hyphae.}
celled hyphae. Pileus cuticle ~~of zone of brownish cells bearing~~
^{of brown cells.}
an ixocutis; Hypodermium ~~and~~ ~~subhymenium~~. Stipe cuticle of dry
repent hyphae, bearing abundant, long caulocystidia, cylindric,
often with a flask-shaped base. Clamp connections present.

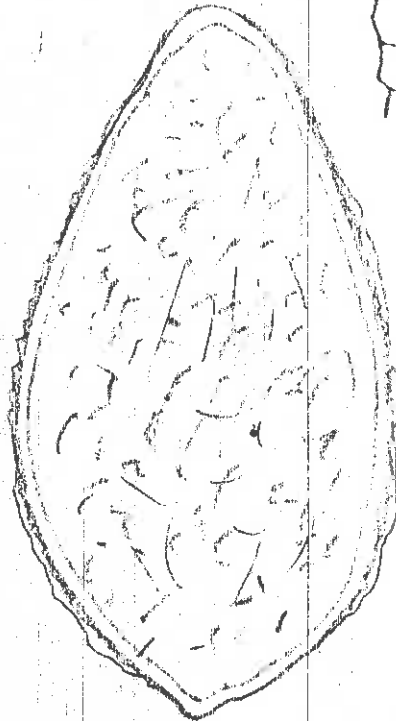
I once thought it to be sordidulum, but the spores are
smaller and less wrinkled than in 15915. Same as 20514.

Nebeloma ~~*Hyphodermis*~~ sp. nov.
brunneifolium

14685



Profile



Face View

Pileus cuticle
x 1000
(tangential section)

Spores x 8000

20514

Brunneifolium
HEBELOMA ~~HIGHLANDENSIS~~ sp. nov.

On soil, in mixed woods, Heintooga Overlook, GSMNP, North Carolina, leg. Hesler, August 19, 1952

Pileus 3-5 cm, glabrous, glutinous, "clay color" (young), "saya1 brown" (mature), margin ~~whitish~~ paler and even. Context ^{firm,} odor and taste of radish.

Lamellae adnate-adnexed, seceding, white, finally "saya1 brown," crowded, rather narrow, edges whitish, fimbriate.

Stipe 3-4.5 cm long, 4-7 mm thick, whitish, apex pruinose, base bulbous, the bulb up to 17 mm diameter and more or less ~~marginate~~, hollow. ^{Veil none.} ~~Veil none.~~

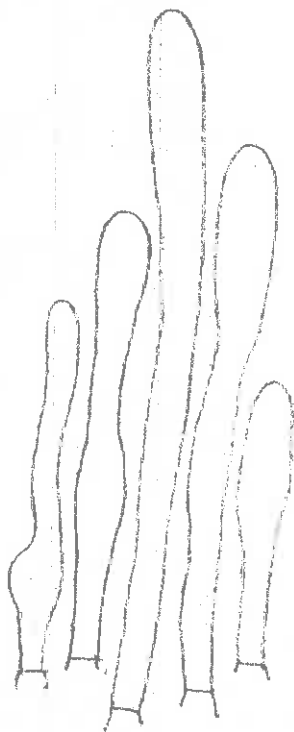
Spores ^{9.5} ~~(9.5) 11~~-12.5(13) x (5) 5.5-7(7.5) μ , inequilateral, subovoid in face view, wall 0.3-0.4 μ , ~~marbled and~~ ^{slightly calyptrate,} rugulose, ^{no germ pores,} yellowish in 2% KOH. Basidia 26-32 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 37-93 x 6-10 μ , in tufts, cylindric at times subcapitate and/or enlarged toward the base. Gill trama of subparallel hyphae. ^{Pileus trama of radial hyphae.} Pileus cuticle an ixocutis^{*}. Hypodermium a cellular brown zone. Stipe cuticle repent, dry, bearing caulocystidia.

~~Similar to or~~ Same as 14685.

Nerexoma highlandensis sp. nov.
20514 *brunneifolium*



Basidium
x 2000



oh x 1000

[spores as in 14685]

20588

Brunnerifolium
HEBELOMA ~~HIGHLANDENSIS~~ sp. nov.

On soil, Abies woods, Clingmans Dome, GSMNP, North Carolina,
September 5, 1952

Pileus 2.5-5 cm broad, "clay color," glutinous, glabrous,
margin even. Context thin; odor and taste of radish.

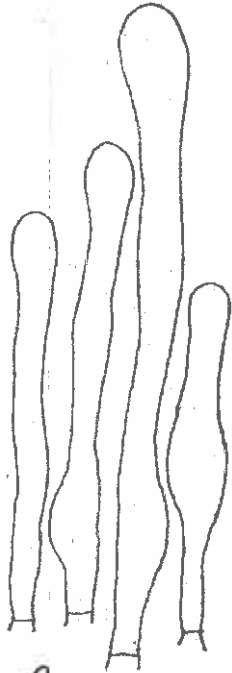
Lamellae adnexed, white then "sage brown," crowded,
rather narrow, edges white-fimbriate.

Stipe 2-3 cm long, 4-6 mm thick, pallid, base slightly
bulbous, dry.

Spores yellowish brown in KOH, ~~12-14.5~~⁹⁻¹³ x 6-7.5 μ ,
inequilateral in profile, subvoid to subfusoid in face view,
wall ^{0.3-}0.4-~~0.5~~ μ thick, rugulose. Basidia 27-30 x 7-8 μ ,
4-spored. Pleurocystidia none; cheilocystidia 40-84 x 5-10 μ ,
cylindric-capitate, often more or less enlarged on one side
near the base. Gill trama subparallel. Pileus trama of
radial hyphae. Pileus cuticle an ixocutis; Hypodermium a
brown cell-zone.

Same as 14685, 20514, + 37568.

Hebeloma highlandense sp. nov.
baumiiifolium
20588 - ~~20588~~



ch x 1000

[spores as in 14685 + 20514]

23374

~~145~~

brunneifolium

HEBELOMA CAROLINENSE~~s~~ sp. nov.

~~Illustrations~~

under spruce, Indian Gap (N.C.), G.S.M.P., Aug 31-'59

Pileus 4-5.5 cm broad, ^{viscid}~~viscid~~, disc "dresden brown," paler outward, margin white, ~~margin white~~. Context thick, thin when dried, firm, watery white; odor and taste of radish.

Lamellae adnate, close, ^{narrow to} medium broad, pale brown, edges fimbriate.

Stipe 5-7 cm long, 7-8 mm thick, white, apex white-squamulose, equal above the slight bulb, solid. Veil ~~none~~ ^{none}.

Spores 8-¹¹~~10~~ x (5) 5.5-^{6.5}~~6~~ μ, inequilateral in profile, ellipsoid-subfusoid to subvoid in face view, wall 0.3-0.4 μ thick, rugulose, yellowish brown in 2% KOH. Basidia 25-28 x 6-7 μ, 4-spored. Pleurocystidia none; cheilocystidia 35-84 x 5-7 μ, cylindrical, or subventricose near the base, ^{± capitate}. Gill trama of narrow (2-4 μ), undulating interwoven hyphae; subhymenium not sharply differentiated. Pileus trama of radial hyphae.

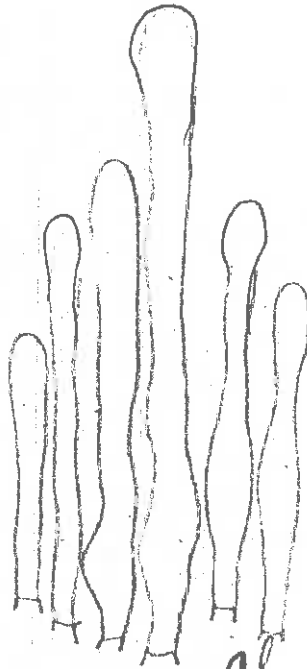
Pileus cuticle an ixocutis--the hyphae repent, loosely interwoven, ~~some more or less aerial, the terminal elements pilocystidioid~~. Hypodermium a zone of dark brown cells.

Stipe cuticle a colorless, distinct zone of dry, rather slender, closely packed vertically-disposed hyphae, often bearing aerial hyphae with terminal elements caulocystidioid (as on the pileus). Clamp connections not observed.

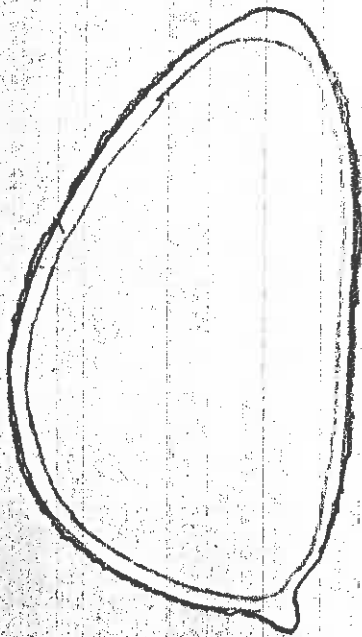
Sphaeloma cardinaria sp. nov.
23374 - ~~Hypha~~ *brunneifolium*



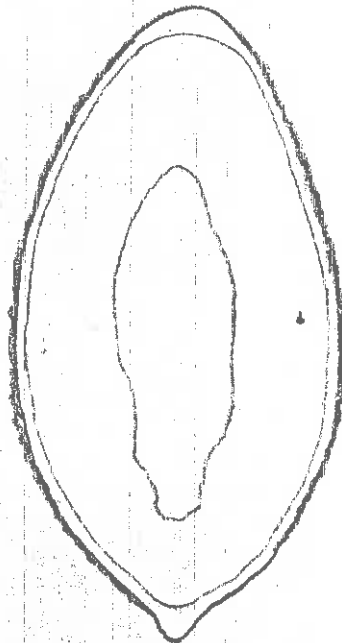
Baidia
x 2000



ch x 1000



Profile



Face

Spores x 8000

Brunnifolium sp. nov.

29350

HEBELOMA ~~ALBIPES~~ sp. nov.

PHOTO

In humus, in deciduous woods, Cades Cove, GSMNP, Tennessee,
September 23, 1966

Pileus 1.5-2.5 cm broad, obtusely umbonate, disc smoky brown, paler to olive-grayish or whitish outward, glutinous, margin even. Context thin, pallid; odor and taste raphanoid, taste becoming slightly bitter (odor of dried material of radish when soaked in alcohol and then water).

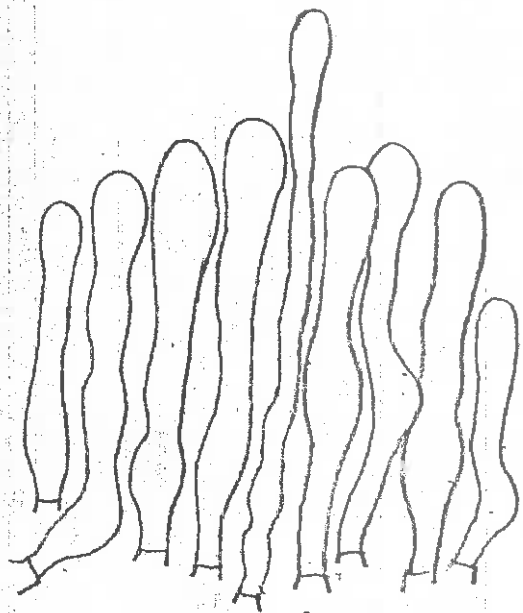
Lamellae emarginate, close, narrow, brown, drying ~~rather~~ dark brown, edges fimbriate.

Stipe 4-7 cm long, 5-8 mm thick, white, sometimes flexuous, equal, base bulbous; solid. Veil none.

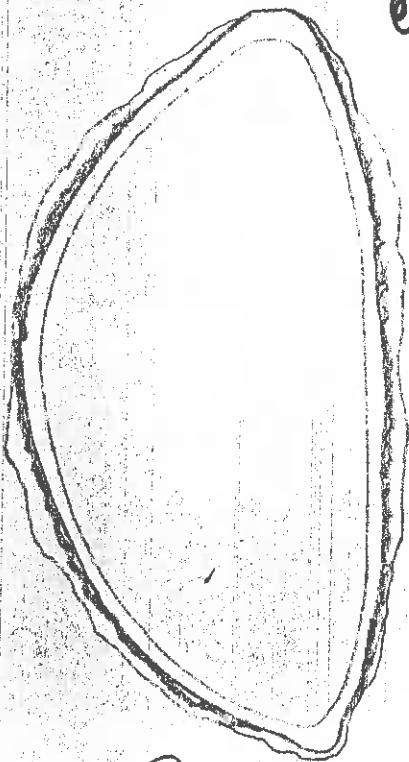
Spores 9-11 x 5.5-7 μ , inequilateral in profile, ~~ovoid~~ ovoid to subfusoid in face view, ~~in many the apex truncate,~~ wall 0.3-0.4 μ thick, rugulose to rugose, often calyptrate, yellowish brown in KOH. Basidia 26-30 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 35-76 x 5-9 μ , cylindrical-capitate, often ventricose below. Gill trama of slender, subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium a brown cell zone. Stipe cuticle repent, dry; apex with tufts of caulocystidia similar to cheilocystidia.

Hedeloma ~~deltopis~~ sp. nov.

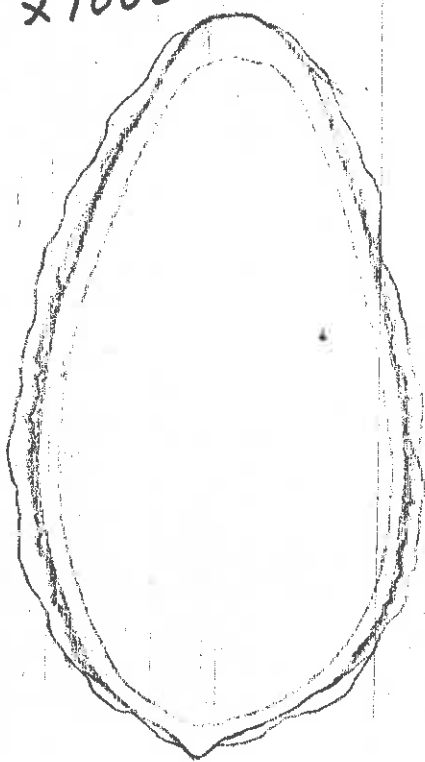
29350 - ~~XXXX~~



eh x 1000



Profile



Face

Spores x 8000



29350 - *Hebeloma brunneifolium* sp. nov. - X 1
[Photo 29408 more typical]

29408

HEBELOMA BRUNNEIFOLIUM ^{Heiler} sp. nov.

PHOTO

On soil, in deciduous woods, Cades Cove, GSMNP, Tennessee,
September 30, 1966. — ^{Type}

Pileus 2.5-4 cm broad, subconic, expanding, slightly umbonate, disc "clay color," elsewhere "cinnamon buff," paler near margin, viscid, ~~apparently~~ ^{sometimes} glabrous but minutely ~~reticulate~~ reticulate under lens, margin even. Context thin, white; odor and taste raphanoid.

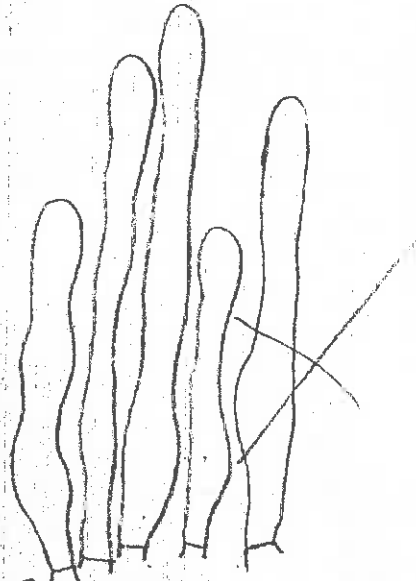
Lamellae rounded and narrowly attached, white, then near "buckthorn brown," close, narrow, edges white fimbriate, not beaded.

Stipe 4-7 cm long, 4-6 mm thick, white, apex white-mealy, fibrillose below, base bulbous, equal or tapering upward, tubular. Veil none.

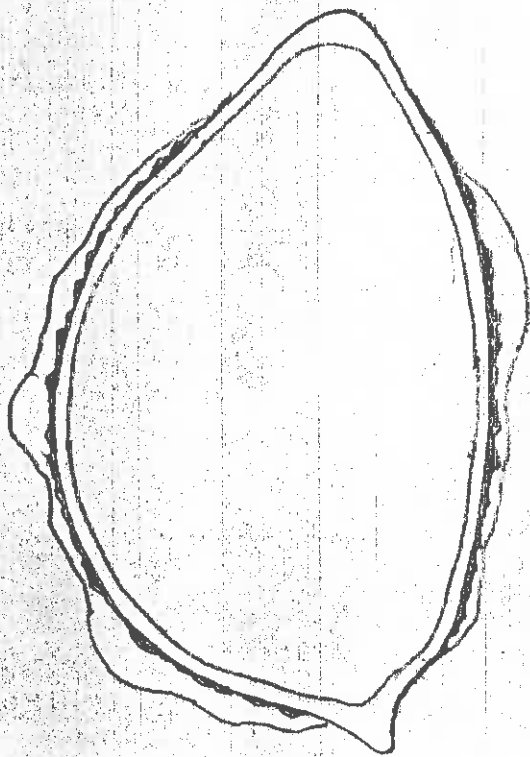
Spores 9.5-13 x 6-7 μ , inequilateral in profile, subfusoid in face view, apical and rounded, wall 0.3-0.4 μ thick, ^{sometimes with an obscure "nose"} rugose, calyptrate, yellowish brown in KOH. Basidia 27-30 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 42-72 x 5-7 μ , filamentous, sometimes subcapitate, usually slightly ventricose below. Gill trama of narrow subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium a brown cell-zone. Stipe cuticle of repent dry hyphae. Caulocystidia 150-230 x 5-8 μ , hyphoid or similar to cheilocystidia. Clamp connections on hyphae of both pileus and stipe cuticles.

Helveloma angustifolium sp. nov.

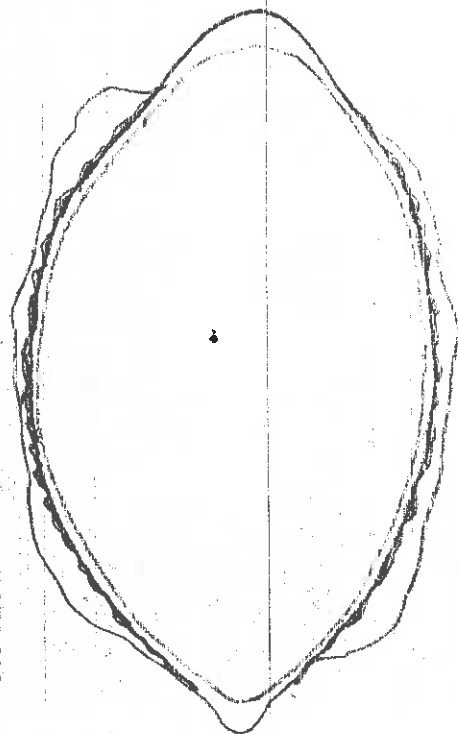
29408 - Type



x ch x 1000



x Profile



x Face

Spores x 8000



2940'

29408 - *Hebeloma brunneifolium* sp. nov. - x 1

Type
JH

brunneifolium

37568 HEBELOMA ~~HIGHLANBENSIS~~ sp. nov.

On soil, in pine woods, Cades Cove, GSMNP, Tennessee,
October 27, 1972

Pileus 3-6 cm broad, plano-convex, viscid to glutinous, central area "clay color" to "sayaal brown," finely ^{matted-}fibrillose-~~matted~~, margin paler, even. Context thin, whitish; odor raphanoid, taste raphanoid then bitter.

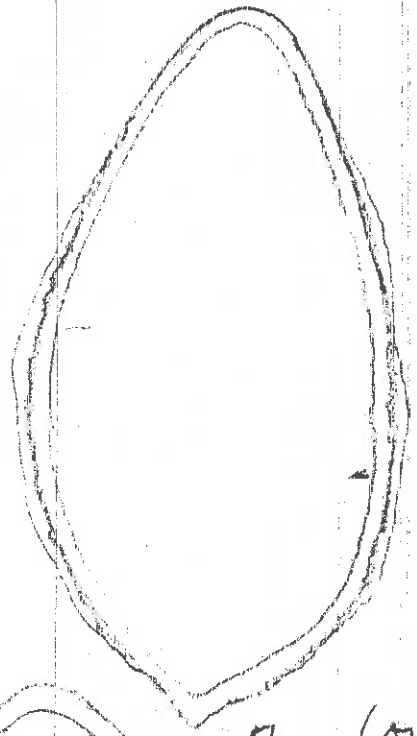
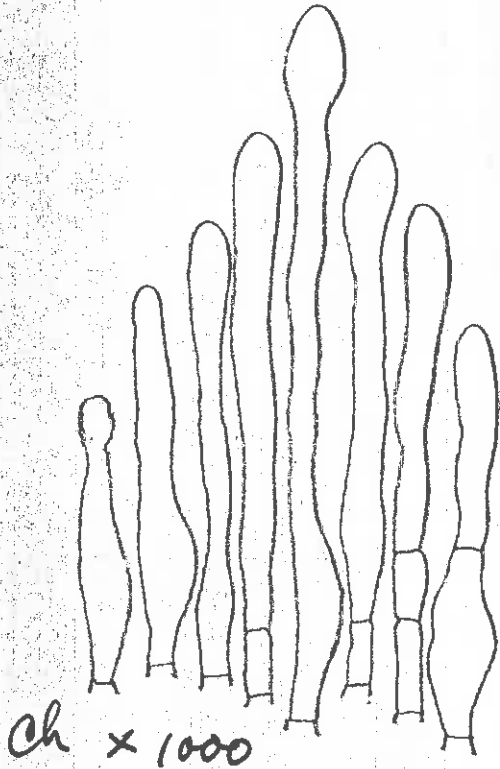
Lamellae adnexed to emarginate, pallid then "pinkish buff," finally "cinnamon," close, ~~rather~~ narrow, lamellulae abundant, edges white-fimbriate.

Stipe 3-8 cm long, 4-9 mm thick, dry, white, striate, apex white-pruinose, equal above the bulbous base, bulb up to 18 mm, and sometimes marginate, tubular. Veil none.

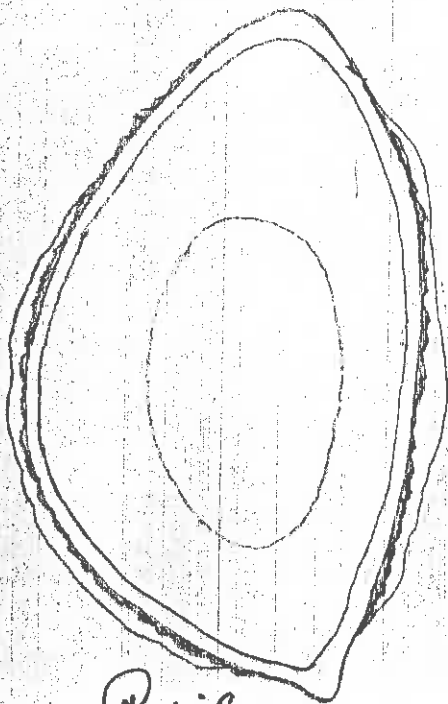
Spores in deposit: "cinnamon brown," 9-12(13) x 5.5-7.5(8) μ , inequilateral in profile, subovoid or subfusoid in face view, wall 0.3 μ thick, rugulose, at times (in most mature spores) slightly calyptrate, yellowish brown in KOH. Basidia 28-32 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 33-93 x 5-10 μ , filamentous, capitate or subcapitate, sometimes ventricose and septate below. Gill trama of subparallel hyphae, 6-12 μ broad. Pileus trama of radially-disposed, slightly interwoven hyphae. Pileus cuticle an ixocutis. Hypodermium a zone of brown cells. Stipe cuticle of dry repent hyphae; caulocystidia in tufts, 52-116 x 7-10 μ , similar to cheilocystidia. Clamp connections on pileus cuticle hyphae.

Hebeloma ~~highlandensis~~ ^{pyrenopeziza} sp. nov.

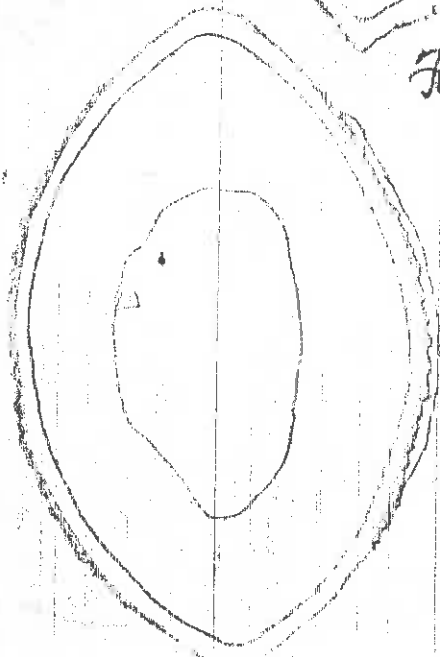
37568 - ~~37568~~



Face (ovoid)



Profile



Face (subfusoid)

Spores x 8000

brunneifolium

39053

HEBELOMA ~~HIGHLANDENSIS~~ sp. nov.

Cades Cove, October 5, 1973

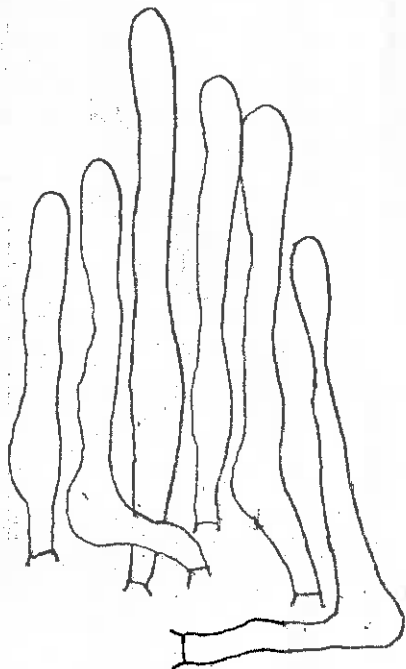
Pileus pinkish buff to pallid brown or cinnamon buff, margin white. Odor raphanoid, taste raphanoid but soon bitter. Flesh white.

Lamellae emarginate, close, narrow.

Stipe white, bulbous, the bulb slightly emarginate.

Spores (8.5)9-12 x (5.5)6-7(7.5) μ , often calyptrate, yellowish-brown. Pleurocystidia none; cheilocystidia 46-74 x 5-8 μ , ventricose below and sometimes crooked (with an elbow). Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium cellular.

Hebeloma highlandensis sp. nov.
brunneifolium ✓
Term - 39053



Ch x 1000

[Spores as in Type]

Exclude

HEBELOMA BROADWAYI Murrill

Mycologia 4:82. 1912

[This is Agrocybe broadwayi (Murr.) Dennis; ~~see~~ Bull. Soc. Myc. de France 69: 179. 1953.

Pileus 2-4 cm broad, convex to expanded, white, glabrous, subviscid, not striate.

Lamellae adnexed, white to ochraceous-fulvous, edges white and crenulate, crowded, rather narrow.

Stipe 3-4 cm long, 2-4 mm thick, white, glabrous, hollow.

Spores 12-14 x 7-8 μ , ellipsoid, ochraceous-fulvous.

Type from St. George's, Grenada, roadside.

Notes on Type

Spores 12-14 x 7.5-9 μ , ellipsoid, smooth, germ pore present, truncate, wall thick, rather dark brown (in 2% KOH). Pleurocystidia and cheilocystidia not found. Pileus cuticle cellular, dry.

This is an Agrocybe, as Dennis concluded. (see: Sm. & Hes., N. A. Sp. of Pholiota, Excluded spp., p. 383).

Is it possible that Pholiota broadwayi Murr. & Hebeloma broadwayi Murr. are the same species, & both are Agrocybe broadwayi (Murr.) Dennis?

Smith - 59277 HEBELOMA BRUNNEUM sp. nov.

Cespitose, by a log, under conifers, South Fork of Lake Fork,
McCall, Idaho, July 30, 1958

Notes by Smith

Pileus cespitose, 6-13.5 cm broad, obtuse to convex with
an incurved margin, ^{at first} "verona brown" to near "warm sepia,"
fading to dull cinnamon on the disc and dingy pale pinkish
cinnamon on the margin, in age with darker brown spots all
over the pileus, glabrous, viscid but soon dry, margin lobed
to uneven. Context pallid; odor and taste mild.

Lamellae adnate to adnexed, "pale pinkish buff" when
young, dull "cinnamon" when mature, edges becoming eroded,
close, medium broad.

Stipe 7-12 cm long, 10-25 mm thick, white, not darker
below, finally cinnamon around warm holes, equal or enlarged
downward, surface squamulose to apex, squamules small, solid,
dry. Veil none.

Spores "clay color" in deposit by day-light.

Notes by Hesler

Spores "clay color" in deposit, 9-11 x 4.5-5(6) μ ,
inequilateral in profile, ~~subcylindrical~~ subovoid in face view,
wall 0.3 μ thick, minutely rugulose, pale yellowish in 2% KOH.
Basidia 25-28 x 6-7 μ , 4-spored. Pleurocystidia none;
cheilocystidia 32-52 x 5-10 μ , subcylindric with the apices
varying from subspheric to subspathulate, more rarely forked,

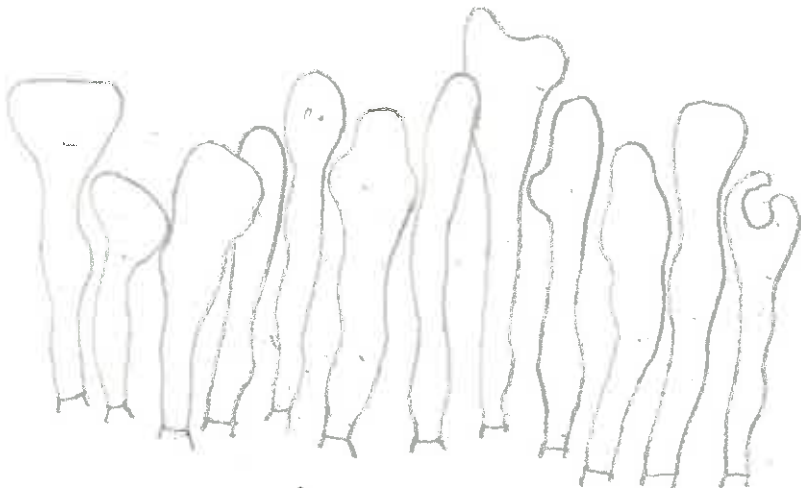
Smith - 59277

H. brunneum - 2

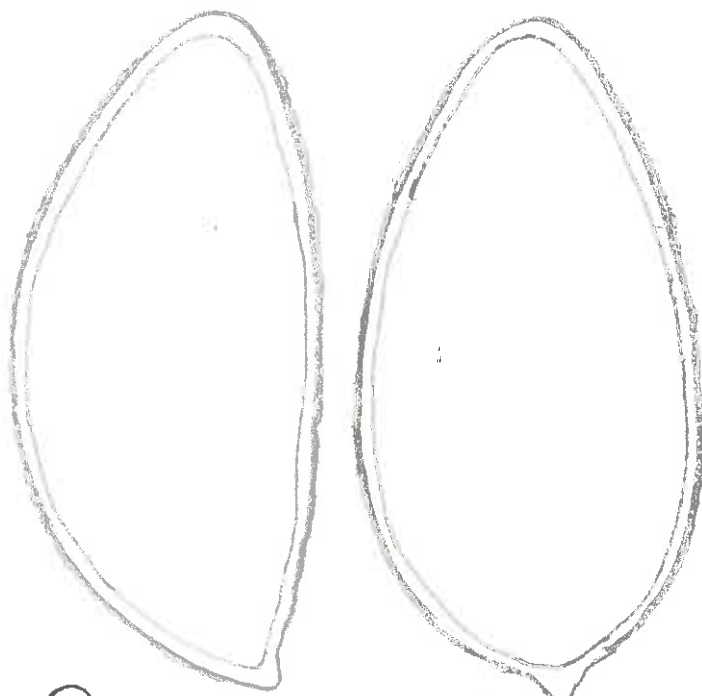
to clavate or irregularly so. Gill trama of slightly interwoven, narrow hyphae, 2-5 μ broad. Pileus trama of radially-disposed hyphae. Pileus cuticle a thin ixocutis. Hypodermium hyphoid. Stipe cuticle of repent, dry hyphae. Clamp connections not observed.

Abeloma brunneum sp. nov.

Jm. 59277 - Fyp



Ch x 1000



Profile

Face

Spores x 8000

Smith - 73344 HEBELOMA BRYOPHILUM sp. nov. PHOTO

Scattered in moss, in wet places, Bishop Creek, Priest Lake,
Idaho, September 11, 1966

Notes by Smith

Pileus 1-4 cm broad, broadly convex, expanding to nearly plane or with a slight umbo, white, slowly becoming dull clay color from the disc outward, glabrous, viscid, margin at first downy and minutely crenulate. Context odor and taste mild.

Lamellae adnexed, white becoming alutaceous then dull ^{white} cinnamon, edges minutely/crenulate, at times beaded with drops, close, moderately broad.

Stipe 2-5 cm long, 2-4 mm thick, white, the lower half becoming sordid honey at the base in age, frosted-pruinose, striate in age, cortex discolored slightly. Veil none.

Caulocystidia clavate, 30-90 x 8-12 μ , thin-walled.

Notes by Hesler

Spores 7.5-9.5(10) x 4.5-5.5 μ , inequilateral in profile, subfusoid to subovoid in face view, wall 0.25 μ thick, minutely rugulose, pale yellowish brown in 2% KOH. Basidia 24-28 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 36-58 x 4-9 μ , subcylindric, apices subcapitate to capitate, slightly ventricose in some, in dense clusters. Gill trama of slightly interwoven hyphae, 5-9 μ broad. Pileus trama of radially-disposed hyphae. Pileus cuticle an ixocutis. Hypodermium of brown, more or less interwoven hyphae. Stipe cuticle of pallid,

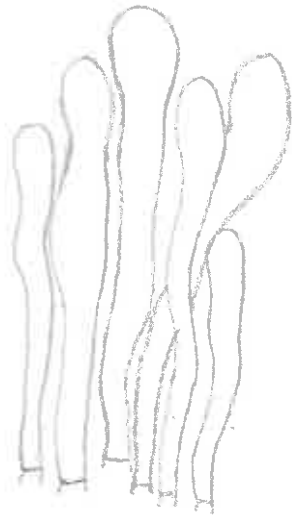
Smith - 73344

H. bryophilum - 2

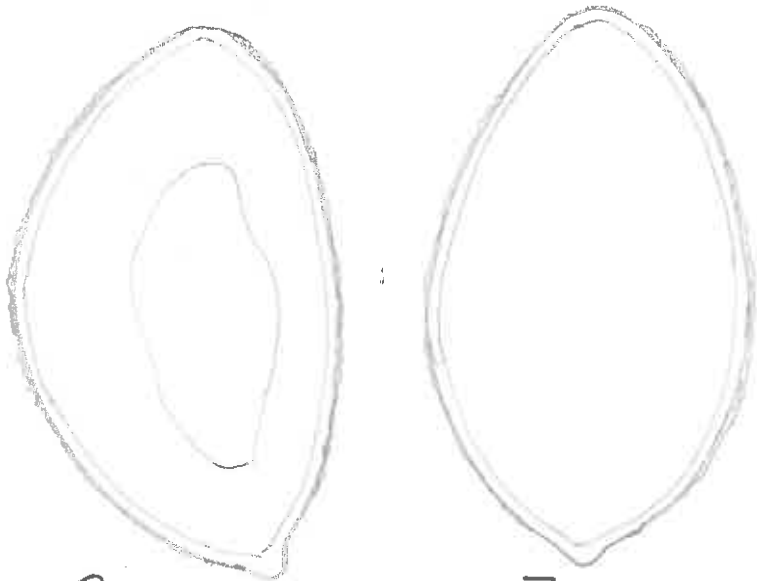
thick-walled hyphae, the surface bearing tufts of caulocystidia, similar to cheilocystidia. Clamp connections not observed.

Nebeloma bryophilum sp. nov.

Sm-73344 - Fyp



Ch x 1000



Profile

Face

Spores x 8000

Jm-84880

HEBELOMA BURKEI sp. nov.

Gregarious among fallen leaves in mixed woods, Robinsons Springs, Alabama, Nov. 8, 1942 (labelled Naucoria by Burke).

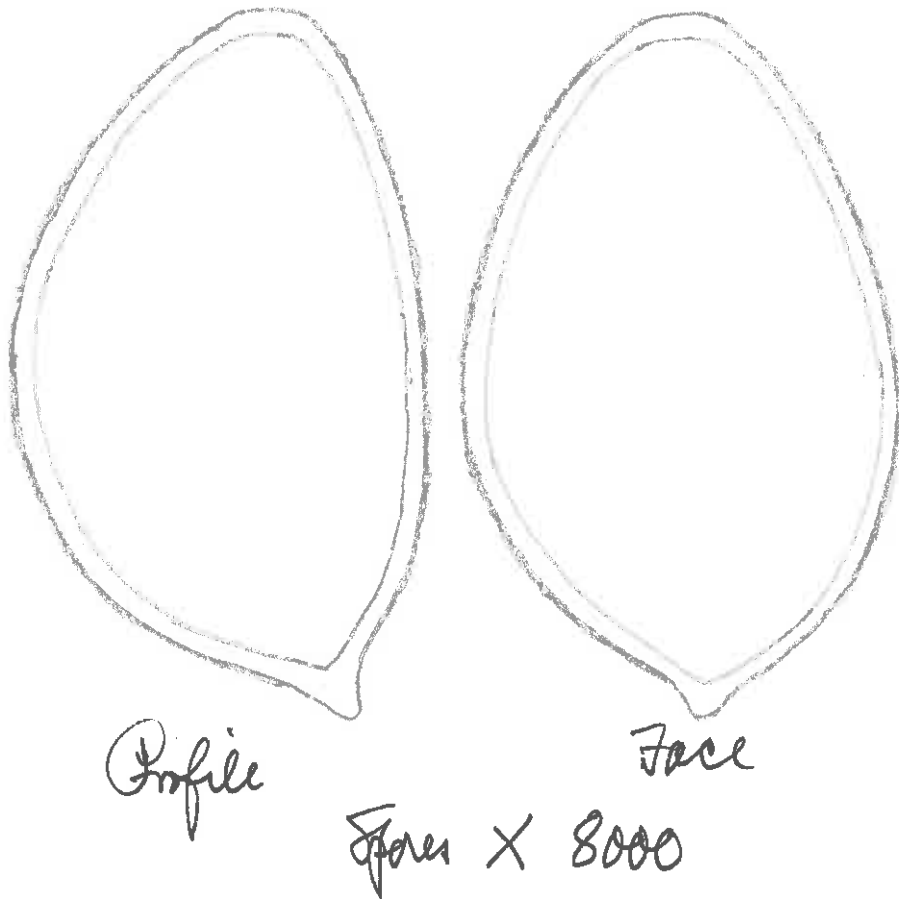
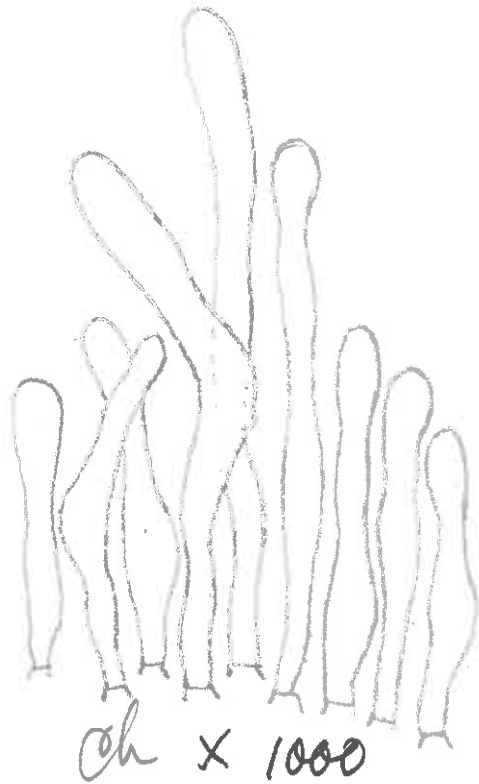
Notes by Hesler

Spores 8-12 x 5.5-7.5 μ , inequilateral in profile, rather broadly subovoid in face view, wall 0.3 μ thick, minutely rugulose to nearly smooth, apices sometimes subtruncate, yellowish brown in 2% KOH, reddish brown in Melzer's reagent. Basidia 30-36 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 38-88 x 5-8 μ , filamentous or cylindrical, apices at times slightly subcapitate, mostly ventricose below. Gill trama of subparallel hyphae, 4-7 μ broad. Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium of rather large, irregularly-shaped cells. Stipe usual, dry.

Distinguished by its pinkish buff pileus; no odor nor taste; broad, ∇ close gills; tapering stipe; no veil; relatively broad, subovoid spores; long cheilocystidia; radial pileus trama; cellular hypodermium.

It is somewhat near H. attenuisporum, in which the pileus is darker (brown); bitter taste; the stipe bulbous; spores strikingly slender; shorter cheilocystidia; hypodermium hyphoid.

Apheloma burkei sp. nov.
Burke - Nov. 8, 1942 — Smith - 84880



40423

HEBELOMA *lysinum* sp nov

Ashcroft Road, Pitkin Co., Colorado, leg. Smith-
87013, August 2, 1976. Smith labels it
H. sinapizans.

Notes by Smith

Pileus 4-6 cm broad(all young), convex to hemispheric,
the oldest broadly convex, more or less hygrophanous,
vinaceous buff over the margin, nearer vinaceous tawny over
the ^{disc}disc but duller, margin inrolled and cottony, viscid.
Context buffy-pallid to whitish, thick; odor and taste
strongly raphanoid. FeSO₄ gray in the stipe; KOH - 0.

Lamellae adnate, crowded, narrow(all young), beaded
with hyaline drops.

Stipe rather short(immature), about 8mm thick at
apex, with more or less of a marginate bulb, 20-35 mm thick,
stipe with zones of scales near base, beaded with drops above
~~with scales.~~ Veil submembranous.

Notes by Hesler

Spores 9.5-12 x 6-8 μ , inequilateral in profile,
ellipsoid or subovoid to somewhat sublimoniform in face view,
~~sometimes with an obscure "neck"~~, brown in 2% KOH, rugulose
to nearly smooth(under 1100 mag.). Pleurocystidia none;
cheilocystidia 37-78 x 6-10 μ , cylindric-clavate, capitate to
subcapitate, rarely slightly ventricose above or below, basal
half of stalk slender. Gill trama subparallel. Pileus trama
of broad, loosely interwoven hyphae. Pileus cuticle an
ixotrichodermium. Hypodermium of ^{radially}~~radially~~ arranged hyphae.
Stipe cuticle of dry, repent hyphae. Caulocystidia in tufts,
the tufts numerous, 45-110 x 5-9 μ , similar to cheilocystidia.

This seems near H. sinapizans, but not that.

over

Habit, Habitat, and Distribution. On soil, Ashcroft
Road, Pitkin County, Colorado, ~~July~~ August 2, ~~1986~~ 1976,
Smith-87013 (TENN-40423), type.

Observations. Although the bandweave was
not fully expanded when collected, the spores and
other structures appeared mature. It is related
to H. squamosipes, in which the filous margin
shows white veil remnants ~~and~~ rather than the
cottony fibrils in H. byssinum.

40423

HEBELOMA *byscium* sp. nov.

(Sm-87013) Ashcroft Rd., Pitkin Co., Colorado,
leg. Smith, August 2, 1976 (Smith calls it H. sinapizans)

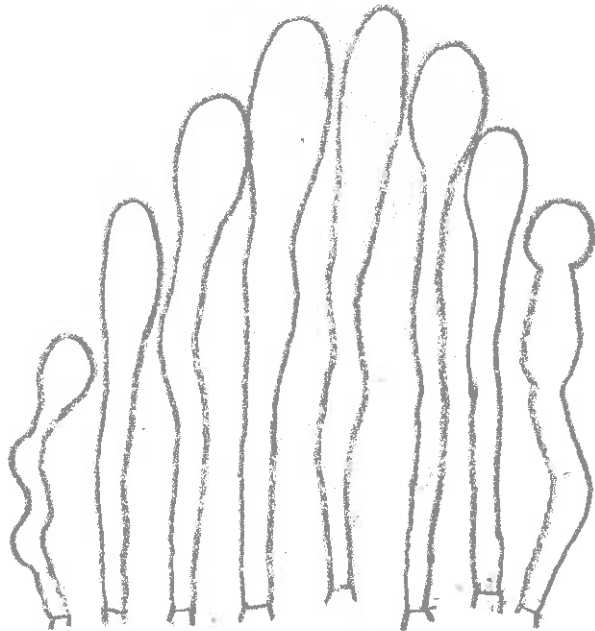
Notes by Hesler

Spores 9.5 - 12 x 6 - 8 μ , inequilateral in profile,
^{to subovoid in face view} ellipsoid, several more or less sublimiform, at times
with an obscure "neck", brown in 2% KOH, rugulose to nearly
smooth (under oil, x1100). Pl none; ch 37-78 x 6-10 μ ,
cylindric-clavate, subcapitate to distinctly capitate, more
rarely slightly or obscurely ventricose above or below,
basal half of stalk slender. Gill trama nearly parallel.
Pileus trama of ^{broad} loosely interwoven hyphae. Pileus cuticle
an ixotrichodermium. Hypodermium ^{of radial hyphae} ~~of radial hyphae~~. Stipe cuticle
of repent, dry hyphae. Caulocystidia in tufts, the tufts
numerous, 45-110 x 5-9 μ , similar to cheilocystidia.

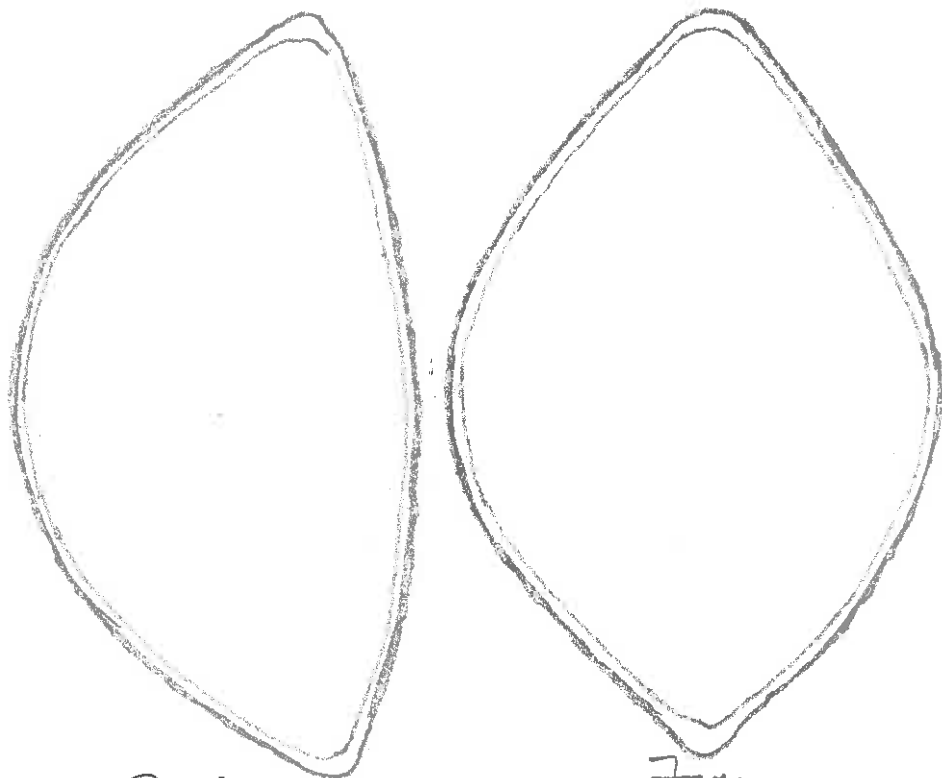
Smith, in his notes, labels this collection
^{but, lacking pl, can not be that.}
H. sinapizans, [^] Also says the hypodermium is hyphoid (which
is correct).

Nebeloma

40423 (Sm-87013)



Ch x 1000



Profile

Face

Spores x 8000

Excluded (unsuitable) material

HEBELOMA CALIFORNICUM Merrill

North American Flora 10:225. 1917

Pileus gregarious, 4-9 cm broad, convex to subexpanded, broadly umbonate, irregular, grayish-white to cream-colored, disc smooth, striate and becoming cracked on the margin which is entire to undulate or lobed, concolorous. Context rather thin, white.

Lamellae sinuate, white, becoming yellowish and finally yellowish-brown, subcrowded, very broad.

Stipe 5-12 cm long, 15-30 mm thick, equal or tapering upward, shining white or grayish, solid, coarse-fibrillose, often split and cracked, solid. Veil arachnoid, ornamenting the pileus margin.

Spores 10-12 x 6 μ , ellipsoid, smooth, pale-ferruginous.

Type on soil, near oak trees, Jasper Ridge, near Stanford University, California, leg. James McMurphy, No. 218 (NY), March 26, 1916.

Notes on Type, by Hesler

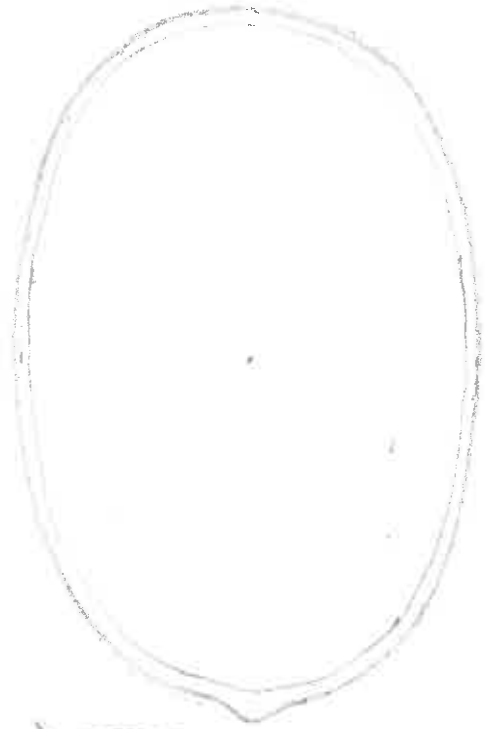
Spores (9.5)11-14(15) x 6-7.5(8) μ , inequilateral in profile, ovoid to ellipsoid to oblong-ellipsoid in face view, smooth, wall 0.3-0.5 μ thick. *Pileus cuticle of dry repent hyphae.*

Basiocarp eaten and pulverized by an insect, and unsuitable for study.

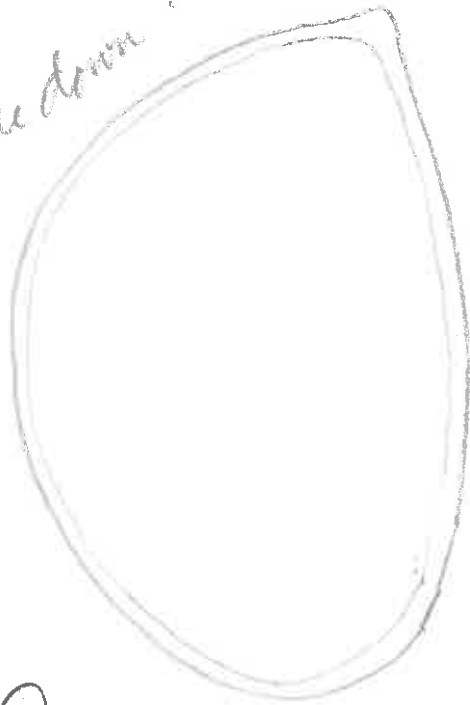
(See Smith's notes on his study at an earlier date.)

Hebeloma californicum Murr.

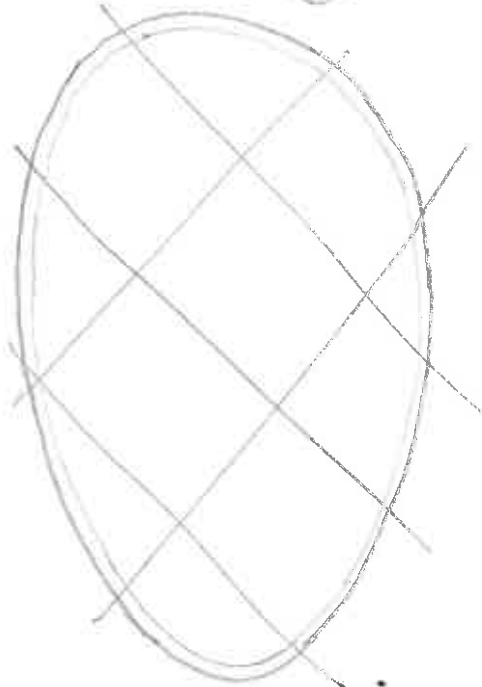
Type



Upside down!



Profile



Face View

Spores x 800

Smith - 56638 HEBELOMA CALIFORNIENSIS^E sp. nov.

Gregarious under alder, near spruce, Big Lagoon Park,
Humboldt County, California, December 13, 1956

Notes by Smith

Pileus 1.5-2.5 cm broad, obtuse to convex, becoming plane or remaining slightly umbonate, "pecan brown" to "warm sepia," glutinous, glabrous, margin entire. Context thick and firm, watery brownish; odor and taste not distinctive.

Lamellae depressed-adnate in age, near "syal brown" when mature, close, broad, edges even and not beaded.

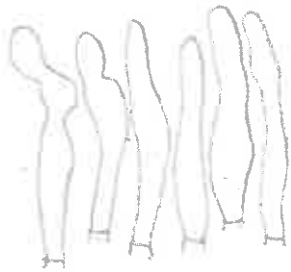
Stipe 3-6 cm long, 4-5 mm thick, pallid above, soon dark brown from base up, surface at first decorated with minute appressed buff squamules to the apex, equal. Veil none.

Notes by Hesler

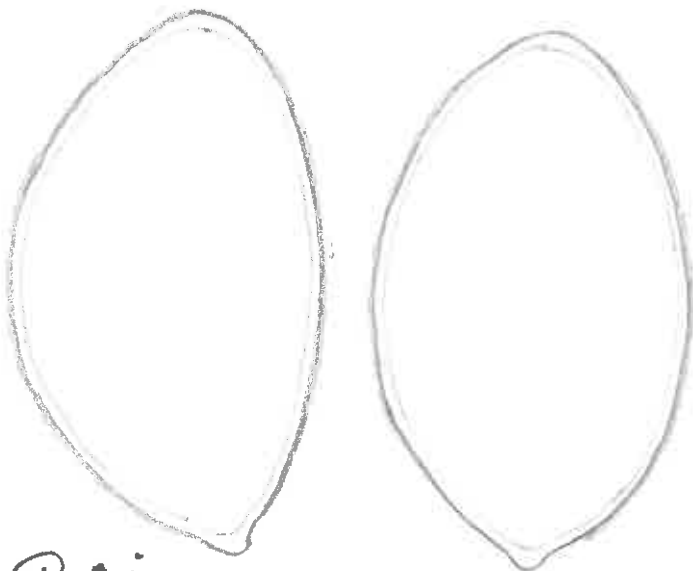
Spores 7-9 x 4.5-5.5 μ , slightly inequilateral in profile, subfusoid to subovoid in face view, wall 0.25 μ thick, rugulose, pale yellowish brown in 2% KOH. Basidia 24-28 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 26-32 x 3-6 μ , subventricose to slightly irregular, sparse, inconspicuous and insignificant. Gill trama of subparallel, slender (2.5-5 μ) hyphae. ^{Pileus cuticle an *inocutis*.} Pileus trama of more or less radially-disposed hyphae, of two rather distinct zones: (1) an upper zone of ~~loosely~~ loosely arranged hyphae; (2) a lower zone of rather compact hyphae. Hypodermium a cell-zone. Stipe cuticle a zone of pallid-grayish, thick-walled hyphae. Clamp connections not observed.

Heloloma californiensis sp. nov.

Sm-56638 - Type



Ch x 1000



Profile

Face

Spores x 8000

HEBELOMA CALYPTROSPORUM Bruchet

No. 63. BR. 32. Leg. Bruchet, Type

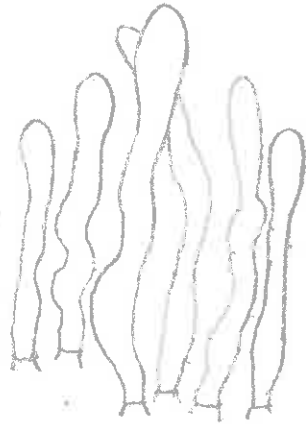
Notes by Hesler

Spores 9-11(13) x 5.5-6(7) μ , slightly inequilateral in profile, subovoid to subfusoid in face view, wall 0.3 μ thick, rugulose to rugose (not asperulate), calyptrate, more or less truncate at the apex, brown with only a faint tint of yellowish. ^{in 2% KOH.} Basidia 28-32 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 32-53 x 4-7 μ , flexuous and subcylindric, apex subcapitate, more or less subventricose below. Gill trama of subparallel hyphae, 4-10 μ broad. Pileus trama generally radial but somewhat interwoven, ~~at times rather irregularly so.~~ Pileus cuticle an ixocutis, 150-200 μ thick. Hypodermium a brown cell-zone. Stipe cuticle a zone of pallid thick-walled hyphae, the surface bearing (near the apex) a turf of caulocystidia, 48-70 x 5-6 μ , more or less flexuous, usually the apices more or less subcapitate, more rarely branched. Clamp connections ~~not found, but Bruchet shows them in his drawings~~ at the base of cheilocystidia and caulocystidia.

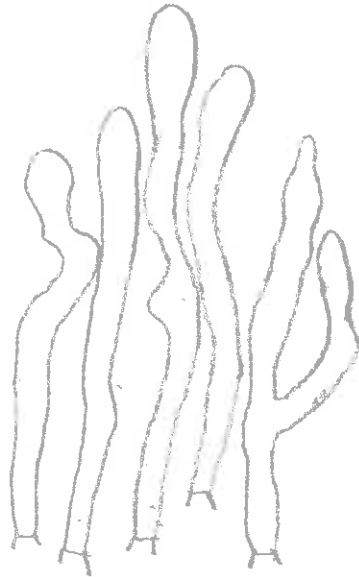
The spores, similar in color and other respects to H. anthracophilum, are not calyptrate over the apex as they are in that species. Appears rather close to H. ^{arellanifolium} ~~leoniopsis~~, in which the spores are sublimoniform and not calyptrate.

Bruchet (1970:106) says of the pileus cuticle: of three zones: epicutis usual, of slender hyphae; cutis and subcutis only slightly differentiated.

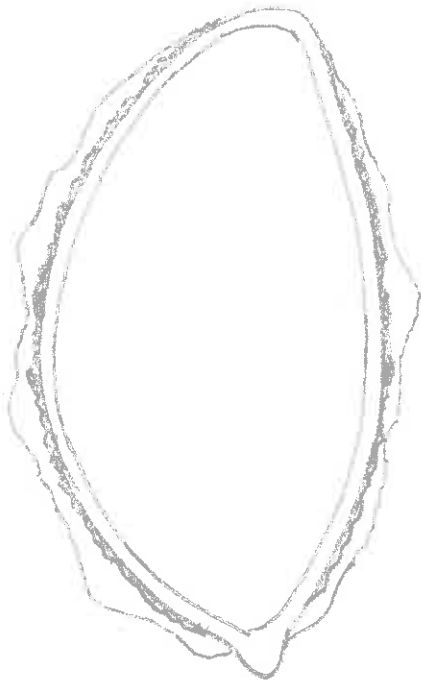
Nebelonia calyptosporum Bruchet
Bruchet 63. BR. 32 (Type)



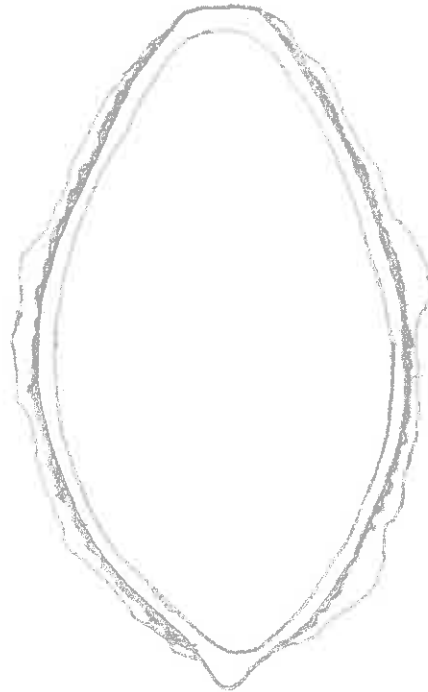
ch x 1000



caulis x 1000



Profile



Face

Spores x 8000

HEBELOMA CANDIDIPES Bruchet

Leg. Bruchet, No. 69. BR. 22 (Type)

Notes by Hesler

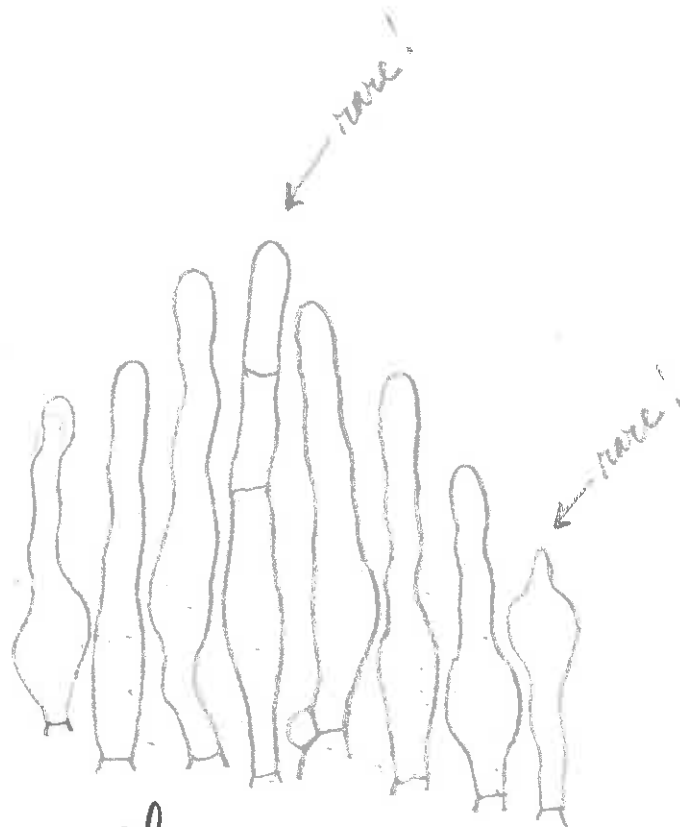
Spores 10-12 x 5.5-7 μ , slightly inequilateral in profile, subvoid or subfusoid in face view, wall 0.3 μ thick, ~~widely~~ rugulose, yellowish brown in 2% KOH. Basidia 30-36 x 7-9 μ , 4-spored. Pleurocystidia none; cheilocystidia 35-70 x 7-10 μ , ventricose below (rarely ventricose above), rarely septate. Gill trama of undulating, subparallel hyphae, 3-5 μ broad. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium of irregular brown cells. Stipe cuticle a zone of pallid thickwalled hyphae, covered by a thin zone of brownish hyphae, surface bearing more or less aerial hyphae; no caulocystidia found. ^(reported by Bruchet) Clamp connections at the base of some cheilocystidia.

Bruchet (1970:29) says of the pileus cuticle: epicutis gelatinous, slightly thick (about 50 μ), hyphae contain numerous yellowish granules visible in the living condition, and with terminal structures* of about 65 x 4.5 μ ; cutis slightly distinct; subcutis rather important (40-50 μ), of pseudoparenchymatous structure, hence very coherent, the hyphal wall was incrustated with a dark brown pigment; pileus flesh rather coherent and slightly aeriferous.

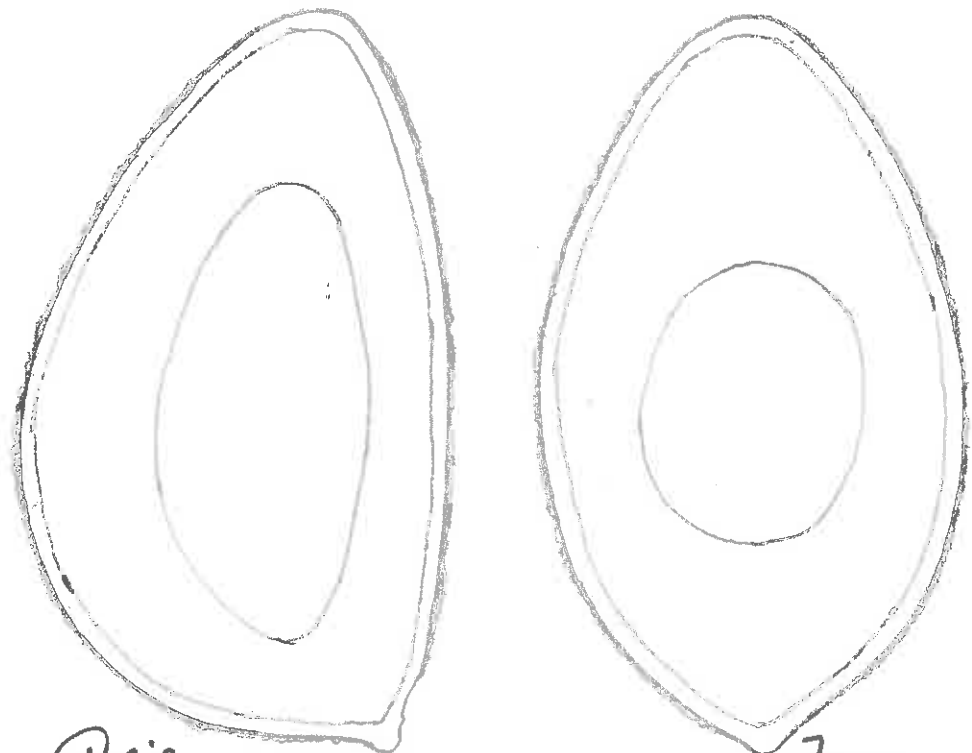
*(These might be pileocystidia, although the shape not given.)

Helvoma candidipes Bruchet

Bruchet No. 69. BR. 22 (~~Type~~)



ch x 1000



Profile

Spore x 8000

Face

Smith - 39808 HEBELOMA CANESCENS sp. nov.

Gregarious on moss in wet meadow, Reflection Lake, Rainier
Nat. Park, Washington, September 12, 1952

Notes by Smith

Pileus 2-2.5 cm broad, plane with an incurved white-pubescent margin, viscid, dark to pale "verona brown," whitish-canescent beneath the gluten, gradually paler and the canescence vanishing. Context watery, more or less verona brown; odor and taste faintly of radish.

Lamellae depressed-adnate, "avellaneous" when young, becoming "wood brown," then more "clay color," close, broad, edges flocculose.

Stipe 3-4 cm long, 3-4 mm at apex, surface heavily coated with pale avellaneous fibrillose-pruinose covering to the apex, evenly watery brown, pallid watery brown within, narrowly clavate below. Veil none.

Spores 9-12 x 6-6.5 μ , smooth or nearly so. Basidia 30-40 x 7-9 μ , 4-spored. Pleurocystidia none; cheilocystidia 50-80 x 9-12 μ . Gill trama parallel. Clamps present.

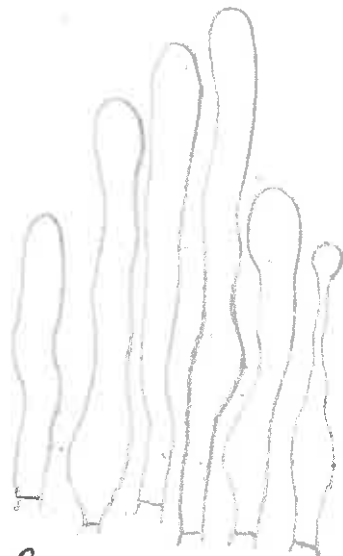
See Smith - 40328 and following numbers; cap varied to "bone brown" beneath hoariness.

Notes by Hesler

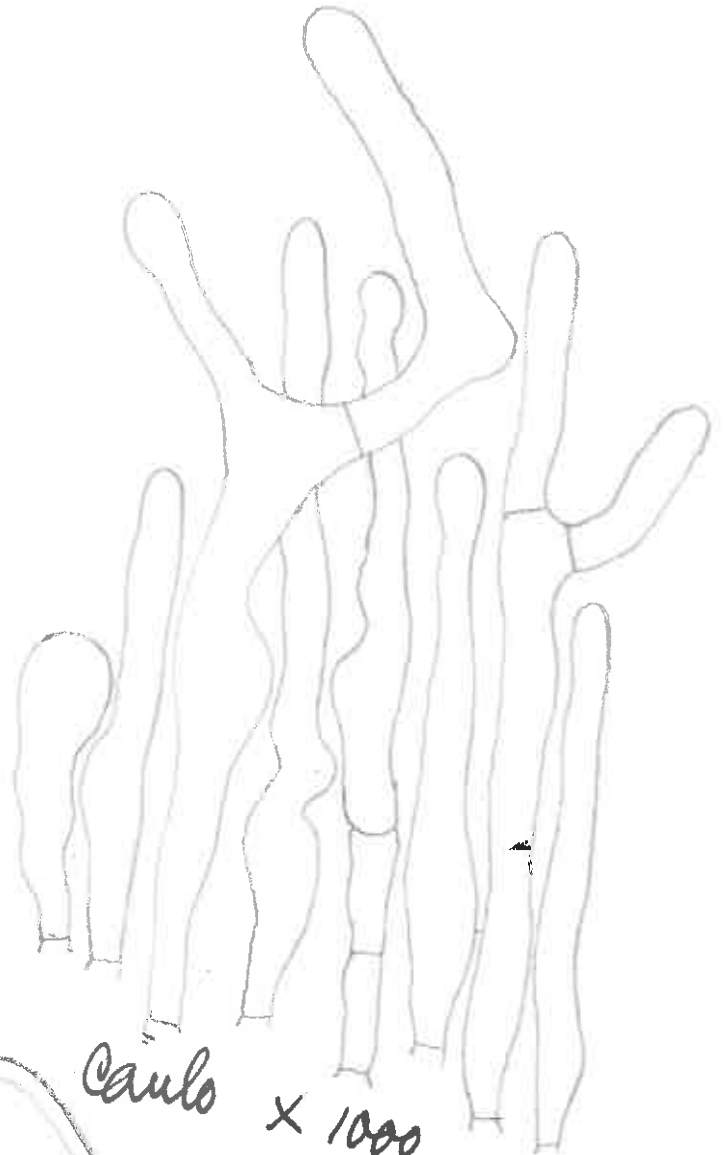
Spores 10-13(14.5) x 5-6.5(7) μ , inequilateral in profile, subfusoid to subellipsoid in face view, wall 0.3 μ thick, minutely rugulose to nearly smooth, pale yellow brown

in 2% KOH. Basidia 28-37 x 7-9 μ , 4-spored. Pleurocystidia none; cheilocystidia 37-68 x 5-9 μ , subcylindric, often more or less ventricose on one or both sides, apex usually subcapitate. Gill trama of subparallel hyphae, 3-7 μ broad. Pileus trama of somewhat loosely interwoven, medium to broad ~~hyphae~~ hyphae (6-18 μ). Pileus cuticle an ixocutis. Hypodermium a brown cellular zone. Clamp connections present. Stipe cuticle a zone of pallid-grayish thick-walled hyphae, surface bearing a turf of prominent caulocystidia, 40-135 x 6-13 μ , more or less subcylindric, sometimes subclavate, occasionally the apices forked, and rarely septate below.

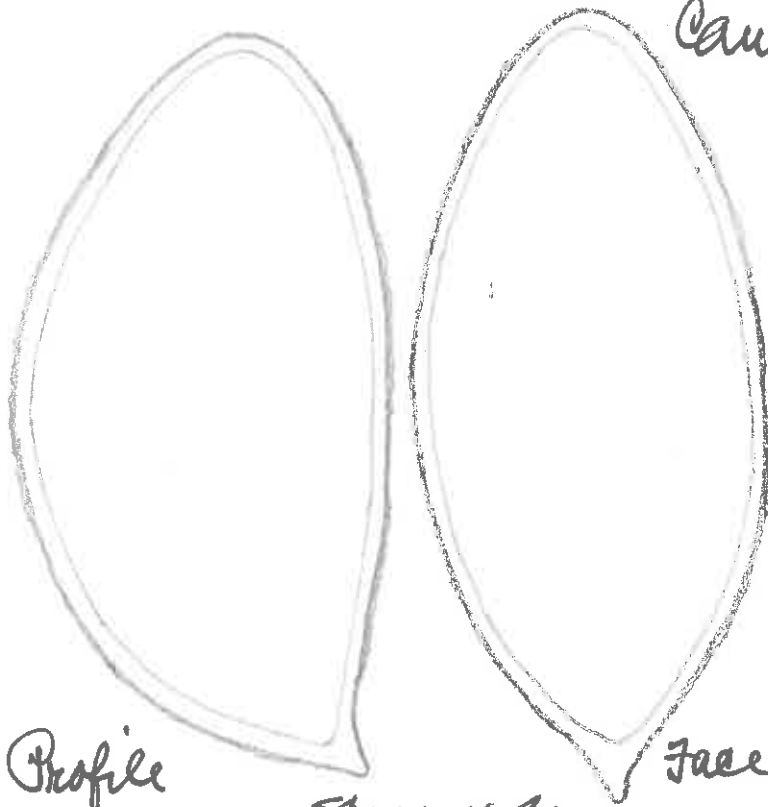
Nobeloma canescens sp. nov.
Sm. 39808 - Type



Ch x 1000



Caulo x 1000



Profile

Face

Sm. x 8000

Sm - 17139 HEBELOMA CASTANEUM sp. nov. PHOTO

Gregarious on soil, in campground, Olympic Hot Springs,
Washington, leg. Smith, September 22, 1941

Notes by Smith

Pileus 3-4.5 cm broad, obtuse to convex when young, broadly convex at maturity or with an obscure umbo, "cameo brown" to "walnut brown" but becoming more or less "pecan brown" on disc, margin paler, viscid, hoary-canescens at first at least along the margin. Context thick, firm and hard, whitish; odor very faintly subraphanoid, taste mild or nearly so.

Lamellae bluntly adnate, or with a slight tooth, "avellaneous" to "wood brown," crowded, narrow (3 mm), edges minutely white fimbriate.

Stipe 3-5 cm long, 10-12 mm thick, white, pallid within, more or less lacerate scaly up to the fibrillose-furfuraceous apex, scales apparently from torn cuticle, dry, equal, stuffed becoming hollow. Veil none.

Spores 8-10 x 4-5 μ , nearly smooth. Cheilocystidia present.

Notes by Hesler

Spores 7.5-9 x (4)4.5-5 μ , inequilateral in profile, subovoid in face view, wall about 0.25 μ thick, minutely rugulose to nearly smooth, yellowish in 2% KOH. Basidia 27-32 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 38-50 x

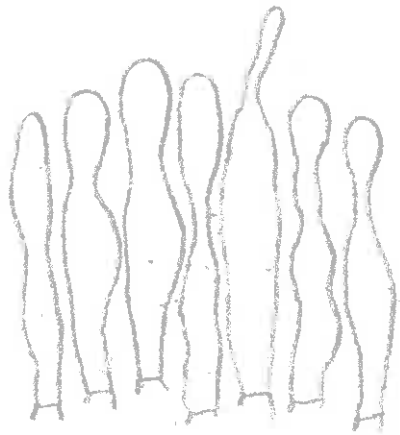
Sm - 17139

H. castaneum - 2

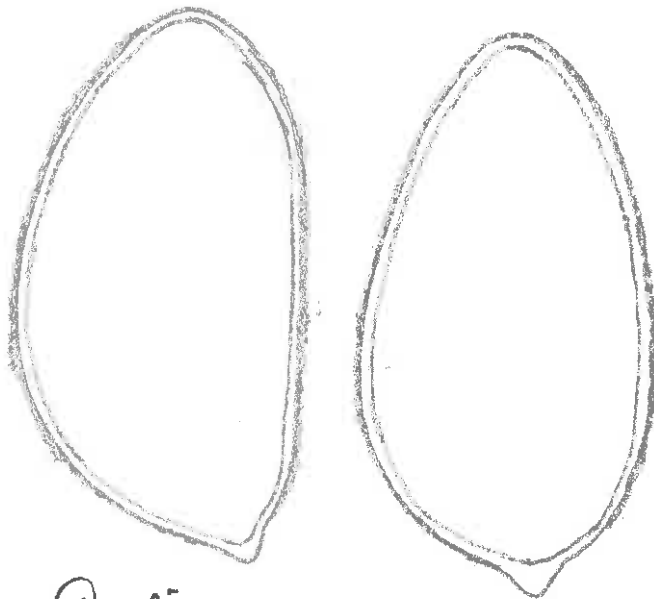
5-8 μ , ventricose, on one side or both, apices usually obtuse, often subcapitate. Gill trama of subparallel, slender hyphae, 3-5 μ broad. Pileus trama of radial hyphae. Pileus cuticle an ixocutis, 65-100 μ thick. Hypodermium of brown cells. Stipe cuticle a zone (more or less 150 μ thick) of dry, grayish, thick-walled hyphae, the outermost brownish. Clamp connections not observed.

Nebeloma castaneum sp. nov.

Em-17139 - Type



Ch - x 1000



Profile

Face

Spores x 8000

37533 HEBELOMA CAULOCYSTIDIOSUM sp. nov.

Type

On soil, oak woods, Fall Creek Falls State Park, Tennessee,
October 10, 1972

Pileus 3-4.5 cm broad, plano-convex then plane, "pinkish buff," usually with dark areas, glabrous, viscid. Context white, thick on disc, thin on margin; odor raphanoid, taste bitter-raphanoid. (Odor of dried material when immersed in 95% alcohol then water, also raphanoid.)

Lamellae adnate then emarginate, "avellaneous" then "snuff brown," close, ventricose, rather narrow, lamellulae present, edges whitish-fimbriate.

Stipe 1-2.5 cm long, 5-10 mm thick, white, pruinose at apex, scattered-fibrillose below, shining, equal, dry, hollow. Veil remnants as fibrils on pileus-margin.

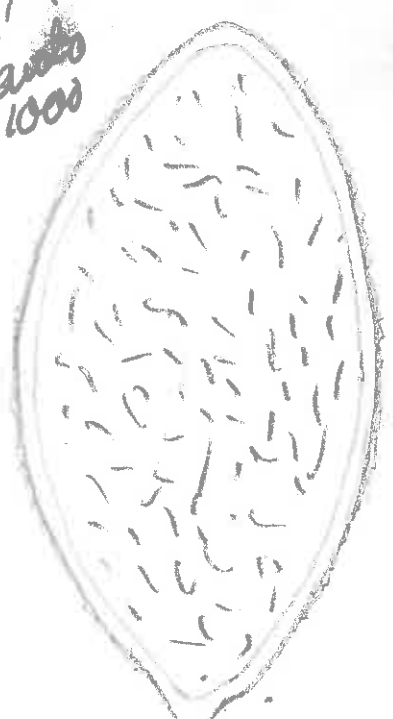
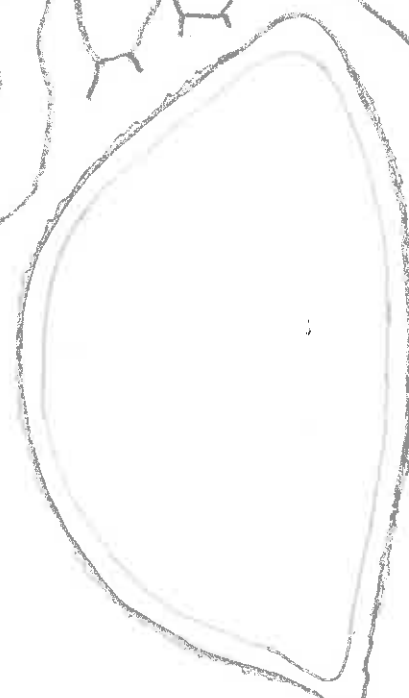
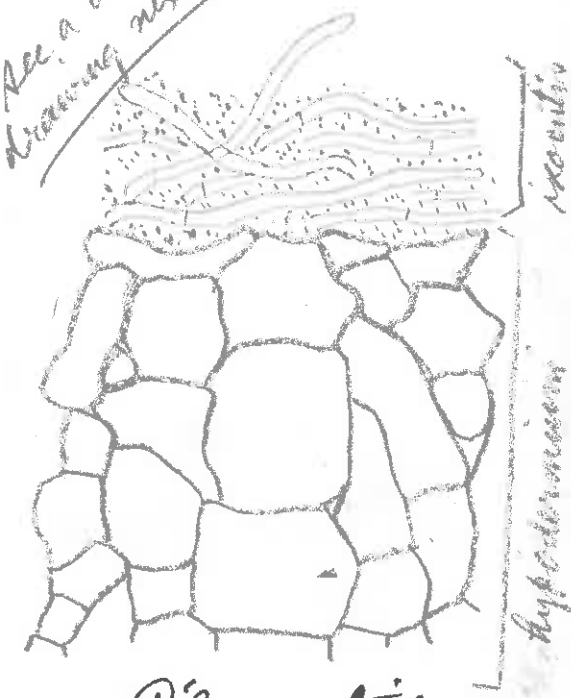
Spores 10-12(14) x 5-5.5(6) μ , inequilateral in profile, fusoid in face view, minutely rugulose, wall 0.5-0.6 μ thick, yellowish brown in 2% KOH. Basidia 22-28 x 6-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 33-78 x 3-5 μ , filamentous, in tufts. Gill trama of subparallel hyphae, 6-14 μ broad. Subhymenium of slender hyphae. Pileus trama of densely interwoven broad (8-15 μ), septate hyphae. Pileus cuticle an ixocutis. Hypodermium a brown cell zone. Stipe cuticle of dry repent hyphae, bearing abundant caulocystidia, 42-100 x 7-15 μ , septate, basal cell often inflated, at times branched. Clamp connections present on pileus cuticular hyphae.

Hebeloma caulocystidiosum sp. nov.

Teru - 37533 - Type



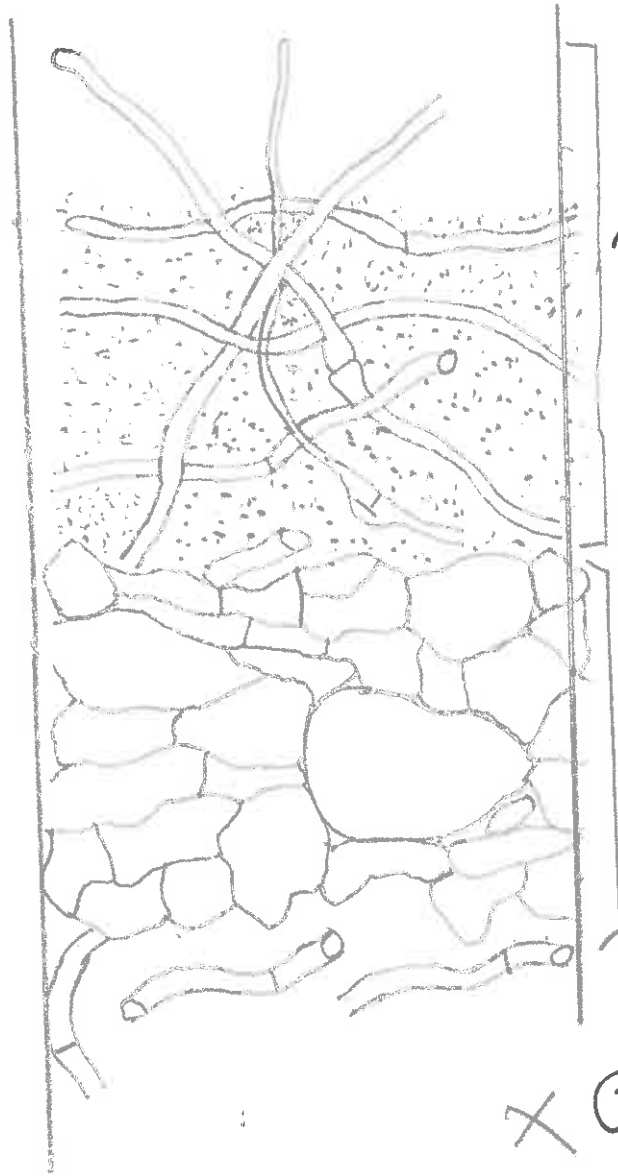
See a better drawing next sheet



Spores x 8000

Helvella caulocyphidiorum sp. nov.

37533



pileus cuticle

hypodermium

X Pileus cuticle x 1000

HEBELOMA CAVIPES Huijsman

Persoonia 2:97. 1961

(Translation from original description)

Pileus 2-4 cm broad, plano-convex or umbonate, generally becoming depressed on the center, glutinous especially in the region of the disc, rather dry on the marginal zone which is of satiny appearance, beige-alutaceous at the center, pale beige between the center and the margin which is sometimes striate and at first incurved. Context white, rather thick on the cap; odor weak, of radish when sectioned, taste weak of radish.

Lamellae broadly adnate, argillaceous to grayish-isabelline, rounded at the base, moderately broad, close, edges serrulate-denticulate, lamellulae of two lengths.

Stipe 2-4 cm long, 4-7 mm thick, subcylindric, subequal, often curved at the base, quite hollow, generally the top of the cavity with a remnant of loose tissue pointing downward, and below with a remnant of loose tissue pointing upward, tapering to a point, apex persistently farinaceous, glabrescent, striate, white and not becoming ~~bec~~ brown or sordid even at the base. Veil none.

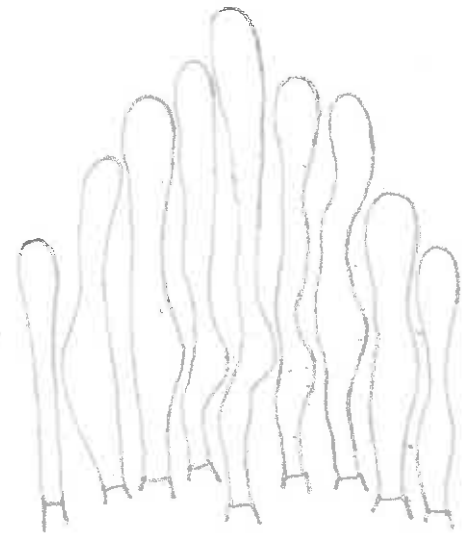
Spores 10-12.5 x 5.7-7 μ , amygdaliform, apex rather acutely papillate, punctate-verruculose, perispore (calyptra?) not or only slightly visible. Basidia 28-36 x 9-12.5 μ , 4-spored, often with a constriction at the middle.

Cheilocystidia up to 28-60 μ long, numerous, hyaline, usually sublageinform, ventricose below, the larger ones not exceeding 12.5 μ , and less on the neck (3.5-6 μ), which is terminated by a clavule up to 12.5 μ . Clamp connections present.

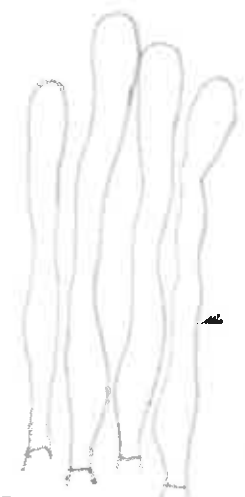
The absence of drops on the gills, the lack of a veil, the raphanoid odor, the amygdaliform spores with a sub-sharp apex, and the cheilocystidia generally ventricose at their base place. This species near H. sinapizans (Paul. per Fr.) Gill.

Hebeloma cavipes Huijsman

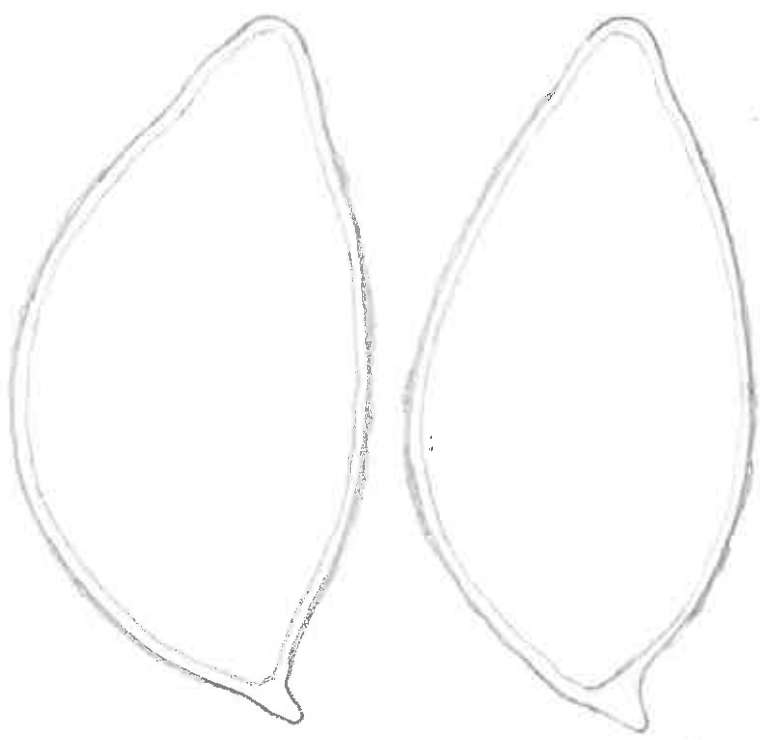
Part of Type



Ch x 1000



Caulo x 1000



Profile

Face View

Spores x 8000

HEBELOMA CAVIPES Huijsman

Nans-les-Pins (Var, France), October 7, 1960, leg. H. S. C.

Huijsman, part of type L 960.110-524.

Notes by Hesler

Spores 9.5-12.5 x (4.5)5.5-7 μ , inequilateral in profile, subvoid or sublimoniform in face view, some with a "nose," wall about 0.3 μ thick, minutely or obscurely rugulose, pale yellowish in 2% KOH. Basidia 26-30 x 7-9 μ , 4-spored. Pleurocystidia none; cheilocystidia 35-56 x 5-8 μ , cylindrical-clavate, ventricose, to sublageniform. Gill trama of undulating, slender hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis. Hypodermium of radial hyphae. Stipe cuticle of dry repent hyphae, bearing scattered clusters of caulocystidia, 48-60 x 5-6 μ , cylindrical-subclavate to sublageniform. Clamp connections present.

(In my Key, it belongs in Subg. Hebeloma, Sect. Denudata, Stirps Crustuliniforme, rather near H. sinapizans which also has a radial pileus trama, but has a cellular hypodermium. It is close to H. Tenn-29405 which has asperulate spores, a distinct hypodermium, and with different pileus-pigments.)

HEBELOMA CAVIPES Huijsman

Leg. Huijsman, sent to Bruchet who lent it to Hesler (May, 1973); No. L 962 - 144 - 040

Notes by Hesler

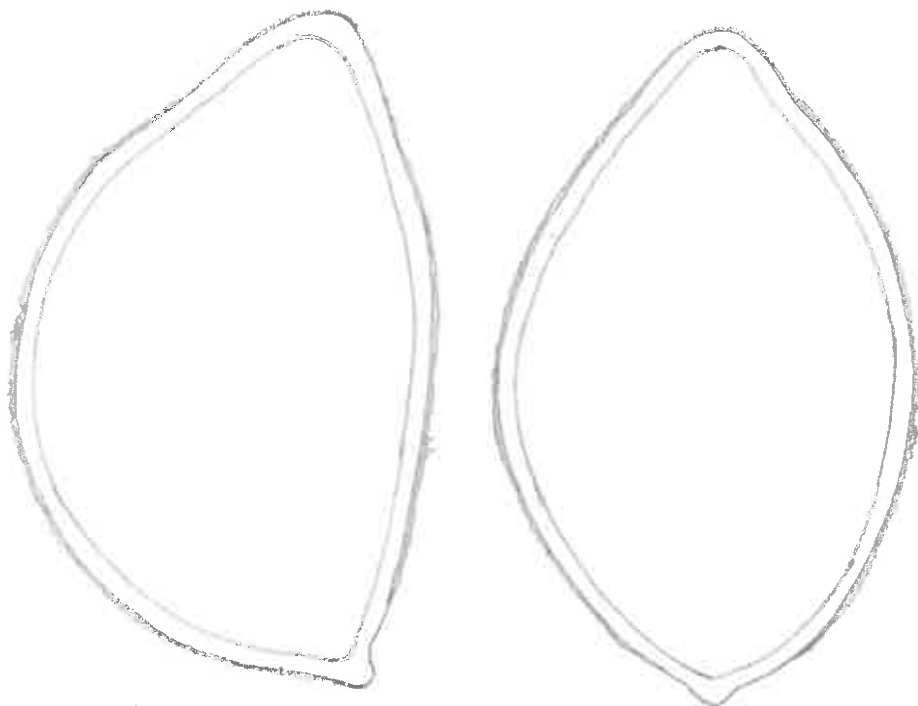
(Material too sparse for sectioning)

Spores 10-12 x ~~8/8~~ 5.5-7 μ , inequilateral, subvoid, minutely rugulose, with a slight "nose."

Heloloma caripes Huijman

Comm. (on loan) from Bruchet, No. L 962-144-040

Coll. by Huijman & sent to Bruchet.
(Material too sparse for sections)



Profile

Face

Spores x 8000

Exclude

HEBELOMA CINCHONENSE Murrill

Mycologia 4:82. 1912

(This is an Inocybe)

Pileus gregarious, 3-6 cm broad, convex to expanded, umbonate, pale-isabelline, rarely milky-white with a stramineous tinge, viscid, margin white, thin, straight, slightly cotton. Context white, 1-2 cm thick; taste not distinctive.

Lamellae sinuate-adnexed, white, broad, ventricose.

Stipe 3-6 cm long, 7-10 mm thick, white or pale-yellowish, enlarged below, abruptly bulbous at the base, glabrous, fleshy with a thick rind. Veil slight, fibrillose, evanescent.

Spores 8X4 μ , pip-shaped, smooth, pale melleous under the microscope.

Type on soil, Cinchona, Jamaica, December 25-January 8, 1908-9, leg. Murrill 568.

Notes on Type

Spores 6.5-9 x 4-4.5 μ , slightly inequilateral in profile, ellipsoid to subellipsoid in face view, wall thin, smooth, no germ pore, pale brownish under scope (in 2% KOH): Pleurocystidia 52-70 x 10-20 μ , ventricose to subventricose; cheilocystidia 32-42 x 6-10 μ , somewhat similar. Pileus cuticle a trichodermium, dry. Clamps not found.

The spores, cystidia, and pileus cuticle all indicate Inocybe. (Dennis, in a note on packet, states that some of the cystidia are crystallate.)

Notes on Murrill No. 501

From Cinchona, Jamaica, December 25, 1908 - January 8, 1909.

Spores and cystidia as in Type.

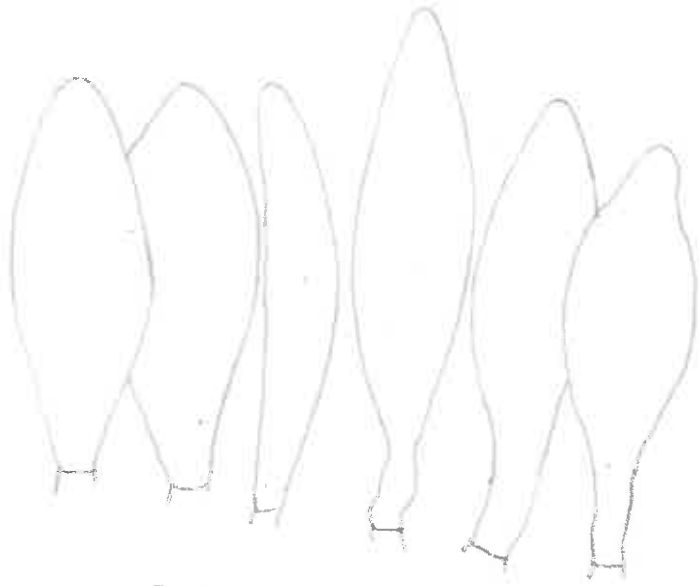
Notes on Murrill No. 772

From New Haven Gap, Jamaica, January 4, 1909.

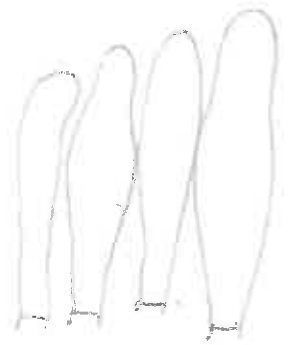
Spores and cystidia as in Type.

Hebeloma cinchonense Murr.

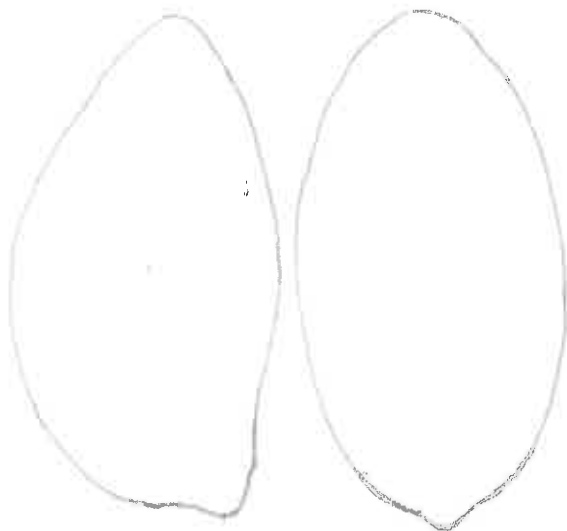
Type [an Ascocyte]



Asc × 1000



Ch × 1000



Spores × 8000

HEBELOMA CIRCINANS Quélet

leg-det Bruchet, No. Ly 64 Br 17.

Notes by Hesler

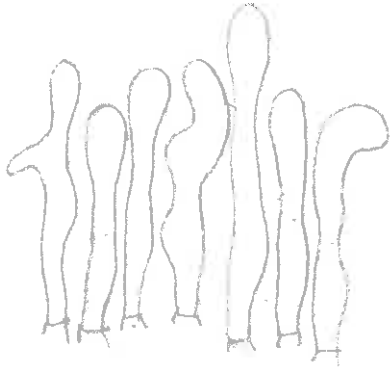
Spores (8.5)9-12 x (4.5)5-5.5(6) μ , inequilateral in profile, subvoid or subfusoid in face view, with a slight nose, wall 0.25 μ thick, minutely rugulose, yellowish brown in 2% KOH. Basidia 27-34 x 6-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 30-45 x 4-6 μ , subcylindric, sometimes subcapitate or ventricose, slightly irregular (none diverticulate, as described by Bruchet). Gill trama of undulating subparallel hyphae, 3-5 μ broad. Pileus trama slightly interwoven. Pileus cuticle an ixocutis. Hypodermium a cell-zone. Stipe cuticle a pallid zone of thick-walled hyphae. Caulocystidia similar to cheilocystidia, but longer. Clamps on epicuticular hyphae of stipe.

Bruchet (1970:115), on the pileus cuticle: of three layers: subcutis of slight importance and weakly colored; cutis collenchymatous in radial section; epicutis double; toward the exterior the hyphae of this zone give the effect of being more slender and possessing pigments, visible in the living state, especially abundant in the terminal elements, or they are present as small, reddish, intracellular grains.

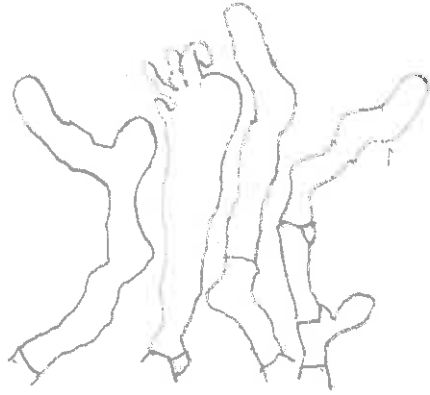
Bruchet reports cheilocystidia as vermiform, apex digitate, diverticulate, often septate.

Abeloma circinans Quél.

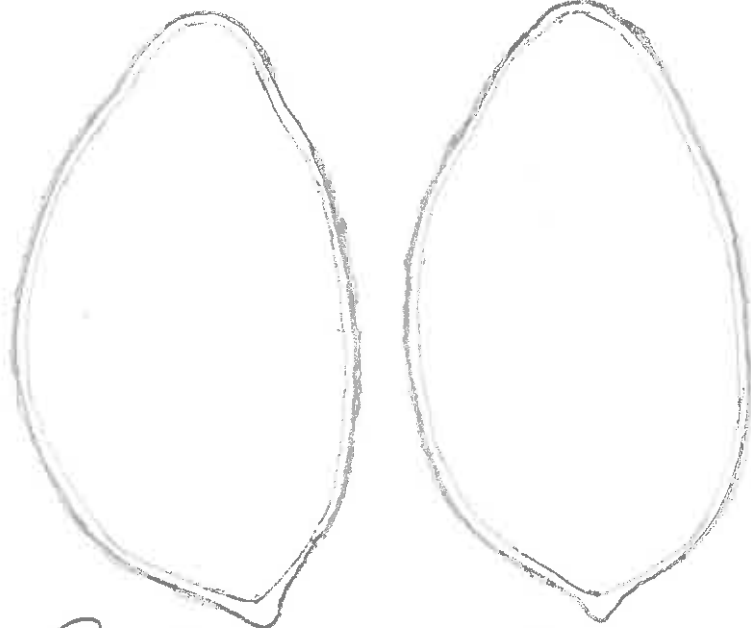
Bruchet No. 64. BR. 17.



ch x 1000



ch - traced from
Bruchet, Pl XXXII, fig 5



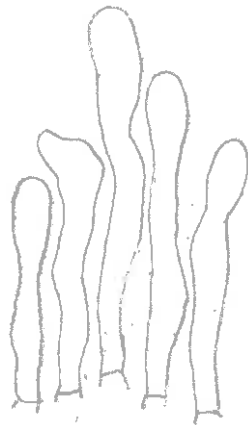
Profile

Face

Spores x 8000

Abdoma coramans Quélet

Bruchet No. 63 Br. 10



Ch x 1000

[Spores as in Bruchet 64. Br. 17]

HEBELOMA CISTOPHILUM R. Maire

Bruchet No. Ly 65. Br. 43

Notes by Hesler

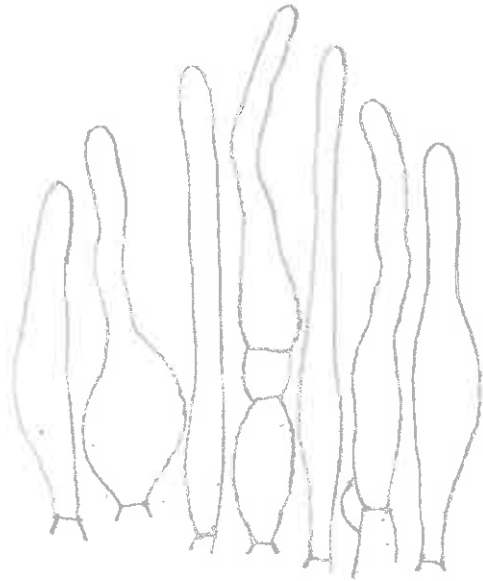
Spores 9-~~12~~¹² x 5.5-6.5⁽⁷⁾ μ, slightly inequilateral in profile, ellipsoid to subovoid, wall 0.4 μ thick, minutely rugulose, pale yellowish brown in 2% KOH. Basidia 30-37 x 8-10 μ, (2)4-spored. Pleurocystidia none; cheilocystidia 42-70 x 5-14 μ, flask-shaped or ventricose, at times subcylindric with a slightly ventricose base, occasionally septate. Gill trama subparallel. Pileus trama radial.

Pileus cuticle an ixocutis, 75-125 μ thick. Hypodermium a cell-zone. Stipe cuticle a zone of pallid thick-walled hyphae; surface bearing trichodermial hyphae, the terminal elements as caulocystidia, similar to cheilocystidia.

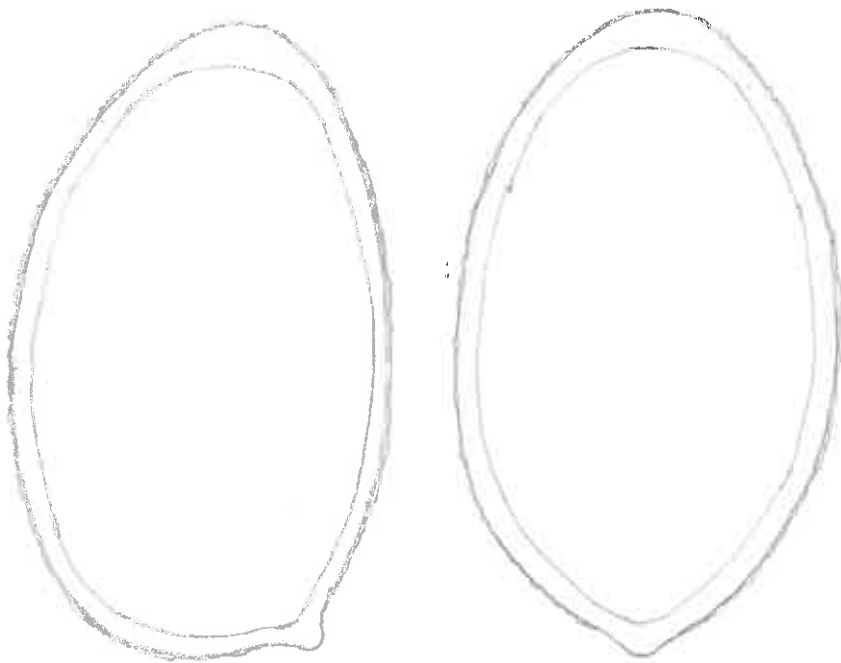
Clamp connections at base of cheilocystidia, and on pileus cuticular hyphae.

Bruchet (1970:40): Epicutis not very well developed, similar to that of H. marginatum; subcutis well-differentiated, highly colored, of pseudoparenchymatic structure; cutis appearing collenchymatous in radial section, not colored but quite visible.

Hebeloma cristophilum R. Maire
Bruchet No. 65. BR. 43



ch x 1000



Profile

Face

Spores x 8000

Smith - 65408 HEBELOMA CLAVATUM sp. nov.

Under Pinus ponderosa, Iron Creek, Stanley, Idaho,

July 16, 1962

Notes by Smith

Pileus 3-6 cm broad, obtuse with an inrolled margin, expanding to broadly umbonate, some convex, some nearly plane, opaque, dull white when fresh, slowly changing to pinkish buff or cinnamon buff, and the oldest one shell-tan, glabrous, viscid. Context pallid, with a watery line at the gills, firm; odor and taste nauseous.

Lamellae adnexed, whitish, slowly dingy cinnamon, narrow, crowded.

Stipe 5-8 cm long, 10-15 mm thick at the apex, pallid to whitish, equal above the clavate bulb, fibrillose, somewhat squamulose below, solid, whitish within the bulb. Veil none.

Spores 8-10 x 5 μ , faintly rough. Cheilocystidia present.

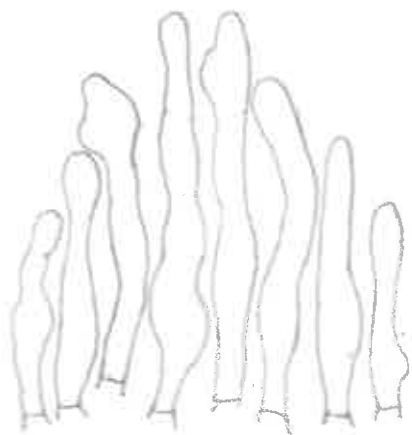
Notes by Hesler

Spores 8-9.5(11) x 4.5-5 μ , inequilateral in profile, subfusoid to subvoid in face view, wall 0.5 μ thick, rugulose, yellowish brown in 2% KOH. Basidia 32-35 x 7-8 μ , (2)4-spored. Pleurocystidia none; cheilocystidia 28-50 x 5-7 μ , subcylindric, usually more or less ventricose on one or both sides below or above. Gill trama of subparallel hyphae, 3-6 μ broad.

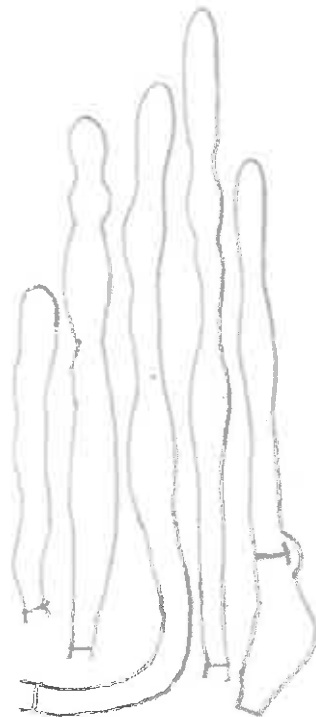
Pileus trama of radial hyphae. Pileus cuticle an ixocutis, hyphae slender. Hypodermium a zone of brown hyphae disposed in a generally radial direction but interwoven. Stipe cuticle a pallid-grayish zone of thick-walled hyphae; caulocystidia in tufts, 43-97 x 5-8 μ , more or less similar to cheilocystidia but longer. Clamp connections at or near the base of caulocystidia.

Heloloma claratum sp. nov.

Sm-65408 - Type



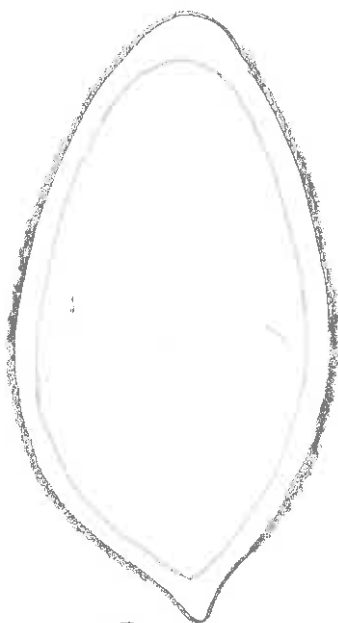
ch x 1000



caulo x 1000



Profile



Face

Spores x 8000

HEBELOMA CLAVICEPS (Fr.) Kummer

(Translation from: Romagnesi, Bull. Soc. Myc. de France 81: 330-333. 1965)

Pileus 2-4.5 cm, rather fragile, thick, convex, conic-obtuse to hemispheric at first but soon spreading, rather frequently umbonate or submammillate, margin inrolled, finally unrolled and sinuous or lobed, very soon of an ashy color, as in the crustuliniforme-group, with a tint of ochraceous brownish at the center or a bit tawny, rarely more reddish with the margin very pale creamy brownish, two zones not distinctly limited; surface at first with a veil remnants of thin silk, then glabrous, shining and viscid, smooth, not ~~striate~~ striate. Context thick, white, tinted ocher under the disc, with dingy brownish yellow tones, more or less reddish-yellow, more rarely of bister tones (also brownish red at the extreme base); odor weak, or slight of radish, but fugaceous and becoming an herb-like odor; taste strongly of radish, but scarcely to very slightly bitter.

Lamellae adnexed-emarginate, seceding, very pale, of a light beige, edges paler and fimbriate, 3.5-5 mm broad, easily separable from the flesh, edges moderately serrate, lamellulae present.

Stipe 4-6 cm long, 3-5 mm thick, often slender and twisted, sometimes very flexuous, solid, then narrowly

tubular, cylindric and sometimes a little inflated at the base, but more frequently crooked and attenuate, white, then tinted brown, later reddish brown or even brownish yellow, streaked with silvery fibers, but with very sparse white plumules at the apex, also rarely with remains of the cortina. Veil superior, unquestionably on the primordium, but slight and very fugaceous, often leaving no trace on the mature basidiocarp.

Spore deposit not obtained (probably slightly dark). Spores 8.5-9.5 x 5-5.2 μ , plum-shaped, obtuse at the tip, non-amygdaliform, very pale, (slightly reddish) s.m., very obscurely (subtly) punctate. Basidia about 7 μ , 4-spored. Chei-ocystidia 35-72 x 5.7-10 μ , slender to sublageniform (flask-shaped), apex obtuse, occasionally long, in general the base slightly ampullaceous.

Epicuticular hyphae filamentous, slender, 2.7-3.5 μ broad, branched, appearing gelatinous, passing (arising) from the more ample cuticular hyphae, rather distinct from the subcutis, but slender, scarcely more colored than the cutis, from short and tangled elements; pigment of the membrane slightly yellowish. Clamp connections at the hyphal septa.

HABITAT: among dead leaves, in late autumn.

OBSERVATIONS: This Hebeloma is remarkable by the appearance of its pileus, which is characteristic of the

crustuliniforme-group, while the cortina and the stipe-browning place it in the Indusiata, it has the pale and almost smooth, nonamygdaliform spores of mesophaeum; the cheilocystidia strongly recall those of H. crustuliniforme. Our fungus agrees perfectly with Fries' description, but differs from that of Ricken in the spore measurements, and the cheilocystidia are slightly longer. We have observed also, as Ricken says, that the cheilocystidia are remarkably developed, exceeding 90 μ , in two or three collections of this Hebeloma all mature, so that we have not been able to record the absence or presence of a cortina, and the clavate outline (shape) of these cheilocystidia suggest rather a Denudata.

HEBELOMA CLAVICEPS (Fr.) Kummer

Bruchet No. Ly 70. BR. 20.

Notes by Hesler

Spores 8.5-10.5(11) x 5-6(6.5) μ , only slightly inequilateral in profile, sube-lipsoid in face view, wall 0.3 μ thick, minutely rugulose, pale yellow in 2% KOH. Basidia 28-32 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 40-95 x (4)6-9 μ , flask-shaped, or sub-clavate, or subventricose midway, extending up the sides a short distance. Gill trama of more or less parallel hyphae, 5-10 μ broad. Pileus trama of radial hyphae, 4-10 μ broad, subparallel or slightly interwoven. Pileus cuticle a thick ixocutis, 175-300 μ thick. Hypodermium a cell zone. Stipe cuticle a zone of pallid, thick-walled hyphae, the outermost with a brown pigment. Clamp connections at the base of cheilocystidia.

Bruchet labels his collection "H. claviceps Romag. H. pallidum Malencon." Does he mean "sensu Romagnesi"?

Tenn-25087 HEBELOMA CLAVICEPS (Fr.) Kümmer

Osterskog, Femsjö, Sweden, coniferous forest, leg.-det.

Moser, July 15, 1961

Spores 8.5-10(11) x 5.5-6.5(7) μ , inequilateral in profile, fusoid to subvoid in face view, wall 0.4-0.5 μ thick, rugulose, no germ pore, pale yellowish brown in 2% KOH. Pleurocystidia none; cheilocystidia 52-96 x 3-7 μ , filamentous, clustered. Gill trama of subparallel, rather broad hyphae; subhymenium of flattened hyphal cells. Pileus trama interwoven-radial hyphae, 4-15 μ broad. Pileus cuticle an ixocutis, hyphae more or less digested; hypodermium a brown cell zone. Stipe cuticle of dry repent hyphae; surface bearing caulocystidia, similar to cheilocystidia (but longer), 48-135 x 5-7 μ . Clamp connections present on the pileus cuticular hyphae.

Romagnesi (1965) gives a description. Says the spores are very subtly punctate (see translation of full description by Romagnesi).

Heloma claviceps (Fr.)

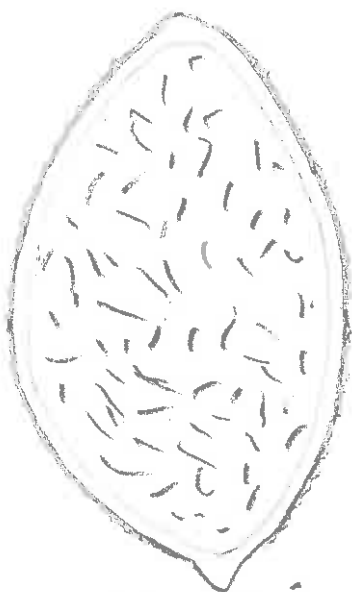
Teru 75087 (Moser Coll.)



ch x 1000



Profile



Face View

Spores x 8000

HEBELOMA CLAVICEPS (Fr.) Kummer

Bruchet No. Ly 70. BR. 20.

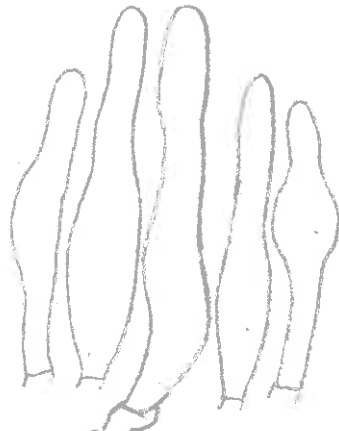
Notes by Hesler

Spores 8.5-10.5(11) x 5-6(6.5) μ , slightly inequilateral in profile, subellipsoid in face view, wall 0.3 μ thick, minutely rugulose, pale yellow in 2% KOH. Basidia 28-32 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia 40-53 x 6-9 μ , flask-shaped, or subclavate, or subventricose midway, extending up the sides a short distance. Gill trama of more or less parallel hyphae, 5-10 μ broad. Pileus trama of radial hyphae, 4-10 μ broad, subparallel or slightly interwoven. Pileus cuticle a thick ixocutis, 175-300 μ thick. Hypodermium a cell zone. Stipe cuticle a zone of pallid, thick-walled hyphae, the outermost with a brown pigment. Clamp connections ~~were~~ found at the base of ch.

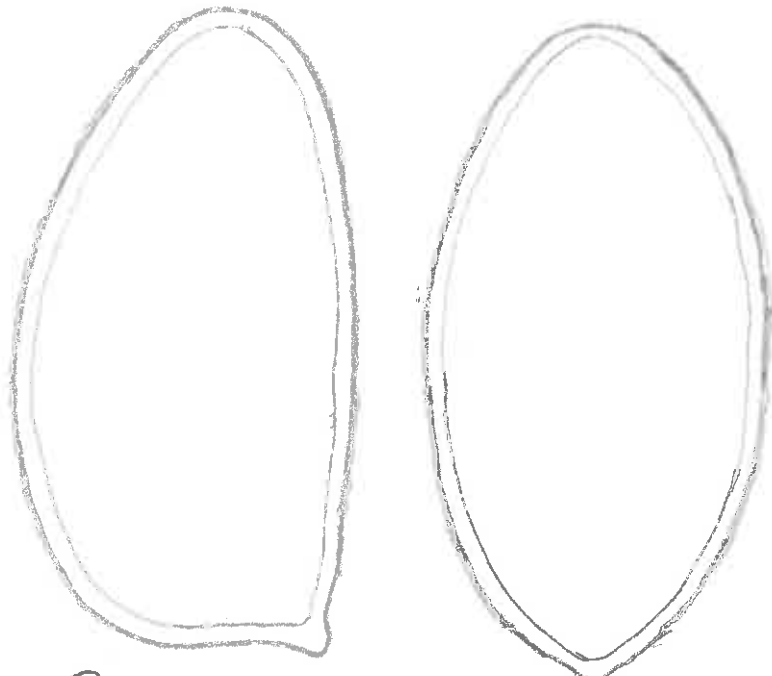
Bruchet labels his collection "H. claviceps Romag. H. pallidum Malençon." Does he mean 'sensu Romagnesi'?

Nebeloma claviceps (Fr.) Kummer

Brushet No. 70. BR. 20.



Ch x 1000



Profile

Face

Spores x 8000

HEBELOMA CLAVULIPES Romagn. sp. nov.

Bull. Soc. Myc. de France 81:326. 1965

(Latin description on p. 328)

Translation of the original description by Romagnesi

Pileus 1.5-3.5 cm, at first strongly convex, then plane, center at first obtuse, then plane around the obtuse mammilla, the margin regular and strongly inrolled, then unrolled and merely the margin involute; rather sombre reddish brown ("Auburn," R.), the margin abruptly pale by a whitish silkiness, later becoming tinged brownish ocher-fawn (between "pinkish cinnamon" and "clay color"); surface moist and viscid under the veil. Context thick, firm, brownish, paler when dry in the pileus, pale in the cortex of the stipe, but browning. Odor strongly raphanoid; taste bitter.

Lamellae sinuate-adnate, pale reddish-incarnate, then light brown, the edges pale and fimbriate, slightly serrate, thin, lamellulae of three lengths (ranks), 2-4 mm broad, finally subventricose.

Stipe 4-4.5 cm long, 3.5-4 mm thick, cylindrical above, but notably the base provided with a emarginate bulb 7 mm, solid, then tubular, at first the surface pale, then the base becoming bister or slightly chocolate and finally entirely brown, the surface appressed of beautiful pale silkiness, and dots the pileus with white floccous. Veil slight, superior, white.

H. clavulipes - page 2

Spore deposit not obtained. Spores large, 10-13.5 x 6-7.5 μ , amygdaliform, subpapillate, nearly citriform, wall thick, the epispore very subtly punctate. Basidia cylindric 4-spored. (see p. 3)

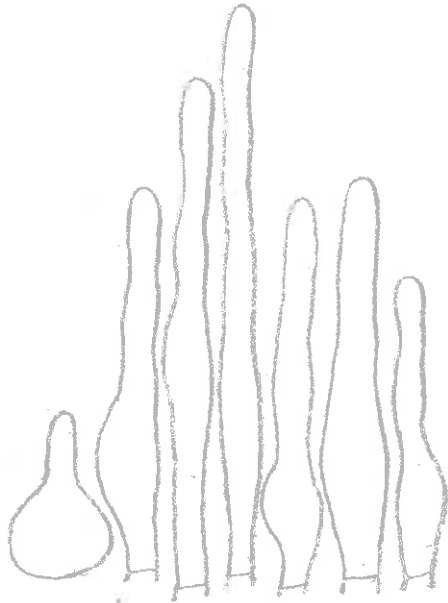
Cheilocystidia 34-56 x 7-11 μ ; filamentous-lageniform, the apical portion cylindrical and obtuse, the base more ampullaceous, the wall sometimes a little thicker toward the base.

Epicutis more or less gelatinous, of allantoid, slender hyphae (2-3.5 μ), the cuticle of filamentous more ample hyphae, and well differentiated from the well-developed subcutis, appearing pseudoparenchymatous, the elements small and tangled. Pigments of incrustated membrane yellowish s.m. Trama of the pileus regular, with incrusting pigments on the walls of a number of hyphae. Clamp connections abundant at the hyphal septa.

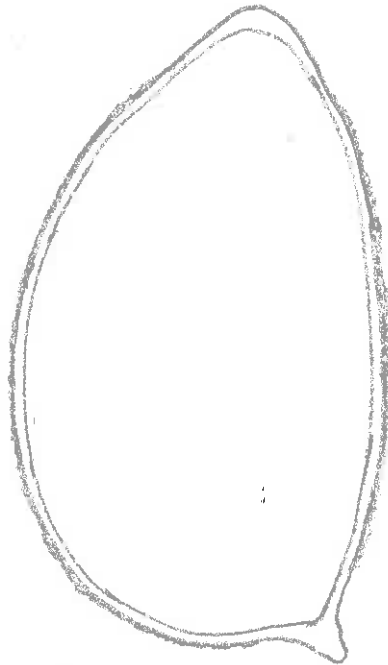
HABITAT: In leaves (Sorbus aucuparia and Fagus silvatica; near by, Rumex arifolius, Athyrium alpinus), in granite soil, by a stream, about 1400 meters altitude. Bystra Valley, near the Hotel Srdiecko (Czechoslovakia), September 9, 1960.

OBSERVATIONS: This species, characterized by its bulbous stipe and the large, slightly punctate amygdaliform spores, is perhaps H. versipelle of some ~~of~~ authors. It is ~~similar~~ similar to H. punctatum in the sense of Ricken, which appears however to have smaller spores and cheilocystidia and which is perhaps H. anthracophilum, which is said to grow sometimes on burned-over places. But H. punctatum of Fries which is distant by its equal stipe and non-raphanoid odor. It seems also related to H. testaceum sensu Lange.

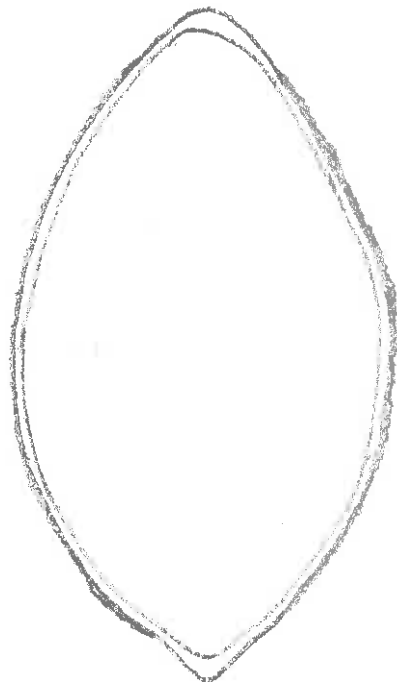
Hebeloma clavulipes Romagn.
(Communicated by Romagnesi)
(Tenn. - 3537577)



Ch x 1000



Profile



Face

Spores x 8000

37577

HEBELOMA CLAVULIPES Romagn.

(Communicated by Romagnesi)

Bull. Soc. Myc. de France 81:326. 1965

Spores 9-11 x 5.5-7 μ , inequilateral in profile, ellipsoid to subfusoid in face view, wall 0.3 μ thick, minutely rugulose, yellowish with a faint tint of brown in 2% KOH. Basidia 28-34 x 6-7 μ , 4-spored. Pleurocystidia none; cheilocystidia (20)40-74 x 5-10(14) μ , subcylindric, usually enlarged near the base, sometimes flask-shaped. Gill trama of subparallel hyphae. Pileus trama of radial hyphae. Pileus cuticle an ixocutis; hypodermium of brown hyphae. (Stipe cuticle: no stipe material available).

In the original description the spores are given as 10-13.5 x 6-7.5 μ .

Latin diagnosis on p. 38 328.

HEBELOMA COLLARIATUM Bruchet

Bruchet No. 66 BR. 96 (Type)

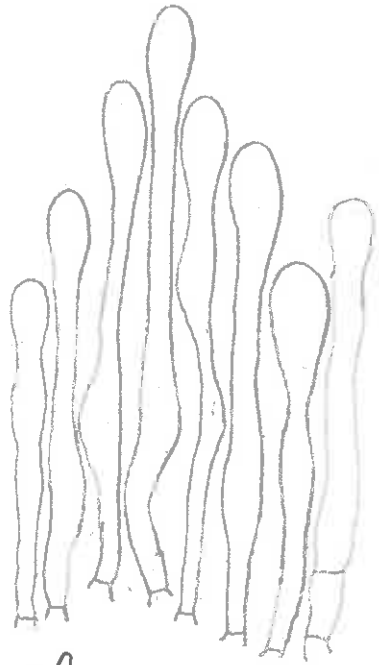
Notes by Hesler

Spores 10-13 x 5.5-6.5(7) μ , inequilateral in profile, subfusoid to subovoid in face view, wall 0.3 μ thick, minutely rugulose, yellowish brown in 2% KOH. Basidia 28-33 x 7-8 μ , 4-spored. Pleurocystidia none; cheilocystidia 44-78 x 5-7(9) μ , subcylindric, capitate or subcapitate, often subventricose below, above, or at the middle, rarely septate, clustered. Gill trama of subparallel hyphae, 5-10 μ broad. Pileus trama radial. Pileus cuticle an ixocutis, 120-170 μ thick. Hypodermium a brown cell-zone. Stipe cuticle a pallid zone of thick-walled hyphae, the surface bearing more or less scattered caulocystidia, similar to cheilocystidia (50-72 x 6-7 μ). Clamp connections on pileus cuticular hyphae and at base of caulocystidia.

Bruchet(1970:37)on the pieus cuticle: usual, composed of three layers(zones): epicutis rather important, gelatinous, of slender and collapsed hyphae; subcutis slightly pigmented; cutis not very distinct.

Hebeloma collariatum Bruchet

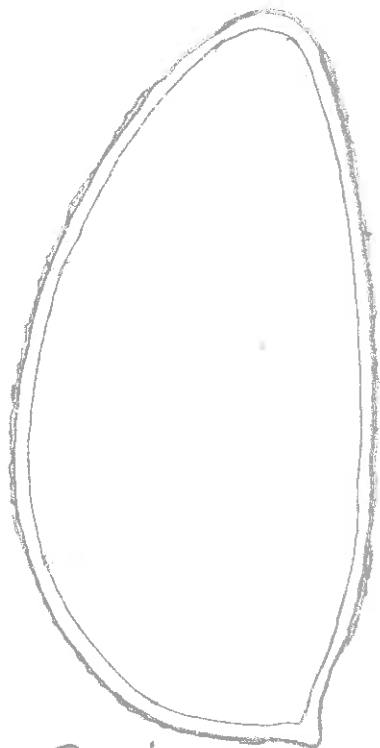
Bruchet No. 66. BR. 96 (Type)



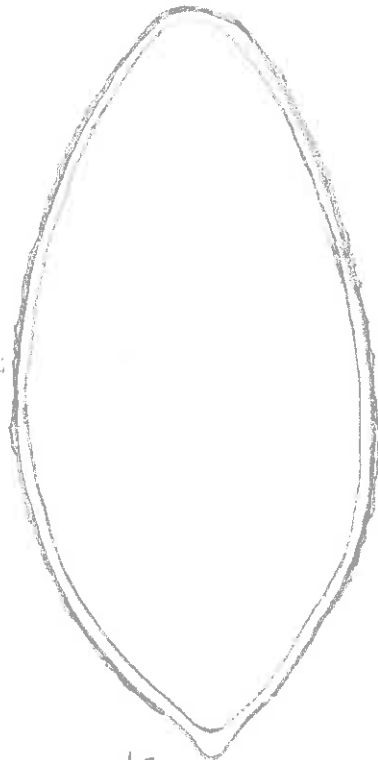
Ch x 1000



Caulo x 1000



Profile



Face

Spores x 8000

Smith - 52047 HEBELOMA COLORADENS^E~~S~~ sp. nov. PHOTO

Scattered in a swamp, Alta, Colorado, August 11, 1956.

(near my concept of H. elatum)

Notes by Smith

Pileus 3-7 cm broad, obtuse and the margin incurved at first, expanding to plane with an obtuse umbo, "wood brown" to "fawn color," with zones of watery alutaceous spots, finally near "verona brown," glabrous, viscid. Context thick, soft; odor and taste raphanoid.

Lamellae adnexed, pallid then "vinaceous brown," or near "verona brown" but with a strong cinnamon tint, close, broad.

Stipe 3-6 cm long, 10-12 mm thick, pallid, not darkening, strongly pruinose-squamulose above, naked below, equal, hollow. Veil none.

Notes by Hesler

Spores 9.5-12 x (4.5)5-5.5 μ , inequilateral in profile, subfusoid in face view, wall 0.3 μ thick, rugose, often slightly calyptrate, yellowish brown in 2% KOH. Pleurocystidia none; cheilocystidia 38-78 x 5-10 μ , subcylindric, apices subcapitate, ventricose on one or both sides below. Gill trama subparallel. Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium of brown, interwoven, more or less incrustated hyphae. Stipe cuticle a zone of pallid-grayish, thick-walled hyphae, surface bearing tufts of caulocystidia, 45-96 x 7-14 μ , cylindric-clavate or subcapitate, frequently

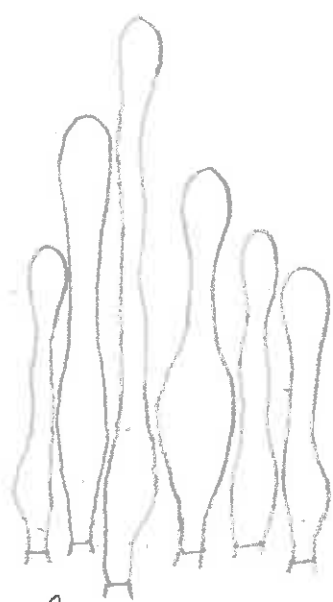
Smith - 52047

H. coloradensis² - 2

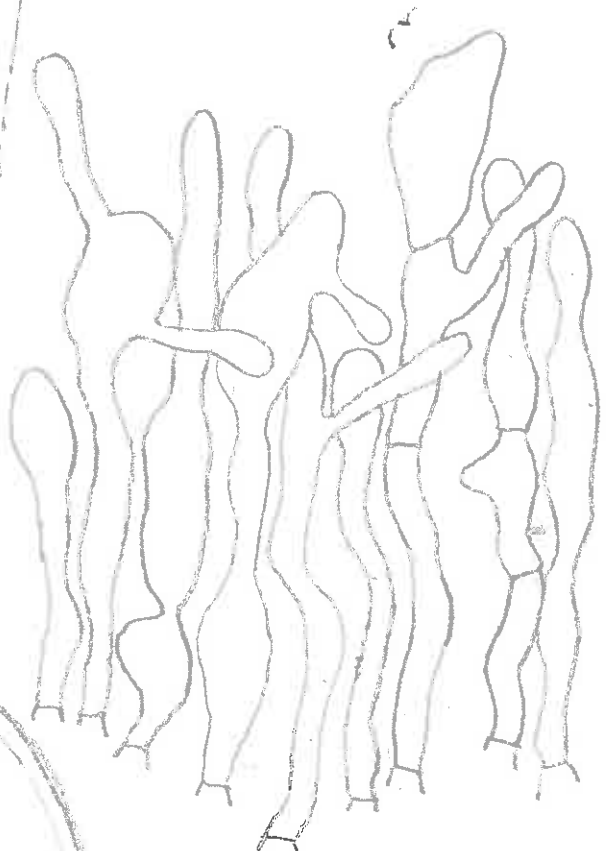
the apical portion branched and often inflated, commonly septate, flexuous.

Hebeloma coloradense sp. nov.

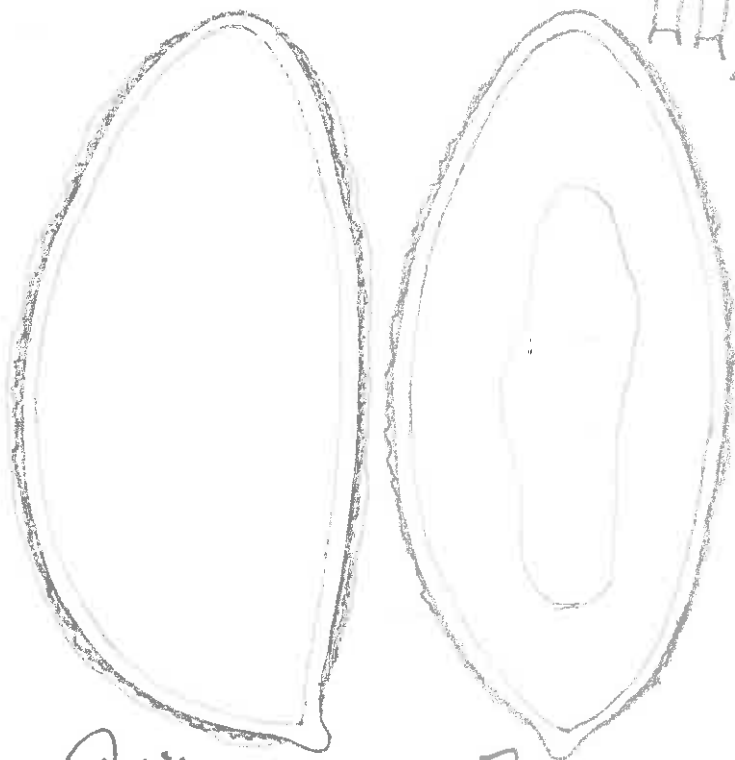
Sm-52047 - Type



Ch x 1000



Caulo x 1000



Profile

Face

Spore x 8000

HEBELOMA COLOSSUS Huijsman

Persoonia 2:98. 1961

(Translation from original description)

Pileus 6-12.5 cm broad, hemispheric, then convex finally irregularly flexuous at the margin, slightly viscid, isabella-beige, center darker, innately fibrillose, disappearing 10-20 mm from the margin which is pubescent and inrolled. Context firm, compact, very thick on the cap, which becomes pale beige-isabella in older specimens; odor and taste slight of radish.

Lamellae adnate-submarginate or rounded, argillaceous-isabella, tinged brown in age, close, medium broad, lamellulae of 2-3 ranks, edges serrulate-denticulate, beaded with liquid drops on young gills.

Stipe up to 6 cm long, obese, 35 mm thick at the apex and 50 mm at the submarginate bulb, white, solid, beige or white squamulose or with bands of squamules, ~~1/2~~ large and recurved in the ~~1/2~~ middle, smaller and closer near the bulb, which is of an indefinite dingy color, finer and furfuraceous at the apex. Veil none.

Spores 10.8-12.4 x 6.4-7 μ , amygdaliform, apex rather obtuse and not long-papillate, verruculose, perispore poorly visible and not calyptrate. Basidia 36-43 x 9.5-11 μ , 4-spored, subclavate. Cheilocystidia 45-72 x 7-11 x 3-5 μ , subcylindric, subclavate at their distal end, clamp connections at their base.

Gregarious under tree leaves in forest at St. Baume (Var, France), October 8, 1960, leg. Huijsman, (type: L 960.110-171).

The absence of a veil, even on young individuals, raphanoid odor, distilled-drops on the lamellae, even the stipe scales, the amygdaliform spores which lack an apical papilla, rather obtuse, and finally the elongated, sub-cylindric, clavulate, place Hebeloma colossus in the group poorly studied and poorly known which revolve around H. crustuliniforme (Bull. per St.-Am) Qué1.

The good specific characters are: the thick flesh of cap, the innately fibrillose pileus cuticle, but little evident and the solid stipe and the bulb, ornamented with bands of squamules which recall that of Tricholoma colossus figured by Akerlund and published by Fries (Icon. sel. Fung. 1: pl. 21, 22. 1869).

HEBELOMA COLOSSUS Huijsman

Gregarious in the forest of St. Baume (Var, France), leg.

H. S. C. Huijsman, October 8, 1960, type: L 960.110-171.

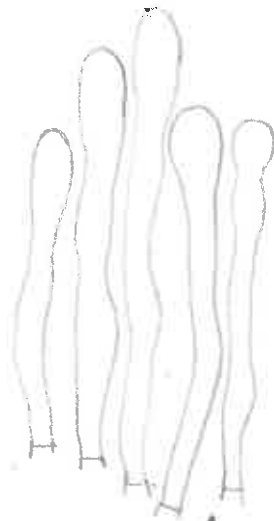
Notes by Hesler - The Type

Spores 10.5-12.5 x 6.5-7.5(8) μ , inequilateral in profile, subvoid to subellipsoid in face view, wall 0.4 μ thick, rugulose to rugose, yellowish brown in 2% KOH. Basidia 27-32 x 7-9 μ , 4-spored. Pleurocystidia none; cheilocystidia 42-63 x 4-7 μ , subcylindric to subclavate, often subcapitate, at times slightly ventricose on one side below, densely tufted. Gill trama of subparallel hyphae, 3-6 μ broad. Pileus trama of radially disposed hyphae. Pileus cuticle a thin ixocutis. Hypodermium a cell zone, with a brown pigment. Stipe cuticle dry, ~~tp~~ repent.

Odor raphanoid when soaked in 95% alcohol then water.

Heloma colossus Huijman

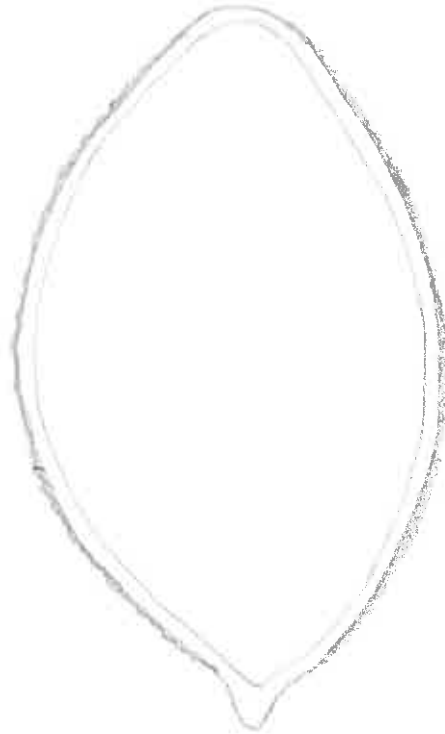
Part 7 Type



Ch x 1000



Profile



Face

Spore x 8000

HEBELOMA COLOSSUS Huijsman

Leg.-det. Huijsman, comm. by Bruchet, No. L960-110-171

Notes by Hesler

Spores 10-12.5 x 6.5-7.5(8) μ , inequilateral in profile, subovoid in face view, wall 0.3 μ thick, minutely rugulose, yellowish brown in 2% KOH. Basidia 30-40 x 8-9 μ , 4-spored. Pleurocystidia none; cheilocystidia 52-78 x 5-8 μ , sub-cylindric, capitate, sometimes faintly ventricose below, densely tufted. Gill trama of slender (2-5 μ), undulating subparallel hyphae. Pileus trama radial. Pileus cuticle an ixocutis. Hypodermium ^{cellular but} not well-defined. Pileus trama ^{always} radial. (No stipe material available).

This seems to be a part of the collection sent me by Huijsman.

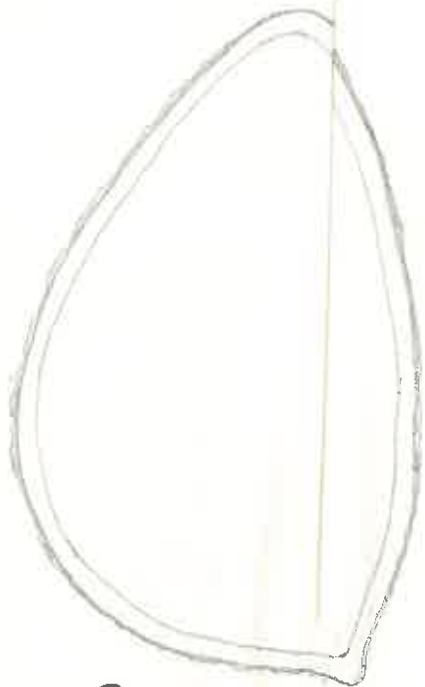
Hesma colossus Huysman
Briet No. L 960-110-171.



Basidia
x 1000



Ch x 1000



Profile



Face

Spores x 8000