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The North American Species of Psathyrella

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# THE NORTH AMERICAN SPECIES OF PSATHYRELLA

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THE NORTH AMERICAN SPECIES OF PSATHYRELLA

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INTRODUCTION

History

In contrast to many of the large genera of the Agaricales, such as Lactarius, Russula, and Cortinarius, which have been recognized as homogeneous groups of species since very early times, the assemblage of species here grouped under the name Psathyrella was scattered through many different groups of Agaricus (in the sense of Fries, 1874). These groups were recognized as genera by Saccardo (1887), but all contained, in addition to species now placed in Psathyrella, many belonging in other genera. Psilocybe, Stropharia, and Hypholoma, for instance, all contained species now grouped in the Strophariaceae in addition to the element belonging in Psathyrella. Quélet (1886) was the first to make a serious attempt to bring these discordant elements from the various genera together into one genus, to which he gave the name Drosophila. This concept and name were accepted by Kühner and Romagnesi (1953).

S. F. Gray (1821) recognized the genus Prunulus and placed in it Agaricus gracilis, the species now accepted as the type of Psathyrella. In Prunulus he also placed such species as Prunulus denticulatus [Mycena pelianthina (Fr.) Quélet], a white-spored fungus. Prunulus was subsequently used by Murrill (1916) in place of Mycena, and to my knowledge, the name has had no further application of significance for dark-spored fungi.

Fries (1838) recognized Psathyrella as a group for certain dark-spored species of Agaricus, but other related species were parceled out into other groups of Agaricus such as Psilocybe, Psathyra, etc. as mentioned above. Saccardo (1887) merely used the Friesian groups at the generic level.

Singer (1951, 1963) following Quélet's work of 1886 placed the genus in perspective in an overall classification of the Agaricales, and made some order out of the nomenclature. That his infrageneric classification was found to be inadequate for the genus in the present study is in direct proportion to the number of species studied by each of us. But as a result of Singer's efforts Psathyrella became recognized as one of the major genera of the Agaricales, a recognition long overdue. Kühner & Romagnesi (1953) in their descriptive key contributed

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little or nothing to a stabilization of the nomenclature, though they did maintain Quélet's broad concept of the genus. They treated the species under the name Drosophila, an invalid name by any interpretation of the International Rules of Nomenclature. Further, a descriptive key simply is not the vehicle for the lucid presentation of diversity in a large and complex group of organisms as poorly sampled over all the earth's major land masses as is true for Psathyrella! Moser's (1967) key is, as is that of Kühner & Romagnesi (1953), helpful; but it still suffers from the limitations of a descriptive key in that it does not allow properly critical comparisons to be made between the floras of Europe and other major land masses. This situation derives from the fact that in a descriptive key a studied attempt is made to avoid detailed descriptions, and data not important to one author may be to others.

It is evident that the outstanding effect of scattering obviously related species in a number of genera (Saccardo, 1887) delayed the general recognition of the true scope of Psathyrella as a genus for nearly 50 years, and, accompanying this, created many uncertainties relative to the use of many species epithets. All of this added up to neglect for the group, and discouraged innovation in its systematics. Certainly this was true for work in North America where investigators were concerned for the most part secondarily with psathyrellloid fungi. Morgan's (1907–08) work is an exception.

In North America, Peck, Atkinson, Murrill, Kauffman, Morgan, and Parker, in their various works, followed the "Friesian tradition" as embodied in Saccardo (1887). In speaking of the "Friesian tradition" it should always be remembered to the credit of Fries, that he visualized all these species as belonging in a single genus. Murrill (1922, et al.) used the old American Code of Nomenclature and hence applied different generic names to the Saccardoian genera. For instance, he used Drosophila, but not in the sense of Quélet. For North America, studies were largely confined to describing species. These are treated in the body of the text and will not be summarized here.

My own contribution over the last forty years has been a continuation of the delimitation of species, and finally the proposal of an infrageneric classification on a broader scale than that attempted by any other investigator or group of them. But I hasten to point out that the sampling of the North American Psathyrella flora is as yet hopelessly inadequate for any final conclusions.

It has been considered impossible to deal successfully with all nomenclatural problems. The final disposition of the names for European species must rest upon the selection of a neotype for each species, and, as I have previously indicated (1970), the only acceptable procedure scientifically is that of collecting each species in its "type" country (that from which it was described), redescribing the material completely so that other investigators can compare the description of the macroscopic features with those given in the original description to be sure of proper agreement, and, of course, to determine the microscopic features from the collection itself. Merely selecting a collection "seen by Fries" does not constitute a sufficiently critical approach for typification in view of the complexity now known for the genus.

Since Singer's infrageneric classification is the point of departure for that used in the present work, the following outline (Singer, 1963) is given including mention of the type species of each taxon.
Subgenus I. *Lacrimaria* (*P. velutina*)
   Sect. 1. *Lacrimaria* (*P. velutina*)
   Sect. 2. *Psathyroides* (*P. melanthina*)

Subgenus II. *Homophron* (*P. spadicea*)

Subgenus III. *Hypholoma* (*P. candolliana*)
   Sect. 1. *Fragilissimae* (*P. marcescibilis*)
   Sect. 2. *Hypholoma* (*P. candolliana*)
   Sect. 3. *Spintrigerae* (*P. spintrigera*)
   Sect. 4. *Obtusatae* (*P. obtusata*)
   Sect. 5. *Typhicola* (*P. typhicola*)
   Sect. 6. *Hydrophilae* (*P. hydrophila*)
   Sect. 7. *Frustulentae* (*P. frustulenta*)

Subgenus IV. *Psathyra* (*P. fibrillosa*)

Subgenus V. *Psathyrella* (*P. gracilis*)
   Sect. 1. *Psathyrella* (*P. gracilis*)
   Sect. 2. *Microrhizae* (*P. microrhiza*)
   Sect. 3. *Atomatae* (*P. prona*)
   Sect. 4. *Subatratae* (*P. substrata*)

Subgenus VI. *Conocybella* (*P. michiganensis*)

Subgenus VII. *Cystopsathyra* (*P. kellermanii*)

PROPOSED INFRAGENERIC CLASSIFICATION IN THE PRESENT WORK:
with Comments on Deviations from Singer’s Classification

Subgenus I. *Panaeolina* (*P. foenisecii*)
   Singer recognizes this as a genus but in my estimation the features
distinguishing it are not sufficient to justify a small genus so closely re­
ssembling members of the subgenus *Psathyrella*; Ola’h (1969) retains it
in *Panaeolus*.

Subgenus II. *Lacrimaria* (*P. velutina*)
   This subgenus is comparable to section *Lacrimaria* of Singer but
different characters are used to define it: the pleurocystidia (at least
some of them) are in fascicles, the spores are usually ornamented,
the pileus is usually innately fibrillose, and the gill trama near the sub­
hymenium has hyphae with walls often yellow-brown in KOH.

Subgenus III. *Psathyroides* (*P. melanthina*)
   It contains stirpes *Hispida*, *Lepidota*, *Hirtosquamulosa*, and *Lacry­
mabunda*. I am considering that Kühner and Romagnesi erected a new
subgenus even though Fayod’s name was mentioned by them. Their
reference to Fayod is not complete, and Fayod did not include in his
genus the species the above authors placed there. Their use of the name
for a subgenus clearly includes the above groups of fungi. This subgenus
is comparable to section *Psathyroides* of Singer. The group is a natural
one and one of the most distinct in the genus.

Subgenus IV. *Mycophila* (*P. epimyces*)
   This subgenus was created to sufficiently emphasize the parasitic
habitat, a very odd feature in this genus.

Subgenus V. *Pseudostropharia* (*P. caputmedusae*)
   Sect. 1. *Pseudostropharia* (*P. caputmedusae*)
   Sect. 2. *Spintrigerae* (*P. spintrigera*)
Each section represents a group of closely related species. Section Spintrigerae is defined on the presence of an annulus on the stipe and absence of pleurocystidia. The color of the gill trama is regarded as of less importance. Singer includes *P. caputmedusae* in his section Psathyroides.

Subgenus VI. *Candolleana* (*P. candolleana*)
Sect. 1. *Candolleana*
Sect. 2. *Fragilissimae* (*P. marcescibilis*)

As I have defined the first section pleurocystidia are lacking. Hence Singer’s use of *Hypholoma* and my use of *Candolleanae* cover totally different concepts. Most of Singer’s sections of *Hypholoma* fall under subgenus *Pannucia* sect. *Appendiculatae* of the present work.

There is still disagreement as to the typification of *Hypholoma* so I have dropped the name in favor of the one proposed by Romagnesi. A question remains in my mind as to whether *P. marcescibilis* is a satisfactory type for the group I have included under this name (see p. 367, Kühner & Romagnesi, 1953). Their description raises some doubts as to the fitness of the species as a type for the group. Since it is very likely that the species is indeed a “good” *Psathyrella*, I have retained it provisionally here.

Subgenus VII. *Pannucia* (*P. fibrillosa*)
Sect. 1. *Appendiculatae* (*P. piceicola*)

This covers most of the cystidiate species with the margin of the pileus appendiculate from an inner veil or combination of inner and outer veil. A comparison with Singer involves his subgenus *Psathyra* as well as *Hypholoma*.

Subsect. *Appendiculatae* (*P. piceicola*)
Subsect. *Hydrophilae* (*P. hydrophila*)
Subsect. *Largae* (*P. larga*)
Subsect. *Subacutae* (*P. delineata*)

Sect. 2. *Pannucia* (*P. fibrillosa*)

This section cuts across Singer’s classification much in the same way as does sect. *Appendiculatae*.

Subsect. *Flocculosae* (*P. flocculosa*)
Subsect. *Miztae* (*P. brooksii*)
Subsect. *Squamiferae* (*P. abortiva*)
Subsect. *Pannuciae* (*P. fibrillosa*)

Subgenus VIII. *Homophron* (*P. spadicea*)

The circumscription by Singer and the one proposed here differ in that we must define what is meant by thick-walled relative to cystidia. In fact it differs further in that an outer veil is a feature of some species. I have emphasized spore color in KOH and the presence of a veil in addition to features given by Singer. Two sections are recognized.

Section 1. *Homophron* (*P. spadicea*)

The spores are nearly hyaline in KOH and do not darken in KOH on standing. View the spores under a low-power oil immersion objective.

Section 2. *Cystidiosae* (*P. cystidiosae*)

The spores brown in KOH and soon darker on standing.

Subgenus IX. *Psathyrella* (*P. gracilis*)
Sect. 1. *Atomatae* (*P. prona*)
Sect. 2. *Subatratae* (*P. subatrata*)
Sect. 3. *Umbonatae* (*P. umbonata*)
Sect. 4. *Psathyrella* (*P. gracilis*)
   Subsect. *Mesosporae* (*P. acutoconica*)
   Subsect. *Psathyrellae* (*P. gracilis*)
      Series *Psathyrellae* (*P. gracilis*)
      Series *Tenerae* (*P. tenera*)
Sect. 5. *Fatuae* (*P. fatua*)
   Subsect. *Fatuae* (*P. fatua*)
   Subsect. *Lauricolae* (*P. lauricola*)
Sect. 6. *Obtusatae* (*P. obtusata*)
   Subsect. *Caespitosae* (*P. multipedata*)
   Subsect. *Obtusatae* (*P. obtusata*)
   Subsect. *Limicolae* (*P. limicola*)

Subgenus X. *Conocybella* (*P. michiganensis*) Same as Singer's concept.
Subgenus XI. *Cystopsathyra* (*P. kellermanii*) Same as Singer's concept.

Study Techniques

Because of the fragile nature of the basidiocarps of *Psathyrella* species the latter require more care in collecting and transporting to the laboratory than the fleshier firmer species of most other genera. I have long recommended that serious students of the Agaricales plan their collecting routine so as to do the collecting in the morning and carry out laboratory studies in the afternoon and evening. Concerning the matter of when and where to find the species see p. 21. We shall start our discussion here on what to do when the desired material has been located.

First, if the basidiocarps are clustered, you can be fairly certain that all in one cluster belong to the same species if they seem to have the same features. Check them immediately as to the veil remnants and how they are dispersed—if a veil is present. Note particularly whether the veil (veils) leave broken fragments along the pilear margin. If both old and young pilei are present note the veil features on both. If the basidiocarps are scattered on the substrate, they should be very carefully compared and if one finds any evidence at all that basidiocarps differ, wrap each separately and then wrap the packages in one larger package to allow the lot to be readily recognized upon return to the laboratory. For wrapping, use waxed paper. I cut the standard sized sheets into quarters for small fungi. Wrap the specimen as you would roll a cigarette, and twist the ends to keep the specimen in place. The specimen should be held firmly in place in the package, but not wrapped tight enough to break it or remove veil particles (although this cannot always be avoided on specimens with an appendiculate margin). For very minute specimens with stipes one mm or less thick, the British method of placing the specimen in a small vial furnished with a cork, or in small tins that can be closed, and have been lined with moist paper and which can be stood upright in one's container, is a very acceptable method. Actually, it is best to go prepared to use both methods. Once the specimens are wrapped, they should be placed in a basket in such a way as to insure that they will remain in an upright position until brought into the laboratory. This is especially true if one plans to take portrait photographs of them. Some collectors, both amateur and professional, have an obsession to collect fleshy fungi and place them in plastic "baggies." This is the worst method known, since the plastic offers little protection to the specimens, they sweat and discolor very readily if the weather is warm, and the specimens are almost invariably broken in trying to remove them from the container. Plastic baggies serve well for collecting woody fungi which are relatively
indestructible, and the main purpose of wrapping is to insure that the spores of the various collections are kept isolated from each other. Great care should be taken to keep the specimens of fleshy fungi from becoming overheated in transporting them back to the laboratory. If allowed to overheat the color changes of the context on cutting may be (usually are) arrested or are unreliable, or the whole basidiocarp may become so wet that it will not be fit for study because the colors have been lost and tissues collapsed. Such poorly preserved specimens are all too numerous in herbaria.

As soon as one has returned to the laboratory, place the collections in a relatively cool place and spread them out so that the individual packages can “breathe”; if piled in a heap they will sweat and lose important characters before they can be properly studied. As soon as possible after returning from collecting, photograph such collections as are deemed worthy of a photo from your standpoint, and then for each of these collections write a complete description patterned after the descriptions (of the macroscopic characters) as found in the following text. The type of photograph taken will depend on the use planned for it. One may want color transparencies for lecture purposes, or black-and-white prints for possible publication later on, or the picture may simply be used to refresh the collector’s memory at a later date. I use 4 x 6 inch cards for my “field” descriptions, and a 4 x 5 inch negative size for black-and-white pictures. Small specimens can be taken natural size and larger ones reduced to half size or less on the negative.

When these operations are complete, write a “field label” for the collection. On it should appear the collector’s name and the number of the collection, the latter in the upper lefthand corner. Below it record the name of the fungus to order, family genus or species depending on how well you can identify it at the moment. Also record the nature of the substrate on which the specimens occurred as accurately as you can identify it, and the date of the collection, the county and location in the latter if that is meaningful. Add the data on the field label in the upper righthand corner of the card on which you wrote the description. The name of the fungus or the group to which it belongs is entered in the upper lefthand corner on the card containing the description.

When all these operations have been completed place the specimen on a drier. If one is drying numerous collections a drier such as illustrated by Smith (1947) is desirable, only use hot plates as a source of heat rather than a gasoline stove since the former give a drier heat and are less of a fire hazard. Never place the label or any paper under the specimens. Fold the label so that the collection number and generic name, if you have it, are readily visible, and place it either to the right or left of the specimen—but be sure to always do it the same way so that the proper label is always placed with the proper specimen when the latter is removed from the drier. If the basidiocarps are very small, the silica gel method described by Hoseney (1963) is recommended: Fill with activated silica gel of moderately large mesh (medium sized particles, not the powder) to about half full a small refrigerator dish which can be tightly closed. Place the specimen with its label on the silica gel, but do not bury the specimen. Close the dish and allow to stand for 24 hours. If the specimen has become brittle by that time (or sooner), it is dry. Carefully rewrap it in waxed paper as you did when you collected it but include the label, and store in a carton for eventual transfer to your home laboratory—if you are at some field location, or for later study when the rush of fresh material is over, such as during the winter months. If the silica gel changes from blue to white and the specimen is not yet dry, transfer it to a fresh
dish of the desiccant. The used (white) silica gel is reconstituted by heating in
an oven at around 200° F. To do this spread the used gel on a cookie sheet and
place it in the oven with the door left open. If overheated the gel will break down.

Most dried specimens of *Psathyrella* species are as fragile as eggs and for
permanent preservation should be kept in cardboard boxes of suitable size for the
specimen rather than flattened and placed in paper packets as is done in many
herbaria. Some naphthalene flakes should be added to the box to repel insects, but
do not allow the flakes to cover the specimen. Before this is done, however, as
a precaution, the specimen should be fumigated. For most people this is most
easily accomplished by placing particles of paradichlorobenzene (paradow) in the
box and letting it stand (with the cover on) for about two weeks. Then remove
the remaining paradow and add the naphthalene flakes. *NEVER MIX THE TWO
COMPOUNDS!* Prepared in this manner and stored in a dry place, the specimen
will keep for years, but flakes should be added from time to time especially in
regions of high temperature during all or part of the year. If any insect damage
is noted remove the flakes and refumigate with paradow.

It is very helpful to keep a log-book in which one records the place and date
of collecting trips and the number assigned to each collection as well as the
tentative identification of the collection. When the specimen has been finally
identified, the name can be entered in the log-book following the number. The
collector's number on the field label will furnish an index number for the collec­
tion and can be used in place of a name on the envelope containing the negative
and also that containing the print.

The spore deposit. One is easily made by cutting off the stipe at the level of
the gills and placing the scarcely mature pileus (which should be perfectly fresh)
gills down on a piece of white paper. I often use a blank field label for this. Cover
with a container to prevent air currents from disturbing the process. When a
good "spore drop" has been obtained, as can be ascertained by the accumulation
of powder on the white paper, remove the pileus and allow the deposit to air-dry
for about 15 minutes. Then record its color on the 4 x 6 card carrying the descrip­
tion. Next fold the paper, with the deposit to the inside of the fold, and staple
this to the card. In this way the deposit is kept with the description. For small
caps, when set up for a spore deposit, place a small container over the setup and
add a drop or two of water to the inner surface of the container to keep the
humidity in the chamber high enough so that the pileus does not dry out before
spores are shed. If the pileus is more than 3 cm broad the simplest method is to
wrap the whole setup (the cap on the white paper) in waxed paper and place on
a table with the gills properly oriented for spore fall.

Specimens with spore prints prepared according to the above instructions are
worth sending to a specialist if the collector himself is not satisfied with his
attempts at naming them. Most collectors, however, will want to try to identify
their collections before drying them. If enough basidiocarps are available save
a few, and when your detailed study, as already described, is completed, go back
to the fresh ones and try to identify them with the literature you have available.
At the present state of our knowledge, this is likely to prove a frustrating experi­
ence in *Psathyrella* as well as in a number of other large genera. One usually finds
that before he can make a final decision, some features of the dried specimen must
be utilized. The ultimate aim in the study of mushrooms is to learn to know as
many species as possible at sight, but, until one has had great experience, it is
dangerous to assume you are right before you have checked the microscopic
features.
The Microscopic Features from a Study of Fresh Material: Spores. Remove some spores from the spore deposit with a scalpel or penknife, and transfer them to a drop of water on a microscope slide by simply washing them off. Place a cover slip over the drop containing the spores and wipe away the surplus water. One will always start with a drop that is too large. After a few trials, however, one will learn how small a drop is needed to cover the area under the cover slip without having any extra. Air bubbles in the mount can be eliminated by applying pressure on the cover slip with a toothpick or needle. Do not use your finger as it will leave a grease spot on the surface of the glass. When the slide made in water is finished, make similar mounts in Melzer's reagent (see p. 443), and one in KOH in that order. Examine the KOH mount first and note the spore color. At first it is likely to be some shade of chocolate color, often the color of powdered cocoa. Next examine the water mount and note the color of the spores—it may not be the same as in KOH. Repeat the process with the slide in Melzer's. Then go back and reexamine the KOH mount. By this time, for some species of *Psathyrella* at least, the spores may have become dark chocolate color. In other species the spores in KOH may be nearly hyaline or they slowly become so in about 15 minutes.

Next one should closely observe the details of the spore. This is done by using an oil-immersion lens of numerical aperture of 1.25 to 1.3 (or 1.4 if such is available). A 10× eye-piece is also recommended. Place a drop of immersion oil on top of the coverglass over the object to be examined and lower the objective into the oil. Then slowly focus with the fine adjustment until the spores are sharply defined. Use a no. 1 cover slip and a minimal amount of the mounting medium. If there is any indication that the spore surface is not perfectly smooth repeat the examination using the mount made in Melzer's. For details of the spore structure and ornamentation see p. 10.

Details of the Basidiocarp. After the spores have been studied one is ready to consider the microscopic features of the basidiocarp itself. The hymenium is usually studied first. For this purpose cross sections of the gills are made by cutting a wedge-shaped piece out of the pileus with 2–3 complete gills on the under side of it. Hold the piece of tissue between the thumb and forefinger of your left hand (if you are right-handed) in such a way that the long axis of the gill is roughly parallel with the long axis of the thumb and with the gill tissue extending beyond the fingers far enough so that when you cut off (and throw away) the projecting part you are next able to cut across the gills fairly near a point half way between the two extremities (point of attachment to stipe and margin of the pileus). Next cut with a slicing motion to obtain the sections. These will stick to the razor blade and should be washed off in the material in which the mount is being made—water, KOH, or Melzer's, for instance. Tease the mass of sections apart with the aid of a needle and place a cover slip on the mount. It is worth while learning to make free hand sections in this manner because it eventually saves you a great deal of time. Sections mounted in water, or in KOH, can be studied immediately, but those mounted in Melzer's need to stand 10–15 minutes to allow the hyphal cells to revive properly. Cross sections of the gills made in the above manner should show the hymenium (basidia and basidioles along with pleurocystidia if such are present), see p. 16. On some of the sections one should also note the cells forming the edge of the gills (cheilocystidia), see p. 16. The arrangement of the threads of the gill trama (the hyphae) and the details of their cells may also be studied (p. 18). Another way of demonstrating cheilocystidia is to mount a gill edge flat on the slide. To do this
cut the gill along parallel to the gill edge but about 1 mm back from it with a sharp razor and mount this strip of tissue. Slight pressure on the cover glass will separate the cheilocystidia if such are present. It is important to use this technique when ascertaining whether or not cheilocystidia are present.

The tissue of the pileus, especially the surface layer (cuticle) should also be studied (p. 19). To do this cut sections as described for the cross sections of the gills, but be sure to include the pileus tissue—at the expense of the gill sections if necessary. In Psathyrella the context of the pileus is so thin that one can often get good sections showing the cuticle and context of the pileus, the gill trama, the hymenium and the gill edges all in one mount, but it saves time to demonstrate one tissue at a time.

In making free-hand sections one always makes some that are so thick as to obscure cellular detail. Disregard these and study only thin ones which clearly show the layer or tissue one wishes to demonstrate. The critical point in the actual sectioning is to slice the material rather than just push the razor blade through it—and concentrate upon relaxing. For sectioning, an old fashioned hollow-ground straight edge razor with a handle that fits your hand is strongly recommended. I buy used razors from my barber. A small oil stone is a necessity since the razor will need frequent sharpening, but a “shaving edge” is not needed for cutting the soft tissue of mushrooms. More of my students have cut their thumbs while using safety-razor blades than when using straight-edged razors. If one is sensitive over the possibility of cutting one’s thumb, put a bandaid over the contact area before you start cutting sections. Always section toward your thumb. If the sections you cut are clearly outlined on your razor they are too thick to study.

When the anatomy of the pileus and hymenophore have been studied (p. 18) one should next examine the stipe. Here one is searching chiefly for caulocystidia (p. 18). To demonstrate them make a very thin peel from near the apex of the stipe down for about a centimeter and examine for the cystidia. Make mounts in KOH, water, and Melzer’s. The caulocystidia are often clustered, and one will find groups of caulobasidia in addition on the stipes of some fleshy fungi. In a peel such as described above, the hyphae of the cortex of the stipe will also be present and their details can be observed. Note pigments as incrustations on the walls, and whether or not the septa are colored in KOH. Clamp connections are usually more readily demonstrated on the hyphae of the stipe than elsewhere on the basidiocarp.

The Study of Dried Material. The technique is essentially the same as for fresh material, but the tissue must be revived somewhat. The procedure is as follows: with an expendable razor blade cut a section from the dry pileus of the same shape (wedge-shaped) as you did from the fresh one. Be careful not to fracture the pileus by handling it carelessly. Moisten the wedge of tissue with a drop or two of ethanol (about 70 per cent) to moisten the surfaces and then place the tissue in water until it is soft—it takes only a minute or two for a Psathyrella. Remove the tissue when it has softened and press out the excess water on blotting paper. Now, if one has access to cylinders of elder pith, section one lengthwise and place the wedge of fungus tissue between the two halves of the cylinder in such a position that the long axis of the gills parallels the long axis of the cylinder. Put the two halves of the cylinder back together with the fungus tissue held firmly between them, and section across the transverse surface of the cylinder. Keep the pith as dry as possible—if it becomes soggy it will not section well. Proceed to slice off sections as you would for fresh material but
remember that you are going to get many sections of pith in the mount along with the sections of fungus tissue. Remove the pith with a suitable implement. Mount sections in the various media already mentioned for the study of fresh material and study the cells and tissues as desired. Be sure to note color differences in spores, thickness of the cystidial walls (if thick enough to measure), and compare this data with that obtained from fresh material. For instance, the amyloid reaction of spore and hyphal walls is often stronger on material dried and then revived, than on the same structures when fresh, in a given species. Never mix the KOH with the Melzer's solution. Students are tempted to save time by making one mount and slowly drawing the various mounting media through the mount by adding the new medium on one side and absorbing the old medium at the opposite side. This does not work for the combination of KOH and Melzer's.

Chemical Reactions on Fresh Material. Most work done on the fleshy fungi in this category has been on an empirical basis. Any chemical one thought of trying was used. It has been found, however, that certain chemicals do give apparently constant color changes and some of these appear to indicate significant differences between taxa. In *Psathyrella*, however, to date, chemicals have been found to be relatively inactive. They have been given little importance in the present work but deserve further study. KOH (a 2.5 per cent solution) gives certain color changes in cystidial walls, and ammonia gives some color changes on cystidial incrustations (Kühner and Romagnesi, 1953). KOH also produces color changes in spore and hyphal walls and on hyphal incrustations. The latter changes are best seen on revived material on sections under the microscope.

Tests on the fresh context are usually made by placing a piece of context on a glass slide and then placing the chemical on the fungus tissue. View against white paper. If more than one chemical is being tested be sure that contamination is avoided. Ammonia, for instance, is very volatile and the fumes by themselves may cause a color change on a pileus. I always apply it last in a series.

**MICROSCOPIC FEATURES OF PSATHYRELLA**

**Spores**

The features of the spores are the most important of all taxonomic characters in the genus, but taken alone do not necessarily indicate relationships between species. The spores in *Psathyrella* show considerable range in diversity centered around a central pattern which is aptly described as being monotonous relative to both spore size and shape. This has made it necessary to standardize the descriptions so that differences and similarities are most readily apparent. As can be seen from a glance at the descriptions, the order of treating spore characters is roughly as follows: size (length and width, or if the spore is flattened to some degree both the width in profile followed by the width in face view are given). Type and degree of ornamentation is described next and then the presence (and features) of the apical germ pore. Next, the shape of the spore in face view is followed by the shape in profile view. In older descriptions very often when spores were quite different in appearance in face and profile view, the differences were merely regarded as "variation." Color in KOH and in Melzer's follows spore shape, and lastly the thickness of the wall is given in approximate values. Generally speaking, thickness of the spore wall in *Psathyrella* is about at the thickness which cannot be measured accurately with the light microscope.

Spore size is very constant throughout the family Coprinaceae, but one must be careful to check the number of spores borne on a basidium. It was established
long ago that, typically, spores from 4-spored basidia in a given species are smaller than those from basidia bearing only two spores. In measuring spores, if possible, use material from a deposit. If the latter are not available, and crush-mounts or sections of the hymenophore are to be used, be sure to measure the most deeply colored individuals. In such mounts it is not at all uncommon to find many pale colored spores often of various sizes, and in some mounts these may be of various shapes, such as being much longer and narrower than the majority. I have found the spores from deposits to be much more constant in shape and pigmentation than those from pieces of the hymenophore, and suggest that the “abnormal” spores are often not discharged.

The color of the spore deposit is a feature of some value taxonomically, but I have not used it here as a major character. First, the color ranges from brick red through cocoa-brown to various shades of chocolate-color to black. One should note the color of the spores from air-dried deposits. It is a simple matter to place the spore deposit on a layer of silica gel (activated), cover the dish and allow to stand for 15 minutes, by which time desiccation is reasonably complete. In the North American species one finds sterile or partly sterile specimens frequently enough to cause some concern about using the color of the deposit taxonomically. Spores from partly sterile specimens are often paler than normal for the species, and of course one is almost certain to get a thinner deposit—if a deposit is obtained.

The color of the spore under the microscope as mounted in KOH and also as mounted in Melzer’s is very useful. In KOH spores of many species are cocoa-color at first but soon darken to dark chocolate color or chocolate-brown (which is a paler shade). In those species in which the deposit is pink to brick red, the spores under the microscope often appear hyaline or nearly so. However, in a number of species in which the spore deposit is avellaneous to wood brown, the spores under the microscope may be a dingy ochraceous-hyaline or a tinge of vinaceous may be added, as in _P. spadicea_. At the other end of the color spectrum we have the species which give an essentially black to dark chocolate colored deposit. Under the microscope these spores may be opaque and practically black, or they may be black with an obscure ochraceous undertone (the latter are here described as _fuscous_—the term not being used in the sense of Ridgway). The term dark chocolate color indicates the presence of a slight violaceous tint and is close to “fuscous” of Ridgway. Chocolate-brown indicates a cinnamon undertone and is most often observed on spores which when first mounted in KOH were cocoa-colored. The latter term is to be interpreted literally—the color of powdered cocoa. Bister is used approximately in the sense of Ridgway but is also expressed by the term _medium date brown_, a dark date brown being near that of the color plate “mummy brown” of Ridgway. The light source for the microscope is an important factor in observing color under the microscope. All observations in the following taxonomic treatment were made with a Leitz Ortholux microscope with their standard incandescent bulb (Osram 8110, 6V, 5A). A white ground glass filter was used. The high power oil immersion used was an apochromat NA 1.4 lens, and the low-power oil a Fluorite 54 x, NA 0.95 lens. No adjustment can be made for individual differences of color perception—each person must arrive at his own evaluation of this factor, but the terms used in the taxonomic treatment indicate such broad color groups that there should be little trouble in evaluating the terms relative to the spores under observation.

Certain changes occur in the color of spores when revived in KOH or mounted in this medium when fresh: by far the majority of species have spores which, when first mounted in KOH for the first few minutes are cocoa-colored, chocolate-
brown or blackish. Cocoa-colored spores typically darken in 15 minutes to grayer shades or to violaceous-browns (many change to dark chocolate color). However, in some, if allowed to stand for a half hour or more the color finally fades to nearly hyaline. This happens sooner for some species than others, but the difference has not been used here taxonomically since it hardly seems practical and its significance is open to question. At present we do not know as much as we should as to how many of the dried specimens have been treated in the past, or what effect age of the spores has on the reaction. It was also noted that for spores initially pale colored to hyaline in KOH that these usually became clouded grayish to pinkish-gray (avellaneous) on standing for 15 minutes or longer. This change is not regarded here as important in distinguishing species, but is very important as an aid to placing to genus or family dried specimens sent in for identification. The members of the Bolbitiaceae have spores not showing this feature. As will be seen again under the discussion of color changes in tramal hyphae in KOH, the latter mounting medium produces some color changes of taxonomic significance but there are limits to their practical application, and a changing pattern of pigmentation in the medium seems almost to be the rule rather than the exception.

The use of Melzer's reagent on spores is of some value taxonomically, but it developed during the course of the study that its taxonomic use had definite limitations. The medium does enable one to measure the thickness of the spore wall more accurately than does KOH because of the sharp definition. In KOH mounts it has been demonstrated that at least for some species the wall swells more than in Melzer's and is less sharply defined. As to the color reaction in Melzer's, we find dark spores (blackish to dark date brown or dark chocolate colored spores) to be bay-red to bay-brown generally, but in by far the majority of species the spores are tawny-red to reddish tawny, and in those with pale spores, the color in Melzer's ranges from near "ochraceous-tawny" (yellow-brown) to pale ochaceous to nearly hyaline (very rarely). Also, one can generally predict the color in Melzer's from viewing the color intensity in KOH. One of the disappointing features of the present investigation was that no amyloid reactions were found either in spore walls or in spore content, as has been found in the boleti for instance. However, I did not bleach spores of a significant number of species to test them after the pigment had been destroyed.

It has been stated in the literature that the spores of Psathyrella discolor in concentrated H$_2$SO$_4$, and that this feature is a generic difference between Psathyrella and Panaeolus, for instance (Singer, 1951). Preliminary tests were made on the spores of nearly all the species in the present work, and a pattern of behavior was found which is of some interest. It was found, as others have found, that, generally speaking, a violet to slate-violet tone develops in most species before the spores disintegrate in the mounting medium. To this extent one can use the feature as an aid in identifying the genus, but since for 395 out of a possible 400 species this can be done more easily by other means, its practical value as a taxonomic tool is questionable. However, it does seem to have value in the Coprinaceae in tracing the evolution of some groups of species, and so its systematic value should not be abandoned.

The interesting point worth mentioning here, is that, as for KOH, there is considerable diversity in the color reaction within the genus. The common reaction is to dull lilaceous or slate-violet followed by rupture of the spore and disintegration of the wall in 10 minutes or more. Psathyrella alluviana is an example. In P. elwhaensis they became Corinthian purple (very bright) but
were russet (rusty brown) in 20 per cent $\text{H}_2\text{SO}_4$. In *P. foenisecii* they were tawny in concentrated acid and did not disintegrate. In *P. hirtosquamulosa* in concentrated acid they were avellaneous. In *P. jalapensis* they became hyaline immediately. In *P. michiganensis*, yellow, *P. obtusata*, hyaline, *P. subrubella*, tawny, etc.

A critical study needs to be made using various concentrations of sulphuric acid. It is obvious that different color reactions will be found, and to me at least, a reaction which disintegrates the spore wall in a short time is too severe. In my estimation it is significant that a brown reaction is obtained in a fair number of species when more dilute solutions are used, and it may be possible to trace the development of the sulphuric acid-stable wall components by this method. Also, color reactions obtained with dilute solutions, it seems to me, are likely to be more significant in indicating slight differences in chemical composition.

Spore shape. This is more easily described than spore color, and it can also be illustrated. In the taxonomic treatment in this work, spore shape is described along with the other details of the spore according to a definite plan, as previously stated.

The simplest spore to describe is one which is terete as viewed in an imaginary cross section. Such a cross section would be represented by a circle of the diameter of the spore. To describe such a spore the standard terms applying to the simple geometric figures they most closely resemble are used: ellipsoid, ovoid, globose, etc. These apply to 3-dimensional objects. Since in *Psathyrella* the spore is often of one shape in face view and another in profile, these two views are described separately in terms of the optical section (a 2-dimensional figure). The terms applied are elliptic, if the ends are rounded and the sides are somewhat convex (or at least not parallel), oblong is most like elliptic but with blunter ends and parallel or nearly parallel sides; ovate is the shape of a hen's egg, etc. *Psathyrella frustulenta* has ellipsoid spores. In *Psathyrella*, however, very few species have spores of the simplest shape. In most a “verbal picture” can be best realized only by reference to more than one term, to account for variation.

The majority of species have spores which in face view are elliptic or vary slightly from this configuration and the term subelliptic is applied to include such deviations. I have religiously tried to avoid compound terms that are self-contradictory such as “elliptic-fusoid.” Major variations from the norm (elliptic) are important taxonomically. One common type is described as ovate, here defined as the outline of a hen's egg seen in optical section; in this case the broad end of the spore is toward the attachment to the basidium. It is a simple progression from this type to that shown in Fig. 19 for *P. hirtosquamulosa* in which the spore in face view resembles in shape the flat side of a kernel of ordinary field corn, and is so described. If the spore in face view is isodiametric, it is to be described as circular in outline, or if almost isodiametric, subcircular. Under no circumstances should a spore with a length-width ratio of 1–0.7 be described as globose (3-dimensional) or circular (2-dimensional term). *Psathyrella* spores commonly vary enough to justify using two of the above terms to describe them. If subglobose is the norm, the variation is likely to be to globose or to broadly ellipsoid or both. In the descriptions the face view is often given as elliptic to ovate, and the profile view given separately.

In my plan of presentation I have tried to give the commonest shape first and the deviations following it, i.e., “elliptic to oblong, rarely ovate” means that most spores are elliptic in face view but a number are oblong (less than 50 per cent), and that a few are broadest near the base. Spores of one species may be
described as elliptic to oblong, rarely ovate, and in another they may be given as ovate to elliptic rarely oblong, and the difference would likely be of taxonomic significance. The order in which the descriptive terms appear in the descriptions has definite significance.

The greatest difficulty is encountered in giving a meaningful description of the spore in profile view. This stems in part from the spore tending to have a depression or merely a flattened area just distal to the apiculus. Basically, in descriptive work, one can consider the spore in optical section as it is attached to the sterigma and identify a dorsal (upper) line forming the spore outline which is separate from the ventral (lower) line (see Fig. 9, bottom spore). There is a tendency for the dorsal line to be humped slightly opposite the flattened (plage) area of the ventral line. At or near the midportion of the spore the dorsal line may level off to the spore apex, but the ventral line may show a bulge (or hump) just distal to the plage area. If a line is drawn across the spore, the peak of the dorsal hump will be toward the base of the spore and the peak of the ventral hump will be to its distal side. In other words, the two humps are not lined up perfectly as seen in a profile optical section of the spore. If this condition is pronounced, the profile view of the spore is described as inequilateral. In some genera this term can be applied to many species, but in *Psathyrella* it is often obscure. Hence qualifying adjectives have been applied in this work on the following basis: if the described condition is obscure, as in many species of *Psathyrella*, the term "obscurely inequilateral" is applied and as one would expect, if an intermediate condition existed, an intermediate term (in this case "somewhat inequilateral") is used. Considerable latitude in applying the terms is to be allowed, and spores may be expected to vary in profile view from this basic shape to others such as bean-shaped (depressed on the ventral line). But the obscurely inequilateral shape in profile is the basic shape of the *Psathyrella* spore. Spores of the subgenus *Psathyroides* are typically oblong in face view but bean-shaped in profile.

The germ pore at the apex of the spore is a generic feature and like all such features is not necessarily present in every species—at least as far as can be detected with the light microscope. As one would expect, it is most poorly developed on spores with thin walls (0.2 μ thick approximately). When present, the position of the pore is typically apical and usually oriented at right angles to the long axis of the spore. In some species, however, and these are mainly among those with dark brown to blackish spores, the “apical pore” may be oblique to slightly eccentric. Since this is a pronounced feature in the spores of many species of *Coprinus*, it is interesting to find the feature here in a rudimentary state. The size of the germ pore ranges from being so narrow it can hardly be resolved with the best magnification of the light microscope, to up to 3 μ broad or slightly more. Also, the pore is not a simple hole in the thickened endospore wall. Rather it often appears to be an area of wall material which does not develop pigment—hence it appears as a hyaline spot. The thin outer wall typically extends over the area maintaining the overall curvature of the spore apex. Such spores cannot legitimately be termed truncate (chopped off) at the apex. If the area of the pore collapses, however, then the apex becomes invaginated or flattened to some extent, the spore may be properly termed truncate. On the other hand, when mounted in KOH the spores of some species bulge at the apex so that the “pore” projects as a hyaline bubble. *P. velutina* usually shows this condition well. It should also be remembered that the term truncate can be legitimately applied to either end of the spore. In *P. hirtosquamulosa* the
spore is truncate at the base in face view because of the peculiar shape of the spore.

The thickness of the colored endosporium varies with the size of the spore, being thickest, usually, in large spores. Thickness of the spore wall is not of much practical importance in the taxonomy of the genus simply because most species have spore walls 0.2–0.4 μ thick. In some species, as already pointed out, the spore wall swells appreciably in KOH.

The Hymenium

Basidia. The principle and most abundant element forming the hymenium is the basidium. It may be defined as the end-cell of a subhymenial hypha or of one of its branches, in which meiosis takes place. In Psathyrella it is typically clavate but in some species varies to elliptic. In it the two nuclei of the dicaryon fuse to form a single large nucleus which usually soon undergoes meiosis to produce 4 nuclei by two successive divisions. In some genera a third division takes place with 8 nuclei formed only 4 of which are functional. The spores are produced following the nuclear divisions and typically one nucleus migrates into each young spore.

Our interest in the basidium in this work is mainly in any morphological or chemical features which it has which might be of use in the identification of the various species. The shape of the basidium and its width-length ratio vary greatly with the location on the gill—whether near the edge or in the area between the gills, for instance. Hence measurements can be misleading unless one is careful to include the position of the basidium in his description. The basidia are often twice as long between the gills as on the gill edge. The typical shape for the genus is narrowly clavate; broadly clavate basidia are almost as numerous. In fact, in some species they fall in the first category in relatively young basidiocarps, and in the latter category in old pilei. In some species they finally become almost elliptic and in some subcapitate. In fact it may be said that the morphology of the basidium in Psathyrella is of little help in the taxonomy of the genus.

If one considers the evolution of the coprinoid type of hymenium, however, the differences in the shape of the basidia of Psathyrella take on more meaning. The Coprinus-type of hymenium is the most highly specialized in the Agaricales both morphologically and physiologically. Concerning the question of which type in Psathyrella is possibly the most primitive, the narrowly clavate type is here so regarded since it is the least differentiated from a typical hyphal end cell. In the Coprinus hymenium the basidia, depending on the species, may project different distances when sporulating in such a pattern as to facilitate the free fall of the spores after discharge. Thus, function is directly correlated to the morphology of the hymenial elements. It is not uncommon in Psathyrella to note, in various species, that the basidia project slightly at the time of sporulation. In Psathyrella this condition appears to be a forerunner of the type featured by Coprinus. In only a few species such as P. praeatomata is the wall of the basidium thickened. In this species the pedicel is not only slightly thickened but the wall is colored dark brown the same as for the hymenophoral tissue. This feature, to my knowledge has never become involved as a main feature of evolution in any line in Psathyrella.

Basidioles and Brachybasidioles. In the hymenium many young basidia do not mature and end up merely as sterile cells helping to give rigidity to the
palisade. It is to be supposed, also, that there are basidium-like cells which, genetically, are not destined to function as basidia. In looking at the hymenium under a microscope, however, one cannot separate one kind from the other. The term basidiole is applied to both since the morphology is that of the immature basidium. In Psathyrella, however, there are many species in which nearly all of the "basidioles," by the time the hymenium is mature, enlarge to globose or elliptic in shape (in optical section) and hence are morphologically different from young basidia which are clavate. Such enlarged cells are here termed \textit{brachybasidioles} and it is interesting to note, again, that these have reached a high degree of development in Coprinus, adding to the morphological specialization of the hymenial elements. Their function in the hymenium appears to be to form a cellular pavement for the support of the basidia. Although the development of brachybasidioles is a most important feature in the systematics of the family Coprinaceae, it turned out to be impractical to use its presence in a major way in the taxonomy of Psathyrella. First, there is no single line of development in Psathyrella featuring the differentiation of brachybasidioles. They appear in most of the sections here recognized, but are most frequent in subgenus Psathyrella, the group most similar to Coprinus. Secondly, their differentiation in Psathyrella is often delayed until full maturity of the hymenium or later, so that in basidiocarps younger than those indicated, they cannot be demonstrated conclusively. Also, and this is a practical consideration in Psathyrella, they often revived very poorly and this makes their presence in specimens dried 25–100 years almost impossible to demonstrate. Consequently, in spite of their general phylogenetic significance, I gave up trying to base a section upon them in subgenus Psathyrella.

Cystidia. These cells differ from basidia, basidioles and brachybasidioles in that they occur more or less at random in the hymenium and are not a basic element as are the other structures just mentioned, i.e., one finds many species featuring a lack of cystidia in the Agaricales as an order. In keeping with my plan from previous works (Smith, 1947) cystidia on the face of the gill are termed \textit{pleurocystidia}, those on the edge of the gills \textit{cheilocystidia}, and those on the stipe \textit{caulocystidia}. If cystidioid cells occur randomly on the pileus they are termed \textit{pileocystidia}. All are end cells of hyphae or hyphal branches. As a rule they are much larger than basidia (at least in Psathyrella) and are characteristically fusoid-ventricose in shape (Fig. 71).

Cystidia may also be classified according to type: Those shown in Fig. 71 are termed leptocystidia and feature thin, smooth walls. Thick-walled cells (Fig. 459) have been termed lamprocystidia (or metuloids), but in Psathyrella one finds many species with cystidial walls of intermediate thickness to the degree that the terms can be applied to advantage only to the extremes. In the following descriptions the term pleurocystidium is used since it is necessary to describe the morphology of the cell anyway. The function of these cells is not too clearly known, but it is assumed that they are evaporating agents—possibly keeping the humidity high in the region where the young basidiospores are forming. This could account for some of the deposits one observes over the upper part or over the apex of many cystidia. As to wall thickenings, it may be worthy of note that in a number of species of subgenus Pannucia there is a slight thickening in the wall from the base to near the apex and the wall in the apical region is thin and less refractive under transmitted light than is the remainder. In these cystidia the thin-walled apical portion may revive much more slowly than the remainder and more frequently carries granular deposits.
In some species having thick-walled cystidia the apex may be ornamented with crystals which in NH$_3$ turn green to olive. Kühner and Romagnesi (1953) emphasized this feature. In KOH a number of species have cystidia in which the walls become vinaceous to vinaceous brown. These are the two most important chemical reactions associated with cystidia in the genus, and neither is as reliable for taxonomic purposes as one would like to have them be. In two species the content of the cystidia (at least some of them) is amyloid.

Pleurocystidia vary greatly in size but less so in shape. Certain patterns, however, are important. Kühner and Romagnesi (1953) used the outline of the apex in optical section as a major character, and my investigation has supported this evaluation. This does not mean, however, that in a given species one cannot find both types. The significant shapes for the cystidial apex are as follows: broadly rounded (Fig. 24), obtuse (Fig. 102), subacute (Fig. 284), and acute (Fig. 285). For any given species, variation is likely to encompass any two adjacent designations. In the broadly rounded type one often finds that the apex may become spathulate (in optical section) due to a tendency to bifurcate or to develop 1–3 protrusions which if they elongate become finger-like processes. This tendency is readily observed in the exannulate variety of *P. kauffmanii* and in *P. spadiceogrisea*. Their presence in *P. cornifericystis* suggested the species epithet. No instance of clavate-echinulate cystidia as found in *Mycena* has been observed. Size is important in a secondary way for there appears to be a breaking point at about 50 μ for length. Many species have typically shorter cystidia and in some groups such as the stirps *Obtusata*, they are mostly longer.

Two points should be kept in mind in measuring cystidia: first, cut sections of the gills in the usual way and then crush the sections by pressure on the cover glass to the point of separating the cystidia from the hymenium. They may have a narrow (2–4 μ wide) pedicel that is 15–20 μ long. Many of these cystidia originate in the gill trama but are not obviously connected to any laticiferous hyphal system. Secondly, one should measure cystidia from mature basidiocarps to be sure that they are fully elongated.

The content of the *Psathyrella* cystidium is monotonously homogeneous—in water, KOH or in Melzer’s, but in a few species one finds a large globule. Kühner and Romagnesi (1953) noted this in *P. gossypina*, and I have noted it in *P. fraxinophila*, *P. canadensis* and *P. delineata* as commented upon in the text. In subgenus *Homophron* two species have been discovered in which cystidia are sometimes filled with refractive particles. Kühner and Romagnesi (1953) and Heineman (1942) noted amyloid content in *P. cotonea* (*lacrymabunda*) and *P. hispida* respectively. A diligent search was made on the North American representatives of the genus but no additional species showing this feature were discovered. No species were discovered having amyloid or dextrinoid cystidial walls, though in a few the cystidial walls are yellow in KOH. The only generalization I am tempted to make about the cystidia in *Psathyrella* is that they are monotonous in that a general pattern is followed through the genus—with some diversity in chemical features and in the shape of the apex.

Cheilocystidia. These fall readily into two categories: those more or less resembling the pleurocystidia morphologically, and those which are clavate to subglobose. In the latter the walls of some, at least in many species, are ochraceous in KOH and this may extend to the hyphae giving rise to them. Those resembling the pleurocystidia typically are shorter than the latter due to having shorter necks. Basidia seldom occur on the gill edge in significant numbers in *Psathyrella*
so in a sense the cheilocystidia are not hymenial elements. It seems appropriate, however, to include them here and also to discuss caulocystidia and pileocystidia.

The caulocystidia in general represent variations of both pleurocystidia and cheilocystidia and often vary greatly in form and size. They cause the pruinosity over the apex of the stipe. In a few instances some distinctive morphological types occur along with the usual pattern of clavate to fusoid-ventricose cells. When the veil is heavy, caulocystidia are often absent or poorly represented.

Pileocystidia are unimportant in *Psathyrella* with the exception of the *P. conopilea* group in which long setae occur which have ochraceous tawny or darker walls (in KOH). At times some of the cells of the pileus cuticle may be “cystidioid” (fusoid-ventricose) but they are usually only an integral part of the cuticle—especially if the latter is hymeniform in structure. Consequently they do not enter prominently into the taxonomy of the genus. At best, it may be said that the various types of cystidia in *Psathyrella* do not show unusual diversity as compared with other large genera of the Agaricales.

The Tissues of the Basidiocarp

The Hymenophore. In *Psathyrella* the hyphae of the gill trama are mostly somewhat interwoven to subparallel. The latter condition is most often observed on lamellae just reaching the sporulating stage and the former on old lamellae that are completely expanded. The most pronounced feature is the degree to which cell inflation occurs. The tissue may appear almost cellular in expanded pilei of some species as seen in cross sections of the lamellae. Typically the subhymenium is cellular (pseudoparenchymatous) but again, often does not reach this condition until full expansion is attained. In some, however, it remains filamentous and interwoven, but it was found impractical to emphasize more than both extreme conditions in the taxonomy of the group. The most important features for taxonomic purposes are concerned with color reactions of the wall in KOH. Three conditions are worthy of mention: (1) no reaction—the hyphal walls are hyaline, thin and smooth. (2) The hyphal walls become tawny to fulvous in KOH and may be smooth or have some pigment incrustations. (3) The hyphal walls become distinctly vinaceous to vinaceous brown in KOH and are likely to show incrustations when first revived.

It will be noticed very soon that on colored hyphae or incrustations the color is often concentrated near and on the septa, often as thickenings in the wall or as incrusted patches on it. This is pronounced enough in some species to give a mottled effect as one views the sections. In most species showing color it is most pronounced at about the time the veil breaks, and it diminishes in intensity as the basidiocarp matures and ages—at which time it may be hardly demonstrable. This difference in pigmentation has superimposed upon it the fact that KOH has the feature of bringing out the pigment strongly at first but in 15 minutes causes the color to fade, more so in some species than in others. This behavior of the pigment in KOH caused me to abandon any serious attempt to use it in the taxonomy of the genus. Melzer's solution with one slight exception does not yield any significant color reactions either. A laticiferous system of “oleiferous” hyphae is often present, as in most agarics, and is in the form of scattered individual metallic-appearing (in KOH or Melzer's) practically non-inflated hyphae sparingly septate. Although the pleurocystidia often arise in the gill trama, their connection appears to be with the more or less uninflated primordial or binding hyphae. A few exceptions occur, such as in *P. rugoproxima*
where an occasional pseudocystidium occurs. In general, and as one would expect, the hyphae near the gill edge are less inflated than those farther toward the gill attachment to the pileus. In species showing strong color in the hyphal walls (in KOH), the color is less pronounced near the gill edge. A number of species have numerous cheilocystidia with yellow walls, and in some of these this pigmentation (in KOH) extends to the tramal hyphae near the edge.

The flush of rose-color in certain species, such as *P. gracilis*, may possibly be associated with this KOH reaction but definitely is not always so. The pigment as seen in fresh material occurred within the cells as well as between them in the areas where it developed, and was diffuse in water mounts.

The Trama of the Pileus. The above observations on the lamellar trama apply almost equally well to the trama of the pileus. In the latter, however, there is a distinct concentration of wall and inerusting pigments in the subcuticular region. Here one can usually readily observe the concentration of pigment (in KOH) on and adjacent to the cross walls of the hyphae. *Psathyrella* is the only genus known to me featuring the combination of this distribution of hyphal inerustations and their reaction in KOH, i.e. the inerusting material disappearing as the pileus matures and ages. As one would expect, this varies in degree between species, but in my estimation is to be regarded as an important generic character.

In the pileus as well as in the lamellae, the degree of cell-inflation varies with the species, usually being greatest in those more delicate, such as *P. atomata* or *P. typhae*. It may be said of *Psathyrella* as a genus that the trend in evolution is for the individual species to use less and less organic substance in the framework of the basidiocarp. Hence those with small basidiocarps are generally to be regarded as more advanced toward the direction of *Coprinus* than the larger species. Certainly it is truly remarkable how little substance the basidiocarps of species in subgenus *Psathyrella* contain. The reduction in substance appears to be correlated with the degree to which the hyphal cells inflate, but is further correlated with the reduction in the number of hyphae involved. It would be interesting to study mycelial growth in terms of grams of mycelium produced in relation to the weight of the basidiocarps produced and correlate both with the weight and number of spores produced to determine, if possible, the quantitative relationships in an attempt to establish a “reproductive” factor as an indicator of efficiency in matters of survival. Perhaps some day in a genus like *Psathyrella* some meaningful estimates can be arrived at.

The cuticle of the pileus in *Psathyrella* is described as cellular but at least three conditions are represented and they are intergrading to the point that their use individually in taxonomy is ambiguous. First, the surface hyphae may be composed of short inflated cells and their arrangement radial so that when sections are cut tangential to the pileus one gets the impression of a “cellular” layer of more or less isodiametric cells covering the interwoven hyphae of the subcuticular region. Sections cut radial to the pileus, of course, will quickly orient the observer as to the true condition. This layer may be 1–3 hyphae deep. This feature (the development of the cuticle) is of some importance as in many species the layer may be only one hypha deep. The opposite extreme is a hymeniform palisade of hyphal end cells. Were it not for the intermediates, these two types might furnish a basis for dividing *Psathyrella* into two genera. As it stands, however, most species feature a cuticle 1–2 cells deep and both types of cells are present in varying densities. A third type, reminiscent of the Boletaceae is the trichodermal type in which the elements of the trichodermium
are greatly inflated cells in chains of 2–4. The degree to which this type has
developed in *Psathyrella* needs further study. In the present work reliance has
been placed on the morphology of the layer as observed on tangential sections
of the pileus approximately midway between the pileus margin and the disc.
This degree of standardization has been found practical in the taxonomy of the
genus.

The features of the cuticular cells themselves are important enough to deserve
comment. The walls are characteristically smooth and thin, but in some species
the cells are so closely compacted that the wall between two cells seems to be
0.5 μ or slightly more thick. Usually careful observation will show a line (resem­
bling a “middle lamella”) indicating that actually two cell walls are involved
instead of one. Ordinarily this can be readily demonstrated under the low-power
oil immersion system. In some species with highly colored (in KOH) subcuticular
hyphae, the layer of cuticular cells next to the subcutis may show deposits of
pigment in the angles of the cells but it appears more as if a liquid had hardened
on the walls and in the angles rather than occurring as incrustations (possibly
arising from the breaking up of an outer wall layer, for instance). If the cuticle
is hymeniform, the pedicels of the cells often show somewhat thickened colored
walls even though the thin wall of the inflated portion appears to be hyaline.
Color, as ascertained under the microscope, however, deserves a few words of
comment at this point. First, the thinner the wall the more likely it will appear
hyaline under transmitted light. In the matter of hyaline, ochraceous, and brown
(including differentiating between rusty brown and vinaceous-brown) I could not
discern a significant difference between an apochromatic optical system and an
orthochromatic system. In using the keys in the text, therefore, either system
should work if the source of light and the filter system of the microscope do not
distort color unduly. As near as I have been able to ascertain from the species
studied to date, there are very few in which the color of the cuticular cells in
KOH or in Melzer’s is significant in taxonomy. The outstanding exception is the
group containing *P. tsugae* and *P. subalpina* where the walls are characteristically
brown in KOH. In the majority of species the color ranges from hyaline to
ochraceous and if present fades on standing in the mounting medium. In a few
it may be tawny to brown but fades rapidly enough to cause one to question
its value in species recognition—too much depends on the age of the basidiocarp.
Cell content, as viewed in KOH or in Melzer’s was singularly monotonous and
negative. Occasionally one finds cells with a “colloidal” content but this is
common throughout the Agaricales and as yet the only place where it might
have significance is in the boletes where such cells also give a bright orange to
red reaction.

The Stipe. The hyphae are typically elongate, thin-walled, and hyaline in
KOH, but in a few species the cross walls become brown in KOH thus forming
a striking appearance in crushed mounts. This appears to be a valuable taxonomic
feature and one deserving more detailed study to correlate data from the same
specimens fresh and when dried—especially those in which the stipe is brown or
becomes brown by late maturity.

Summary. It may be said that hyphal characters of the basidiocarp as
distinct from end cells and any tissues the latter form, are important in the
systematics of the family Coprinaceae but are of secondary importance in the
delimitation of species in *Psathyrella*. The features which appear to have some
importance in the taxonomy of the genus are cell inflation, KOH reaction (as
to color) on transverse septa, presence of wall thickenings and wall incrustations
near the septa and their behavior in KOH, and the color of the wall (brown) of the cuticular cells of some species when revived in KOH.

The degree of differentiation of a laticiferous system, the arrangement of the hyphae of the hymenophoral trama (within the genus), and the arrangement of the hyphae in the context of the pileus appear quite homogeneous for the genus as a whole. Clamp connections are present in all but a few species (in which the material available to date has not been abundant). In view of what has been found in Suillus (Boletaceae) by Pantidou (1961) and others, one can expect to find an occasional clamp in the "clampless" Psathyrella species. Hyphal disarticulation especially in relation to hyphae of the veils needs further study as do the veil hyphae generally—but from fresh material. On most dried specimens of Psathyrella in herbaria generally one cannot get a good sample of veil hyphae. It is the author's intention, now that this work has been brought to a reasonable stage of completion, to study the features of the veil in relation to species concepts as here proposed. It is true that the veil furnishes important characters in the taxonomy of Coprinus.

SUBSTRATE RELATIONSHIPS AND ECOLOGY OF SPECIES OF PSATHYRELLA

The substrate relationships for most species appear to be rather monotonously—most occur on wood in various stages of decay or on the dead remains of both monocots and dicots, such as piles of leaves, compost piles, accumulations of herbaceous stems, etc. Some species clearly cause a primary decay, but most probably attack wood already partly decomposed. It is common to find Psathyrella on logs so rotten that they are ready to crumble or have crumbled into a shapeless mass. Very little is known of the basic nutrient requirements for the various species—in fact our inability to identify species accurately has probably held up or rendered questionable to date studies on their biology. However, most species can be readily obtained in culture, and it is hoped that the present study will aid in furnishing a serviceable foundation for critical investigations of the species in the laboratory. One phase which is of interest is the possible interdependence of these fungi on the byproducts of decay as produced by such fungi as Mycena leaiana and Xeromphalina tenuipes.

Although most Psathyrellae have substrate relationships rather broad in scope, some are highly specialized. Psathyrella epimyces, for instance, is parasitic on Coprinus comatus, and, at least in my own front yard, has apparently killed flourishing mycelium of the latter. Psathyrella arenulina and P. ammophila are associated with dune grass—either living on the dead roots, etc., or possibly forming mycorrhiza with the grass. As will be noted in the keys, a few species occur on Sphagnum. Psathyrella typhae is found most frequently on dead culms and leaves of Typha—usually fruiting just above the waterline. Some Psathyrellae prefer grass land, but it is not known if they attack the roots of the grass or live on dead material—one would guess the latter. A number are coprophilous, as are so many species of Coprinus. From a gardener's standpoint such species as P. candolleana might well be investigated for their ability to compost coarse lignicolous debris such as herbaceous stems, piles of leaves, etc.

When compared with other genera, Psathyrella would, by necessity of the number of species involved, be regarded as one of the major "clean-up" genera of the Agaricales along with Coprinus and Pholiota.

The seasonal fruiting habits of Psathyrella species are much like those of the above mentioned genera. Some fruit in the spring, some in the summer and
most of them appear in the fall or early winter (if the weather remains above freezing). However, seasons when a large number (50–100 species) fruit in a relatively restricted area, such as the Upper Peninsula of Michigan, are rare, and in this respect at least in North America, the genus resembles Cortinarius and Rhodophyllus. As for both of these genera, however, it is not uncommon for a few species to fruit in great numbers and thus give a false impression relative to the true diversity of the genus. Prolonged rainy cool weather seems to bring them out both as to quantity of basidiocarps and number of species. Also, a number of species characteristically fruit in cold wet springy habitats either on mud or plant debris. It would be interesting to know their vegetative requirements.

Two habitats of general interest deserve special emphasis: burned areas and recently dried up pools or ponds. In the Pacific Northwest where large areas have been ravaged by fire, one regularly finds a few species of Psathyrella occurring along with such species as Pholiota highlandensis, etc. Apparently such fruitings are associated with the release of mineral nutrients in large quantities by the burning of the organic material. Since at times these fungi come up rather soon after a fire, followed by rains, the process of their survival in the habitat or re-invasion rate pose interesting questions.

To me the species fruiting on the dried mud left when a pond dries up are far more interesting. In southern Michigan it is not uncommon for woodland pools to dry up by the end of July or sometime in August, and while the bottom thus exposed is still moist, a number of Psathyrellae may fruit on it. It seems obvious that the mycelium of these species must have made their growth and stored up the necessary nutrients while submerged. In the present era when so many fungi are grown in liquid media, the manner of growth of the Psathyrella species does not seem unusual, but laboratory conditions are artificial to say the least, and, ecologically, the niche established by these species has a number of interesting features.

Among the large number of species living on dead organic matter generally, there is distinct specialization on the part of some for particular substrates. Psathyrella obtusata is usually found on oak logs or stumps; P. huronensis apparently causes a heart rot of sugar maple; P. circellatipes, at least in the Rocky Mountains favors aspen wood; P. subalpina and P. tsugae favor conifer wood, etc.

Many species appear to fruit on the soil and it is usually assumed that they live on the organic material in it. These, in the keys in the following text, are termed terrestrial whereas those with the base of the stipe attached directly to wood are termed lignicolous. Some apparently terrestrial species actually are produced by mycelium living in buried pieces of wood. This feature imposes a limitation on the use of substrate as a key character. Confusion may also result when one finds as often happens, basidiocarps on chip-dirt or soil unusually rich in lignicolous material of various sorts, such as sawdust spaded into the soil. To further complicate the situation, a species, let us say, living in a block of wood, may produce its basidiocarps some distance from the place where the vegetative mycelium is located—such as on a stone, on the soil, or the bark of a living tree. This habit of the fruiting mycelium of leaving home, so to speak is an adaptation of ecological interest but can be deceiving to the taxonomist. In using the following keys take the obvious choice first, and check by taking the opposite choice next. And if the fruiting is on a stone or the trunk of a live tree let the circumstances guide you. The fungus might be living on the bark of the tree in the
manner of *Mycena corticola*, but if it is on a stone it is obvious that an example of migration has been encountered.

I have made no attempt to correlate pH with fruiting site, but it is evident from what has been said already that a reading at the base of the basidiocarp may not give accurate information on the pH where the vegetative growth is taking place. Also, the basidiocarp can modify the pH slightly in its immediate vicinity. In spite of a number of such possible pitfalls, it is a known fact that certain species fruit on strongly calcareous soil and some only on rather acid substrata. These however, are mainly in such genera as *Inocybe*, *Cortinarius* and *Rhodophyllus*, i.e. mycorrhizal forming genera for the most part. I would hazard a guess that in *Psathyrella* the pH requirements are about like those of other genera of wood-inhabiting agarics.

As for most fleshy fungi, the amount of nutrient available appears to influence the size and number of basidiocarps produced. Around a sawdust pile for instance, species often normally growing in a gregarious or scattered manner have basidiocarps in large clusters and with larger basidiocarps than usual. However, the colors, veil details, spore size, etc. are not likely to vary significantly. In these respects the genus is like other genera of the order.

The alpine and subalpine species seem to show the same types of basidiocarp modifications shown by other genera when they occupy the same habitat. The basidiocarps are mostly small and usually remain hidden in the vegetation of the meadow or the needle carpet. For *Psathyrella* these zones have not yet been adequately explored. The process involves a maximum expenditure of energy for results obtained. Most of the alpine and subalpine species have very small slender basidiocarps and only a few are found at a time. It is curious that one also finds species of similar stature in the hot dry areas such as sagebrush country, but they occur there when conditions of high humidity have been maintained for 5–12 days. Here it seems that a set of factors opposite those prevailing in the high country seems to have produced species with basidiocarps capable of quick development and sporulation. The species themselves, of course are different.

**Phytogeographical Considerations**

Not much can be said at this time relative to the distribution of *Psathyrellae* over the world—we need to critically delimit the species first. But it is evident from present knowledge that the genus is world-wide in distribution. It occurs in tropical as well as subalpine and arctic regions. The degree of diversity, however, in the genus for the major land masses of the earth needs to be assessed more critically before comparisons with various regions will be worth while. One of the major needs, not limited to studies of *Psathyrella*, is better planned and more intensive sampling in most areas.

Although the present work is the first, to my knowledge, which has involved the above considerations, it must be candidly pointed out that the sample of the *Psathyrella* flora of North America forming the basis for this work is minimal for the proper understanding of speciation and species migration in North America. For one thing, most of Canada remains unexplored. My own estimate of the completeness of the present work is that it will fall between 50 and 75 per cent of the total flora.

Canada, Alaska, and Mexico have scarcely been touched. The areas in the United States most adequately sampled are the mountains of the western United
States and the Great Lakes region. However, in our western mountains the area is so large and the collectors so few that anyone with field experience will readily realize the opportunity for future work. In the Great Lakes region the north-south axis from Whitefish Point on Lake Superior to Ann Arbor must be considered one of the most heavily sampled areas in the world—and we still find undescribed species in Washtenaw County.

There are reasons for the present state of affairs. First, species of *Psathyrella* are like those of *Cortinarius* to the extent that a few common ones fruit almost every year, but it is only in the occasional year, one in ten perhaps, that the genus fruits heavily both as to number of species and number of basidiocarps. Although this is now a well known pattern for a number of major groups of fleshy fungi, it still operates as a major factor as far as plotting the distribution of agarics over the landmasses of the earth is concerned.

A psychological factor, however, may have strongly influenced our failure to accumulate information on the phytogeography of *Psathyrellae*. It has heretofore been generally regarded as a rather insignificant genus. Hence few collectors (including myself during my early years) have given it critical attention. Also, the fact that the species of the genus as now defined were previously scattered in so many different genera, did not help matters. Add to all this the fact that the basidiocarps of most *Psathyrellae* are small and ephemeral, and that some characters such as those involving the development of the veil and the color of the pileus were either readily obliterated by poor collecting technique or are characters which change so rapidly that it is difficult to preserve the features until a critical study could be made, and make the reason for our slow progress apparent. As in *Rhizopogon* (Smith and Zeller, 1966) I must again insist that the present work is an introduction to the *Psathyrella* flora of North America, reviewers please take note. My reason for being so emphatic in regard to these considerations is that in a preliminary way, on a recent visit to the Royal Botanic Garden at Edinburgh, Scotland, I had the pleasure, when working with Peter Orton, the British specialist, of comparing notes and descriptions of *Psathyrella* from the British Isles with those from North America. It became evident at once that, while many species were quite similar—in a comparison of British and American counterparts—they were more often than not distinguished by one or two characters now considered important. The number of species we clearly established as occurring on both regions was a distinct minority. Orton's unpublished data are the most critical I have seen to date for European species, and the number he has found is certainly greater (far greater) than in any account for Europe yet published. I had expected, frankly, that a critical comparison of the two floras would have revealed many more species common to both areas. When the *Psathyrella* flora of Canada can be critically compared with that of the British Isles, the number of species common to both should be increased sharply.

But with the situation as pointed out for the British Isles in mind, it should be obvious to all how much remains to be done over the world as a whole. If it seems to some of my readers that I am belaboring the obvious, allow me to point out that from the time I took up the study of fleshy fungi in 1928 to the present, biologists in general, and taxonomists in other groups of fungi in particular, did and still do take the attitude that further investigations of fleshy fungi are not badly needed because the work on the order is largely completed. This point is most likely to come up when financial support for biology is being considered. Yet the fleshy fungi today, with all the modern monographs included,
represent one of the most poorly explored groups in the plant kingdom. It must be kept in mind that fleshy fungi are an important world source of food (Singer 1961), and on this basis alone, intensive study of the group is justified.

RELATIONSHIPS TO OTHER GENERA

In my estimation it is logical to seek for the ancestral types of the Coprinaceae in more primitive rather than in other highly evolved groups. Hence, though spores of *Leucoagaricus* and some other *Lepiota*-like genera have a germ pore, I am not inclined to relate to them the family Coprinaceae. To me it is more logical to look back through the Bolbitiaceae to *Galerina* as a primitive group. If one simply compares characters, it is at once evident that the Bolbitiaceae are anatomically very similar to the Coprinaceae, and it is tempting to visualize the latter as having arisen from the former through mutations in pigmentation of the spore. That such changes can occur has been demonstrated from material collected in nature, the subgenus *Conocybellae* for example. The spores of the type species were fuscous in deposit when fresh, but after standing in the herbarium over the years they now have almost the same pigmentation as some *Conocybe* spores but duller. It has long been known that *Agrocybe* of the Bolbitiaceae has some species which give an earth-brown deposit that for all practical purposes is the same color as some spore prints of *Psathyrella*. *Agrocybe dura*, for instance, is often mistaken for a *Stropharia*. Smith and Hesler (1969) discussed the intergrading color of spore deposits between *Pholiota* and the strophariaceous genera. In short there is ample evidence that purple-brown spored agarics could have arisen from those featuring rusty brown spores, particularly in groups where a germ pore is involved.

The problem of related genera in the Coprinaceae is simple and straightforward. *Pseudocoprinus* is a genus recognized by some authors and is distinguished from *Psathyrella* by two features; namely the presence of brachybasidioles in the hymenium and a plicate striate pileus. Both of these features are found in *Psathyrella* but not in combination (by definition). The distinction may be regarded as artificial by some, but it must be kept in mind that there is a smooth progression through *Psathyrella* to *Coprinus* in the evolution of physiological and morphological features. The problem resolves itself into whether the family should contain a single genus or be divided. The latter conclusion is the one accepted here and *Pseudocoprinus* is recognized on that basis. It represents a major step in the evolution of the *Coprinus*-type basidiocarp from the *Psathyrella*-type. The genus differs from *Coprinus* in that the process of autodigestion has not been developed.

*Coprinus*, featuring the process of systematic autodigestion of the hymenophore after spore liberation, is, without question, the most highly specialized genus in the family; but its recognition is based mainly on a physiological process. Morphologically speaking, its other characters can all be traced to primitive states in *Psathyrella*.

*Panaeolus* is a "satellite" genus closely related to *Psathyrella*, but differing in the stability of the spore pigment and spore wall in concentrated sulphuric acid and in having mottled gills as the spores mature. It connects to *Psathyrella* through the subgenus *Panaeolina* of the latter (as recognized here). The question as to whether *Panaeolina* is a valid genus or belongs in *Panaeolus* or *Psathyrella* is an open question at present. My disposition of it is based on its *Psathyrella*-aspect and, in view of the diversity in *Psathyrella*, its generic features seem
trivial. There is also the practical consideration that if each slightly odd agaric is made the type of a genus, agaric taxonomy will certainly fall into disrepute.

*Macrometrula* Donk & Singer can be recognized by the large membranous volva, again a single character. Otherwise it appears to be a *Psathyrella*. Since the volva is at such an advanced stage of evolution as compared to any *Psathyrella* known to me, and since I have not seen fresh material of *Macrometrula*, the disposition made by the original authors is accepted.

In summary it can be stated that the genera surrounding *Psathyrella* show the same pattern as the genera surrounding *Cortinarius*—namely odd segments of evolution in the form of satellite genera.

**EVOLUTION WITHIN PSATHYRELLA**

If it is assumed that the genus originated from primitive types in the Bolbitiaceae, we can at least introduce the present topic in a logical manner, for, as previously mentioned, in the Bolbitiaceae we find nearly all the anatomical features which also characterize *Psathyrella*. Both groups are saprophytic, both have a cellular pileal cuticle, both have similar spore anatomy, both feature rather similar cystidia, and enough intergradation in the color of the spore deposit exists to cause some confusion between them. Brachybasidioles have evolved in both groups. All this points to the fact that evolution did not bring about much change in creating the group now known under the name *Psathyrella*. Major points of difference appear to be in the development of the outer veil in part of *Psathyrella*, and the pigmentation of the pileus is also different, especially the reaction of the pigments to KOH. The major lines of evolution in *Psathyrella* are as follows:

*Lacrymaria* (subgenus). This is one of the most highly evolved groups in the genus and to me represents an endpoint in evolution. The arguments for recognizing this group as a genus are as good as those for *Macrometrula*. It is retained here because it is likely that it can be connected up to the following subgenus.

*Psathyroides*. This group could have originated from the same ancestral type as *Lacrymaria*, but species of *Psathyroides* show a more smoothly intergrading series of characters leading into the typical *Psathyrellae*. The evolution in these two groups seems to be away from the *Coprinus* type basidiocarp.

*Pseudostropharia* in reality consists of two lines, one with apiculate non-truncate spores which is the type section, but the heavy veil is the key character. Pleurocystidia seem to connect the group to cystidiate species of subgenus *Pannucia*. The second section, the acystidiate species clearly connects up to the *Candolleanae*, in fact, in North America, we have annulate forms of the latter (see *P. incerta* and *P. candolleana*). This group also connects to *Pannucia*, especially the acystidiate species.

*Homophron* contains a number of stirpes but as a subgenus is artificial. It is recognized more for convenience in ready identification of collections. The various stirpes connect to subgenera *Pannucia* and *Psathyrella*.

*Pannucia* and *Psathyrella* as subgenera represent the core of the genus and the problem here is not the recognition of related lines since relationship could be postulated in almost any direction, but is rather one of finding groupings that will be practical in the identification of the various species. It is in these two subgenera that one can trace steps toward the evolution of the *Coprinus*-type basidiocarp.
In summary, it also can be said that *Psathyrella* is one of the most homogeneous genera in the Agaricales, a fact first recognized by Quélet and later reiterated by Romagnesi (1944). The species in it, though they can be recognized after critical study, are so similar that arrangement of them into groups or lines to emphasize presumed relationships might be more misleading than helpful. It seems to me, that for both *Psathyrella* and *Coprinus*, more studies in culture relative to the behavior of such characters as the size of the germ pore, thick-walled cystidia, hyphal incrustations, etc., through a number of generations are highly desirable. Until we know more of the stability of these features and their genetic basis, our classification is bound to be highly tentative.

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The facilities of the University of Michigan Biological Station, first under the directorship of Prof. A. H. Stockard, and later under Prof. F. K. Sparrow, played a major role in the exploration of a transect extending from Ann Arbor to the Lake Superior shore at Whitefish Point. This axis is now one of the most thoroughly explored areas for agaricales in North America, and it has been through this study that so much has been learned relative to the problems of obtaining an adequate sample in floristic work on mushrooms.

The work in northern Michigan, in recent years has been greatly facilitated by the Huron Mountains Wildlife Foundation, a subsidiary of the Huron Mountains Club, Big Bay, Michigan. Largely through the interest and efforts of Mr. Wm. Harris over many years, the holdings of the Club, which represent
a unique geological area in Michigan, have been preserved in their natural state far better than the state parks and recreation areas which generally suffer more and more each year from over-use and over-development. Through the facilities developed by the Foundation on their Ives Lake property, the area is open to biologists with approved research projects. The study of the Michigan mushrooms has profited handsomely from this arrangement over the last five years.

The system of state forests, state parks and recreation areas, administered through the Department of Natural Resources, has furnished areas for study. It is hoped that the relatively "wild" condition of these areas can be maintained for they offer a great deal to the natural history hobbyist as well as to the professional biologist.

The U. S. Forest Service has been of great help in all areas where I have collected and they have holdings. It has been the helpfulness of the men in the field—local supervisors and rangers, who have contributed so much on a day-to-day basis simply because they had such accurate firsthand knowledge of the vegetation and terrain of their respective forests. However, in addition to this work-a-day type of assistance, the Service, through its research branch as represented by the Forest and Range Experiment Stations, has furnished living and laboratory facilities for my studies as a means of encouraging and developing a better understanding of forest and range fungi in the major ecosystems under their jurisdiction. In this connection I wish to acknowledge with pleasure the assistance received from the Intermountain Forest and Range Experiment Station, Mr. Joseph F. Pechanec, former Director, and Mr. Robert W. Harris, present Director, in the form of facilities furnished at the Priest River Experimental Forest, Priest River, Idaho. The Priest River Experimental Forest itself is an excellent area for fleshy fungi, and in addition is so located that one has relatively easy access to the entire Priest Lake district. This area has become my major sampling area for the northern Rocky Mountains in connection with my forthcoming flora, and it has been an exceptionally fine area for *Psathyrella*.

The second station of note in connection with the present project is the Cascade Head Experimental Forest near Otis, Oregon, on the Oregon coast. This unit is administered by the Pacific Northwest Forest and Range Experiment Station U. S. D. A. Forest Service, Mr. Philip Briegleb, Director, and it furnished a series of fungous habitats quite different from those around Priest Lake in spite of some similarities between the two in the major elements of the vegetation.

The National Park Service has also been most helpful, in fact Mt. Rainier National Park and the Olympic National Park represent my two most important stations in Washington. An effort has been made to designate collections from these areas as the types of new species on the assumption that the habitats there are less disturbed than in other areas and are likely to remain so.

Many individuals, professional biologists and otherwise, have made significant contributions of materials to the project. Many of these people have new species named after them as an acknowledgment of their interest and effort. Since descriptive terms as used for *Psathyrella* species can nearly always be aptly applied to a number of species, they do not seem to me to be very effective as species epithets. By using the names of collectors, at least some historical element is introduced. To all of those who have sent me specimens—whether or not they ever received identifications—I take this opportunity to express my thanks for their effort.

In some regions it is almost impossible to plan to collect fungi because the
conditions for fruiting are so erratic. For successful work in such areas a resident of the region with an interest in the subject is practically a requirement. I have been fortunate in this respect relative to the arid region of southwest Idaho and adjacent states. Mrs. Ted (Ellen) Trueblood of Nampa, Idaho has been collecting in the Owyhee Mountains of Idaho for years and has discovered there a substantial *Psathyrella* flora. Through her efforts we are learning more about it and are also accumulating interesting data on the total flora of fleshy fungi for this remote region.

In Alaska Mrs. Virginia Wells and Mrs. Phyllis Kempton have for years been working on the flora of that vast area with exceptional success as the series of papers under their authorship indicates. They have encountered an interesting *Psathyrella* flora, as is indicated by the species included in the present work, which is going to be very important in a final comparison with the *Psathyrella* flora of northern Europe.

I am particularly indebted to Mr. Peter Orton, Rannoch School, Scotland, for time and effort spent in comparing details of the *Psathyrella* flora of the British Isles with that of North America. Much remains to be done yet in this respect, but it was evident from our preliminary effort that the genus in the British Isles has its own pattern of complexity and that this does not coincide too well with the North American pattern. It seemed evident that the course leading to the best understanding of both floras was to record the diversity of each in detail separately and then make comparisons.

Dean Emeritus L. R. Hesler of the University of Tennessee kindly turned over his *Psathyrella* collections to me for study, as did several of my former students: Dr. Howard Bigelow, Dr. Harry D. Thiers and Dr. Kent McKnight. I regret not being able to furnish them more identifications, but at least in many cases ideas relative to future problems were obtained.

On the basis of my own experience, it appears that any distinctive phytogeographic area in North America which supports fleshy fungi, has some species of *Psathyrella* of special interest. It is my hope that the present work offered as an introduction to the *Psathyrella* flora of North America, will stimulate regional studies of significance both in the analysis of species concepts based at least in part on laboratory studies, and on further field work to more accurately map the distribution of our taxa. If my present effort enables future investigators to see more clearly the problems in the genus, I shall feel that the effort has been worthwhile.
PSATHYRELLA (Fries) Quélet, Mem. Soc. Emul. Montbéliard II, 5: 152. 1872
(Champ. Jura et Vosges 1: 152. 1872)

Psathyra Kummer, Führ. Pilzk. 20. 1871 (non Spring, 1818).
Psathyra (Fr.) Quélet, Champ. Jura et Vosges, 148. 1872.
Hypholoma (Fr.) Quélet, Champ. Jura et Vosges, 143. 1872.
Drosophila Quélet, Enchir. Fung. 115. 1886.
Lacrymoria Patouillard, Hymén. Europ. 122. 1887.
Astyleospora Murrill, Mycologia 10: 18. 1918.
Psalliota Velenovsky, Novitates Mycol. 155. 1939.

The diagnostic features of Psathyrella are as follows: spore print typically some shade of cocoa-color to chocolate-black, or dull brick red, or avellaneous (pinkish gray); spores typically with a germ pore visible to some extent under an oil immersion lens and in many species causing the spore apex to be truncated; spore wall at least slightly thickened; pileus typically thin and fragile, the cuticle composed of inflated short cells or pedicellate cells in a palisade or consisting of a mixture of both; veil development various: from none at all to an outer and inner veil of significant proportions; clamp connections usually present; sporulating basidia often projecting beyond the basidioles; basidioles with a tendency to inflate in some species to form brachybasidioles or the latter becoming differentiated by early maturity.

Type. Psathyrella gracilis.

Observations. Although color is not regarded as an important generic character, it is true that by far the majority of the species range from pale clay color to dark liver brown in the moist state, and fade to pale tan, honey brown or nearly white. As is found in Cortinarius, the size of the basidiocarps varies between species from minute to those having pilei 15 cm wide, but most are 2–7 cm wide and with the stipe 1–6 mm thick. The basidiocarps are very short-lived, lasting one to a few days ordinarily or slightly longer for large basidiocarps. For most species there is one major period of spore production.

Key to the Subgenera of Psathyrella

1. Spores ornamented (observe under low-power oil immersion of NA 0.95 or 1.25); veil absent; brown basidiole-like bodies imbedded in the hymenium (see 66.
P. neotropica also).
    Panaeolina.
2. Not as above.
3. Some of the pleurocystidia in fascicles of 2–4 and/or spores ornamented; lamellar surfaces more or less mottled at maturity.
    Lacrymoria.
4. Not as above.
5. Parasitic on species of Coprinus.
    Mycophila.
7. Pileus innately fibrillose to squamulose and the fibrils colored; spores often angular to subangular in face view (but see 81. P. subagraria also).
    Psathyroides.
4. Pileus glabrous or with superficial fibrils that are white, grayish or yellowish but are soon evanescent.  
5. Veil granulose (from disarticulation of cells of the veil hyphae).  
6. Stipe typically furnished with a membranous to floccose annulus. 

6. Annulus typically lacking. 
7. Pleurocystidia absent and pileus margin at first appendiculate from adhering patches of the inner veil or a combination of both veils (but see subsect. Flacculosae of subg. Pannucia also). 
8. Pleurocystidia with wall in neck or ventricose part 0.5 μ thick or more, or the apex of the cystidium (especially cheilocystidia) with crystalline or coarsely granulose incrusting material on at least some of them (as revived in KOH).  

8. Pleurocystidia (if present) with walls up to 0.5 μ thick at times but apex smooth or with only slight finely granular incrustations or coagulated material (as revived in KOH). 

9. Cheilocystidia lecythiform (Fig. 862, 863); veil absent. 
10. Veil thin to rudimentary or absent (check button stages). 

Psathyrella subg. Panaeolina (Maire) A. H. Smith, comb. and stat. nov. 


In a broad concept of Psathyrella, P. foenisecii, in my estimation, is better placed here than anywhere else. It has already been noted that not all species of Lacrymaria have ornamented spores, and that P. neotropica which also has ornamented spores, is not closely related to Lacrymaria. Furthermore, species of the latter subgenus have gills mottled much as in Panaceola, so this feature cannot be considered as restricted to the latter. The spores in Psathyrella have been found to be rather diverse in their reactions to chemicals: they may be hyaline or nearly so in KOH or reddish to cocoa-color, or chocolate-black to black, and in at least one species become strongly violet on standing in the medium, reminding one of the color change when spores of most species are mounted in sulphuric acid. In Melzer's they vary from pale yellowish tan to dark bay-brown. To me the indication for the genus is that the spore pigments are quite diverse and vary from stable to unstable, and this certainly vitiates using a single chemical change in a single species such as the sulphuric acid reaction, as a generic character for a genus of two species. I find the disposition of the species made by Quélet (1886), and Bertrand (1901) much more logical and is the one I have adopted here. All three of us have used different generic names to distinguish the same concept.

The relationships of this subgenus appear to me to be with species of sub-section Psathyrella.

Type. Psathyrella foenisecii.

Key to Species of Subgenus Panaeolina

1. Stipe 1-3 mm thick; odor and taste typically not distinctive. 
1. P. foenisecii. 
2. Stipe 3-6 mm thick; odor and taste typically noticeable (odor strong, taste unpleasant). 
2. P. castaneifolia.
1. **Psathyrella foenisecii** (Fries) A. H. Smith, comb. nov.


*Psilocybe foenisecii* (Fr.) Quélet, Champ. Jura et Vosges. 147. 1872.

*Drosophila foenisecii* (Fr.) Quélet, Enchir. Fung. 117. 1886.

*Coprinarius foenisecii* (Fr.) Schroet. in Cohn, Krypt. Fl. Schles. 555. 1886.


Illustr. Pl. 1; Text Figs. 865–867.

Pileus 1–3 (4) cm broad, obtusely conic to convex, becoming broadly umbonate to plane, glabrous, moist, hygrophanous, “cinnamon-brown” to “warm sepia” to near “benzo brown” or dingy grayish vinaceous brown, margin at times faintly striate when moist, when faded “avellaneous” to dingy buff to pallid and typically atomate, at times the cuticle variously disrupted in age from weathering; no veil present. Context thin, fragile, watery brown fading to avellaneous or finally pallid, odor fungoid, taste acidulous.

Lamellae rounded adnate, soon seceding, moderately close to subdistant, broad and ventricose, chocolate brown to very dull vinaceous brown, in age somewhat spotted at times from the patches of maturing spores; edges even and whitish.

Stipe 4–8 cm long, 1.5–3.5 mm thick, equal, fragile, pallid to brownish gray paler above, tubular, base dingy brownish and scantily pubescent, faintly appressed fibrillo-ventricose-striate up to the pruinose apical region, twisted-striate at times; no veil evident.

Spores dark vinaceous brown (“bone brown”) in deposits, 12–15 × 6.5–9 μ, ornamented with irregular low warts or areolate patches of outer wall material, apex truncate from an apical pore, apex in some tending to appear snout-like, shape in face view various degrees of ovate, in profile somewhat to obscurely inequilateral, color in KOH dingy cocoa-color, in Melzer’s about the same or finally a duller rusty brown, wall about 0.5 μ thick.

Basidia 4-spored, clavate, 24–30 × 8–11 μ, projecting slightly when sporulating. Pleurocystidia none, but possibly scattered dark-walled (in part) pseudocystidia buried in the hymenium. Cheilocystidia 28–42 × 7–13 μ, fusoid-ventricose with obtuse apex, thin-walled, smooth, hyaline, content not distinctive.

Gill trama and pileus trama with incrusted hyphae, the incrustations fuscous brown in KOH (somewhat as in *P. barlæ*), those in the subcuticular zone darker colored than the remainder. Cuticle of pileus a cellular layer 2–4 cells deep, pyriform as well as globose to angular-inflated cells present in it, their walls thin and smooth, hyaline to weakly ochraceous in KOH. Clamp connections present.

Type locality. Europe.

Habit and habitat. Scattered to gregarious on lawns, fields and grassy places generally, May to August, common.

Distribution. Common in southern Canada and the United States, and also known from Mexico.

Observations. In my experience most mycologists with a general knowledge of *Psathyrella* recognize this species as belonging in the genus, and this is also true of a number of specialists in the past, as already pointed out. Hence my including the species here is hardly an innovation. The fungus has all the essential features
of the genus: the cellular cuticle of the pileus, more or less cocoa-colored spores in KOH, dark purple-brown spore deposit, and typical cheilocystidia.


2. Psathyrella castaneifolia (Murrill) A. H. Smith, comb. nov.

_Psilocybe castaneifolia_ Murrill, Mycologia, 15: 17. 1923.
_Panaeolus castaneifollus_ (Murrill) Smith, Mycologia 40: 685. 1948.
_Panaeolus castaneifolius_ (Murrill) Ola’h, Le Genre _Panaeolus_, 149. 1969.

Pileus 2–4 cm broad, convex, not fully expanding, in age often broadly conic, surface strongly hygrophanous, often rugose, “warm sepia” (dark cinnamon) to dark fuligineous when moist, pale ochraceous (“pale pinkish buff”) and somewhat zoned when dry, margin even and incurved, translucent striate when moist. Context rather thick and firm, fuligineous moist, pallid faded, with a rather strong odor and unpleasant taste (or, in Smith’s colls. odor and taste mild).

Lamellae adnate to adnexed, broad (6–7 mm), triangular or ventricose, not crowded, pallid to dark fuscous or castaneous (“Verona brown”), edges whitish.

Stipe 4–6(–9) cm long, 4–6 mm thick, slightly tapered downward, pruinose, cartilaginous, fistulose, pale ochraceous or ± concolorous with the pileus.

Spores 12–16 × 7–8.5 μ, roughened as in _P. foenisecii_, somewhat truncate from a hyaline apical pore; ± elliptic in face view, in profile somewhat inequilateral; color in KOH tawny to russet.

Basidia 4-spored, 24–28 × 10–12 μ, hyaline in KOH. Pleurocystidia present as dark cinnamon-brown basidiole-like bodies 18–24 × 6–10 μ imbedded in the hymenium. Cheilocystidia 24–38 × 7–10 μ, abundant, fusoid-ventricose to subcylindric, neck often flexuous and apex typically obtuse, thin-walled, hyaline and smooth.

Gill trama parallel to subparallel, dull cinnamon brown when first revived in KOH but fading. Pileus cuticle of clavate pear-shaped and vesiculose cells intermingled and arranged into a somewhat regular palisade. Trama proper of floccose interwoven hyphae pallid to brownish revived in KOH. Clamps present.

Habit, habitat and distribution. Gregarious along roadsides and in grassy fields, New York and Washington, and in Quebec in Canada, summer and fall, rare.

Observations. Ola’h (1969) was in error in supposing that a Latin description was necessary for a species published in 1923. This led him into a series of nomenclatural errors: for instance, a neotype for Murrill’s species is not valid when there is a holotype in existence.

This species, like its sister species _P. foenisecii_, is intermediate between _Panaeolus_ and _Psathyrella_, and in the broad concept of the latter in this work it has been placed in accordance with its obvious relationship to _P. foenisecii_.

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Psathyrella subg. Lacrymaria (Patouillard) Smith & Singer in Singer, Lilloa 22: 466. 1951. (as Lacrimaria.)

Lacrymaria Patouillard, Hymén. Europ. 122. 1887.

The principle feature of the subgenus concerns the spore ornamentation: the spores are verrucose, and there is a tendency for the ornamentation to darken more in KOH than does the wall itself. The clustered pleurocystidia, at least in part, however, are an equally valid feature as is the aspect of the basidiocarps. In P. echiniceps we find an exception to the spore ornamentation: in mounts in KOH the spore appears to be very obscurely ornamented in some collections, but in Melzer’s no ornamentation is evident. In P. neotropica the spores are very finely punctate-ornamented, but this type is not at all like that characteristic for Lacrymaria and the other characters of that species do not indicate a relationship to the subgenus.

Type. Psathyrella velutina.

In Europe, P. velutina, P. pyrotricha and P. glareosa are not infrequently reported. In contrast, we have six species in North America. They may be grouped on the basis of their relationships into stirpes in the following manner:

Stirps Velutina: Spores verrucose and the apex of the spore with a bubble-like “pore”, or apex drawn out into a distinct snout.

Stirps Rigidipes: Spores more or less inequilateral in profile but the apex not snout-like and ornamentation of the wall less distinct than in the above.

Stirps Echiniceps: Spores smooth or questionably ornamented, but pleurocystidia in clusters and pigmentation of the basidiocarp much as in P. velutina.

Key to the Species of Subgenus Lacrymaria

1. Pileus with conspicuous dark brown to blackish hairs or squamules on the surface. 2
2. Spores 10-13 × 8-10 μ, ornamentation coarse and darker in Melzer’s than the wall proper. 3
3. P. sepulchralis.

1. Pileus glabrous or if hairs or fibrils present, not strikingly different in color than the ground color of the pileus (may be paler). 3
2. Spores 7-9 × 4-5 μ (or 8-10 × 5-6.5 μ), ornamentation weak to apparently absent. 4
3. P. subcinnamomea.
4. P. rugocephala.

3. Spores 9-12 × 5.5-7 μ, distintively warty under a low power oil immersion lens. 4
4. Pileus glabrous, rugulose, 6-10 cm broad; spores finely but distinctly verrucose. 6
5. Not with above combination of features (pileus fibrillose at least to some degree). 5
6. P. rigocephala.

5. Spores with a distinct broad suprahilar depression as seen in a profile view (see Fig. 9). 7
6. Taste somewhat disagreeable; hyphae composing the fibrils of the pileus distinctly incrusted with zones or spirals of colored materials as seen revived in KOH. 5a
7. P. velutina var. boughtoni.
8. P. subcinnamomea.

5. Spores lacking such a broad suprahilar depression (the latter when present smaller and more abrupt than in above choice, see Fig. 13).
6. Taste mild, fibrils on pileus punctate-roughened to smooth as seen under the microscope in KOH. 5b
7. P. velutina var. velutina.


Illustr. 1.c. fig. 1. Text Figs. 1-4.

Pileus 7–9 cm broad, broadly campanulate to broadly conic, margin appen­diculate from the broken veil, surface fibrillose-squamulose to appressed fibrillose with the fibrils often in fascicles, fibrils dark brown (reminding one of those of *P. echiniceps*), ground color orange-brown, deeper colored over the disc. Context whitish, odor farinaceous to lacking.

Lamellae sinuate, close, narrow to only moderately broad, grayish becoming dark purple-brown, finally blackish-mottled, edges pallid-fimbriate.

Stipe 14–26 cm long, 5–10 mm wide, slightly enlarged downward, squamulose or variously ornamented with dark fibrils similar to those on pileus, ground color a little paler than that of pileus and in the cortex brownish, apical region whitish, smooth, silky fibrillose from fine appressed fibrils.

Spores black in deposit, 10–12.5(-13.5) × 8.5–10.5 μ, coarsely verrucose and with a hyaline bubble-like apical “pore,” in face view broadly elliptic (excluding the apical pore), in profile broadly inequilateral, color in KOH blackish brown, in Melzer's blackish brown due to the dark colored ornamentation, dark bay red for the ground color, wall about 0.3 μ thick.

Basidia 22-38 × 7–9 μ, hyaline to pale fuscous in KOH, 4-spored, projecting to different lengths when sporulating. Pleurocystidia in scattered fascicles, 40–60 × 9–15 μ, utriform to broadly fusoid-ventricose with obtuse apex, content hyaline to pale fuscous in KOH, walls thin and smooth. Cheilocystidia abundant, 38–70 × 8–11 μ, hyaline to pale fuscous, elongate-clavate to slightly ventricose and with the apical region oval to subcapitate or abruptly pointed. Caulocystidia 40–100 μ long, clavate, fusoid-ventricose with obtuse apex, or subfilamentous-capitate, smooth, thin-walled, hyaline, content not distinctive.

Gill trama subparallel, the hyphae with pale fuscous-brown walls as revived in KOH; subhymenium more darkly colored than the central area because of the narrower cells. Pileus with a cuticle of inflated cells 3–4 cells deep and their walls dull ochraceous in KOH, smooth and 0.5 μ thick; fascicles of dark fibrils composed of hyphae 8–12 μ wide with ochraceous thickened (0.5–1 μ) walls in KOH and wall outline uneven from adhering material. Hyphae of the context as revived in KOH hyaline to brownish. Clamp connections regularly present. No distinctive iodine reactions on any cell or tissue, but in KOH dark brown basidiole-like bodies are numerous in the hymenium.

Type locality. Near San Agustín Loxicha, Oaxaca, Mexico.

Habit and habitat. Solitary on soil under herbaceous plants.

Distribution. Mexico.

Observations. This species is distinct because of the coarse spore ornamenta­tion which becomes darker brown in Melzer's, and the dark colored hairs on the pileus. It is obvious that ecologically the species occupies a niche similar to that of *P. velutina*. The ornamentation of the pileus reminds one of *P. echiniceps*.

4. **Psathyrella echiniceps** (Atkinson) A. H. Smith, comb. nov.


Illustr. Pl. 2; Text Figs. 5–7.

Pileus 3–10 cm broad, obtuse to convex, becoming subumbonate to nearly plane, in age the margin usually spreading but at times recurved slightly, surface
appearing moist but opaque beneath a conspicuous coating of innate seal-brown or “bister” (dark brown) fibrils or somewhat recurved fibrillose scales over the disc, ground color dull “ochraceous-tawny” (pale dull tawny) on the disc, and “cinnamon-buff” (pale alutaceous) along the margin, the fibrils over the marginal area long and appressed giving it a hairy appearance, surface somewhat uneven to rugulose. Context thick but brittle, “pinkish buff” (pale buff) or darker, becoming pallid but not distinctly hygrophanous, odor and taste slightly disagreeable (like that of most species of *Clitocybe*), where touched with FeSO₄ olivaceous; with KOH instantly “Mars brown” (dark rusty brown).

Lamellae bluntly adnate, seceding readily, broad (about 1 cm), broadest near the stipe and narrowed to the pilear margin, close, 50–56 reach the stipe, 3–4 tiers of lamellulae, pallid brownish at first, at maturity deep reddish to purplish brown (“Carob brown” to “chestnut-brown”), the edges conspicuously white-fimbriate.

Stipe 8–12 cm long, 10–15 mm thick at apex, equal or slightly enlarged downward, becoming hollow, rather fleshy but brittle, pallid to cinnamon-buff within, surface “pinkish buff” (pale alutaceous) and the lower two-thirds covered with coarse seal-brown fibrils from the veil, upper portion pruinose, base surrounded by white cottony mycelium.

Spores 7–9×4.5–5 μ, smooth to very obscurely warty in some, apical pore well developed and often terminating a rudimentary “snout,” shape in face view sub-elliptic to ovate, in profile somewhat to distinctly inequilateral, color in KOH soon a medium dark-chocolate color, in Melzer's bay-brown to bay-red, wall about 0.3 μ thick.

Basidia 4-spored, 20–28×7–10 μ, clavate, hyaline in KOH or some of them pale brownish at the base. Pleurocystidia 40–70×9–18 μ, scattered to abundant and often fasciculate, subcylindric with rounded apex to utriform, wall thin and smooth, hyaline, content not distinctive in either KOH or Melzer's. Cheilocystidia abundant, 60–80×9–12 μ, narrowly clavate but soon cylindric with wavy outlines and rounded apex, walls thin, hyaline and smooth in KOH, content in KOH or Melzer's not distinctive. Caulocystidia resembling the cheilocystidia but more versiform: filamentous, utriform or obtusely and narrowly fusoid-ventricose, present only near the apex of the stipe.

Gill trama regular, the hyphae parallel and sordid pale yellowish to pale dingy cinnamon-brown in KOH, the subhymenium darker. Pileus with a cuticle of inflated cells several deep, their walls dingy brownish ochraceous in KOH, and beneath this hyphae with smooth dingy ochraceous-cinnamon walls (as seen in groups). Context hyphae dingy ochraceous in KOH from colored walls, smooth. Clamp connections present.

Type locality. Ithaca, New York.

Habit and habitat. In groups of 2–6 basidiocarps near or beside stumps or old roots of hardwoods, fall, rather frequent locally during wet periods in late summer.


Observations. Spore size is a problem in this species. The type and the author's Michigan collections have spores as described above, but Potter, near Ithaca, Michigan, found a variant with spores 8–10×5–6 μ. A single basidiocarp from the headquarters area of the Priest River Experimental Forest near Priest Lake, Idaho has spores 6–7.5×3.5–4.5 μ. This situation requires further study. The distinctive features of the species are the coarse dark brown fibrils of the
pileus, medium to large basidiocarps, smooth to very obscurely ornamented spores and the typical cystidia of the section.


*Agaricus lacrymabundus* † *velutinus* Fries, Syst. Mycol. 1: 288. 1821.


*Hypholoma velutinum* (Fr.) Kummer, Führ. Pilzk. 72. 1871.

*Lacrymaria velutina* (Fr.) Patouillard, Hymén. Europ. 123. 1887.

**var. velutina**

*Illustr. Pls. 3, 4, 5; Text Figs. 12–14.*

Pileus (3–)5–12 cm broad, obtuse to convex at first, soon broadly convex to nearly plane, occasionally obtusely umbo nate, at first innately and rather densely fibrillose from grayish or slightly darker fibrils, becoming appressed fibrillose-scyal, not striate, ground color yellowish to dull tawny ("ochraceous-buff" to "clay color"), sometimes nearly umber on the disc in age, at times radiately rugulose, margin at first appendiculate with cottony patches or fringed with fibrils of veil remnants. Context thick in the disc, watery brown to sordid yellowish, odor earthy, taste fungoid (neither very distinctive), with FeSO₄ slowly olive-gray; with KOH dark rusty brown.

Lamellae adnate but readily seceding, sinuate, broad near the stipe, narrowed toward the pileus margin but not reaching it, crowded, at first pale yellowish then rusty brown and finally shaded umber and mottled from the spores, edges whitish and beaded with drops of moisture.

Stipe (2–)5–10 (–15) cm long, variable in length, 4–12 (–20) mm thick, equal, soon hollow, fibrillose to floccose-scyal and tawny up to the annulus or annular zone, whitish above, slowly becoming dingy tan to tawny from the base upward, veil soft and fibrillose-cottony, dingy buff to pallid, often copious.

Spore deposit blackish brown. Spores from a deposit 9–12 × 6−7 μ, from tissue of revived material 8–11 × 5.5–6.5 μ, ornamented with minute warts within a thin hyaline sheath or envelope, apex snout-like with a pore at apex, in face view ovate to elliptic and with an apical snout, in profile more or less inequilateral, color in KOH dark bister slowly becoming more chocolate color, in Melzer’s dark bay, inner wall about 0.6 μ thick.

Basidia hyaline in KOH, 24–32 × 8–13 μ, somewhat clavate, hyaline in KOH. Pleurocystidia (37–)48–64 × 9–14 μ, narrowly clavate, utriform or (rarely) obtusely fusoid-ventricose, hyaline in KOH in young caps but in old ones the lower part often with dull brownish walls, scattered in fascicles, content not distinctive in either KOH or in Melzer’s. Cheilocystidia 40–80 (–90) × 8–12 μ, flexuous, subcapitate to subfilamentous, hyaline, smooth, content hyaline, abundant (almost to the exclusion of other types of cells). Caulocystidia 50–110 × 7–13 μ, smooth, thin-walled, hyaline in KOH, flexuous-filamentous to narrowly ventricose in proximal third or narrowly clavate, apex rounded to obtuse, mostly occurring in fascicles. Cortical hyphae of the stipe hyaline in KOH. Clamps present.
Cuticle of pileus of vesiculose cells several deep and from them and from between them arise filaments 9–13 μ wide with walls both roughened and tawny in KOH, walls of cuticle cells somewhat roughened and paler in color in KOH; subcuticle of hyphae sparsely roughened and pale buff in KOH; in Melzer's the roughness on all hyphae very inconspicuous. Clamps regularly present.

Type locality. France.

Habit and habitat. Scattered, gregarious to cespitose on rich moist humus or soil, on compost heaps, very old sawdust piles, or areas rich in organic material. It is fairly common during wet weather.


Observations. This is an edible species, in fact Kühner and Romagnesi (1953) give it two stars, indicating that it is better than average. The spores of this species are usually figured as verrucose with the warts forming an irregular outline as the spores are viewed in optical section. In most of the American collections a hyaline envelope covers the spore and gives a smooth outline in optical section—especially if the envelope is pigmented slightly. This envelope does not always revive well when ammonia is used as a mounting medium and under these circumstances the spore indeed does appear verrucose in the usual meaning of the term.

The American material I have seen apparently has a heavier veil and often larger basidiocarps than is typical for the species in Europe. This point deserves further critical study.


5a. Psathyrella velutina var. boughtoni (Peck) A. H. Smith, comb. nov.


Illustr. 1. c. pl. 2, figs. 1–7.

Pileus 2.5–7 cm broad, broadly convex or subhemispheric, rarely with an umbo, glabrous or slightly fibrillose, often cracked concentrically or areolately, pale reddish brown or grayish brown. Context whitish, taste disagreeable.

Lamellae moderately close, adnate, purplish brown to seal brown or blackish, obscurely spotted, whitish on the edges.

Stipe 2.5–6 cm long, 4–10 mm thick, equal, floccosely fibrillose, striate above, hollow, white or whitish.

Spores 8–11 × 5–7 μ, elliptic in face view excluding the snout-like apex, in profile broadly somewhat inequilateral, apex truncate, color in KOH soon dark chocolate-brown, in Melzer's reddish (bay-red), surface minutely verrucose as in var. velutina, wall about 0.5 μ thick.

Basidia 23–28 × 9–10 μ, 4-spored, hyaline in KOH, clavate. Pleurocystidia
present but rare, occurring in groups, 48–53 × 10–12 μ, ventricose above a slight pedicel, apex capitate to subcapitate and terminating a scarcely narrowed neck (i.e. utriform). Cheilocystidia very abundant, 38–60 (–80) × 9–11 μ, narrowed at base and slightly enlarged toward the capitale to subcapitate apex, thin-walled hyaline in KOH, smooth. Caulocystidia not studied.

Gill trama parallel, of broad equal and greatly elongated cells, sordid yellowish brown in KOH, subhyphalium darker. Pileus trama with a cuticle of hyaline vesiculose to clavate or pedicellate cells, several cells deep, numerous filamentose hyphae clamped at the septa arising from among the cells of the cuticle, the walls with brown incrusting material in wide bands or spirals (as revived in KOH). Context of interwoven hyphae pale yellowish brown in KOH. Clamp connections present.

Type locality. Menands, Albany County, New York.

Habit and habitat. On the ground solitary to cespitose in pastures, open woods, etc. Not common.


Observations. The disagreeable taste appears to be the distinguishing feature of this variety, and may possibly make the species unacceptable as an esculent. Other features such as a white stipe, non-hygrophanous pileus and white flesh as described need further verification. Pleurocystidia are present on the type specimen. In view of the overall similarities with P. velutina var. velutina it seems best to reduce Peck's species to the rank of variety. However, the problem is worth more study particularly if one can again collect material answering the original description. P. pyrotricha has similar incrustations on the hairs of the pileus, but grows on beech and has much brighter colors. It is not known from North America as yet.

Material examined. Michigan: Smith 64388. New York: Peck, Menands (Type); Marsden 701.


Illustr. 1. c. pl. 8, fig. 29.

Pileus 6–10 cm broad, convex-expanded or plane, the margin often turned up in age, at times broadly umbonate, surface strongly radiately rugulose, glabrous, moist, watery brown to tawny, finally alutaceous. Context thick on the disc, thin on the margin, tinged yellowish, odor and taste not distinctive.

Lamellae adnate, seceding, rounded next to the stipe or sinuate, moderately close, broad (5–7 mm), pallid brownish becoming purplish black and mottled from the maturing spores, edges whitish and fimbriate.

Stipe 8–12 cm long, 6–10 mm thick, equal, subbulbous, even, hollow, lower portion pale brownish, paler and glabrous above, subannulate from veil remnants and these usually blackish from an accumulation of spores, in age glabrescent or remaining appressed fibrillose.

Spores 9–11 × 6–7 (–8) μ, densely but rather finely verrucose, apex furnished with an abrupt protruding lens-shaped pore, shape in face view broadly suboval (pointed at apiculate end) and with the protruding lens-shaped apical cap, in profile somewhat inequilateral, color in KOH dark chocolate-color, in Melzer's dull bay-red, wall about 0.6 μ thick.

Basidia 24–28 × 9–10 μ, 4-spored, clavate, hyaline in KOH. Pleurocystidia scattered to abundant, thin-walled, hyaline in KOH, 45–63 × 9–12 μ, slightly
ventricose above a scarcely distinct pedicel, with a thick neck and broadly rounded subcapitate apex, or subcylindric. Cheilocystidia abundant, elongated and with clavate to subcapitate apex, smooth, hyaline, 50–70×10–13 μ. Caulocystidia not studied.

Gill trama hyaline in KOH or slightly sordid yellowish in the subhymenium, hyphae parallel, the cells long and broad (about 80×15 μ). Pileus with the cuticle composed of vesiculose cells several cells deep and having pale tawny walls when revived in KOH, a few filamentous hyphae can be found projecting from between the cells and having a faintly yellowish (in KOH) incrusting pigment and clamp connections. Context of floccose interwoven hyphae which are pale tawny when revived in KOH.

Type locality. Ithaca, New York.

Habit and habitat. Scattered to gregarious on humus in the woods often around stumps.

Distribution. Maryland, Michigan, New York.

Observations. In this species it is the hyaline pore-apparatus which projects strongly to give the spore the characteristic appearance for the group. In *P. velutina* there is a short tube of colored wall material with the pore at the apex. In the field this species is readily distinguished by its glabrous rugulose pileus and large size. The pleurocystidia are found both in fascicles and occurring singly.


*Drosophilida rigidipes* (Peck) Murrill, Mycologia 14: 70. 1922.

Illust. Peck. op. cit. pl. 3, figs. 1–6. Pl. 6; Text Figs. 8–11.

Pileus 2.5–5 cm broad, convex to broadly convex, dry, fibrillose squamulose, tawny brown, often reddish at the center. Context whitish at first, taste mild. Lamellae close, narrow, slightly sinuate, adnexed, brownish red, becoming dark purplish brown or black.

Stipe 5–10 cm long, 4–6 mm thick, slender, rigid, equal, hollow, fibrillose-squamulose, colored like or a little paler than the pileus.

Spores 9–12×5–5.7 μ, weakly to distinctly ornamented with small warts to appearing almost smooth (under low-power oil immersion), apex truncate from a broad pore but apex typically not snout-like (Fig. 9), shape in face view elliptic-truncate to ovate-truncate, typically pointed at basal end, in profile somewhat elongate-inequilateral due to the broad suprahilar depression, color in KOH dark bister becoming dark chocolate-color, in Melzer’s dull bay-red, wall about 0.2 μ thick.

Basidia 4-spored, 20–24×8–10 μ, hyaline to (in age) weakly brownish at base in KOH. Pleurocystidia 42–56×9–14 μ, scattered or in fascicles, often rare, cylindric but often flexuous, subclavate, to subcapitate or abruptly tapered to a point at apex, walls thin, smooth and hyaline, content not distinctive in KOH or Melzer’s. Cheilocystidia 50–64×9–12 μ, filamentous to subcapitate, hyaline, thin-walled, smooth. Caulocystidia versiform (Fig. 10), thin-walled, walls yellowish to hyaline in KOH, smooth, content not distinctive.

Gill trama of parallel hyphae, the cells considerably enlarged, unusually dark sordid yellowish-brown. Pileus with a cuticle of vesiculose cells several deep, their walls smooth, yellowish in KOH and thin, content not distinctive; fila-
mentous hyphae project from this layer to form the fibrils of the pileus surface, these are clamped and their walls smooth to minutely rough and hyaline to ochraceous in KOH. Context of sordid yellowish brown hyphae (in KOH), or these paler toward the subhymenium.

Type locality. North River, Warren County, New York.

Habit and habitat. Gregarious in damp places under herbs or in grassy places or along gravel roads, often occurring in large numbers.


Observations. This species is very distinct from *P. velutina* in the features of the spores: These are more inequilateral in profile, the ornamentation is less distinct, and the apex is typically rather broadly truncate.


8. *Psathyrella subcinnamomea* A. H. Smith, sp. nov.

Pileus 2–4 (–7.5) cm latus, 2–2.5 cm altus, obtuse conicus demum convexus, siccus, fibrillosus, cinnamomeus vel subcinnamomeus; lamellae confluentae, latae pallide brunneae demum testaceae; stipes (4–)5–7 cm longus, (4–)5–8 (–10) mm crassus, subcinnamomeus, fibrillosus; sporae 7–10×4–5 (–6) μ, subleves. Typus. Smith 16957 (MICH).

Illust. Pl. 7; Text Figs. 15–17.

Pileus 2–4 (–7.5) cm broad, 2–2.5 cm high, obtusely conic to nearly convex when young, becoming broadly umboconvex to nearly plane in age, surface dry and coarsely fibrillose from the veil fibrils, color “Verona brown” on the disc and “Sayal brown” over the marginal area (dark cinnamon on disc, more or less pale tawny toward the margin), sometimes “tawny” or “ochraceous-tawny” over all; cortina “pinkish buff” (pale buff). Context about 3.5 mm thick near the stipe, tapered evenly to the margin, watery “Sayal brown” when moist, buff when faded, fragile, taste none, odor slightly acidulous or lacking.

Lamellae only moderately close (23–37 reach the stipe), 2–3 tiers of lamellulae, moderately broad (about 4 mm at the stipe), tapered to the pileus margin, ascending adnate and readily seceding, palid brownish at first, dark testaceous at maturity, edges white fimbriate.

Stipe (4–)5–7 cm long, (4–)5–8 (–10) mm thick, equal above a very slightly enlarged base, tubular to hollow, sordid watery brown within, surface covered by more or less concentric zones of dull cinnamon to tawny appressed fibrillose veil remnants, cortina pale buff and leaving an evanescent zone where it breaks, apex silky to pruinose.

Spores 7–10×4–5 (–6) μ, mostly very slightly ornamented but some appearing smooth, plage smooth, apex truncate and somewhat snout-like in many, shape in face view elliptic-truncate to somewhat ovate-truncate, in profile somewhat inequilateral-truncate, plage area flattened, color in KOH dark rusty brown soon becoming dark chocolate-color, in Melzer’s dull bay-red, wall about 0.3 μ thick.
Basidia 4-spored, 24–30×9–11 μ, clavate with the pedicel narrow, hyaline in KOH; scattered basidioles containing a homogeneous pale tawny pigment as revived in KOH. Pleurocystidia 40–80×9–17 μ, scattered to abundant, not appreciably clustered, utriform to subcylindric, walls thin, smooth and hyaline, content not distinctive in either KOH or Melzer’s. Cheilocystidia causing the edge to be sterile they are so numerous, 50–80×10–14 μ, filamentous-subcapitate to narrowly utriform, smooth, hyaline, thin-walled. Caulocystidia scattered, clavate to elongate-ventricose, 40–80×9–16 μ, hyaline, thin-walled content not distinctive.

Gill trama regular, pale ochraceous-tawny as revived in KOH from color in the smooth walls. Pileus with a cuticle 3–4 cells deep, the cells vesiculose and with dull ochraceous to pale tawny walls in KOH, walls smooth; filaments projecting from this layer 8–12 μ wide and at first with fine incrustations but these largely disappearing in KOH, nearly hyaline on standing; subcuticular region with hyphae having pale fulvous walls in KOH, no incrustations or wall thickenings noted. Context hyphae merely paler than the subcuticular hyphae, lacking any distinctive reaction in Melzer’s. Clamp connections present.

Type locality. Heart O’Hills, Mt. Angeles, near Port Angeles, Washington.

Habit and habitat. Densely gregarious on waste ground, along roads and sometimes in lawns, late spring and again in the fall, common in the Olympic Peninsula of Washington.


Observations. This species differs from P. rigidipes in the cinnamon colored context, smaller spores, and abundant pleurocystidia. P. pyrotricha has spores 10–12×5–7 μ according to Moser and other European authors.


Psathyrella subg. Psathyroides (Lange) A. H. Smith, stat. nov.


In this group the spores are smooth though some may be angular, the pleurocystidia are not clustered, and the pileus is fibrillose to such a degree that the hygrophanous nature of the surface typically is at least somewhat obscured. Typically the fibrils on the pileus are colored and innate, the pigment being located in the wall in some and in others in the cell content. The fibrils arise from among the cells of the cuticle.

In addition to the species keyed in the following treatment, certain others may be sought for here because of their fibrillose pilei. These are 25. P. epimyces, 23. P. insignis, and 139. P. canoceps. The rule to follow in making an identification to subgenus is that if the fibrils are innate, try the key to Psathyroides first.

This group is treated under the name Psathyroides in Kühner & Romagnesi (1953). The type of that subgenus is generally considered to be very close to P. corrugis.

Type. Hypholoma melanthisum (Fr.) Karsten.

There are a number of concepts of this species extant, but all appear to apply clearly to this group.
Key to the Stirpes of Subgenus *Psathyroides*

1. Pileus hispid-squamulose; pleurocystidia with amyloid content (check mature specimens); stipe 1-2 mm thick.  
   stirps *Hispida*.
2. Not with above combination of features.
   2. Cuticular hyphae of pileus (those forming the squamules) lacking a colored content when mounted in KOH.
   3. Hyphae forming squamules over pileus having ochraceous to yellow-brown content when revived in KOH.  
      stirps *Lepidota*.
3. Spores in face view shaped like the flat side of a kernel of corn.  
   stirps *Hirtosquamulosa*.
3. Spores not truncate at the base in face view as in above choice.  
   stirps *Lacrýmabunda*.

Stirps *Hispida*

This stirps is limited to *Psathyrella* species with hispid-squamulose pilei and with at least some pleurocystidia with amyloid content. Only the type species is known, but it is not yet established that it occurs in North America.


Illustr. 1 c. fig. 2.

Pileus about 15 mm broad, slightly fleshy, hemispheric-campanulate then convex-expanded, margin straight then spreading, extending beyond the gills, scarcely hygrophanous, dark grayish brown, covered with numerous fascicles of blackish fibrils which on the disc may be more or less upright, toward the margin they are more appressed.

Lamellae crowded to close, broad (about 2.5 mm), ventricose, at first sinuate-adnate, then from the spreading of the pileus broadly notched and with a decurrent tooth, about concolorous with the pileus, edge whitish, finely denticulate.

Stipe 2–3 cm long, 1–2 mm thick, equal, flexuous, shiny white or toward the base brownish, pruinose above, covered to near apex with fibrils similar to those on pileus or lower down these arranged into minute scales, narrowly tubular and fairly tough.

Spores 6.5–7×4.5–5 μ, deep purple-brown in deposit, clear brown under the microscope, violaceous in concentrated H₂SO₄, face view subangular and truncate at the base, in profile view showing a plage area that is depressed and an apical hump, germ pore distinct.

Basidia 4-spored, about 30×7 μ. Pleurocystidia rare, ventricose and broadly rounded at apex, often with resinous adhering material, violaceous in Melzer's, not metachromatic in cresyl blue, 30–50×13–20 μ. Cuticle of pileus of vesiculose cells not forming a palisade, filamentous hyphae arising from among them.

Type locality. Belgium.

Habit and habitat. Among mosses on wet ground.

Distribution. Belgium.

Observations. In addition to having amyloid pleurocystidia this species differs from *P. hirtosquamulosa* in having typical pigmentation of the spores for the genus as these are revived in KOH, i.e., some shade of cocoa-color at first. This species is included here because I suspect it occurs in North America but I have no specimens as vouchers. If my suspicions are correct great care should be taken to study carefully all small solitary-occurring basidiocarps having squamulose pilei. These are the ones that are usually “lost” in large collections of species when mushrooms are abundant, or they spoil before one can study them.
Stirps Hirtosquamulosa

This stirps features pale spores in KOH, fibrillose squamulose pilei, and lack of pigmented content in the hyphae of the fibrils when these are mounted in KOH. The color of the squamules noted on fresh material is apparently due to pigment in the cell wall. The type of the subgenus, *P. melanthina* may also belong in this stirps, but I have not studied it critically. As mentioned previously, there is more than one concept of the latter in the literature.


*Hypholoma hirtosquamulosum* (Pk.) Saccardo, Sylloge Fung. 5: 1037. 1887.


Illustr. Pl. 8, fig. a; Text Figs. 18–21.

Pileus 1–3.5 cm broad, obtuse to convex with the margin at first incurved, becoming broadly convex to nearly plane, surface moist and hygrophanous beneath a sparse to copious innate fibrillose covering which becomes broken up into erect to somewhat decumbent fine dark-colored squamules especially around the disc, the fibrils dark brown to blackish brown, surface beneath grayish buff, avellaneous or dark drab (all when moist), fading to pallid, smooth to rugulose. Context pallid to gray, thin and very fragile, odor and taste not distinctive.

Lamellae adnate but soon seceding, broad, close, thin, pallid at first but soon drab and finally dark purplish brown, edges white-fimbriate.

Stipe 2–4 cm long, 1.5–2 mm thick, equal, fragile, ground color white or pallid but this obscured by coarse appressed dark fibrils similar to those occurring on the pileus, apex pruinose; veil submembranous and all traces along the margin soon vanishing, not leaving a distinct ring on the stipe where it breaks.

Spores 6–7(–8) × 4.6–4.5–5.5(–6) μ, smooth, apex rounded (but pore not distinct), shape in face view corn-kernel-shaped, some with a slight medial constriction, some very broadly ovate, typically truncated at the apiculate end, in profile view somewhat bean-shaped to obscurely pistol-like because of a slight bulge at the apiculus, color revived in KOH pale for the genus and a dingy ochraceous-olive after standing for a few minutes, in Melzer's pale reddish cinnamon, wall about 0.3 μ thick.

Basidia 15–18(–22) × 6–8.5 μ, 4-spored, hyaline in KOH, clavate, many with refractive particles in them as revived in KOH, not distinctive in Melzer's. Pleurocystidia 30–45 × 10–18 μ, very broadly utriform and as revived in KOH typically with a cap of incrusting olive to dingy ochraceous amorphous material, walls thin and hyaline, content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia or more saccate–pedicellate. Caulocystidia numerous near apex, 40–80 × 10–25 μ, subvesiculose to elongate-clavate, smooth, thin-walled, content not distinctive, hyaline to weakly yellowish in KOH.

Cuticle of pileus of inflated cells 2–4 deep, the walls thin and smooth and in KOH hyaline to weakly ochraceous; the hairs of the pileus of hyphae 10–25 μ wide, cells with smooth pale brownish (in groups in KOH) walls, no tendency for the cells to disarticulate noted and no pigmented content evident in either KOH or Melzer's. Context hyphae hyaline in KOH and weakly yellowish in Melzer's. Clamp connections present. No amyloid reaction present on any tissue or in any cells.

Type locality. Portville, New York.

Habit and habitat. Solitary to scattered or gregarious on logs and debris of
hardwoods, particularly on ash (Fraxinus), not uncommon early in the summer
in the Great Lakes region, but usually only a few basidiocarps at a time.

Distribution. Throughout the aspen areas of the United States and Canada.

Observations. This species is not closely related to P. lepidota. The color of
the spores in KOH and the lack of pigmentation in the fibrils of the pileus as
revived in KOH or in Melzer’s sharply differentiate it from that group within the
subgenus. It differs from P. hispida in its non-amyloid pleurocystidia and
lignicolous habitat.

Material examined. UNITED STATES. Michigan: Bailey 7–13–51; Imshaug
3656; Kauffman 5–29–12; Mazzer 4046; Potter 4914, 5867, 5943, 6176,
7231, 7558, 7910, 8846, 8874; Sinden and Reese 6–16–48; Smith 6289, 7130, 9541,
9571, 10976 (small spore variant), 21739, 23477, 25784, 25914, 26014, 32374,
32469, 36396, 36441, 42027, 50886, 61433, 63448, 63480, 74318, 77586, 78040, 78078;
6–28–29 and 7–3–29 (paratypes for Hypholoma irregulare); Thiers 2664; Weh­
Washington: Imshaug 1227; Smith 29150, 29700, 29921. Wyoming: Smith
34786. CANADA. Ontario: Smith 26448, 26516, 26561.

Stirps Lepidota

The type species, with elliptic spores in face view, is known to me from North
America by one collection (Smith 62278) on which I did not take notes, so that
identification must remain tentative, but at least the existence of a taxon with
spores as Bresadola illustrated them is verified. The stirps is recognized by the
hyphae of the squamules on the pileus having an ochraceous content when
mounted in KOH, and the spores (except for the type species) being recognizably
truncated at the base as seen in face view.

Key to the Species of Stirps Lepidota

1. Spores 6–8.5 × 4–5 × 5–6.6 µ; pileus white marked with brownish-black scales;
   known from Guadeloupe. 11. P. tigrina.
   1. Not as above.
      2. The filamentose hyphae on the pileus containing both short and long cells
         and these tending to disarticulate; spores 7–9 × 4–4.5 µ; taste of fresh
         context typically bitterish. 12. P. subamara.
      2. Not as above.
      3. Pileus olive-brown where covered by outer veil fibrils; taste slowly bitterish;
         spores 8–10 × 4.5–6.5 µ. 13. P. olivaceogrisea.
      3. Not as above.
      4. Stipe usually annulate; spores 6.5–8.5–(9) × 3.5–4.5 µ. 400. P. battarac.
      4. Stipe not annulate.
      5. Spores 7–9 × 4–4.5 × 4.5–5 µ; stipe 4–10(–14) mm thick (see 15. P. lepidotooides
      5. Spores 6–7.5 µ long or basidiocarps smaller.
      6. Spores 6–7.5 µ long.
      7. Spores 6–7 × 4–5 µ; stipe white; pileus with isabelline-fulvous imbricate scales;
         known from Mexico. 16. P. truncatispora.
      7. Not as above.
      8. Spores elliptic or nearly so in face view (not included in this work).  P. lepidota.
      8. Spores (or many of them) basally truncated in face view.
      9. Spores 6–7.5 × 3.5–4.2 µ; pileus 2–4 cm broad; from Florida. 18. P. weberi.


Illust. Text Fig. 22.

Pileus at first ovoid, white, marked with appressed brownish black scales giving it a streaked appearance, the scales formed by the remains of the universal veil, finally becoming campanulate with the margin recurved, smooth or slightly striatulate, bibulous, finally somewhat deliquescent and entirely brownish purple.

Lamellae linear, white then purplish.

Stipe 3–5 cm long, cylindric, slender, fragile, white; annulus none.

Spores 6–8.5 × 4–5 × 5–6.6 μ, smooth, pore apical and distinct, shape in face view broadly ovate to almost subangular or merely more ventricose on one side than the other, in profile view subelliptic to slightly inequilateral, in KOH dull cocoa-color becoming chocolate-gray.

In the portion of the type studied all tissues revived so poorly that reliable data on them could not be obtained.

Type locality. Basse-Terre, Guadeloupe.

Habit and habitat. Gregarious on decaying sticks.

Distribution. Known only from the type locality.

Observations. This species could be a *Coprinus*, but in view of the features as described above it is included here (type studied).

12. *Psathyrella subamara* A. H. Smith, sp. nov.

Pileus 1–3.5 cm latus, obtuse conicus demum late campanulatus, spadiceo-fibrillosus; sapor subamarus; lamellae confertae, secedentes, pallide brunneae demum subfuscæ; stipes 2–3 (–4) cm longus, 2.5–4 mm crassus, deorsum spadiceo-fibrillosus; sporæ 7–9 × 4–4.5 μ, ad basem truncatae; pleurocystidia 32–44 × 9–14 μ, ad apicerum late rotundata; caulocystidia clavata; hyphae epicuticularum intus fumoso-ochraceae; fibulae adsunt. Typus. Smith 78178 (MICH); legit Roy Watling, prope Roxbury Creek, Chippewa County, Michigan.

Illust. Pl. 9, fig. b; Text. Figs. 23–25

Pileus 1–3.5 cm broad, obtusely conic becoming broadly campanulate, surface when young covered by a mat of veil fibrils colored dark yellow-brown (“Dresden brown”), the layer becoming stretched by expansion of the pileus and breaking into appressed squamules and finally almost glabrous except for the disc, ground color dingy pallid over the margin and near wood-brown over the disc beneath the squamules, margin appendiculate at first from the pallid remnants of the veil. Context pallid fragile, taste bitterish, odor none, with FeSO₄ no color change.

Lamellae pallid brownish, becoming avellaneous then wood brown and developing a vinaceous-fawn (reddish tone), brownish vinaceous as dried, close, very thin, adnate, seceding, edges even.

Stipe 2–3 (–4) cm long, 2.5–4 mm thick, equal tubular, white throughout but lower part with dark yellow-brown patches of veil tissue in part obscuring the ground color, usually not becoming entirely glabrous.

Spores 7–9 × 4–4.5 μ, smooth, with an inconspicuous hyaline apical spot as a pore, shape in face view ovate to wedge-shaped or corn-kernel-shaped (truncate at apiculate end), in profile bean-shaped to obscurely inequilateral, color in KOH soon dark chocolate-brown, in Melzer's reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 16–22 × 7–9 μ, hyaline, clavate. Pleurocystidia abundant, 32–44 × 9–14 μ, utriform or nearly so, smooth, wall hyaline and smooth, content
1972

PSATHYRELLA

not distinctive or merely weakly brownish in KOH, not amyloid. Cheilocystidia similar to pleurocystidia and also as hyaline inflated cells. Caulocystidia found only as scattered clavate to vesiculose cells.

Pileus cuticle a layer of vesiculose cells several deep and with smooth hyaline thin walls, cell content not distinctive in KOH or Melzer's. Trama hyaline in KOH, hyphal walls smooth. Veil hyphae with smoky ochraceous homogeneous content as revived in KOH, the hyphae 6–12 μm wide and both short and long cells present, with a distinct tendency to disarticulate. Clamp connections present. No tissue reacting distinctively when revived in Melzer's.

Type locality. Roxbury Creek, Chippewa County, Michigan.

Habit and habitat. Gregarious on rotten hardwood logs.


Observations. The collection was made by Dr. Roy Watling, Sept. 18, 1969 (Smith 78178). This species should differ from *P. lepidota* in having basally truncated spores and a bitterish unpleasant taste as well as in the tendency for the outer veil hyphae to have short cells and a tendency for the cells to disarticulate. This latter feature might be regarded as a forerunner to the subgenus *Cystopsathyra*.

Material examined. Michigan: Ammirati 3225; Hoseney 1402; Smith 50044, 78178 (Type), 78192.

13. Psathyrella olivaceogrisea A. H. Smith, sp. nov.

Pileus (2–)2.5–4.5 cm latus, subovatus vel convexus, demum late convexus vel obtuse umbonatus, olivaceo-brunneus, fibrillosus vel fibrilloso-squamulosus; sapor tarde subamarus; lamellae pallidae demum griseo-brunneae, ventricosae, latae, subdistantes; stipes 3–5(–6) cm longus, 3–5(–6) mm crassus, deorsum olivaceo-brunneus, fibrillosus vel squamulosus; sporae 8–10×4.5–6.5 μm; ad basem subtruncatae; pleurocystidia 40–50×13–20 μm, ad apicem late rotundata, intus cum globuli; hyphae epicuticularum intus olivaceo-brunneae. Typus. Wells-Kempton 8–15–63 no. 5 (MICH) ; Alaska.

Illust. Text Figs. 26–28.

Pileus (2–)2.5–4.5 cm broad, subovate to convex, the margin connivent at first, becoming broadly convex to nearly plane, sometimes with a low obtuse umbo, moderately dark olive-brown in button, disc remaining olive-brown to olive but the margins paler to gray-brown or (at maturity) pale olive-ochraceous-gray, dry, unpolished, subvirgate to appressed patchy-scaly in buttons, surface fibrils and squamules becoming separated over marginal area as pileus expands, scales more or less evanescent in age and surface then merely fibrillose, or scales more persistent around the disc; margin usually splitting in age. Context translucent-pallid when moist, opaque and white when faded, thin, pliant to somewhat fragile, odor not distinctive, taste becoming slightly bitter slowly.

Lamellae pallid whitish becoming grayish brown and finally dark fuscous-brown, narrow, ventricose and moderately broad at maturity, close becoming subdistant.

Stipe 3–5(–6) cm long, 3–5(–6) mm thick at apex, equal or enlarged downward, olive-brown and fibrillose as in the pileus at first, when elongated dry and silky-shining from scattered appressed longitudinal fibrils, apex often faintly pruinose, lower third of stipe often with patches of olive-brown veil remnants variously distributed; partial veil white and fibrillose and not leaving an annulus when it breaks.
Spore deposit dark purple-brown. Spores 8–10×4.5–6.5 μ, smooth, apical pore present but apex not obviously truncate, shape in face view corn-kernel-shaped to obscurely truncate, in profile view obscurely bean-shaped to obscurely inequilateral, color in KOH dull cocoa-brown as revived, dark sooty brown when fresh, in Melzer's tawny, wall about 0.5 μ thick.

Basidia 4-spored, 15–20×6–9 μ, short-clavate. Pleurocystidia abundant, 40–50×13–20 μ in ventricose part and 9–12 μ near apex, fusoid-ventricose with broadly rounded apex, hyaline in KOH, in Melzer's some having a small hyaline to yellowish globule, smooth in either KOH or Melzer's. Cheilocystidia 22–30×15–25 μ, clavate to saccate, smooth, thin-walled.

Pileus with the outer veil fibrils olive to olive-brown in KOH from dissolved pigment, cuticle of inflated cells 3–4 deep, walls thin, smooth and hyaline, content hyaline in KOH. Hyphae of subcuticular region hyaline in KOH, the walls smooth. Clamp connections present.

Type locality. Alaska.

Habit and habitat. Gregarious to subcespitose on cottonwood logs, July to August.

Distribution. Areas where cottonwood grows in southern Alaska.

Observations. This species is distinct from *P. lepidotoides* in the cocoa-colored spores in KOH which measure up to 6.5 μ wide and which change color only slightly on standing in KOH. From *P. hirtosquamulosa* it differs in having colored epicuticular hyphae as revived in KOH. *P. subamara* has distinctly narrower spores. It is, apparently, close to *Stropharia aculeata* Quél. but lacks an annulus.


Pileus 4–8 cm latus, demum plano-umbonatus, pallide spadiceus vel spadiceus, fibrillosus; sapor indistinctus; lamellae pallidae demum violaceo-fuscae, confertae, adnatae latae; stipes 7–10 cm longus, 9–14 mm crassus, fibrillosus, deorsum squamulosus; sporae 7–9×4.5–5.5×4–4.5 μ, ad basem truncatae; pleurocystidia 34–56×12–18 μ, clavata vel fusoide ventricosa, ad apicerum late rotundata; caulocystidia sparsa; hyphae epicuticularum intus sordide ochraceae; fibulae adsunt. Typus. Smith 67000 (MICH); legit Wildwood, Michigan.

Illustr. Pl. 8, fig. b; Pl. 9, fig. a; Text Figs. 29–30.

Pileus 3–8 cm broad, obtuse when young, expanding to plano-umbonate, surface rather coarsely appressed-fibrillose to fibrillose-scaly from dingy yellow-brown fibrils or patches of them, over the disc the fibrils dark yellow-brown (near “bister”), ground color whitish before becoming dusted from the spores. Context thin, white, taste slightly unpleasant but not lasting, odor not distinctive, with FeSO₄ no reaction.

Lamellae pallid to brownish pallid becoming dark “benzo brown” when mature, moderately broad, adnate, close, edges even.

Stipe (3–)5–10 cm long, 4–10(–14) mm thick, firm and fibrous, white, surface squamulose, sometimes lacerate with white to brownish fibrils, cottony-fibrillose at apex, not discoloring below.

Spore deposit near “benzo brown” (dark violaceous-brown). Spores 7–9×4.5–5.5×4–4.5 μ, smooth, apical pore present but apex not truncate, wall about 0.4 μ thick, shape in face view ovate to wedge-shaped (angular at base as seen in optical section and basal line nearly straight), in profile bean-shaped or with a slight dorsal hump near the apiculus, color in Melzer's reddish tawny, in KOH pale fuscous to dark-chocolate brown.
Basidia small, 4-spored, 18–26×6–7 μ, clavate, hyaline in KOH. Pleurocystidia 34–56×12–18 μ, clavate to utriform, many almost as broad at apex as at ventricose portion, rarely with a small to moderately large protuberance on or near apex, smooth, thin-walled, mostly hyaline in KOH or Melzer’s but some with brownish dissolved content as revived in KOH. Cheilocystidia 10–17 μ broad, clavate to pedicellate. Caulocystidia mostly absent—a few at apex and similar more or less to the pleurocystidia.

Pileus with a cuticle composed of a layer of vesiculose cells 2–4 deep with the cells 15–40 μ broad or more, from this layer extend hyphae scattered or in fascicles and 6–12 (–16) μ wide, the cells tubular to somewhat inflated and having dingy ochraceous content as revived in KOH, the hyphae with walls thin and hyaline, the cells disarticulating at times. Hyphae of the pileus context hyaline, cells greatly inflated, lacking a colored zone (in KOH) beneath the cuticle. Clamp connections present.

Type locality. Wildwood, Emmet County, Michigan.


Observations. This species is close to P. subtruncatispora but is larger, and the spores are more angular in face view.

Material examined. Michigan: Smith 33–1091, 15314, 32395, 43153, 67000 (Type), 67018, 71544, 80822.

15. **Psathyrella lepidotoides** A. H. Smith, sp. nov.

Pileus 1–4 cm latus, demum planus vel ad marginem leviter recurvatus et appendiculatus, subspadiceus vel cinnamomeo-brunneus; sapor mitis; lamellae pallidae demum sordide vinaceo-brunneae; sporae 8–10×4–5 μ, ad basem truncatae; pleurocystidia 38–60×10–15 μ, subapitata vel late rotundata; caulocystidia circa 75×18 μ, clavata; hyphae epicuticularum intus incoloratae; fibulae adsunt. Typus. Smith 73674 (MICH); legit prope Upper Priest River, Idaho.

Illust. Text Figs. 31–35.

Pileus 1–4 cm broad, obtuse when young, expanding to plane or margin finally uplifted, surface with dingy appressed fibrils and squamules which are clay color to duller ochraceous-brown (near “snuff brown”) or over the disc in age the patches “cinnamon-brown,” margin appendiculate at first, becoming violaceodrab as the spores mature. Context very fragile, odor and taste mild, with FeSO₄ no color change.

Lamellae pallid brown becoming near “Natal brown” (dark vinaceous-brown), close, nearly subdistant, adnate-seeding, edges even.

Stipe 3–5 cm long, 2–3.5 mm thick, equal, fragile, white, dotted with colored fibrils from the veil, tawny at base in age.

Spores 8–10×4–5 μ, smooth, apex truncate from a hyaline pore, shape in face view wedge-shaped to corn-kernel-shaped (truncated at base also), in profile obscurely bean-shaped to obscurely inequilateral or some almost elliptic, color in KOH dull rusty brown and slowly darkening to an olive-brown or bister, in Melzer’s ochraceous-tawny to amber brown, wall about 0.3 μ thick.

Basidia 4-spored, 15–20×7.5–9 μ, subellipsoid, hyaline in KOH. Pleurocystidia 38–60×10–15 μ, neck 8–13 μ wide, utriform to capitate; wall smooth, thin, hyaline, content hyaline to weakly ochraceous in KOH, yellowish to faintly grayish (in a few) in Melzer’s. Cheilocystidia similar to pleurocystidia but smaller and some fusoid-ventricose with subacute apex. Caulocystidia clavate, up to 75×18 μ,
hyaline or yellowish walls in KOH. Cuticle of pileus a layer of inflated cells several cells deep, walls thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's. Tramal hyphae hyaline or nearly so in KOH. Veil hyphae when revived in KOH with yellow stringy content. No distinctive reactions seen in any tissue in mounts made in Melzer's. Clamp connections present.

Type locality. Upper Priest Lake, Idaho.

Habit and habitat. Gregarious on a cottonwood log, September, Smith 73674.

Distribution. Known only from Idaho.

Observations. This species is close to *P. subamara* but has a mild taste, and larger spores and pleurocystidia. The color of the spores in KOH is a deep yellow-brown shaded olive. This is a peculiar color change for a *Psathyrella*. In many respects *P. lepidotoides* fits the description of *Drosophila sylvestris* but the original description by Gillet reads more like a species related to *P. maculata* or *P. lacrymabunda* var. *aggregata*. The size is right for the latter, and Gillet mentions yellow at the base of the stipe. The description of the scales reads more like that of *P. maculata*, however. Because I think that *D. sylvestris* in Europe has become a too generalized concept, no American material is identified with it. In *P. propinqua* the spores are typically somewhat compressed.

16. **Psathyrella truncatispora** (Murrill) A. H. Smith, comb. nov.


Illust. Text Figs. 39-40.

Pileus 2.5 cm broad, becoming slightly convex, not quite fully expanding, regular in shape, not umbonate, surface hygrophanous, avellaneous, with pale isabelline fulvous imbricate floccose scales which are distinct but not conspicuous, margin entire, concolorous. Context thin and fragile.

Lamellae plane, adnexed, broad, subdistant, avellaneous to pale chestnut.

Stipe 4 cm long, 3 mm thick, short, equal, smooth, white, fragile, hollow.

Spores 6-7×4-5μ, smooth, apex rounded but a hyaline apical pore present, base more or less truncate as seen in face view, in profile somewhat bean-shaped, purplish brown in water mounts, pale dull brown as revived in KOH.

Basidia 4-spored, 12-15×7-8μ, hyaline in KOH. Pleurocystidia scattered, 32-40×9-14μ, utriform, wall hyaline, smooth and thin, content not distinctive in KOH (not tested in Melzer's). Cheilocystidia similar to pleurocystidia.

Pileus with a cuticle of vesiculose cells about two cells deep, numerous filamentous hyphae arising from the layer and having an intracellular pigment brownish-ochraceous as revived in KOH. Clamp connections present.

Type locality. Xuchiles, Mexico.

Habit and habitat. Solitary to gregarious on rotten wood or humus.

Distribution. Mexico.

Observations. This species is most similar to *P. weberi*, but should differ in having a white stipe and paler squamules on the pileus (type studied).

17. **Psathyrella subtruncatispora** A. H. Smith, sp. nov.

Pileus (1-)3-6(-8) cm latus, demum late convexus, spadiceus, fibrillosus, ad marginem appendiculatus; sapor mitis; lamellae pallide brunneae demum sordide vinaceo-brunneae, confertae, latae, adnatae; stipites 3-6 cm longus, 3-6 mm crassus, fibrillosus, deorsum spadiceus; sporae 6.5-7.5×4-4.5×4.5-5μ, ad basem subtruncatae; pleurocystidia 38-52×10-14×8-11μ, subcapitata; caulocystidia clavata, circa 18μ lata. Typus. Smith 78076 (MICH); legit prope Vanderbilt, Michigan.
Psathyrella 51

Illustr. Text Figs. 36–38.

Pileus (1–)3–6–(8) cm broad, obtuse to convex when young, surface covered by innate “snuff brown” to “bister” (dingy yellow-brown) appressed-fibrillose scales over the disc and merely with appressed fibrils toward the margin, in age the margin lacerated somewhat, grayish brown in areas between the dark brown fibrils, the edge appendiculate at first from submembranous patches of a buff to dull tawny veil, when dried the entire cap dull dingy cinnamon. Context watery brownish fading to pallid, odor and taste none, FeSO₄ no reaction; KOH on veil remnants dingy tawny.

Lamellae pallid brownish becoming wood brown and near “Natal brown” (dark vinaceous-brown) in age, near dull “Mars brown” (rusty cinnamon) as dried, close, adnate, moderately broad, edges even.

Stipe 3–6 cm long, 3–6 mm thick, equal, fibrous, stuffed, pallid within, surface whitish overlaid by fine fibrils concolorous with those of the pileus (these are prominent in some basidiocarps and inconspicuous in others but have always been found), apex whitish and silky-punctate, base with whitish mycelium.

Spores 6.5–7.5 × 4–4.5 × 4.5–5 μ, some slightly compressed, smooth, apical pore distinct, shape in face view corn-kernel-shaped (wedge-shaped) to ovate (the angles are then less pronounced), in profile broadly bean-shaped, or in optical section the ventral line straight, color in KOH fuscous with a weak ochraceous tint, in Melzer’s reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 25–30 × 7–8 μ, hyaline in KOH. Pleurocystidia abundant, 38–52 × 10–14 × 8–11 μ, utriform, apex often subcapitate; wall thin, smooth and hyaline, content of cells not distinctive in either KOH or Melzer’s. Cheilocystidia mostly clavate-pedicellate to vesiculose-pedicellate, 10–16 μ wide, hyaline, thin-walled; some fusoid-ventricose cells also present and apex acute to rounded, smaller ventricose cells also present and apex acute to rounded. Caulocystidia mostly clavate and up to 18 μ wide, wall thin and hyaline in KOH, cell content “empty,” length of cells quite variable.

Pileus cuticle a thick layer of inflated cells 4–7 deep, their walls hyaline, the cell content “empty”; hyphae of the subcutis and trama yellow to hyaline in KOH, smooth. Hyphae of the veil with ochraceous to ochraceous-brown dissolved pigment, walls smooth and hyaline. Clamp connections present. No distinctive reaction on any tissue seen in mounts revived in Melzer’s.

Type locality. Michigan.

Habit and habitat. Scattered on hardwood logs, August.


Observations. This species is close to *P. lepidotoides* but has distinctly smaller spores differently colored in KOH. *Drosophila sylvestris* sensu Kühner and Romagnesi (1953) has spores 7–11 (–12) × 4.5–5.7 μ, again too large. For comments on Gillet’s concept of his own species see *P. lepidotoides*.


Illustr. Pl. 9, Fig. e; Text Figs. 41–45.

Pileus 2–4 cm broad, obtusely conic becoming plane or retaining only a slight umbo, surface dry and covered by appressed to slightly recurved fibrillose scales
around the disc, the scales dark reddish brown ("Mars brown" to "warm sepia" on a dingy "tawny-olive" background), toward the margin covered with loose innate fibrils. Context thin, brownish, taste mild.

Lamellae close (about 28 reach the stipe), about 3 tiers of lamellulae, adnate or becoming slightly sinuate and slightly toothed, not broad, dingy yellowish brown at first, darker reddish brown at maturity or when dried, edge view sordid avellaneous when young and near "snuff brown" at maturity.

Stipe 2.5–3.5 cm long, 1.5–3 mm thick, tubular, equal or base slightly dilated and with a compact white mycelium around it, apex faintly pruinose-striate, white, lower half more or less snuff-brown from the colored fibrilloose remains of the veil.

Spore deposit deep vinaceous-brown ("Walnut brown" to "army brown").

Spores 6–7.5×3.5–4.2 μ, smooth but with a tendency to angularity, apical pore present but inconspicuous, shape in face view subtriangular and sometimes showing a slight medial constriction, in profile somewhat bean-shaped to obscurely inequilateral, color revived in KOH dull cocoa-brown slowly shading to fuscous (a medium chocolate-brown), wall about 0.2 μ thick.

Basidia short, 12–15×5.5–7 μ, 4-spored, hyaline in KOH. Pleurocystidia scattered, 28–40×10–15 μ, thin-walled, apex broadly rounded, some pale sordid yellowish in KOH. Cheilocystidia more or less similar to pleurocystidia or merely saccate and 8–12 μ broad, some up to 50×10 μ and with apex subcapitate and lateral wall flexuous.

Gill trama parallel or nearly so, hyaline to pale sordid yellowish brown in KOH. Pileus context colored like the gill trama; cuticle formed of vesiculose cells one to two deep, many filamentous hyphae with dingy yellowish (in KOH) content projecting from the cuticle to form the scales. Clamp connections present. No amyloid reaction evident on or in any hyphae.

Type locality. Gainesville, Florida.

Habit and habitat. During May on a mixture of wet soil and much-decayed wood in deep shade.


Observations. Since it is obvious, from classification of variants proposed here under the stirps Lepidota, that evolution, as far as morphological features are concerned, has been largely on spore characters, the taxa as I see them have been recognized largely on this basis. I hope that this will stimulate studies in culture on this group by way of testing the validity of these concepts. Psathyrella weberi, on the above basis, is a species with narrow spores, but with the latter more angular than in P. lepidota Bres. (type studied).


Stirps Lacrymabunda

Stipe typically 5–10(–20) mm thick, spores in face view not appreciably truncated at the apiculate end; veil typically copious and often cottony and leaving patches on the pileus rather than recurved to upright scales, the hyphae lacking distinctly pigmented content as viewed in KOH.

These are mainly the fleshy species of the genus and are not typically hygrophanous as in the following subgenera. The fact that some species have an outer veil of essentially colorless fibrils indicates an intermediate position for this stirps, and explains the necessity for keying some in more than the one subgenus.
Key to the Species of Stirps Lacrymabunda

1. Some pleurocystidia when mounted in Melzer's having a distinctly amyloid content (use mature pilei).


   *Hypholoma lacrymabundus* (Fr.) Quélet, Champ. Jura et Vosges, 144. 1872.

2. Taste disagreeable, odor sweetly fragrant, spores 9–12 × 4.5–5 × 4.45 μ. see 27. *P. pseudocotonerea*.


4. Pileus with blackish patches of veil material when mature; pleurocystidia clavate-mucronate.

   21. *P. insignis*.

5. Odor fragrant, lamellae vinaceous before clouded from spores; cespitose on soil under spruce and fir.

   22. *P. duchesnayensis*.

6. Stipe subvolvate as the veil breaks; growing solitary on humus; stipe about 3 mm thick.

   24. *P. subvolvata*.

7. Stipe elongate and subannulate above as veil breaks; stipe 8–12 mm thick; cespitose on rotten hardwood. 23. *P. insignis*.

8. Stipe as above but pileus with cottony patches of innate fibrils which discolor to some degree by maturity.

   19a. *P. lacrymabunda* var. *aggregata*.


   *Hypholoma lacrymabundus* (Fr.) Quélet, Champ. Jura et Vosges, 144. 1872.

var. lacrymabunda

Illustr. Pl. 10; Text Figs. 65–67, 71.

Pileus (3–)4–8 (–10) cm broad, obtuse to convex, becoming campanulate and finally plane or nearly so, surface more or less covered with fascicles of innate fibrils, or fibrils grouped to form appressed imbricate scales, scales grayish brown ("wood brown") and more numerous near the margin, disc glabrous at times, ground color whitish to pale yellowish or finally sordid ochraceous, subhygrophanous but scarcely changing color when losing moisture. Context rather thick, white, odor and taste fungid.

Lamellae close to crowded, narrow, adnate-seceding, white at first, finally dark purplish brown ("Quaker drab"), edges white and floccose and in humid weather sometimes beaded with droplets of moisture.

Stipe 6–8 (–12) cm long, (6–)10–15 mm thick, equal or nearly so, hollow, white throughout, surface at first peronate up to the evanescent annular zone by the remains of the fibrillose veil, zone sometimes basal and surface above white and glabrous, or the sheath breaking up into scales or patches over the lower portion and finally vanishing, silky near the apex, becoming sordid in age and sometimes stained yellowish, mycelium pale yellow.

Spores 6–7.5 × 3.2–4 μ, smooth, elliptic to slightly bean-shaped in profile view, in face view oblong to narrowly elliptic, the apex with a minute hyaline spot as a pore and the base often more or less truncate, in KOH soon pale to medium chocolate-color becoming dark chocolate-color finally, in Melzer's pale to medium reddish tan, wall about 0.2 μ thick.

Basidia 4-spored, 20–29 × 7–8 μ, hyaline in KOH, subclavate. Pleurocystidia abundant, 32–46 × 10–14 (–16) μ, fusoid-ventricose to utriform, thin-walled,
smooth, wall hyaline in KOH, content as mounted in KOH dull brownish in many and in Melzer's in old specimens some of them amyloid, in younger specimens the content hyaline to dingy violaceous-brown in a few. Cheilocystidia similar to the pleurocystidia only a larger number fusoid-ventricose. Caulocystidia numerous near the stipe apex, fusoid to fusoid-ventricose, hyaline in KOH or Melzer's, thin-walled, smooth, 34-67×9-18 μ, some clavate to subvesiculose cells also present. Hyphae of the stipe cortex merely yellowish in Melzer's.

Pileus with a cuticle of vesiculose cells 2-4 deep, the walls thin, smooth and hyaline in KOH, content not distinctive in either KOH or Melzer's. Hyphae of the context with thin, smooth, hyaline walls and no distinctive content. Clamp connections present.

Type locality. Europe.

Habit and habitat. Cespitose on soil around stumps or logs of hardwoods, especially beech, or on humus around uprooted trees, late summer and fall.


Observations. Quélet described *Stropharia cotonea* as growing on heaths and with conifers. Consequently the above name is not acceptable for the species described here. It should be pointed out that he also recognized "*Hypholoma lacrymabundus*" as a species—one associated with hardwoods. I see no good reason for dropping the name *P. lacrymabunda* because of confusion. The critical descriptions are clear enough for the times. The base of the stipe is not *always* yellow—a possible reason why the feature was not included in the accounts by Fries. The gill edges do become beaded with droplets under some conditions, so the species epithet is appropriate even though a number of species show it.


Illust. Pl. 11; Text Figs. 68-70, 72.

Pileus about 2-3 cm broad, convex to subcampanulate, grayish white or tinged pinkish brown on the disc, obscurely spotted with appressed brownish to olivaceous fibrils or squamules, glabrescent, margin faintly striatulate when wet. Context white, thick in the disc, odor and taste not distinctive.

Lamellae rounded behind, nearly free, broad, close, at first whitish to grayish then purplish gray or finally "light drab" with a whitish fimbriate margin.

Stipe 5-8 cm long, 3-7 mm thick, hollow, equal, somewhat floccose or fibrillose from the brownish to olivaceous veil remnants, otherwise white, apex pruinose.

Spores 6-7.5×3-3.8 μ, smooth, with an inconspicuous hyaline apical pore, shape in face view oblong to slightly truncate-ovate (truncate at apiculate end), in profile somewhat bean-shaped, color revived in KOH cocoa-color becoming chocolate-gray, in Melzer's reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 14-17×5-7 μ, hyaline in KOH. Pleurocystidia scattered to abundant, 30-45×10-15 μ broadly fusoid-ventricose with obtuse to rounded apex varying to utriform, wall thin hyaline and smooth in KOH, content in KOH hyaline, in Melzer's sometimes bluish gray (especially on oldest basidiocarps). Cheilocystidia similar to pleurocystidia but more narrowly fusoid-ventricose and with apex subacute to obtuse. Caulocystidia not studied.

Pileus with a cuticle of vesiculose cells several cells deep, hyaline with thin
smooth walls (revived in KOH), content not distinctive in either KOH or Melzer's. Hyphae of the subcutis and trama hyaline as revived in KOH and lacking distinctive content. Clamp connections present.

Type locality. Alcove, New York.

Habit and habitat. Clustered on or near hardwood stumps, late summer and fall.


Observations. This variant differs from var. lacrymabunda in having pleurocystidia with very slight amyloid reaction or none at all, and in which the content of the cell when revived in KOH remains hyaline or practically so. The spores are a shade smaller, but hardly significantly so. However, the outer veil is more distinctly colored, which should aid in distinguishing var. aggregata in the fresh condition.


Illustr. 1. e. fig. 3, g, h; 16a b; 17. Pl. 12; Pl. 13, fig. a; Text Figs. 46–48, 50.

Pileus (2–)3–5–(6) cm broad, obtuse to convex at first, becoming plane or nearly so, the disc in some elevated as a low broad umbo, surface dry and fibrillose, the fibrils innate and forming an appressed cottony mat over the buttons which are pure white, the fibrils soon become aggregated into patches and discolor to avellaneous or wood brown, the disc at times dingy alutaceous, at maturity entire surface off-color toward cinnamon-buff or disc more brownish (near cinnamon-brown), margin fibrillose-appendiculate to cottony-appendiculate at first but finally nearly naked. Context firm and hard for this genus, hygrophanous, watery avellaneous fading to whitish, odor faintly fragrant but soon fading, taste not distinctive.

Lamellae depressed-adnate, seceding, close, narrow to moderately broad, white to very pale avellaneous becoming drab-gray to hair brown, edges white-floccose.

Stipe 3–5 cm long, 10–12 mm thick, firm and hard, stuffed but becoming hollow, white within but pinkish to orange-pink in the base, with dingy fibrils over lower half in some, in others white-fibrillose, upper half white and longitudinally striate.

Spores purple-brown in deposit (near “benzo brown”), 7.5–9×4–4.5 μ, smooth, apical pore not evident, shape in face view ovate to elliptic, in profile bean-shaped to obscurely inequilateral color in KOH cocoa-color, becoming only slightly darker, in Melzer's bay-brown, wall about 0.2 μ thick.

Basidia 4-spored, 26–34×5.5–7 μ, narrowly clavate, hyaline in KOH, a few with refractive particles. Pleurocystidia of two types: (1) Clavate to subvesiculose-pedellate, 25–40×10–14 μ, thin-walled, smooth, hyaline in KOH and content not amyloid; (2) fusoid, 40–53×9–14 μ, thin-walled, hyaline in KOH, smooth, apex obtuse to subacute, varying to mucronate, cell content not amyloid but when fresh often containing numerous small globules. Cheilocystidia clavate to fusoid but apex not pointed, 32–48×9–15 μ, hyaline and smooth, content homogeneous and not amyloid. Caulocystidia elongate-clavate, 30–70×10–18 μ, not abundant.
Gill trama regular, cells inflated, thin-walled, smooth and hyaline in KOH. Pileus with a cuticle of vesiculose cells 10–18 μ wide and 3–6 cells deep, the walls thin, smooth, hyaline in KOH, content not distinctive in KOH or Melzer's. Veil remnants often forming a thick layer (about 300 μ thick) of interwoven hyphae 7–12 μ wide and having thin, smooth, hyaline walls in KOH and regularly with clamps. Hyphae of the pileus trama hyaline in KOH and with smooth walls. Hyphae of the stipe cortex with an uneven wall giving the impression of roughness but the walls often refractive enough to obscure fine detail.


Observations. This species is related to *P. lacrymabunda* but the spores distinguish it as do the color changes in the veil on aging. The pleurocystidia are more diverse and none was found with amyloid content. It might also be compared with *P. scobinacea* (Fr.) Singer, but the buttons are white at first.

Material examined. Washington: Smith 29308, 29505 (Type), 29916, 30360, 30421, 30591, 30687.


*Hypholoma maculatum* Parker, Mycologia 25: 205. 1933.

Illust. Pl. 13, fig. b; Pl. 14; Text Figs. 49, 51, 52.

Pileus 2–6 cm broad, obtuse when young, expanding to obtusely campanulate and finally plane or with a slight umbo, surface at first viscid from a “mummy brown” (blackish brown) to pale grayish brown coating of outer veil remnants, the pallid grayish brown fibrils of the pileus cuticle soon showing through, at maturity with a broad mummy brown patch or patches or streaks and with pale avellaneous to dark wood brown appressed fibrils over the remainder, margin typically appendiculate with pallid to wood brown cottony triangular patches of veil remnants. Context soft, fairly thick, whitish and unchanging, taste mild, odor fungoid.

Lamellae crowded, narrow, depressed-adnate, pallid when young, “cinnamon-drab” in age, edges white floccose.

Stipe 6–12 cm long, 6–14 mm thick at apex, slightly narrowed downward, fleshy and fibrous (not fragile), solid becoming hollow, pallid within but pinkish in the base when cut, surface densely fibrillose and lower part entirely covered or merely streaked with mummy brown fibrils, pallid near the apex, some with an apical annulus and surface above it fibrillose scurfy.

Spores 5–6×3–3.5 μ, smooth, apical pore present but very inconspicuous, in face view elliptic to oblong, in profile more or less bean-shaped, color in KOH moderately dark chocolate-color, in Melzer's reddish tawny, wall thin.

Basidia 14–18–(20)×4.5–7 μ, 4-spored, narrowly clavate, hyaline in KOH. Pleurocystidia abundant, 32–46×9–15 μ, obovate-mucronate or the apical finger-like prolongation considerably drawn out (up to 6–15 μ long), walls thin, smooth and hyaline, content homogeneous in KOH or rarely with a few refractive particles, homogeneous in Melzer's. Cheilocystidia similar to pleurocystidia or merely saccate and up to 18–20 μ wide. Caulocystidia mostly elongate-clavate to short clavate, oval or obscurely cystidioid, smooth and hyaline, content not distinctive.

Pileus with a cuticle of inflated cells 3–4 deep, walls thin, hyaline and smooth, content not distinctive in either KOH or Melzer's; hyphae arising from between
the cells of the cuticle or from the cuticle cells themselves, with pale rusty cinna­
mon walls in KOH which are smooth to granular-incrusted (these form the
blackish layer on the pileus). Pileus trama of hyaline inflated smooth-walled
hyphae, clamp connections regularly present.

Type locality. Mt. Rainier National Park, Washington.

Habit and habitat. Cespitose to subcespitose on alder stumps and logs, fall,
rather rare during most seasons.


Observations. This species features minute spores, pleurocystidia shaped like
typical chrysocystidia but lacking the distinctive content, the darkening layer
of veil material of the pileus, and the avellaneous annulus. It is related to
P. lacrymabunda. It is also known from Europe.

Material examined. Oregon: Kauffman 10–7–22; Smith 19532, 20199, 26714,

22. Psathyrella duchesnayensis A. H. Smith, sp. nov.

Pileus 3–6 cm latus, convexus, ad marginem griseo-fibrillosus vel squamulosus
et appendiculatus, ad centrum pallide alutaceus et glaber; odor fragrans; lamellae
pallide demum avellaneae, confertae, angustae, secedentes; stipes 3–6 cm longus,
9–12 mm crassus, deorsum sordide fibrillosus, sursum sericeus, albidus; sporae
6–6.5 × 3–3.5 μ; pleurocystidia 33–52 × 10–15 μ, ad apicerum late rotundata;
caulocystidia sparsa, subelavata vel late fusioide ventricosa; fibulae adsunt. Typus.
Smith 61737 (MICH); legit prope Duchesnay, Quebec, Canada.

Ilust. Text Figs. 53–57.

Pileus 3–6 cm broad, convex with an incurved margin, surface moist but not
hygrophanous, appressed-fibrillose near the margin, having dingy grayish buff
fibrils scattered or in patches, the disc glabrous and pale pinkish buff, margin at
first decorated with patches of dingy veil tissue. Context white, firm, taste mild,
odor faintly but distinctly fragrant.

Lamellae whitish at first, becoming vinaceous and finally near vinaceous-drab
(pinkish gray), close, narrow, adnate, soon seceding, edges even.

Stipe 3–6 cm long, 9–12 mm thick, equal, hollow, white within, surface of lower
three fourths coated with dingy buff to grayish veil remnants which terminate in
an evanescent zone of fibrils, apex white and silky.

Spores 6–6.5 × 3–3.5 μ, smooth, apical pore present but very minute, shape in
profile allantoid to bean-shaped, in face view nearly oblong, color in KOH pale
fuscous to dark chocolate-color, in Melzer's merely dingy tawny, wall about 0.2 μ
thick.

Basidia 4-spored, 21–25 × 6–7 μ, clavate, hyaline in KOH. Pleurocystidia
33–52 × 10–15 μ, abundant, broadly utriform to broadly fusoid-ventricose with
obtuse to rounded apex; wall thin and smooth, content of cell hyaline in KOH,
not distinctive in Melzer's. Cheilocystidia 35–50 × 8–15 μ, narrowly fusoid­
ventricose with obtuse apex to broadly ventricose with short neck and rounded
apex, content not distinctive in KOH or in Melzer's. Caulocystidia present as an
occasional cell near stipe apex and in shape resembling the cheilocystidia.

Pileus with a cuticle of pedicellate and vesiculose cells mixed, 1–3 cells deep,
walls thin and hyaline in KOH, content not distinctive in Melzer's or KOH.
Hyphae of the subcuticular region interwoven, the cells inflated, the walls
perfectly hyaline, in Melzer's the subhymenium in the area adjoining the context
of the pileus somewhat dextrinoid. Clamp connections present. No amyloid or fleeting-amyloid reaction evident anywhere.

Type locality. Duchesnay, Quebec, Canada.


Distribution. Known only from the type locality.

Observations. This is a whitish species with a fragrant odor, pleurocystidia lacking any colored content in KOH and in not having an amyloid content, in having a dingy buff veil and very small spores. It is closest to Stropharia cotonea Quél. Kühner and Romagnesi (1953) use this name to replace P. lacrymabunda and this is followed by Moser (1967). Quél's species was associated with conifers. Under the circumstances, however, there is nothing to be gained by trying to apply a confused concept of a European species to North American specimens. Kühner and Romagnesi give the spores of their Drosophila cotonea as 7–8(–10) × 3.45(–5) μ compared to 6.5–6.5 × 3–3.5 for the Canadian species.


Illustr. Text Figs. 61–64.

Pileus 3–7 cm broad, obtuse becoming plane or with a low obtuse umbo and a spreading margin, surface at first covered with the remains of a coarse white fibrillose universal veil, fibrils either remaining appressed and giving the surface a white-silky appearance or becoming aggregated into fascicles which remain more or less appressed and become slightly sordid in age, margin appendiculate with patches of fibrils, becoming glabrous over all, surface beneath the fibrils white to whitish when fresh and moist, but becoming "light vinaceous-fawn" to "fawn color" as the spores mature, often with "pinkish vinaceous" blotches or tinged that color along the margin, at times the disc whitish buff ("pale pinkish buff"), hygrophanous but scarcely changing color when fading, margin opaque at all stages. Context moderately thick, rather brittle, watery, "pale vinaceous fawn" (pinkish) becoming "vinaceous-buff" (grayer), pallid when faded; odor and taste not distinctive.

Lamellae "pale vinaceous-fawn" becoming "army brown" (reddish as in P. sublateritia), beaded with drops of moisture at first and in age spotted as a result, depressed-adienate, close to crowded, moderately broad (5–6 mm); edges finely serrate.

Stipe 6–10 cm long, 8–12 mm thick, hollow, equal or narrowed slightly below, white throughout and unchanging, mycelium and that surrounding the base of the stipe yellowish in some, surface coarsely appressed white-fibrillose from veil remnants, remains of veil terminating in apical to median zone, white and silky-floccose above this.

Spores dingy cocoa-brown (near "army brown") in deposit, on loss of moisture becoming dark chocolate-color; 6.5–7.5 × 3.2–3.8 μ, smooth, apical pore present but indistinct; shape in face view oblong to narrowly elliptic, in profile more or less bean-shaped, as revived in KOH dark cocoa-color becoming chocolate-brown, in Melzer's tawny-red, wall about 0.2 μ thick.

Basidia 18–24×5–7 μ, 4-spored, clavate, hyaline in KOH. Pleurocystidia scattered, 32–45 × 10–15 μ, broadly fusoid-ventricose with rounded to obtuse apex, wall thin, smooth and hyaline, cell content not distinctive in either KOH or in Melzer's. Cheilocystidia similar to pleurocystidia, the latter 17–26×8–15 μ and yellowish as revived in KOH, some smaller versiform ochraceous cells also present.
Psathyrella 59

(Fig. 64). Caulocystidia 40-65x10-18 μ, fusoid-ventricose with obtuse apex, thin-walled, hyaline in KOH, readily collapsing.

Pileus with a cuticle of inflated cells 3-5 deep, their walls hyaline and refractive in KOH, smooth, thin; content not distinctive in either KOH or Melzer's. Tramal hyphae with hyaline smooth walls revived in KOH, content not colored but in Melzer's the subhymenium reddish orange in places. Clamp connections present.

Type locality. Ann Arbor, Michigan.

Habit and habitat. Cespitose around stumps of beech and locust (Robinia), rare but found in quantity when it does fruit, late summer and fall.

Distribution. Michigan (Smith 20789 (Type), 20999, 38866).

Observations. This is a white, fibrillose species developing pinkish tints on the pileus by late maturity, spores distinctly vinaceous-brown in deposit and very narrow. It is not one of the annulate species.


Illustr. 1. c. fig. 2. Text figs. 58-60.

Pileus 2.5 cm broad, obtuse, becoming broadly subumbonate, surface appearing dry because of a dense covering of innate long white fibrils which surround the disc and become aggregated into fassicles, the margin incurved and striatulate at first, glabrescent or nearly so part way to disc in age, entirely white at first but becoming tinged umber as the spores mature. Context fragile, white, hygrophanous, odor and taste not distinctive.

Lamellae close, broad (about 5 mm), shallowly adnexed, white, slowly becoming dark violaceous-brown ("benzo brown"), edges slightly paler and nearly even.

Stipe 2.5 cm long, 3 mm thick, equal except for the subbulbous base, white, hollow, bulb surrounded by a white mass of fibrils which almost form a volva, densely fibrillose over lower half, pruinose above.

Spores 6-7.5x3-3.5 μ, smooth, apical pore present but inconspicuous, shape in face view oblong, in profile somewhat allantoid, color in KOH near snuff brown (dull yellow-brown), in Melzer's ochraceous-tawny, wall 0.2 μ thick.

Basidia 4-spored, 16-19x6-6.5 μ; hyaline in KOH, slightly clavate but basal portion not conspicuously narrowed. Pleurocystidia abundant, 28-36(-40) x 10-12(-14) μ, utriform to broadly fusoid-ventricose with rounded apex, wall smooth, thin and hyaline; cell content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia or merely clavate, both types hyaline in KOH.

Gill trama of narrow parallel hyphae hyaline in KOH. Pileus trama of compactly interwoven hyphae hyaline in KOH. Cuticle of pileus of hyaline vesiculose cells in a layer irregularly 2-3 cells deep or if cells are very large (up to 60x40 μ or more) only one cell deep, well thin, smooth and hyaline, cell content not distinctive. Filamentose hyphae 6-10 μ wide originating in the cuticle and remaining appressed over the surface, the cells elongate, tubular and not disarticulating. Clamp connections present. No distinctive reaction on any tissue when mounted in Melzer's.

Type locality. Indian Camp Creek, Great Smoky Mountains National Park, Tennessee.

Habit and habitat. Solitary on soil along a trail.

Distribution. Known only from the type locality.

Observations. Psathyrella columbiana has much the same type of volva but significantly larger spores and lacks innate fibrils on the pileus.
Psathyrella subg. Mycophila A. H. Smith, subg. nov.

Crescunt parasitice in Coprini. Typus Psathyrella epimyces.

Since a parasitic mode of existence is so unusual in this genus it appears logical to me to recognize any species which have made this adjustment at the above level. Only the type species is known to me.

25. Psathyrella epimyces (Peck) A. H. Smith, comb. nov.

Agaricus epimyces Peck, Rep. N. Y. State Mus. 35: 133. 1884.
Stropharia coprinophila Atkinson, Jour. Mycol. 8: 118. 1902.

Illust. Atkinson, 1907, fig. 23, 24. Pl. 22; Pl. 23, fig. b; Text Figs. 73, 74.

Pileus 2–6 cm broad, ovoid to globose when young, becoming broadly convex to nearly plane, the margin sometimes elevated in age, surface silky-fibrillose, not hygrophanous, white but becoming sordid in age, margin fibrillose-appendiculate when the veil breaks. Context thick, soft, white or whitish, odor and taste not distinctive.

Lamellae narrowly adnate or at times somewhat adnexed, narrow, broadest toward the pileus margin, thin, pallid at first, soon blackish brown and as dried blackish, the edges white-fimbriate.

Stipe 2–7 cm long, 5–15 mm thick, fleshy, equal or tapering upward, stuffed solid but becoming hollow, soft, floccose-meatly, striate, white-annulate near the base or not, or veil remnants appearing volva-like.

Spore deposit blackish. Spores 7–9 (–10) × 4–5 μ, smooth, apical pore not distinct, shape in face view ovate to elliptic, in profile subelliptic to very obscurely inequilateral, color in KOH dark chocolate-color, in Melzer’s bay-brown; wall 0.7–1 μ thick.

Basidia 4-spored, 24–34 (–48) × 7–9 μ, clavate, pedicel often long and flexuous, hyaline in KOH, merely yellowish in Melzer’s. Pleurocystidia 40–64 (–70) × 9–15 μ, broadly fusoid-ventricose with obtuse apex varying to subcylindric with rounded apex, pedicel often distinctly elongated, wall thin, smooth and hyaline as revived in KOH, cell content not distinctive in either KOH or Melzer’s. Cheilocystidia similar to but smaller than the pleurocystidia and more of them with an obtuse to subacute apex. Caulocystidia, none located (only dried material studied for this feature).

Gill trama cellular near the base of the gill, of elongated narrow subparallel hyphae near the edge, hyaline in KOH, subhymenium very narrow and indistinct. Pleurocystidia with a rudimentary cuticle of pear-shaped to clavate, hyaline cells, the cells 20–42 × 10–20 μ, some upright, some decumbent and in some sections appearing as a layer of vesiculose cells with hyaline filamentous hyphae projecting from the layer. Clamp connections regularly present. No distinctive reactions on any part as revived in KOH or Melzer’s, cell walls all smooth and thin.

Type locality. North Greenbush, New York.

Habit and habitat. On Coprinus comatus.


Observations. The relatively thick-walled spores lacking a readily observable germ pore, the silky pileus and the parasitic habit set this species apart from other Psathyrellae, but the parasitic habit is the most unusual feature. Similar probable “accidents” of a parasitic habit of this kind are Boletus parasiticus on Scleroderma and Volvariella surrecta on species of Clitocybe. In the latter
instances, however, the host fungus is very likely a mycorrhiza former, and in the case of Boletus parasiticus the parasite is no doubt derived from ancestral types which were mycorrhiza formers. Nyctalis species parasitize species of Russulaceae but here there are indications that the basidiocarp of the parasite has undergone distinct evolutionary changes possibly as the result of its parasitic habit. There seems to be no indication that the parasites were at first mycorrhiza formers, or that they reached their present habit starting from such a relationship. Apparently the valid combination in Psathyrella has not been made previously.


Psathyrella subg. Pseudostropharia A. H. Smith, subg. nov.

Stipes annulatus; annulus membranaceus vel floccosus et crassus, persistens vel evanescentis. Typus. Psathyrella caputmedusae.

Observations. This subgenus features a level of veil development in two distinct (for this genus) lines of evolution. The texture of the veil is sufficiently firm and coherent so that when the pileus expands it breaks at the margin of the pileus thus leaving an annulus on the stipe most of the time. The outer veil if one is present, is not innate and colored as in subg. Psathyroides but some intermediates occur, see P. pseudocotonea. Remains of the outer veil may persist longer on the stipe below the annulus than on the pileus or none may be present to begin with—it depends on the species.

Species in other subgenera may produce annulate basidiocarps occasionally, usually one or two in a cluster of otherwise non-annulate individuals. In North America this is particularly evident in subg. Pannucia sect. Appendiculatae, especially the stirps Candolleana. The second most likely place to encounter annulate variants is in subg. Pannucia sect. Pannucia where there is generally rather pronounced development of the veil. Again, however, only one or a few basidiocarps out of a good sized collection will be annulate. In Lacrymaria and Psathyroides annulate basidiocarps are more numerous, especially during good seasons, but it should be noted that in the key to subgenera these are keyed out before Pseudostropharia.

In spite of diligent search I have not found the type of section Spintrigerae in North America. It should be a beech-associated dark brown species lacking pleurocystidia. Psathyrella kauffmannii is perhaps closest, but features broadly rounded pleurocystidia. In the Pacific Northwest, P. longistriata is our most common species for this subgenus. It needs further study since as presented here it encompasses a large amount of variation. P. caputmedusae is an example of a strikingly distinct but rare species occurring on wood of conifers in both Europe and North America.

Key to the Sections of Subgenus Pseudostropharia

1. Pleurocystidia present. Pseudostropharia.
1. Pleurocystidia absent. Spintrigerae.

Section Pseudostropharia

See Psathyrella carbonicola and other members of subg. Pannucia sect. Appendiculatae also.
Key to the Species of Section *Pseudostropharia*

1. Pileus white to pallid when young and moist. 2
2. Pileus honey-brown to darker at first.
   2. On burned areas; spores 8-10.5 × 4.5-5.5 μ. 26. *P. gruberi.*
   2. On or around hardwood stumps; spores 6.5-7.5 × 3.2-3.8 μ. see 23. *P. insignis.*
4. Spores smaller.
   4. Taste very disagreeable (See 32. *P. kauffmanii* also).
   4. Taste mild or slight. 27. *P. pseudocotonea.*
5. Spores 9-12 × 4.5-6 μ; odor aromatic. 28. *P. caputmedusae.*
7. Pleurocystidia more or less utriform to fusoid-ventricose with broadly rounded apex. 8
8. Pleurocystidia acute to obtuse or subcapitate (but then the neck narrow) more rarely some with a rounded apex. 9
9. Spores 8-10 × 4.5-6 μ. 31. *P. solheimii* var. *solheimii.*
10. Spores (many of them) somewhat truncate (in face view) at the base.
    see 34. *P. barrowsii* and 400. *P. battarae* also.
11. Pileus dark purple-drab to vinaceous-gray; walls of some pleurocystidia slightly thickened but hyaline and highly refractive. 33. *P. subpurpurea.*
12. Not as above (walls of cystidia yellowish if thickened slightly). 13
13. Spores with a truncate apex; walls of some pleurocystidia yellowish in KOH (especially if slightly thickened), acutely pointed. 35. *P. ellenae.*


Pileus 3-6 cm latus, obtusus demum late campanulatus, albo-squamulosus, ad marginem appendicelatus, pallidus demum ligno-bruneus; odor graveolens; lamellae pallidae demum violaceo-fuscae, confertae, latae, adnatae; stipes 5-8 cm longus, 8-10 mm crassus, fibrillosus, deorsum squamulosus, sursum annulatus; annulus albidus, gossypinus; sporae 8-10.5 × 4.5-5.5 μ, apiculatae; pleurocystidia 40-60 × 10-15 (–20) μ, ad apicem obtusa vel late rotundata; caulocystidia 40-80 × 10-15 μ, flexuoso-subcylindrica, anguste clavata vel fusoido ventricosa; fibulae adsunt. Typus. Smith 28041 (MICH); legit prope Bear Springs, Mt. Hood National Forest, Oregon.

Illust. Pl. 15; Text Figs. 75-78.

Pileus 3-6 cm broad, obtuse with a slightly bent in margin when young, at maturity broadly campanulate to umboolate, surface at first covered by a dense coating of white superficial squamules, soon glabrescent from the disc out, near "tilleul buff" (whitish) when young, darkening to near avellaneous or wood brown or grayish cinnamon-buff on disc by maturity, margin long remaining paler and at first coarsely appendiculate from the remains of the membranous veil or veil breaking to leave a thick cottony apical annulus. Context pallid, taste mild, odor very strongly sweetish-fragrant.
Lamellae depressed-adnate in expanded pilei, pallid ("tilleul buff") when young, becoming wood brown to benzo brown in age, edges even and pallid. Stipe 5–8 cm long, 8–10 mm thick at apex, equal or slightly enlarged downward, hollow, rigid and firm, fibrous, surface densely white cottony and the lower part squarrose scaly, often with a thick superior cottony annulus, apex striate and pruinose-floccose, cortex at base or lower portion discoloring to avellaneous or darker on handling or in age.

Spores 8–10.5 x 4.5–5.5 µ, smooth, apical pore not evident under low-power oil immersion, shape in face view narrowly ovate to a pointed apiculus, varying to narrowly elliptic (but with pointed apiculus), many obscurely angular at basal end; in profile view obscurely inequilateral to subelliptic but with a prominent basal apiculus, color in KOH dark chocolate-color slowly fading to bister (if immature, then remaining dark chocolate-color in many of them), in Melzer's reddish tawny, wall about 0.3 µ thick.

Basidia 26–32 x 8–9 µ, four-spored, clavate, hyaline in KOH. Pleurocystidia abundant, 48–60 x 10–20 µ, broadly ventricose, neck short to elongated and apex obtuse to broadly rounded, some with 1–3 subapical protrusions, wall thin, smooth and hyaline, content not distinctive in KOH or Melzer's. Cheilocystidia variable, similar to the pleurocystidia or shorter and narrower (50–60 x 7–10 µ) and flexuous or scarcely ventricose, all hyaline in KOH. Caulocystidia versiform, 40–80 x 10–15 µ, flexuous-subcylindric and apex obtuse to furnished with 1–3 protrusions, narrowly clavate to broadly clavate or fusoid-ventricose, all hyaline in KOH, smooth and lacking distinctive content.

Pileus with a cuticle of hyaline vesiculose cells several deep, their walls thin, smooth and not particularly refractive, content not distinctive in either KOH or Melzer's. Tramal hyphae hyaline in KOH and with thin, smooth walls. Clamp connections present. Not distinctive as revived in Melzer's.

Type locality. Bear Springs, Mt. Hood National Forest, Oregon.

Habit and habitat. Cespitose on a burned area, on the soil, late fall.

Distribution. Known only from the type locality (Smith 28041).

Observations. This species is obviously very close to *P. caputmedusae* because of the apiculate spores without a readily evident apical germ pore, the fragrant odor and veil features. It is distinct in having a white rather than a date brown pileus, habitat on burned ground along with such species as *P. carbonicola*, and lack of a tendency for the tips of the veil squamules to darken to fuscous. It was found by Wm. B. Gruber of Portland, Oregon.

27. *Psathyrella pseudocotonea* A. H. Smith, sp. nov.

Pileus circa 14 cm latus, plano-umbonatus, spadiceus, ad marginem plicatus et albosquamulosus; sapor armarus; odor graveolens; lamellae latae (12 mm), confertae; stipes circa 15 cm longus, 17 mm crassus, cavus, deorsum brunneo-fibrillosus, sursum annulatus; annulus brunneo-fibrillosus; sporae 9–12 x 4.5–5, apiculatae; pleurocystidia 36–54 x 10–16 µ, fusoid ventricosa, ad apicem obtusa vel late rotundata; caulocystidia interdum crasso-tunicata (0.5 µ crassa); fibulae adsunt. Typus. Smith 49412 (MICH); legit prope Ashford, Washington.

Illust. Text Figs. 79–81.

Pileus up to 14 cm broad, plano-umbonate with a slightly decurved and plicate-wavy margin, hygrophanous, pale date brown drying dull tawny, fading to pale tan ("cinnamon-buff") over margin and slowly changing to gray-brown
(“wood brown”) as spores mature, the disc dingy cinnamon in age (“Sayal brown”), at first with white fibrillose squamules over the plicate portion. Context thick but exceedingly fragile, odor strong and sweetly fragrant, taste very disagreeable.

Lamellae close, broad (12 mm), depressed adnate, when mature cinnamon-drab with some areas more rusty brown (obscurely mottled), edges even.

Stipe up to 15 cm long, 17 mm thick at apex, equal, hollow, rather fibrous, with a median annulus having wood brown to vinaceous-brown fibrils on lower side near the margin, below the annulus the stipe surface having appressed brown fibrils variously distributed, surface above annulus seurfy whitish and longitudinally striate from gill impressions.

Spores 9–12×4.5–4.5×4.5–5 μ, smooth, apical pore not evident, apiculus prominent, shape in face view ovate-apiculate, in profile obscurely bean-shaped, varying to obscurely inequilateral, as revived in KOH soon dark chocolate-color, in Melzer’s tawny red, wall about 0.3 μ thick.

Basidia 24–30×7–10 μ, 4-spored. Pleurocystidia 36–54×10–16 μ, broadly fusoid-ventricose with obtuse to rounded apex, thin-walled, smooth, lacking distinctive content in either KOH or Melzer’s. Cheilocystidia subtibiiform to ventricose-rostrate to fusoid-ventricose to subvesiculose, hyaline and thin-walled or a few with yellowish slightly thickened walls (to 0.5 μ). Caulocystidia more versiform than the cheilocystidia and more with yellowish walls in KOH, some elongated to 120 μ.

Pileus with a cellular cuticle 4–8 cells deep, walls weakly yellowish as revived in KOH, smooth, content of cells not distinctive. Subcuticular layer yellowish becoming nearly hyaline in KOH, walls smooth and thin. Clamp connections present. No distinctive iodine reactions noted on any tissue or in any cells.

Type locality. Ashford, Washington.

Habit and habitat. Solitary near conifer stumps, October, rare.

Distribution. Known only from the type locality (Smith 49412).

Observations. The brown fibrils on the annulus and below it on the stipe are not the result of mere discoloration of originally pallid fibrils, they are brown in button stages. These colored fibrils in addition to the very disagreeable taste distinguish this species from *P. caputmedusae* which has spores about the same size. Both have the fragrant odor. Still another species closely related to *P. caputmedusae* is *P. jerdonii* as redescribed by Orton (1960) from the type. However, it apparently lacks pleurocystidia. The annulus, and apiculate spores lacking a truncate apex place it here.


*Hypholoma caputmedusae* (Fr.) Ricken, Die Blätterpilze, 243. 1912.

*Geophila caputmedusae* (Fr.) Quélet, Enchir. Fung. 112. 1886.


Illust. Smith & Stuntz (1950). Figs. 18b, c, d, 19. Pl. 16, fig. b; Text Figs. 82–85.

Pileus 4–5 cm broad at base, nearly 3 cm high, obtusely campanulate, surface at first covered with small whitish superficial fibrillose scales which show a tendency to become fuscous or bister at the tips, glabrescent, surface dark “snuff brown” to pale “snuff brown” (a medium date brown) over the disc, near sepia toward the margin, hygrophanous and fading to grayer in streaks
to give the marginal area a coarsely striate appearance, near cinnamon-buff faded. Context firm but fragile, near snuff brown when moist, fading to near avellaneous, taste mild, odor sweetish-aromatic.

Lamellae close to crowded, broad, ascending adnate, avellaneous becoming gray-brown ("wood brown") at maturity, dingy vinaceous-brown when dried, edges even to slightly crenulate.

Stipe 8–10 cm long, 7–8 mm thick at apex, equal to evenly enlarged downward, hollow, not exceptionally fragile, the cavity lined with avellaneous tissue, the cortex whitish, surface white and densely fibrillose-squarrose scaly below the cottony-membranous fringed annulus, scales white but tips fuscescent, pruinose and silky-striate above the superior annulus.

Spores 9–12 × 4.5–6 μ, smooth, apical pore not evident under low-power oil-immersion, shape in face view broadly ovate to subelliptic, in profile obscurely inequilateral (suprahilar area flattened), with a prominent apiculus, color in KOH distinctly cocoa-color but slowly darkening to a grayish chocolate-brown on standing, reddish tawny in Melzer’s, wall about 0.4 μ thick.

Basidia 4-spored, 24–30 × 9–10 μ, clavate, hyaline in KOH. Pleurocystidia scattered, 36–54 × (12–)14–22 μ, broadly ventricose with a short neck ending in an obtuse to rounded apex, wall thin, smooth and hyaline, content not distinctive in KOH or Melzer’s or rarely in KOH with numerous minute droplets. Cheilocystidia similar to pleurocystidia and some narrower and more elongated (50–65 × 9–13 μ), the neck often drawn out and flexuous in outline, walls thin and hyaline, content of some oily in KOH. Caulocystidia elongate-clavate (9–18 μ wide) or flexuous-filamentous (8–10 μ wide) or resembling the pleurocystidia, rarely with a pale cinnamon-colored dissolved content as revived in KOH, walls thin and hyaline. Cortex hyphae rather refractive in KOH but smooth.

Pileus with a cuticle formed by a layer of vesiculose cells 3–5 deep, the walls hyaline, thin and smooth, content not distinctive in KOH or Melzer’s. Hyphae of the trama flushed with cinnamon when first revived in KOH but soon fading. Not distinctive in any part when mounted in Melzer’s. Clamp connections present, typically prominent.

Type locality. Europe.

Habit and habitat. Cespitose on or near conifer wood such as stumps etc.

Distribution. Washington (Smith 30907).

Observations. There is remarkable agreement in the literature as to the features of this species though it apparently is generally rare. The stipe is much more cottony below the annulus than in *P. pseudocotonea*. For additional comment see that species. The rather distinct apiculus of the spores is an important feature.

29. *Psathyrella annulata* A. H. Smith, sp. nov.

Pileus 3–5 cm latus demum subplanus, minute squamulosus, glabrescens, melleibrunneus; lamellae confertae, latae, secundae, pallide cinnamomeae demum cacaocolor; stipes 9–13 cm longus, 5–9 mm erassus, pallidus, deorsum sericeus, sursum annulatus; annulus membranaceus, tenuis, sursum striatus, deorsum squamulosus; spora 11–14 (–15) × 6–7.5 μ; pleurocystidia 46–77×13–20 μ, ad apiceraum late rotundata vel subaeuta; fibulae adsunt (sparsae). Typus. Smith 76887 (MICH); legit prope Priest Lake, Idaho.
Illustr. Text Figs. 86–88.

Pileus 3–5 cm broad, obtuse when young, expanding to nearly plane or retaining a low umbo, surface moist and hygrophanous, at first covered by minute white squamules from an outer veil, glabrescent, color when moist a dark honey brown, fading to pallid but when dried dull tawny-brown. Context thin, fragile, concolorous with surface, odor and taste not distinctive.

Lamellae close, moderately broad, adnate but soon seceding, pale dingy cinnamon (in youngest) becoming dark dingy cinnamon (“Verona brown”) and when dried dark cocoa-color, edges pallid and even.

Stipe 9–13 cm long, 5–9 mm thick, equal, hollow, fragile, whitish over all and unchanging, silky below the superior membranous annulus, striate-pruinose over apical region; annulus thin and membranous, striate above, squamulose on the under side, darkening to avellaneous-brown in drying.

Spores 11–14 (–15) × 6–7.5 μ, smooth, apical pore not evident and apex not truncate, shape in face view broadly fusiform to ovate-fusiform, pointed at the apiculate end, apex less so but not rounded, in profile inequilateral to somewhat inequilateral (or the ventral line almost straight if plage area is very broad and merely flattened), color in KOH cocoa-brown becoming very dark cocoa-brown, in Melzer's rich tawny, wall about 0.3 μ thick.

Basidia 24–30 × 9–12 μ, 4-spored, clavate, hyaline in KOH. Pleurocystidia scattered, 46–77 × 13–20 μ, broadly fusoid-ventricose with a wide (10–12 μ) neck and broadly rounded apex, in some broadly fusoid and more abruptly tapered to a subacute apex, thin-walled, smooth, hyaline, content not distinctive. Cheilocystidia similar to pleurocystidia but neck narrower and often greatly elongated and with the apex merely obtuse, the basal ventricose part 10–14 μ wide.

Gill trama regular, the hyphae with greatly elongated and inflated cells with thin, smooth, hyaline walls. Pileus trama hyaline in KOH or at first (in young pilei) brown in the subcuticular region but fading, walls smooth and hyaline at maturity. Cuticle of pileus a layer 3–5 cells deep, of vesiculose elements with pale dingy ochraceous walls in KOH which are thin and smooth. Clamp connections present but rare in material examined to date. Veil hyphae with one type having cinnamon colored walls in KOH which are thin and smooth.

Type locality. Tule Bay, Priest Lake, Idaho.

Habit and habitat. Gregarious on conifer duff under old-growth hemlocks.

Distribution. Known only from the type locality (Smith 76887).

Observations. This species is close to P. caputmedusae but lacks the odor and heavy soft veil remnants of the latter below the annulus and has distinctly larger spores. Both have the tendency of the necks of the cheilocystidia to elongate.


Illustr. Maire, op. cit. pl. 6, figs. 10–12; Favre; op. cit. fig. 5; Lange, op. cit. pl. 1, fig. f. Text Figs. 89–92.

Pileus 1–2 (–3) cm broad, obtusely conic, becoming campanulate or expanded-umbonate, surface at first with delicate fibrillose scales toward the margin, soon glabrescent, when moist pale to dark chocolate-brown, margin striatulate, hygrophanous and fading to pale alutaceous or pale livid buff (“cinnamon-buff”) or
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the disc remaining tawny, atomate and somewhat rugulose when faded. Context thin and very fragile, odor and taste not distinctive.

Lamellae moderately close, ascending adnate, broad, pallid, becoming dull purplish brown, thin, edges white-fimbriate.

Stipe 8–11 cm long, 2–5 mm thick, equal, tubular, fragile, whitish to pale cinnamon-buff, becoming darker below, sparsely covered by loose fibrils or in age glabrous, often somewhat undulate; annulus submembranous, superior, flaring, whitish, sometimes evanescent.

Spores 8–10 (–11) × 4–5 μ, smooth, apical pore hyaline and prominent, shape in face view narrowly elliptic to somewhat ovate, in profile obscurely inequilateral (the suprahilar depression broad and flat), color in KOH dark chocolate-color, in Melzer's reddish tawny, wall about 0.4 μ in Melzer's and up to 0.6 μ in KOH.

Basidia 20–26 × 7–9 μ, 4-spored, clavate, hyaline in KOH. Pleurocystidia 40–60 × 9–15 μ, fusoid-ventricose with subcapitate, broadly rounded or merely obtuse apex, wall thin smooth and hyaline, content not distinctive in either KOH or Melzer's, scattered to abundant. Cheilocystidia similar to pleurocystidia and also saccate to clavate and 10–18 μ broad, thin-walled, hyaline to yellowish as revived in KOH. Caulocystidia scattered, similar to both types of cheilocystidia. Hyphae of the stipe cortex with uneven walls as revived in KOH (due to very slight local thickenings ?), no incrusting pigment present.

Pileus with a cuticle of clavate to pear-shaped cells 26–40 × 10–25 (–30) μ, pedicels dull vinaceous-brown in KOH on young material, walls not appreciably thickened. Tramal body of hyphae (in young pilei) dark vinaceous-brown in KOH but pigment fading. Clamp connections present. No distinctive reactions shown by any tissue as revived in Melzer's.

Type locality. Europe.

Habit and habitat. Scattered on sphagnum moss in bogs, rare.


Observations. The spore wall appeared appreciably thicker, as measured on broken spores, in KOH than in Melzer's. The pattern of ornamentation, if it may be so termed, of the hyphae of the cortex of the stipe, though obscure, has a readily detectable “mass effect” as crushed mounts of the cortex are viewed. There is remarkable agreement in the literature on this species.


31. Psathyrella solheimii McKnight & A. H. Smith, sp. nov.

Pileus 3–5 cm latus, obtuse conicus demum planus vel subumbonatus, glaber, sordide melleibrunneus; lamellae confertae, latae, secedentes, dilute brunneae demum subfuscae; stipes 4–6 cm longus, 3–5 mm crassus, deorsum demum sordide brunneus, glaber, sursum annulatus; annulus membranaceus, striatus; sporiae 8–10 × 5–6.2 μ; pleurocystidia 26–45 × 10–18 μ, ad apicem late rotundata; caulocystidia sparsa, clavata vel vesiculosa; fibulae adsunt. Typus. W. G. Solheim 2178 (MICH); legit prope Laramie, Wyoming.

var. solheimii

Illustr. Pl. 19; Text Figs. 93–95.

Pileus 3–5 cm broad, obtusely conic, expanding to plane or nearly so, glabrous or with a few marginal veil remnants for a time after the veil breaks, color
when fresh a medium honey brown (close to "buckthorn brown"), becoming
grayish as spores mature, when faded pale avellaneous over marginal area and
a dingy tan over the disc (very ordinary coloration for the genus). Context thin
and membranous, fragile, odor and taste not distinctive.

Lamellae close, adnate-seceding, broad, brownish when young, becoming
dark chocolate-color by maturity and when dried blackish, edges even.

Stipe 4-6 cm long, 3-5 mm thick, equal, fragile, whitish becoming merely
pallid above, discoloring over basal area to dingy brownish, glabrous or nearly
so, with a median to superior membranous annulus which is striate on the upper
surface.

Spores 8-10×5-6.2 μ, smooth, apical pore distinct, shape in face view ovate
to elliptic, in profile view subelliptic to obscurely inequilateral, color in KOH at
first the color of a roasted coffee bean but slowly darkening to dark chocolate-
color (with more of a violaceous tone), in Melzer's dark bay-brown (not as
red as in most species), wall about 0.5-0.7 μ thick.

Basidia 4-spored, 24-30×8-11 μ (near the base of the gill, shorter near the
edge), clavate, hyaline in KOH. Pleurocystidia scattered, 26-45×10-18 μ broadly
and obtusely fusoid to broadly fusoid-ventricose with scarcely any neck and
apex broadly rounded to obtuse, wall thin, smooth and hyaline, content not
distinctive. Cheilocystidia vesiculose to broadly fusoid-ventricose and then re-
ssembling the pleurocystidia, hyaline to yellowish in KOH, 18-30×9-15 μ or
merely 10-15 μ wide if vesiculose. Caulocystidia none located other than an
occasional clavate to vesiculose hyphal end-cell.

Pileus with a cuticle of hyaline cells 2-3 deep with their long axes arranged
vertically and when crushed out many found to be broadly pyriform, walls thin,
smooth and hyaline, content not distinctive in either KOH or Melzer's. Hyphae
of the cocoa-colored subcuticular region (in KOH) showing some wall thickenings
near the septa, the color fading on standing, hyphal walls smooth or nearly so
over most of their area. Clamp connections present. No distinctive reaction
noted for any tissue when revived in Melzer's other than an orange tint to the
subhymenium which fades in a few minutes.

Type locality. Pole Mountain, near Laramie, Wyoming.

Habit and habitat. On moist soil under aspen, especially around beaver dams.


Observations. This species is close to *P. kauffmanii* but the latter differs in
having longer pleurocystidia which tend to produce bulges and projections at or
near the apex in mature or old specimens, in not having a coating of floccose
fibrils over the stipe below the annulus, and in slightly larger spores with thicker
walls.

Utah: McKnight F77. Wyoming: Smith 34576, 34579, 34597, 34660, 34725,
34726, 34728, 34737, 34740, 34763, 34764, 34774, 34899, 34902, 34905, 34924, 34925,
35109, 35209; Solheim 2178 (Type), 2855, 2856, 2857, 2859, 2860, 2864, 3345.

31a. *Psathyrella solheimii* var. *sanjuanensis* A. H. Smith, var. nov.

In exsiccatas annulus gossypinus avellaneus; sporae 8-10×5-6 μ; pleuro-
cystidia 38-50×10-13×8-10 μ, ad apicem rotundata vel subcapitata. Typus.
Smith 51837 (MICH); legit Ophir, Colorado.

Pileus 1-3.5 cm broad, convex, expanding to broadly convex, surface glabrous,
moist and hygrophanous, tawny to near "buckthorn brown," fading to pale
pinkish buff; margin at first appendiculate from particles of the white veil if the annulus does not form. Context thin, fragile, pale tawny fading to pallid; odor and taste not distinctive. Lamellae close, moderately broad, nearly equal, pallid tan becoming chocolate-brown and drying dark cocoa-color, edges even. Stipe 4–8(–10) cm long, 2–4 mm thick, equal, strict, naked except for a superior annulus or if annulus lacking the veil fragments scattered along the pileus margin, apex pruinose, white to pallid; annulus when present cottony, whitish but in drying becoming avellaneous; base of stipe white-strigose and basal region not appreciably discolored. Spores 8–10.5 × 4.5–6 μ, smooth, apical pore distinct and apex truncate, shape in face view broadly to moderately broadly elliptic varying to ovate, in profile obscurely inequilateral to subelliptic, color in KOH dark cocoa-color at first, in 15 minutes becoming dark chocolate-color, in Melzer’s reddish tawny, wall about 0.4 μ thick. Basidia 4-spored, 20–26 × 8–9 μ, clavate, hyaline in KOH. Pleurocystidia scattered, 38–50 × 10–13 × 8–10 μ, narrowly utriform with subcapitate apex, some Y-shaped, wall thin, smooth and hyaline, cell content not distinctive in KOH or in Melzer’s. Cheilocystidia 34–52 × 8–15 μ, fusoid-ventricose with subacute apex, fusoid-ventricose with short indistinct neck and broadly rounded apex, elliptic-pedicellate (in optical section), or clavate, hyaline, smooth, thin-walled, content not distinctive. Gill trama regular, hyphae with inflated cells, walls smooth and hyaline. Pileus cuticle a layer of vesiculose cells 2–3 deep, walls thin, smooth and hyaline, numerous pileocystidia resembling the pleurocystidia or more variable in shape present over some areas of the surface. Hyphae of the subcuticular region with pale tawny incrustations and wall thickenings near the septa as revived in KOH. Clamp connections present.

Type locality. Ophir, Colorado.

Habit and habitat. Gregarious under aspen.

Distribution. Colorado.

Observations. The Y-shaped cystidia are most peculiar but hardly diagnostic on the basis of present information. They give one the impression of being abnormal. The same applies to the pileocystidia. They are sporadic and may occur only where insects have damaged the tissue. This impression needs further verification. The reliable characters are the spore size, dark color of the spores in KOH, narrowly utriform pleurocystidia and the cottony annulus which becomes avellaneous in drying. This variant may eventually deserve recognition as an autonomous species.

Material examined: Colorado: Smith 51837 (Type).

32. Psathyrella kauffmanii A. H. Smith, sp. nov.

Pileus (3–)4–8(–9) cm latus, campanulatus vel plano-umbonatus, interdum late convexus, pallide spadiceus, ad marginem appendiculatus; sapor subamarus vel mitis; lamellae angustae conflatae adnatae, pallide spadiceae, pallidae in KOH, sursum annulata; microscopicae ad marginem appendiculate; stipes 6–12 cm longus, (2.5–)3–10 mm crassus, albidus, deorsum interdum fibrillosus, sursum annulatus; annulus tenuis, striatus, saepe evanescent; sporae 7–9 × 4.5–5 μ; pleurocystidia (34–)40–60 × 10–18 μ, ad apicera late rotundata vel obtusa, saepe bifurcata; fibulae adsunt. Typus. Smith 66602 (MICH); legit prope Big Bay, Michigan.
var. kauffmanii

Illustr. Pl. 17; Text Figs. 96–100.

Pileus about (3–)4–8–(9) cm broad, campanulate becoming plane, surface glabrous and moist, hygrophanous and slightly wrinkled when faded, honey brown (“buckthorn brown”) when young and becoming near “wood brown” as spores mature (dark grayish brown), when faded grayish to alutaceous to dingy pallid, scarcely translucent striate when moist, margin often appendiculate from remains of the veil. Context fragile, moderately thick, concolorous with surface, fragile, odor slight and not distinctive; taste mild to slightly bitterish.

Lamellae adnate, soon seceding, sometimes decurrent by a tooth, rather narrow, close to crowded, whitish becoming gray and finally dusky drab, edges white-fimbriate.

Stipe 6–12 cm long, (2.5–)3–10 mm thick at apex, 5–12 mm at base, white, stuffed becoming hollow, pruinose at apex, glabrous elsewhere or slightly to distinctly fibrillose-floccose below the annulus; annulus distant but not median, membranous, persistent or evanescent, striate on upper surface, fragile.

Spores 7–9 × 4.5–5 μ, smooth, apical pore broad but very inconspicuous under an oil immersion lens (apex rounded), shape in face view broadly oblong to elliptic, in profile subelliptic to obscurely bean-shaped, color as seen in KOH dark chocolate-color, in Melzer's reddish tawny, wall 0.3 μ thick.

Basidia 4-spored, 10–26 × 8–11 μ, clavate, hyaline in KOH. Pleurocystidia abundant (34–)40–60 × 10–18 μ, fusoid-ventricose to utriform, not infrequently with 1–3 protuberances at or near apex or apex forked, mostly the apex obtuse to broadly rounded, wall thin, smooth and hyaline in KOH, at times with some amorphous debris adhering variously, content not distinctive in either KOH or in Melzer's. Cheilocystidia vesiculose to clavate or fusoid-ventricose, 18–30 × 8–16 μ, the fusoid-ventricose cells with subacute to broadly rounded apex. Caulocystidia scattered to rare and merely vesiculose to clavate and 9–18 μ broad, hyaline, thin-walled, smooth.

Pileus with a cellular cuticle 1–3 cells deep, the wall thin, smooth and hyaline in KOH, content not distinctive. Hyphae of the trama including subcuticular region hyaline to weakly tawny brownish (on young pilei), walls thin and smooth. Clamp connections present. No distinctive reactions noted for any tissue as revived in Melzer's.

Type locality. Big Bay, Michigan.

Habit and habitat. Gregarious to scattered under beech-maple stands with some oak present.

Distribution. Michigan, New Mexico, Ohio, Virginia, Wyoming.

Observations. The distinguishing features of this species are the abundant pleurocystidia with variable apex as described, habit on humus, relatively large size, lack of reddish tinges to the gills (even as dried) and the dark colored spores in KOH. In the latter features it is very similar to Drosophila leucotephra sensu Kühner & Romagnesi, but has abundant pleurocystidia.

32a. Psathyrella kauffmanii var. exannulata A. H. Smith, var. nov.


Illustr. Pls. 18, 94; Text Fig. 101.

Pileus 3–8 cm broad, oval to obtusely conic becoming nearly plane, surface moist and hygrophanous, glabrous or with zones or patches of veil fibrils along the margin, margin at first appendiculate from patches of the submembranous partial veil, color when moist "Prout's brown" to "cinnamon-brown" to "snuff brown" or "buckthorn brown," fading finally to "warm buff" to "pinkish buff" (pale dingy ochraceous to pale tan), surface radially rugulose at times, margin often striate to plane when moist. Context watery brown, fading to pallid, fragile, thin, odor and taste not distinctive.

Lamellae close to crowded, narrow to moderately broad, bluntly adnate, seceding, pallid grayish and finally fuscous brown to purplish brown, edges even.

Stipe 7–12 cm long, 4–8 mm thick equal or narrowed to a pointed laterally rooting base, fragile to firm, hollow, surface thinly appressed fibrillose over lower portion, glabrescent, apical region faintly pruinose-striate, white over all and unchanging or merely slightly discolored generally in age.

Spore deposit dark purple-brown (with a slight red component). Spores 7–8.5 (–9) × 4–4.5 μ, smooth, apex somewhat truncate from a distinct pore, shape in face view narrowly ovate to elliptic with the base of many of them somewhat truncated (spore tending to be wedge-shaped to a slight extent), in profile somewhat bean-shaped to obscurely or somewhat inequilateral (apical region in some drawn out slightly, color in KOH cocoa-color and remaining so a long time in KOH, finally darkening slightly), in Melzer's tawny reddish, wall about 0.2 μ thick.

Basidia 4-spored, 18–23 × 7–9 μ, clavate, hyaline in KOH. Brachybasidioles not differentiated from basidioles. Pleurocystidia 35–45 (–50) × 10–18 μ, utriform to broadly fusoid-ventricose with broadly rounded to capitulate apex, wall thin, smooth, hyaline and not highly refractive, content not distinctive in KOH or in Melzer's. Cheilocystidia 20–35 × 10–20 μ, broadly clavate, saccate, or vesiculose, thin-walled and hyaline. Caulocystidia more or less like the pleurocystidia but fewer of them utriform.

Pileus with a cuticle of vesiculose cells 1–2 deep, the cells with thin, hyaline to slightly ochraceous walls and content of cell not distinctive. Hyphae of the trama in the subcuticular region vinaceous-brown in young basidiocarps when first revived in KOH, fading, hyphal walls smooth, some intercellular hyaline debris in the layer. When mounted in Melzer's no distinctive color changes were evident. Clamps present.

Type locality. Haven Hill, Highland Recreation Area, Oakland County, Michigan.

Habit and habitat. Subcespitose-gregarious under beech, June and October.


Observations. This is a genetically constant entity fruiting at the same time as the type variety and never observed with a persistent annulus. However, it is so similar to the type variety in all other respects that it seems unjustifiable to recognize it as an autonomous species. It may possibly differ in shorter more capitate pleurocystidia, but here there is much intergradation. Psathyra fatua sensu Lange, with spores under 5 μ wide, may be this variant.

33. *Psathyrella subpurpurea* A. H. Smith, sp. nov.

Pileus 2–4 cm latus, demum late convexus, purpureo-griseus, glaber; lamellae confertae, angustae, secedentes, demum sublatae, secedentes, demum sordide vinaceo-brunneae; stipes 5-9 cm longus, 2.5-5 mm crassus, glaber; annulus striatus, membranaceus, saepe evanescens; sporae 7-9×4-4.5 μ; pleurocystidia 46-70(-80)×9-16 μ, ad apicerum acuta vel subacuta; fibulae adsunt. Typus. Smith 55579 (MICH); legit prope Grants Pass, Oregon.

Pileus 2–4 cm broad, convex with a straight margin, in age broadly convex, glabrous, moist, hygrophanous, dark purple-drab (“dark purple-drab”) to more vinaceous (“dark vinaceous-drab”) with a grayish-hoary overcast but no veil fibrils present, fading to a dingy vinaceous-drab but in drying becoming dark purple-drab again. Context thin and very fragile, odor not distinctive.

Lamellae close, narrow to moderately broad, equal, seceding, dingy vinaceous brown becoming dark vinaceous and drying “Natal brown,” edges crenulate.

Stipe 5–9 cm long, 2.5–5 mm thick, equal or nearly so, whitish but generally dingy in age, with a median flaring annulus striate on the upper side and fringed on the margin, annulus often evanescent, slightly pruinose near the apex.

Spores 7–9×4-4.5 μ, smooth, apical pore distinct and apex somewhat truncate, shape in face view ovate to elliptic, in profile obscurely inequilateral to sub-elliptic, rarely obscurely bean-shaped to drop-shaped, color in KOH ochraceous-tawny to dull tawny, slowly becoming grayer, in Melzer's pale tawny, wall about 0.3 μ thick.

Basidia 4-spored, 8–9 μ broad at apex. Pleurocystidia abundant, 46–70(-80)×9–16 μ, fusoid-ventricose with a long, tapered neck to an acute to obtuse apex; wall smooth, thin and hyaline, or refractive and 0.3–0.4 μ thick (+) in some; cell content not distinctive. Cheilocystidia smaller than the pleurocystidia and more obtuse at apex. Cuticle of pileus a layer 2–4 cells deep, walls yellowish to hyaline, smooth, cell content not distinctive. Hyphae of the subcuticular zone dull rusty brown, fading, wall mostly somewhat incrusted. Clamp connections present.

Type locality. Sleepy Hollow, near Grants Pass, Oregon.

Habit and habitat. On conifer debris and duff, late fall, rare.

Distribution. California, Oregon.

Observations. The colors remind one of those as described for *P. bipellis* but the latter does not have an annulus. *Psathyrella longistriata* is close, but in that
species the pleurocystidia were not observed to have thickened walls and they
typically are more obtuse and have more granular material adhering around the
apex, and of course there is a striking difference in pigmentation of the pileus.

Material examined. California: Lanphere 61; White 358. Oregon: Smith
55579 (Type).

34. Psathyrella barrowsii A. H. Smith, sp. nov.

Pileus 2–6 cm latus, convexus vel umbonatus, glaber, spadiceus; lamellae
conferatae angustae demum sublatae, pallidae demum sordide vinaceo-brunneae;
stipes 7–14 cm longus, 3–7 mm crassus, deorsum strigosus et subradicatus, albidus,
sursum pruinosus, deorsum subquamulosus; annulus gossypinus, albidus, in
exsiccati avellaneus; sporae 7.5–9 × 4–5 μ; pleurocystidia 33–46 × 9–15 μ, fusoide
ventricosa, ad apicem obtusa, fibulae adsunt. Typus. Barrows 1307 (MICH);
legit prope Santa Fe, New Mexico.

Pileus 2–6 cm broad, broadly obtuse to convex-umbonate, expanding to plane
or nearly so or retaining a slight umbo, surface glabrous, moist, hygrophanous,
color when young date brown but becoming lighter (in yellow-brown series) before
fading to cartridge buff or pale tan. Context thin, fragile, concolorous with the
surface when moist or faded, taste and odor not distinctive.

Lamellae adnate (bluntly or with a decurrent tooth), close, equal, narrow to
moderately broad, pallid when young, near “bone brown” (dark vinaceous-brown)
in age, edges pallid.

Stipe 7–14 cm long, 3–7 mm thick, equal or narrowed to a somewhat rooting
base which is strigose, white and pruinose above, lower down (beneath the
annulus) with patches or a zone of veil fibrils or in some with a second annulus;
basal area not distinctly discoloring; annulus thick, cottony, collar-like with a
flaring upper limb, white but drying avellaneous.

Spores 7.5–9 × 4–5 μ, smooth, apical pore present but apex only obscurely
truncate, color in KOH dark cocoa-color slowly changing to dark chocolate-color,
in Melzer's dark reddish tawny, shape in face view ovate with the base in many
somewhat truncated (as in P. subtruncatispora), varying to broadly subelliptic,
in profile obscurely broadly-inequilateral, wall about 0.3 μ thick.

Basidia 4-spored, 14–20×6–8 μ, clavate, hyaline. Pleurocystidia scattered,
33–46 × 9–15 μ, broadly subfusoid with obtuse apex, fusoid-ventricose with an
obtuse apex or a few ventricose-subcapitate (not truly utriform), wall thin, smooth
and hyaline, content of cell not distinctive. Cheilocystidia similar to pleurocystidia
or clavate to saccate and 24–35 × 8–15 μ, walls hyaline to yellowish in KOH.

Pileus cuticle a layer of vesiculose cells 2–3 deep, the cells thin-walled, hyaline
to ochraceous in KOH. Hyphae of trama in subcuticular region vinaceous in KOH
and pigment in the walls and some incrusted near the septa. Clamps present.

Type locality. Santa Inez Mountains, New Mexico.

Habit and habitat. Under aspen, gregarious.


Observations. This species has shorter pleurocystidia of a different shape, and
smaller spores than P. solheimii var. sanjuanensis. In both, the annulus is thick,
cottony, and dried avellaneous in color. It is distinct from P. kauffmanii in having
a thick annulus and a significant number of spores truncated at the base (as seen
in face view).

Material examined. Colorado: Smith 51809, New Mexico: Barrows 411, 437,
1008, 1307 (Type). Wyoming: Solheim 3636, 3656, 3710, 4383, 4728.
35. *Psathyrella ellenae* A. H. Smith, sp. nov.

Pileus 1–3 cm latus, demum late convexus, glaber, cinnamomeus; lamellae confertae, secedentes, sublatae, dilute bruneae demum rufo-cinnamomeae; stipes 2.5–4 cm longus, 1.3–3 mm crassus, cavus, fragilis, deorsum bruneus, sursum albidus; annulus membranaceus; sporae 7–9×4–5 μ; pleurocystidia 40–63×9–15 μ, ad apicem acuta; fibulae adsunt. Typus. Smith 58678 (MICH); legit prope McCall, Idaho; Ellen Trueblood.

var. *ellenae*

Pileus 1.5–3 cm latus, demum later convexus, glaber, cinnamomeus; lamellae confertae, secedentes, sublatae, dilute bruneae demum rufo-cinnamomeae; stipes 2.5–4 cm longus, 1.3–3 mm crassus, cavus, fragilis, deorsum bruneus, sursum albidus; annulus membranaceus; sporae 7–9×4–5 μ; pleurocystidia 40–63×9–15 μ, ad apicem acuta; fibulae adsunt. Typus. Smith 58678 (MICH); legit prope McCall, Idaho; Ellen Trueblood.

Illustr. Text Figs. 102–104.

Pileus 1.5–3 cm latus, demum later convexus, glaber, cinnamomeus; lamellae confertae, secedentes, sublatae, dilute bruneae demum rufo-cinnamomeae; stipes 2.5–4 cm longus, 1.3–3 mm crassus, cavus, fragilis, deorsum bruneus, sursum albidus; annulus membranaceus; sporae 7–9×4–5 μ; pleurocystidia 40–63×9–15 μ, ad apicem acuta; fibulae adsunt. Typus. Smith 58678 (MICH); legit prope McCall, Idaho; Ellen Trueblood.

var. *ellenae*

Pileus 1.5–3 cm broad, convex, becoming broadly convex, glabrous, moist, hygrophanous, watery cinnamon-brown and striatulate moist, fading to dingy buff and when dried grayish; margin even and lacking any adhering veil remnants. Context almost paper thin, concolorous with surface, odor and taste not distinct.

Lamellae close, moderately broad, adnate, seceding, pale dingy brown becoming “warm sepia” (dull dark reddish cinnamon), edges even.

Stipe 2.5–4 cm long, 1.3–3 mm thick at apex, base 2–4 mm thick, hollow, fragile, brownish near the base, whitish over upper region, with a superior, thin membranous annulus becoming grayish pallid in drying, with thin appressed patches of veil fibrils scattered below the annulus at first, glabrescent in age.

Spores 7–9×4–5 μ, smooth, apical pore distinct and apex truncate, shape in face view ovate to elliptic, in profile obscurely inequilateral to subelliptic, color in KOH tawny-olive and slowly darkening to close to “bister,” in Melzer’s pale reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 18–24×7–9 μ, clavate, hyaline in KOH. Pleurocystidia scattered, fusoid, 40–63×9–15 μ, apex pointed and in KOH often with granules adhering, hyaline to yellowish in KOH, wall thin (or in yellowish cystidia it is refractive and 0.3–0.5 μ thick as revived in KOH), cell content not distinctive. Chellocystidia mostly clavate to subvesiculose, 9–12 μ wide, hyaline in KOH, thin-walled.

Gill trama regular, hyphae interwoven and with inflated cells having ochraceous to brownish walls. Pileus trama dull tawny in KOH, hyphae with walls smooth but thickened at and near the septa. Cuticle of pileus a layer of cells 2–3 deep with ochraceous walls smooth and not highly refractive, cell content not distinctive. Clamps present.

Type locality. Above Boulder Lake, near McCall, Valley County, Idaho.

Habit and habitat. About 7,000 ft. elev. under spruce-fir.

Distribution. California, Idaho.

Observations. This is a very distinct species on the basis of spore size, apical truncation of the spore, and their color in KOH along with the acute prominent pleurocystidia, lack of an odor and the small size of the basidiocarps. It is named in honor of its collector Mrs. Ellen Trueblood of Nampa, Idaho.

Of the European species considered, the description of *P. xanthocystis* Orton reads much like that of *P. ellenae*, but it grew on a rotten birch log and has cheilocystidia 65×28 μ. *P. jerdonii* (Orton’s type study) has spores 10–11×5–5.5 μ, with a very inconspicuous apical pore and a prominent apiculus. On the basis of the spore features I would class *P. jerdonii* as related to *P. caputmedusae*.

Material examined. California: White 139. Idaho: Smith 58678 (Type).

Sporae 8–10 × 4–5 μ; pleurocystidia 44–68 (–80) × 10–18 (–20) μ, ad apicerum obtusa, saepe crassotunicata (0.5 μ). Typus. Thiers 13870 (MICH); legit prope Yuba Pass, Sierra County, California.

Pileus 3–4 cm broad, convex expanding to broadly convex or plane, in age some slightly umbonate and with undulating margin, glabrous, distinctly rugulose over entire marginal portion, smooth on the disc, when partly faded the marginal area chestnut-brown, the central portion warm buff to pale olive-buff; margin incurved and entire at first but becoming eroded, naked at all times. Context very fragile, about 3 mm thick in the disc, concolorous with the surface, taste and odor not distinctive.

Lamellae close to subdistant, several tiers of lamellulae, thin, fragile, narrow, adnate, avellaneous, dark vinaceous-brown as dried; margin becoming eroded, paler in color than the faces.

Stipe 3–4 em long, 3–6 mm thick near apex, hollow, white, shiny, surface appressed silky-fibrillose, dry, with a conspicuous persistent subapical annulus; interior of stipe white and unchanging.

Spores 8–10 × 4–5 μ, smooth, apical pore distinct and apex truncate as seen in optical section, shape in face view ovate to subelliptic, in profile somewhat to obscurely inequilateral, color in KOH dingy ochraceous-tawny slowly becoming grayish tinged, in Melzer's bright pale tawny, wall about 0.3 μ thick.

Basidia 4-spored. Pleurocystidia 44–68 (–80) × 10–18 (–20) μ, fusoid-ventricose with obtuse smooth apex; walls often slightly thickened and yellowish in KOH, smooth; cell content not distinctive. Cheilocystidia abundant, clavate, hyaline, 26–40 × 8–15 μ, thin-walled, hyaline in KOH.

Pileus cuticle 2–5 cells deep, the cells hyaline to yellowish in KOH, some very large cells present, walls somewhat thickened (up to 0.5 μ) but smooth. Hyphae of the subcuticular region nearly hyaline in KOH. Clamps present.

Type locality. Yuba Pass, California.

Habit and habitat. Gregarious in conifer woods on humus.

Distribution. Known only from the type locality.

Observations. This variety differs from the type variety in having obtuse pleurocystidia, somewhat thickened refractive cell walls in the cuticular hyphae, and paler spores in KOH.


Illust. Kauffman, i. c. pl. 12. Pl. 20; Pl. 21; Text Figs. 105–109.

Pileus (3–)4–8 (–10) cm broad, obtusely conic to convex when young and the margin incurved, expanding to plane or broadly convex but sometimes with a low broad umbo, surface at first covered with thin fibrillose patches of veil remnants or merely thinly fibrillose, soon glabrous, smooth but sometimes becoming rugulose at least around the disc, moist, decidedly hygrophanous, when moist dark avellaneous, pale sordid yellowish brown, to dark rusty brown or dark reddish brown (cinnamon-buff, "wood brown" “Mars brown” or “Mikado brown”), more or less translucent striate when moist, fading to pallid or tinged cinnamon buff or merely pallid (“tilleul buff” to “cinnamon-buff”). Context very thin and
fragile, more or less concolorous with the surface of the pileus, pallid to buff in age, odor and taste not distinctive.

Lamellae close, 46–54 reach the stipe, 2–3 tiers of lamellulae, adnate but seceding readily, moderately broad and more or less equal (5–7 mm), pale buff when young, soon dull purplish brown, sometimes distinctly vinaceous-brown ("vinaceous-fawn") from maturing spores, often drab and becoming "hair brown" edges even and white floccose.

Stipe 4–10 cm long, (4–)5–10 mm thick at apex, evenly but only slightly enlarged downward, hollow and very fragile, white or pallid, sheathed up to the annulus by a thin white fibrillose coating which often becomes broken into floccose scales and eventually may disappear completely, somewhat silky fibrillose-squamulose or merely silty above the annulus; annulus superior to median, white, usually persistent and membranous, white-floccose on the under side, upper surface striate and silky.

Spore deposit dull vinaceous-brown to purplish brown. Spores (6.5–)7–9 × 4–4.5 (–5) μ, smooth, apical pore present but not readily evident on most spores, apex not truncate, shape in face view elliptic to ovate, in profile obscurely inequilateral to subelliptic, color in KOH cocoa-color becoming dark sepia or clouded with gray (but not dark chocolate-color), in Melzer's reddish tawny, wall about 0.3 μ thick.

Basidia 16–18 × 7–9 μ (at base of gill up to 25 × 10 μ), 4-spored, clavate, hyaline in KOH. Pleurocystidia abundant, 40–60 (–72) × 10–17 μ, fusoid-ventricose with obtuse to subacute apex, wall thin, hyaline and smooth, content not distinctive in KOH or in Melzer's. Cheilocystidia similar to pleurocystidia or saccate to balloon-shaped and 28–36 × 10–18 μ, thin-walled and readily collapsing. Caulocystidia fairly abundant, either fusoid-ventricose with obtuse apex and up to 75 × 18 μ or clavate to vesiculose and 10–15 μ wide, both types thin-walled and readily collapsing.

Pileus with a cuticle composed of hyaline cells 10–30 μ wide and among them are clavate to pear-shaped upright cells 40–50 × 10–20 μ, the layer not truly hymeniform, the walls thin, smooth and hyaline, content not distinctive in either KOH or Melzer's. Tramal hyphae pale vinaceous brown in KOH but fading. Clamps present.

Type locality. Seattle, Washington.

Habit and habitat. Scattered to gregarious on humus and debris under conifers and also under alder (Alnus).


Observations. This is a common species in the Pacific Northwest. As presented here it is a variable one in respect to the color of the pileus and to some extent relative to the veil remnants on the stipe below the annulus. I have not observed any significant tendency toward thickened walls in the pleurocystidia.

Section Spintrigerae (Fr.) Singer, emended

Agaricus (Stropharia) \( \beta \). Spintrigera Fries, Hymen. Europ. 287. 1874.

As defined here the section includes only annulate species lacking pleurocystidia. A group of subtropical species is keyed out here also even though the type material studied revived too poorly to justify a firm conclusion that pleurocystidia actually were absent.

Type. Psathyrella spintrigera.

Key to the Species of Section Spintrigerae

1. Pileus smoky olive over disc when young, subhymenium at maturity of distinctly inflated cells (wider than the basidia in many instances).
   37. P. diabolica.

1. Not with both the above features.

2. Growing especially with beech; pileus trama dark colored when young (not yet known from North America).
   38. P. tuberculata.

2. Not as above.

3. Pileus greenish and covered with small tubercules.
   39. P. membranacea.

3. Not as above.

4. Stipe brownish; lamellae moderately broad; brachybasidiolopes present; growing solitary on wet ground in woods.

5. Stipe naked below the annulus.

6. Pileus "densely woolly squamulose"; stipe 2-4 mm thick.
   41. P. floccosa.

6. Pileus "floccose-scaly", stipe 5-10 mm thick.
   40. P. vanhermanii.

37. Psathyrella diabolica A. H. Smith, sp. nov.

Pileus 2-6 cm latus, demum convexus vel subplanus ad centrum fumoso-olivaceus, ad marginem laxis; lamellae pallidae demum vinaceo-brunnea, conferta, angustae; stipes 3-8 cm longus, 2-4.5 mm crassus, albidus; annulus tenuis, albidus, saepe evanescens; sporae 7-9×4.5-5.5 \( \mu \); pleurocystidia nulla; basidia 12-18×7-9 \( \mu \); tetraspora; subhymenium pseudoparenchymaticum, celluli 8-15 \( \mu \) diam.; fibulae adsunt. Typhus. Mazzer 7097 (MICH); legit prope Dexter, Michigan.

Pileus 2-6 cm broad, obtuse becoming convex and thin, nearly plane in age, surface glabrous moist and then subhygrophanous, when young smoky olive over the disc and pallid near the margin, but at maturity milky white except for an olive cast over the disc or finally milky white over all, whitish over all when faded or dried (but some young pilei retaining a dingy olive-gray cast over the disc); margin naked or appendiculate depending on how the veil breaks. Context thin, white, fragile, odor and taste not distinctive.

Lamellae very crowded and narrow, adnate, pallid becoming violaceous brown and as dried dark vinaceous-brown, the edges pallid.

Stipe 3-8 cm long, 2-4.5 mm thick, equal, hollow, fragile, white over all and drying white, not discoloring, naked below the superior white membranous entire to fragmentary annulus which is present on most basidiocarps; naked, the annulus often evanescent.

Spores 7-9×4.5-5.5 \( \mu \), smooth, apex truncate from a small but distinct apical pore, shape in face view broadly elliptic to obscurely ovate, in profile obscurely
inequilateral to sub elliptic, color in KOH pale cocoa-color slowly changing to fuscous-gray (pale), reddish tawny in Melzer's, wall about 0.2 μ thick.


Gill trama of hyaline smooth interwoven inflated hyphae in KOH; subhymenium cellular, the cells up to 15 μ or more in diameter (often twice the diameter of a basidium). Pileus cuticle a layer 1–3 cells deep of inflated hyaline thin-walled cells. Subcuticular hyphae hyaline in KOH. Clamps present.

Type locality. Dexter, Michigan.

Habit and habitat. Subcespitose to gregarious near elm stumps, late June.

Distribution. Known only from the type locality.

Observations. This species has extremely small basidia in relation to the size of the subhymenial cells. In fact it is difficult to identify brachybasidioles because subglobose hymenial cells were seen to have sterigmata. The spores in face view are more elliptic than in *P. candolleana*, the young pileus is olive-tinged, and an annulus is usually present. *Psathyrella leucotephra* (Berk. & Br.) Orton may be close to this species, but the stipe is squamulose below the annulus.


*Stropharia tuberculata* Morgan, Jour. Mycol. 14: 70. 1908.

Illust. Text Figs. 110, 111.

Pileus 1–4 cm broad, fleshy, at first globose, becoming campanulate and finally expanded, greenish and covered with squamules in the form of small obtuse tubercules, becoming glabrous and color changing to purplish or almost black, smooth or faintly striatulate, the margin entire and straight. Context thin.

Lamellae narrow, reaching the apex of the stipe, white then purplish and finally a brownish black.

Stipe 5–10 cm long, 3–5 mm thick, white, cylindric, hollow, fragile, rugulose and lower portion marked with scattered slightly projecting squamules; annulus spreading, thin, membranous, fringed on the margin, white, persistent, median to somewhat superior.

Spores 6.2–7.8×4–4.6 μ, smooth, pore apical and distinct under oil immersion, shape in face view elliptic, color as revived in KOH dull cocoa-color becoming chocolate-gray, in Melzer's tawny reddish.

Basidia 4-spored, 13–15×5–6 μ, hyaline in KOH. Brachybasidioles possibly differentiated by maturity (hymenium in old pilei very poorly preserved). Pleurocystidia none. Cheilocystidia scattered, 16–22×9–12 μ, clavate to broadly fusoid-ventricose, apex rounded to obtuse, wall thin, smooth and hyaline, content not distinctive. Caulocystidia not studied.

Pileus with a cuticle of clavate-pedicellate and vesiculose cells about one cell deep, their walls smooth, thin and hyaline as revived in KOH. Hyphae of the subcuticular zone dull tawny brownish as revived in KOH.

Type locality. Guadeloupe.

Habit and habitat. Cespitose on old trunks of *Hura crepitatux*.

Distribution. Guadeloupe (type studied).

Observations. The greenish color of the pileus is admittedly peculiar for a *Psathyrella*, but the material studied clearly indicates this genus.
39. **Psathyrella membranacea** A. H. Smith, nom. nov.


Illust. Text Figs. 112, 113.

Pileus 2.5 cm broad, convex-subumboate, surface hygrophanous, brown, faintly striate, with delicate floccose patches from the remains of the veil. Context very thin and fragile.

Lamellae adnexed, crowded, moderately broad, dark avellaneous.

Stipe 7 cm long, 2-3 mm thick, slender, fragile, tapering upward, enlarged at the base, glabrous, silky, hollow, concolorous with pileus but slightly paler; annulus about 2.5 cm from apex of stipe, white, ample, persistent.

Spores 7-8 × 4.5-5 µ, smooth, with a small apical pore but apex not appearing truncate, shape in face view elliptic to slightly ovate, in profile subelliptic to obscurely inequilateral, pale chocolate gray as revived in KOH, wall about 0.2 µ thick.

Basidia 4-spored, 18-20 × 9-11 µ, clavate-capitate, hyaline in KOH. Brachybasidioles 10-16 × 9-14 µ, hyaline and readily collapsing. Pleurocystidia not found. Cheilocystidia abundant, saccate to clavate or broadly ventricose with a slightly narrowed neck and very obtuse apex, thin-walled, hyaline, 25-38 × 10-18 µ.

Subhymenium cellular. Pileus with a cuticle of enlarged hyaline hyphal cells 20-40 × 15-30 µ, the layer 1-2 cells deep, hyaline in KOH and thin-walled. Tramal body brown in KOH and the hyphae with greatly inflated cells.

Type locality. Chalmitte, New Orleans, Louisiana.

Habit and habitat. Solitary on the ground in wet woods.

Distribution. Louisiana, Florida and British Honduras (type studied).

Observations. The scattered remains of an outer veil on the pileus, moderately broad lamellae, brownish stipe, white ample annulus, spores pale chocolate-gray in KOH, and lack of pleurocystidia all indicate clearly a relationship to the annulate species of the subgenus *Candolleana*.

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40. **Psathyrella vanhermanii** A. H. Smith, nom. nov.

*Stropharia caespitosa* Murrill, Mycologia 10: 71. 1918 (non *Psathyrella caespitosa* Peck, 1907).

Illust. Text Fig. 114.

Pileus 3-5 cm broad, campanulate to convex, surface dry, pallid with brownish shades, floccose-scaly, at length glabrous, rugose, margin thin, fluted, scarcely striate. Context thin, very fragile, white, taste mild (pleasant).

Lamellae adnexed, crowded, rather narrow, white to pale purplish brown.

Stipe 7-10 cm long, 5-10 mm thick, subcylindric, tapering below, white, densely floccose, hollow, veil white, thick, usually forming a more or less deciduous annulus about 3 mm from the apex of the stipe.

Spores 6-7.5 × 3.5-4 (9-11 × 5) µ, smooth, with a broad apical pore but not appearing truncate unless the convex apical lens collapses, shape in face view oblong to narrowly elliptic, in profile obscurely bean-shaped to subelliptic, color as revived in KOH pale chocolate-gray, wall about 0.2 µ thick.

Cheilocystidia 26-30 × 9-15 µ, broadly and obtusely fusoid-ventricose, hyaline, thin-walled and smooth as revived in KOH. Pileus with a cuticle of inflated hyaline cells 10-20 µ wide and hyaline in KOH.

The above description is drawn entirely from the type (Earle 204). The
material revived very poorly and consequently much important information is still lacking. However, from the information available the species clearly belongs in this group.

Type locality. Santiago de las Vegas, Cuba.
Habit and habitat. Cespitose on red clay soil under a house.
Distribution. Cuba (type studied).

Observations. Murrill stated that the species resembled the annulate form of *Drosophila appendiculata* (*P. candolleana* of this work), and the comparison is very appropriate. The range in size of the typical spores distinguishes the two at once. *Psathyrella microlepidota* Orton is close to this species, but grows on wood, and very likely has a northern distribution.

41. *Psathyrella floccosa* (Earle) A. H. Smith, comb. nov.


Illustr. 1, c., pl. 40, fig. 2. Text Figs. 115, 116.

Pileus 2–4 cm broad, thin, convex to plane or depressed, brownish ochraceous, tinged brownish purplish because of the spore powder, densely woolly-squamulose when dry, not striate. Context thin and delicate, cinereous, odor and taste mild.

Lamellae more or less adnate, close, almost narrow, equal, concolorous becoming brownish purple.

Stipe 4–6 cm long, 2–4 mm thick, cylindric or attenuated above, densely villose, white, hollow; veil well developed, white, forming a conspicuous annulus 2 cm from the cap.

Spores 6–7×4 μ, pale chocolate-color in KOH, ellipsoid to ovate in face view, obscurely bean-shaped to subelliptic in profile, the apical pore distinct. Pileus cuticle a layer of vesiculose cells 1–2 deep.

Note. The type was studied but the tissue revived so poorly that data on other characters could not be reliably obtained.

Type locality. Santiago de las Vegas, Cuba.
Habit and habitat. Clustered on the ground.
Distribution. Cuba.

Observations. This species features a very prominent funnel-like annulus and is clearly a *Psathyrella* of the annulate group.

*Psathyrella* subg. *Candolleana* (Romagnesi) A. H. Smith, comb. nov.


Note that *Psathyrella* subg. *Hypholoma* (Fr.) Singer, Lilloa 22: 466. 1951 cannot be accepted because Fries (1821) p. 296, included *Agaricus candollianus* in *Psathyra* (as a “tribe” of *Agaricus*), and in the same publication (p. 287) where “tribe” *Hypholoma* is described, *A. candolleanus* is not mentioned. Thus the latter species simply is not available as the type of “*Hypholoma*.”

As treated here this subgenus includes only those species with veil remnants appendiculate on the margin of the pileus and in which pleurocystidia are absent. The fact that the veil remnants readily fall away causes some difficulty in identifying mature pilei in this group. In such an instance greatest emphasis should be placed on the absence of pleurocystidia and the fact that the stipe typically is more than 2.5 mm thick. This group is continued in section *Substratae* of *Psathyrella*.

Type species. *Psathyrella candolleana*.²

²Note that the species epithet is spelled with an e instead of an i as Fries spelled it.
Key to the Sections of Subgenus Candolleana

1. Spores 5-10 μ long (see P. proxima also). sect. Candolleana.
2. Spores (9-)10-12 μ or more long. sect. Fragilissimae.

Section Candolleana

This is basically the P. candolleana group, and as such needs further critical study. In this group one can observe the gradual differentiation of brachybasidioles among the various species, as well as a tendency for the spore pigments to be more poorly developed as more southern species are discovered which show this progression. There is also a tendency toward veilless species—see P. glandispora Pegler (1966).

Key to the Species of Section Candolleana

1. Spores compressed slightly (7-8 × 3.5-4 × 4-4.6 μ); veil fibrils grayish pallid; lamellae gray-brown when mature. 42. P. pseudocandolleana.
   1. Not as above. 2
   2. Pileus dark rusty brown when young and moist; with the stature of 233. P. conopilea; lamellae dark rusty brown when mature. 43. P. rupchandii.
   2. Not as above. 3
   3. Spores grayish hyaline to weakly brownish hyaline, or nearly hyaline in KOH under the microscope. 4
   4. Hyphae of subcuticular region of pileus bright rusty brown in KOH or with brown wall thickenings or incrustations. 44. P. singeri.
   4. Hyphae of subcuticular region of pileus hyaline to dingy ochraceous in KOH. 5
   5. Spores 9-12 × 5-6 μ (many 9-10 × 5 μ). see 61. P. luteopallida.
   5. Spores 7-9 × 4.5-6 μ; veil absent (but young caps are necessary for verification). see 242. P. subhyalinispora.

   6. Solitary; stipe 14 cm long and 4 mm thick; spores 7-9.5 × 4.5-5.5 μ; known from Mexico (see 81. P. subagraria also). 45. P. jalapensis.
   6. Not as above. 7
   7. Spores 5-7.5(-8) × 3.5-5 μ (see 50. P. hymenocephala also) 8
   7. Spores 7-10(-11) × 4-5 μ (see 38. P. hurnonensis also). 10
   8. Spores 5-6.5(-7.5) × 3-4.2 μ, smoky umber in KOH but soon fading to hyaline; lamellae pale yellow when young. 46. P. thiersii.
   8. Not as above (see 411. P. subochracea also). 9
   9. With a compact mat of mycelium at the base of the stipe; pileus radiately rugose near the margin. 47. P. rugoproxima.
   9. Lacking a mat of mycelium at the base and pileus surface smooth or nearly so (see 406. P. olivaceocystis also) 48. P. incerta.
   10. Outer veil pinkish buff and its hyphae yellow in KOH as revived and viewed under the microscope. 49. P. rogueiana.
   10. Not as above (see 410. P. sublongispora also). 11
   11. Pileus typically with a strong cinnamon color tone at first. 50. P. hymenocephala.
   11. Pileus pallid to honey-color. 12
   12. Spores mostly oblong in face view; solitary on sand. 51a. P. candolleana var. solitaria.
   12. Spores elliptic to ovate in face view. 51. P. candolleana var. candolleana.

42. Psathyrella pseudocandolleana A. H. Smith, sp. nov.

Pileus 2.5-4 cm latus, demum planus, glaber, griseo-melleus, ad marginem appendiculatus; lamellae griseo-pallidae demum fuscae, angustae confertae; stipes 2-4 cm longus, 2-4 mm crassus, pallidus, deorsum griseo-fibrillosus; sporae 7-8 × 3.5-4 × 4-4.6 μ; cheilocystidia 34-47 × 9-14 μ; fibrulae adsunt. Typus. Smith 63540 (MICH); legit prope Douglas Lake, Michigan.
Pileus 2.5–4 cm broad, nearly plane when mature, obtuse at first, then convex, glabrous and moist, hygrophanous, at first a grayish honey-color, fading to grayish buff; margin appendiculate with small fragments of the veil at first. Context thin but not markedly fragile, odor and taste not recorded.

Lamellae grayish pallid becoming dark grayish brown ("hair brown"), close, narrow, adnate-seceding, edges even and pallid.

Stipe short, 2–4 cm long, 2–4 mm thick at apex, pallid and more or less naked above, lower down thinly coated with grayish pallid fibrils, as dried with a distinct "sand bulb" at the base as a result of shrinkage of tissue above the bulb.

Spores 7–8 × 3.5–4 × 4–4.6 μ, smooth, apical pore distinct, at least a fair number slightly compressed, shape in face view ovate to elliptic, in profile somewhat bean-shaped to oblong, rarely with a slight medial constriction, color in KOH dull cocoa-color but slowly darkening, in Melzer's tawny red, wall 0.2 μ.

Basidia 4-spored, 17–22 × 5–7 μ, clavate, hyaline in KOH. Pleurocystidia not found. Cheilocystidia 34–47 × 9–14 μ, utriform to capitate, thin-walled, smooth, hyaline in KOH, content not distinctive in KOH or Melzer’s, some vesiculose cells also present. Caulocystidia similar to but larger than cheilocystidia, rare.

Pileus cuticle a layer of vesiculose cells 1–2 deep, the walls thin and hyaline to yellowish hyaline, smooth, content not distinctive. Hyphae of the subcuticular zone dingy cinnamon in KOH, the walls smooth or practically so. Clamps present. No distinctive reactions in Melzer’s observed.

Type locality. University of Michigan Biological Station, Cheboygan County, Michigan.

Habit and habitat. Gregarious on sand at the edge of a woods, July.

Distribution. Known only from the type locality.

Observations. The distinctive features of this species are the slightly compressed spores, the color of the pileus (which is grayer than that of *P. candolleana* in young stages), the habitat on sand, the grayish pallid fibrils on the stipe, and the gray-brown gills when mature. They lack a violaceous tone. As dried the gills are dull cocoa-color.

43. *Psathyrella rupchandii* A. H. Smith, sp. nov.

Pileus 1–3 cm latus, obtuse conicus, demum late conicus, glaber, ad marginem appendiculatus, fulvus; lamellae bruneolae, demum fulvae, angustae, confertae, adnatae; stipes 5–8 cm longus, 3–3.5 mm crassus, albidus, glabrescens; sporae 7–8 × 4.5 μ, in "KOH" cacaocolor demum subfuscæ; pleurocystidia nulla; cheilocystidia clavata, subcylindrica vel fusoidae ventricosa; fibulae adsunt. Typus. Smith 78343 (MICH); legit Rup Chand, Ann Arbor, Michigan.

Illust. Text Figs. 120–122.

Pileus 1–3 cm broad, obtusely conic, expanding to broadly conic, dark rusty brown ("Mars brown") moist, fading to pale tan ("pinkish buff") on disc first, margin quite irregular and at first decorated with appendiculate patches of pallid veil remnants, surface at first thinly fibrillose from the veil but glabrescent when still only partly expanded. Context thin, fragile, concolorous with pileus when either moist or faded, odor and taste not distinctive.

Lamellae rusty brown like the pileus when mature, merely dull brownish when young, crowded, narrow, adnate, edges even.

Stipe 5–8 cm long, 3–3.5 mm thick, equal, white, not discolored in old ones, at first with scattered fibrils from the veil but soon glabrescent.
Spores 7–8×4–4.5 μ, smooth, apical pore distinct, shape in face view elliptic to ovate, in profile ovate to obscurely inequilateral, color in KOH cocoa-brown slowly becoming dark chocolate-color, in Melzer's tawny reddish, the wall about 0.3 μ thick.

Basidia 4-spored, 5–7 μ wide. Brachybasidioles present, 7–9 μ wide. Pleurocystidia none. Cheilocystidia clavate, cylindric or utriform, apex rounded, wall thin, smooth and hyaline, content not distinctive. Caulocystidia similar to cheilocystidia or many of them larger (up to 80×20 μ).

Pileus cuticle a layer of vesiculose cells 1–2 deep, hyaline, smooth, content not distinctive in KOH or Melzer's. Hyphae of subcutis and trama merely dingy ochraceous in KOH or in Melzer's, hyphae smooth. Clamps present. No distinctive reactions on any tissue when revived in Melzer's.

**Type locality.** Ann Arbor, Michigan.

**Habit and habitat.** Gregarious on garden soil, June.

**Distribution.** Known only from the type locality.

**Observations.** The dark rusty brown pileus and stature of *Psathyrella rupchandii* are the distinctive field characters. The small spores and lack of pleurocystidia place it in the *P. candolleana* group. No setae were located on the pileus.

**Material examined.** Michigan: Bailey 6–20–56; Hoseney 1025; Smith 78343 (Type); legit Mr. Rup Chand of Ann Arbor.

44. **Psathyrella singeri** A. H. Smith, sp. nov.

Pileus 1–2.7 cm latus, campanulatus vel convexus glaber cinnamomeus; lamellae angustae, confertae rufo-brunneae; stipes 5–7 cm longus, 1.3–2 mm crassus, albus, glaber; sporae 7–7.8×4–4.6 μ, in “KOH” subhyalinae; cheilocystidia 18–24×7–16 μ, saccata vel clavata interdum subcylindrica. Typus. Sebring, Florida (MICH); legit Singer.

**Illum. Text Fig. 123.**

Pileus 1–2.7 cm broad, campanulate to convex, glabrous, surface moist, hygrophanous, light reddish brown (near cinnamon-brown when dried), long-striate. Context thin and fragile.

Lamellae adnexed, narrow, crowded, reddish-brownish-argillaceous, edges even.

Stipe 5–7 cm long, 1.3–2 mm thick, equal to very slightly enlarged downward, white, glabrous, slightly yellowish when dried.

Spores 7–7.8×4–4.6 μ, smooth, hyaline with a faint honey yellow tinge when revived in KOH, subovate in face view, subelliptic in profile, not or only slightly flattened, the wall thin and apical pore not distinct.

Basidia 16–18×7–8.5 μ, 4-spored, clavate, hyaline in KOH. Pleurocystidia none. Cheilocystidia abundant, saccate to subcylindric with very broadly rounded apex, 18–24×7–16 μ, hyaline or very slightly tinged brownish in KOH.

Gill trama of interwoven hyphae bright rusty brown in KOH, subhymenium not distinctive, pallid in thin sections. Pileus with a cuticle of inflated cells, one or irregularly 2 cells deep, the walls very pallid brownish in KOH. Hyphae of the context proper bright rusty brown in KOH beneath the cuticle, paler to nearly hyaline toward the subhymenium.

**Type locality.** Sebring, Florida.

**Habit and habitat.** On sticks in a wooded swamp, August.

**Distribution.** Florida.

**Observations.** This species is related to *P. hymenocephala* but is distinct
because of the very pale spores. Apparently there is a fairly extensive series of
variants centering around *P. hymenocephala*, and one “line” features pale colored
spores and various stages, depending on the species, in the development of
brachybasidioles.

The following description is of a northern variant we tentatively assign to
*P. singeri*, but it is not clear at present whether a veil is present or not.

Pileus 2–3 cm broad, convex to plane or somewhat umboinate, glabrous, near
“wood brown” but with more of a grayish cast when moist, hygrophanous, near
avellaneous when faded and remaining near avellaneous when dried, margin striate
when moist, atomate over all when faded. Context very thin, fragile, paler than
the surface; odor and taste not recorded. When dried the pilei vinaceous-tan.

Lamellae adnate to adnexed, very narrow and crowded, edges even but whitish,
pale “Verona brown” (vinaceous-brown) at maturity.

Stipe 2.5–3.5 cm long, 1.5–2.5 mm thick, equal, fragile, hollow, glabrous, white.

Spores very pale dull “Verona brown” in mass (dull vinaceous-cinnamon);
6–7.5×4–5 µ, smooth, apical pore not evident (because of a relatively thin wall),
shape in face view elliptic to subovate, in profile obscurely bean-shaped to sub­
elliptic, color in KOH almost hyaline, in Melzer’s almost hyaline.

Basidia 22–24×7.5–9 µ, clavate, hyaline in KOH, 4-spored. Brachybasidioles
possibly differentiated in old pilei. Pleurocystidia none. Cheilocystidia volumi­
nous, 18–28×10–22 µ, ellipsoid to balloon-shaped, thin-walled, very faintly
yellowish to hyaline in KOH.

Pileus with a cuticle formed by inflated cells in a layer about one cell deep,
pale cinnamon to yellowish revived in KOH. Hyphae of the trama mostly pale
cinnamon to yellowish in KOH, walls with cinnamon colored thickenings near the
septa at the base of the cuticle and including some hyphae of the subcuticular
region, some hyphae with incrustations. Clamps present. No distinctive color
changes occur in mounts revived in Melzer’s.

Type locality. Rhododendron, Oregon.

Habit and habitat. On debris under mixed hardwoods and conifers.


Observations. This variant is characterized by pale spores in KOH, the
vinaceous-cinnamon spore deposit, crowded narrow vinaceous-cinnamon gills, and
possibly by the lack of a veil. See p. 438 for data on Michigan collections.

45. *Psathyrella jalapensis* (Murrill) A. H. Smith, comb. nov.


Pileus 4 cm broad, convex to plane, not umboinate, surface glabrous, hygropha­
nous, striate, dull avellaneous-isabelline, with isabelline disc, margin entire,
concolorous. Context thin and fragile.

Lamellae adnate, crowded, rather narrow, dark purplish brown at maturity.

Stipe 14 cm long, 4 mm thick, long and slender, equal or tapering slightly
upward, smooth, glabrous, white, fragile, hollow.

Spores 7–9.5×4.5–5.5 µ, smooth, ellipsoid, chocolate color when revived in
KOH, with an apical hyaline pore.

Basidia 4-spored, 16–18×9–10 µ, hyaline in KOH. Brachybasidioles not devel­
oped. Pleurocystidia none. Cheilocystidia abundant, hyaline in KOH, 28–40×
9–14 µ, ventricose to subcylindric, with rounded apex, some merely fusoid-
ventricose and obtuse, wall thin, smooth and hyaline, readily collapsing.

Gill trama of greatly enlarged cells more or less regularly arranged, hyaline in
KOH. Pileus with a cuticle of vesiculose cells one to two cells deep, the walls thin, smooth and hyaline, the content not distinctive. Hyphae of the context of greatly enlarged cells hyaline and smooth in KOH.

Type locality. Jalapa, Mexico.
Habit and habitat. Solitary on the ground in woods.
Distribution. Mexico (type studied), Texas (Thiers 1396).
Observations. The relationships of this species are clearly in this group but more data on the veil, if one indeed is present, is needed.

46. Psathyrella thiersii A. H. Smith, sp. nov.

Pileus 1.5–3 cm latus, conicus demum campanulatus, ad marginem appendiculatus, glaber, spadiceus vel subspadiceus; sapor farinaceus; lamellae confertae demum subdistantes, angustae, luteolae demum “avellaneus”; stipes 5–8 cm longus, 2.5–4 mm crassus, albus, glaber; sporae 5–6.5(−7.5) × 3–4.2 μ; cheilocystidia 33–50 × 11–16 μ; fibulae adsunt. Typus. Thiers 1866 (MICH); legit prope Richards, Texas.

Pileus 1.5–3 cm broad, conic to convex becoming subconic to campanulate, margin incurved when young, becoming straight to flared when older, appendiculate with white veil elements when young, becoming glabrous with age, surface moist, glabrous, frequently becoming striate when older, when young dark brown (“bister”) on the disc, changing to brown or olivaceous-brown (“snuff brown” to “tawny-olive”) toward the margin, when older sometimes fading to yellowish or in age finally darkening to blackish brown (“mummy brown”). Context thin, brittle, concolorous with the surface, taste farinaceous, odor not distinctive.

Lamellae ascending-adnate, close to subdistant, narrow, thin, yellowish (“light buff”) when young becoming lavender gray (“avellaneous” to “wood brown”) when older; margin entire, concolorous with the faces, no lamellulae present.

Stipe 5–8 cm long, 2.5–4 mm thick at apex, tapering slightly toward the apex, stuffed to hollow, surface dry, glabrous when young, frequently becoming fibrillose when older, white during all stages of development.

Spores 5–6.5(−7.5) × 3–4.2 μ, smooth, germ pore indistinct, shape in face view oblong to elliptic, in profile more or less elliptic, color in KOH smoky umber slowly becoming nearly hyaline, in Melzer’s pale reddish tawny, wall thin.

Basidia 4-spored, 13–17×8–10 μ, clavate, hyaline in KOH. Pleurocystidia not differentiated. Cheilocystidia abundant, 33–50×11–16 μ, subcylindric to fusoid-ventricose, apex obtuse to broadly rounded, wall thin, smooth and hyaline, cell content not distinctive in KOH or in Melzer’s. Caulocystidia similar to cheilocystidia, scattered.

Gill trama hyaline, interwoven, of filamentous hyphae about 5 μ wide. Pileus trama honey brown to dark honey brown (“buckthorn brown”), the hyphal walls smooth or practically so. Cuticle of pileus a palisade of clavate to vesiculose cells with walls thin, smooth and hyaline, cell content not distinctive. Clamp connections present.

Type locality. Near Richards, Texas.
Habit and habitat. Gregarious to scattered on humus near hardwood logs.
Distribution. Texas.
Observations. In the light of species concepts as proposed in this work and as currently used in Europe, this fungus is a distinct species in its own right and I take pleasure in dedicating it to its collector. The dark colored pileus, yellowish young lamellae, spores which slowly become nearly hyaline on standing for an
hour in KOH, and which are small even for the *P. candolleana* group, amply distinguish it.

47. **Psathyrella rugoproxima** (Parker) A. H. Smith, comb. nov.


Illustr. 1. c., pl. 26, figs. 1; pl. 27, fig. 23; pl. 30, fig. 35.

Pileus 3–5 cm broad, convex-campanulate, nearly expanded, dry, cream-buff or pale yellow when expanded, radially rugose toward the margin, disc smooth, covered with numerous small whitish scales arranged concentrically in rings as remnants of the floccose universal veil. Context lacking a distinctive odor or taste. Lamellae adnexed, broad toward the stipe, rounded, narrowed toward the pileus margin.

Stipe 8–12 (–13) cm long, 4–5 mm thick, fibrous, striate, even, minutely downy (pruinose) above, white, with a compact mass of mycelium at the base; veil membranous, evanescent.

Spores 6–8 × 4–5 μ, smooth, apex with a small hyaline pore, shape in face view elliptic to oblong, in profile elliptic to very obscurely inequilateral, color in KOH pale chocolate-color, darkening somewhat on standing, wall about 0.3 μ thick.

Basidia 4-spored, clavate, 7–10 μ wide, hyaline in KOH. Pleurocystidia present only as occasional pseudocystidia (more or less filamentous and with finely globular content). Cheilocystidia abundant, 35–50 × 10–18 μ, subcylindric to fusoid-ventricose, apex obtuse, wall thin, smooth and hyaline, content of cell not distinctive.

Gill trama parallel except for the highly refractive laticifers which are 10–13 μ wide. Pileus with a cuticle of vesiculose cells 2 deep, the cells hyaline, with smooth thin walls, and the cell content not distinctive. Hyphae of the trama floccose, the hyphal cells variously inflated, numerous laticifers 10–13 μ wide extending through it.

Type locality. Cayuga Lake Basin, New York.

Habit and habitat. Gregarious or subcespitose on ground in woods.


Observations. Parker’s (1933) illustration of a cluster of “imbedded cystidia” is a mistake. No such cystidia on the sides of the gills could be found in my examination of the type. The pseudocystidia of this species are of systematic importance but of doubtful taxonomic value as they are scattered and very difficult to find. The floccose outer veil, pale yellow pileus, long stipe with its mat of basal mycelium and lack of leptocystidia on the faces of the gills distinguish it. It is close to *P. jalapensis* but has remains of an outer veil over the pileus, and the gills are broad.


48. **Psathyrella incerta** (Peck) A. H. Smith, comb. nov.


*Hypholoma incertum* (Pk.) Saccardo, *Sylloge Fung.* **5**: 1042. 1887.


Illustr. Text Figs. 124–126.

Pileus 2–4 (–5) cm broad, obtuse to convex, becoming nearly “antimony yellow” (pale clear yellow) to “cinnamon-buff” and fading to whitish in age, pale sordid purplish gray and dark livid gray when remoistened, striate when moist, atomate
when faded, glabrous or with scattered fibrils at first, the margin appendiculate. Context very fragile and thin, odor and taste not distinctive.

Lamellae crowded and narrow, adnate, seceding, white becoming purplish gray, edges even but white.

Stipe 2–5 cm long, 2–3 mm thick, equal, hollow, fragile, white, base white-strigose, with scattered fibrils above but soon glabrescent, apex pruinose.

Spores 6–7.5 × 3.5–4 μ, smooth, apical pore present but inconspicuous, shape in face view elliptic to subovate, in profile subelliptic to obscurely inequilateral, color in KOH cocoa-color slowly becoming chocolate-gray or darker, in Melzer's reddish tawny, wall about 0.2 μ thick.

Basidia small, 14–16 × 7–8 μ, 4-spored, hyaline in KOH. Brachybasidioles present, 8–10 μ broad. Pleurocystidia none. Cheilocystidia 32–46 × 9–14 μ, utriform to fusoid-ventricose with broadly rounded apex, some merely clavate, thin-walled, hyaline, smooth, content not distinctive. Caulocystidia clavate to utriform or fusoid-ventricose, mostly like the cheilocystidia but often larger. Gill trama of greatly enlarged hyaline cells (40–90 × 10–20 μ), subhymenium cellular but the cells only 8–12 μ wide. Pileus with a cuticle of vesiculose cells one or two deep, walls thin, hyaline and smooth, content not distinctive. Hyphae of context with hyaline, smooth walls in KOH, in Melzer’s no distinctive reactions noted. Clamps present.

Type locality. Green Island, New York.

Habit and habitat. Gregarious to subcespitose or scattered on damp soil with much lignicolous debris in it, or near stumps of hardwoods; late spring and summer.


Observations. Since some European authors recognize _P. coronata_ as having spores 7–10 μ long, it seems best to return to the American name which clearly applies to the species described here. Many reports in the literature for “_Hypholoma incertum_” apply to _P. candolleana_. In spite of this Peck’s species is to be regarded as common and widely distributed in North America. Peck noted a tendency for at least a partial annulus to form, and this is a feature, rarely, of Michigan collections, but see _P. diabolica_ also. _Hypholoma incertum_ var. _sylvestre_ Kauffman (Agar. Mich. p. 264), is incompletely described and the specimens are in very poor condition. It is best to drop the name. Also see var. _pygmea_, p. 429.


49. _Psathyrella rogueiana_ A. H. Smith, sp. nov.

Pileus 4–6 cm latus, convexus demum late convexus umbrino-melleus vel melleus, sparse fibrillosus demum glaber (fibrae pallide alutaceae), ad marginem
appendiculatus; sapor subnauseosus; lamellae pallidae demum purpureo-brunneae, adnatae secedentes latae confertae; stipes 6–7 cm longus, 5–7 mm crassus; deorsum subsquamulosus et demum sordide brunneus; sporae 8–11 \( \times \) 4–4.5 \( \mu \); fibulae adsunt. Typos. Smith 55708 (MICH); legit prope Grants Pass, Oregon.

Illustr. Pl. 27, fig. a; Text Figs. 127, 128.

Pileus 4–6 cm broad, convex becoming plane, surface dark honey-color to near "buckthorn brown," fading on disc first to a dingy warm buff, when young coated with "pinkish buff" fibrils as remnants of an outer veil, or squamulose over all, margin appendiculate with remains of a whitish veil. Context thin but firm, taste subnauseous, odor none.

Lamellae pallid then grayish and finally purple brownish, adnate, seceding, broad, close, edges even.

Stipe 6–7 cm long, 5–7 mm thick, equal, pallid, surface fibrillose to squamulose over lower two-thirds, base brownish where handled, apex striate and pruinose-scurfy.

Spores 8–11 \( \times \) 4–4.5 \( \mu \), smooth, apical pore broad, shape in face view elliptic to subovate, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH fuscous (a weak ochraceous tone present), only slowly changing to chocolate color in KOH, in Melzer's tawny-red, wall 0.3 \( \mu \) thick.

Basidia 4-spored, 24–30 \( \times \) 7–11 \( \mu \), clavate, hyaline in KOH. Pleurocystidia very rare and found only near the gill edge, similar to the cheilocystidia. Cheilocystidia 28–34 \( \times \) 7–13 \( \mu \), clavate to utriform, thin-walled, hyaline in KOH, content "empty" in either KOH or Melzer's. Caulocystidia near stipe apex, mostly clavate but varying to utriform, sparse to absent lower down.

Pileus cuticle of inflated cells 2–4 deep, the walls thin and hyaline to yellowish, hyaline in KOH, content not distinctive, subcutis and trama hyphae not appreciably colored in KOH or very soon fading if colored at first; hyphae of veil yellow in KOH. Clamps present. No distinctive reactions on any tissue observed in mounts revived in Melzer's.

Type locality. Grants Pass, Oregon, near Rogue River.

Habit and habitat. Scattered on clay soil in an old road through mixed woods, November.

Distribution. Known only from type locality.

Observations. This species is obviously in the stirps Candolleana in spite of the occurrence of a few cystidia near the gill edge. It differs from \( P. \) candolleana in the relatively strong pigmentation of the pileus ("buckthorn brown" or darker), the pinkish buff veil remnants which under the microscope in KOH are yellow instead of pallid, the stipe which discolors over the basal area from handling, and the occurrence of veil remnants in patches and squamules over the lower half of the stipe.


\textit{Hypholoma hymenocephalum} (Pk.) Saccardo, Sylloge Fung. 5: 1042. 1887.

\textit{Hypholoma cinereum} Parker, Mycologia 25: 175. 1933.

\textit{Atylospora striatula} Murrill, Mycologia 14: 267. 1922.

\textit{Psathyra striatula} (Murrill) Murrill, Mycologia 14: 278. 1922.

Illustr. Pl. 28; Text Figs. 129, 130.

Pileus (1–)2–4 (–8) cm broad, obtusely conic to convex when young, the margin straight, in age becoming broadly convex to plane or somewhat umbonate, surface
moist and hygrophanous, at first more or less covered by particles of fibrils from the outer veil, the veil remnants pallid to buffy tan, margin appendiculate at first, soon glabrescent over all, even at first but at times slightly corrugated at maturity, margin sometimes translucent striate, color "cinnamon-brown" on the disc and "buckthorn brown" elsewhere, fading to "pale ochraceous-buff" or "pinkish buff," old remoistened pilei livid at least along the margin; when dried generally with a cinnamon-tan tone. Context very thin and fragile, buffy tan to livid in age, odor and taste not distinctive.

Lamellae close, narrow, adnate, often seceding, equal, whitish to dull grayish buff when young, changing slowly to dull purplish brown, edges even.

Spores 6–8(-9) × (3.5–)4–4.5(-5) μ, smooth, apical pore present but not conspicuous, shape in face view elliptic to oblong, in profile view subelliptic to obscurely bean-shaped, color in KOH dull cocoa-color slowly becoming chocolate-gray to grayish brown, in Melzer's merely tawny, wall about 0.2 μ thick.

Basidia 4-spored, 16–18 × 8–9 μ, hyaline in KOH. Pleurocystidia none. Cheilocystidia abundant, 32–46 (–50) × 10–18 μ, sacate, subcylindric, utriform or broadly fusoid-ventricose with rounded apex, wall thin, hyaline and smooth, cell content not distinct. Caulocystidia scattered, more or less like the cheilocystidia.

Pileus with a cuticle of vesiculose cells 1–2 deep, the cells with hyaline to pale cinnamon walls as revived in KOH, wall smooth and thin. Hyphae of the trama pale rusty to vinaceous-brown in KOH but fading somewhat, in old pilei often nearly hyaline, where colored the wall often found to be thinly incrusted. Clamp connections present. No distinctive reactions when revived in Melzer's.

Type locality. Adirondack Mts., New York.

Habit and habitat. Scattered to gregarious on humus and debris under hardwoods or along the edges of roads or bogs.


Observations. The spores of this species vary in size from 6–6.6(-7) × 3.5–4 to 8–9×4–5 μ, but mostly measure 6.5–8×4–5 μ. Anyone studying *P. candolleana* in detail should also include this species and its satellites. Aside from the cinnamon pigment of the pileus, the two intergrade. *Psathyrella varicosa* Pearson lacks a veil, but is otherwise very close to *P. hymenocephala*.


*Agaricus candolleanus* (as *candollianus*) Fries, Syst. Mycol. 1: 296. 1821.

*Hypholoma candolleanum* (as *candollanus*) (Fr.) Quélét, Champ. Jura et Vosges, 146. 1872.

*Drosophila candolleana* (Fr.) Quélét, Enchir. Fung. 115. 1886.


var. *candolleana*

Illust. Pls. 24, 25, 26; Pl. 23, fig. a, annulate specimens; Text Figs. 131–133.

Pileus 3–7 (–11) cm broad, obtusely conic to convex when young, usually expanding to broadly convex or plane, or with an obtuse umbo and a spreading margin, occasionally remaining broadly conic, surface moist, smooth to slightly rugulose, the margin translucent striate, at first with scattered superficial patches of fibrils or squamules present only near the margin, the margin appendiculate with veil fragments, color at first light to dark honey-color (“chamois” to “buckthorn brown”), gradually becoming dingy purplish brown at least near the margin as spores mature, hygrophanous and fading to whitish or retaining a tawny-buff disc. Context thin, fragile, moist and concordorous with pileus at first, pallid when faded, odor and taste mild.

Lamellae close to crowded (54–57 reach the stipe), 2–3 tiers of lamellulae, narrow (2–5 mm), white to pallid and finally becoming grayish brown tinged more or less with violet (often “drab”), the edges whitish and crenulate.

Stipe (4–)6–10 (–13) cm long, (3–)4–8 (–10) mm thick, equal more or less or narrowed at the base, hollow, fragile, white to whitish, apex silky-fibrillose to somewhat furfuraceous, sometimes striate, lower portion more or less fibrilllose-scaly to appressed fibrillose, the veil remnants soft and white-fibrillose to submembranous, usually soon evanescent, at times forming a persistent membranous annulus.

Spores in deposit purplish brown, 7–9 (–10) × 4–5 µ, smooth, truncate at apex from a hyaline pore, shape in face view elliptic to slightly ovate, in profile subelliptic to very slightly bean-shaped, color in KOH dull cocoa-color changing to pale purplish gray, in Melzer’s pale tawny to dull reddish brown, wall about 0.3 µ thick.

Basidia 20–24 × 5–7 µ, 4-spored, hyaline in KOH. Brachybasidioles not differentiated. Pleurocystidia not differentiated. Cheilocystidia 32–46 × 9–16 µ, saccate to clavate or cylindric, occasionally the lower portion slightly ventricose, apex broadly rounded to obtuse or knob-like at times, wall thin, smooth and hyaline, content not distinctive. Caulocystidia versiform, up to 60 × 15 µ, sub-utriform to utriform, clavate or vesiculose, all thin-walled, smooth and hyaline, cell content not distinctive.

Pileus with a cuticle of vesiculose cells 1–3 deep, the walls thin, smooth and hyaline, cell content not distinctive, measuring 20–46 × 10–38 µ. Hyphae of the trama brownish in KOH when first revived or hyaline, soon fading to hyaline, walls smooth and thin. Clamps present. No distinctive color changes in any tissue as revived in Melzer’s.

Type locality. Europe.

Habit and habitat. Cespitose to gregarious around old hardwood stumps or buried wood, particularly common around cottonwood and elm, spring and early summer.
Distribution. Generally throughout the hardwood forest area of the United States and Canada.

Observations. This is our most common and variable species in North America. The type form should lack outer-veil remnants on the pileus and the latter should be spadiceous (date brown?) when young. This variant is rare with us. I have seen specimens from Mt. Rainier, however, showing the above mentioned features. Our most common variant is pale honey brown and at first has a few superficial fibrils from an almost rudimentary outer veil. In another variant a fairly well-developed outer veil is present. As for \textit{P. incerta}, we find collections of this species in which some of the basidiocarps are annulate. In all, however, the gill trama is pallid as revived in KOH or if pale tan at first soon fades. For \textit{Agaricus spintriger} (\textit{Drosophila} in Kühner and Romagnesi, 1953), they and Singer (1963) both emphasize the pigmented gill trama. Aside from this feature \textit{A. spintriger} would seem to fit in with the North American variants as an annulate variant with possibly the pigmentation of the type variant. I have not recognized \textit{A. spintriger} in North America. The constellation of variants around \textit{P. candolleana} and \textit{P. hymenocephala} needs a critical study based on cultures correlated with the details of the naturally occurring basidiocarps. \textit{P. leucotephra} (B. & Br.) Orton is close to our annulate variant of \textit{P. candolleana}.


51a. \textit{Psathyrella candolleana} var. solitaria A. H. Smith, var. nov.

Pileus 2–4 cm latus, convexus demum planus, glaber, ad marginem appendiculatus, hygrophanus, luteolus demum albidus; lamellae confertae, angustae, demum cacaocolor; stipe 4–5 cm longus, 3–4.5 mm crassus albidus; sporae 7–9(12) ×
4–4.5 μ; pleurocystidia nulla; solitaria. Typus: Smith 20541 (MICH), legit prope Milford, Michigan.

Pileus 2–4 cm broad, broadly convex, expanding to plane or the margin wavy to undulating at maturity, surface glabrous except for the appendiculate margin (only mature to nearly mature pilei were available), hygrophanous, cream-buff fading to whitish. Context relatively thick and firm, odor not distinctive.

Lamellae crowded, narrow, adnate, brownish soon becoming dark cocoa-color, edges distinctly whitish and remaining so.

Stipe 4–5 cm long, 3–4.5 mm thick, equal down to a slight basal enlargement, white, not discoloring, naked or apex faintly pruinose.

Spores 7–9(−12) × 4–4.5 μ, smooth, apical pore small but distinct and apex truncate under oil, shape in face view oblong to narrowly elliptic (a few large spores subfusoid), in profile oblong to narrowly and obscurely inequilateral, color in KOH rich cocoa-color darkening to chocolate-brown, in KOH reddish tawny, wall about 0.2 μ thick.

Basidia 2- and 4-spored. Pleurocystidia absent. Cheilocystidia as in var. candolleana. Pileus cuticle of vesiculose cells 1–3 deep, hyaline and thin-walled. Trama of pileus cocoa-brown in KOH but soon fading to pallid. Clamp connections present.

Type locality. Milford, Michigan.

Habit and habitat. Solitary on sandy humus under brush, September.


Observations. The normal spores are oblong and dark cocoa-brown in KOH. The cocoa-brown trama as revived in KOH and the features of the spores are the important characters of the variety. It is rather anomalous to find such a weakly pigmented pileus with the trama giving this reaction in KOH. The basidiocarps are relatively fleshy and firm compared to other North American variants, and occur solitary to scattered, but these features may not prove constant.

Material examined. Michigan: Hoseney 1524, Mazzer 6091; Patrick 1921; Smith 20541 (Type), 20545.

Section Fragilissimae (Romagnesi) Singer, Lilloa 22: 446. 1951.


As indicated in the key, the major feature of this section is the spore length, but, generally speaking, the species placed here have stipes 3.5–6 mm thick or more

Type. Psathyrella marcescibilis.

Key to the Species of Section Fragilissimae

1. Spores 6 μ or more wide in broadest view.
1. Spores 4.5–6 μ wide.
   2. Spores somewhat compressed laterally.
   2. Spores terete in cross section.
3. Spores 10–13 × 7–8 × 8–10 μ; veil remnants present only along the margin of the pileus.
3. Spores 13–15 × 6–7 × 7–8.5 μ; veil remnants covering the pileus at first.
5. Spores 9–11 × 5–6.5 μ; hyphae of subcortical region of pileus heavily incrusted; caulocystidia much inflated (to 30 μ).
5. P. longipes.

2. P. fragilissima.
3. P. elchoensis.
4. P. thomii.
5. P. incrustans.
5. Not as above.
6. Pileus viscid, whitish with a lavender tinge; pileus "radially floccose-striate".

57. **Psathyrella elongatipes**.

6. Pileus not viscid.

7. Pileus pallid (whitish) at first.
7. Pileus yellowish to gray-brown to vinaceous-brown.
8. Spores truncate at apex; growing cespitose on hardwood stumps and logs.

58. **Psathyrella huronensis**.

8. Spore apex not truncate.

9. Grayish tones evident on young pileus; solitary to gregarious under aspen in the Rocky Mountains.

59. **Psathyrella waltersii**.

9. Pileus pale yellow when young; on grassy ground, Tennessee.

60. **Psathyrella uliginicola**.

61. **Psathyrella luteopallida**.

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*Drosophila campanulata* (Pk.) Murrill, Mycologia 4: 304. 1912.


Pileus 2.5–3.7 cm broad, campanulate, even or obscurely striate on the margin, fibrillose becoming glabrous, hygrophanous, yellowish-brown when moist, brown or isabelline-brown when dry, the margin appendiculate with the very white floccose, fugaceous veil. Context extremely thin and fragile.

Lamellae narrow, close, adnate, white or whitish becoming nearly black, often whitish on the edge.

Stipe slender, 5–10 (–12.5) cm long, 2–5 mm thick, hollow, striate at the top, white with a white mycelioid tomentum at the base.

Spores 10–13 × 7–8 × 8–10 μ, smooth, apical pore distinct, shape in face view ovate to elliptic and (as revived in KOH) showing a tendency to angularity, in profile subelliptic to obscurely inequilateral, color in KOH at first mummy brown slowly becoming dark chocolate-color, in Melzer's tawny-red, wall about 0.8–1 μ thick (in KOH) in old spores.

Basidia 4-spored, 16–22 × 9–10 μ, clavate, hyaline in KOH. Pleurocystidia none. Cheilocystidia 32–48 × 9–15 μ, fusoid-ventricose with obtuse apex varying to narrowly ventricose to clavate, thin-walled, smooth, hyaline, content not distinctive. Brachybasidioles present (use mature pilei). Caulocystidia scattered to numerous, clavate, to fusoid-ventricose or utriform, variable in size, walls thin, smooth and hyaline, cell content not distinctive.

Pileus with a cuticle of vesiculose cells several deep, the walls thin, smooth and hyaline, the content of the cells not distinctive. Hyphae of the trama hyaline in KOH, thin-walled, walls smooth. No distinctive color reactions in any tissue as revived in Melzer's. Clamp connections present.

Type locality. Pasadena, Calif.

Habit and habitat. Among fallen leaves in very wet weather, late fall or winter.

Distribution. California, type studied, Michigan, Oregon, Washington.

Observations. Smith (1941) misidentified collections from the Olympic Mountains of Washington as this species. For an account of this material see *P. eluhoensis*. The latter does not have flattened spores. The spore size and shape for *H. campanulatum* are the same as for *P. longipes*. The distinguishing features of the latter as based on a study of the type are as follows: the spores are compressed and somewhat angular in face view, pleurocystidia are lacking, and
in mature pilei brachybasidioles are present. Also, the young pileus is fibrillose and the lamellae narrow and crowded.


53. **Psathyrella fragilissima** (Kauffman) A. H. Smith, comb. nov.


Illustr. 1. e., pl. 11. Text Figs. 137, 138.

Pileus 2–5 cm broad, 1.5–3 cm high, at first broadly conic and obtuse, conic-campanulate at maturity, hygrophanous, “light cinnamon-drab” and even when moist and young, later “benzo brown” (dull purplish brown), at first covered by snow-white evanescent floccose-fibrillose superficial scales, soon glabrous, fading to “pale pinkish buff” and even when faded, margin at times evanescently appendiculate. Context thin, very fragile, equal, concolorous with surface, odor and taste mild or slightly nutty.

Lamellae ascending, adnate-seceding, relatively narrow (3–5 mm), crowded, soon “hair brown” then “fuscous” (violaceous-black), edge at first minutely white flocculose.

Stipe 10–15 (–18) cm long, 3–5 (–6) mm thick, long and slender, extremely fragile, equal or slightly tapering upward, pure white, glabrous, seurfy and substriate at apex, hollow, even, strict but becoming flexuous, cartilaginous, easily splitting.

Spores 13–15 × 6–7 × 7–8.5 μ, smooth, apical pore distinct and apex truncate, shape in face view broadly elliptic to subovate, in profile subelliptic or the suprahilar area broad and flattened, color in KOH fuscous-brown becoming chocolate-black, in Melzer’s very dark reddish brown, wall about 0.5–0.7 μ thick.

Basidia 30–32 × 10–12 μ, 4-spored, hyaline in KOH. Pleurocystidia none. Cheilocystidia abundant, 32–45 × 9–15 μ, broadly fusoid-ventricose to utriform, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer’s. Caulocystidia not found in the material examined (type).

Pileus with a cuticle of vesiculose hyaline cells 3–4 cells deep, their walls thin, smooth hyaline and not refractive, cell content not distinctive. Hyphae of the context only slightly brownish as revived in KOH and fading on standing, walls thin and not refractive.

Type locality. Mt. Hood, Oregon.

Habit and habitat. Gregarious on decayed leaves etc. in mixed forests.

Distribution. Oregon.

Observations. This species is easily mistaken for a *Pannucia*, no doubt because that is where its relationships appear to be. Hence it is keyed in both groups. *Psathyra fragilissima* Lange (1936); Lange’s species is now identified with *Psathyrella marcescibilis* (Britz.) Singer.

Material examined. Oregon: Sipe 766; Smith 28414; Kauffman’s type from Mt. Hood.

54. **Psathyrella elwhaensis** A. H. Smith, sp. nov.

Pileus 2.5–7 cm latus, obtusus demum late conicus vel campanulatus, glaber, ad marginem appendiculatus, avellaneus vel subavellaneus demum cinnamomeo-brunneus; lamellae confertae angustae adnatae, albidae demum fusace; stipes 9–16 cm longus, 3–6 mm crassus, cavus, fragilis albidus, glaber; sporae 12–15 × 6.5–8 μ; cheilocystidia 30–42 × 8–12 (–17) μ; fibulae adsunt. Typus. Smith 3318 (MICH); legit prope Port Angeles, Washington.
1972]  

Psathyrella  

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Illust. Pl. 16, fig. a; Text Figs. 139, 140.

Pileus 2.5-7 cm broad, obtusely conic when young, either remaining conic or the margin flaring, sometimes becoming broadly campanulate, at times finally nearly plane, glabrous or with a few scattered fibrils near the margin, margin at first appendiculate with a veil which is membranous to submembranous and breaks up to form patches of tissue, glabrescent over all in age, when young and fresh “cinnamon-drab” to “avellaneous,” at times becoming nearly “cinnamon-brown” before becoming sordid livid brown as the spores mature, hygrophanous, fading to sordid “ochraceous-buff” or “tilleul buff” (whitish), surface faintly striate when moist, lubricous to subviscid and smooth, somewhat atomate when faded. Context thin concolorous with the surface, firm and not markedly fragile, odor and taste mild.

Lamellae ascending adnate to horizontally adnate (old pilei), readily seceding, close to crowded (36-40 reach the stipe), narrow to moderately broad, equal, whitish when young becoming “hair brown” or in age finally nearly black, edges even.

Stipe 9-16 cm long, 3-6 mm thick, equal or the base slightly enlarged, hollow, cavity large, rigid, strict, fragile, white, surface with minute appressed white fibrils when young, soon glabrous except for the pruinose apex, sometimes striate above.

Spores 12-15×6.5-8 μ, smooth, apical pore broad but not conspicuous, shape in face view elliptic to ovate, in profile subelliptic to obscurely inequilateral, color in KOH fuscous but slowly darkening to dark chocolate-color, in Melzer’s bayred, wall about 0.5-0.7 μ thick.

Basidia 20-25×(7-)8-12 μ, 4-spored, hyaline in KOH, subcapitate. Pleurocystidia none. Basidioles varying to brachybasidioles in age, 16-20×8-15 μ. Cheilocystidia 30-42×8-12 μ (rarely 17 μ), subcylindric to ventricose, apex obtuse, wall thin, smooth and hyaline, content not distinctive in KOH or Melzer’s. Caulocystidia in patches, subcylindric to fusoid-ventricose with obtuse apex, 40-75×9-18 μ, wall thin, smooth and hyaline, cell content not distinctive.

Pileus with a cuticle of vesiculose cells 3-4 cells deep, their walls thin, smooth and hyaline, the cell content not distinctive in KOH or Melzer’s. Hyphae of the trama hyaline in KOH and merely yellowish in Melzer’s. Clamps present.

Type locality. Elwha Lake, Olympic National Park, Washington.

Habit and habitat. Scattered to gregarious on humus, spring.


Observations. This species, first misidentified as P. longipes, features terete spores, an essentially glabrous pileus when young (save for a few fibrils near the margin), and both a relatively firm pileus and broader gills. Drosophila involuta has the same spore size, but is given as in “loco ambusto” and has a copious outer veil. The two appear very close, however.


55. Psathyrella thomii A. H. Smith, sp. nov.

Pileus 2-3 cm latus conicus demum campanulatus ad marginem fibrillosus, glabrescentus, albus demum fusco-brunneus; lamellae adnatae subdistantes angustae, pallidae demum purpureo-pruinose; sporae 15-18×10-12 μ; pleurocystidia 30-52×10-20 μ; fibulae adsunt. Typus. Thom 15 Jan., 1924 (MICH); legit Chas. Thom, Louisiana.
Pileus 2–3 cm broad, conic to obtusely campanulate, at first with the remains of the slightly developed veil decorating the extreme margin but soon glabrous, white when fresh but becoming dark brown in age and when dried more or less avellaneous.

Lamellae broadly adnate, subdistant, narrow to moderately broad, pallid becoming dark purple-brown, edges whitish.

Stipe 4–6 cm long, 4–6 mm thick at apex, enlarged downward or nearly equal, surface densely pruinose-pubescent over all, base white fibrillose, white or whitish throughout but tinged brownish when dried.

Spores 15–18×10–12 μ, smooth, apical pore small but bubble-like, shape in face view broadly ovate to elliptic (to a somewhat pointed base) as revived in KOH, as revived in Melzer's somewhat angular-ovate as in Panaeolus spores, in profile view subelliptic or obscurely inequilateral, dark blackish brown in KOH but slowly dark chocolate-color on standing (immature spores becoming chocolate color first), in Melzer's dark bay-brown, wall about 1.5 μ thick.

Basidia 30–45×10–15 μ, 4-spored, broadly clavate, hyaline in KOH. Pleurocystidia rare and mostly near the edge, 30–52×10–20 μ, broadly fusoid-ventricose to subutriform (apex subcapitate), smooth, hyaline, thin-walled, content not distinctive in KOH or Melzer's. Chelocystidia similar to pleurocystidia. Caulocystidia numerous and versiform, clavate and 26–35×10–15 μ to 80×25 μ, subcylindric and 40–70×10–15 μ, utriform or ventricose with broadly rounded apex and 40–50×12–18 μ, all smooth, hyaline or walls weakly ochraceous, thin-walled, content not distinctive. Stipe cortex filled with hyaline laticiferous hyphae, also hyaline in Melzer's.

Pileus with a cuticle formed by an hymeniform layer of hyaline pear-shaped to subsaccate cells 26–40×12–25 μ or occasional cells up to 60×30 μ and clavate, some broadly rounded ventricose pileocystidia also present. No distinctive color changes evident in mounts made in Melzer's. Clamps present.

Type locality. Plant of Celotex Company, Louisiana.

Habit and habitat. On bagasse piles from sugar mills in wet places.

Distribution. Louisiana.

Observations. The angularity observed on spores in Melzer's disappeared in about a half hour in the solution. The species is not a Panaeolus as the gills apparently (from the material examined) are not mottled, the color change of the spores in KOH is typical of Psathyrella, as is also the fibrillose veil. Its distinctive features are the large thick-walled spores with the bubble-like germ pore (as revived in KOH), and the motley assemblage of types of caulocystidia.

56. Psathyrella incrustans A. H. Smith, sp. nov.

Pileus 2–3 cm latus demum planus, glaber, hepaticolor, ad marginem appendiculatus; lamellae latae (5 mm) adnatae vel subdecurrentes, secedentes, substantianae dilute bruneae demum subhepaticolor; stipes 2–3 cm longus, 4–6 mm erasus, fibrillosus, intus bruneolus; sporae 9–11×5–6.5 μ; fibulae adsunt. Typus. Smith 18929 (MICH); legit South Lyon, Michigan.

Pileus 2–3 cm broad, obtuse to convex, expanding to plane, surface glabrous and moist, dark liver-brown when fresh, avellaneous when faded, hygrophanous, veil fragments fringing the margin at first but soon disappearing. Context moderately thick and not distinctly fragile, avellaneous when moist, paler when faded, odor and taste not distinctive.

Lamellae broad (about 5 mm), broadly adnate to subdecurrent, soon seceding,
subdistant, one tier of lamellulae, pallid brownish young, dark reddish brown in age, edges even.

Stipe 2–3 cm long, 4–6 mm thick, equal or base bulbous from adhering sand, not fragile, stuffed but soon hollow, cortex dull brownish, surface whitish to pallid and at first fibrillose with the remains of the veil, apex often striate.

Spores 9–11 × 5–6.5 μ, smooth, apical pore broad and shallow but apex rounded, shape in face view elliptic to broadly elliptic, in profile subelliptic, color in KOH reddish chocolate-color darkening to dark chocolate-color, in Melzer's tawny-red, wall about 0.3–0.4 μ thick.

Basidia 28–34 × 8–12 μ, 4-spored, hyaline in KOH, clavate. Pleurocystidia absent (a few near the edge and resembling cheilocystidia). Cheilocystidia 28–42 × 14–18 μ, vesiculose, clavate or broadly fusoid-ventricose with rounded apex, walls thin, smooth and hyaline, cell content not distinctive, a few with slightly thickened (0.4 μ) yellowish walls in KOH. Caulocystidia vesiculose to clavate or broadly ventricose, some up to 30 μ broad, abundant, walls thin, smooth and hyaline. Hyphae of the cortex mostly with hyaline wall thickenings of a local type sufficiently numerous to cause the hyphae to appear to have roughened walls from the pattern in which the light is refracted.

Gill trama of regularly arranged hyphae (slightly interwoven), very pale brownish in water mounts of fresh material, cocoa-color to yellow-brown as revived in KOH, the walls with inrustations. Pileus cuticle mostly of pear-shaped to clavate cells vertically arranged into more or less of a palisade, the walls hyaline or only the base slightly colored, cell content not distinctive. Hyphae of the trama dark cocoa-colored when first revived in KOH, fading to a dingy yellow-brown, the hyphae coarsely incrusted with amorphous colored material (in KOH), in Melzer's the incrusting material colorless. Clamp connections present.

Type locality. South Lyon, Michigan.

Habit and habitat. Gregarious on waste soil, often in sand.


Observations. The medium-large spores, numerous and greatly enlarged caulocystidia, habitat, and heavily incrusted (for the genus) trama hyphae make this an easily recognized species.


57. Psathyrella elongatipes (Parker) A. H. Smith, comb. nov.

_Hypholoma elongatipes_ Parker, _Mycologia_ 25: 196. 1933.

_Hypholoma longipes_ Dearness & Bisby, _Fungi of Manitoba_, 113. 1929 (non _H. longipes_ Peck).

Illustr. Text Figs. 147, 148.

Pileus 6–14 cm broad, globose then hemispheric and finally plano-convex or at times the disc broadly umbonate and the margin slightly turned up, radiately floccose-striate especially towards the margin, viseid, whitish with a lavender tinge, becoming buff, drying buff to buckthorn brown. Context whitish, thin to the umbo, taste and odor mild.

Lamellae broad, chocolate brown at maturity but whitish at first and soon purplish and mottled, adnate or arcuate and adnate-decurrent by ridges on the stipe, edge white-fimbriate, not distilling droplets.

Stipe 6–18 cm long, 1–3 cm thick, shining, concolorous or paler than the pileus, sometimes brownish purple at the base, even, innately fibrillose, striate,
hollow, easily splitting; veil whitish at first, evanescent, remnants sometimes found near the base of the stipe.

Spores 9–12 (–13) × 5–7 μ, smooth, with an apical hyaline pore, shape in face view narrowly elliptic to nearly oblong, in profile suboblong to obscurely inequilateral, wall about 0.4 μ thick.

Basidia 4-spored, 20–24 × 9–10 μ, clavate, hyaline in KOH. Brachybasidioles not present. Pleurocystidia none. Cheilocystidia abundant, (32–) 40–58 × 10–18 μ, broadly fusoid-ventricose with broadly rounded apex varying to cylindric, wall thin, smooth, hyaline in KOH, content not distinctive in KOH or Melzer’s. Caulocystidia not studied.

Pileus with a cuticle of vesiculose hyaline cells several cells deep, many filamentose hyphae 4–7 μ wide arising from this layer. Hyphae of the trama loosely interwoven and hyaline in KOH.

Type locality. Manitoba, Canada.

Habit and habitat. Solitary to cespitose on floor of an old “dug-out.”

Distribution. Known only from the type locality. Type studied.

Observations. The description of this species is very suggestive of an Agrocybe, and this point should be carefully checked if fresh material is ever available again. The “purplish” mottled gills are against the above suggested disposition, but as is well known, A. dura is often mistaken for a Stropharia. The spores are not those of a Panaeolus, though one is tempted to compare the species with P. separatus and P. solidipes. I have studied the type, but if pleurocystidia are present they are very rare and could be easily missed. If pleurocystidia were found, and were of the Agrocybe type, that genus would seem to be indicated.

58. Psathyrella huronensis A. H. Smith, sp. nov.

Pileus 4–8 cm latus, conicus, late conicus vel campanulatus, glaber ad marginem appendiculatus, pallidae demum albidae; lamellae albidae demum fusco-brunneae, angustae; stipes 9–14 cm longus, 6–10 mm crassus, cavus, pallidus sursum furfuraceus, deorsum tenuiter fibrillosus; sporae 8–11 × 5–6 μ teres; fibulae adsunt. Typus. N. J. Smith 1733 (MICH); legit prope Ives Lake, Huron Mountains, Michigan.

Illust. Pl. 30; Text Figs. 149–151.

Pileus 4–8 cm broad, conic, expanding to campanulate and often splitting at maturity, glabrous but margin appendiculate with membranous patches of a veil which soon disappears, veil material pallid (“tilleul buff”), surface “tilleul buff” when young and moist, hygrophanous and fading to a dead white, becoming grayish to avellaneous over the marginal area as spores mature. Context fragile but rigid, thin, odor and taste not distinctive.

Lamellae white to pallid becoming chocolate-brown, crowded, narrow, ascending, in age the color violaceous-brown (“benzo brown”), edges even.

Stipe 9–14 cm long, 6–10 mm thick, hollow, fragile, equal, whitish over all and unchanging (at times dusted with spores), pruinose-scurfy above, lower portion with scattered patches of pallid veil material but no annulus present on any of the basidiocarps observed.

Spores 8–11 × 5–6 μ, smooth in outline but in KOH the wall ornamented by dark punctations (as in Tylopilus gratilis), apex truncate from a typical germ pore, shape in face view broadly ovate to elliptic, but some obscurely angular, in profile obscurely inequilateral to elliptic, color in KOH near “mummy brown” (blackish brown), in Melzer’s reddish tawny and appearing perfectly smooth, wall 0.3–0.4 μ thick.
Basidia 4-spored, 26–34×7–10 μ, clavate, hyaline in KOH. Pleurocystidia not observed. Cheilocystidia 32–40×9–13 μ, citriform to fusoid-ventricose (Fig. 149), hyaline, thin-walled, some with a slight mucilaginous incrustation, content of cell not distinctive in KOH or Melzer’s. Caulocystidia in fascicles, the cells elongate-subfusoid, 60–100×10–18 μ, with smooth, thin walls and no distinctive content in KOH or Melzer’s. Cortex hyphae slowly developing an ocher-colored homogeneous content as revived in Melzer’s, in KOH the walls refractive and hyaline and the content often “colloidal” in appearance.

Pileus cuticle a layer of clavate-pedicellate and inflated cells 3–5 deep, in KOH the walls refractive-hyaline (glassy in appearance), smooth, content not distinctive, in Melzer’s the walls weakly yellowish but in many cells the content ocher-yellow and homogeneous to colloidal. Clamp connections present.

Type locality. Huron Mountains, Marquette County, Michigan.

Habit and habitat. Cespitose on an old wound near base of a living maple.

Distribution. Known only from the type locality.

Observations. This species is indeed a peculiar one, first because it is possible that it causes a heart rot of sugar maple, and secondly because of such odd features as the spores appearing distinctly punctate in KOH but smooth in Melzer’s, the colored content of the cuticular cells as revived in Melzer’s, the pallid pileus when young and the elongated cheilocystidia.

59. Psathyrella Waltersii A. H. Smith, sp. nov.

Pileus 3–6 (–9) cm latus, demum campanulatus vel obtuse conicus, fibrillosus, canescens, glabrescens cinnamomeus vel vinaceo-brunneus, demum pallidus; lamellae confertae, adnatae, 5–6 mm latae, pallidae demum violaceo-fuscae; stipes 5–12 cm longus, 8–10 mm crassus, fibratus, deorsum tactu sordide ochraceus; sporae 9–12×5–6.5 μ; fibulae adsunt. Typus. Walters 4 (MICH); legit prope Cleveland, Ohio.

Illustr. Pl. 29; Pl. 91, fig. b; Pl. 92; Text Figs. 152, 153.

Pileus 3–6 (–9) cm broad, ellipsoid to subovoid when young, becoming campanulate to broadly conic, canescent from a thin delicate covering of white fibrils, glabrescent, while still moist “warm sepia” to “Verona brown” (deep vinaceous-brown), gradually fading through “avellaneous” to “tilleul buff” (whitish), hygrophanous, whitish and atomate when faded, later occasionally darkening to rusty brown on the disc, margin often splitting radially, appendiculate at first but soon naked. Context white, thin, rigid and firm but fragile, odor and taste none.

Lamellae close to crowded, 45–47 reach the stipe, 3 tiers of lamellulae, bluntly adnate, soon seceding, 5–6 mm broad (moderately broad), broadest at the stipe and tapered evenly to the pileus margin, white when young, slowly becoming “benzo-brown” (violaceousfuscous), edges white-crenulate.

Stipe 5–12 cm long, 8–10 mm thick, hollow, fibrous and firm, slightly enlarged downward, white but soon staining sordid yellowish at the base, white-fibrillosse to lacerate-scaly, toward the apex longitudinally striate and slightly scurfy.

Spores 9–12×5–6.5 μ smooth, apical pore distinct and apex truncate (under oil immersion), shape in face view ovate to elliptic, in profile obscurely inequilateral, color in KOH dark cocoa-brown and changing to darker very slowly, in Melzer’s tawny-red, wall about 0.4 μ thick.

Basidia 4-spored, 26–32×7–9 μ, clavate, hyaline in KOH. Pleurocystidia none. Cheilocystidia abundant, 28–42×9–15 μ, ventricose with very short neck and broadly rounded apex varying to clavate; wall thin, smooth, hyaline, content
not distinctive in either KOH or Melzer's. Caulocystidia present merely as scattered clavate cells near the apex of the stipe.

Pileus cuticle of vesiculose cells arranged in a layer several deep, the cell walls smooth, hyaline and thin, the cell content not distinctive in either KOH or Melzer's. Hyphae of the trama floccose, interwoven, hyaline or nearly so in mature pilei. No distinctive reactions present on material revived in Melzer's. Clamp connections present.

Type locality. Cleveland, Ohio.
Habit and habitat. Clustered on hardwood stumps, etc.
Distribution. Michigan and Ohio.
Observations. This species is at once distinguished from *P. candolleana* by the larger spores. It has the appearance of basidiocarps so often referred to "*Hypholoma appendiculatum,*" but the use of that name is certainly not justified for this American *Psathyrella.* The latter resembles *P. huronensis* in stature but is distinguished by its caulocystidia and more highly colored pileus.


60. *Psathyrella uliginicola* McKnight & A. H. Smith, sp. nov.

Pileus 5–10 cm latus, obtusus vel hemisphericus demum late expansus, dilute griseus, subsericeus, ad marginem sparse appendiculatus; lamellae adnatae 5–6 mm latae, conflatae, pallidae demum vinaceo-brunneae; stipes 8–12 cm longus, 12–15 mm crassus, albus, sericeus, deorsum tactu dilute brunneae; sporia 10–15 × 5–6 μ; fibulae adsunt. Typus. Smith 34903 (MIC); legit prope Laramie, Wyoming.

Illustr. Pls. 31, 32; Text Figs. 154–156.

Observations. This species is at once distinguished from *P. candolleana* by the larger spores. It has the appearance of basidiocarps so often referred to "*Hypholoma appendiculatum,*" but the use of that name is certainly not justified for this American *Psathyrella.* The latter resembles *P. huronensis* in stature but is distinguished by its caulocystidia and more highly colored pileus.


60. *Psathyrella uliginicola* McKnight & A. H. Smith, sp. nov.

Pileus 5–10 cm broad, globose when young, the margin incurved, becoming hemispheric to broadly convex, finally plane or obtusely umbonate, pallid to grayish, subhygrophanous "avellaneous" or "wood brown" when moist, surface with a faintly silky appearance due to scattered appressed fibrils, when young with scattered fibrils near the margin left by a very rudimentary outer veil, margin at first slightly appendiculate from the remains of a thin but submembranous partial veil, fading to pale avellaneous and in age sometimes slightly sulcate along the margin. Context firm but brittle, pale drab ("pallid Quaker drab"), scarcely fading and when bruised darkening somewhat, odor and taste not distinctive.

Lamellae narrowly adnate, narrow, 5–6 mm broad, crowded to close, thin, pallid at first, finally dark vinaceous-brown ("army brown"), edges white-crenulate.

Stipe 8–12 cm long, 12–15 mm thick, equal, hollow, rigid and brittle, white or whitish, silky beneath the scattered fibrils left by the veil, becoming longitudinally rimose-sulcate in age, white mycelioid at the base, lower portion discoloring when handled.

Spores 10–12 (−15) × 5–6 μ, smooth, apical pore rather inconspicuous, shape in face view elliptic to oblong, in profile more or less bean-shaped, in KOH sordid cinnamon to pale cocoa-color but soon with a dark-chocolate cast, in Melzer's tawny, wall about 0.3 μ thick.

Basidia 28–33 × 10–12 μ, 4-spored, hyaline in KOH, clavate. Pleurocystidia not differentiated. Cheilocystidia abundant, of two types: (1) 45–70 × 10–16 μ, elongate-utriiform to cylindric, wall hyaline, smooth and thin, content not distinctive; (2) 10–16 × 8–12 μ, vesiculose to clavate, hyaline and thin-walled.
Caulocystidia up to $140 \times 12 \mu$, elongate-utriform with flexuous sidewalls, hyaline and smooth in KOH.

Pileus cuticle of somewhat inflated cells and the layer several cells deep, pallid brownish (in KOH) to hyaline, content not distinctive; with filamentose hyphae scattered over the surface and apparently originating from among the cells of the cuticle. Hyphae of the trama hyaline in KOH, thin-walled and lacking incrustations. No distinctive reactions noted in mounts made in Melzer's.

Type locality. Pole Mountain, near Laramie, Wyoming.

Habit and habitat. Solitary in swampy areas under brush or on decayed wood of aspen, especially around beaver ponds.

Distribution. Idaho, New Mexico, Utah, Wyoming.

Observations. This is a large species with gray evident in the pileus before the color changes occur which are associated with maturation of the spores. It is close to P. subagraria in overall appearance, but the latter has pleurocystidia.


61. Psathyrella luteopallida A. H. Smith, sp. nov.

Pileus 8–20 mm latus, late convexus, ad marginem appendiculatus fibrillosus, luteolus; lamellae confertae adnatae angustae albidae demum avellaneae; stipes 10–25 mm longus, 1–2 mm crassus, fragilis, albidus deorsum fibrillosus; sporae 9–12×5–6 \( \mu \); fibulae adsunt. Typus. Sharp 20863 (MICH); legit prope Knox County, Tennessee.

Pileus 8–20 mm broad, hemispheric becoming broadly convex to nearly plane, rarely nearly fully expanded, margin appendiculate at first, surface otherwise fibrillose moist and hygrophanous, when young pale yellow ("light ochraceous-buff" to pale ochraceous), when water soaked gray ("light mouse gray"), atomate when faded. Context soft, thin and readily collapsing, white, odor and taste not distinctive.

Lamellae close, adnate, narrow, white becoming "avellaneous" but pale tan as dried, sometimes with a pinkish tint, edge fimbriate.

Stipe 10–25 mm long, 1–2 mm thick, equal slender, fragile, white over all, striate and pruinose above, fibrillose to subscaly below, bulbilose at base in some, hollow; veil white, fibrillose leaving remnants along the margin at first.

Spores deposit "hair brown." Spores 9–12×5–6 \( \mu \), smooth, apical pore none, shape in face view elliptic to obscurely ovate, in profile somewhat bean-shaped to obscurely inequilateral, color in KOH grayish hyaline, not darkening appreciably, in Melzer's dingy ochraceous to weakly dextrinoid, wall thin.

Basidia 4-spored, 16–22×9–13 \( \mu \), broadly clavate from a narrow pedicel, rarely subglobose—more so toward the gill edge. Pleurocystidia absent. Cheilocystidia clavate to utriform to fusoid-ventricose with rounded apex, smooth, thin-walled, hyaline and readily collapsing.

Gill trama interwoven, cells inflated, hyaline, smooth; subhymenium cellular. Pileus cuticle of vertically elongate elliptic to angular cells in addition to subglobose type, all smooth, thin-walled and hyaline, cell content not distinctive. Hyphae of subcuticular region hyaline and smooth-walled. Clamps present.

Type locality. Knox County, Tennessee.

Habit and habitat. Gregarious on soil and humus at edge of a lawn.

Distribution. Tennessee. Type studied.
Observations. This species is closely related to *P. subhyalinispora* but has distinctly larger spores and yellower colors for the pileus when young. *Psathyrella luteopallida* is close to *P. gordonii* (Berk. & Br.) Dennis & Pearson, but the latter has a darkening stipe base.

**Psathyrella subg. Pannucia** (Karsten) A. H. Smith, comb. nov.

(Apparently Romagnesi never used the name in combination with *Psathyrella.*

*Psathyrella* subg. *Psathyra* (Fr.) Singer, Agar. Modern Taxon. 510, 1962. This combination was apparently not validly published.

In this group, as emended, I have placed those species with a moderately to well-developed partial veil typically appendiculate on the margin of the young pileus for a time after it breaks, and in which pleurocystidia are present. It should be kept in mind, however, that, in addition to the partial veil, an outer veil may be present in various degrees of development depending on the species. Also in this subgenus, and recognized as the type section, *Pannucia*, the outer veil is well developed but the inner veil is more fibrillose than membranous. It is the remains of the outer veil which, for the most part, cause the pileus margin to be appendiculate at first in some species of this section. As indicated in the key, the pleurocystidia are not of the type which characterize subg. *Homophron*. However, in *Pannucia*, one finds species with slightly thickened cystidial walls (0.5 μ). An annulus may accidentally be present on an occasional basidiocarp, but this is too infrequent to cause any real difficulty in identifying collections.

Type. *Psathyrella fibrillosa*.

Key to the Sections of Subgenus *Pannucia*

1. Pileus margin appendiculate for a time from remains of a typically submembranous to membranous inner veil. **sect. Appendiculatae.**
2. Pileus when young showing a well developed outer veil leaving copious remains that may fringe the margin at first; inner veil more or less fibrillose. **sect. Pannucia.**

Section **Appendiculatae** A. H. Smith, sect. nov.

Pileus ad marginem appendiculatus, glabrescens.

Type. *Psathyrella piceicola*.

The name *Pseudo-Hypholoma* Konrad & Maublanc, Encyc. Mycol. 14: 125. 1948 for a section of *Psathyrella* was not validly published. I have considered it desirable to avoid reference to the name *Hypholoma* as much as possible in this work and so propose a name that features the distinguishing character of the section.

Key to the Subsections of Section **Appendiculatae**

1. Spores 9–12 × 6 μ or larger. **subsect. Appendiculatae.**
2. Spores smaller.
   1. Spores 5–7 μ long (if 6.5–8 μ see next choice) **subsect. Hydrophilae.**
   2. Spores 7–10 × 4–5 μ. **subsect. Largae.**
   3. Pleurocystidia utriform or fusoid-ventricose and with the apex broadly rounded. **subsect. Subacutae.**
   3. Pleurocystidia nine-pin-shaped to obtuse to acute.
Subsection **Appendiculatae**

**Key to the Species of Subsection *Appendiculatae***

1. Spores $12-15 \times 6-8 \mu$; pileus with distinct often deep vinaceous to vinaceous-brown tints.  
   62. *P. barlae*.  
   2

1. Not as above.

2. Spores $12-15 \times 5.5-6.5 \mu$; pileus walnut brown (dingy vinaceous-brown).  
   63. *P. hortensis*.  
   3

2. Not as above.

3. Spores $12-15 \times 5.5-6.6 \times 6.6-8 \mu$; pileus honey-brown; growing on wood of conifers.  
   64. *P. piceicola*.  
   4

3. Not as above.

4. Pileus prominently conic; densely clustered on alder logs; spores $9-12 \times 5-6 \mu$, apex truncate.  
   65. *P. cuspidata*.  
   5

4. Not as above.

5. Spores ochraceous-hyaline in KOH, not flattened.  
   66. *P. neotropica*.  
   6

5. Spores dark colored in KOH.

6. Northern and vernal; stipe bulbous; growing on sticks partly submerged in cold water.  
   67. *P. submontana*.  
   7

6. Not as above.

7. Spores flattened slightly; pileus chestnut brown.  
   68. *P. castaneicolor*.  
   8

7. Spores terete; pileus honey to rusty brown in color.

8. Brachybasidioles differentiated; pileus honey-brown and very delicate in texture.  
   69. *P. praetenuis*.  
   9

8. Brachybasidioles not differentiated.

9. Scattered to gregarious on debris.  
   70. *P. semivestita*.  
   see **88. P. emmetensis**.


*Psathyra barlae* Bresadola, Fungi Trid. 1: 84. t. 91. 1887.

f. **barlae**

Illustr. Bresadola, op. cit., t. 91; Smith, op. cit. pls. 16, 30, figs. 3, 4, 6. Pl. 75, fig. a; Text Figs. 157-159.

Pileus 3–5 cm broad, obtusely conic when young, becoming plane or with a low broad umbo, surface glabrous on the disc and with a narrow fringe of whitish fibrils along the margin when young, glabrescent, color “warm blackish brown” to “dark livid brown” when young (deep vinaceous red), the disc soon “pale grayish vinaceous” to “russet-vinaceous” (paler vinaceous-red), hygrophanous, striate when moist, disc near “cinnamon-buff” when faded (pale tan), atomate when faded and becoming somewhat rugulose. Context thin, firm, brittle, concolorous with the surface when either moist or faded, odor and taste mild.

Lamellae bluntly adnate, soon seceding, close to subdistant, about 3 tiers of lamellulae, moderately broad (4–5 mm), “russet-vinaceous” when young (medium vinaceous-red), tinged chocolate-gray in age, pruinose under a lens from the pleurocystidia, edges even.

Stipe 5–10 cm long, 4–6 mm thick, equal, hollow, fragile, “pale vinaceous-fawn” to “light vinaceous-fawn” beneath a coating of appressed white fibrils, appearing longitudinally fibrous-striate and canescent, becoming sordid in age.

Spores $12-15 \times 6-8 \mu$, smooth, with a distinct often oblique apical pore, shape in face view elliptic to nearly oblong, in profile subelliptic to very obscurely inequilateral, color in KOH dark bister and slowly darkening to dark coffee-color, very dark vinaceous-brown under the microscope when fresh, in Melzer’s bay-red, wall about 0.4 \( \mu \) thick.

Basidia 4-spored, (20–)26–38 × 10–15 \( \mu \), hyaline in KOH, clavate-pedicellate.
Pleurocystidia abundant, 60–90×10–16 μ, subutriform to fusoid-ventricose with rounded to obtuse apex, at times subcylindric, the wall thin, smooth and hyaline (or rarely some debris adhering near the apex), content not distinctive in either KOH or Melzer's. Cheilocystidia similar in shape to pleurocystidia but usually smaller. Caulocystidia not located. Cortex of stipe of hyphae with fuscous brown wall thickenings (or incrustations) near the septa (as revived in KOH).

Pileus with a cuticle of vesiculose cells having thin, smooth, hyaline walls and lacking a distinctive content in either KOH or Melzer's as revived, some clavate to pyriform cells intermingled in the layer. Context of hyphae with grayish brown to fuscous-brown deposits of pigment or wall thickenings particularly near the septa but also inerusting the hyphae as zones or bands, cell content not distinctive in either KOH or Melzer's as revived. Clamps present.

Type locality. Europe.
Habit and habitat. Gregarious to cespitose on soil and humus.

Observations. Malençon and Romagnesi (1953) illustrated the cystidia of both *P. barlae* and *P. bipellis* Quél. Those of the latter species would place it in a different section in my classification. Since I have found a difference of the type these authors illustrated, to be, on the whole, a very constant feature in North American *Psathyrellae*, I continue to recognize *P. barlae* as a distinct species, but now recognize the collections from the Great Lakes region previously referred to as *P. bipellis* as forma minor of *P. barlae*. This species and its variants are intermediate in veil features and have also been keyed out in subg. *Psathyrella* to facilitate identification.


Pileus 1–4 cm latus, stipes 2–3 mm crassus; lamellae rubellae demum fusco-brunneae. Typus. Smith 1389 (MICH); legit prope Ann Arbor, Michigan. Illust. Pl. 75, fig. b.

Pileus 1–4 cm broad, obtusely conic, the margin appressed against the stipe becoming somewhat expanded, often with an obtuse umbo, at first with scattered fibrils over the surface and a fibrillose zone near the margin from the broken veil, glabrous in age, when young and fresh dark purplish-red (“diamine brown”) but sometimes becoming rusty brown (“Mars brown”) before fading, hygrophanous, fading to “light grayish vinaceous” before fading (pinkish gray). Context reddish when moist, very fragile, taste not distinctive, odor faintly fragrant.

Lamellae moderately close to subdistant, broad, adnate or narrowed at the point of attachment, bright pink (near “Corinthian pink”) at first, becoming dark brown with a persistent reddish tinge, edges minutely white-fimbriate.

Stipe 1–4 cm long, 2–3 mm thick, tubular, very fragile, pallid but with a vinaceous to pink tinge, at first fibrillose, canescent part way to apex, with scattered fibrillose points above, nearly glabrous in age.

Spores 12–15(–16) × 6–7.5(–8) μ, smooth, pore apical to oblique, well developed, shape in face view elliptic to suboblong, in profile subelliptic to very obscurely inequilateral, color in KOH bister becoming dark coffee-brown, in Melzer's dark bay, wall about 0.4 μ thick.

Basidia 4-spored, 20–30×10–14 μ, many almost globose above a narrowed pedicel. Pleurocystidia scattered, 50–70×10–18 μ, more or less fusoid-ventricose, or the neck constricted only slightly and apex rounded to somewhat capitate, wall thin, smooth and hyaline, and content not distinctive in KOH or in Melzer's. Cheilocystidia similar to pleurocystidia but usually smaller. Caulocystidia
scattered in clusters, similar to pleurocystidia but often up to 100 μ long and with a merely obtuse apex.

Gill trama regular, the hyphae somewhat interwoven, the cells enlarged and hyaline to dark dingy purplish gray (pale fuscous) to dull brownish in KOH, with wall thickenings and some in crustation—especially near the septa. Pileus with a cuticle of vesiculose cells 1–2 cells deep, the walls thin, smooth and hyaline, the content not distinctive in KOH or Melzer’s. Hyphae of the context colored about like the gill trama and with the local wall thickenings and pigment deposits near the septa, some hyphae with spiral or bandlike in crustations. Clamp connections present. No distinctive reaction on any part in mounts made in Melzer’s.

**Type locality.** Ann Arbor, Michigan.

**Habit and habitat.** Scattered on freshly spaded garden soil.

**Distribution.** Michigan.

**Observations.** The bright pink gills and clearly terrestrial habitat along with the small size distinguish this from the type form, but the two are similar in pigmentation as observed on dried material sectioned and mounted in KOH, in spore features, and in cystidia. *P. barlae* f. *barlae* very likely has caulo-cystidia.

**Material examined.** Colorado: Smith 51648. Michigan: Potter 4705, 4909, 4911, 5211, 5212, 7162, 7230, 7247, 7303, 7304, 7308, 7313, 7328, 7329, 7335, 7337, 7338, 7341; Smith 1389 (Type), 20455.

### 63. *Psathyrella hortensis* A. H. Smith, sp. nov.

Pileus (2–)3–3.5 cm latus, conicus demum campanulatus, glaber, ad marginem appendiculatus, vinaceo-brunneus, sublubricus; lamellae 2.5–3.5 mm latae, avel­laneae demum vinaceo-brunneae; stipes 8–11 cm longus, 3–6 mm crassus, cavus albus, glaber, deorsum fibrillosus; sporae 12.2–15×5.5–6.5 μ; pleurocystidia 60–90×11–15 μ, fusoide ventricosa, ad apicerum acuta vel obtusa; fibulae adsunt. 

**Typus.** Smith 2143 (MICH); legit prope Ann Arbor, Michigan.

**Illust. Text Figs.** 160–162.

Pileus (2–)3–3.5 cm broad, obtusely conic to convex, becoming broadly obtuse to plano-umbonate, umbo obtuse, surface glabrous except for the margin which is at first hung with patches of the whitish submembranous veil, moist and hygrophanous, exactly “walnut brown” moist, paler pecan buff to near avellaneous when faded, margins becoming paler when pileus is still moist, surface slightly lubricous when wet. Context more or less concolorous with pileus surface, thin, watery, fragile, odor and taste not distinctive.

Lamellae close, 2–3 tiers of lamellulae, one tier almost touching the stipe, depressed-adnate, horizontal, narrow to moderately broad (2.5–3.5 mm) “avel­laneous” young, becoming wood brown to “army brown” (vinaceous brown) finally, in age even darker but paler again in drying, edges even.

Stipe 8–11 cm long, 3–6 mm thick, equal, hollow, rather firm, white, glabrous and silky above, white-fibrillose striate below and often with laevoe patches of veil remnants unevenly distributed, cortex pale sordid watery buff, base white strigose and many radiating hairs present but a typical pseudorhiza not constantly present.

Spores near “benzo brown” in deposit (with a redder tinge on loss of moisture), 12.2–15×5.5–6.5 μ, smooth, apex truncate from a wide apical pore which is rather inconspicuous, shape in face view elliptic to narrowly ovate, in profile weakly bean-shaped to obscurely inequilateral with the majority subelliptic, dark reddish in H₂O mounts when fresh, soon bister then a medium chocolate-color in KOH, in Melzer’s bay-red, wall about 0.8 μ thick.
Basidia 4-spored, 26–35×10–13 μ, clavate, hyaline in KOH, many finally subcapitate. Pleurocystidia 60–90×11–15 μ, subacute to obtuse with narrow elongated wavy necks, wall smooth, thin, hyaline in KOH, content not distinctive in either KOH or Melzer’s. Cheilocystidia similar to pleurocystidia or shorter and some clavate to saccate (the latter 18–26×9–14 μ), some developing one or two slight protuberances. Caulocystidia not found except for projecting narrow (2–4 μ) filaments.

Gill trama hyaline or nearly so, either when fresh or revived in KOH. Pileus trama more or less cinnamon in H₂O when fresh, as revived in KOH dark reddish brown fading to pale tawny or clay color, the hyphae incrusted at least weakly in the area of the septa. Cuticle of pileus an irregular palisade of inflated and clavate cells with smooth, hyaline to weakly cinnamon, thin walls, content of cells not distinctive. Clamp connections present. No distinctive reactions present on tissue mounted in Melzer’s.

Type locality. Botanical Gardens, University of Michigan, Ann Arbor, Michigan.

Habit and habitat. Around rubbish heaps.

Distribution. Known only from the type locality.

Observations. This is probably an introduced species. It grew around the discarded remains of tropical plants. The distinguishing features are the vinaceous-brown color when young, large pleurocystidia, medium large spores, whitish submembranous veil, and dark reddish brown tramal hyphae as revived in KOH.

Psathyrella vinaceofulva Orton appears to be a closely related species.


Illust. 1. c. fig. 2, B, C, E. Text Figs. 163–166.

Pileus 2–3.5 cm broad, conic, becoming broadly umbonate and campanulate to more or less expanded, surface with the marginal two-thirds radiately rugose and nearer the margin with concentric flattened scales from the remains of the veil, glabrescent, dry (probably collected when faded), near cinnamon-buff to honey-color with the disc “buckthorn brown” (when dried the disc sordid tawny to reddish brown, the margin paler yellowish brown), the surface appearing somewhat as if varnished (when dried) but no gelatinous pellicle present, margin appendiculate with the submembranous patches of the veil tissue for a time. Context thick in the disc, abruptly thin outward, white, firm, odor strongly fungoid, taste mild, pleasant at first but finally bitterish.

Stipe 5–12 cm long, 4–6 mm thick, apex mealy, glabrous and shining to the midportion, lower half conspicuously lacerate scaly, equal or tapering upward, stuffed becoming hollow, rooting; veil heavy and fibrous.

Spores dark purple-brown in mass, 12–15 (–18) × 5.5–6.6 × 6.6–8 μ, smooth, apex lacking a distinct pore, shape in face view oval-apiculate to broadly ovate-apiculate, in profile obscurely oval-apiculate or with a broad shallow suprahilar depression or applanation (somewhat inequilateral), color in KOH at first bistert-brown slowly clouded with chocolate-gray, in Melzer’s dull red, wall about 0.6 μ as revived in KOH.

Basidia 30–34×10–12 μ, 4-spored, clavate, hyaline to yellowish in KOH. Pleurocystidia abundant, 40–90×12–20 μ, ventricose and with a greatly elongated neck and broadly rounded apex, thin-walled, smooth, hyaline yellowish in KOH from a somewhat colloidial content, a few with one or more knob-like projections or contorted prolongations present. Cheilocystidia 50–80×7–12 μ, narrowly ventricose to subcylindric or with flexuous walls at least in age, thin-walled, apex obtuse, smoky yellowish brown in KOH. Caulocystidia in patches, more or less
like the cheilocystidia but up to 100 × 12 μ, subcylindric, narrowly clavate or at base slightly ventricose with a long flexuous neck above it ending in a subacute apex, wall hyaline, smooth and thin. Cortex hyphae with "colloidal" content.

Pileus with a cuticle of a layer of vesiculose cells irregularly two to three cells deep, their walls pale cinnamon-brown in KOH, smooth, thin, in Melzer's merely ochraceous. Hyphae of the context weakly yellowish to hyaline in KOH and yellowish in Melzer's, smooth. Clamp connections present. No distinctive color reactions on any tissue when mounted in Melzer's.

Type locality. Indian Gap, (Great Smoky Mountains National Park), Tennessee.

Habit and habitat. Cespitose on spruce logs.

Distribution. Tennessee. Type studied.

Observations. The hyphae of the stipe which show colloidal content in KOH are merely yellow in Melzer's, not red as so frequently happens in other fungi showing similar cell content. The spores have a granular content which in Melzer's in some spores gives the impression of a minutely punctate condition, but the wall itself, which is fairly thick, showed no sign of any discontinuity. This species has the colored cuticular cells in KOH somewhat like that of *P. tsugae*, but the spores separate the two at once. The caulocystidia appear to be accentuated cheilocystidia but are distinctive nevertheless. Spores with a similar pronounced apiculus are found in *P. caputmedusae* and its closely related variants. The spore apex is rounded and under ordinary low power oil immersion a distinct pore is not clearly visible.


Illustr. 1. c. pl. 29, fig. 10; pl. 30, fig. 2. Text Figs. 167-169.

Pileus 1.5-3 cm broad across the base, up to 4.5 cm high, prominently conic to cuspidate, becoming narrowly conic-campanulate or remaining conic, the margin appressed against the stipe when young, flaring somewhat in age, covered by a dense appressed coating of white fibrils at first, glabrescent around the disc first but finally over all, margin usually remaining appendiculate with white patches of fibrils, surface moist, "pinkish buff" when very young, becoming "ochraceous-tawny" (pale rusty brown) as the pileus enlarges, the marginal area changing to "light drab" to "drab" (livid gray) as the spores mature, the umbo becoming "chamois" (pale yellowish), hygrophanous, fading to "tilleul buff" (pallid) or slightly darker over all except the umbo which remains yellowish. Context very rigid and very brittle, thin, concolorous with the surface, odor none, taste mild.

Lamellae close to crowded or in age appearing subdistant, 20-25 reach the stipe, narrow (about 2.5 mm), equal, ascending adnate, whitish when young (paler than "tilleul buff"), "russet" to "Mars brown" (dark rusty brown) when mature, edges even.

Stipe 4-8 cm long, 4-8 mm thick, equal or slightly narrowed toward the apex, hollow, very fragile, when young coated with a thin layer of snow-white fibrils, glabrescent and whitish below, surface often transversely undulate, in age white fibrillose-scurfy above.

Spores 9-12 × 5-6.5 μ, smooth, apex truncate from a broad apical pore, shape in face view mostly ovate with the apiculate end somewhat pointed, in profile mostly somewhat inequilateral, color russet in water mounts when fresh, bister in KOH and darkening somewhat but lacking a distinct violaceous component, in Melzer's tawny but slowly becoming tawny-red, wall about 0.5 μ thick.

Basidia 4-spored, hyaline in KOH, 20-30 × 8-10 μ, clavate. Pleurocystidia scattered to abundant, 60-80 × 12-25 μ, broadly fusoid-ventricose, the neck short
to elongated and the apex broadly rounded to obtuse, smooth, hyaline, thin-walled and readily collapsing, content not distinctive in either KOH or in Melzer's. Cheilocystidia similar to pleurocystidia. Caulocystidia versiform but mostly sac-cate, clavate or vesiculose, more rarely obtusely fusoid-ventricose, the content of some with refractive particles (in KOH), some with slightly thickened (0.5 µ) wall over apex or upper region generally.

Gill trama with greatly enlarged hyphal cells with pale cinnamon cell sap when fresh, hyaline revived in KOH or the wall weakly ochraceous and very weakly encrusted at times; subhymenium cellular with darker content than the cells of the gill trama when fresh. Pileus with a cuticle of hyaline to yellowish vesiculose cells about 3 deep, the walls thin and smooth, the cell content not distinctive as revived in KOH or Melzer's. Hyphae of the context with pale cinnamon colored cell sap when fresh, as revived in KOH the walls weakly ochraceous and minutely roughened. Clamp connections present. No distinctive reactions observed on mounts of any tissue in Melzer's.

Type locality. Sol Duc Hot Springs, Olympic National Park, Washington.

Habit and habitat. Densely cespitose in large masses on alder logs and debris.


Observations. The distinguishing features of the species are the rusty brown coloration, medium-large spores, very large pleurocystidia, pale cinnamon color of the cell sap in fresh material of the hyphae of the gill trama, and habit of growing in large clusters. It appears to be related to P. frustulenta.

Material examined. Washington: Smith 14610 (Type), 16279, 30405.

66. Psathyrella neotropica A. H. Smith, nom. nov.

Drosophila pallidispora Murrill, Mycologia 10: 64. 1918 (not Psathyrella pallidispora Dennis, 1970).

Illustr. Text Fig. 170.

Pileus 3 cm broad, irregular, campanulate, at length spreading at the margin, surface hygrophanous, silky, very faintly striate, veil forming deciduous flecks on the young pileus, at first chestnut, fading to pale tan, pallid when dry. Context thin, with mild but slightly mawkish (subnauseous) taste.

Lamellae adnexed, broad, crowded, pale argillaceous, at length brown.

Stipe 5–6 cm long, 3–5 mm thick, slightly tapered upward, fibrillose, white, hollow, veil scarcely appendiculate.

Spores 9–12 (–13) × 5–6.5 µ, smooth but under a 1.4 NA oil immersion objective appearing to have discontinuities in the wall as seen in optical section, apical pore usually distinct because of a bubble of protoplasm which shows in KOH mounts, shape in face view broadly elliptic to ovate, in profile obscurely inequilateral to faintly bean-shaped, color in KOH ochraceous-hyaline but slowly developing a gray tone, in Melzer's nearly hyaline to ochraceous; wall thin.

Basidia 4-spored, 10–12 µ broad, hyaline. Brachybasidioles present, 10–13 µ wide. Pleurocystidia 28–37 × 10–14 µ, utriform to fusoid-ventricose with short necks and broadly rounded apex, thin-walled, readily collapsing, content not distinctive. Cheilocystidia similar to pleurocystidia or merely vesiculose, 25–30 × 10–15 µ, thin-walled, smooth, content not distinctive, readily collapsing. Caulocystidia similar to cheilocystidia.

Pileus with a cuticle of inflated cells one to two cells deep, reviving poorly but apparently with thin, hyaline, smooth walls and lacking any distinctive content. Hyphae of trama weakly incrusted and pale tan in KOH. Clamp connections present. No distinctive color reactions noted in mounts made in Melzer's.
Type locality. Herradura, Cuba.

Habit and habitat. Gregarious on soil in a garden.

Distribution. Cuba. Type studied.

Observations. In color and in color changes the species recalls *P. singeri*, an impression further supported by the narrow vinaceous-brown crowded gills of the dried basidiocarps. It differs in having distinctly larger spores.

67. *Psathyrella submontana* A. H. Smith, sp. nov.

Pileus 2–4 cm latus, demum convexus vel subplanus, ad marginem appen­diculatus, subcinnamomeus; lamellae latae confertae adnatae secedentes brunneo­lae demum vinaceo-brunnea; stipes 3–4 cm longus, 3–5 mm crassus ad basem bulbilosus, albus; spore 9–12 (11–16) × 5–6.4 (4–5) μ; pleurocystidia 42–66 × 10–16 μ, ad apicerum capitata vel late rotundata; fibulae adsumt. Typus. Smith 66609 (MICH); legit Huron Mountains, Big Bay, Michigan.


Pileus 2–4 cm broad, obtuse when young, broadly convex, expanded to times nearly plane, margin appendiculate at first submembranous patches of a pallid partial veil, surface moist and subhygrophanous, dull cinnamon (“Verona brown”) moist, dingy tan when faded. Context fragile, brownish when moist, pallid when faded, odor and taste not distinctive, with FeSO₄ slowly becoming slightly olivaceous.

Lamellae broad, moderately close, adnate, soon seceding, pallid brownish becoming nearly “Natal brown” (with a tinge of red), edges whitish.

Stipe 3–4 cm long, 3–5 mm apex, equal to the base which is typically oval­bulbous, white and unchanging, not darkening below, silky fibrillose.

Spores 9–12 (−11–16) × 5–6.5 (−4–5) μ, smooth to angular (in apparently abnormal spores), apical pore distinct, shape in face view typically elliptic to ovate, in profile ovate to obscurely inequilateral, color in KOH soon dark chocolate-color, in Melzer’s bay-red, wall about 0.3 μ (“abnormal” spores elongate-angular or subglobose-angular, or ovate-angular or drawn to a point—all types present in some mounts.)

Basidia 4-spored, 23–30 × 9–11 μ, clavate, hyaline in KOH. Pleurocystidia 42–66 × 10–16 μ, utriform to ventriose-capitate, thin-walled, smooth, hyaline in KOH, content not distinctive in either KOH or Melzer’s (in KOH some with a faint diffuse brownish pigmentation). Cheilocystidia similar to pleuro­cystidia, or shorter, fatter and apex more nearly obtuse. Caulocystidia not found.

Pileus cuticle a layer of vesiculose cells 2–3 deep, hyaline in KOH, with thin walls and many lens-shaped local thickenings present against the inner wall (these refractive in KOH, hyaline and 2–4 μ wide); trama beneath the layer vinaceous-brown in KOH and hyphal walls with incrustations on them. No amyloid reactions present on any of the tissues. Clamp connections present.

Type locality. Huron Mountain, Huron Mountains Club, Big Bay, Michigan.

Habit and habitat. On wet sticks in and near cold water, June.


Observations. The lens-shaped thickenings in the cuticular cells of the pileus and the abnormal spores are not regarded as important taxonomic features—at least not until verified by future collections. The large pleurocystidia, the oval bulb of the stipe, the incrusted subcuticular hyphae, and habitat along with the vernal occurrence are considered diagnostic.

Material examined. Michigan: Smith 66609 (Type), 66644, 66716.

Illustr. Text Figs. 175–177.

Pileus 3 cm broad, hemispheric to convex, surface hygrophanous, glabrous or sometimes having fragments of the white veil when very young, chestnut to tan, margin even, splitting. Context thin, brownish, with mild but mawkish taste.

Lamellae sinuate adnate, subcrowded, broad, plane, white to purplish then black.

Stipe 4 cm long, 3–4 mm thick, subcylindric, subglabrous, floccose above, hollow, white.

Spores 9–12×5.5–6.6×6.6–8 μ, smooth, apical pore broad and apex truncate under low-power oil-immersion, shape in face view broadly elliptic, in profile obscurely bean-shaped, color in KOH very soon dark chocolate-color, in Melzer’s bay-red, wall about 0.4 μ thick.

Basidia 20–25×8.5–10 μ, 4-spored, hyaline in KOH. Basidioles somewhat enlarged but not sufficiently so to be brachybasidioles. Pleurocystidia 38–54×10–20 μ, with a well developed narrow (3–5 μ) pedicel, greatly inflated above this to almost balloon-like varying to utriform, wall thin, hyaline, smooth, the cell readily collapsing, content not distinctive. Cheilocystidia similar to the pleurocystidia. Caulocystidia more or less similar to pleurocystidia and not abundant.

Pileus with a cuticle of vesiculose cells 2–3 deep, walls pale cinnamon in KOH, smooth; hyphae of subcutis reddish cinnamon in KOH, hyphae smooth to slightly uneven (in KOH). Clamp connections present. When mounted in Melzer’s no tissue or cells showing any distinctive reaction.

Type locality. Redding, Connecticut.

Habit and habitat. On a pile of decaying leaves.


Observations. The spores remind one of the *P. candolleana* group, but the pleurocystidia are abundant and distinctive.

69. *Psathyrella praetenuis* A. H. Smith, sp. nov.

Pileus 3–5 cm latus, late umbonatus vel convexus, glaber, mellei-brunneus; lamellae dilute brunneae, in exsiccatis subatratae, conflertae, adnatae; stipes 6–12 cm longus, 3–6 mm crassus albidus glaber; sporae 8–11 (12) ×5–6 μ; pleurocystidia 38–47 (52) ×10–17 μ; cheilocystidia saccaea vel vesiculosa, luteotunicata; fibulae adsunt. Typus. Smith 76781 (MICH); legit prope Priest Lake, Idaho.


Pileus 3–5 cm broad, obtuse, expanding to plane with the margin spreading and the disc with a low umbo in age, surface glabrous, moist, hygrophanous, when young dark honey brown ("buckthorn brown" or darker), fading to cinnamon-buff but slightly redder over the disc, fading first on disc, in age and when faded pale date brown. Context very thin and fragile, odor not distinctive, taste fungoid, with FeSO₄ no color change.

Lamellae pallid brownish young, dark chocolate-color when mature and blackish as dried, adnate, close, only moderately broad, very thin, edges even.

Stipe 6–12 cm long, 3–6 mm thick above, evenly and only slightly enlarged downward, hollow, very fragile, white and unchanging (merely sordid variously in age), surface naked, veil if present rudimentary (no buttons seen).

Spore deposit dark chocolate-color. Spores 8–11 (12) ×5–6 μ, smooth, hyaline
apical pore present, shape in face view oblong to elliptic, in profile oblong to subelliptic or obscurely inequilateral, color in KOH dark rusty brown slowly becoming dark chocolate-color or fuscous-violaceous, in Melzer's reddish tawny, wall about 0.5 μ thick.

Basidia 4-spored, 18–23×7–9 μ, hyaline in KOH, projecting about one third to one half their length when sporulating. Brachybasidioles globose to nearly so, 8–10 μ wide. Pleurocystidia 38–47(–52)×10–17 μ, utriform or subutriform, ventricose-subcapitate or fusoid-ventricose with obtuse apex, all hyaline, thin-walled, and smooth (as revived in KOH), content not distinctive (in KOH or Melzer's). Cheilocystidia vesiculose to saccate and with yellowish walls for the most part as revived in KOH, 10–16 μ wide, present as scattered cells near the edge at times. Caulocystidia present as clavate to vesiculose cells much like the cheilocystidia.

Pileus cuticle a layer about 2 cells deep of smooth, hyaline, thin-walled vesiculose cells lacking distinctive content in KOH or in Melzer's. Hyphae of the trama next to the cuticle smooth, weakly cinnamon, fading to pale dingy ochraceous and lacking distinctive content. Clamps present.

Type locality. Upper Priest River, Bonner County, Idaho.

Habit and habitat. Gregarious under cottonwood trees on debris, October.

Distribution. Idaho.

Observations. The distinguishing features of this species are the presence of brachybasidioles in the hymenium, the variable pleurocystidia, vesiculose to clavate yellow cheilocystidia as revived in KOH, the almost oblong spores in face view, and the delicate nature of the fresh basidiocarps. The species is placed here on the assumption that the veil was appendiculate on the margin at first.

Material examined. Idaho: Smith 73946, 76781 (Type).

70. Psathyrella semivestita (Berkeley & Broome) A. H. Smith, Contr. Univ. Herb. 5: 57. 1941.


Drosophila gossypina var. semivestita (Berk. & Br.) Quélet, Flor. Mycol. 62. 1888.


Pileus 10–30 mm broad, ovoid to obtusely conic when young, becoming campanulate to convex, at times remaining unexpanded but with a flaring margin, surface more or less glabrous around the disc, with white fascicles of fibrils near the appendiculate or fringed margin, not scaly, soon glabrescent, striatulate when moist, color variable, "Mars brown," "cinnamon-brown" or "Prout's brown" when fresh and moist, (dark rusty brown to yellowish brown), hygrophanous and fading to near "wood brown" or a sordid tan, usually fading along the margin first. Context very thin, moderately fragile, cinnamon-brown when moist, sordid tan when faded, odor and taste mild.

Lamellae ascending but bluntly adnate and soon seceding, close, 3 tiers of lamellulae, moderately broad (23 mm), pallid at first, soon becoming "wood brown," edges even.

Stipe 4–12 cm long, 1.5–3 mm thick, equal, strict, tubular, fragile, delicately appressed fibrillose from scant veil remnants, apex pruinose, base faintly mycelioid, more or less glabrescent in age, white, becoming pale dingy honey-color on lower portion.

Spores 10–12(–14)×5.5–6.5 μ, smooth, apical pore distinct and apex truncate, shape in face view elliptic to narrowly ovate, in profile subelliptic to very ob-
securely inequilateral, color in KOH bistre darkening to near "mummy brown" (blackish brown), lacking the violet component of dark chocolate-color, in Melzer's bay-red, wall about 0.8 μ thick.

Basidia 20–32 × 10–13 μ, hyaline in KOH, clavate, 4-spored. Pleurocystidia scattered, similar to cheilocystidia. Cheilocystidia 32–64 × 9–16 μ, fusoid-ventricose with narrow neck (often flexuous) and acute at apex, thin-walled, hyaline, smooth, content not distinctive in either KOH or Melzer's. Caulocystidia versiform (see Fig. 183), in some the apex with a thickened wall up to 0.5 μ and highly refractive, smooth, hyaline in KOH, content not distinctive in either KOH or Melzer's.

Gill trama pale rusty brown in KOH, the pigment in the walls and these often lightly incrusted. Pileus with a cuticle of vesiculose cells one cell deep or irregularly 2 cells deep from which scattered fusoid-ventricose pileocystidia project (more or less resembling the cheilocystidia), the walls of the vesiculose cells hyaline to pale cinnamon, smooth and thin, cell content not distinctive. Hyphae of the trama especially near the cuticle a pale to darker cinnamon-color and with the walls more or less incrusted especially in the region of the septa. Clamp connections present. No distinctive reactions on any tissue observed when mounts were made in Melzer's.

Type locality. British Isles.

Habit and habitat. Scattered to gregarious on debris in woods.


Observations. Orton (1960) has reported on the spore size of the type and gives the measurements as 10–12 × 5.5–6.5 μ and describes them as having a well defined apical pore and apiculus. No well defined apiculus is present on my material. In view of the importance of the apiculus as a feature of P. capitata and related species, further studies should be made, hence I use the name here provisionally pending further studies.


Subsection Hydrophilae (Romagnesi) A. H. Smith, comb. nov.


The very small spores are the central feature of this group as emended here, but species with equally small spores also occur in subg. Psathyrella. See stirps Minutisperma.

Key to the Species of Subsection Hydrophilae

1. Pleurocystidia utriform to broadly rounded at first, in age some becoming obtuse. (see 102. P. franklinii and 172. P. pellstonensis also).

1. Pleurocystidia obtuse to acute.

2. Walls of pleurocystidia slightly thickened and distinctly refractive in KOH. 71. P. alaskaensis.

3. Veil remnants denticulate on margin of pileus; spores 6–7 × 4–4.2 μ. 3

3. Veil more or less appendiculate as a continuous band along the margin of the pileus.

4. Stipe white then honey-brown below; spores often wedge-shaped in face view. 73. P. ogemwaensis.

4. Stipe white and unchanging; spores oblong to oval in face view. 74. P. deceptiva.
5. Pleurocystidia (some of them) soon lilac gray to vinaceous brown tinted in KOH mounts, apex lacking adhering granules in KOH. (see also 117. \textit{P. indecorosa}).

75. \textit{P. avellaneifolia} & variants.

5. Pleurocystidia hyaline or if a few cystidia become colored in KOH, most have granules adhering around or over the apex.

6. Pileus white when young. see 103. \textit{P. pseudolaetica} & 353. \textit{P. acuticystis}.

6. Pileus brown when young.

7. Spores 6-7 × 3-4.5 μ. (see also 107. \textit{P. sequoiae} and 122. \textit{P. iterata} also).

67. \textit{P. paradoxa} and variants.

7. Spores 4.5-6 μ long.

8. Stipe 8-17 mm long, about 1 mm thick.

77. \textit{P. subfilipes}.

8. Stipe 10-20 cm long, 3-5 mm thick; growing in dense clusters. 78. \textit{P. confertissima}.

71. \textbf{Psathyrella alaskaensis} A. H. Smith, sp. nov.

Pileus 5–50 mm latus, obtusus demum late convexus, glaber, subcinnamomeus vel olivaceo-brunneus, ad marginem appendiculatus; lamellae pallidae demum griseo-brunneae, latae, confertae; stipes 30–50 mm longus, 3–6 mm crassus, subalbidus, sursum pruinosus; sporae 5–6 × 3–3.5 μ; pleurocystidia 33–52 × 9–16 μ, crassotunicata (0.5 μ), obtusa vel late rotundata; fibulae adsunt. Typus. Wells-Kempton 9/27/65 no. 5 (MICH) ; legit prope Anchorage, Alaska.

Pileus 5–50 mm broad, convex, becoming broadly convex, margin connivent at first, glabrous, hygrophanous, fading from the disc out, when moist watery reddish brown to watery olive-brown (finally), fading to ochraceous-tan and then unpolished to atomate; margin appendiculate, opaque when moist. Context concolorous with the pileus surface, thin (about 2 mm) at the disc, fragile, odor and taste slightly sweetish-fungoid but not distinctive.

Lamellae pallid to pale tan becoming a medium dark grayish brown, adnate, close, moderately broad (up to 6 mm), edges whitish crenulate.

Stipe 30–50 mm long, 3–6 mm broad at apex, equal, white to pale ivory, brittle and tubular, dry, pruinose above, with appressed longitudinal fibrils below, base white-floccose; veil white, fibrillose-arachnoid, moderately well developed but the remnants soon evanescent.

Spore deposit chocolate-brown (dark cocoa-brown as air dried). Spores 5–6 × 3–3.5 μ, smooth, apical pore present but obscure, shape in face view oblong to elliptic, in profile suboblong to obscurely inequilateral or slightly bean-shaped, color in KOH dark cocoa-brown slowly becoming dark chocolate-color, in Melzer's tawny-red, wall thin.

Basidia 4-spored, 16–20 × 5–7 μ, clavate. Pleurocystidia 33–52 × 9–16 μ, narrowly fusoid-ventricose with obtuse apex toward base of gill and broadly fusoid-ventricose to utriform (rarely elliptic and 30–40 μ long) toward the gill edge, wall slightly thickened (0.5 μ) and refractive in KOH over midportion, smooth, content not distinctive. Cheilocystidia 28–38 (–46) × 9–15 μ, mostly bluntly fusoid to fusoid-ventricose, wall smooth and refractive in KOH, content not distinctive. Caulocystidia versiform and mostly on veil hyphae appressed to the stipe, wall as in pleurocystidia, located mostly near the apex of the stipe.

Pileus cuticle a palisade of inflated cells with the upright arrangement fairly distinct but becoming obscured by maturity; walls smooth and hyaline; cell content not distinctive. Hyphae of subcutis vinaceous-cinnamon to cinnamon in KOH, fading somewhat, walls smooth, no distinctive reaction evident on any tissue when mounted in Melzer's. Clamps present.

Type locality. Anchorage, Alaska.

Habit and habitat. Cespitose on decayed wood along disturbed edge of a road, September.
Distribution. Alaska.

Observations. This species, by its small spores and general appearance, is close to *P. hydrophila* but differs in the refractive walls of the pleurocystidia as revived in KOH and in the more versiform caulocystidia.


*Bolbitius hydrophilus* (Fr.) Fries, Hymen. Europ. 333. 1874.

*Hypholoma hydrophilus* (Fr.) Quélet, Champ. Jura et Vosges 146. 1872.

*Psilocybe hydrophilus* (Fr.) Gillet, Les Hymén. 583. 1874.


Illust. Pl. 33; Pl 36, fig. b. Text Figs. 184-186.

Pileus 2-5(-7) cm broad, obtusely conic to convex, becoming broadly convex, finally nearly plane, occasionally obscurely umboonate, surface glabrous or white-fibrillose only along the margin, the margin at first fringed or with a belt of fibrils from the remains of the fibrillose to submembranous veil, surface moist and hygrophanous, dark but bright to dull reddish brown ("Mars brown" to "Prout's brown"), or occasionally somewhat umber as spores mature, and in age at times near "mummy brown" when wet, color over marginal area pale tawny, hygrophanous and fading to various shades of pale tan, rarely vinaceous-brown fading to pale cinnamon, sometimes translucent striate when moist, occasionally decidedly rugulose (best seen when faded). Context rather firm and rigid, becoming fragile, watery brown fading to pallid tan, odor and taste not distinctive.

Lamellae crowded, narrow to moderately broad, equal, pale brownish (near "cinnamon-buff") young, becoming dark reddish brown at margins, margin even or only slightly fimbriate, only rarely beaded with drops of moisture.

Stipe 3-7(-15) cm long, (2-)3-6(-8) mm thick, equal, hollow, not distinctly fragile (except for small basidiocarps), apex pruinose, lower portion somewhat fibrillose from veil remnants but glabrescent, white to grayish at first, in age gradually becoming sordid brownish at least near the base.

Spores (4-)4.5-5.5(-6) x 3-3.5 μ (or 5.5-7 x 3.2-3.7 μ from deposits), smooth, apical pore present but inconspicuous, shape in face view elliptic to slightly ovate, in profile subelliptic to slightly bean-shaped, color in KOH pale to dark cocoa-color slowly becoming chocolate-gray, in Melzer's pale tawny slowly becoming reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 14-16(-20) x 5.5-7 μ, hyaline in KOH, clavate. Pleurocystidia abundant, (30-)36-48(-56) x 9-16(-20) μ, broadly fusoid-ventricose with the neck more or less elongated and ending in a broadly rounded to obtuse apex, thin-walled, smooth, hyaline, content not distinctive in either KOH or Melzer' (slightly grayish and homogeneous in some collections as revived in KOH). Cheilocystidia clavate to saccate, 22-30 x 9-14 μ, hyaline and thin-walled, cells similar to pleurocystidia also present. Caulocystidia similar to cheilocystidia but erratic and none found on many basidiocarps.

Gill trama of parallel hyphae, those in the midportion with brownish walls, those next to the subhymenium hyaline (on fresh material in H₂O), as revived in KOH the hyphal walls pallid cinnamon or darker throughout. Pileus with a
cuticle rather irregular in thickness of vesiculose cells (one or more deep), the walls thin, smooth, pale ochraceous revived in KOH, content not distinctive in either KOH or Melzer's. Hyphae of the trama in region of the cuticle reddish brown to vinaceous-brown and with some hyphal wall thickenings near the septa, paler below and hyphal walls entirely smooth and pale ochraceous to pale cinnamon. Hyphae of the stipe pallid cinnamon to cinnamon in KOH and the walls with obscure thickenings. Clamp connections present. No distinctive color reactions on any tissue as revived in Melzer's.

Type locality. France.

Habit and habitat. Cespitose gregarious on decaying wood of hardwood trees, at times appearing terrestrial but arising from buried wood, late fall, common.

Distribution. Throughout the United States and southern Canada.

Observations. Orton (1960) has discussed the nomenclature and application of the name to the various European concepts that have existed for this species. As recognized here, Orton's concept is accepted. This species may appear terrestrial as a result of fruiting from buried wood. This is particularly true where it is found along road banks, etc. In northern Idaho I have seen material with the gills beaded with drops, but only under conditions of an almost saturated atmosphere. The veil is never denticulate along the margin, in fact in many collections the margin merely has a distinct zone of appressed fibrils and one will then search for a name in the Obtusatae. See P. fuscafalia also.


73. Psathyrella ogemawensis A. H. Smith, sp. nov.

Pileus 3–6 cm latus demum late convexus vel subplanus, glaber, ad marginem denticulatus, cinnamomeo-brunneus; lamellae confertae, latae, secedentes, brunneoideae demum fuscobrunneae; stipites 4–7 cm longus, 4–8 mm crassus, albo-fibrillosus, deorsum demum mellebrunneus; sporia 6–7 × 3.8–4. μ; pleurocystidia 32–40 × 8–13 × 6–8 μ, fusoidae ventricosa, ad apiceroxum rotundata vel obtusa; fibulae adsunt. Typus. Smith 67446 (MICH); legit prope St. Helens, Michigan.

Illust. Text Figs. 187, 188.

Pileus 3–6 cm broad, obtuse to convex when young, expanding to broadly convex or nearly plane, in age the margin often uplifted, surface glabrous, moist,
hygrophanous, margin decorated with triangular patches of veil tissue for some
time after veil breaks, color cinnamon-brown when young and moist, fading to
pallid and then discoloring to cinnamon-buff; margin faintly striate when moist.
Context watery brown, thin, fragile, odor and taste mild, with FeSO₄ no color
change.

Lamellae close, broad, adnate to adnexed, seceding, dingy brown when young,
near hair brown at maturity (dark brownish gray), “bone brown” as dried, edges
even.

Stipe 4–7 cm long, 4–8 mm thick, equal to clavate, fibrous-brittle, white and
appressed-fibrillose over all at first, becoming dingy honey brown in and over the
basal area in age, apex silky and white, no zone of veil fibrils evident.

Spores dark purple-brown in deposit, 6–7 × 3.8–4 μ, smooth, apical pore not
readily visible and apex not truncate, shape in face view ovate to wedge-shaped or
subelliptic, in profile obscurely bean-shaped to somewhat inequilateral, apical end
often somewhat pointed, color in KOH dark cocoa-color but changing slowly to
chocolate-brown, distinctly reddish tawny in Melzer’s.

Basidia 4-spored, 14–18 × 6–7 μ, subelliptic, hyaline. Pleurocystidia 32–40 × 8–
13 × 6–8 μ, fusoid-ventricose, with a thick neck and rounded to obtuse apex, walls
thin, smooth and hyaline, cell content not distinctive. Cheilocystidia similar to
pleurocystidia varying to clavate and vesiculose, hyaline. Cuticle of pileus a layer
of inflated cells 2–4 deep, cell walls thin, smooth and ochraceous to hyaline in
KOH. Hyphae of the trama merely dingy ochraceous at maturity, walls smooth,
cells inflated. Clamp connections present.

Type locality. Near St. Helens, Michigan in Ogemaw
County.

Habit and habitat. Cespitose on sawdust, September.

Distribution. Known only from type locality.

Observations. Like P. alaskaensis this is a satellite species of P. hydrophila
but differs from the latter significantly in spore features (compare Figs. 186 and
187).

**74. Psathyrella deceptiva** A. H. Smith, sp. nov.

Pileus 2–3.5 cm latus demum late convexus, ad marginem denticulatus et
copiose fibrillosus, ad centrum glaber, cinnamomeo-fulvus; lamellae conferatae
angustae, dilute brunneo demum fusco-brunneoae; stipes 4–7 cm longus, 3–5 mm
crassus, albidus, deorsum fibrillosus; sporae 6–7 × 4–4.4 μ; pleurocystidia 34–46 ×
9–15 μ, ad apicem late rotundata; fibulae adsunt. Typus. Smith 77961 (MICH);
legit prope Burt Lake, Michigan.

Pileus 2–3.5 cm broad, ovoid expanding to obtusely conic and finally broadly
convex, surface glabrous over the disc and with copious veil remnants along and
on the margin where they hang for a short time after the white veil breaks and
are in the form of denticulate fragments, surface russet to cinnamon-brown,
fading to pale tan but drying darker (dull cinnamon). Context dark colored
moist, paler when faded, fragile, odor none.

Lamellae close, narrow, adnate, brownish when young, chocolate-brown mature
and when dried “bone brown,” edges even, pallid.

Stipe 4–7 cm long, 3–5 mm wide, equal or at base slightly enlarged, white and
unchanging (concolorous over all as dried), lower down more or less fibrillose from
veil remnants but glabrescent, apex faintly pruinose.

Spores 6–7 × 4–4.4 μ, smooth, apical pore minute and apex not distinctly
truncate, shape in face view oblong to ovate, in profile obscurely bean-shaped to
obscurely inequilateral, color in KOH very quickly dark chocolate-brown but becoming violaceous-fuscous on standing, reddish tawny in Melzer's, wall about 0.2 μ thick.

Basidia 4-spored, clavate, 14–18×5–8 μ, hyaline. Pleurocystidia 34–46×9–15 μ, fusoid-ventricose with broadly rounded to obtuse apex (in age), neck in some scarcely developed, wall thin, smooth and hyaline, content of cells not distinctive. Cheilocystidia clavate to ellipsoid and up to 18 μ broad, hyaline, some cells similar to pleurocystidia also present. Hyphae of subcuticular zone in pileus vinaceous-cinnamon in KOH, walls incrusted. Cuticle of pileus a layer of vesiculose hyaline to cinnamon colored cells 2–3 deep (if colored soon fading). Clamp connections present.

Type locality. Colonial Point, Burt Lake, Cheboygan County, Michigan.

Habit and habitat. Subcespitose on a birch (Betula sp.) log, September.

Distribution. Known only from the type locality.

Observations. The spores are slightly larger than in P. hydrophila, and the differences in the veil are striking. It appears to be closest to P. septentrionalis in veil features but has smaller spores. In a collection by Hesler (no. 22988), which is tentatively placed here, there occur hyaline refractive particles of dried mucilaginous material on or around the apex of the pleurocystidia.

75. Psathyrella avellaneifolia A. H. Smith, sp. nov.

Pileus 2–3.5 cm latus demum subplanus, fibrillosus, glabrescens, ad marginem appendiculatus, subspadiceus; lamellae circa 3 mm latae, confertae, avellaneae, demum ligno-brunneae (pallide fuscae); stipes 4–5 cm longus, 3–4 mm crassus, fragilis deorsum sparse fibrillosus tactu sordide avellaneus; sporae 6.2–7.5×3.1–3.6×3.6–4.5 μ; pleurocystidia 36–54×10–15 μ, fusoida, acuta, in “KOH” vinaceo-avellanea; fibulae adsunt. Typus. Smith 21463 (MICH); legit prope Burt Lake, Michigan.

var. avellaneifolia

Illust. Text Figs. 189, 190.

Pileus 2–3.5 cm broad, obtuse when young, becoming nearly plane with an obtuse umbo or umbo obsolete, surface at first hairy-fibrillose from the remains of a thin outer veil, soon glabrous or nearly so on the disc, the fibrils near the margin appressed into fascicles, margin appendiculate at first, color evenly “Prout's brown” or with a slightly more yellowish margin, hygrophanous, when faded near “cinnamon-buff.” Context very watery and fragile, odor and taste not distinctive.

Lamellae depressed adnate, moderately broad, (about 3 mm), 2–3 tiers of lamellulae, the third often rudimentary, somewhat ventricose in age, pale avellaneous when young, near wood brown at maturity, edges even.

Stipe 4–5 cm long, 3–4 mm thick, equal, hollow, fragile, white, striate near apex, scurfy below and toward the base more or less fibrillose, finally becoming glabrous, becoming sordid avellaneous at base where handled—especially in age.

Spore deposit near “cinnamon-drab.” Spores 6.2–7.5×3.1–3.6×3.6–4.5 μ, slightly flattened, smooth, apical pore present but not conspicuous, shape in face view ovate to obscurely angular-ovate, some obscurely truncated at the base, in profile view obscurely bean-shaped to obscurely inequilateral, color in KOH cocoa-color slowly clouded chocolate-gray, in Melzer's tawny, wall about 0.2 μ thick.
Basidia 20–26×6–9 μ, 4-spored, narrowly clavate, hyaline in KOH. Pleurocystidia abundant, fusoid to fusoid-ventricose, 36–54×10–15 μ, wall smooth, apex acute, content usually very pale to distinctly vinaceous-gray to vinaceous brownish, homogeneous, in Melzer's not distinctive, wall in the neck often flexuous and also in many refractive and up to 0.4 μ thick. Cheilocystidia in part similar to pleurocystidia and in part clavate to vesiculose, typically hyaline as revived in KOH. Caulocystidia more or less like the pleurocystidia but not colored in KOH and walls not refractive, rather rare.

Gill trama regular, vinaceous-brown in KOH in young pilei (as revived), nearly hyaline in old ones. Pleuripores having a cuticle of a layer of vesiculose cells 1–2 deep, most with yellowish walls revived in KOH, cell content not distinctive. Hyphae of the trama vinaceous-brown in KOH but fading, walls smooth to minutely roughened. No distinctive reactions observed in mounts made in Melzer's for any tissue.

Type locality. University of Michigan Biological Station, Cheboygan County, Michigan.

Habit and habitat. Subcespitose to gregarious on rotting hardwood logs, June.

Distribution. Michigan, Oregon.

Observations. The important features of this species are the smooth pleurocystidia many of which show some color on standing in KOH, the small spores typically ovate in face view, and the avellaneous gills when young.

The European *P. spintrigeroides* is close to this species but has slightly larger spores and yellowish pleurocystidia in KOH.

Material examined. Michigan: Bartelli 2243; Potter 8826; Smith 20762, 21463 (Type), 21511, 22318, 23394, 36252, 41380, 41534, 57112, 64704, 74418, 74420, 78271. Oregon: Smith 24241, 24242, 24414.

### 75a. *Psathyrella avellaneifolia* var. *perplexa* A. H. Smith, var. nov.

Pileus (1.5–)2–4 cm latus, convexus fibrilloso-squamulosus glabrescens, ad marginem appendiculatus; fulvus; lamellae angustae confertae vinaceo-brunneae; stipes 3–5 cm longus, 2–3 mm crassus, fragilis, albidus albo-fibrillosus, glabrescens; sporae 6–7(–8)×3.5–4 μ; pleurocystidia 40–67×9–13(–17) μ, fusoidae, acuta vel obtusa in "KOH" hyalina vel pallide avellanea; fibulae adsunt. Typus. Smith 32479 (MICH); legit prope Douglas Lake, Michigan.

Illustr. Text Figs. 191, 192.

Pileus (15–)20–40 mm broad, convex, surface decorated with patches of fibrils from the copious universal veil, margin decorated with rather copious veil fragments, surface moist, rich tawny, fading to tan but darkening in drying. Context thin, fragile, concolorous with surface in either moist or faded condition, odorless.

Lamellae narrow, close, cocoa-colored after being dried, edges whitish.

Stipe 3–5 cm long, 2–3 mm thick, equal, fragile, whitish, at first white-fibrillose from remains of the outer veil, glabrescent.

Spores 6–7(–8)×3.5–4 μ, smooth, apical pore present but obscure, apex not truncate (but in KOH a "bubble" often forming on the spore apex), shape in face view narrowly wedge-shaped to suboblong, in profile obscurely inequilateral to obscurely bean-shaped, color in KOH pale tawny when first mounted, soon cocoa-color and finally chocolate-brown, in Melzer's ochraceous-tawny, wall about 0.2 μ or less thick.

Basidia 4-spored, 16–20×7–8 μ, clavate, hyaline in KOH. Pleurocystidia abundant, 40–67×9–13(–17) μ, fusoid to fusoid-ventricose, apex acute to sub-
acute or obtuse, more rarely forked, wall about 0.5 \( \mu \) thick and refractive, smooth, brittle (many broken ones seen in crushed mounts), mostly hyaline in KOH but in some the content smoky pale lilaceous-brown to brownish vinaceous (the reaction apparently lessening as basidiocarps age). Cheilocystidia similar to the pleurocystidia or smaller, having thinner walls and mostly hyaline in KOH.

Gill trama in KOH dull cinnamon fading to hyaline. Pileus with a cuticle composed of a layer of vesiculose cells several deep, wall yellowish to rusty-cinnamon in KOH and at basal zone often showing copious deposits of a dark cinnamon pigment variously disposed in the cell but usually against the wall. Hyphae of the context vinaceous-brown to cinnamon in KOH fading out to pale cinnamon. Clamp connections present. No distinctive color reactions noted in mounts in Melzer's save that the hymenium may be brighter yellow than usual.

Type locality. Camp Manitou, Douglas Lake, Cheboygan County, Michigan.

Habit and habitat. Scattered on hardwood logs.


Observations. This variety differs from the type variety in degree rather than qualitatively, and deserves further study. The veil is more copious, the spores are less compressed (rarely ovate in face view), more cystidia have thickened walls, the cystidia appear to be more brittle, and there seems to be heavier pigmentation in the basal zone of the cuticle. *Psathyrella xanthocystis* Orton is close to this variety but has yellow cystidia in KOH, and spores 7.5–9 \( \times \) 4.7–5 \( \mu \).

Material examined. Michigan: Ammirati 2167, 3525; Potter 6145; Smith 32479 (Type), 32623, 33929, 74403.

76. *Psathyrella paradoxa* A. H. Smith, sp. nov.

Pileus 2–5 cm latus demum campanulatus vel convexo-umbonatus, pallide fulvus demum fulvus, ad marginem sparse appendiculatus; lamellae pallide alutaceae demum griseo-brunneae, adnatae demum subdistantes; stipes 4–8 cm longus, 3–5 mm crassus, fragilis, deorsum fibrilloso-squamulosus demum sordide brunneus; sporae (5.5–)6–7 \( \times \) 3.5–4.5 \( \mu \); pleurocystidia 40–60 \( \times \) 10–16–20 \( \mu \), fusoidae, subacuta ad apicerum hyalino-granulosa; fibulæ adsunt. Typus. Smith 23924 (MICH); legit prope Cherryville, Oregon.

var. *paradoxa*

Illustr. Pl. 37; Text Figs. 193–196.

Pileus 2–5 cm broad, obtuse when young, becoming broadly campanulate or convex or convex-umbonate, surface moist, hygrophanous, color "ochraceous-tawny" (pale fulvous) at first, becoming cinnamon brown to more reddish brown in age before fading, fading to avellaneous or wood brown over marginal area and pale tan over disc, at first white with scattered remains of a white outer veil as patches or streaks of fibrils, soon glabrescent; margin decorated with dentate segments of the broken submembranous veil. Context watery brownish fading to buff, odor and taste not distinctive.

Lamellae pale cinnamon-buff young, "light drab" when mature, as dried dark vinaceous-brown, bluntly adnate and readily seceding, broad (5–7 mm), close to nearly subdistant, edges eroded.

Stipe 4–8 cm long, 3–5 mm thick at apex, slightly enlarged downward, hollow, fragile, with more or less appressed fibrillose patches over lower half, floccose above and silky near the apex, white above, sordid brownish below in age.

Spores (5.5–)6–7 \( \times \) 3.5–4.5 \( \mu \), smooth, apical pore present but inconspicuous,
shape in face view narrowly elliptic to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH dull cocoa-color but slowly changing to chocolate, in Melzer's near ochraceous-tawny to slightly redder, wall about 0.2 μ thick.

Basidia 4-spored, 12-15(-18)×5.5-8 μ, hyaline in KOH. Pleurocystidia abundant, 40-60(-70)×10-16(-20) μ, fusoid-ventricose to fusoid, apex pointed to subacute and apical region often with debris or granular material adhering to the surface, wall thin but in some slightly thickened and refractive, content hyaline to grayish vinaceous in KOH, not distinctive in Melzer's. Cheilocystidia subelliptic, submucronate or broadly fusoid (20–)25-40×9-15 μ, hyaline or slightly vinaceous in KOH, basal hyphae pale yellowish to hyaline. Caulocystidia similar to pleurocystidia but up to 30 μ broad, varying to clavate or vesiculose, some ventricose-mucronate, hyaline, wall thin to slightly thickened.

Gill trama vinaceous-brown in KOH fading to hyaline on standing, usually hyaline in old (or mature) pilei. Pileus having a cuticle formed of a layer of vesiculose cells several cells deep, the cells with their long axis perpendicular to the pileus surface, walls thin, smooth and hyaline, content of cell not distinctive. Hyphae of subcuticular zone with rusty brown to tawny incrustations along the wall as well as local wall thickenings. Clamps present.

Type locality. Cherryville, Clackamas County, Oregon.
Habit and habitat. Scattered near and on very decayed alder logs.

Observations. The pleurocystidia are variable in a size-width ratio, being short and broad in some collections and fusoid in others; in the thickness of the wall and the color of the content as revived in KOH they are also variable. Yet the cystidia are quite characteristic. For a comparison with P. iterata, see that species.

Washington: Imshaug 1866; Kauffman 9–22–15; Simmons 1585; Smith 13245, 29310, 29322, 29327, 29356, 29361, 29907, 30361, 30406, 30416, 30520, 31445.

76a. Psathyrella paradoxa var. velicopia A. H. Smith, var. nov.

A typo differt: velum copiosum; spora 6-7×3-3.5 μ; pleurocystidia 42-60× (9–)10-17 μ; fusoid ventricosa, acuta; fibulae adsunt. Typus. Smith 71554 (MICH); legit prope Stutsmanville, Michigan.

Illust. Text Fig. 197.

Pileus 2.5–4 cm broad, oval in button stages, becoming obtusely conic and finally expanded-umbonate, margin straight at first and denticulate-appendiculate from veil fragments, fibrillose becoming glabrous, moist, hygrophanous, pale cinnamon-brown when moist fading to pallid on the margin first and when faded appearing finely radially reticulate, disc finally pale tan (“cinnamon-buff”). Context thin and fragile, watery brownish fading to pallid, odor and taste not distinctive, with FeSO₄ no color change.

Lamellae pallid brownish, slowly becoming violaceous-brown (“cinnamon-
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drab"), close, narrow or finally moderately broad, adnate, soon seceding, edges whitish.

Stipe 3–6 cm long, 3–7 mm thick, hollow, rigid but fragile, pallid within, at first snow white and fibrillose but soon dingy brownish below, fibrillose to a baggy submembranous veil (reminding one of Suillus subluteus) when breaking sometimes adhering as an annulus but usually adhering as fragments on the margin of the pileus.

Spores 6–7 × 3–3.5 µ, smooth, apical pore present but very inconspicuous (under oil immersion), shape in face view narrowly elliptic or more rarely ovate, in profile subelliptic to obscurely elongate-inequilateral, color in KOH dull cocoa-color darkening to dark chocolate-color, in Melzer's reddish tawny, wall about 0.2 µ thick.

Basidia 4-spored, 13–20 × 6–7 µ, clavate, hyaline in KOH. Pleurocystidia 42–60 × (9–)10–17 µ, fusoid-ventricose with apex acute and long retaining hyaline incrusting granules as viewed in KOH, walls thin and hyaline, content not distinctly differentiated in KOH or Melzer's. Cheilocystidia similar to pleurocystidia only shorter. Caulocystidia versiform and variable as to size.

Pileus cuticle a layer of inflated cells 3–5 deep, the walls thin, smooth and usually ochraceous to hyaline in KOH, content of cell not distinctive. Hyphae of subcutis vinaceous-cinnamon in KOH but fading, walls smooth, cell content not distinctive. No distinctive reaction present in any tissue when revived in Melzer's. Clamps present.

Type locality. Stutsmanville, Emmet County, Michigan.

Habit and habitat. Gregarious on a birch log, June.

Distribution. Known only from type locality.

Observations. The diagnostic features of this variety are the denticulate veil remnants usually present on the pileus margin for a short time after the veil breaks, the large pleurocystidia with granules tending to adhere to the apex and the apex reviving more slowly than the rest of the cell, the pale cinnamon-brown pileus and the stipe brunnescent below.

77. Psathyrella subfilipes A. H. Smith, sp. nov.

Pileus 5–15 mm latus, obtuse conicus demum late conicus vel subplanus, albo-fibrillosus, cinnamomeo-brunneus; lamellae adnatae, confertae, latae, sordide fulvae; stipes 8–17 mm longus, circa 1 mm crassus, albo-fibrillosus intus sordide brunneus; sporae 4.5–5.5 × 2.8–3.2 µ; pleurocystidia 30–46 × 7–14 µ, acuta; fibulae adsunt. Typus. Smith 42710 (MICH); legit prope Mackinaw City, Michigan.

Pileus 5–15 mm broad, obtusely conic expanding to broadly conic, convex or nearly plane, surface at first covered by copious white fibrillose remains of an outer veil, cinnamon-brown beneath the veil remnants when moist and fading to a dull tan, glabrescent in age. Context thin and fragile, dark brown when moist.

Lamellae adnate, close, moderately broad, becoming ventricose on expanded pilei, dull russet before becoming clouded by the spores, fusceous-brown as dried, edges pallid.

Stipe 8–17 mm long, about 1 mm thick, equal, fragile, dull brown beneath the pallid fibrillose remains of the veil.

Spore deposit purple-brown. Spores 4.5–5.5 × 2.8–3.2 µ, smooth apical pore not evident, shape in face view wedge-shaped to ovate, varying to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH a dingy chocolate-brown, in Melzer's pale tawny wall 0.2 µ or less thick.
Basidia 4-spored, 17–20×5–7 μ, hyaline to flushed vinaceous-brown (in KOH). Pleurocystidia scattered, 30–46×7–14 μ, ventricose and abruptly tapered distally to a narrow neck ending in an acutely pointed apex; wall smooth or apex occasionally with adhering granules in KOH, hyaline or in the pedicel vinaceous-brown, thin; cell content not distinctive or with a few refractive particles in some. Cheilocystidia similar to pleurocystidia but often longer and some yellow to hyaline vesiculose to clavate cells also present.

Gill trama rich vinaceous-cinnamon in KOH, regular, walls smooth. Pileus cuticle a layer of vesiculose cells 2–3 deep; the walls vinaceous-cinnamon to nearly hyaline, smooth, thin. Hyphae of trama dark vinaceous-cinnamon in KOH, pigment encrusted on the wall and/or as thickenings in the wall—usually near the septa, the vinaceous-cinnamon color persistent in KOH. Clamps present.

Type locality. Wilderness State Park, Emmet County, Michigan.

Habit and habitat. Scattered on moist earth where brush piles have been burned.

Distribution. Known only from the type locality.

Observations. The strong KOH color reactions of the gill trama, small more or less pointed pleurocystidia, very small spores, purplish spore deposit, rusty brown gills and possibly the habitat are distinctive (but the only other collection assigned here was from conifer duff).


Hypholoma oblongisporum Parker, Mycologia 25: 179. 1933.

Illust. Parker, op. cit. pl. 26, fig. 4; pl. 27, fig. 20; pl. 29, fig. 30. Pl. 38.

Pileus 1–3.5 cm broad, obtusely conic becoming more or less convex, surface at first covered by remains of the white floccose universal veil, the margin appendiculate, glabrescent, hygrophanous, pallid argillaceous finally becoming pallid ochroleucous or whitish, disc argillaceous and rugulose, ashy brown in age or streaked or spotted this color. Context thin, fragile.

Lamellae adnexed, seceding, crowded, elliptic, ashy then purplish-brown, edges white.

Stipe (5–)10–20 cm long, 3–5 mm thick, equal, straight or flexuous, white, hollow, white floccose-squamulose, fragile, base furnished with a well developed pseudorhiza which gives rise at the ground level or near it to a large cluster of basidiocarps bound together to some extent by a yellow mat of mycelium.

Spores 5–6×3–3.5 μ, smooth, truncate at apex from a broad inconspicuous pore, shape in face view suboblong (often with a slight medial depression or constriction), in profile somewhat bean-shaped or showing a medial constriction, color in KOH soon medium chocolate-gray, in Melzer’s reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 16–19×3.5–5 μ, clavate, hyaline in KOH. Pleurocystidia 30–56×9–16 μ, fusoid-ventricose with acute to subobtuse apex, smooth, thin-walled, hyaline in KOH or with a very pale diffuse brownish content as revived in KOH. Cheilocystidia 26–44×8–14 μ, similar to pleurocystidia but shorter and apex more obtuse, hyaline in KOH. Caulocystidia not located except for a few clavate hyphal ends.

Gill trama regular, subparallel, hyaline in KOH. Pileus having a cuticle of inflated hyaline cells several cells deep, the cells 10–30 μ wide, hyaline or nearly
so in KOH, walls smooth and thin, cell content not distinctive. Hyphae of the trama dingy ochraceous in KOH to brownish, fading to hyaline, walls smooth. Clamps present. No distinctive reactions observed on any tissue when mounted in Melzer's.

Type locality. Hoop Pole Ridge, Oakland, Maryland.

Habit and habitat. In clusters of 50–100 basidiocarps from dead roots of old trees or buried wood generally in hardwood forest.


Observations. During “off seasons” for fruiting the species behaves much like *P. hydrophila* in that it produces small clusters and the pseudorhiza may not be present if the substrate is at the surface of the soil. I have found the pale diffuse brownish content of at least some of the pleurocystidia as revived in KOH along with the very small spores to be a good combination of features for the identification of dried specimens sent in without adequate notes.


**Subsection Largae** A. H. Smith, subsect. nov.

Sporae 5–10(–11) μ longae; pleurocystidia ad apicem late rotundata. Typus. *Psathyrella larga*.

If the type of pleurocystidium is doubtfully utriform, or if utriform and obtuse to subacute cystidia both occur on the same basidiocarp, see subsection *Subacutae* also.

**Key to the Species of Subsection Largae**

1. Stipe 5–15(–20) mm thick; pileus 4–14 cm broad.
   1. Stipe 1–6(–10) mm thick; pileus (0.5–)1–7(–10) cm broad.
   2. Pileus vinaceous-cinnamon; lamellae narrow; spore apex not truncate.
   3. Not as above.
   4. Spores slightly compressed (8–9.5 μ long, 5–6 μ in widest view).
   5. Spores terete.
   6. Veil discoloring to dingy buff or brownish from handling; stipe base also becoming dingy tan.
   7. Stipe becoming reddish-fulvous over basal area and when dried the base ferruginous-red.
   8. Stipe not as above.
   9. Pileus densely covered by outer veil remnants.
   10. Stipe with a pale pink tint, almost volvate at the time the veil breaks.
   11. Pileus without pink tints and not volvate at any time.
   12. Spores ochraceous-tawny in KOH; lamellae broadly adnate to short-decurrent.
   13. Not as above.
   15. Not as above.
   16. Pileus dark yellow-brown fading to whitish; spore deposit dark fuscous.
   17. Not as above.
   18. Inner veil avellaneous from the first.
   19. Inner veil white.
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a. Spores 7-10 \( \mu \) long.  

b. Spores 6.75 \( \times \) 4.5-5.5 \( \mu \).

13. Pileus white to olive-buff.

13. Pileus more deeply colored.

14. Pileus covered by snow-white fibrils of outer veil.

14. Lacking any significant outer veil remnants.

15. Spores compressed at least slightly.

15. Spores terete.

16. Scattered on debris of hardwoods; spore with a readily distinguished apical pore.

16. Cespitose on soil under aspen; spore with an indistinct apical pore.

17. Spores in profile kidney-shaped; growing under conifers; stipe drying ochraceous.

17. Not as above.

18. Spores 7-9 \( \times \) 4.5-5.5(-6) \( \mu \); gills white at first.

18. Not as above.

19. Spores 7-9 \( \times \) 4-4.5 \( \mu \).

19. Spores 8-11 \( \times \) 4.6-6 \( \mu \).

20. Pileus lubricous and shining; context with bitterish aftertaste.

20. Not as above.

21. Pileus at first with superficial white veil squamules over all; pileus honey brown when fresh.

21. Pileus with veil remnants only on or near the margin (but see also P. kauflmannii var. exannulata).

22. Brachybasidioles present; pleurocystidia rare; solitary on soil in Cuba; spores in KOH cocoa-color then ochraceous and finally clouded gray.

22. Not as above.

23. Pleurocystidia thin-walled.

Pileus 3–8 cm latus, ovatus demum umbonatus vel convexus, castaneus, nitens, glaber, ad marginem appendiculatus; lamellae confertae angustae demum latae sordide caacaolor demum fulvo-cinnamomeae; stipes 6–12 cm longus, 4–8 (-13) mm crassus, fragilis, glabrescens, abidius; sporae 7–8.5(-9) \( \times \) 4.45(-5) \( \mu \); pleurocystidia 26–52 \( \times \) 10–17 \( \mu \), fusoidae ventricosa, late rotundato in "KOH" pallide ochraceo-cinnamomeae vel hyalinae; fibulae adsunt. Type. Hoseney 641 (MICH); legit prope Piney, Michigan.

Illustr. Text Figs. 198–200.

Psathyrella subvinacea A. H. Smith, sp. nov.

Pileus 3–8 cm broad, when young ovate to obtusely umbonate or convex, expanding to convex and finally plane or the margin wavy, when moist chestnut brown and shining, hygrophanous and fading to pinkish tan (dingy "vinaceous-cinnamon"), glabrous, margin at first appendiculate from particles of the veil, striate when moist. Context pallid, rigid-fragile, odor and taste not distinctive.

Lamellae close, narrow at first but broad in age, 2-3 tiers of lamellae present, adnate but soon seceding, ventricose only in age, pale dingy cocoa-color in youngest pilei, by maturity rich cocoa-color (pale rusty cinnamon) and drying this color, edges even.

Stipe 6–12 cm long, 4–8 (-13) mm thick, equal, fragile, hollow, naked after sparse veil particles have disappeared, apex only faintly pruinose, white over all and remaining so.

Spores 7–8.5(-9) \( \times \) 4-4.5(-5) \( \mu \), smooth, apex obscurely truncate to rounded but a pore present, shape in face view elliptic to ovate, in profile obscurely
inequilateral, color in KOH vinaceous-brown slowly becoming dull cocoa-color, in Melzer's ochraceous-tawny to tawny or finally some redder, wall about 0.2 μ thick.

Basidia 4-spored, 15–18 μ long, clavate, hyaline. Pleurocystidia 26–52×10–17 μ, utriform to broadly ventricose with rounded apex, wall thin, very pale ochraceous-cinnamon to hyaline revived in KOH, smooth, content not distinctive, (either in KOH or Melzer's). Cheilocystidia 9–16 μ wide, mostly clavate to saccate or vesiculose, wall hyaline to faintly ochraceous in KOH, smooth, up to 0.4 μ thick in some. Caulocystidia resembling the cheilocystidia or somewhat larger.

Pileus cuticle a layer of vesiculose cells several deep, the walls pale ochraceous-cinnamon in KOH to nearly hyaline and bright yellow in Melzer's, smooth, thin (about 0.5 μ). Hyphae of the context smooth, paler in color than cells of the cuticle as revived in KOH. In mounts in Melzer's no tissue showing a distinctive reaction other than in walls of cuticular cells. Clamps present.

Type locality. Near Pinckney, Michigan.

Habit and habitat. Gregarious on an old hardwood log, September.

Distribution. Known only from the type locality.

Observations. As dried the gills are the color of those of P. spadicea but the cystidia distinguish between the two at once.

80. Psathyrella larga (Kauffman) A. H. Smith, comb. nov.


Illustr. 1. c. pl. 57. Pl. 39; Text Figs. 201–203.

Pileus 4–14 cm broad, ovoid to campanulate at first, finally expanded to plane or with a low broad umbo; surface at first dotted with scattered small snow-white, floccose superficial scales, soon denuded, often with only a white silky margin when collected; surface smooth and moist, often cracking radially near the margin, hygrophanous, bay-brown to ochraceous-brown and margin even when moist, fading to whitish tan and becoming radiately rugulose. Context rather thin and very fragile, white when dry, odor and taste not distinctive.

Lamellae adnate, rounded next to the stipe, rather broad, close, varying to subdistant in age, white at first then pale fuscous, finally umber, edges minutely white-fimbriate.

Stipe stout, 5–10 cm long, 5–15 mm thick, equal or tapering upward, soon hollow, terete or compressed, rather firm, usually striate to sulcate, furfuraceous but glabrescent, then shining white, cortex subcartilaginous.

Spores 7–9.5×4–5.5 μ, smooth, apical pore distinct but minute, apex not truly truncate, shape in face view broadly elliptic, in profile subelliptic to obscurely inequilateral, color revived in KOH bister becoming near “mummy brown” to finally dark chocolate-color, in Melzer's tawny to tawny-red, wall about 0.3 μ thick.

Basidia 4-spored, 26–34×7–9 μ, clavate, hyaline in KOH. Pleurocystidia 64–80×12–16(–20) μ, abundant, elongate-utiform above a narrowed pedicel, wall thin, smooth and hyaline, cell content not distinctive in KOH or in Melzer's. Cheilocystidia similar to pleurocystidia but often shorter. Caulocystidia similar to pleurocystidia but often smaller, scattered to rare.

Pileus with a cuticle of vesiculose cells 2–4 deep, the walls thin and hyaline, cell content not distinctive. Hyphae of the context nearly tawny when first revived in KOH but fading, hyphae in region of subcutis minutely granular-roughened to distinctly roughened with ochraceous-brown lines and patches of deposit, in the region adjacent to the cuticle and including the bases of the
cuticular cells the angles where cells meet thickened and tawny in KOH. Not distinctive in any way when mounted in Melzer's. Clamps present.

Type locality. Ann Arbor, Michigan.

Habit and habitat. Solitary to cespitose around stumps of elm and ash, June-July.

Distribution. Michigan, Minnesota, Ohio.

Observations. This is one of the largest and most fragile species in the genus and has exceptionally large pleurocystidia. It is common here in southeastern Michigan now that our elms are all dead and decaying, but has a short fruiting period and so is rarely collected.


81. Psathyrella subagraria (Atkinson) A. H. Smith, comb. nov.


Illust. Pl. 40, 41; Text Figs. 204–206.

Pileus (2–)3–7(–10) cm broad, obtuse to convex, the margin incurved somewhat, expanding to campanulate, umbonate or plane, at times the margin elevated in age but usually merely spreading, surface moist, hygrophanous to subhygrophanous and scarcely changing color when fading, surface covered by minute innate whitish to grayish fibrils or appearing nearly glabrous, margin appendiculate with veil remnants, colors pale grayish (pale “drab”) when young, at maturity the disc somewhat darker and near avellaneous or “wood brown” the margin gradually becoming pallid. Context rather thick, watery-punctate, white.

Lamellae narrow (5–6 mm), subdistant to close, widest at the stipe and tapering to the margin of the pileus, white to pallid grayish when young, becoming dull purplish brown at maturity, edges even.

Stipe 6–12 cm long, (2.5–)3–8(–12) mm thick, hollow, equal or nearly so, base clavate at times, fragile, pure white, surface covered by loose fibrils over lower portion, glabrescent, pruinose and somewhat striate above, often obscurely undulate.

Spore deposit purple-brown. Spores 8–10×4–5(10–12×4.5–5.5) μ, smooth, apical pore present but not prominent, shape in face view oblong to elliptic or slightly ovate, in profile obscurely inequilateral to slightly bean-shaped, color purple-brown in water mounts fresh, cocoa-brown in KOH as revived but on standing becoming dingy ochraceous, in Melzer's near ochraceous-tawny, wall about 0.3 μ thick.

Basidia 2- and 4-spored, 22–28(–35)×9–12 μ, hyaline in KOH. Pleurocystidia 36–60×10–18 μ, scattered, usually broadly ventricose, above a narrow pedicel and the neck scarcely constricted (utriform), apex broad and rounded, hyaline and smooth, thin-walled, collapsing readily, content not distinctive. Cheilocystidia 40–60×10–16 μ, more or less similar to pleurocystidia, saccate to vesiculose cells also present. Caulocystidia resembling the pleurocystidia but varying to clavate to vesiculose (and up to 30 μ broad if the latter shape), hyaline, smooth, thin-walled, content not distinctive.

Pileus cuticle of vesiculose cells 2–3 thick, hyaline in KOH, walls thin and smooth, content not distinctive; fibrils above the cuticle dingy ochraceous in KOH and with some incrusting material present on some. Hyphae of the trama of hyaline to weakly ochraceous hyphae as revived in KOH, the cells very broad.
Clamp connections present. No distinctive reactions on any tissue when mounted in Melzer's.

Type locality. Ithaca, New York.

Habit and habitat. Scattered to gregarious on moist ground in woods, late summer and fall, especially in elm swamps.


Observations. Previously I used the name *P. artemisiae* for this species, but the present concept of that species in Europe now embraces some other fungus. Atkinson's type checked well with my material so his name is used here. A neotype needs to be selected for the European *P. artemisiae*, but that is not possible in the present work. Atkinson's species is actually most closely related to *P. uliginicola* from our western mountains. As happens in nearly every case of a pair of closely related species, ecological differences are apparent. Atkinson's is adapted to the rich humus of moist woods; in southeastern Michigan it is found most frequently in elm swamps often under *Impatiens* (jewel weed), whereas in the Rocky Mountains, *P. uliginicola* occurs on wet soil under aspen, usually downstream from a beaver dam. In *P. subagraria*, occasional basidiocarps show very few pleurocystidia, so at times one may key collections into section *Candolleana*.

Material examined. Michigan: Ammirati 1283, 3437; Hoseney 230; Kauffman 9-13-07, 10-13-26; Pennington 9-11-07; Potter 5101, 5102, 5175, 5215, 8819, 8971, 9087; Shaffer 2613; Smith 33-1115, 1453, 1479, 5026, 6244, 7723, 78265. 

82. *Psathyrella seminuda* A. H. Smith, sp. nov.

Pileus 2-4 cm latus conicus demum campanulatus, glaber, appendiculatus cinnamomeo-brunneus; lamellae confertae, adnatae, latae, dilute brunneae demum cinnamomeo-fulvae; stipes 3-6 cm longus, 2-3(-4) mm crassus fragilis deorsum floccosus glabrescens, ad basem demum sordide brunneus; sporiae 8-9.5×4.5-5.3×5-6 μ; pleurocystidia 48-60×10-20 μ, fusoidc ventricosa obtusa vel subcapitata; fibulae adsunt. Typus. Smith 34091 (MICH); legit prope University of Michigan Biological Station, Cheboygan County, Michigan.

Illustr. Pl. 42, figs. a, c; Pl. 43, fig. a; Text Figs. 207-209.

Pileus 2-4 cm broad, obtuse to conic to campanulate, expanding to broadly campanulate to nearly plane, with or without an obtuse umbo, surface glabrous, veil remnants only near or on the margin which is at first appendiculate from patches of the submembranous to fibrillose veil, surface glabrous, moist and hygrophanous, dull cinnamon to cinnamon-brown at first when fresh, when faded near cinnamon-buff or paler. Context brownish, thin, fragile, odor and taste not distinctive.

Lamellae close, adnate, moderately broad, pallid brownish to near cinnamon-buff and finally dark reddish brown.

Stipe 3-6 cm long, 2-3(-4) mm thick, equal or nearly so, hollow, fragile, lower portion slightly fibrillose from broken veil, soon glabrescent, glabrous above veil zone, apex slightly pruinose, pallid at first but soon brownish: at least in the lower portion, slightly paler than the pileus when properly dried.

Spores 8-9.5×4.5-5.3×5-6 μ, slightly compressed to terete, smooth, apical pore present but not affecting the contour of the spore apex, shape in face view ovate to elliptic, in profile obscurely inequilateral to obscurely bean-shaped, color in KOH
dark cocoa-color slowly chocolate-brown, in Melzer’s dull red, wall about 0.3 \( \mu \) thick.

**Basidia** 22–28\( \times \)8–10 \( \mu \), clavate, hyaline in KOH, 4-spored. Pleurocystidia abundant, 48–60\( \times \)10–20 \( \mu \), fusoid-ventricose with elongate neck and obtuse to subcapitate apex (rarely forked at apex), hyaline in KOH or rarely ochraceous. Cheilocystidia similar to pleurocystidia but more often rusty brownish as revived in KOH. Caulocystidia clavate to fusoid-ventricose with obtuse to rounded apex, hyaline in KOH, scattered.

Gill trama interwoven, hyaline to yellowish in KOH (ochraceous in young pilei as revived in KOH but fading). Pileus trama with subcuticular rusty brown hyphae, color paler toward the subhymenium. Cuticle of pileus a palisade of clavate to inflated cells which become somewhat disarranged in age, the walls at the base of the cell often rusty brown to yellowish in KOH. Clamp connections present.

**Type locality.** Mud Lake Bog, Cheboygan County, Michigan.

**Habit and habitat.** Scattered on rotten wood of aspen (?) and on debris.

**Distribution.** Michigan.

**Observations.** The distinguishing features of the species are the appendiculate margin of the pileus when the veil breaks, the relatively broad spores for their length (in face view), the obtuse to subcapitate pleurocystidia, the cheilocystidia mostly with broadly rounded apex, and the tendency for the stipe to become brownish below.

**Material examined.** Michigan: Potter 8294, 8782, 8786, 8787, 8796, 8884, 9122; Smith 25205, 25206, 32141, 32322, 33710, 33728, 33756, 33770, 33773, 33777, 33781, 33784, 33789, 33794, 33801, 33815, 33909, 33930, 34091 (Type).

**Psathyrella velibrunnescens** A. H. Smith, sp. nov.

Pileus (2–)3–6\( (-7.5) \) cm latus obtuse conicus demum late campanulatus vel plano-umbonatus, glaber, appendiculatus, fusco-fulvus vel cinnamomeo-brunneus, demum rugoso-recticulatus; lamellae confertae, adnatae, latae, "vinaceous buff" demum sordide cinnamomeae; stipes 5–8\( (-10) \) cm longus, (3-)4–7\( (-10) \) mm cras­sus, fibrillosus pallidus demum brunneus; sporae 7–9\( X \)4–5 \( \mu \); pleurocystidia 38–58\( \times \)10–14 \( \mu \), ad apicerum obtuse vel late rotundata; fibulae adsunt; velum pallidum demum sordide brunneum. Typus. Smith 13240 (MICH); legit prope Kalaloch, Washington.

Illustr. Pl. 27, fig. b; Pl. 44, fig. a; Text Figs. 210–212.

Pileus (2–)3–6\( (-7.5) \) cm broad, obtusely conic, becoming more or less expanded or broadly campanulate, often with a broad flattened umbo, glabrous except for marginal fibrillose to submembranous patches of pallid to pale avellaneous veil remnants which in age usually discolor to dingy cinnamon-buff, surface when moist "russet" to "Mars brown" (dark rusty brown), hygrophanous and fading to pallid ("tilleul buff" or a dingy "cinnamon-buff"), surface frequently rugulose-reticulate around the disc and radially rugulose toward the margin, often fading first along the ridges. Context thin, fragile, concolorous with the surface; odor and taste mild.

Lamellae close (30–40 reach the stipe), bluntly adnate, but soon seceding, broad, (4–7 mm), equal or tapering toward the margin of the pileus, "vinaceous-buff" when young, "Verona brown" at maturity, edges whitish and crenulate.

Stipe 5–8\( (-10) \) cm long, (3-)4–7\( (-10) \) mm thick, equal, hollow, fragile, surface
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fibrillose, apical region pruinose, becoming dingy tan near the base and tinged vinaceous toward the apex, veil fibrils also discoloring.

Spores 7–9×4–5 μ, smooth, with an apical hyaline pore, shape in face view oblong to narrowly elliptic, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH dark dull cocoa-color slowly darkening, fuscous when fresh spores are mounted in KOH, pale tawny in Melzer’s, wall about 0.3 μ thick.

Basidia 4-spored, 14–20×6–8 μ, clavate, hyaline in KOH. Pleurocystidia abundant, 38–58×10–14 μ, narrowly ventricose with obtuse to rounded apex or more broadly fusoid-ventricose and apex broader, wall thin, smooth and hyaline, content not distinctive in either KOH or Melzer’s. Cheilocystidia mostly saccate, 26–36×10–18 μ, hyaline, thin-walled. Caulocystidia rare to scattered and more or less like the cheilocystidia.

Pileus with a cuticle of vesiculose cells 2–3 deep, the walls hyaline in KOH except where the layer adjoins the subcutis, in this region dark cinnamon wall thickenings occur especially at the angles of the cells, in Melzer’s these thickenings merely ochraceous, the cell content not distinctive. Hyphae of the trama vinaceous-brown to cinnamon revived in KOH, some wall-thickenings evident but lacking readily discernible inerustations. Clamp connections present. No distinctive color reactions noted for any tissue mounted in Melzer’s.

Type locality. Near Kalaloch, Olympic Peninsula, Washington.

Habit and habitat. Cespitose, gregarious or scattered on rotting wood of frondose trees.


Observations. Smith (1941) identified specimens from decaying wood of frondose trees as P. chondroderma. Continued collecting over the last thirty years has shown that the American taxon is constant as to habitat, in the brownish discoloration of the veil and stipe, and in spores consistently 7–9×4–5 μ. Psathyrella chondroderma was originally described as being associated with pines, and was terrestrial. This is evident on the type at Kew and Cooke’s plate (606) certainly indicates this also. He also pictures the veil remnants as white. In view of this, and the pattern of species evolution encountered here in North America relative to these features, I now regard my previous identification as an error. The American species is characteristically vernal and quite accurately identified in the field by the discolorations on the veil hyphae either on the stipe or the margin of the pileus.


84. Psathyrella ferrugipes A. H. Smith, sp. nov.

Pileus 2.5–5 cm subplanus ad marginem denticulatus castaneus; lamellae angustae, fulvo-brunneae; stipes 4–11 cm longus, 2.5–7 mm crassus deorsum demum ferrugineo-fulvus; sporae 7–10×4–5 μ; pleurocystidia 36–48×10–16 μ, fusoid-ventricosa ad apicem late rotundata, vel pedicellato-elliptica; fibulae adsunt. Typus. Walters 6–8–40 (MICH); legit prope Cleveland, Ohio.
Pileus 2.5–5 cm broad, convex, expanding to plane or the margin uplifted, glabrous, moist, hygrophanous, margin denticulate with submembranous patches of the broken veil, colors dark rusty brown to chestnut fading to a reddish tan.

Lamellae close, narrow, adnate, dull brown when young and dark rusty brown when mature, in drying becoming practically concolorous with the pileus.

Stipe 4–11 cm long, 2.5–7 mm thick, equal or slightly enlarged below, hollow, fragile, whitish to pale honey-color when fresh but becoming reddish-fulvous over basal area and the basal part drying ferruginous-red.

Spores 7–10×4–5 μ, smooth, apical pore distinct and apex somewhat truncate shape in face view elliptic to ovate, varying to suboblong, in profile obscurely bean-shaped to subelliptic, color in KOH dull cocoa-color but soon chocolate-brown, in Melzer's tawny-red, wall about 0.3–0.4 μ thick (in Melzer's).

Basidia 4-spored, hyaline in KOH, clavate, 17–23×7–9 μ. Pleurocystidia 36–48×10–16 μ, fusoid-ventricose with thick neck and broadly rounded apex varying to utriform or ovate- to elliptic-pedicellate (as seen in optical section), wall thin, hyaline; with granular (or coagulated) debris over the apical region in many as revived in KOH but this slowly dissolving. Cheilocystidia 30–42×9–14 μ, fusoid-ventricose with a short neck and obtuse apex, thin-walled, hyaline.

Gill trama regular, hyaline in KOH. Pileus trama hyaline or only in the subcuticular region weakly brownish in thick sections, walls smooth and thin. Cuticle of pileus of inflated hyaline thin-walled cells in a layer 2–4 deep. Clamp connections present.

Type locality. Cleveland Heights, Ohio.

Habit and habitat. Cespitose on decaying hardwood logs, June.

Distribution. Michigan, Ohio.

Observations. This species might be regarded as a robust variant of *P. septentrionalis*. The spores and shape of the pleurocystidia indicate this. It is distinguished as a species by the almost colorless pileus trama as revived in KOH (this is important in such a darkly pigmented *Psathyrella*), the material adhering to the pleurocystidia, and the long stipes which become rusty red at the base in drying.


_Drosophila hololanigera* (Atk.) Murrill, Mycologia 14: 70. 1922.

Illust. Text Figs. 213, 214.

Pileus 2–2.5 cm broad, oval to convex, watery brown, hygrophanous, as it dries becoming pale ochraceous-buff to pinkish buff, covered by long dense delicate whitish fibrous scales which are superficial and soon disappear, not striate. Context fragile.

Lamellae elliptic, adnate, purplish brown, whitish on the edges.

Stipe 6–7 cm long, 4–5 mm thick, slender, hollow, fragile, even, white with a very pale pink tint; veil at first forming a volva at the time the veil breaks.

Spores 7–9×4–4.5 μ, smooth, apical pore present and readily visible under ordinary magnifications, shape in face view broadly and bluntly fusoid varying to subelliptic, in profile somewhat inequilateral, color as revived in KOH pale chocolate-gray, wall about 0.4 μ thick.

Basidia 4-spored, 18–24×6–8 μ, clavate, hyaline in KOH. Pleurocystidia 38–50×10–16 μ, scattered, with a slender pedicel, a broadly ventricose midportion
tapering slightly into a short neck, with the apex broadly rounded to obtuse, some broadly elliptic-pedicellate in optical section, all smooth, hyaline and thin-walled, cell content not distinctive. Cheilocystidia numerous, cylindrical narrowly clavate, subventricose and subcapitate, straight or flexuous, also similar to pleurocystidia in part, all thin-walled and hyaline, 50–80 × 10–15 μ.

Pileus cuticle a layer of vesiculose cells several deep, their walls thin, smooth and hyaline, the cell content not distinctive.

Type locality. Ithaca, New York.

Habit and habitat. Gregarious on very rotten wood in woods.

Distribution. New York, type studied.

Observations. The description of the cheilocystidia is taken in part from the original account. In my examination of the type I did not see the greatly elongated cells, but I see no reason to doubt Atkinson's data. The species is amply distinguished by its copious outer veil, the somewhat bluntly fusoid spores in face view, and the pale pink tinge in the stipe.

86. Psathyrella pannucioides A. H. Smith, sp. nov.

Pileus 2-4 cm latus, conicus demum late conicus vel convexus, fibrillososquamulosus, glabrescens ad marginem appendiculatus, laete cinnamomeus cum “FeSO₄” leviter olivaceus; lamellae confertae, adnatae, laete, cinnamomeae demum purpureo-brunneae; stipes 3-5 cm longus, 2-3.5 mm crassus; albidus vel pallidus, deorsum squarrose squamulosus; sporae 7-9 × 4-4.5 μ; pleurocystidia 38-50 × 13-15 μ late rotundata; fibulae adsunt. Typus. Smith 66625 (MICH); Huron Mountains prope Big Bay, Michigan.

Pileus 2-4 cm broad, obtusely conic expanding to broadly conic to convex, at first covered with white recurved fibrillose squamules, margin appendiculate with veil remnants, color when fresh and moist a rich watery cinnamon, hygrophanous and fading to cinnamon-buff. Context thin, cinnamon moist, paler faded, odor and taste not distinctive, with FeSO₄ slightly olivaceous.

Lamellae close, moderately broad, adnate, pale cinnamon becoming rich cinnamon and finally clouded purple-brown from spores, edges pallid.

Stipe 3–5 cm long, 2–3.5 mm thick, equal, fragile, whitish over all beneath veil remnants and merely pallid in age, squarrose-squamulose below the veil line from the remains of the veil.

Spores 7–9 × 4-4.5 μ, smooth, apical pore distinct and apex truncate, shape in face view elliptic, varying to obscurely ovate, in profile somewhat inequilateral varying to obscurely so, color in KOH dark cocoa-brown becoming distinctly reddish violet-brown, in Melzer's strongly reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, clavate, hyaline (17–) 20–30 × 8–9 μ. Pleurocystidia scattered, 38–50 × 13–15 μ, utriform to fusoid-ventricose with broadly rounded apex, wall thin, smooth and hyaline (rarely with granular debris around the apex), cell content not distinctive. Cheilocystidia 30–42 × 6–9 μ, subcylindric-capitulate, varying to utriform (like the pleurocystidia). Pileus trama vinaceous-cinnamon in KOH, with pigmented wall thickenings near the septa frequently present. Cuticle of pileus of inflated cells 2–3 deep, wall thin, hyaline to weakly cinnamon and smooth; content of cell not distinctive. Clamp connections present.

Type locality. Lake Ann, Huron Mountain Club, Big Bay, Michigan.

Habit and habitat. Scattered on hardwood sticks, June.

Distribution. Marquette County, Michigan.

Observations. This is a rather distinctive species because of the clear
cinnamon-colored pileus beneath the veil, the somewhat inequilateral spores in profile (this is unusual in a spore of this size), and their dark color in KOH. As for a number of species, this one is ambiguous between subsection Hydrophila and subsection Pannucia.

87. *Psathyrella tubarioides* A. H. Smith, sp. nov.

Pileus 1–3.5 (–4) cm latus, obtusus vel convexus demum late convexus, ad marginem squamulosus et appendiculatus, glabrescens, sordide cinnamomeus; lamellae subdecurrentes, angustae, confertae, dilute cinnamomeae demum ligno-brunneae (fusco-brunneae); stipes 3–5 cm longus 1.5–4 mm crassus, albidus, deorsum sparse fibrillosus; spora 7–9 (–10) × 4–4.5 μ; pleurocystidia 44–55 (–60) × 12–18 μ, fusoid-ventricosa, ad apicem late obtusa; fibulae adsunt.

Typus. Smith 50994 (MICH); legit prope Pellston, Emmet County, Michigan.


Pileus 1–3.5 (–4) cm broad, obtuse to convex, expanding in broadly convex or flattened over the disc, outer veil leaving squamules and patches over the marginal half of the pileus and the edge appendiculate, soon glabrescent, color when moist dingy cinnamon fading to pale tan. Context thin and fragile, odor not distinctive.

Lamellae broadly adnate to subdecurrent, close, narrow and equal, pallid cinnamon when young, duller cinnamon before clouded from the spores, retaining a reddish cinnamon cast in drying.

Stipe 3–5 cm long, 1.5–4 mm thick, equal, hollow, fragile, white throughout, at first sparsely fibrillose from veil remnants, pruinose at apex.

Spores 7–9 (–10) × 4–4.5 μ, smooth, apical pore indistinct but apex blunt to subtruncate, shape in face view ovate to narrowly subelliptic to oblong, in profile obscurely inequilateral to ovate or suboblong, color in KOH ochraceous-tawny, darkening very slowly, in Melzer's pale ochraceous-tawny, wall about 0.2 μ thick.

Basidia 4-spored, 18–24 × 7–9 μ, clavate, hyaline in KOH. Pleurocystidia 44–55 (–60) × 12–18 μ, abundant, fusoid-ventricose with rounded apex, rarely with 1-2 protuberances, apex in some merely obtuse, wall thin and hyaline, apical region often with adhering refractive debris, cell content not distinctive in KOH or in Melzer's. Cheilocystidia smaller than pleurocystidia but otherwise similar but cells about 60 × 20 μ often numerous in local areas; clavate to short-fusoid cells also present, all cells hyaline as revived in KOH.

Gill trama regular, hyphae hyaline and smooth, cells greatly inflated and tending to remain collapsed. Cuticle of pileus a cellular layer 3–6 cells deep, walls thin, smooth and hyaline to weakly ochraceous in KOH, cell content not distinctive. Hyphae of subcutis dingy tawny when revived in KOH but quickly fading, walls smooth. No distinctive reactions noted for any part in Melzer's. Clamp connections present.

Type locality. Hardwood State Forest, west of Pellston, Michigan.

Habit and habitat. Subcespitose on rotting hardwood logs, October.

Distribution. Emmet County, Michigan.

Observations. The gills as dried are about the color of those of *P. spadicea*, and in some spores a slight medial constriction is present. Smith 63484 apparently belongs here. It has pale ochraceous-tawny spores as revived in KOH and a cinnamon-buff veil. The pleurocystidia are merely obtuse.

Material examined. Michigan: Smith 50994 (Type), 63484, 75554.
88. *Psathyrella albescens* Hesler & A. H. Smith, sp. nov.

Pileus 5–7 cm latus, convexus demum planus subspadiceus demum pallidus, ad marginem appendiculatus, saepe radiate rugulosus; lamellae latae adnatae demum subdistantes pallide argillaceae demum fusco-brunneae; stipes 6–8 cm longus 5–6 mm crassus palidus sursum furfuraceus; sporae 7–8.5 × 3.5–4.5 μ; pleurocystidia (28–)35–56 (–64) × 14–17 (–20) μ; fibulae adsunt. Typus. Hesler 18895 (MICH); legit L. R. Hesler prope Farragut, Knox County, Tennessee.

Illustr. Pl. 45; Pl. 79, fig. b; Text Figs. 218–221.

Pileus 5–7 cm broad, hemispheric, expanding to convex or nearly plane, moist but not viscid, hygrophanous, dark yellowish brown ("Dresden brown") when moist, fading to whitish or "pale vinaceous-buff," mature pilei mostly whitish when dried, slightly atomate, appearing striatulate, in some radially rugulose, at first margin appendiculate from remains of a thin white veil. Context thin, pallid, odor and taste mild.

Lamellae adnate to slightly decurrent, whitish to pale pinkish buff at first, "snuff brown" at maturity but more purplish in age from spores, in dried basidiocarps having a cocoa-colored tinge, rather broad, narrowed somewhat in front, close, edge fimbriate.

Stipe 6–8 cm long, 5–6 mm thick, strict, hollow, whitish, a few dark fibrils present, apex white-mealy to squamulose, base curved.

Spores "blackish brown (1)" in deposit, 7–8.5 × 3.5–4.5 μ, smooth, apical pore distinct, shape in face view oblong to elliptic, in profile slightly bean-shaped to obscurely inequilateral, when revived in KOH dark cocoa-color slowly changing to dark chocolate-color, in Melzer's reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 18–24 × 6–7 μ, narrowly clavate, hyaline in KOH. Pleurocystidia abundant (28–)35–56 (–64) × 14–17 (–20) μ, variable in shape from subglobose-pedicellate to ellipsoid-pedicellate but mostly ventricose with obtuse to rounded or subcapitate apex, thin-walled, smooth, hyaline in KOH, content not distinctive in KOH or Melzer's. Cheilocystidia mostly subglobose to clavate, 18–28 × 10–17 μ, in old basidiocarps some having highly refractive localized deposits of material on the interior face of the wall (these may appear as highly refractive wall thickenings). Caulocystidia variable in size and shape.

Gill trama regular, the cells becoming greatly enlarged in age, dull brownish in KOH but fading. Pileus with a cuticle in the form of a layer of inflated cells two or three deep but with many clavate-pedicellate cells intermixed and over the disc more or less forming a palisade, in old basidiocarps many of the cells with the highly refractive deposit noted for the cheilocystidia. Hyphae of the trama when first revived in KOH cocoa-color but fading to sordid brownish or hyaline. Clamp connections present. No distinctive reaction on any tissue when mounted in Melzer's.

Type locality. Farragut, Knox County, Tennessee.

Habit and habitat. Scattered on piles of chips.


Observations. Romagnesi (in Kühner and Romagnesi, 1953) described *Drosophila exalbicans* which appears to be somewhat similar to *P. albescens* but has spores often elongate-subtriangular, and a very slight veil. He also describes *D. exalbicans* as having pale to medium pale spores. Because of these differences I do not consider his species the same as *P. albescens*.

Material examined. Colorado: Smith 51822. Idaho: Smith 44653. Massa-
89. *Psathyrella brunnescens* A. H. Smith, sp. nov.

Pileus 3–5 cm latus, obtuse conicus demum plano-umbonatus, glaber, ad marginem leviter appendiculatus, glabrescens, cinnamomeo-brunneus; velum avellaneum, submembranaceum; lamellae confertae, angustae, adnatae, avellaneae demum sordide vinaceo-brunneae; stipes 4–7 cm longus, 4–8 mm crassus, sparse fibrillosus, deorsum demum spadiceus; sporae 7–8×4.5–5 μ; pleurocystidia 36–50×9–15 μ fusoid-ventricosa, obtusa vel rotundata; fibulae adsunt. Typus. Smith 39049 (MICH); legit prope Tahquamenon Falls State Park, Luce County, Michigan.

Illust. Text Figs. 222–224.

Pileus 3–5 cm broad, obtusely conic, expanding to broadly conic or plano-umbonate, glabrous or at first with thin patches of fibrils near the margin, margin denticate-appendiculate from remains of an avellaneous submembranous partial veil, soon denuded of veil remnants both on edge and over surface, color dull rusty brown ("Mars brown" to "cinnamon-brown"), hygrophanous and fading to dingy pale tan and then often rugulose, fading in spots causing the pileus to appear mottled. Context thin, fragile, colored like the surface, lacking an odor or taste.

Lamellae close, narrow (broadest near the stipe), bluntly adnate, avellaneous to wood brown or more vinaceous, with a rusty cinnamon tone as dried, edges even.

Stipe 4–7 cm long, 4–8 mm thick, equal or nearly so, fragile, tubular, surface thinly pallid-fibrillos, darkening to dull brown (date brown) below, apex white pruinose-scarious, also long-riate and fibrillos.

Spores 7–8×4.5–5 μ, smooth, apical pore distinct, shape in face view elliptic to ovate, in profile obscurely inequilateral, color in KOH fuscous (with a weak ochraceous tint), in Melzer’s tawny to slightly redder, wall about 0.2 μ thick.

Basidia 4-spored, 18–23×6–8 μ, clavate, hyaline. Pleurocystidia 36–50×9–15 μ, utriform to fusoid-ventricose with obtuse apex, thin-walled, smooth, content not distinctive. Cheilocystidia clavate to broadly fusoid-ventricose, smooth, thin-walled, hyaline. Caulocystidia scattered in small patches, clavate to ventricose, walls mostly yellowish in KOH but thin.

Pileus with a cuticle of a layer of vesiculose cells about 1 cell deep, hyaline in KOH, reviving poorly; trama (including subcutis) bright rusty brown in KOH and hyphae having local wall thickenings dark tawny in KOH and causing a spotty appearance on revived sections, in Melzer’s the thickenings not as highly colored. Clamps present. No distinctive reaction when mounted in Melzer’s.

Type locality. Tahquamenon Falls State Park, Luce County, Michigan.

Habit and habitat. Scattered on hardwood logs, July.


Observations. This species features rusty brown pileus and lamellar trama as revived in KOH, the stipe becomes dark date brown over the basal area when fresh, the pleurocystidia are mostly rounded at the apex but some obtuse to subacute cells can be found, and the spores are rather short and broad.

Material examined. Michigan: Smith 39049 (Type), 41591.

90. *Psathyrella septentrionalis* A. H. Smith, sp. nov.

Pileus (1.5–)2–5 cm latus, obtusus vel convexus demum late convexus, cinnamomeo-brunneus, ad marginem denticulato-appendiculatus glabreseens;
lamellae subfuscae; stipes (1.5–)3–6 cm longus, 1.5–4 mm crassus, pallidus, deorsum sordide bruneus, sparse fibrillosus; sporae (7–)8–10 × 4.5–5 μ; pleurocystidia 33–46 × 9–16 μ, late fusoido-ventricosa, ad apicerum rotundata vel obtusa; fibulae adsunt. Typus. Smith 36553 (MICH); legit Tahquamenon Falls State Park, Luce-Chippewa County, Michigan.

var. septentrionalis

Illustr. Pl. 43, fig. b; Pl. 46. Text Figs. 225–228.

Pileus (1.5–)2–5 cm broad, obtuse to convex when young, expanding to broadly convex to plane, surface moist and hygrophanous, “russet” when young and fresh, near “cinnamon-brown” at maturity, fading to near wood brown over margin and dingy tan over disc, glabrous except for appressed fibrils near the margin, the latter denticulate-appendiculate with variously disposed patches of submembranous veil material. Context thin, fragile, watery brown fading to pallid tan, odor and taste not distinctive, FeSO₄ no color change.

Lamellae close, narrow to moderately broad, broadly adnate, pallid brownish darkening to dull cinnamon-brown or finally with a smoky brown cast (chocolate color), when dried near “bone brown” (with a vinaceous cast), edges even.

Stipe (1.5–)3–6 cm long, 1.5–4 mm at apex, equal or slightly enlarged downward, white to pallid at first, finally honey brown in basal region, fibrillose from the veil but soon glabrescent.

Spores (7–)8–10 × 4.5–5 μ, smooth, apical pore present but not conspicuous, shape in face view elliptic to oblong, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH cocoa-color soon becoming dark chocolate-color, in Melzer's reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 17–22 × 6–8 μ, clavate, hyaline in KOH. Pleurocystidia abundant, 33–46 × 9–16 μ, broadly ventricose with short neck and broadly rounded apex, wall thin, smooth and hyaline, content of cell not distinctive in KOH or in Melzer's. Cheilocystidia similar to pleurocystidia but in many the apex obtuse to subacute, saccate to vesiculose cells also present. Caulocystidia scattered, more or less resembling the cheilocystidia (clavate to broadly fusoid-ventricose).

Pileus cuticle of vesiculose cells 2–3 deep, the walls hyaline to pale buffy tan in KOH, walls thin and smooth, content not distinctive. Hyphae of the trama vinaceous-brown or paler in the subcuticular region, some incrustations present. Clamp connections present. No distinctive reaction on any tissue when mounted in Melzer's.

Type locality. Tahquamenon Falls State Park, Luce-Chippewa County, Michigan.

Habit and habitat. Cespitose to gregarious on hardwood logs (aspen, beech and oak), summer and fall, fairly common.


Observations. This is a species resembling P. hydrophila in many respects but at once distinct in the field by the denticulate remains of the veil on the margin of the pileus immediately after the veil breaks, and the larger spores. The pleurocystidia are not typically utriform but in the present classification fall within that category.

Smith 77982 may represent a distinct variety of this species. In it the stipe readily splits lengthwise, the pileus is pale honey brown, and the cuticle of the pileus is 1–2 cells deep.
Material examined: UNITED STATES. Maine: Bigelow 3235, 3482, 4327.
Michigan: Ammirati 2035, 2109; Potter 4564, 4751; Smith, 21508, 21511, 21515,
21532, 21568, 22314, 23596, 23597, 25415, 25445, 25532, 25561,
25578, 25632, 25955, 25997, 28778, 32246, 32308, 32311, 32319, 32382, 32791,
32802, 33001, 33271, 33319, 33324, 33333, 33372, 33374, 33450, 33463, 33476,
33479, 33482, 33487, 33529, 33692, 33788, 33876, 34004, 36358, 36444, 36446,
36470, 36471, 36473, 36476, 36482, 36483, 36486, 36553 (Type), 36554, 36555,
36574, 36575, 36609, 36615, 36617, 36720, 36758, 36763, 36765, 36766,
36767, 36906, 36993, 37023, 37194, 37291, 37557, 37701, 37703, 37707,
37710, 37712, 37715, 37722, 37724, 37726, 37729, 37731, 38573, 38963,
39001, 39046, 39047, 39048, 39058, 39059, 39061, 39065, 39067, 39071, 39080,
39093, 39430, 39506, 41366, 41374, 41378, 41381, 41383, 41470, 41473,
41477, 41478, 41512, 41606, 41681, 42791, 49703, 49707, 49708, 49712, 49750,
49883, 50669, 50691, 50694, 50697, 51715, 57203, 57205, 61010, 61012, 61015,
61016, 61017, 61019, 61023, 61024, 61111, 63508, 63552, 63563, 66676, 66678,
66679, 66713, 66726, 66860, 67103, 71701, 71703, 71704, 71753, 71772, 71776,
72032, 72263, 74366, 74369, 74370, 74371, 74592, 75579, 77580, 78008, 78009,

90a. Psathyrella septentrionalis var. vesiculosa A. H. Smith, var. nov.

Sporae 7–9 × 3.5–4.5 µ; cheilocystidia saepe vesiculosa (10–20 µ lata). Typus. Smith 63485 (MICH); legit prope Tahquamenon River (White House Landing), Chippewa County, Michigan.

Pileus 1–4 cm broad, obtusely conic becoming campanulate, disc glabrous, marginal area at first streaked with buff fibrils, edge denticulate with cinnamon-buff remains of the fibrillose to submembranous veil, color dark rusty brown (“russet”) moist, dingy tan faded, streaked grayish over marginal area when fading. Context thin and exceedingly fragile, odor and taste none.

Lamellae close to subdistant, adnate, soon seceding, dingy cinnamon when young, russet in age (almost concolorous with the pileus), edges pallid.

Stipe 5–8 cm long, 3–5 mm thick, hollow, fragile, pallid above and silky, dingy buff below from veil remnants, finally darkening beneath the veil.

Spores 7–9 × 3.5–4.5 µ, smooth, apical pore distinct, shape in face view ovate to elliptic, in profile subelliptic (the ventral line nearly straight and dorsal line convex as seen in optical section), color in KOH chocolate color, gradually fading and with an ochraceous tinge (in about 3 hrs), in Melzer’s pale tawny, wall about 0.3 µ thick.

Basidia 4-spored, 18–24 × 6–7 µ, clavate, hyaline in KOH. Pleurocystidia 34–50 (–60) × 9–15 µ, fusoid-ventricose to utriform, apex obtuse to rounded, wall thin and smooth, content not distinctive in either KOH or Melzer’s. Cheilocystidia mostly vesiculose and 10–20 µ wide, some fusoid-ventricose to utriform also present, all smooth, thin-walled and content not distinctive. Caulocystidia of no significance—rarely a few vesiculose to clavate cells present near apex.

Cuticle of pileus a layer of vesiculose cells 2–3 cells deep, the cell walls hyaline, thin and smooth; cell content not distinctive. Subcuticular hyphae
cinnamon as revived in KOH but fading to ochraceous on standing. Clamps present. No amyloid reaction noted on any tissue.

Type locality. White House Landing, Tahquamenon River, Chippewa County, Michigan.

Habit and habitat. Cespitose on hardwood logs, September.

Distribution. Known only from type locality.

Observations. The distinguishing features of this species are the numerous vesiculose cheilocystidia, the denticulate veil remnants on the pileus margin, the darkening stipe beneath the veil fibrils, and relatively narrow spores—at least narrower than in *P. velibrunnescens* to which it is rather similar in some respects.


Illustr. l. c. figs. 16g, h; 18, a.

Pileus 2–4 cm broad, obtusely conic at first, expanding to plane with a low obtuse umbo, surface at first coated with the layer of snow-white fibrils more or less radially arranged and which become aggregated into fascicles before disappearing entirely, surface glabrous in age, snow-white when young, (beneath the fibrils) and the margin appendiculate from veil fragments, scarcely changing color in age (the disc creamy in oldest pileus), the edge finally naked. Context brittle but also soft, watery-pallid fading to white, odor and taste not distinctive, no color change on bruising.

Lamellae close, thin, narrow, ascending-adnate and soon seceding, snow-white becoming “light drab,” edges even.

Stipe 5–10 cm long, 4–6 mm thick at apex, equal, hollow, fibrous, snow-white throughout, surface floccose-fibrillose from the veil and at first with a slight evanescent zone near the apex or above the middle, floccose-pruinose above this.

Spores 8–10.5 × 4–5 μ, smooth, truncate from a distinct apical pore, in face view ovate to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH dark chocolate or chocolate-gray on less mature spores, in Melzer's bay-brown to slightly redder, wall about 0.4 μ thick.

Basidia 4-spored, clavate, hyaline in KOH, 18–26 × 7–9 μ. Pleurocystidia scattered to abundant, ventricose with a short neck and broadly rounded apex or varying to utriform or to pedicellate-subelliptic (in optical section), smooth, with a very slightly thickened and more highly refractive wall over the sides than at the apex, hyaline in KOH, content not distinctive. Cheilocystidia abundant 32–50 (–68) × 10–15 μ, elongate-subfusoid with obtuse apex to utriform or broadly fusoid-ventricose, thin-walled, hyaline in KOH, some small inflated to clavate cells also present. Caulocystidia in fascicles, resembling the cheilocystidia but usually some with walls 0.5 μ thick and highly refractive.

Pileus with a cuticle of vesiculose cells somewhat larger than the hyphae of the context and hyaline in KOH, 2–3 cells deep, content not distinctive. Tramal hyphae of pileus and lamellae perfectly hyaline in KOH and lacking any distinctive reactions in Melzer's. Clamp connections not present.

Type locality. Lower Tahoma Creek, Mt. Rainier National Park, Washington.

Habit and habitat. Gregarious on debris under alder.


Observations. The white pileus, medium-sized spores, tendency for the caulocystidia to have slightly thickened highly refractive walls, and lack of clamp connections are diagnostic.

92. *Psathyrella olivaceopallida* A. H. Smith, sp. nov.

Pileus 3–5 cm latus, conicus demum plano-umbonatus, glaber, lacteo-albus demum ad centrum olivaceo-griseus, ad marginem denticulato-appendiculatus; lamellae pallidae demum griseo-fuscae, adnatae angustae; stipes 5–9 cm longus, 3–5 mm crasso, albidus raro annulatus; sporae 7–9×4–4.5 μ; pleurocystidia 30–45×9–18 μ; fibulae adsunt. Typus. Smith 4991 (MICH); legit prope Burt Lake Cheboygan County, Michigan.

Illustr. Text Figs. 229–231.

Pileus 3–5 cm broad, obtusely conic expanding to plano-umbonate, surface glabrous, moist, hygrophanous, milky white to pale olive-buff when young, the margin finally becoming watery grayish and the disc watery pinkish buff, striatulate before fading; margin at first denticulate with flaps of the submembranous whitish veil. Context thin, pallid, fragile, odor and taste mild, FeSO₄ no color change.

Lamellae whitish becoming nearly "hair brown" (a brownish gray), no red or cinnamon tints evident, close, narrow, adnate, soon seceding, edges even.

Stipe 5–9 cm long, 3–5 mm at apex, equal, white, unchanging, naked or nearly so, rarely with a thin annulus, drying pallid.

Spores 7–9×4–4.5 μ, smooth, with a hyaline apical pore, shape in face view oblong to narrowly elliptic, or narrowly ovate and slightly truncated at the base, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH dark chocolate-color on standing, dark cocoa-color when first revived, in Melzer's dark tawny-red, wall about 0.3 μ thick.

Basidia 4-spored, clavate, hyaline in KOH. Pleurocystidia 30–45×9–18 μ, vesiculose to utriform or fusoid-ventricose with obtuse apex (versiform), thin-walled, smooth, content not distinctive in either KOH or Melzer's. Cheilocystidia 18–42×10–17 μ, clavate, vesiculose or fusoid-ventricose, thin-walled, smooth, hyaline, content "empty." Caulocystidia absent or as scattered clavate hyphal end cells.

Pileus cuticle a cellular layer 1–2 cells deep with many pedicellate cells in the layer, the walls hyaline (including the pedicel). Subcutis also hyaline in KOH. Clamps present. No amyloid reactions of any kind present in any tissue.

Type locality. Burt Lake at Colonial Point, Cheboygan County, Michigan.

Habit and habitat. Scattered on wet humus rich in lignicolous debris, June.

Distribution. Known only from type locality.

Observations. This species reminds one of a pale *P. candolleana* but has pleurocystidia, grayer gills, and no color in the subcuticular region of the pileus when sections are revived in KOH.


*var. subnuda*

Illustr. Pl. 47.

Pileus 3–6 cm broad, ovoid, or very obtuse, becoming broadly convex, plane or with a broad low umbo, the margin sometimes recurved in age, but appressed against the stipe when young, glabrous or with a very slight fringe of fibrils along the margin, striatulate when moist, color "Prout's brown," "buckthorn brown,"
“cinnamon-brown” or “sepia,” hygrophanous and fading to “clay color” or “cinnamon-buff,” often glistening when faded, usually fading first around the disc. Context concolorous with the surface, thickish under the disc, thin toward the margin, fragile, odor and taste mild.

Lamellae bluntly adnate and soon seceding, moderately broad (about 3 mm), close, 29–33 reach the stipe, “tilleul buff” when very young, becoming sordid brownish and finally “light drab” at maturity, edges even.

Stipe 4–8 cm long, 3–7 mm thick, equal, hollow, fragile, glabrous, white, often transversely undulate but not flexuous, apex sometimes faintly pruinose.

Spores (7–)8–10 × 4.5–5.5 × 5–6.5 μ, smooth, compressed slightly, apex with a distinct hyaline pore, shape in face view strongly ovate to somewhat ovate, in profile subelliptic varying to obscurely inequilateral or to obscurely bean-shaped, color in KOH blackish brown (about “mummy brown”), in Melzer’s dark bay-brown, wall about 0.6 μ thick.

Basidia 4-spored, abruptly clavate, 14–17 × 7–9 μ, hyaline in KOH. Pleurocystidia scattered, 36–54 × 10–16 μ, utriform to fusoid-ventricose with thick neck and broadly rounded to very obtuse apex, hyaline, smooth, thin-walled. Cheilocystidia saccate to broadly ventricose with short slightly constricted necks and very obtuse apex, hyaline, thin-walled, content not distinctive. Caulocystidia similar to pleurocystidia but more variable in size, some small to large clavate cells also present.

Pileus with a cuticle of vesiculose cells 2–3 deep, their walls smooth, hyaline and thin, content not distinctive. Hyphae of the trama cinnamon-brown to vinaceous-brown in KOH, walls not obviously incrusted. No distinctive color changes on any tissue as revived in Melzer’s. Clamp connections present.

Type locality. Finland.

Habit and habitat. Gregarious to scattered on debris of alder and cottonwood.


Observations. The type variety is regarded here as a *Psathyrella* with only a thin fibrillose veil and as such is just as logically placed in the *P. spadiceogrisea* group. Var. *velosa* however, has a heavier veil appendiculate on the pileus margin at first.


93a. *Psathyrella subnuda* var. *velosa* A. H. Smith, var. nov.

Pileus ad marginem appendiculatus; velum albidum, submembranaceum. Typus. Smith 73947 (MICH); legit prope Priest Lake, Idaho.


Pileus 2.5-4 cm broad, obtusely conic, expanding to broadly conic, margin straight at first, glabrous except for a few thin patches of fibrils along the margin and the edge appendiculate with fragments of a white veil, soon entirely glabrescent, dark cinnamon-brown to dull clay color and margin striate, hygrophanous and fading on disc first to dingy tan (near “cinnamon-buff”). Context very thin and fragile, odor and taste not distinctive, with FeSO₄ no color change.

Lamellae close, moderately broad, ascending-adnate, seceding, brownish, when
mature violaceous fuscous (lacking a cinnamon or vinaceous-brown tone), edges even.

Stipe 4–6 cm long, 2–3.5 mm at apex, equal or nearly so, fragile, white over all, pruinose at very apex, soon naked lower down; veil thin and fibrillose.

Spore deposit fuscous-black; spores 8–10×4.5–5.5×5.5–7 μ, smooth, apical pore prominent and apex in some obscurely snoutlike, compressed, in face view prominently ovate to obscurely angular-ovate, in profile subelliptic to obscurely inequilateral, color in KOH dark chocolate-color, in Melzer’s dark reddish tawny, wall about 0.6 μ thick.

Basidia 4-spored, 20–25×6–8 μ, hyaline in KOH. Pleurocystidia 38–56 (–63) ×9–14 (–16) μ, utriform, varying to elongate fusoid-ventricose with obtuse to rounded apex, smooth, thin-walled, hyaline in KOH, content not distinctive. Cheilocystidia vesiculose to clavate-saccate, 22–36×10–15 μ, or obtusely fusoid to fusoid-ventricose or similar to pleurocystidia. Caulocystidia gigantic (up to 150×20×15 μ), utriform to clavate, thin-walled, hyaline in KOH.

Pileus cuticle a layer of vesiculose cells 2–3 deep, some clavate-pedicellate cells also present, walls thin, smooth and hyaline, content of cells not distinctive. Hyphae of pileus trama vinaceous-cinnamon in KOH, hyphal walls incrusted (crush out sections to see single hyphae). In mounts revived in Melzer’s no distinctive reaction seen on any tissue. Clamps present.

Type locality. Priest Lake, Idaho.

Habit and habitat. Scattered on humus under cottonwood, October.

Distribution. Idaho, Oregon.

Observations. This variant is distinguished chiefly on the more copious veil which is heavy enough to leave appendiculate patches on the margin when it breaks.

Material examined. Idaho: Smith 73947 (Type). Oregon: Sipe 1100.

94. Psathyrella albanyensis A. H. Smith, sp. nov.

Pileus 1–3 cm latus, conicus demum campanulatus vel convexus, glaber sed ad marginem appendiculatus; cinnamomeo-brunneus; lamellae latae, confertae, sordide vinaceo-brunneae; stipes 4–8 cm longus, 2–3.5 mm crassus; deorsum demum brunneolus; sporae 7–9×4–5×5–6 μ; pleurocystidia 35–48×10–18 μ, fusoid ventricosa, ad apicem late rotundata vel obtusata; fibulae adsunt. Typus. Solheim 4438 (MICH); legit prope Laramie, Albany County, Wyoming.

Pileus 1–3 cm broad, obtusely conic expanding to campanulate or broadly convex, surface glabrous except on or near the margin where it is appendiculate with submembranous patches of the pallid veil, dark reddish rusty brown fading to tan and drying to a dingy reddish tawny, margin curved in at first. Context thin and fragile.

Lamellae close, broad, adnate, “bone brown” to darker as dried.

Stipe 4–8 cm long, 2–3.5 mm thick, equal, fragile, hollow, surface whitish becoming tan beneath the evanescent veil fibrils, and dingy brown as dried, lacking a pseudorhiza.

Spores 7–9×4–5×5–6 μ, smooth, apical pore indistinct and apex not truncate; shape in face view ovate to broadly elliptic or at base distinctly angular and apiculate, or angular-ovate, many corn-kernel-shaped, in profile somewhat inequilateral to ovate, color rich cocoa-brown in KOH and darkening to chocolate-brown, in Melzer's rich tawny, wall about 0.3 μ thick.

Basidia 4-spored, clavate, hyaline. Pleurocystidia 35–48×10–18 μ, broadly
fusoid-ventricose with broadly rounded to obtuse apex, thin-walled, hyaline, smooth, cell content not distinctive. Cheilocystidia mostly clavate to vesiculose and yellow in KOH.

Gill trama with a rusty brown central strand in KOH, the hymenopodial area hyaline. Pileus cuticle 2–3 cells deep, of inflated cells with ochraceous walls in KOH, smooth. Hyphae of subcuticular region rusty brown in KOH, with incrustations on the walls. Clamp connections present.

Type locality. Pole Mountain, Albany County, Wyoming.

Habit and habitat. Cespitose on soil in a mixture of aspen and conifers, May, alt. 8,000 ft.

Distribution. Known only from type locality.

Observations. This species has spores which in face view suggest very much those of *P. hirtosquamulosa* in shape but are much darker in color. The species is most closely related to *P. ophirensis*. It needs to be critically described from fresh material but is worth putting on record here because of the shape of the spores in face view.

95. *Psathyrella renispora* A. H. Smith, sp. nov.

Pileus 3–6 cm latus, convexus demum late convexus, castaneus, ad marginem sparse appendiculatus; lamellae conftaeae, angustae vinaceo-brunnea; stipes 4–8 cm longus, 3–5 mm crassus, pallidus, sparse fibrillosus; sporeae 7–10×4–5 μ, reniformes; pleurocystidia 34–46(–50)×9–15 μ, utriformia vel fusoid ventricosa, ad apicem obtusa; fibulae adsunt. Typus. Smith 340 (MICH); legit prope Lake Placid, New York.

Illustr. Text Figs. 236–238.

Pileus 3–6 cm in diameter, convex, glabrous, moist and hygrophanous, near “chestnut” (very deep chestnut-brown) when moist, fading to “walnut brown” (vinaceo-brown) when faded, margin at first decorated with particles of veil tissue but these soon disappearing; veil thin and submembranous to fibrillose. Context thin and fragile, dull rusty brown, odor none.

Lamellae close to crowded, narrow, adnate, dull reddish (“Vandyke brown”) and drying vinaceous-brown (almost as in *P. spadicea*), edges even.

Stipe 4–8 cm long, 3–5 mm thick at apex, slightly enlarged downward, hollow, fragile, whitish becoming dull ochraceous when dried especially over the lower portion, sparsely fibrillose from the remains of the veil.

Spores 7–10×4–5 μ, smooth, apical pore present but indistinct, shape in face view oblong to narrowly elliptic and some with a medial to submedial slight constriction, in profile kidney-shaped to obscurely so, color in KOH fuscous with a yellow tinge (near “sepia” to “mummy brown”), slowly becoming dark chocolate-color, tawny-red in Melzer’s, wall about 0.3 μ thick.

Basidia 4-spored, 18–28×7–9 μ, sections of hymenium distinctly ochraceous in KOH. Pleurocystidia abundant, 34–46(–50)×9–15 μ, utriform to narrowly ventricose, tapered to an obtuse apex, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer’s. Cheilocystidia similar to pleurocystidia or subcylindric to saccate or vesiculose. Caulocystidia similar to pleurocystidia or (more frequently) merely clavate to vesiculose with the wall in basal part slightly (0.5 μ) thickened and ochraceous in KOH.

Gill trama parallel, as revived in KOH a duller rusty brown than the hymenium but the hyphae smooth. Pileus trama dark rusty brown in KOH (amber brown or darker) but lacking distinctive incrustations (rarely a few
wall thickenings observed); cuticle a layer of inflated cells, some pedicellate, the layer 1–2 cells deep and walls ochraceous revived in KOH, lower part of the pedicel often with rusty brown wall thickenings. Clamp connections present. No distinctive reactions on any tissue when revived in Melzer’s.

Type locality. Mt. Marcy, New York.

Habit and habitat. On humus under conifers beside the trail.


Observations. *Psathyrella renispora* is closely related to *P. velibrunnescens* but grows on humus under conifers, has reniform spores in profile view, vinaceous-brown pileus faded, and a lutescent stipe.


96. *Psathyrella carolinensis* A. H. Smith, sp. nov.

Pileus 3–4.5 cm latus, demum subplanus, castaneus demum spadiceus, ad marginem appendiculatus; lamellae adnatae demum decurrentes, secedentes, confertae, angustae, albidae demum subfuscæae; stipes 6–7 cm longus, 4–5 mm crassus, albidus, deorsum fibrillosus; velum submembranaceum; sporae 7–9 × 4.5–5.5 (–6) μ; pleurocystidia 34–50 × 12–22 μ, late fusoid-ventricosa vel utriformia, saepe bifureata vel trifureata. Typus. Hesler 21000 (MICH); legit prope Highlands, North Carolina.

Illus. Text Fig. 242.

Pileus 3–4.5 cm broad, hemispheric to convex, finally broadly convex to nearly plane, rarely umbonate, hygrophanous, “chestnut-brown” when young and moist, at maturity becoming “snuff brown” (duller and paler), glabrous except for margin which is appendiculate with white patches of the veil which are evanescent by maturity. Context brown when moist, paler faded, odor and taste not distinctive.

Lamellae adnate, finally decurrent, white at first, finally “wood brown” (grayish brown), narrow, close, edges pallid and floccose.

Stipe 6–7 cm long, 4–5 mm thick, equal, hollow, fragile, white to slightly dingy, sparsely fibrillose but soon glabrescent, apex pruinose; veil ample, white, fibrillose to submembranous.

Spores “blackish brown (3),” 7–9 × 4.5–5.5 (–6) μ, smooth, apex at most only obscurely truncate, apical pore indistinct, shape in face view broadly elliptic to slightly ovate, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH chocolate-brown becoming fuscous and then paler again, in Melzer’s dark reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 20–24 × 7–9 μ, clavate. Pleurocystidia scattered, 34–50 × 12–22 μ, broadly fusoid-ventricose with rounded apex or utriform, many forked or with 3–4 apical or subapical protrusions, some large clavate cells near edge, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia clavate and 14–20 μ wide or similar to pleurocystidia.

Gill trama of interwoven hyphae with inflated cells, those in the central strand with brownish walls in KOH. Subhymenium very inconspicuous. Pileus cuticle a layer of cells 1–2 deep, some cells clavate to inflated-pedicellate, walls thin, smooth and dingy ochraceous to hyaline except for some pigment thickenings in the wall of the pedicels or at the angles of the inflated cells. Hyphae of the subcuticular region rusty cinnamon in KOH and hyphal walls distinctly roughened. Clamp connections present.
Type locality. Highlands, North Carolina, 4000 ft. elev.
Habit and habitat. Gregarious on deep humus in frondose woods, September.
Distribution. Known only from the type locality.
Observations. This species is close to *P. kauffmanii* var. *exannulata*, but is a richer color when young, the spores are wider and take a reddish tinge in KOH, and the gills are white at first. It has the colors of *P. delineata* or *P. hydrophila* when these are fully pigmented.

97. *Psathyrella subradicata* A. H. Smith, sp. nov.

Pileus 1–3 cm latus, obtuse conicus, demum late convexus, glaber, ad marginem appendiculatus, sordide pallido-cinnamomeus; lamellae confertae, latae, brunneolae demum umbrino-vinaceae; stipes 2–4.5 cm longus, 1.5–3 mm crassus, subradicatus, albidos, glaber; sporae 7–9×4–5 μ; pleurocystidia 38–50×9–15 μ, versiformia (utriiformia, fusoide ventricosa et pedicellato-elliptica); fibulae ad-sunt. Typus. Trueblood 2945 (MICH); legit Boulder Creek, Owyhee County, Idaho.


Pileus 1–3 cm broad, obtusely conic expanding to broadly convex but retaining an obtusely conic umbo, surface glabrous except for the margin which is at first appendiculate with patches of the pallid veil, veil remnants soon evanescent, pale dingy cinnamon-brown fading to pallid, surface even or nearly so. Context thin, fragile, concolorous with surface either moist or faded, odor earthy, taste not distinctive.

Lamellae close, moderately broad, adnate-seceding, brownish when young, nearly “bone brown” (dark vinaceous-brown) as dried, edges even.

Stipe 2–4.5 cm long, 1.5–3 mm thick, more or less radicating (base with adhering dirt over a short pseudorhiza for 1–1.5 cm additional length), nearly equal above the ground line, white (pallid as dried, over all), naked or at first with scanty evanescent veil particles.

Spores fuscous-brown in deposit, 7–9×4–5 μ, smooth, apical pore distinct and apex truncate to indistinctly so, shape in face view elliptic to suboblong, rarely ovate, in profile obscurely inequilateral to obscurely bean-shaped, color in KOH dark cocoa-color soon becoming a medium dark chocolate-color, in Melzer’s reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 18–24×7–9 μ, clavate, hyaline in KOH. Pleurocystidia 38–50×9–15 μ, of four types: (1) fusoid-ventricose with flexuous walls and obtuse apex (uncommon); (2) elliptic to elongate-elliptic, pedicellate (fairly numerous); (3) ventricose with scarcely any neck and apex half as broad as ventricose part (numerous), and (4) typically utriiform, all with thin, smooth, hyaline walls, cell content showing refractive granules in apex of some. Cheilocystidia variable in shape like the pleurocystidia and in addition some of them clavate, hyaline in KOH.

Gill trama of moderately inflated interwoven hyphae with (in central strand) yellow-brown smooth walls in KOH. Subhymenium cellular but cells not greatly inflated. Pileus cuticle of clavate and vesiculose cells in a layer 2–3 deep, the walls smooth, thin and hyaline or nearly so. Hyphae of subcuticular region clay color to more rusty in KOH but walls smooth or nearly so. Clamps present.

Type locality. South Fork Boulder Creek, Owyhee County, Idaho.
Habit and habitat. Cespitose on soil under fir.
Distribution. Known only from the type locality.
Observations. The distinctive features of this species are the variable shape of the pleurocystidia, medium small spores, more or less radicating stipe and appendiculate margin of the pileus when young. It appears to be related to *P. multipedata* but the cystidia are different, and the pileus is more conic as well as thinner. Also, *P. subradicata* has an appendiculate veil.

98. *Psathyrella lubrica* A. H. Smith, sp. nov.

Pileus 2–4 cm latus, obtuse conieus demum late conicus vel plano-umbonatus, lubricus, nitens, ad marginem subappendiculatus, spadiceus vel cinnamome-brunneus, sapor subamarus; lamellae confertae, pallidae demum purpureo-fuscae; stipes 4–5 cm longus, 3–5 mm crassus, albidus, deorsum floccosus, glabrescens; sporae 7–9×3.5–4.8 μ; pleurocystidia 46–60×9–16 μ, fusoid-ventricosa, ad apicem obtusa vel late rotundata; fibulae adsunt. Typus. Smith 15019 (MICH); legit prope New Hudson, Michigan.

Pileus 2–4 cm broad, obtusely conic to convex, becoming broadly conic to nearly plane or retaining an obtuse umbo, margin distinctly inrolled at first and when expanded becoming plicate to crenate, the surface polished and lubricous, often radially wrinkled to rugulose, margin at first fringed with fibrils but soon glabrous, opaque at first but becoming striatulate before fading, color evenly “Prout’s brown” to “cinnamon-brown” over all (rust-brown), hygrophanous, slowly fading to pale alutaceous. Context thick in the disc, thin toward the margin, pallid watery brown fading to buff, odor none, taste mild but with a bitterish aftertaste.

Lamellae close to crowded, 37–42 reach the stipe, 1–3 tiers of lamellulae, more or less horizontally adnate, readily seceding, “tilleul buff” young, soon “avellaneous” to “wood brown,” finally purplish brown and dull vinaceous-brown as dried, edges even.

Stipe 4–5 cm long, 3–5 mm thick, hollow, only moderately fragile, equal, white to whitish, at first with scattered appressed patches of fibrils, glabrous in age.

Spores 7–9×3.5–4.6 μ, smooth, apical pore distinct and apex truncate, shape in face view oblong to slightly ovate (obscurely wedge-shaped in some), in profile subelliptic to obscurly inequilateral, color in KOH dull cocoa-color becoming a medium dark chocolate on standing, in Melzer’s reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 18–22×7–9 μ, clavate to narrowly clavate, hyaline in KOH. Pleurocystidia abundant, 46–60×9–16 μ, broadly fusoid-ventricose and tapered gradually to an obtuse to rounded apex, thin-walled, hyaline, smooth, cell content not distinctive in either KOH or Melzer’s. Cheilocystidia mostly clavate to saccate, the latter 24–32×9–15 μ, hyaline, thin-walled; the former 30–42×9–14 μ, otherwise about like the pleurocystidia. Caulocystidia resembling the pleurocystidia and varying to clavate, mostly as the end-cells of narrow (veil ?) hyphae.

Gill trama of more or less parallel elongated hyphae, pallid brownish in KOH as revived; subhymenium thin and not distinctive, the hyphae very compactly interwoven and the cells not appreciably inflated. Pileus having a cuticle of hyaline inflated, smooth, thin-walled cells about 2 deep, some with pedicels, content not distinctive. Hyphae of the trama interwoven, dark rusty brown to tawny in KOH, walls smooth or nearly so. Clamp connections present. No distinctive color reactions on any tissue when revived in Melzer’s.

Type locality. New Hudson, Michigan.
Habit and habitat. Scattered on decaying leaves.
Distribution. Michigan, New Mexico, Tennessee.

Observations. The bitterish aftertaste and the distinctly inrolled margin of the pileus along with the lubricous pileus distinguish it from *P. spadiceogrisea*. Its relationships are with the latter as the degree of veil development varies considerably.

Material examined. Michigan: Kauffman 10-2-26; Smith 9508, 15019 (Type), 20362, 20616, 20620, 20714, 20906, 21026, 21142, 21285, 21313, 21340, 21344, 25213, 28667, 28704, 28706, 28752, 32192, 36172. New Mexico: Barrows #1. Tennessee: Boarts 16405; Hesler 15833.

99. *Psathyrella flexuosipes* A. H. Smith, sp. nov.

Pileus 3–4 cm latus, 3–3.5 cm altus, conicus, sparse fibrillosus, ad marginem appendiculatus, pallide spadiceus; lamellae conflatae, angustae, sordide luteolae, demum umbreol-fulvae; stipes 12–14 cm longus, 4–5 mm crassus, fragilis, albo-fibrillosus, glabrescens, deorsum sordide brunneus, flexuosus; sporae 7–9 × 4–5 μ; pleurocystidia 50–70 × 8–15 μ, pedicellato-elliptica vel subfusoidea, ad apicerum rotundata vel subcapitata; fibulae adsunt. Typus. Smith 3269 (MICH); legit prope Pysht, Washington.

Illust. Text Figs. 247, 248.

Pileus 3–4 cm broad across the base and 3–3.5 cm high, broadly conic, surface at first covered by appressed superficial white fibrils, the margin decorated with thick cottony patches of veil tissue, when moist "buckthorn brown" (dull yellowish brown), hygrophanous, fading to sordid buff and becoming radially rugose, at times somewhat crenate along the margin, scarcely striatulate when moist. Context thin, fragile, brownish, odor and taste mild.

Lamellae narrow, close, bluntly adnate, sordid buff when young, slowly becoming dark dull rusty brown, edges minutely fimbriate.

Stipe 12–14 cm long, 4–5 thick, equal, fragile, hollow, at first covered by patches of white fibrils and appearing silvery, often flexuosus, in age somewhat glabrescent and sordid brownish, surface becoming slightly undulating finally.

Spores 7–9 × 4–4.5 μ, smooth, somewhat truncate at apex from a distinct apical pore, shape in face view elliptic to narrowly ovate, in profile subelliptic to obscurely inequilateral, color in water-mounts when fresh dark purple-brown, in KOH cocoa-brown soon becoming chocolate-gray to dark chocolate-color, in Melzer's reddish tawny, wall 0.3 μ thick.

Basidia 4-spored, 20–25 × 7–9 μ, clavate with a long narrow pedicel, hyaline in KOH. Pleurocystidia very abundant, 50–70 × 8–15 μ, at first elliptic-pedicellate in optical section but elongating to subfusoid with obtuse to subcapitate apex (broadly rounded only in the elliptic state), apex with granular, hyaline debris often adhering, wall thin and hyaline, content of cell not distinctive in KOH or Melzer's. Cheilocystidia clavate, saccate or fusoid-ventricose, neck fairly distinct from the ventricose portion (these cells measuring 32–46 × 9–12 μ, the clavate to saccate type up to 30 × 16 μ and their bases at times slightly yellowish when revived in KOH).

Pileus with a cuticle formed by a region of inflated hyaline cells several deep but the cells very irregularly arranged, walls thin, smooth and hyaline, content not distinctive in KOH or Melzer's. Hyphae of the trama tawny brown when revived in KOH but gradually fading out to pale tawny brown or ochraceous, walls smooth or at most minutely uneven in a few. Clamp connections
present. No tissue showing any distinctive color reaction in mounts made in Melzer's.

Type locality. Pysht, Clallam County, Washington.

Habit and habitat: Solitary on debris along roads through alder stands.


Observations. The species has the stature of P. fragilissima but has totally different spores.


100. Psathyrella brevipes (Murrill) A. H. Smith, comb. nov.


Illust. Text Fig. 249.

Pileus 4–5 cm broad, obtuse to irregularly convex, not fully expanding, surface dry, corrugate and plicate, pale tan, darker on the disc, delicately floccose from the remains of the veil, striate on the margin which becomes upturned on drying. Context without an odor.

Lamellae adnate, crowded, rather narrow, uneven and many times inserted, pallid to brown.

Stipe 5 cm long, 7 mm thick, tapering downward, whitish, minutely whitish floccose above, fibrillose-lacerate below, hollow.

Spores 8–11×4–5.5 μ, smooth, with an inconspicuous apical pore but apex appearing broadly truncate, shape in face view elliptic to broadly elliptic, in profile view slightly bean-shaped to obscurely inequilateral, color in KOH cocoa-color becoming dingy ochraceous and finally clouded with gray (color pale for the genus), in Melzer's tawny or slightly paler, wall about 0.3 μ thick.

Basidia 4-spored, 20–25×8–10 μ, hyaline in KOH. Brachybasidioles present. Pleurocystidia rare, delicate, hyaline, subcylindric, about 50×12 μ, content not distinctive. Cheilocystidia very delicate and poorly revived, 36–40×8–12 μ, cylindric to subventricose with rounded apex, smooth, thin-walled, content not distinctive.

Pileus with a cuticle of inflated cells 1–2 cells deep, their wall thin, smooth and hyaline, the content of the cells not distinctive in KOH or Melzer's. Hyphae of the trama poorly revived but dingy ochraceous in KOH with a smooth, thin wall. Clamp connections probably present.

Type locality. Santiago de las Vegas, Cuba.

Habit and habitat. Solitary on soil.

Distribution. Known only from the type locality.

Observations. The species appears, on the basis of spore features, to be closely related to *P. hymenoccephala*. The fact that pleurocystidia are rare and that brachybasidioles are present substantiates the impression obtained from the features of the spores. The type specimens were apparently collected in the faded condition hence the "corrugate and plicate" pilear surface needs to be rechecked on moist specimens. There is the possibility that this species has reached the "*Pseudocoprinus* level," i.e., having both a truly plicate-striate pileus and brachybasidioles.


Pileus (1-)2-5 cm broad, obtusely conic, expanding to broadly conic, margin straight at first, glabrous except for the weakly appendiculate margin, the veil thin and submembranous to fibrillose, color dingy honey brown or slightly darker than “buckthorn brown” to (rarely) dull cinnamon, hygrophanous, fading to pale pinkish buff (pallid tan to dingy pallid) but disc later darkening to pale tan. Context thin and fragile, brownish fading to pallid, odor and taste not distinctive.

Lamellae close, broad, adnate, seceding, pallid brownish becoming cinnamon-drab, edges whitish, gills blackish as dried.

Stipe (3-)4-11 cm long, 3-5 mm thick at apex, equal, fragile, whitish over all at first, becoming dingy over the upper part but base remaining pallid, sparsely fibrillose over lower half, downy-pruinose above; all traces of the veil soon vanishing from the stipe.

Spores 8-10×4.5-5.5(-6) μ, smooth, apical pore distinct, shape in face view elliptic to ovate, in profile subovate to obscurely inequilateral, color in KOH soon dark chocolate-color, in Melzer’s bay-red, wall about 0.4 μ thick.

Basidia 4-spored, clavate, 17-23×7-9 μ. Pleurocystidia scattered, 36-48×9-14 μ, triform to narrowly utriform, the apex typically subcapitate, thin-walled, smooth, hyaline in KOH or Melzer’s, the content not distinctive. Cheilocystidia mostly clavate to saccate, 30-38×9-15 μ, hyaline in KOH, some fusoid-ventricose and 28-40×10-13 μ, the apex merely obtuse, content not distinctive. Caulocystidia clavate to fusoid-ventricose with obtuse apex, the latter 34-46×9-15 μ, apex obtuse, thin-walled and hyaline, not abundant.

Cuticle of pileus a staggered palisade of clavate to vesiculose cells, the walls hyaline to yellowish in KOH and smooth. Subcuticular region faintly dull cinnamon in sections (in KOH) but fading, cells smooth, trama soon hyaline in KOH. Clamps present. No distinctive reactions on any tissue in mounts made in Melzer’s.

Type locality. Pasadena, California.

Habit and habitat. Gregarious on humus under brush and hardwood trees, especially cottonwood, summer and fall.


Observations. This very “ordinary” appearing Psathyrella appears to be closely related to the European species P. fusca. For a comparison see that species. Its diagnostic features are the spores mostly over 5 μ wide, utriform pleurocystidia, appendiculate pilear margin, lack of fibrillose squamules over the pileus at any stage, and the weak pigmentation in KOH of the hyphae of the subcuticular region of the pileus.

102. Psathyrella franklini A. H. Smith, nom. nov.


Illust. Text Figs. 253, 254.
Pileus 3–5 cm broad, convex then expanded, glabrous, faintly striate, hygrophanous, cinnamon-brown at first, becoming pale gray, darker in the center. Context thin and pallid.

Lamellae adnexed, dirty white at first, becoming dark brown (cinnamon-brown when dried).

Stipe 6–12 cm long, 4–6 mm thick, rather stout, hollow, flocculose, white, the veil white, appendiculate and evanescent.

Spores 6–7.5 × 4–5.5 μ, smooth, with a broad but obscure apical pore causing apex in many to appear truncated, shape in face view elliptic to slightly ovate, in profile subelliptic to obscurely bean-shaped, color nearly hyaline to weakly ochraceous in KOH but on standing becoming clouded somewhat with chocolate-gray, in Melzer's pale reddish tan, wall about 0.2 μ thick.

Basidia 4-spored, hyaline in KOH, 17–20×7–8 μ. Pleurocystidia scattered 35–45×9–15 μ, fusoid-ventricose, apex broadly rounded, thin-walled, readily collapsing, smooth or with mucilaginous material adhering over upper part of neck or apex, content not distinctive. Cheilocystidia similar to pleurocystidia but varying to elliptic, clavate and vesiculose, 30–40×10–20 μ.

Gill trama regular, the hyphae with greatly inflated cells, the walls thin and the cells tending to remain collapsed, weakly dingy ochraceous in KOH. Pileus with a cuticle of vesiculose cells (reviving poorly and other details not reliably ascertained). Hyphae of the trama in the subcuticular region tawny in KOH and apparently with smooth walls. Clamp connections present.

Type locality. Santiago de las Vegas, Cuba.

Habit and habitat. Cespitose on a stump in a garden.

Distribution. Known only from the type locality.

Observations. The species appears to be closely related to P. hymenocephala but has pleurocystidia.

Subsection Subacutae A. H. Smith, subsect. nov.

Sporae 5–10 μ longae; pleurocystidia acuta vel obtusa. Typus. Psathyrella delineata.

Key to the Species of Subsection Subacutae

1. Pileus white to whitish before spores mature.
   2. Pileus honey-tan to various shades of brown at first.
   3. Spores 6–7×3–3.5 μ.
   4. Spores 7.5–9×4.5–5.5×5–6.3 μ.
5. Spores 6–7.5×3–3.5×3.6–4.5 μ.
6. Spores 6–8×4.5–4.5×4.5–5.5 μ.

103. P. pseudolactea.
104. P. fraxinophila.
105. P. tsugae.
106. P. subalpina.
6. Pleurocystidia nine-pin-shaped, clavate-mucronate, or with an acute to blunt apical extension, rarely obtusely fusoid-ventricose.

7. Stipe base yellowish; on wood of conifers.

(see 413. *P. turnagainensis* also) 108. *P. bigelovii*.

8. Stipe base not as above.

8. Terrestrial; gregarious under aspen; pleurocystidia ventricose-rostrate.

109. *P. utahensis*.

8. Lignicolous; pleurocystidia nine-pin-shaped to mucronate, rarely with sub-apical projections or obtusely fusoid-ventricose.

9. Pileus "cinnamon"; spores 7-9(-10) \( \times \) 4.5-6 \( \mu \). 110. *P. madeodisca*.

9. Pileus dark cinnamon-brown to russet at first; spores 6.5-8 \( \times \) 3.5-5.5 \( \mu \); on logs, stumps etc. later in the season than the above.

10. Spores 3.5-4.5 \( \mu \) wide, terete; pleurocystidia subfusoid with a narrow extended acute apical projection.

111. *P. canadensis*.

10. Spores 4.5-5.5 \( \mu \) in broadest view; pleurocystidia more or less mucronate but mucro often enlarged slightly at apex.

112. *P. delineata*.

11. Habitat lignicolous (often on chip-dirt).

11. Habitat typically terrestrial.


12. On wood of hardwoods.

13. Spores compressed slightly; lamellae drab-gray when mature.

113. *P. oregonensis*.

13. Spores terete; gills rusty brown or chocolate-color when mature.

14. Spores with a distinct apical pore and spore apex truncate; pleurocystidia 38-50 \( \mu \) long.

14. Spore apex not distinctly truncate; pleurocystidia up to 70 \( \mu \) long.

15. Some pleurocystidia with slightly thickened yellow walls as revived in KOH; a thin outer veil showing on young pilei. 115. *P. pseudoparadoxa*.

15. Pleurocystidia with thin walls; outer veil absent. 116. *P. wapinitaensis*.

16. An appreciable number of pleurocystidia with slightly thickened highly refractive walls.

17. Spores 6.5-7.5 \( \mu \) long; on alder logs. 117. *P. indecorosa*.

17. Spores 7.5-9 \( \mu \) long; on canes of *Rubus* and adjacent alder debris. 118. *P. rubicola*.

18. Stipe 1.5-3.5 mm thick; spores coffee-color in KOH; spore apex truncate.

119. *P. fallax*.

18. Stipe 3-8 mm thick.

19. Spores deep garnet brown in KOH; pileus grayish clay-color. 120. *P. tahquamenonensis*.

19. Spores cocoa-brown to tawny in KOH; pileus dark rusty brown.

20. Spores dingy ochraceous tawny when first revived in KOH; stipe distinctly fibrillose-squamulose below veil line. 122b. *P. iterata* var. *ochraceispora*.

20. Spores in KOH dark cocoa-brown when first revived; stipe less scaly than in above choice. (see *P. velibrunnescens* also) 122a. *P. iterata* var. *iterata*.

21. Stipe 1-3 mm thick.

21. Stipe 3-6 mm thick.

22. Spore apex truncate.

23. Growing on barren sandy soil; pleurocystidia obtuse.

24. Not as above.

25. Outer veil buff-colored; pileus russet.

25. Outer veil white; pileus cinnamon to clay color.

26. Pleurocystidia mostly under 50 \( \mu \) long.

26. Pleurocystidia often 50 \( \mu \) or more long.

27. Lamellae grayish brown when mature; stipe grayish in the base.

128. *P. subcinerascens*.

27. Lamellae rusty to purple-brown; stipe white.

28. Stipe 5-10 cm long, on needle duff under conifers.

28. Not as above.

29. Stipe 2-4 cm long; on sandy soil along roads; pileus squamulose at first with outer veil particles.

130. *P. crassulistipes*.
29. Stipe 4–7 cm long; growing on grassland in arid regions; lacking a well developed outer veil.

30. Stipe 8–15 cm long.

31. Spores 6.5–8(9) × 4–4.5 × 4–5 μ.

32. Pileus becoming pinkish after fading; cheilocystidia nearly all vesiculose

to clavate.

33. Lamellae olive-brown when mature.

34. Pleurocystidia acute to subacutae, apex often with hyaline debris adhering.

131. *P. owyheensis*.

132. *P. verna*.

133. *P. alnicola*.

134. *P. mesocystis*.

135. *P. subfasciculata*.

136. *P. idahoensis*.

103. *Psathyrella pseudolactea* A. H. Smith, sp. nov.

Pileus 2–5 cm latus, obtuse conicus demum campanulatus, sparse fibrillosus; glabrescens, ad marginem denticulatus, lactoalbus, demum mellebrunneus, saepe rugulosus; lamellae angustae confertae albae demum griseo-brunneae; stipes 3–7 cm longus (3–)4–8(–10) mm crassus, dissiliens, fibrillosus, glabrescens, albidos demum melleus; sporae 6–7×3–3.5 μ; pleurocystidia 38–62×10–18 μ, fusoid-ventricosa; ad apicem acuta; fibulae adsunt. Typus. Smith 39799 (MICH); legit prope Pellston, Michigan.

Illust. Text Figs. 255–257.

Pileus 2–5 cm broad, obtuse with a bent-in margin, expanding to broadly conic or umbonate and the margin spreading, surface moist and hygrophanous, thinly coated with veil fibrils near the margin, the edge denticulate from remains of submembranous veil material, color milk-white to watery white before spores mature, as spores mature the color gradually becoming brown and at maturity dingy honey brown, translucent striate moist, in age at times rugose-reticulate. Context white becoming watery brownish by maturity, odor and taste not distinctive.

Lamellae close, narrow, ascending-adnate, white, becoming dark gray-brown (lacking red tinges), finally near "wood brown," edges even.

Stipe 3–7 cm long, (3–)4–8(–10) mm thick, equal or enlarged downward, hollow, splitting readily, surface rather coarsely fibrillose from veil but finally glabrous, apex somewhat scurfy, white at first, dingy honey-color in age.

Spores 6–7×3–3.5 μ, smooth, apical pore evident and causing apex to appear truncate, shape in face view oblong to narrowly elliptic, in profile suboblong to obscurely inequilateral, color in KOH cocoa-color darkening to chocolate, in Melzer's reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 20–24×6–7 μ, hyaline in KOH. Pleurocystidia abundant, 38–62×10–18 μ, fusoid to fusoid-ventricose, the apex acute to subacute and often remaining collapsed and usually coated with amorphous granules as an inerustation, hyaline, thin-walled, content not distinctive. Cheilocystidia similar to pleurocystidia. Caulocystidia as the terminal cell of a chain of 2–4 cells of cortical hyphae, all of the cells inflated, the end cell mostly vesiculose to clavate and 12–20 μ broad.

Pileus cuticle a layer of greatly inflated vesiculose cells with yellowish hyaline, smooth walls and no distinctive content. Subcuticular region brownish as first revived in KOH but soon fading to yellowish or nearly hyaline; tramal body hyaline in KOH, the hyphae smooth. Clamps present. No distinctive reactions in Melzer's on any tissue.
Type locality. Pellston, Michigan.
Habit and habitat. On hardwood logs, scattered, August.
Distribution. Known only from the type locality.

Observations. The distinctive features of this species are the pale pilei, narrow oblong spores, pointed pleurocystidia with the coated tips slow to revive, the darkening stipe and lack of a distinctively colored sap in the pleurocystidia along with the chains of inflated hyphal cells on the stipe.

104. Psathyrella fraxinophila A. H. Smith, sp. nov.

Pileus 2–4 cm latus, conicus, demum campanulatus vel plano-umbonatus, pallidae demum subalutatae, ad marginem appendiculatus, sparse fibrillosus, glabrescens; lamellae latae, confertae, pallidae demum avellaneae vel griseofuscae; stipes 3–6 cm longus, 2–5 mm crassus, deorsum floccosus, glabrescens, albidus vel pallidus; sporae 7.5–9.5 × 5–6.3 × 4.5–5.5 μ; pleurocystidia 36–47(–65) × (9–)10–12(–14) μ, ad apicem obtusa vel capitata, intus cum globulis magnis; fibulae adsunt. Typus. Smith 25299 (MICH); legit prope Burt Lake, Michigan.

Illust. Text Figs. 258–260.

Pileus 2–4 cm broad, obtusely conic, expanding to broadly campanulate or plano-umbonate, some in age with an arched margin and slightly depressed disc, surface at first glabrous over central area but finally over all, smooth at first but becoming rugulose in age; at first colored a dark "tilleul buff" (pallid) but soon near "cinnamon-buff" on the disc and near "wood brown" over marginal area, typically hygrophanous but not undergoing a distinct color change as the result of fading; veil submembranous and its remnants hanging in delicate patches on or along the margin, fibrils white to whitish. Context thin, pallid when moist or dry, odor and taste not distinctive.

Lamellae moderately close and broad, ascending adnate, becoming horizontally adnate near the stipe in age, pallid young, soon grayish to avellaneous, becoming "hair brown" but finally "bister," edges crenulate.

Stipe 3–6 cm long, 2–5 mm thick at apex, equal or slightly thickened downward, hollow, fragile, silky-striate in age, at first lower part floccose to appressed fibrillose from veil remnants, essentially white and unchanging but in old basidio-carpers at times sordid yellowish.

Spores 7.5–9.5 × 5–6.3 × 4.5–5.5 μ, smooth, slightly compressed, apical pore present but apex rounded, shape in face view broadly elliptic to ovate, in profile obscurely inequilateral to subelliptic, color in KOH dark bister to near "mummy brown," in Melzer's tawny-red, wall about 0.6 μ thick, very fragile (pressure on the cover glass causes many spores to fracture).

Basidia 4-spored, 24–32 × 8–10 μ, clavate, hyaline in KOH. Pleurocystidia abundant but soon collapsing and consequently appearing rare to scattered at times in old material, 36–47(–65) × (9–)10–12(–14) μ, oval-ventricose and mostly abruptly narrowed to the more or less elongated neck, the apex obtuse to subcapitate, occasionally forked, hyaline when fresh but with a large oil globule as mounted in H₂O or KOH, and also when revived within a year or two of collecting (but on older specimens the content homogeneous and not distinctive in KOH), when mounted in Melzer's some cystidia show a hyaline to yellow inclusion, wall thin, smooth and hyaline. Cheilocystidia mostly resembling the pleurocystidia but some clavate to saccate cells also present. Caulocystidia present as tubular hyphal ends 4–6 μ wide, or some narrowed at apex, some narrowly clavate, variable in length, hyaline and thin-walled.
Pileus with a cuticle of vesiculose cells—mostly about 2 cells deep but the cells not greatly enlarged (10-30) μ, walls smooth, hyaline and thin, content of cells not distinctive in KOH or Melzer’s. Hyphae of the trama in the subcuticular region weakly ochraceous in KOH, the walls smooth. Clamp connections present. No distinctive reactions on any tissue in mounts made in Melzer’s.

Type locality. University of Michigan Biological Station, Cheboygan, Michigan.

Habit and habitat. Scattered on mossy logs, stumps or dead trees of Fraxinus (ash), June.


Observations. The long cystidia frequently are the narrowest. This species features a pallid pileus at first, pallid gills which become dark grayish brown, and spores tending to be slightly compressed. The globule in the pleurocystidia shows in some as a pale yellow mass in Melzer’s. For a comparison with P. madeodisca see that species. The relationships of P. fraxinophila appear to be with that species, but P. madeodisca is readily distinct by its darker color when young.

Material examined. Michigan: Smith 25207, 25299 (Type), 25305, 25334, 25335, 25336, 25387, 25591, 25593, 25596, 25600, 25781, 26013, 26020, 28742, 28744, 32302, 36395, 36517, 36586, 71550, 71706.

105. Psathyrella tsugae A. H. Smith, sp. nov.

Pileus 4–8(-10) cm latus, obtuse umbonatus, glaber rugulosus, ad marginem appendiculatus, fusco-cinnamomeus; lamellae confertae, latae, cinnamomeae demum fumoso-cinnamomeae; stipes 5–10 cm longus, 1–1.5 cm crassus, pallidus, demum brunneus; sparse fibrillosus, glabrescens; sporae 7–9 X 3.7–4.5 μ; pleurocystidia 34–48(-60) X 9–13 μ, lecythiformia; fibulae adsunt. Typus. Smith 77849 (MICH); legit prope Hulbert, Michigan.

Illust. Text Figs. 261–263.

Pileus 4–8(-10) cm broad, obtusely umbonate with a spreading margin, expanding to broadly convex or nearly plane, glabrous, radially rugulose, appendiculate on the margin, color dark rusty brown when moist ("Mars brown"), subhygrophanous and near cinnamon-brown when moisture has escaped, when dried dark rusty brown. Context firm to very firm, colored more or less like the pileus surface, odor and taste not distinctive.

Lamellae adnate, close, moderately broad, of equal width near to the pileus margin, dark rusty brown in youngest specimen seen, nearly the same color when mature, slightly darker as dried, edges even.

Stipe 5–10 cm long, 1–1.5 cm thick, equal or enlarged somewhat near apex, pallid at first, brownish when mature, surface glabrous or thinly coated with veil fibrils at first but soon glabrescent, apex faintly pruinose.

Spores 7–9 X 3.7–4.5 μ, smooth, apical pore present but apex rounded, in face view oblong to truncate-ovate (the base truncated), a few more or less wedge-shaped, in profile more or less bean-shaped, color in KOH dark rusty brown to dark cocoa-brown, slowly becoming more dark chocolate-color, in Melzer’s bay-brown (not as red as in most species), wall about 0.2 μ thick.

Basidia 4-spored, 20–24 X 6–7 μ, narrowly clavate, hyaline in KOH. Pleurocystidia abundant, 34–48(-60) X 9–13 μ, mostly short nine-pin-shaped, walls smooth, thin and hyaline to yellowish in KOH. Cheilocystidia similar to short pleurocystidia (ventricose-capitate and with hardly any neck), walls often
ochraceous in KOH, a few vesiculose cells also present. Caulocystidia only a few clavate cells observed as such.

Pileus cuticle a layer of vesiculose cells 12–40 μ wide, the walls 0.5–1 μ thick (the double lines 2 μ thick), colored tawny in H2O when fresh and distinctly ochraceous revived in KOH (more highly colored than the hyphae of the context), their content not distinctive. Hyphae of the subcuticular region pale ochraceous in KOH, walls smooth or rarely in the area just beneath the cuticle with the wall slightly roughened. Clamp connections present. In Melzer's the cuticular cells more ochraceous than the hyphae of the context and with local weakly dextrinoid wall thickenings evident. In sections the cuticular layer darker than the context to the naked eye.

Type locality. Near Hulbert, Michigan.

Habit and habitat. Cespitose on or around stumps of Tsuga (hemlock).

Distribution. Known only from the type locality.

Observations. This is one of the most easily recognized species in the genus by virtue of the cuticular and tramal features described above, the nine-pin-shaped cystidia and the small spores tending to be wedge-shaped in face view. The basidiocarps are typically large as was evidenced by clusters too old to preserve.


Illustr. 1. c., fig. 20 (f, g, h, j). Text Figs. 264–266.

Pileus 2–4 cm broad, (probably larger when fully mature), buttons obtuse and expanding to convex or plane, occasionally with a broad low umbo, surface at first hoary to near disc from a thin coating of veil fibrils, glabrescent over all except the incurved margin which retains a zone of avellaneous fibrils, surface moist and hygrophanous, “russet” (dark rusty brown) at first but shading to cinnamon in fading. Context thick, watery cinnamon-brown, taste none, odor imperceptible or very faint and reminding one of cinnamon.

Lamellae close, adnate, narrow to moderately broad, near avellaneous in buttons changing through wood brown to a dark purplish cinnamon-brown when mature, edges even.

Stipe (2-) 3–6 cm long, (3-) 4–6 mm thick, somewhat enlarged downward and with a mycelioid base sunken in the soil, surface pallid-fibrillose from the pale avellaneous veil, pallid and pruinose near the apex, hollow, brownish within and cinnamon-brown in the base, lower half glabrescent, in old carpophores darkening from the base upward.

Spores 6–8×4.5–5.5 μ, slightly compressed, smooth, apical pore distinct (under oil) but inconspicuous and apex not truncate, shape in face view broadly elliptic to obscurely rectangular (base somewhat truncate), in profile subelliptic to somewhat bean-shaped, color in KOH dark bister but soon clouded chocolate-gray, in Melzer's tawny, wall about 0.3 μ thick.

Basidia 23–34×6–9 μ, elongate-clavate, hyaline in KOH individually but sections of the hymenium with an ochraceous tone when first revived in KOH. Pleurocystidia abundant, 34–56×8–14 μ, ventricose, neck becoming elongated and apex subacute to oval (not truly capitate), wall thin, smooth and hyaline in KOH, content not distinctive in either KOH or Melzer's. Cheilocystidia of two types, the first similar to but usually smaller than the pleurocystidia and the second clavate to subsaccate and 12–18×7–15 μ, thin-walled to pale ochraceous in KOH. Caulocystidia not located, but hyphae of the veil often ending in clavate
to cystidioid end-cells. Hyphae of the stipe cortex with hyaline to weakly ochraceous walls in KOH, hyphae of the veil on the stipe with ochraceous-tawny coagulated content or wall-color and the walls also minutely roughened at times.

Gill trama parallel or nearly so, tinged cinnamon revived in KOH but fading, hyaline in mounts of fresh material in H₂O or KOH. Pileus with a cuticle consisting of a layer of elongated (perpendicularly to pileus surface) or clavate to vesiculose cells about 2 cells deep, walls ochraceous-cinnamon as revived in KOH (at first dark cinnamon-brown), the pedicels of the clavate cells tawny and with thickened walls, in water mounts of fresh material the surface-cells yellowish or in KOH cinnamon. Hyphae of the context cinnamon in KOH as revived but fading on standing, nearly hyaline in H₂O fresh, walls smooth to minutely roughened. Clamp connections present. All tissues as revived in Melzer’s pale greenish yellow.

Type locality. Eagle Peak, Mt. Rainier National Park, Washington.
Habit and habitat. On soil forming face of a bank along a trail, conifer roots were close by.
Observations. The colored walls of the cuticular hyphae make this one of an outstanding group occurring on conifer wood.
Material examined. Washington: Smith 30166, 30646, 31105 (Type).

107. Psathyrella sequoiae Thiers & A. H. Smith, sp. nov.
Pileus 2.5–4 cm latus, demum late convexus, sparse fibrillosus, glabrescens, ad marginem appendiculatus, cinnamomeo-brunneus; lamellae demum subdistantes, latae, griseae demum subsapideae; stipes 4–6 cm longus, 3–8 mm crassus; albidus, deorsum tactu brunneus, glabrescens; sporae 6–7.5 × 3–3.5 × 3.6–4 (–4.5) μ; pleurocystidia 34–48 × 10–15 × 7–11 μ, lecythiformia; fibulae adsunt. Typus. Thiers 18282 (MICH); Del Norte County, California.
Pileus 2.5–4 cm broad, subglobose to convex when young, typically broadly convex at maturity, surface at first thinly fibrillose from remnants of the outer veil, more densely white-fibrillose along the appendiculate margin, glabrous in age or remnants of the veil remaining along the margin, color dark rusty brown (near “cinnamon-brown”), when dried dark reddish brown on mature pilei. Context fragile, concolorous with surface, odor and taste not distinctive.
Lamellae adnate to adnexed, close to subdistant, thin, fragile, several tiers of lamellulae; drab when young, to buffy brown when older but cocoa-brown as dried, edges entire, paler in color.
Stipe 4–6 cm long, 3–8 mm thick, equal, white, staining brown around base where handled, dry, lower portion white-fibrillose from veil remnants variously arranged, with a slight annular fibrillose zone at times where the veil breaks, silky near the apex.
Spores 6–7.5 × 3–3.5 × 3.6–4 (–4.5) μ, smooth, apex truncate in many from a distinct hyaline pore, shape in face view broadly oval to elliptic, in profile somewhat bean-shaped to obscurely inequilateral (very slightly compressed), color in KOH cocoa-color, slowly graying slightly, in Melzer’s pale tawny, wall about 0.2 μ thick.
Basidia 4-spored, narrowly clavate, 15–19 × 6–7 μ, hyaline. Pleurocystidia scattered 34–48 × 10–15 × 7–11 μ, nine-pin-shaped, walls thin, smooth and hyaline, cell content not distinctive. Cheilocystidia similar to pleurocystidia or with apex merely obtuse and many more nearly clavate-mucronate than nine-pin-shaped, smooth, hyaline and thin-walled.
Gill trama regular, the hyphal walls not appreciably colored. Cuticle of pileus a layer 3-5 cells deep of inflated cells with rusty brown walls in KOH, fading slowly but basal cells remaining darkest. Hyphae of the subcuticular region paler (nearly hyaline in KOH). Clamps present.

Type locality. Pacific Coast State Park, Del Norte County, California.

Habit and habitat. Cespitose on redwood logs, December.

Distribution. Known only from the type locality.

Observations. This species is most closely related to *P. tsugae* but differs in smaller spores, smaller stature of the basidiocarps, and in the more copious fibrillose veil. The white stipe staining brown may be an additional important field character.

108. *Psathyrella bigelowii* A. H. Smith, sp. nov.

Pileus 3-6.5 cm latus, convexus, glaber, ad marginem appendiculatus, mel-leibrunneus; lamellae latae (4-8 mm), confertae, late adnatae, avellaneae demum purpureo-brunneae; stipes 6-13 cm longus, 5-10 mm crassus, cavus, fibrosus, fibrillosus, deorsum luteus; velum albidum; sporae 8-10 × 4-4.5 μ; pleurocystidia 28-37 × 9-14 μ, subutriformia, ovato-mucronata vel fusoideo-ventricosa; fibulae adsunt. Typus. Bigelow 3311 (MICH); legit prope Sinclair, Maine.

Illust. Pl. 52.

Pileus 3-6.5 cm broad, convex with an incurved margin, expanding to broadly convex but margin remaining decurved, subumbonate at times, glabrous or practically so except for patches of veil remnants along or appendiculate on the margin, color various shades of honey brown but becoming grayish toned as spores mature, when dried near cinnamon-buff. Context thin, watery pallid, brittle, odor and taste not distinctive.

Lamellae broadly adnate, close, broad (4-8 mm), horizontal, purple-brown drying dark vinaceous-brown, when young near avellaneous; edges finely eroded.

Stipe 6-13 cm long, 5-10 mm thick, equal, hollow, cortex thick and fibrous, base yellowish and partly coated with a white tomentum, whitish and silky-shining above beneath the dingy surface fibrils; veil white, silky, thin and the remains adhering for a time to the pileus margin.

Spores 8-10 × 4-4.5 μ, smooth, apical pore very indistinct and spore apex rounded, shape in face view oblong to obscurely angular-oblong, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH cocoa-color slowly changing to chocolate-color, in Melzer's tawny, wall about 0.3 μ thick.

Basidia 4-spored, narrowly clavate, 7-8 μ broad. Pleurocystidia 28-37 × 9-14 μ, subutriform (rare), oval-submucronate (common), and fusoid-ventricose with obtuse apex (uncommon), all smooth, thin-walled, hyaline, and the cell content not distinctive. Cheilocystidia similar to pleurocystidia but longer (up to 45 μ long), varying to clavate, hyaline.

Cuticle of pileus a layer of inflated cells several or more deep, walls weakly ochraceous revived in KOH and moderately refractive. Hyphae of the subcuticular zone ochraceous to hyaline in KOH, walls smooth. Clamps present.

Type locality. Mud Lake, Sinclair, Maine.

Habit and habitat. Cespitose to gregarious at base of a conifer stub.

Distribution. Known only from type locality.

Observations. The habitat on conifer wood, the oval-submucronate cystidia and relatively long narrow spores distinguish this species in the *P. spadiceogrisea* group.

Pileus 1.5–3.5 cm latus, late convexus, glaber, ad marginem appendiculatus, ad centrum alutaceus; lamellae confertae, adnatae, angustae, demum latae; stipes 2–3 cm longus, 2–5 mm crassus, sericeus, albidus, deorsum demum brunneus; sporae 7–9 × 4–4.5 μ; pleurocystidia 36–48 × 10–15 μ, ventricoso-rostrata, ad apicem subacuta; fibulae adsunt. Typus. Kent McKnight F-958 (MICH); legit prope Mt. Timpanogas, Utah County, Utah.

Pileus 1.5–3.5 cm broad, broadly convex at first, becoming plane at maturity, glabrous, moist, hygrophanous, margin at first appendiculate with remains of the veil, color “cinnamon-buff” on disc, near “sepia” elsewhere, fading quickly to “light buff” (pallid yellowish) and often developing pink tints. Context thin and fragile, concolorous with surface moist or faded, odor and taste not distinctive.

Lamellae close, adnate, narrow to moderately broad, brownish at first, becoming purplish brown and when dried dark vinaceous-brown, edges concolorous as dried.

Stipe 2–3 cm long, 2–5 mm thick, equal or nearly so, becoming hollow, cartilaginous, surface silky-fibrillose, whitish becoming dingy brownish, often with white floccose mycelium at the base.

Spore print near “benzo brown” (purple-brown); spores 7–9 × 4–4.5 μ, smooth, apical pore present but apex not truncate, shape in face view ovate to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH chocolate-brown but soon dark chocolate-color then chocolate-gray, in Melzer’s bay-red, wall about 0.3 μ thick.

Basidia 4-spored, 12–24 × 6–8 μ, clavate, hyaline. Pleurocystidia scattered, 36–48 × 10–15 μ, (ventricose-rostrate), (pedicellate, then abruptly ventricose, the neck 5–6 μ thick near ventricose portion and flexuous to an obtuse to subacute apex), wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia inflated-pedicellate to cystidioid, hyaline to ochraceous in KOH, 9–15 μ wide, walls thin.

Pileus cuticle 1–2 cells deep, a mixture of clavate and vesiculose cells with smooth, thin, hyaline walls, cell content not distinctive. Hyphae of subcuticular region pale dull cinnamon in KOH and smooth or nearly so. Clamp connections present.

Type locality. Aspen Grove, Utah County, Utah.

Habit and habitat. Gregarious on soil, April.

Distribution. Utah.

Observations. The distinguishing features of the species are the rostrate pleurocystidia, medium sized spores, rather squatty stature, terrestrial habitat and the pink tints developing on the faded pileus. The generally pale color of the moist young pileus may also be important.


*Hypholoma madeodiscum* (Pk.) Saccardo, Sylloge Fung. 5: 1039. 1887.


Illustr. Smith, 1. c., pl. 28, figs. 1–5. Text Figs. 267–270.

Pileus 1–4 cm broad, obtuse when young, becoming plane with a low broad umbo, surface moist and hygrophanous, near “cinnamon” when moist but varying to duller (near “Sayal brown”), fading to pale dingy tan (“cinnamon-buff”) to
whitish finally, in old pilei often avellaneous (grayish brown); margin dentate-appendiculate from remains of a white veil which is submembranous, the denticulations soon disappearing; surface glabrous over all or the marginal area slightly appressed-fibrillose at first. Context thin, watery buff then pallid, odor and taste not distinctive.

Lamellae broad, ascending-adnate, soon seceding, close, pallid, brownish before the veil breaks, becoming nearly russet but in age with a fuscous cast, not mottled, edges even.

Stipe 3–6 cm long, 3–5 mm thick, equal, hollow, fragile, white at first and thinly coated with white fibrils, glabrescent in age dingy watery tan (near cinnamon-buff) over all, no color change on bruising and not darkening distinctly from the base upward.

Spores 7–9(–10) × 4.5–6 μ, smooth, apex rounded but apical pore distinct, shape in face view ovate to elliptic, in profile subelliptic to elliptic, color as revived in KOH dark chocolate-color, in Melzer's bright reddish brown, wall about 0.3 μ thick.

Basidia 4-spored, 24–30×8–10 μ, clavate, hyaline in KOH. Pleurocystidia abundant, 42–62×10–16(–20) μ, ventricose-subcapitate to nine-pin-shaped, apex often flattened, some with 2–3 subapical or apical protuberances (bubble-like in some), wall smooth and thin, hyaline in KOH, cell content not distinctive in KOH, in Melzer's often with a yellow inclusion. Cheilocystidia 32–50×9–15 μ, clavate to ventricose-capitate to fusoid-ventricose or nine-pin-shaped, some with 2–3 subapical extensions, often quite versiform, wall thin and content not distinctive. Caulocystidia not found.

Pileus with a cuticle of a layer of inflated cells, some pedicellate, the layer 2–4 cells deep, walls thin and nearly hyaline. Hyphae of the subcutis tubular to inflated, with brownish incrustations as viewed in KOH. Context hyphae below the subcutis not distinctively colored. Clamps present. No distinctive reactions noted for any tissue as mounted in Melzer's.

Type locality. New York (Adirondack Mountains).

Habit and habitat. Gregarious on wet mossy sticks in areas where water accumulates during wet seasons in forests of aspen and birch, May-June.


Observations. The Michigan collections described here have the wide spores and nine-pin-shaped pleurocystidia of the type. The species is apparently not uncommon, but is missed because of its early fruiting period. Smith (1941) erroneously identified a different species as Peck's. The correct concept of *P. madeodisca* features a dull to bright cinnamon pileus, gills distinctly russet near maturity, and the pleurocystidia as described. In the Michigan collections when sections are revived in Melzer's the pleurocystidia show a distinct yellow inclusion. No record of an inclusion in fresh material is at hand. However on the basis of the shape of the pleurocystidia and the fact that they often show a yellow internal body as revived in Melzer's, *P. fraxinophila* and *P. madeodisca* appear to be closely related—a conclusion substantiated further by their aspect, habit, habitat, and time of fruiting.


111. *Psathyrella canadensis* A. H. Smith, sp. nov.

Pileus 1.5–3.5 cm latus, obtusus vel convexus, demum late convexus, tenuiter fibrillosus, ad marginem appendiculatus, cinnamomeo-brunneus demum argil-
laceus; fragilis; lamellae confertae, angustae, adnatae, rufo-cinnamomeae; stipes 2.5–5 cm longus, 1.5–3 mm crassus, deorsum fibrillosus, ad basin luteomyceliosus; sporae 6.5–8 × 5.5–4.5 μ; pleurocystidia 46–68 (–74) × 9–14 μ, subfusoidae. Typus. University of Toronto 9401 (MICH).

Pileus 1.5–3.5 cm broad, obtuse to convex becoming plane or slightly umbo­nate, faintly fibrillose over all or toward the appendiculate margin, moist, hygrophanous, dark cinnamon-brown when moist, fading to clay color or cinnamon-buff, when dried sometimes sordid tawny but usually clay-colored. Context thin and fragile, odor and taste not recorded.

Lamellae close, narrow to moderately broad, adnate, dark reddish brown ("warm sepia") or darker when dried.

Stipe 2.5–5 cm long, 1.5–3 mm thick at apex, slightly enlarged downward, hollow, when dried pale yellowish over all and fibrillose to unpolished over the lower portion, base with a rather conspicuous yellowish mycelium; veil sub­membranous, when dried between "vinaceous-buff" and "pinkish buff."

Spores 6.5–8 × 3.5–4.5 μ, smooth, apical pore present but inconspicuous, shape in face view oblong to elliptic, in profile obscurely inequilateral to obscurely bean-shaped, color in KOH rich cocoa-color darkening to chocolate-brown, in Melzer's reddish tawny, wall about 0.3 μ thick.

Basidia 16–24 × 6–8 μ, 4-spored, narrowly clavate, hyaline in KOH. Pleuro­cystidia very abundant, 46–68 (–74) × 9–14 μ, subfusoid with the apex tapered to a narrow flexuous neck and apex subacute, the wall smooth, thin and hyaline, the cell content homogeneous and hyaline in KOH, in Melzer's having a large central globule as wide as the cystidium and yellowish-hyaline. Caulocystidia not found on the limited material available for examination.

Gill trama characteristically yellowish in KOH, the subhymenium darker, the hyphae parallel or nearly so. Pileus with a cuticle formed by clavate to pear-shaped cells staggered in such a way as not to form an even palisade, the layer 1–2 cells deep, the walls of the cells smooth and yellowish in KOH. Hyphae of the context interwoven, yellowish or (at first) dark yellowish brown in KOH. Clamp connections present.

Type locality. Hatchley, Brant County, Ontario, Canada.

Habit and habitat. On a rotten stump.


Observations. Psathyrella fraxinophila has cystidia containing a globule in the fresh material, but in time (several years in the herbarium) it fails to reconstitute when cystidia are revived in KOH or Melzer's. In P. canadensis the globule appears not to form in KOH but does in Melzer's regardless of the age of the specimens. In P. delineata the globule is colored pale sulphur yellow and forms in both KOH and in Melzer's.

Material examined. CANADA. Ontario (Type).


_Hypholoma delineatum_ Peck, Bull. N. Y. State Mus. 150: 83. 1911.
_Drosophila delineata_ (Pk.) Murrill, Mycologia 14: 68. 1922.

Illustr. Pl. 50; Pl. 53, fig. a; Text Fig. 271.

Pileus (3–)5–10 cm broad, obtuse, becoming convex to plane or slightly umbonate, surface at first covered by a thin superficial coating of white silky
fibrils especially toward the appendiculate margin, glabrescent, color dark rusty
to reddish brown when moist, ("Mars brown" to "Vandyke brown"), watery in
appearance but fading slowly to sordid tan (more or less hygrophanus), margin
zonate at times, surface conspicuously radially rugulose. Context fragile but
thick and watery brown, odor and taste mild.

Lamellae close, moderately broad, bluntly adnate, concolorous with the pileus,
very thin and fragile, near "bone brown" (very dark vinaceous-brown) when dried.

Stipe 6–10 cm long, (5–)10–15 mm thick, equal, hollow, whitish, white fibrillose
over the lower portion, apex silky-pruinose.

Spores 6.5–8(–9) × 4.5–5.5 μ, smooth, apical pore present but not conspicuous,
shape in face view ovate, in profile obscurely inequilateral to obscurely bean-
shaped, color in KOH dark cocoa-color slowly becoming dark chocolate-color, in
Melzer's dark bay-red, wall about 0.3–0.4 μ thick.

Basidia 4-spored, 20–26×6–9 μ, narrowly clavate, hyaline in KOH. Pleuro-
cystidia abundant, 45–68×10–22 μ, broadly ventricose above a broad base and
apex a finger-like projection or mucro 2–3.5 μ broad, walls hyaline smooth and
thin, with a large hyaline globule in KOH, the globule yellowish in Melzer's.
Cheilocystidia similar to pleurocystidia or smaller and clavate-mucronate (26–
40×7–14 μ), bases often yellowish brown in KOH (the whole gill edge colored
in robust specimens). Caulocystidia similar to pleurocystidia but larger, contain-
ing the same kind of globule.

Gill trama parallel, the hyphae 8–15 μ wide, hyaline to pale vinaceous-brown
when revived in KOH. Pileus with a cuticle of inflated cells but elongated
perpendicularly to the pileus surface in an irregular palisade, cell walls smooth,
thin and hyaline, content not distinctive. Hyphae of the context tawny-brown
in KOH but fading on standing. Clamp connections present. Pileocystidia similar
to the pleurocystidia, scattered.

Type locality. Port Jefferson, New York.

Habit and habitat. On humus or decayed wood, scattered to gregarious.

Distribution. Alabama, Massachusetts, Michigan, New York, North Carolina,
Ohio, Oregon, Pennsylvania, Tennessee, West Virginia.

Observations. Kent McKnight has found a bitter variant of this species. It
is not included in the distributional records as further studies are desirable in
regard to its identity.

Some spiral brown incrustations were found to be present on the hyphae of
the subcuticular region of the pileus in some collections. When fruiting luxuri-
antly the pilei of this species are very often conspicuously rugose-reticulate.

Material examined. Alabama: Burke BE. Massachusetts: Smith 67257.
Michigan: Ammirati 3438; Kanouse 629; Smith 28743, 36490, 75293, 75557,
136, 146, 185. Oregon: Smith 24238; Thiers 750. Pennsylvania: Kauffman

113. Psathyrella oregonensis A. H. Smith, sp. nov.

Pileus 2.5–5 cm latus, obtuse conicus demum plano-umbonatus, glaber, ad
marginem appendiculatus, umbrino-melleus; lamellae angustae, adnatae, pallidae,
demum griseofuscae; stipes 4–6 cm longus, 3–5 mm crassus, pallidus, glaber;
sporae 8–10×4.5–5.5×5.5–6.5 μ; pleurocystidia 48–62×10–16 μ, ad apicem
obtusa vel subcapitata; fibulae adsunt. Typus. Smith 28182 (MICH); legit in
Mt. Hood National Forest, Oregon prope Beaver Creek.
Psathyrella rugulosa A. H. Smith, sp. nov.

Pileus 2–4 cm latus, convexus, demum late convexus; ad marginem dente appendiculatus, subhepaticolor; lamellae latae, ventricosae confertae (“auburn”) laete brunneo-fulvae; stipes 3–5 cm longus, 3–5 mm crassus, cavus, albidus, deorsum tactu brunnescens; sporae 7–9×4–5 μ; pleurocystidia 38–50×9–14 μ, obtusa vel subacuta; fibulae adsunt. Typus. Hesler 17027 (MICH); legit prope Clingman’s Dome, Tennessee (Great Smoky Mountains National Park).

Psathyrella rugulosa is a species of fungus in the genus Psathyrella. It is characterized by its large, convex to broadly convex pileus that is dark reddish brown when moist and fading to pale pinkish buff. The lamellae are medium broad and ventricose, close and “auburn” (bright rusty brown). The stipe is 3–5 cm long, 3–5 mm thick, hollow, equal or equal down to an enlarged base, white and shining but showing brown in the lower portion where it is covered with scattered fibrils, apex pruinose.
Spores 7–9×4–5 μ, smooth, apical pore distinct, apex with a small truncation, shape in face view elliptic to ovate, in profile subelliptic to obscurely inequilateral, color in KOH soon becoming a pale tawny above, nearer clay-color when first revived, in Melzer’s tawny, wall about 0.5 μ thick.

Basidia 4-spored, 7–9 μ wide, hyaline in KOH. Pleurocystidia 38–50×9–14 μ, fusoid-ventricose, the neck 4–6 μ wide and apex obtuse to subacutus, some with granular material over and around the apex, wall thin and hyaline, cell content not distinctive. Cheilocystidia similar to pleurocystidia or smaller, also clavate to vesiculose cells are also present in varying numbers. Pileus cuticle of inflated cells with brownish to ochreous walls in KOH, cell content not distinctive. Clamp connections present.

Type locality. Clingman’s Dome, Great Smoky Mountains National Park, Tennessee.

Habit and habitat. Subcespitose on a spruce log.

Distribution. Known only from the type locality.

Observations. Psathyrella rugulosa is closely related to P. septentrionalis but occurs on conifer wood, and the cystidia are narrower at the apex. There are other features also, such as the color of the spores in KOH, which indicate that the two are different.

115. Psathyrella pseudoparadoxa V. Wells & A. H. Smith, sp. nov.

Pileus 2.5–4(-6) cm latus, convexus demum campanulatus vel late convexus, cinnamomeo-brunneus, sparse fibrillosus, glabreseens, ad marginem appendiculatus, demum rugulosus; lamellae pallidae demum fusco-brunneae, latae (5–9 mm), confluentae, ad marginem interdum lacto-guttatae; stipes 5–9 cm longus, 3–5 mm crassus, pallide alutaceus, deorsum floccosus, glabrescens; sporae 7–9×4–4.5 μ; pleurocystidia 42–70×9–17 μ, fusoid-ventricosa, acuta vel obtusa; fibulæ adsunt. Typus. Wells-Kempton 8/27/64 no. 1 (MICH); legit prope Girdwood, Alaska.

Pileus 2.5–4(-6.0) cm broad, convex to ovate, the margin connivent to the stipe, becoming campanulate to broadly convex with an obtuse umbo, hygrophanous, when moist cinnamon-brown, fading to pale buff, buttons typically covered with white radially appressed fibrils breaking (aggregating) into squamules, margin appendiculate, glabrescent and surface often rather strongly radially rugulose. Context concolorous with the surface, very thin, brittle, odor and taste not distinctive; FeSO₄ negative, KOH-negative, ammonia-negative.

Lamellae pallid to white becoming pale tan to grayish and finally purple-brown, dark vinaceous-fuscose as dried, adnate to adnexed, close, moderately broad (5–7–9 mm), edges pallid, whitish, entire, at times beaded with clear to milky droplets of moisture.

Stipe 5–9 cm long, 3–5 mm thick above, equal or evenly enlarged below, pallid to pale tan, dry, silky, polished, smooth to undulating, apex pruinose, becoming glabrous below, base somewhat floccose-fibrillose. Veil fibrillose to submembra

tous, not leaving a ring on the stipe.

Spore deposit blackish, spores 7–9×4–4.5 μ, smooth, apical pore distinct but apex only obscurely truncate, shape in face view narrowly elliptic to ovate, in profile obscurely inequilateral to subelliptic, color in KOH dark cocoa-color slowly becoming chocolate-brown, in Melzer’s tawny, wall about 0.3 μ thick.

Basidia 4-spored, clavate, 18–25×8–9 μ. Pleurocystidia abundant, 42–70×9–17 μ, mostly broadly fusoid-ventricose with subacute to obtuse apex, but some
with flexuous walls and irregular in shape (basically subcylindric), wall thin to slightly thickened and then refractive and weakly yellow in KOH on standing 5–10 minutes, smooth or with granules over apex and apex tending to remain collapsed in KOH. Cheilocystidia more or less similar to pleurocystidia (usually smaller), and also clavate hyaline cells intermingled with them.

Pileus cuticle a layer of vesiculose cells 2–3 deep, the walls thin, smooth and not distinctively colored in KOH. Hyphae of subcuticular region pale vinaceous-cinnamon in KOH, walls smooth or nearly so. Clamps present.

Type locality. Girdwood, Alaska.

Habit and habitat. Gregarious to subcespitose around brush piles of decaying spruce and hemlock slash, August.

Distribution. Known only from type locality.

Observations. This species is close to *P. avellaneifolia*, but the cystidia are not vinaceous-brown in KOH, it grows on conifer debris and the pleurocystidia have more of a tendency to be granulose over the apical portion (which has a thinner wall than the remainder of the cell and hence tends to remain collapsed). In this respect it resembles *P. paradoxa*.


Pileus 2–4 cm latus, demum late convexus, glaber, umbrino-cinnamomeus, ad marginem appendiculatus; lamellae pallidae, demum fusco-brunneae, latae, confertae; stipes 2–4 cm longus, 2–4 crassus, fragilis, pallidus, deorsum demum sordide bruneus; sporae 7–9×4.5–5 μ; pleurocystidia 40–70×9–14 μ, fusoid-ventricosa vel anguste fusoida, acuta; fibulae adsunt. Typus. Smith 28032 (MICH); legit prope Frog Lake, Mt. Hood National Forest, Oregon.

Pileus 2–4 cm broad, obtuse to convex with the margin bent in slightly, expanding to broadly convex or nearly plane, surface glabrous, moist, hygrophanous, russet to cinnamon-brown when moist fading to dingy tan, but very dark if rehydrated; margin appendiculate at first with pale patches of veil remnants, soon glabrescent. Context thin and fragile, concolorous with the surface, odor none.

Lamellae pallid brownish becoming very dark chocolate-color, close, broad, adnate seceding, edges even but not white.

Stipe 2–4 cm long, 2–4 mm thick, equal, fragile, pallid above, soon brownish over basal area, with scattered fibrils at first but soon naked except for pruinose apex.

Spores 7–9×4.5–5 μ, smooth, apical pore very indistinct and apex lacking any sign of a truncation, shape in face view elliptic to ovate, in profile obscurely inequilateral to subovate, color in KOH cocoa-brown when first revived but soon tawny-olive (paler and more olivaceous and finally darker coffee brown), in Melzer’s reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored. Pleurocystidia abundant, 40–70×9–14 μ, elongated fusoid-ventricose with subacute apex, often with coagulated material thinly coating the apical region, wall thin and hyaline, cell content not distinctive. Cheilocystidia similar to pleurocystidia but smaller.

Cuticle of pileus of vesiculose cells 2–3 deep, walls brownish to hyaline in KOH, thin and smooth. Hyphae of pileus context vinaceous-cinnamon but soon hyaline or nearly so in KOH, not roughened. Clamps present.

Type locality. Frog Lake, Mt. Hood National Forest, Oregon.

Habit and habitat. Subcespitose on conifer logs, October.

Observations. The spores distinguish this species from *P. tsugae* and *P. subalpina*—there is no tendency whatever toward a basal truncation. The very elongated subacute pleurocystidia, lack of any apical truncation of the spores, and occurrence on conifer wood are diagnostic. Frog Lake is near Wapinita Summit in the Cascades south of Mt. Hood, Oregon.


117. *Psathyrella indecorosa* A. H. Smith, sp. nov.

Pileus 2–5 cm latus, demum late convexus, ad centrum glaber, ad marginem floccosus et appendiculatus, glabrescent, cinnamomeo-brunneus; lamellae latae confertae, pallidae demum fumoso-cinnamomeae; stipes 3–7 cm longus, 2–5 mm crassus, albidus vel pallidus, fibrilloso-floccosus, glabrescens; sporae 6.5–7.5 (–8) × 3.8–4.3 μ; pleurocystidia 38–60 × 9–14 (–16) μ, fusoid-ventricose, acuta; fibulae adsunt. Typus. Smith 14272 (MICH); legit prope Lake Crescent, Washington.

Ilust. Text Figs. 275–277.

Pileus 2–5 cm broad, obtuse when young, expanding to convex, slightly umbonate or nearly plane, surface glabrous over the disc, toward the margin decorated with pallid patches of veil material and margin appendiculate with pallid submembranous patches of the veil tissue, glabrescent, rusty brown (near "cinnamon-brown") moist, fading to dingy tan, odor and taste not distinctive.

Lamellae moderately broad, close, adnate-seceding, pallid to dingy brownish becoming dull rusty cinnamon with a smoky tinge but dark to medium cinnamon or cinnamon-brown as dried, edges fimbriate.

Stipe 3–7 cm long, 2–5 mm thick, equal or enlarged slightly at the base, fragile, hollow, white, not appreciably discoloring (?), at first fibrillose from remains of a medium copious veil, apex pruinose.

Spores 6.5–7.5 (–8) × 3.8–4.3 μ, smooth, apical pore present but apex only obscurely truncate in some spores, shape in face view obscurely wedge-shaped to ovate or subelliptic, in profile mostly obscurely inequilateral (with ventral line relatively straight and dorsal line humped near the apiculate end), color in KOH dingy pale rusty cinnamon but slowly becoming chocolate-gray, in Melzer's pale tawny with a reddish tone, wall about 0.2 μ thick.

Basidia 4-spored, clavate, 16–20 × 8–9 μ, hyaline in KOH. Pleurocystidia abundant, 38–60 × 9–14 (–16) μ, fusoid-ventricose with apex acute, smooth, wall thin to 0.4 μ thick (in KOH) and becoming slightly refractive, neck often filled solid with a mucilaginous content, wall hyaline, no debris adhering (a few with a pale smoky content in KOH). Cheilocystidia mostly clavate to vesiculose and readily collapsing, 12–18 × 6–10 μ, also present are numerous lanceolate-flexuous to fusoid-ventricose cells all with acute apex and in most a slightly thickened refractive wall.

Cuticle of pileus 1–3 cells deep, of inflated hyaline, smooth, thin-walled cells lacking a distinctive content. Hyphae of subcuticular region reddish cinnamon to dull tawny in KOH, the walls smooth and thin. Clamps present.

Type locality. Lake Crescent, Washington.

Habit and habitat. Subcespitose on alder logs, June.


Observations. It is almost shameful to describe another species in this group, but this one appears amply distinct by its smooth pointed pleurocystidia, small spores, the shape of the spore in face view (broadest near the base), and more
rusty brown spores than usual as revived in KOH. *Psathyrella avellaneifolia* has more distinctly thickened cystidial walls and the cystidia become much more colored in KOH. When they can be compared on the basis of fresh material no doubt other differences will come to light.


Illustr. 1. c., figs. 520–a, b, c, d, e.

Pileus 2.5–4 cm broad, convex to ovoid, becoming obtusely conic to convex or finally plane, surface at first covered with white fibrils which soon are grouped into fascicles and disappear (over the disc first), margin conspicuously fibrillose-appendiculate from remains of thick fibrillose patches of veil material, surface “tawny-olive” beneath the veil, eventually tinged drab from ripening of spores, the margin translucent striate in age before fading, hygrophilous and fading to near cinnamon-buff or paler. Context watery, very fragile, odor and taste not distinctive.

Lamellae pallid becoming grayish brown or darker, close, broad, broadly adnate, readily seceding, edges even.

Stipe 4–5 cm long, 3–5 mm at apex, enlarged slightly downward, hollow and fragile, white at first because of the dense fibrillose covering, usually with a superior fibrillose zone, watery-pallid to grayish beneath the fibrils.

Spores 7.5–9×4–4.5 μ, smooth, apex truncate from an apical pore which in KOH often becomes “bubble-like,” shape in face view elliptic to ovate, in profile mostly obscurely inequilateral, color in KOH chocolate-brown, in Melzer’s tawny-red, wall about 0.3 μ thick.

Basidia 4-spored, 20–28×8–10 μ, clavate, hyaline in KOH. Pleurocystidia abundant 46–60(–70)×9–16 μ, fusoid to fusoid-ventricose with acute apex and very slightly thickened refractive walls (revived in KOH), hyaline to faintly vinaceous revived in KOH, the walls often flexuous, with mucilaginous material adhering near the tip in many but dissolving in KOH; no additional distinctive features seen in mounts in Melzer’s. Cheilocystidia of two types: clavate to vesiculose and up to 12–15 μ broad, these thin-walled and hyaline or yellowish only at the base; or fusoid-ventricose with acute apex, 28–44×9–15 μ, thin-walled, smooth, hyaline in KOH. Caulocystidia scattered and clavate, of various sizes, thin-walled.

Gill trama pale cinnamon but soon fading to hyaline in KOH mounts. Pileus with a cuticle in the form of a layer of vesiculose cells several deep, the cells very large (50 μ wide or more), thin-walled, hyaline, smooth, and content not distinctive. Hyphae of the trama in the subcuticular region bright rusty brown in KOH but fading in a few minutes, walls thin, smooth and hyaline to weakly ochraceous (after standing in KOH). Clamp connections present. No distinctive reactions noted for any tissue in mounts made in Melzer’s.

Type locality. Lower Tahoma Creek, Mt. Rainier National Park, Washington.

Habit and habitat. Solitary or in small groups of 2–3 on canes of *Rubus* and on rotten alder, July.


Observations. The habitat on canes of *Rubus* is not an unusual feature when one considers the amount of this debris which is available in the wet areas of the Pacific Northwest.

119. Psathyrella fallax A. H. Smith, sp. nov.

Pileus 1–3 cm latus, demum campanulatus vel late convexus, ad marginem sparse appendiculatus, glaber, cinnamomeus, nitens; lamellae pallide cinnamomeae demum fusco-brunneae, confertae, latae, secedentes; stipes 3–8 cm longus, 1.5–3.5 mm crassus; fragilis, pallidus, deorsum demum sordide alutaceus; sporae 7–9 × 4–5 μ. Pleurocystidia 36–50 × 9–15 μ, fusideo-ventricosa, obtusa; fibulae adsunt. Typus. Smith 43322 (MICH); legit prope Mackinaw City, Michigan.

Pileus 1–3 cm broad, obtusely conic when young, expanding to obtusely campanulate or convex, margin at first slightly appendiculate from the veil, glabrous otherwise but small buttons covered by a thin fibrillose veil, color a rich cinnamon-brown and shiny (with a clean appearance), fading to dingy buffy tan but drying a dull cinnamon-tan. Context dark brown, thin, fragile and lacking a distinctive odor.

Lamellae dingy cinnamon when young, becoming dark cinnamon before being clouded chocolate-brown as the spores mature, drying dark vinaceous-brown, close, moderately broad, adnate-seceding, edges even.

Stipe 3–8 cm long, 1.5–3.5 mm thick, equal, slender, fragile, whitish at first but discoloring to tan below, coated with white veil fibrils at first but glabrescent, apex pruinose.

Spores 7–9 × 4–5 μ, smooth, apex truncate from a small pore, shape in face view almost perfectly narrowly ellipsoid varying to oblong, in profile obscurely clouded chocolate-brown as the spores mature, drying dark vinaceous-brown, finally chocolate-brown, in Melzer’s tawny, wall about 0.3 μ thick.

Basidia 4-spored. Pleurocystidia 36–50 × 9–15 μ, fusoid-ventricose with an obtuse apex, wall thin, smooth and hyaline (or rarely with dried coagulated material adhering to it near apex), cell content not distinctive. Cheilocystidia similar to pleurocystidia but neck typically shorter, apex obtuse to rounded; clavate cells also present. Hyphae of trama rusty brown in KOH, with incrusting pigment. Cuticle of pileus a layer 2–3 cells deep of vesiculose hyaline to ochraceous cells with smooth, thin walls. Clamp connections present.

Type locality. Wilderness State Park, Emmet County, Michigan.

Habit and habitat. Gregarious on chip-dirt, September.


Observations. This species resembles P. obtusata but has an appendiculate pileus margin at first, strikingly elliptic spores in face view which are coffee-colored in KOH, and the pleurocystidia are obtuse enough to approach being utriform in shape.

Material examined. Michigan: Smith 43322 (Type), 62163.

120. Psathyrella tahquamenonensis A. H. Smith, sp. nov.

Pileus 2–4 cm latus, demum campanulatus vel plano-umbonatus, glaber, ad marginem appendiculatus (denticulatus), griseo-argillaceus deinde subincarnatus; lamellae confertae, latae, brunneae demum purpureo-brunneae; stipes 3–5 cm longus, 3–5 mm crassus, fragilis, albidus, deorsum fibrillosus, glabrescens; sporae 7–9 × 4–4.5 μ; pleurocystidia 40–56 × 10–16 μ, fusideo ventricosa, subacuta; fibulae adsunt. Typus. Smith 61022 (MICH); legit Tahquamenon Falls State Park, Michigan.
Pileus 2–4 cm broad, obtuse with a curved in margin when young, expanding to campanulate or obtusely umbonate with finally a more or less spreading margin, surface glabrous except for the edge which at first is denticulate-appendiculate from white veil fragments, color a grayish clay color to dull tawny-brown, hygrophanous and fading to dingy tan but soon generally a pinkish-pallid, when dried near “snuff brown.” Context thin, concolorous, fragile, odor not distinctive.

Lamellae close, moderately broad, nearly equal, adnate, dingy brown becoming very dark purple-brown from the spores and blackish brown as dried (about like those of *P. velutina*), edges whitish.

Stipe 3–5 cm long, 3–5 mm thick, equal to a slightly thickened base, fragile, hollow, white over all, dingy pale brownish as dried, fibrillose over lower half at first, glabrescent.

Spores 7–9 × 4–4.5 μ, smooth, apical pore small but apex weakly truncate, in face view elliptic to suboblong, in profile subelliptic to obscurely inequilateral, color in KOH deep garnet brown becoming dark chocolate-color, in Melzer's merely tawny, wall about 0.3 μ thick.

Basidia 4-spored, 8–10 μ wide, subellipsoid to clavate, hyaline. Pleurocystidia 40–56 × 9–15 μ, fusoid-ventricose with subacute to obtuse apex, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia similar to the pleurocystidia but smaller, and many clavate-inflated cells 9–13 μ wide present, walls hyaline to yellowish.

Cuticle of pileus 2–3 cells deep, walls thin, smooth and hyaline to yellowish in KOH, cell content not distinctive. Hyphae of the context yellowish in the subcuticular zone (in KOH), walls smooth. Clamp connections present.

**Type locality.** Tahquamenon Falls State Park, Luce County, Michigan.

**Habit and habitat.** Subcespitose on hardwood logs.

**Distribution.** Known only from the type locality.

**Observations.** The dark gills are a distinctive feature among the wood-inhabiting species of this subsection. It seems to be closest to *P. septentrionalis* but is distinguished by its paler pileus, the garnet brown colored spores as first revived in KOH, and more subacute pleurocystidia.

121. *Psathyrella lanatipes* A. H. Smith, sp. nov.

Pileus 2–4 cm latus, late convexus vel subplanus, floccoso-fibrillosus, glabrescens, ad marginem appendiculatus, spadiceus vel subcinnamomeo-brunneus; lamellae adnatae, latae subdistantes; stipes 6–8 cm longus, (2–)3–5 mm crassus, fragilis; albidus, floccoso-fibrillosus, glabrescens; sporae 8–10 × 4–5 μ; pleurocystidia (46–)52–70 × 9–15 μ, fusoid-ventricosa, acuta vel subacuta; fibulae adsunt. Typus. Smith 24457 (MICH); legit prope Rhododendron, Oregon.

Pileus 2–4 cm broad, convex when young the margin curved in slightly, expanding to nearly plane, surface at first covered by fibrillose flecks from the outer veil, the margin appendiculate with patches of the inner veil, glabrescent, when moist “warm sepia” to “bister” (dark dingy brown to reddish brown), hygrophanous and fading to “ochraceous-buff” (yellowish), at maturity closely striatulate before fading, opaque when faded. Context very thin and fragile, odor none, taste not recorded.

Lamellae adnate but soon seceding, moderately broad, subdistant, tapered evenly toward the pileus margin, edges even and whitish to concolorous.

Stipe 6–8 cm long, (2–)3–5 mm thick, equal, hollow, fragile, white, covered to near apex with patches of white fibrils, soon glabrescent.
Spores 8–10 × 4–5 μ, smooth, with an apical hyaline spot as a pore, the apex not truncate, shape in face view oblong to elliptic, in profile subelliptic, color in KOH dark cocoa-color slowly becoming almost dark chocolate-color, in Melzer's reddish tawny, wall about 0.4 μ thick.

Basidia (18–)20–32 × 6–9 μ, hyaline in KOH, elongate-clavate. Pleurocystidia (46–)52–70 × 9–15 μ, narrowly to broadly fusoid-ventricose tapered to an acute to subacute (rarely obtuse) apex, with debris or mucilaginous material adhering over apical region in some, wall thin and hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia 28–42 × 7–12 μ, fusoid-ventricose with subacute to obtuse apex, thin-walled, hyaline. Caulocystidia scattered, versiform, clavate, mitten-shaped, etc., some with secondary septa, walls thin and hyaline, extremely variable in size.

Gill trama regular, the cells considerably enlarged, pale to dark cocoa-color in KOH, pigment mostly in the wall but some in cell sap, subhymenium cellular. Pileus with a cuticle of irregularly shaped (vesiculose) cells 2–3 deep, some cells clavate (but no true palisade formed) the walls hyaline or nearly so, some cinnamon-colored pigment in the lower cells or adhering to the inner face of the wall. Clamp connections present. No distinctive reaction noted on any tissue mounted in Melzer's.

Type locality. Near Rhododendron, Clackamas County, Oregon.

Habit and habitat. Gregarious on debris under mixed Thuja and Alnus, September.


Observations. This species appears to be very close to P. fabia of Europe but differs in having acute to subacute pleurocystidia. It also bears some resemblance to Hypholoma simile Parker but that species apparently has larger spores and lacks copious veil remnants.

Material examined. Michigan: Kauffman 6-11-10; Smith 7-4-69. Oregon: Smith 19652, 19696, 20085, 24457 (Type). Washington: Imshaug 840; Smith 2558, 29323, 29824, 29922, 29924, 30407, 57605.

122. Psathyrella iterata A. H. Smith, sp. nov.

Pileus 3–8 cm latus, conicus demum campanulatus, demum expanso-umbonatus, sparse fibrillosus, glabrescens, ad marginem denticulo-appendiculatus; umbrino-cinnamomeus; lamellae latae (3–7 mm), confertae, secedentes, pallidae demum griseo-fuscae; stipes 5–8 cm longus, 3–8 mm crassus, fibrillose floccosus vel subsquamulosus, glabrescens; albidus; sporae 6–8 × 3.5–4.5 μ; pleurocystidia 42–58 (–70) × 9–14 (–17) μ, fusoide ventricosa, obtusa vel acuta; fibulae adsunt. Typus. Smith 14143 (MICH); legit prope Olympic National Park, Washington.

var. iterata

Illustr. Pl. 51; Text Figs. 278–280, 284.

Pileus 3–8 cm broad, obtusely conic and with a slightly incurved margin when young, becoming conic-campanulate or plane and with an obtuse umbo, occasionally broadly convex, surface sometimes covered when young with a thin coating of superficial white fibrils, usually glabrous except for the white fibrillose patches adhering in a denticulate pattern along the margin, smooth and "Prout's brown," "russet" or "cinnamon-brown" when moist, faintly striatulate, hygrophanous, fading to "ochraceous-tawny" on the disc and "tilleul buff" over the marginal area, sometimes "pinkish buff" over all when faded or merely pale avellaneous. Context moderately thin and fragile, brownish, odor and taste mild.
Lamellae adnate but soon seceding, close, 24–35 reach the stipe, narrow but becoming broad (3–7 mm), "tilleul-buff" (pallid) when young, "wood brown" to "hair brown" at maturity, in age near "benzo brown" (lacking a red component), edges even and whitish.

Stipe 5–8 cm long, 3–8 mm thick, equal or narrowed slightly toward the apex, hollow, white, fragile, surface white-fibrillose or fibrillose-scaly, appressed fibrillose toward the more or less striate apex.

Spores in deposit "hair brown" (grayish brown); 6–8 × 3.5–4.5 μ, smooth, apex truncate from an inconspicuous apical pore, shape in face view oblong to elliptic or narrowly ovate, in profile somewhat inequilateral to obscurely bean-shaped, color in KOH at first dark cocoa-color, soon dark chocolate-brown, in Melzer's tawny reddish, wall about 0.2 μ thick.

Basidia 4-spored, 15–20 × 5–8 μ, hyaline, clavate. Pleurocystidia very abundant, 42–58 (−70) × 9–14 (−17) μ, fusoid-ventricose, the apex obtuse to subacute and near the apex often with adhering debris as revived in KOH, wall hyaline and thin or rarely very slightly thickened and refractive in KOH, cell content not distinctive in KOH or in Melzer's. Cheilocystidia numerous, 28–40 × 9–15 μ, saccate, somewhat clavate, fusoid-ventricose with subacute apex, or the apex at times subcapitate and the wall thickened very slightly and refractive in KOH, cell content not distinctive. Caulocystidia mostly some variation of clavate to broadly fusoid-ventricose, up to 25 μ wide and length variable, some vesiculose, cell content not distinctive.

Pileus with a cuticle of vesiculose cells 1–2 deep and most vertically arranged (clavate to inflated-pedicellate), walls smooth and hyaline or colored in the pedicel, content not distinctive in KOH or in Melzer's. Hyphae of the context vinaceous-brown in KOH but fading, the hyphae finely inerupted to smooth. Clamp connections present. No distinctive reactions noted for any tissue mounted in Melzer's.

Type locality. Jackson Guard Station, Hoh River, Olympic National Park, Washington.

Habit and habitat. On wood and lignicolous debris of cottonwood, May.


Observations. This is probably one of the fungi to pass under the name of "Hypholoma appendiculatum" in this country. P. xanthocystis Orton is close to this species.


122a. Psathyrella iterata var. ochraceispora A. H. Smith, var. nov.

A typo differt: sporae 7–9 (−10) × 4–4.5 (8–10 × 2.5–3) μ, in "KOH" pallide fulvae; lamellae latae; velum copiosum. Typus. Smith 33–1130 (MICH); legit prope Fowlerville, Michigan.

Illust. Text Figs. 281–283.

Pileus 2–5.5 cm broad, obtuse to convex, expanding to broadly convex, surface moist and glabrous except for veil remnants on the margin, margin conspicuously appendiculate, hygrophanous, color "cinnamon-brown" to "Mars brown" fading to avellaneous or ochraceous-buff, even to somewhat radially rugulose and margin
only slightly striatulate when moist; veil remnants white. Context moderately
thick and fragile, brownish fading to buff, odor and taste not distinctive.

Lamellae broad (5–8 mm), adnate, seceding, close, grayish tawny in buttons,
becoming somewhat reddish and finally nearly black but dull rusty red when
dried, edges white-fimbriate.

Stipe 4–6 cm long, 4–7 mm thick at apex, hollow, equal or slightly enlarged
downward, white and unchanging, densely white-fibrillose to fibrillose-squamulose
up to the zone left by the broken veil, striate and pruinose above, in age slightly
enlarged.

Spores 7–9(–10) × 4–4.5 μm (some 8–10 × 2.5–3 μm), smooth, with an apical pore
which is indistinct (the apex not truncate), shape in face view ovate to narrowly
ovate, more rarely suboblong, in profile somewhat to obscurely inequilateral, color
in KOH dingy ochraceous-tawny to somewhat cocoa-color, in Melzer’s tawny to
reddish tawny, wall about 0.3 μm thick.

Basidia 2- and 4-spored, 17–24 × 8–10 μm, clavate, hyaline in KOH. Pleuro­
cystidia abundant, 46–60 × 9–16 μm, thin-walled, hyaline in KOH, fusoid-ventricose
with obtuse (mostly) to subacute (rarely) apex, when first revived in KOH with
bits of debris or mucilaginous material on the neck or near or over the apex, wall
thin and colorless, cell content not distinctive in either KOH or Melzer’s. Cheilo­
cystidia similar to pleurocystidia but varying to subcapitate, clavate and
vesiculose, 30–40 × 12–18 μm. Caulocystidia not found.

Gill trama sordid brown to nearly hyaline in KOH, with scarcely a tinge of
vinaceous, hyphal cells greatly inflated at maturity. Pileus with a cuticle of a
layer of vesiculose hyaline cells about 2 deep, walls thin and smooth, content not
distinctive. Hyphae of the trama dingy brownish fading to nearly hyaline, the
walls smooth in KOH. Clamp connections present. No distinctive reactions
observed in mounts made in Melzer’s.

Type locality. Fowlerville, Michigan.

Habit and habitat. On rotting elm and ash logs, October.

Distribution. Known only from the type locality.

Observations. The spores, after two hours in KOH, are clouded gray but are
still pale in color. The broad gills, copious veil remnants on the stipe, pale (almost
ochraceous-tawny) spores when first mounted in KOH, obtuse cystidia and the
relatively pale color of the tramal hyphae in KOH (when one considers the color
of the moist pileus) are distinctive.

Psathyrella iterata var. ochraceispora may represent a distinct species but
more collections are needed to verify this. The color of the spores as revived in
KOH distinguishes it from var. iterata and from P. paradoxa. P. paradoxa var.
velicopia is distinct from both var. paradoxa and P. iterata var. iterata in narrow
spores (3–3.5 μm wide as compared to 3.5–4.5 μm wide) and var. velicopia also has
a more membranous inner veil which at times forms a baggy annulus on the stipe.
Also, it was not observed to have cystidia colored even slightly by KOH.
Psathyrella paradoxa var. paradoxa and P. iterata var. iterata are very close but
P. paradoxa var. paradoxa has cystidia some of which are grayish vinaceous in
KOH and the stipe becomes brown at the base. In P. iterata the cystidia remain
hyaline and the stipe white.

The above four variants are discussed as a group here because I consider it
likely that a critical biological study of the group will be needed to clarify species
concepts. At present I prefer to treat them as presented here in order not to
obscure any diversity in characters found to be taxonomically valuable in other
groups in the genus: namely the color of the spores in KOH, color of cystidia in KOH, width of spores, and degree of development of the veil.

123. *Psathyrella laricina* A. H. Smith, sp. nov.

Pileus 7–15 (–20) mm latus, campanulatus vel late convexus, sparse fibrillosus, glabrescens, cinnamomeo-brunneae; lamellae latae adnatae, subdistantes, pallide fulvae demum fusco-griseae; stipes 1.5–4 cm longus, 1–1.5 mm crassus, fuscus, albidus, sparse fibrillosus, glabrescens; sporae 7–8×4.6 μ; pleurocystidia 32–40×8–12 μ, fusoid-ventricosa; fibulae adsunt. Typus. Smith 64604 (MICH); legit prope Dexter, Michigan.

Illust. Text Fig. 285.

Pileus 7–15 (–20) mm broad, obtuse to campanulate expanding to broadly convex, surface at first covered by a thin white fibrillose outer veil all traces of which soon disappear, moist and striatulate, hygrophanous, dull cinnamon-brown becoming more chocolate-brown as spores mature and fading to grayish brown. (but as dried dull cinnamon). Context very thin and fragile, odor not distinctive. Lamellae broad, adnate, seceding, subdistant, with a rusty brown tone before becoming chocolate-gray as the spores mature, edges even.

Stipe 1.5–4 cm long, 1–1.5 mm thick, flexuous, equal, very delicate, whitish but drying brownish (paler than the pileus), sparsely fibrillose at first over lower portion from veil fibrils, soon naked, apical region only slightly pruinose.

Spores 7–8×4.6 μ, smooth, apical pore distinct and apex truncate, shape in face view elliptic to ovate or some obscurely angular and wedge-shaped, in profile obscurely inequilateral to subelliptic, color in KOH chocolate-brown becoming dark chocolate-color, in Melzer’s reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 18–20×9–12 μ, subelliptic to broadly clavate (in optical section). Brachybasidioles present in mature hymenium. Pleurocystidia scattered, 32–40×8–12 μ, fusoid-ventricose (abruptly narrowed to a neck 3–4 μ thick ending in an acute apex), hyaline, smooth, thin-walled, cell content not distinctive. Cheilocystidia similar to pleurocystidia or neck less developed.

Pileus cuticle a layer of vesiculose cells 2–3 deep with thin hyaline to ochraceous walls (as revived in KOH), cell content not distinctive. Hyphae of the subcuticular region vinaceous-cocoa-color in KOH, the pigment in the walls or in patches or bands of incrusting material or wall thickenings near the septa (crush out the hyphae to observe the incrustations). Clamp connections present.

Type locality. Dexter, Michigan.

Habit and habitat. Under larch in a plantation, gregarious, October.

Distribution. Known only from the type locality.

Observations. The diagnostic features of this species are the small pointed pleurocystidia, dark colored spores in KOH and their tendency to be truncated broadly at the base as seen in face view, the thin veil and the slender pallid stipe. The degree to which the veil is appendiculate on the pileus margin here is confusing—most specimens will be found to lack the character when collected unless immature caps are present. Hence the species is also keyed out in *Psathyrella* subsection *Obtusatae*.

124. *Psathyrella houghtonensis* A. H. Smith, sp. nov.

Pileus 1–3 cm latus, demum convexus, ad marginem denticulato-appendiculatus, glabrescens, pallide spadiceus; lamellae confertae, latae, dilute cinnamomeae;
demum purpureo-fuscae; stipes 3–5 cm longus, 2–3 mm crassus, sparse fibrillosus pallide bruneus; sporae 7–9.5×4–5 μ; pleurocystidia 34–48×10–16 μ, fusoid-ventricosa, obtusa; fibulae adsunt. Typus. Smith 72497 (MICH); legit prope Roscommon, Michigan.

Pileus 1–3 cm broad, obtuse expanding to convex or broadly convex, margin appressed at first and with small fascicles of fibrils representing the remains of a thin veil often at first denticulate along the margin, soon glabrous over all, when moist dark honey brown (“buckthorn brown”) and fading to pale tan or more ochraceous but darkening to dingy grayish cinnamon in drying. Context very thin and delicate.

Lamellae close, adnate, moderately broad, dingy cinnamon becoming purple-brown (near “benzo brown”), dark vinaceous-brown as dried (edges fuscous as dried).

Stipe 3–5 cm long, 2–3 mm thick, equal, slender, delicate, lower portion sparsely coated with whitish fibrils, brown beneath, paler and weakly pruinose above, dull cinnamon over all as dried.

Spores 7–9.5×4–5 μ, smooth, truncate because of a small apical pore, shape in face view elliptic to oval, in profile obscurely inequilateral to subelliptic, color in KOH dark cinnamon to cocoa-brown soon becoming dark chocolate, in Melzer’s dark reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 17–22×8–9 μ, hyaline or hymenium flushed cinnamon in KOH. Pleurocystidia 34–48×10–16 μ, fusoid-ventricose with obtuse apex, apex often with granular incrustations, wall thin and hyaline, cell content not distinctive. Cheilocystidia more or less resembling pleurocystidia.

Pileus cuticle a layer of vesiculose hyaline (or nearly so) cells 2–3 deep. Hyphae of subcuticular zone vinaceous-cinnamon in KOH but incrustations not conspicuous. Clamp connections present.

Type locality. Houghton Lake, Michigan.

Habit and habitat. Gregarious on sandy soil, September.

Distribution. Known only from the type locality.

Observations. This species features a habitat on rather barren sandy soil, a thin veil, medium-sized spores, short pleurocystidia, and a darkening stipe. As for the previous species, it is also keyed out in subsect. Obtusatae of subg. Psathyrella. The darkening gill edges may be more significant as a taxonomic feature than I now suspect.

125. Psathyrella fulva A. H. Smith, sp. nov.

Pileus 2–3 cm latus, late conicus, glaber sed ad marginem denticulato-appendiculatus, laete cinnamomeus; lamellae brunneolae, demum violaceo-griseae, laetae, subdistantes; stipes 4–6 cm longus, 2.5–3 mm crassus, fragilis, deorsum melleus, sursum pallidius, sparse fibrillosus; sporae 8–9(–10)×4.5–5 μ; pleurocystidia 42–65×9–15 μ; fusoid-ventricosa; fibulae adsunt. Typus. Smith 73799 (MICH); legit prope Priest Lake, Idaho.

Illust. Text Figs. 286–289.

Pileus 2–3 cm broad, obtusely conic becoming broadly conic, surface glabrous except for white dentate patches of veil material along the edge at first, color a rich rusty brown (bright cinnamon to dull tawny), striate nearly to the disc, fading to pale tan. Context exceedingly fragile, odor and taste not distinctive, with application of FeSO₄ no color change.

Lamellae dull brown when young, becoming wood brown and finally shaded
violaceous-gray, broad, nearly subdistant, adnate but soon seceding, edges even.

Stipe 4-6 cm long, 2.5-3 mm thick, equal, fragile, dingy honey-color below, merely pallid above, thinly fibrillose over lower half, white pruinose above.

Spores 8–9(−10) × 4.5–5 μ, smooth, apical pore distinct, shape in face view elliptic to slightly ovate, in profile subelliptic to obscurely inequilateral, color in KOH bister becoming date brown, in Melzer's reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, very short, subelliptic to clavate, 15–20×8–11 μ, hyaline. Brachybasidioles present in mature pilei, subglobose or with a slight pedicel. Pleurocystidia 42–65×9–15 μ, fusoid-ventricose, thin-walled, hyaline, apex in many as revived in KOH with granular material over or around it. Cheilocystidia 32–40×10–18 μ, broadly fusoid to clavate, hyaline in KOH, thin-walled, smooth or with adhering debris. Caulocystidia clavate to fusoid-ventricose, of various sizes, thin-walled, smooth, content not distinctive.

Pileus with a cuticle of vesiculose cells 1–2 deep, walls smooth, hyaline to pale cinnamon, thin (as revived in KOH), content not distinctive. Hyphae of context tawny to pale tawny in KOH and with some local wall thickenings but for the most part smooth. No distinctive reaction on any tissue when revived in Melzer's but some highly refractive hyphae present. Clamp connections present.

Type locality. Priest River, Idaho.

Habit and habitat. Gregarious on debris, October.


Observations. Psathyrella fulva has much the appearance of P. fulvescens but with a heavier veil and grayer lamellae at maturity. Also, brachybasidioles are present at maturity.


Hypholoma simile Parker, Mycologia 25: 195. 1933.

Illust. Parker, 1. c. pl. 26, fig. 6.

Smith, 1. c. pl. 28, figs. 6–9. Text Figs. 290–292.

Pileus 2–3.5 cm broad, ovoid in button stages, becoming obtusely conic to campanulate, surface at first covered over all with scattered patches of buff fibrils, the margin appendiculate with veil remnants, soon glabrescent, evenly "russet" or darker when young, becoming paler and near "cinnamon-brown" before fading, hygrophanous, fading to dark tan on the disc and sordid grayish buff-brown toward the margin, sometimes nearly "cinnamon-buff" over all, atomate. Context concolorous with the surface, very thin and fragile, odor and taste mild.

Lamellae bluntly adnate, broadest (3–4 mm) at the attachment to the stipe and tapered evenly toward the margin of the pileus, readily seceding, close, pallid cinnamon-brown when young, soon dark fuscous-brown, edges whitish.

Stipe 4–5 cm long, 2–3 mm thick, equal, strict, fragile, hollow, white, base with a rather copious white mycelium, lower part sparsely white fibrillose, toward the apex densely floccose-pruinose.

Spores 8–10×5–6 μ [8.5–10.2 (−13) μ, Parker 1933], smooth, with an apical hyaline germ pore, shape in face view approximately elliptic, in profile obscurely bean-shaped to subelliptic, color in KOH soon chocolate-brown, in Melzer's bay reddish, wall about 0.3 μ thick.
Basidia 20–26×8–9 μ, clavate, 4-spored, hyaline in KOH. Pleurocystidia scattered, 30–48×10–15 μ, fusoid-ventricose, apex obtuse to subacute (very acute according to Parker), thin-walled, smooth, hyaline in KOH. Cheilocystidia similar to pleurocystidia varying to having a very narrowly acuminate apex, some saccate cells also present, these hyaline or at the base ochraceous.

Gill trama regular, dark rusty brown in KOH. Pileus with a cuticle formed of a palisade of inflated clavate to subsaccate nearly hyaline cells; the context of interwoven dark rusty brown hyphae in KOH.

Type locality. St. Charles, Missouri.

Habit and habitat. Gregarious on the ground along a river bank.

Distribution. Idaho, Michigan, Missouri.

Observations. As Smith (1941) pointed out, the microscopic features readily distinguish the species from *P. hymenocephala*.


Illust. 1. c. figs. 20–i, 21–a, b. Text Figs. 293–295.

Pileus 1–2.5 cm broad, obtusely conic, expanding to plane or slightly umbonate, surface moist and hygrophanous beneath a coating of white outer veil fibrils so thin it does not obscure the ground color, ground color pale cinnamon-brown to clay color moist, fading to cinnamon buff on the disc and pinkish buff elsewhere, glabrescent or remaining slightly silky, margin appendiculate at first. Context very thin and fragile, watery brownish fading to nearly pallid, odor none.

Lamellae close to nearly subdistant, bluntly adnate, moderately broad, pallid young, near hair brown in age.

Stipe 3–4.5 cm long, 3–3.5 mm at apex, slightly and evenly enlarged downward, hollow, cortex pallid and fibrous, not distinctly fragile for this genus, white but dull, more or less evenly appressed fibrillose from remains of the veil (no zones or scales present).

Spores 7.8–9.5×5–6 μ, smooth, apical pore small and apex rounded, shape in face view ovate to elliptic, in profile obscurely inequilateral to subelliptic, color in KOH bistre slowly darkening to near "mummy brown" (very dark brown with no reflection of violet), in Melzer's reddish tawny to pale bay, wall about 0.3–0.4 μ thick.

Basidia 26–30×7–10 μ, spored, narrowly clavate, hyaline in KOH. Pleurocystidia 50–70×10–15 μ, abundant, ventricose-rostrate, the neck 3–4 μ wide and flexuous, apex subacute to obtuse, wall smooth, thin and hyaline, cell content in H₂O when fresh showing a large globule, in KOH fresh or revived perfectly homogeneous, in Melzer's with a central amorphous mass not completely reviving and yellowish hyaline in color (reminding one of the content of chrysocystidia as revived in KOH). Cheilocystidia generally similar to the pleurocystidia as revived but smaller and more clavate-mucronate. Caulocystidia versiform from a basic clavate type, thin-walled, smooth, hyaline, 30–56×9–18 μ.

Gill trama hyaline in KOH, regular, cells smooth, with thin walls. Pileus cuticle of clavate to vesiculose cells 2–3 cells deep, the walls smooth, thin and hyaline, the content not distinctive. Tramal hyphae in region of subcutis dingy tawny and with some incrusting material over the walls as revived in KOH.

Clamp connections present. No distinctive reactions on any tissue as revived in Melzer's.
Habit and habitat. On debris among willows and cottonwood, single to
gregarious.
Distribution. Known only from type locality.
Observations. In addition to the rather fibrous stipe (for a Psathyrella) the
spores are wider than usual for their length. The inclusion in the pleurocystidia
recalls that of the group of species around P. delineata. It does not show in KOH
in revived material so I would not class the cystidia as "chrysocystidia."
Material examined. Washington: Smith 29757 (Type).

128. Psathyrella subcinerascens A. H. Smith, sp. nov.

Pileus 1–3 cm latus, demum convexus, ad marginem appendiculatus, sparse
fibrillosus, glabrescent; lamellae confertae, latae, brunneoalum demum violaceo-
griseae; stipes 3–5 cm longus, 3–6 mm crassus, deorsum demum griseus, albo-
fibrillosus, glabrescent; spora 7–9×4–5×5–6 μ; pleurocystidia 40–56×10–18 μ,
fusoide ventricosa, obtusa: fibulae adsunt. Typus. Smith 34502 (MICH); legit
prope Pole Mountain, Laramie, Wyoming.

Illust. Text Figs. 296–299.

Pileus 1–3 cm broad, obtuse to convex, the margin appendiculate at first with
the submembranous remains of the partial veil, universal veil very thin to absent,
surface moist and hygrophanous, cinnamon-brown fading to cinnamon-buff.
Context very thin and fragile.

Lamellae broadly adnate, close, pallid brownish becoming dark grayish brown
(near "benzo brown").

Stipe 3–5 cm long, 3–6 mm thick, equal, white to pallid, white-fibrillose from
remains of a partial veil but glabrescent, gray in the base in age.

Spores, 7–9×4–5×5–6 μ, smooth, some very slightly flattened, apical pore
inconspicuous but apex broadly truncate, shape in face view ovate to subelliptic,
in profile view slightly bean-shaped to obscurely inequilateral, color as revived
in KOH cocoa-color soon becoming dark chocolate-color, in Melzer's bay-red,
wall about 0.4 μ thick.

Basidia 22–30×8–10 μ, 4-spored, hyaline in KOH, clavate. Pleurocystidia
abundant 40–56×10–18 μ, fusoid with subacute to obtuse apex (rare), fusoid-
ventricose with obtuse apex (common), and subutriform (not common), all with
walls thin, smooth and hyaline, content not distinctive. Cheilocystidia 20–30×
9–15 μ, clavate to vesiculose, smooth, thin-walled, hyaline. Stipe with hyaline
cortex-hyphae which are minutely roughened (?) as seen in KOH.

Pileus with a cuticle of vesiculose to variously inflated cells which in KOH
have pale ochraceous to pale cinnamon walls, the latter smooth and thin. Hyphae
of the pileus and gill trama vinaceous brown in KOH, incrusted or with wall
thickenings especially at or near the septa. Clamp connections present. No
distinctive reactions noted on any tissue as mounted in Melzer's.

Type locality. Pole Mountain, near Laramie, Wyoming.
Habit and habitat. Scattered on muck near beaver ponds.
Distribution. Known only from type locality.
Observations. This species is a "satellite" of P. velibrunnescens but grows on
muck, has a white veil, and pleurocystidia varying from subelliptic-pedicellate to
fairly narrowly fusoid.
129. Psathyrella microcystis A. H. Smith, sp. nov.

Pileus 2–4 cm latus, demum late conicus, subspadiceus, ad marginem appendiculatus; lamellae pallidae demum purpureo-brunneae, conflerta, secedentes latae; stipes 5–10 cm longus, 2.5–5 cm crassus; pleurocystidia 32–48×7–11 μ, subcyllindrica vel anguste inflata, subacuta; fibulae adsunt. Typus. Smith 52744 (MICH); legit prope Trout Lake, Ophir, Colorado.

Illustr. Pl. 54, fig. a.

Pileus 2–4 cm broad, obtusely conic, expanding to broadly conic, “buckthorn brown” (rich honey brown) moist, hygrophanous, fading to pale ochraceous buff (pallid buff); margin at first appendiculate from remains of the veil. Context thin, not markedly fragile, odor and taste not distinctive.

Lamellae tilleul buff (pallid) becoming purplish brown at maturity, close, ascending-adnate, seceding, moderately broad.

Stipe 5–10 cm long, 2.5–5 mm thick at apex, often crooked, white, with a thin coating of fibrils from the partial veil, pruinose above the veil line.

Spores 8–10×4–5 μ, smooth, apical pore distinct, shape in face view elliptic to ovate, in profile subelliptic to obscurely inequilateral, color in KOH dull cocoa-brown slowly becoming somewhat chocolate-color, in Melzer’s reddish tawny, wall about 0.2–0.3 μ thick.

Basidia 18–22×8–9 μ, 4-spored, clavate, hyaline in KOH. Pleurocystidia scattered, 32–48×7–11 μ, subcylindrical with flexuous neck and subacute apex, varying to narrowly ventricose, wall smooth, thin and hyaline. Cheilocystidia 28–37×9–15 μ, vesiculose-pedicellate to fusoid-ventricose, apex in latter case obtuse, wall smooth and hyaline, content not distinctive in either KOH or Melzer’s. Caulocystidia versiform: (1) clavate and 50–90×18–28 μ, thin-walled, smooth and hyaline, (2) cystidioid and 28–42×7–12 μ, more contorted than the pleurocystidia, (3) pedicellate-vesiculose and up to 25 μ wide.

Pileus cuticle of vesiculose cells 2–3 deep and with hyaline, smooth, thin walls, subcutis of hyaline to yellowish-hyaline hyphae in KOH, walls smooth. Clamp connections present. No distinctive reaction of any tissue in Melzer’s.

Type locality. Trout Lake, San Juan Mountains, Colorado.

Habit and habitat. Scattered to cespitose on duff of conifer needles and aspen leaves mixed, August.

Distribution. Known only from the type locality.

Observations. The very narrow pleurocystidia with flexuous necks, the medium-sized spores, the gigantic clavate caulocystidia, the submembranous veil, white stipe and cespitose habit are distinctive.

Material examined. Colorado: Smith 51779, 52744 (Type).

130. Psathyrella crassulistipes A. H. Smith, sp. nov.

Pileus 1–2 cm latus, late convexus, demum subplanus, squamuloso-floccosus, glabrescentis, badius vel cinnamono-brunneus, ad marginem denticulato-appendiculatus; lamellae conflerta, latae, brunneolae, demum fumoso-fulvae; stipes 2–4 cm longus, 2–5 mm crassus, eavus, pallidus, sparse fibrillosus; sporae 7–9 (–10)×4.5–5 (–6) μ; pleurocystidia 32–44 (–67)×9–14 μ; fusoid ventricosa; fibulae adsunt. Typus. Smith 53710 (MICH); legit prope Priest Lake, Idaho.

Illustr. Pl. 44; fig. b.

Pileus 1–2 cm broad, broadly convex with the margin curved in slightly, expanding to nearly plane or the disc slightly depressed, surface at first covered
by white squamules of outer veil fibrils but soon glabrescent over the center, margin coarsely denticulate-appendiculate from the white submembranous inner veil, color dark bay to cinnamon-brown when young and fresh and dark brownish when faded or dried. Context thin, concolorous with the surface, fragile, odor and taste not distinctive.

Lamellae close, becoming moderately broad, adnate, dull brown when young, near “warm sepia” as dried (dark dull vinaceous-brown), edges even.

Stipe short, 2–4 cm long, 2–5 mm thick, equal, hollow, fragile, watery white and not discolored below appreciably, with a thin coating of white fibrils to an evanescent fibrillose zone.

Spores dark purple-brown in deposit, 7–9(-10) × 4.5–5(-6) µ, smooth, api- cal pore present but apex at most only obscurely truncate, shape in face view elliptic to ovate, in profile obscurely inequilateral to subelliptic, color in KOH dark cocoa-color slowly becoming chocolate-brown, tawny in Melzer’s, wall about 0.3 µ thick.

Basidia 4-spored, 18–23 × 8–10 µ, broadly clavate, hyaline in KOH. Brachybasidioles differentiated. Pleurocystidia 32–44(-67) × 9–14 µ, scattered, fusoid to fusoid-ventricose, apex acute to subacute, walls very thin, smooth and hyaline, varying to narrowed to a subcapitate apex with wall slightly thickened in the apex, some narrowly fusoid-ventricose with obtuse apex. Cheilocystidia clavate to short and subfusoid, 25–38 × 8–13 µ, hyaline in KOH, scattered cells somewhat resembling the pleurocystidia also present.

Pileus cuticle of inflated cells 1–3 deep and with thin walls brownish to hyaline in KOH. Hyphae of subcutis vinaceous-cinnamon in KOH, slowly fading to brownish, hyphae smooth or nearly so. Clamp connections present.

Type locality. Priest Lake, Idaho.

Habit and habitat. Cespitose on sand at the side of a dirt road, September.

Distribution. Idaho.

Observations. This species differs from P. vialis in its thicker stipe, smaller spores and more appendiculate pileus margin. The inner veil is submembranous.

Material examined. Idaho: Smith 53710 (Type), 54232, 55064, 55079.

131. Psathyrella owyheensis A. H. Smith, sp. nov.

Pileus 1.5–4 cm latus, obtuse-campanulatus demum convexus, ad marginem appendiculatus, glaber, mellei-cinnamomeus; lamellae subdistantes latae, pallidae demum sordide caeacolor; stipes 4–7 cm longus, 3–6 mm crassus, albidus, glaber; sporae 7.5–10 × 4.5–5 µ; pleurocystidia 36–48 × 9–13 µ, late fusoid ventricosa vel subcapitata; fibulae adsunt. Typus. Trueblood 3135 (MICH); legit Owyhee County, Idaho.

Pileus 1.5–4 cm broad, obtuse when young, expanding to obtusely campanulate, broadly convex-umbonate or nearly plane, margin bent inward at first and appendiculate with fragments of a pallid evanescent submembranous veil, glabrous over the remainder of the surface, hygrophanous, pale cinnamon to honey-tan when moist and fading out to a pale pinkish buff or (as dried) pallid. Context concolorous with surface either moist or faded, reasonably firm for a Psathyrella, odor and taste not distinctive.

Lamellae nearly subdistant at maturity, broad, depressed adnate, pallid when very young, becoming brownish and dingy cocoa-brown but when dried a dingy pallid brownish (as if partly sterile), edges even or nearly so, concolorous with faces.
Stipe 4–7 cm long, 3–6 mm thick, equal, rather firm and cartilaginous for the genus, hollow, surface finely longitudinally striate in larger ones, naked, rarely with veil remnants (these soon evanescent), white to pallid throughout and over all, base not conspicuously mycelioid.

Spores 7.5–10 × 4.5–5 μ, smooth, apical pore present but obscure and apex not truncate, shape in face view oblong to elliptic, in profile suboblung to obscurely bean-shaped, color in KOH rich rusty cocoa-color slowly becoming dark chocolate, in Melzer’s reddish tan to pale bay-red; wall about 0.3 μ thick.

Basidia 4-spored, clavate, 26–30 × 7–8 μ. Pleurocystidia scattered, 36–48 × 9–13 μ, neck short and apex obtuse, or some narrowly nine-pin-shaped (with slight apical enlargement); wall thin, smooth and hyaline. Cheilocystidia clavate to vesiculo-se-pedicellate and hyaline in KOH, or shaped like the pleurocystidia.

Gill trama of interwoven somewhat inflated hyphae, central strand rusty brown in KOH but soon fading, subhymenial cellular. Pileus cuticle a layer of inflated cells 2–3 deep, walls smooth, thin and hyaline in KOH, some cells pedicellate-clavate. Hyphae of subcuticular region rusty cinnamon in KOH, slowly fading to dull ochraceous-tawny, pigment incrusted on the walls to some degree. Clamp connections present.

Type locality. Sand’s Basin, Owyhee County, Idaho.

Habit and habitat. Gregarious among native grasses in an area where cattle were pastured, April.

Distribution. Known only from type locality.

Observations. The species is clearly a Psathyrella as the KOH reaction of the spores indicates. Only well-pigmented spores were used in establishing the size. As for many Psathyrella species, some evidence of partial sterility exists in the type collection. A fair number of spores are weakly colored, measure 10–12 × 6–7.5 μ, and are broadly elliptic in face view. The veil is denticulate on the margins of young or half-developed basidiocarps, but all traces may have vanished by maturity. The species is apparently related to P. spadiceogrisea, P. verna and P. atrojolia, but its ecology is very different and, of course, there is the usual cluster of slight differences such as spore color, consistency of basidiocarps, pallid naked stipe over all in most, and shape of the pleurocystidia.

132. Psathyrella verna A. H. Smith, sp. nov.

Pileus (1–)4–7 cm latus, late umbonatus vel subcampanulatus, glaber, cinnamomeo-brunneus, ad marginem sparse fibrilloso-appendiculatus; lamellae confertae, adnatae, latae (4–8 mm), albidæ demum vinacceo-brunneæ; stipes 8–14 cm longus, 3–8 mm crassus, pallidus, glabrescents; sporae 6.5–8(–9) × 4.5–5 μ; pleurocystidia 40–70 × 8–15 μ, fusoidæ ventricosa, obtusa vel subacuta; fibulae adsunt. Typus. Smith 6207 (MICH); legit prope Manchester, Michigan. Illust. Pl. 55.

Pileus (1–)4–7 cm broad, ovoid to obtusely conic, becoming broadly umbonate to subcampanulate, often nearly plane or with merely a decurved margin, margin appressed against the stipe at first and sometimes flaring or slightly recurved in age, striate, glabrous except for a fringe of evanescent fibrils along the margin, moist, smooth or slightly wrinkled, “Mars brown” to “russet” or cinnamon-brown or “buckthorn brown,” hygrophanous, fading to “ochraceous-tawny” on the disc and pale buff over the marginal area. Context moderately thin and not exceptionally fragile, watery brown moist, buff when faded, odor none or slightly acidulous, taste mild.
Lamellae adnate, soon seceding, crowded, 28–36 reach the stipe, moderately broad (about 4–8 mm), 3 tiers of lamellulae, whitish at first, then pinkish buff finally becoming dull vinaceous-brown, duller brown as dried, edges even.

Stipe 8–14 cm long, 3–8 mm thick, equal, often curved at base, hollow, fragile, pure white when young, slightly sordid in age, faintly fibrillose but soon glabrescent, base white-mycelioid.

Spores 6.5–8(9) × 4–4.5 × 4.5–5 µ, at the most only very slightly flattened, smooth, apical pore minute and inconspicuous under oil (apex rounded), shape in face view ovate to elliptic, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH bister or darker, finally clouded chocolate-gray, in Melzer’s tawny, wall about 0.3 µ thick.

Basidia 17–22 × 7–9 µ, short-clavate, hyaline in KOH. Pleurocystidia abundant, 40–70 × 8–15 µ, fusoid-ventricose with obtuse to subacute apex, often with debris adhering near apex (revived in KOH), wall thin, smooth and hyaline, content not distinctive in either KOH or Melzer’s. Cheilocystidia of two types: clavate to saccate and 18–38 × 10–18 µ, and smaller than the pleurocystidia but approximately the same shape and otherwise as described above. Caulocystidia versiform, smooth thin-walled, content not distinctive.

Gill trama regular, hyaline to faintly brownish in KOH, the hyphae more or less parallel and with broad (10 µ or more) hyphal cells. Pileus having a cuticle of vesciculose and pear-shaped cells intermingled, the layer one cell deep but not organized into a true palisade, the cells with thin, hyaline and smooth walls and the content not distinctive in either KOH or Melzer’s. Hyphae of the trama interwoven, the walls tinged rusty vinaceous in KOH but soon fading to brownish or nearly hyaline, smooth or practically so. Clamps present. No distinctive reaction on any tissue when mounted in Melzer’s.

Type locality. Near Manchester, Michigan.

Habit and habitat. Scattered to gregarious on rich humus and debris, May.


Observations. This species was previously identified as *P. spadiceogrisea* (Smith, 1941), but the current concept of the latter in Europe calls for utriform pleurocystidia.

Material examined. Michigan: Ammirati 1543, 1547, 2926; Harding & Belizzi 4–29–51; Hoseney 1520; Potter 7121, 9427, 9581; Smith 6207 (Type), 6221, 6228, 15016, 18036, 2094, 20347, 20354, 28615, 28637, 28670, 28673, 28674, 32296, 34285, 36515, 41319, 41426, 49531, 73023, 74374, 4–21–51, 4–27–52.

133. *Psathyrella alnicola* A. H. Smith, sp. nov.

Pileus 2–6 cm latus, late conicus, vel convexus, cinnamomeo-brunneae, ad marginem appendiculatus; lamellae pallidae demum fumoso-brunneae, confertae, angustae demum latae; stipes (4–)8–15 cm longus, (3–)4–6 mm crassus, 6–8 mm ad basem, deorsum sordide melleus, rare annulatus (velum submembranaceum); sporae 8–11 × 5–6 µ; pleurocystidia 42–64 × 10–18 µ, fuside ventricose, obtusa vel acuta; fibulae adsunt. Typus. Smith 70222 (MICH); legit prope Warren, Idaho.

Illust. Text Figs. 300–302.

Pileus 2–6 cm broad, obtusely conic to convex, expanding to broadly conic, surface glabrous, cinnamon-brown when moist, pale dingy tan (“cinnamon-buff”) when faded, when moist the margin faintly striatulate, margin at first appendicu-
late with remains of the submembranous veil. Context very thin and fragile, odor and taste not distinctive, with FeSO₄ no color change.

Lamellae pallid at first then very soon pale dull brown, at maturity violaceous-fuscous, narrow to moderately broad, close, adnate but soon seceding, edges even and whitish.

Stipe (4–)8–15 cm long, (3–)4–6 mm at apex, 6–8 mm below, gradually thickened slightly, white, by maturity or in age becoming dingy honey-color over the basal area, surface thinly fibrillose to the silky-punctate apical region; veil pallid, submembranous, rarely forming an incomplete annulus.

Spores 8–11×5–6 μ, smooth, with a hyaline spot at apex but apex rounded, shape in face view ovate to elliptic, the apiculate end (base) often obscurely to distinctly truncate, a few showing a slight degree of angularity, in profile elliptic to obscurely inequilateral, color in KOH dark rusty brown with a smoky tinge, slowly becoming dark chocolate-color, in Melzer's reddish tawny; wall about 0.4 μ thick.

Basidia 25–32×8–11 μ, 4-spored, hyaline in KOH. Pleurocystidia 42–64×10–18 μ, broadly fusoid with obtuse apex, fusoid-ventricose with obtuse to subacute apex, and a few utriform to cylindric-pedicellate, all smooth, thin and hyaline, content of cell not distinctive in either KOH or Melzer's. Cheilocystidia 32–35×9–14 μ, fusoid-ventricose, hyaline, rare to scattered, many clavate to vesiculose cells also present and hyaline to yellow in KOH, pigment in the wall. Caulocystidia very rare, the only ones seen were clavate to vesiculose and 9–15 μ wide.

Pileus with a cuticle of vesiculose and clavate cells mixed and 2–3 cells deep, walls hyaline in KOH, smooth, thin, cell content not distinctive in either KOH or in Melzer's. Hyphae of trama in subcuticular region especially dull cinnamon in KOH but fading on standing, the walls smooth or obscurely uneven. Clamps present. No distinctive reaction on any tissue when revived in Melzer's.

Type locality. Warren, Idaho.

Habit and habitat. Gregarious under alder on soil.

Distribution. Idaho.

Observations. The distinctive features of this species are the broad often somewhat truncate (basally) spores, pleurocystidia varying from fusoid-ventricose to utriform, the long stipe and apparent lack of any distinctive caulocystidia.

Material examined. Idaho: Smith 70222 (Type); Trueblood 162, 1439, 1458, 2280, 2680.

134. Psathyrella mesocystis A. H. Smith, sp. nov.

Pileus 3–3.5 cm latus, plano-umbonatus, glaber, ad marginem appendiculatus, cinnamomeo-brunneus; lamellae confertae, latae, fumoso-brunneae; stipes 4–5 cm longus, 3–4 mm crassus, glaber, pallidus; sporae 7–9×4–4.6 μ; pleurocystidia 42–63×9–15 μ, fusoide ventricosa, subacuta; cheilocystidia clavate vel vesiculosa; fibulae adsunt. Typus. Smith 65274 (MICH); legit prope McCall, Idaho.

Pileus 3–3.5 cm broad, plano-umbonate, glabrous, margin at first appendiculate from patches of the submembranous veil, hygrophanous, near cinnamon-brown when moist, fading to dingy pinkish buff on disc (pale dull tan) and pale vinaceous-buff (having a pinkish flush) toward the margin, dull cinnamon when dried. Context pallid, firm, odor and taste not distinctive, with either KOH or FeSO₄ no reaction.
Lamellae close, broad, depressed-adnate, brownish drab at maturity but dull cocoa-brown as dried, edges even.

Stipe 4–5 cm long, 3–4 mm thick, equal, fragile, naked, pallid over all.

Spores 7–9 × 4–4.6 μ, smooth, apical pore distinct but apex not truncate, shape in face view ovate to elliptic, in profile obscurely inequilateral to somewhat bean-shaped, color in KOH dull cocoa-brown, not darkening readily, in Melzer’s reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 20–25 × 8–10 μ, hyaline in KOH, clavate. Pleurocystidia abundant, 42–63 × 9–15 μ, fusoid-ventricose with elongated neck and subacute to obtuse apex which in KOH remains granular-incrusted for some time, wall thin to slightly thickened and hyaline to yellowish in KOH in the ventricose part, content not distinctive in KOH or in Melzer’s. Cheilocystidia saccate-pedicellate to vesiculose, 22–30 × (8–)10–16 μ, walls thin and smooth or slightly thickened and yellowish, content not distinctive. Caulocystidia not found.

Pileus with a cuticle of inflated cells several deep, the walls smooth and yellowish to hyaline in KOH, content of cells not distinctive; trama of pileus of inflated hyphal cells brownish at first as revived in KOH but fading to yellowish hyaline, walls smooth. Clamps present. When mounted in Melzer's no distinctive reaction was noted in any tissue.


Distribution. Known only from type locality.

Observations. The distinctive features of the species are the stature—reminding one of small basidiocarps of _P. candolleana_,—the elongate pleurocystidia with the apical granular inerustation as revived in KOH, medium-sized spores and gill edges almost entirely made up of clavate to vesiculose cells. The weak coloration in the wall of the pleurocystidia can be easily overlooked. In crushed mounts the cystidia tend to break thus indicating a more rigid wall than in most species in the genus.

135. _Psathyrella subfasciculata_ A. H. Smith, sp. nov.

Pileus 2–3 cm latus, hemisphericus demum late convexus, pallide spadiceus, ad marginem appendiculatus; lamellae latae, confertae, pallidae demum olivaceo-brunneae; stipes 3–4 cm longus, 4–6 mm crassus, siccus, sursum fibrilloso-zonatus; sporae 8–9 × 4–4.5 (–5) μ; pleurocystidia 40–55 (–66) × 10–15 μ, fusoid ventricosa, obtusa; fibulae adsunt. Typus. Sharp 18909 (MICH); legit prope Greenbrier, Great Smoky Mountains National Park, Tennessee.

Illustr. Text Figs. 303–306.

Pileus 2–3 cm broad, convex-hemispheric or finally broadly convex to nearly plane, atomate, hygrophanous, "snuff brown" moist, "clay color" faded (when dried nearly drab), margin white-appendiculate, at times splitting. Context rather thin on disc, very thin on margin, white, odor and taste not distinctive.

Lamellae adnate, rather broad, close, pallid at first, finally "buffy brown" to "olive-brown," edges pale and fimbriate.

Stipe 3–4 cm long, 4–6 mm thick, dry, equal, whitish, shining, fibrillos, hollow, with a slight fibrilloso ring left by the webby veil.

Spores 8–9 × 4–4.5 (–5) μ, smooth, apical pore distinct and apex obscurely truncate, shape in face view oblong to narrowly elliptic, in profile subelliptic to obscurely inequilateral, color in KOH cocoa-color slowly changing to chocolate-brown, in Melzer’s tawny-red, wall about 0.3 μ thick.
Basidia 4-spored, 18–25×5–8 μ, hyaline, clavate. Pleurocystidia 40–55 (–66) × 10–15 μ, fusoid-ventricose with obtuse apex, smooth, hyaline in KOH, thin-walled cell content not distinctive in either KOH or in Melzer's. Cheilocystidia similar to pleurocystidia or vesiculose and 10–15 μ wide. Caulocystidia versiform: (1) subfilamentose (rare) and up to 60×8 μ; (2) fusoid-ventricose and resembling pleurocystidia (rather common), 38–60×10–18 μ; (3) clavate in various degrees and up to 18 μ wide (fairly common).

Gill trama regular, when first revived in KOH having a strong vinaceous-brown cast but soon fading to hyaline or merely sordid brownish, pigment in the walls. Pileus having a cuticle consisting of a layer of vesiculose cells usually several deep and having yellowish walls as revived in KOH, the walls of the basal cells and hyphae next to them distinctly rusty brown in KOH thus forming more or less of a demarcation line between the cuticle and the context. Hyphae of the context strongly vinaceous-brown when first revived in KOH but soon dull cocoa-color (or retaining a vinaceous tint). Clamp connections present. No distinctive reactions noted on any tissue mounted in Melzer's.

Type locality. Greenbrier, Great Smoky Mountains National Park, Tennessee.

Habit and habitat. In loose clusters on soil.

Distribution. Known only from the type locality.

Observations. This species is clearly a close relative of *P. microsperma* but is distinguished in the fresh condition by the much longer and more numerous pleurocystidia and the olive-brown gills. The points of similarity are the very inconspicuous apical germ pore of the spores, the more or less cespitose habit, thin veil and reaction of the context in KOH, but in *P. subfasciculata* the cells of the cuticle have yellow to rusty yellow to brown walls as revived in KOH in contrast to the hyaline cells in *P. microsperma*.

136. *Psathyrella idahoensis* A. H. Smith, sp. nov.

Pileus 2–4 cm latus, late conicus vel convexus, ad marginem denticulato-appendiculatus, glaber, fulvus; lamellae subdistantes, latae, adnatae, brunneolae demum griseo-brunneae; stipes 3–6 cm longus, 2.5–5 mm crassus, deorsum brunneus, sparse fibrillosus, glabrescens; sporae 7–8.5×4–4.5 μ; pleurocystidia 42–64×9–16 μ, fusoid ventricosa, subacuta; fibulae adsunt. Typus. Smith 70159 (MICH); legit prope, Warren, Idaho.

Illustr. Text Figs. 307–310.

Pileus 2–4 cm broad, obtusely conic, expanding to broadly conic or nearly convex, margin straight and at first denticulate-appendiculate with fragments of the white submembranous veil, surface glabrous, moist, hygrophanous, tawny ("tawny") when fresh, fading to near "cinnamon-buff" (pale tan). Context exceedingly thin and fragile, odor and taste not distinctive, with FeSO₄, no color change.

Lamellae broad, subdistant, adnate then seceding, pallid brownish becoming hair brown.

Stipe 3–6 cm long, 2.5–5 mm thick, equal, hollow, fragile, white and thinly fibrillose, in age becoming dingy brownish beneath the fibrils, finally glabrous.

Spores 7–8.5×4–4.5 μ, smooth, apical pore present but obscure, shape in face view ovate to elliptic, in profile obscurely inequilateral to subelliptic, color in KOH cocoa-color darkening to dark smoky chocolate-brown, in Melzer's reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 18–24×8–10 μ, hyaline in KOH, clavate. Pleurocystidia...
abundant, 42–64 × 9–16 μ, fusoid-ventricose with obtuse apex varying to subacute, rare cells up to 20 μ wide also present and broadly rounded at apex or broadly and obtusely fusoid, walls thin and smooth, content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia but smaller. Caulocystidia none or at apex similar to cheilocystidia.

Pileus with a cuticle as a layer of vesiculose cells 2–3 deep, the walls smooth and thin, hyaline to cinnamon in KOH, content not distinctive in KOH or Melzer's. Hyphae of the trama including the subcuticular region vinaceous-cinnamon in KOH, the walls smooth and up to 0.5 μ thick. No distinctive reaction on any tissue when mounted in Melzer's. Clamp connections present.

Type locality. French Creek Area, Salmon River, Idaho.

Habit and habitat. Gregarious to cespitose on disturbed soil in a slashing, September.

Distribution. Known only from the type locality.

Observations. The denticulate remains of the veil on the margin of the pileus, tawny pileus when fresh, medium-small spores and relatively large pleurocystidia distinguish this species. It is a rather "ordinary" *Psathyrella* in most respects.

Section **Pannucia**

In this group the outer veil is sufficiently well developed so that its presence on immature basidiocarps is readily ascertained. The veil typically is white but in a few species it is grayish, pallid, yellow, buff or tan and in some a fringe of fibrils remains on the margin for a short time at least. If the inner veil is submembranous and leaves broken segments appendiculate on the pileus margin when it breaks, see the previous section. Because of intergradation between the two sections some species are keyed in both. The same problem exists in relation to the Obtusatae and the same solution has been applied. If a thin outer veil is present, it may be desirable to try subgenus *Psathyrella* also.

Type. *Psathyrella fibrillosa*.

Key to Subsections of Section **Pannucia**

1. Spores larger than 8–11 × 4–5(–6) μ (see *P. roothaanensis* also).
   2. Pleurocystidia absent or a few occasionally found near the gill edge.
   3. Pleurocystidia with obtuse or acute apex.
   4. Pleurocystidia lacking or very rare.

1. Spores 8–11 × 4–5 μ (or 8–10 × 5–6 μ) or smaller.
2. Pleurocystidia present and readily demonstrated.
3. Pleurocystidia utriform or if fusoid-ventricose with a broadly rounded apex.
4. Pleurocystidia readily demonstrable.

Subsection **Flocculosa** A. H. Smith, subsect. nov.


Key to Stirpes of Subsection **Flocculosa**

1. Spores 9–12 μ or more long. stirps Typhae.
1. Spores 5–10 μ long. stirps Flocculosa.
Key to Species of Stirps Flocculosa

1. Spores becoming hyaline or nearly so in KOH (in about a half hour or less). 2

2. Spores 5–6.5 (–7.5) × 3–4.2 μ. 3

2. Spores 8–9 × 4.5–5 μ. see 46. P. thiersii.

3. Pileus chocolate-color to red-brown at first; known from Cuba. 138. P. flocculosa.

3. Pileus white from appressed fibrils, grayish brown beneath; northern and western North America. 139. P. canoceps.

137. Psathyrella plumigera (Berkeley & Curtis) A. H. Smith, comb. nov.


Psathyra plumigera (Berk. & Curt.) Saccardo, Sylloge Fung. 5: 1069. 1887.

Atylospora plumigera (Berk. & Curt.) Murrill, Mycologia 10: 23. 1918.

Pileus about 1 cm broad, convex becoming plane but with an obtuse umbo, pubescently striate, brown, covered with white squamules. Context thin and fragile.

Lamellae broadly adnexed, fuscous.

Stipe about 3 cm long and 1.5–2 mm thick, slender, fragile, fistulose, white and subpellucid.

Spores 8–9 × 4.5–5 μ, smooth, with an obscure apical hyaline pore, pale dull brown when first revived in KOH but soon becoming hyaline, in Melzer's pale reddish tawny (at least on what appeared to be the mature spores).

No other microscopic details could be obtained from the dried material available.

Type locality. Cuba.

Habit and habitat. On sticks in the woods.

Distribution. Cuba.

Observations. About the only feature of taxonomic value obtained from the study of the type is that the spores are brownish at first when mounted in KOH but soon lose this color. On this basis an attempt is made to include the species, but our knowledge of it is not sufficient for an accurate delimitation.

138. Psathyrella flocculosa (Earle) A. H. Smith, comb. nov.


Drosophila flocculosa (Earle) Murrill, Mycologia 10: 64. 1918.

Pileus 2–4 cm broad, convex when expanded, somewhat hygrophanous, at first somewhat chocolate-color or red-brown, afterward paler, especially when dry, surface when young covered with scattered woolly tufts but later nearly glabrous, the margin not striate and finally revolute, veil thin and evanescent. Context thin and fragile.

Lamellae narrow, close, adnexed, at first pallid, at length purple-brown.

Stipe 2–4 cm long, 2–3 mm thick, rather short, firm, hollow, white, the surface minutely roughened to scaly.

Spores 8–10 × 5–6 μ, smooth, truncated from a well-developed apical pore, shape in face view broadly elliptic to ovate, in profile subelliptic to obscurely bean-shaped, color in KOH avellaneous or a darker grayish brown, in Melzer's reddish tan, wall about 0.3 μ thick.

Basidia 4-spored, hyaline in KOH, 15–20 × 9–10 μ. Pleurocystidia not
observed. Cheilocystidia subcylindric to ventricose, the apex broadly rounded, 28–36 × 10–14 μ, hyaline in KOH, thin-walled and smooth, cell content not distinctive in KOH or Melzer’s.

Gill trama not reviving well in the type. Pileus having a cuticle of vesiculose cells more or less one cell deep, the cells with thin, yellowish to hyaline walls in KOH. Hyphae of the context not distinctively colored in KOH. Clamp connections present.

Type locality. Santiago de las Vegas, Cuba.

Habit and habitat. Gregarious on damp ground underneath buildings.

Distribution. Cuba.

Observations. The dried basidiocarps strongly resemble those of *P. hymenoecephala* in a number of respects, but the red-brown to chocolate-color of the pileus, and the well-developed outer veil amply distinguish it as a species. The spores when mounted in Melzer’s may appear minutely echinulate, but this was not visible in KOH mounts. The apparent ornamentation in Melzer’s mounts under high magnifications appeared to be formed by minute particles adhering to the surface of the spore.


Illustr. Smith, 1. c., pl. 26, figs. 3, 4. Pl. 54, fig. b; Text Figs. 311, 312.

Pileus 1–3.5 cm broad, 1–2 cm high, obtusely conic with an appressed margin when young, becoming campanulate or remaining broadly conic, surface at first appressed white-fibrillose-silky and the margin fringed, the fibrils more or less innate but becoming arranged in fascicles and eventually more or less disappearing (but never evanescent as in *P. bifrons*), color whitish at first from the fibrils, ground color “cinnamon-drab” to “wood brown” or “avellaneous” (grayish brown tinged cinnamon), hygrophanous and fading to pallid (“tilleul buff”). Context thin and fragile, avellaneous fading to pallid, odor and taste none or faintly radish-like but hardly distinctive.

Lamellae ascending-adnate, close, 24–26 reach the stipe, narrow (2.5–3 mm), equal, pallid to white but becoming “wood brown” (dark avellaneous), edges even or becoming white floccose.

Stipe 4–6 cm long, 1.5–3 mm thick, equal, white, fragile, sometimes transversely undulate, hollow, lower portion at first silky-floccose but finally glabrescent, apex fibrillose-pruinose, white or whitish.

Spores (7–)8–10 × 4.5–6 μ, smooth, apical hyaline pore distinct and apex typically obscurely truncate, shape in face view ovate to elliptic, in profile mostly obscurely inequilateral varying to more distinctly inequilateral, color in KOH dark cocoa-color becoming dark chocolate-color, in Melzer’s bay-brown to slightly paler, wall about 0.4 μ thick.

Basidia 4-spored, 18–25(–37) × 8–10 μ, clavate, hyaline in KOH. Pleurocystidia none. Cheilocystidia abundant, hyaline, thin-walled, fusoid-ventricose with apex obtuse to subacute, 40–54 × 8–13 μ, neck often elongated in age, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer’s. Caulocystidia present only as subcylindric to clavate cells of various sizes and rather scattered in occurrence, the walls thin, smooth and hyaline.

Gill trama regular, the hyphae having inflated cells, pale dingy brown revived in KOH to hyaline, hyaline in water mounts of fresh material. Pileus having a
cuticle of vesiculose cells 2–3 deep, walls thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's. Veil remnants of hyphae 6–12 μ wide and hyaline in KOH. Hyphae of context hyaline to pale brownish in KOH, walls thin and smooth. Clamp connections present. No distinctive reactions noted on any tissue as revived in Melzer's.

Type locality. Mt. Hood, Oregon.

Habit and habitat. Scattered on debris in rich soil under alder and cottonwood.


Observations. This is a common and characteristic species of the Pacific Northwest. It is curious that it seems most closely associated with two Cuban species.


Stirps Typhae


Key to Species of Stirps Typhae

1. Veil pale tan to buff; spores nearly hyaline in KOH. 140. _P. typhae._

1. Veil white to grayish; spores cocoa-color or darker in KOH (nearly hyaline in _P. subaustralis)._ 2

2. Lamellae cinereous becoming black. 141. _P. comata._

2. Lamellae whitish becoming cocoa-color and finally argillaceous to dark reddish brown. 3

3. Spores 12.5–15 X 6.5–8 μ; brachybasidioles present. 142. _P. delicatella._

3. Not with either of above features. 4

4. Spores nearly hyaline in KOH; spores 6–7.5 μ wide. 143. _P. subaustralis._

4. Spores bister or darker in KOH and 5–6 μ wide. 144. _P. lanuginosa._


_Agaricus typhae_ Kalchbrenner, Gomb. 206. 1865.

_Psathyra typhae_ (Kalchbr.) Saccardo, Syll. Fung. 5: 1067. 1887.


Illustr. Peck, 1. c. pl. 2, figs. 6–10. Pl. 60, fig. d; Text Figs. 313–314.

Pileus 5–20 mm broad, convex, becoming nearly plane, at very first covered with thin patches of pale tan fibrils, soon glabrous, dark to pale rusty brown ("russet" to "cinnamon-brown" or "Sayal brown"), hygrophanous, fading to pale buff, pellucid-striate when moist, somewhat plicate when faded. Context very fragile, thin and watery, odor and taste not recorded.

Lamellae subdistant to moderately close, broad, attached by a narrow tooth or nearly free, pallid to whitish at first, soon pale brown, finally with a tinge of purplish brown.

Stipe 1–2 cm long, 1–1.5 mm thick, hyaline, very weak, watery, fragile, covered by scattered fibrils or with a denser fibrillose zone toward the base, the base slightly enlarged and delicately mycelioid at the point of attachment.

Spores 10–12 X 5–6.5 μ, smooth, apical pore not evident because of the thin wall, shape in face view elliptic to ovate, in profile obscurely inequilateral to (in
optical section) nearly straight on the ventral line and convex for the dorsal line, color in KOH hyaline to faintly brownish, in Melzer's nearly hyaline, in HzO mounts pale purplish brown on fresh material, wall thin.

Basidia 4-spored, 12–18 × 9–11 μ, hyaline, short-clavate. Pleurocystidia absent. Cheilocystidia 30–47 × 8–15 μ, hyaline in KOH, thin-walled, subcylindric to ventricose, with the neck only slightly narrowed and the apex broadly rounded, content not distinctive in either KOH or Melzer's. Caulocystidia abundant and more or less similar to the cheilocystidia.

Gill trama somewhat interwoven, rusty-brown to tawny in KOH, hyphae smooth to incrusted. Pileus trama of enlarged loosely interwoven cells, the walls tawny to dark rusty brown in KOH and many (especially the narrow hyphae) with fulvous bands, plates or spirals of incrusting pigment; the cuticle of clavate cells organized into a loose palisade, the walls at the base of the cells pale tawny. Clamp connections present.

Type locality. Hungary.

Habit and habitat. On dead leaves and stems of Typha and Carex, often fruiting near the water-line, late spring and summer.


Observations. Brachybasidioles are present in the over-mature hymenium in some collections at least. It is doubtful if their presence will aid in the recognition of the species. Collections are frequently found in which the veil has been obliterated.


141. Psathyrella comata (Atkinson) A. H. Smith, comb. nov.


Illust. Text Figs. 315, 316.

Pileus 5–15 mm broad, ovoid becoming campanulate, white, becoming blackish gray and slightly striate, when young, densely covered with radiating fibrils, then silky fibrillose, the margin appendiculate.

Lamellae adnate, elliptic, cinereous then becoming blackish.

Stipe 3–5 cm long, 1.5 mm thick, equal, white, bulbous, straight or flexuous, fibrillose-squamulose.

Spores 11–13 × 5–6 μ, smooth, truncate from a well developed apical pore, shape in face view oblong to elliptic or slightly ovate, in profile subelliptic to obscurely inequilateral, color in KOH chocolate-brown going to dark chocolate-color, wall 0.4–0.5 μ thick.

Basidia 4-spored, 20–24 × 9–12 μ, subcapitate, hyaline in KOH. Pleurocystidia not differentiated. Typical basidioles present. Cheilocystidia abundant, 38–50 × 9–13 μ, subcylindric to fusoid-ventricose with obtuse apex, wall smooth, hyaline and thin, cell content not distinctive in KOH or Melzer's.

Gill trama of more or less vesiculose hyaline readily collapsing cells, regular but the orientation of the hyphae difficult to discern. Pileus having a cuticle of vesiculose cells more than one cell thick (?), material revived poorly. Hyphae of the context hyaline, cells greatly enlarged and reviving poorly. (The type and one additional collection studied.)

Type locality. Ithaca, New York.
Habit and habitat. Scattered to gregarious on humus and buried twigs in a lawn.


Observations. In the Michigan collection (by L. H. Pennington 9–11–07), the spores are dull bay-red in Melzer's and clamp connections are present though difficult to locate because they are very small. The species is not a Coprinus, at least brachybasidioles are not present.

142. Psathyrella delicatella A. H. Smith, sp. nov.

Pileus 5–10 mm latus, campanulatus, demum late conicus, copiose albofibrillosus; glabrescens, pallidus demum avellaneus dein vinaceo-brunneus; lamellae confertae, latae, subhepaticolor; stipes 3–5 cm longus, circa 1 mm crassus, fibrillosus ad basem myceliosus; sporae 12.5–15×6.5–8 μ; cheilocystidia 28–36×12–18 μ, clavata vel utriformia; fibulae adsunt. Typus. Brooks 1619 (MICH); legit prope Geary County, Kansas.


Pileus 5–10 mm broad, obtusely campanulate becoming broadly conic, surface at first densely covered by a coating of superficial whitish (when dried, yellow) outer veil fibrils, young pilei pallid to avellaneous, when mature glabrous and near “army brown” (vinaceous brown). Context very thin and delicate.

Lamellae close, broad, ascending-adnate, reddish chocolate color when mature, edges slightly fimbriate.

Stipe 3–5 cm long, about 1 mm thick, equal or nearly so, whitish, (no evidence of much discoloration in dried material), covered by very pale yellowish (as dried) outer veil remnants, base conspicuously mycelioid with more or less radiating fibrils or a mat of fibrils.

Spores 12.5–15×6.5–8 μ, smooth, apical pore distinct and spore apex truncate, shape in face view with a somewhat pointed apiculate end, otherwise elliptic to ovate, in profile somewhat to obscurely inequilateral (plage area typically flattened), color in KOH date brown (bister before maturity, near “mummy brown” when mature), in Melzer’s very dark bay-red, wall about 0.8 μ thick.

Basidia 4-spored, sterigmata very fine, clavate and 10–14 μ broad, hyaline in KOH. Brachybasidioles present, 12–22 μ broad, hyaline and readily collapsing. Pleurocystidia not seen. Cheilocystidia scattered to numerous, 28–36×12–18 μ, fusoid-ventricose with scarcely any neck and apex broadly rounded to obtuse, wall thin, smooth and hyaline, content not distinctive. Caulocystidia 50–80×15–25 μ, subventricose with obtuse apex, thin-walled, hyaline, some 40–65×8–14 μ and tapered to an obtuse apex; some clavate and 15–20 μ broad.

Gill trama hyaline in KOH. Pileus trama hyaline or nearly so in KOH. Cuticle of pileus a layer of vesiculose cells several deep and the individual cells very thin-walled and hyaline. Clamp connections present.

Type locality. Geary County, Kansas.

Habit and habitat. Gregarious in a sunflower patch.

Distribution. Known only from the type locality.

Observations. The non-striate pileus, presence of brachybasidioles, pronounced outer veil, lack of pleurocystidia, the large spores and the very large numerous caulocystidia are distinctive.

Material examined. Kansas: Brooks 1618, 1619 (Type).
143. **Psathyrella subaustralis** A. H. Smith, sp. nov.

Pileus 18–21 mm latus, campanulatus, subspadiceus, striatus, fibrillososquamulosus, glabrescens; velum pallide griseum; lamellae 2.5–3 mm latae, demum subdistantes; argillaceae; stipes 15–20 mm longus, 0.5–3 mm crassus, albidus, albo-floccosus, glabrescens; sporae 8–10.5×6–7.5(8) μ; cheilocystidia 18–28×8–14 μ, clavata vel saccata. Typus. Singer F792 (MICH); legit prope South Miami, Dade County, Florida.

Pileus 18–21 mm broad, campanulate becoming plane, “bister” on the disc, much paler on margin between the translucent striations, with scattered floccose patches of outer veil remnants at first, soon glabrescent, veil pale grayish. Context very thin and fragile, odor none.

Lamellae adnexed, moderately broad (2.5–3 mm), moderately close to subdistant, subventricose-horizontal, argillaceous.

Stipe 15–20 mm long, 0.5–3 mm thick, equal or tapering upward, white, hollow, veil remnants floccose and white.

Spores 8–10.5×6–7.5(8) μ, smooth, apical pore indistinct, ovate to nearly elliptic in face view, in profile subelliptic to obscurely inequilateral, color in KOH nearly hyaline to slightly yellowish tinged, scarcely darkening, wall 0.2 μ thick approximately.

Basidia 4-spored, 17–20×9–11 μ, short and broad, hyaline in KOH. Pleurocystidia none. Cheilocystidia clavate to saccate or broadly fusoid-ventricose, 18–28×8–14 μ, hyaline, smooth and thin-walled in KOH, content of cell not distinctive.

Gill trama dingy yellowish in KOH but not reviving well, apparently composed of more or less inflated cells irregularly arranged. Pileus having a cuticle of vesiculose cells one cell deep, pale yellowish in KOH. Hyphae of context yellowish in KOH.

Type locality. West of South Miami, Dade County, Florida.

Habit and habitat. On naked earth in crab holes in pure stand of *Myrica* in backwater region, September.

Distribution. Known only from the type locality.

Observations. The grayish veil, spores practically hyaline in KOH, and the argillaceous gills are a distinctive combination of features.

144. **Psathyrella lanuginosa** A. H. Smith, sp. nov.

Pileus 4–9 mm latus, demum campanulatus, copiose fibrilloso-squamulosus, glabrescens, ad marginem fimbriatus vel appendiculatus, albidus, demum griseo-brunneus; lamellae confertae, latae pallidae demum rufo-brunneae; stipes 1–2 cm longus, 1 mm crassus, albo-fibrillosus; sporae 8–11×5–6 μ; cheilocystidia 28–43×9–14 μ, clavata vel fusoid ventricosa; fibulae adsunt. Typus. Smith 10973 (MICH); legit prope Milford, Michigan.

Illust. Text Figs. 320, 321.

Pileus 4–9 mm broad, obtuse to campanulate, the umbo at times conic and rather abrupt, surface at first densely covered with coarse appressed fibrils from the remains of the white outer veil, the fibrils often arranged in fascicles around the disc, the margin fringed to appendiculate, glabrescent, white when young (beneath the fibrils), near avellaneous to wood brown as spores mature, coarsely striate before fading, pallid buff when faded. Context thin, whitish, very fragile, odor and taste not distinctive.
Lamellae moderately close, 18–20 reach the stipe, broad, adnate, whitish but soon cocoa-brown, dark reddish brown in age, edges even.

Stipe 1–2 cm long, about 1 mm thick, equal, fragile, densely white-fibrillose from the veil remnants, apex pruinose or with minute fibrillose flecks.

Spores 8–11 × 5–6 μ, smooth, truncate because of a broad apical pore, shape in face view broadly elliptic to broadly ovate, in profile view obscurely inequilateral, color in KOH bister becoming chocolate-brown, finally fuscous, in Melzer's "tawny," wall about 0.4 μ thick.

Basidia 4-spored, 17–24 × 8–10 (–12) μ, clavate, hyaline in KOH, when sporulating projecting slightly. Basidioles more or less inflated by late maturity and brachybasidiole-like. Pleurocystidia absent but rarely one finds large cylindric cells (28–35 × 10–15 μ) projecting into the hymenium from the inner subhymenium or the gill trama proper. Cheilocystidia 28–43 × 9–14 μ, fusoid-ventricose to clavate, wall thin, smooth and hyaline (or rarely a few granules adhering along the neck), cell content not distinctive.

Gill trama of greatly enlarged irregularly arranged cells, hyaline or only dull brownish (in groups) in KOH. Pileus trama of loosely arranged greatly enlarged hyphal cells dull brownish in KOH fading to nearly hyaline, lacking any appreciable inerustations. Cuticle of inflated cells 30–50 μ wide, globose to clavate and arranged in an irregular manner, wall thin, smooth and hyaline to yellowish in KOH, cell content not distinctive. Clamp connections present.

Type locality. Near Milford, Michigan.

Habit and habitat. Scattered on debris at edge of swamp.

Distribution. Known only from the type locality.

Observations. No caulocystidia were observed on the one stipe studied. The white pileus at first and wide spores are distinctive.

Subsection Mixtae A. H. Smith, subsect. nov.

Sporae (8–)9–12 × 5–7 μ vel maior; pleurocystidiis utriformibus vel late rotundatis. Typus. Psathyrella brooksiï.

Key to the Species of Subsection Mixtae

1. Lamellae blue when young; spores 12–13 × 6.5–7.5 μ.
   1. Not as above.

2. Spores 12–15 × 7–9 μ; pleurocystidia subclavate, elliptic, or broadly fusoid-ventricose.
   2. Spores smaller.

3. Hyphae of stipe with pigment-deposits near the septa; clamps rare; pileus flushed pale salmon along the margin after fading.
   3. Not as above.

4. Brachybasidioles present at maturity; pileus margin uplifted and splitting in age; context crumby-fragile.
   4. Not with above combination of features.

5. Spore apex at most obscurely truncate; pleurocystidia in optical section mostly pedicellate-elliptic to subelliptic.
   5. Not as above (spore apex distinctly truncate).

6. Pileus cuticle a palisade of clavate to vesiculose cells.
   6. Pileus cuticle about 2 cells deep.

7. Cespitose, arising from a basal mat of mycelium and stipes often connate.
   7. Cespitose-gregarious along roads.
145. **Psathyrella riparia** A. H. Smith, sp. nov.

Pileus 10–25 mm latus, convex demum planus, copiose fibrilloso-squamulosus, glabrescens, griseo-brunneus demum fusco-brunneus; lamellae griseae demum violaceo-fuscae, latae (5 mm), conflerta; stipes 3–4 cm longus, 1.5–2 mm crassus, sursum dilute brunneus, deorsum fusco-brunneus, fibrillosus vel floccosus, glabrescens; spora 9–12.5 × 5–6.5 μ; pleurocystidia 38–46 × 10–15 μ, utriformia vel late fusoidae ventricosa, ad apicem late rotundata; fibulae desunt. Typus. Brooks 1600 (MICH); legit Edwards County, Kansas.

Illust. Text Figs. 322–325.

Pileus 10–25 mm broad, convex expanding to plane, surface at first covered with coarse superficial patches of white fibrils from the remains of the outer veil, glabrescent, disc grayish brown to yellowish brown, margin reddish brown or darker, when dried near "Natal brown" over all (having a distinct reddish-vinaceous cast), surface even when fresh. Context thin and fragile.

Lamellae light livid gray becoming purplish brown (not as reddish as the pileus when dried), lamellulae in 3 tiers, broad (about 5 mm), broadly adnate and with a decurrent tooth, close, edges whitish.

Stipe 3–4 cm long, 1.5–2 mm thick, equal or tapered slightly above, pale brownish above, darker below (when dried with a pinkish tint near or at the apex), white pruinose above, lower down fibrillose with appressed fascicles of fibrils from remains of the white veil, somewhat striate in age.

Spores 9–12.5 × 5–6.5 μ, smooth, apex somewhat truncate from a well-developed apical pore, shape in face view elliptic to ovate, in profile subelliptic to obscurely inequilateral, color in KOH soon dark chocolate-color, in Melzer's dark bay, wall about 0.6 μ thick.

Basidia 4-spored, 20–25 × 10–12 μ, subcapitate, pedicellate, hyaline in KOH or the pedicel faintly brownish at the base (revived in KOH). Pleurocystidia 38–46 × 10–15 μ, utriform to broadly fusoid-ventricose with broadly rounded apex, wall thin, smooth and hyaline in KOH, content of cell not distinctive in either KOH or Melzer's. Cheilocystidia similar to pleurocystidia or varying to clavate or vesiculose. Caulocystidia similar to pleurocystidia varying to clavate to narrowly clavate, thin-walled, hyaline in KOH.

Gill trama pale vinaceous-brown in KOH but fading, the hyphae incrusted (at least in subhymenial region). Pileus trama deep vinaceous-brown to darker in KOH, the walls incrusted, fading on standing and most of incrustation vanishing. Cuticle in the form of a palisade of clavate to vesiculose cells and with pale sordid brownish walls, fading to nearly hyaline, cell content not distinctive. Clamp connections absent.

Type locality. Edwards County, Kansas.

Habit and habitat. Gregarious to subcespitose in sandy soil along a stream.

Distribution. Kansas.

Observations. The cuticle in the form of a palisade, habitat on sandy moist soil, coarse outer veil, browning stipe and medium large spores and lack of clamps are distinctive.

Material examined. Kansas: Brooks 1600 (Type), 1601.

146. **Psathyrella emmetensis** A. H. Smith, sp. nov.

Pileus 1–3 cm latus, conicus demum plano-umbonatus, sparse albo-fibrillosus, ad marginem appendiculatus, glabrescens, pallide cinnamomeus; lamellae con-
fertae, latae, dilute cacaocolor, demum fumoso-cacaocolor; stipes 4–6 cm longus, 3–4 mm crassus, connatus, albidus deorsum demum brunneus; sporae 8–11×5–6.2 μ; pleurocystidia 40–55×12–18 μ, pedicellato-ventricosa, ad apice erum rotundata; fibulae adsunt. Typus. Smith 71791 (MICH); legit prope Cross Village, Michigan.

Illust. Pl. 36, fig. a; Text Figs. 326–329.

Pileus 1–3 cm broad, obtusely conic with a straight margin, becoming expanded-umbonate, surface at first with a thin white coating of outer veil fibrils, the margin appendiculate at first for a short time, soon glabrescent over all, color a pale cinnamon-brown when young and moist, hygrophanous and fading in streaks on the margin first and often appearing pallid-rimose. Context thin and fragile, pale dingy buff, odor and taste not distinctive—the odor somewhat earthypungent, with FeSO₄ no reaction.

Pileus cuticle a layer of vesiculose cells about 2 deep, the walls hyaline or ochraceous in KOH and both smooth and thin; subcuticular region and tramal hyphae ochraceous to clay color revived in KOH, walls smooth. Clamps present.

Type locality. Wycamp Lake, Emmet County, Michigan.

Habit and habitat. Cespitose on humus in an alder-aspen slashing, July.

Distribution. Emmet County, Michigan.

Observations. The distinctive features of this species include the mycelial mat around the clusters of basidiocarps, the wide spores for their length, the wide and rounded pleurocystidia, the large vesiculose caulocystidia along with the other types as described, the outer veil, and habit of fruiting in clusters. Drosophila pannucioides (Lange) Kühn. & Romagn. has spores 7.5–9.5×5–5.7 μ but the outer veil is heavy and relatively persistent.

Material examined. Michigan: Smith 71790, 71791 (Type).

147. Psathyrella vialis A. H. Smith, sp. nov.

Pileus 1–3.5 cm latus, obtuse conicus vel convexus, demum late campanulatus vel subplanus, sparse griseo-fibrillosus, glabrescens, radius vel subferrugineus, demum spadiceus; lamellae sordide cinnamomeae demum subhepaticolor; stipes
4–7 cm longus, 1.5–3(–4) mm crassus, squamulosus, glabrescens, deorsum demum ochraceo-brunneus; sporae 8–11 × 5–6 μ; pleurocystidia 36–58(–62) × 12–18 μ, fusoid-ventricosa vel utriformia; fibulae adsunt. Typus. Smith 78108 (MICH); legit prope Brevoort Lake, Michigan.

Illust. Pl. 56, fig. a; Pl. 57, fig. b; Text Figs. 330–333.

Pileus 1–3.5 cm broad, broadly conic to convex, becoming somewhat campanulate to broadly convex, moist and hygrophanous beneath a thin coating of grayish pallid outer veil remnants, margin at first fringed by veil remnants, soon entirely glabrescent, translucent-striate moist, when young and moist reddish cinnamon (about like Pholiota confragosa), becoming “burnt umber” before fading, old pilei dark yellow-brown (“Prout’s brown”) before fading, dingy reddish tan to tan when faded or grayer from the spores. Context thin and fragile, odor and taste not distinctive.

Lamellae pale to dark dull cinnamon (“Sayal brown”), becoming “burnt umber” and finally dark chocolate-color, broad, close, adnate but soon seceding, edges even.

Stipe 4–7 cm long, 1.5–3(–4) mm at apex, equal in age, narrowly clavate young, surface white-fibrillose to squamulse, pruinose-scabrous over apical region, context becoming yellow-brown or darker from the base upward.

Spores 8–11 × 5–6 μ, smooth, truncate from an apical pore, shape in face view elliptic to ovate, in profile subovate to obscurely inequilateral, color in KOH soon chocolate-black, in Melzer’s dark bay-brown, wall about 0.4 μ thick.

Basidia 4-spored, 12–24 × 7–9 μ, clavate, hyaline in KOH. Pleurocystidia scattered, 36–58(–62) × 12–18 μ, utriform to fusoid-ventricose with obtuse apex, thin-walled, smooth, hyaline in KOH, content not distinctive in KOH or Melzer’s. Cheilocystidia clavate to saccate and 15–25 × 9–15 μ or similar to pleurocystidia but more frequently fusoid-ventricose. Caulocystidia 22–46 × 12–18 μ, many odd shapes present, some surface hyphae with intercalary cells inflated like cystidia, all with smooth, thin, hyaline walls and lacking distinctive content.

Cuticle of pileus a layer of vesiculose cells about 2 deep, the walls (as seen on sections) weakly ochraceous to hyaline, content empty (in either KOH or Melzer’s). Hyphae of subcutis with pale cinnamon walls in KOH and walls smooth to minutely roughened. Clamps present.

Type locality. Brevoort Lake, Mackinac County, Michigan.

Habit and habitat. Cespitose to gregarious or scattered but often very abundant on or along little used sand roads, summer and early fall.


Observations. This species features a thin coating of grayish pallid fibrils over the pileus at first, colors much as in Pholiota confragosa (before they change with the maturation of the spores), very dark colored spores both in KOH and in Melzer’s, pleurocystidia intermediate between utriform and typically fusoid-ventricose types, and finally in the versiform caulocystidia.

Material examined. UNITED STATES. Michigan: Ammirati 1763, 2890; Smith 32548, 33325, 50424, 50434, 67040, 77958, 77959, 77960, 77962, 78108 (Type). CANADA. Ontario: Smith 26568.


Illust. 1. c. fig. 79, pl. 3h.

Pileus 1–2.5 cm broad, subglobose becoming campanulate to broadly hemispheric, when young with white minute flocci from a rudimentary outer veil, soon
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Glabrous, hygrophanous, umber "(h 2)" when moist, when faded whitish yellow "(3 5)" with deep ochre yellow disc when faded, when partly faded with a dark zone around the margin, smooth or sometimes minutely wrinkled, when moist translucent striate inward for 2–3 mm, margin often rusty ochraceous "(g 2)." Context 1–1.5 mm in the disc, whitish, in the pileus nearly concolorous with surface except for a dark watery line above the gills, in the interior of the stipe more or less fulvous; odor unpleasant (soap-like or like that of Tricholoma saponaceum), taste not distinctive.

Lamellae at first a beautiful pallid eye-blue "(0 4)" and forming a strong contrast to the rusty margin of the cap, at length blackish, broad (4 mm), more or less ascending, broadly adnate, subdecurrent, crowded, the margin slightly concave and strongly white-floccose.

Stipe 2.5–5 cm long, 1.5–2 mm thick, pure white, equal or evenly thickened downward, often with a waxy surface, flexuous, with a silky sheen, smooth, base without setulae, rooting, apex with very fugaceous white flocci (from outer veil) when young, stiff, fistulose.

Spores 12–13×6.5–7.5 μ, oval, with indistinct germ pore; black brownish (Möller). Spore powder black. Basidia 4-spored, 20–24×11–12 μ. Cystidia at gill edge, 28–42×10–13 μ, utriform or nearly so, 6–7 μ wide at apex.

Type locality. Stromo, Faeroes.

Habit and habitat. On naked manured garden-bed soil, gregarious, rarely subcespitose, July.

Distribution. The Faeroes.

Observations. No material of this species has been studied. The above account is adapted from Möller's description. It is included here on the expectation that the species will be found in the subarctic region of eastern Canada.

149. Psathyrella brooksii A. H. Smith, sp. nov.

Pileus 1–2 cm latus, campanulatus vel convexus, sparse squamulosus, glabrescens, cinnamomeo-brunneus; lamellae latae, subdistantes, fusco-brunneae; stipes 3–4 cm longus, circa 1 mm crassus, floccoso-fibrillosus; spora 12–15×7–9 μ; pleurocystidia 40–62×10–18 μ, subelavata, elliptica vel late fusoido ventricosa; fibulae adsunt. Typus. Brooks 1594 (MICH); legit prope Edwards County, Kansas.


Pileus obtusely campanulate to convex, the scattered patches of outer veil material remaining longest near the margin, surface moist and hygrophanous, apparently dingy cinnamon-brown when moist and fading to dingy tan, when dried dull grayish cinnamon. Context thin and fragile, odor and taste not recorded.

Lamellae broad, bluntly adnate, subdistant, chocolate-brown as dried but with the edges white and minutely fimbriate.

Stipe 3–4 cm long, about 1 mm (or slightly more) thick, equal, mycelioid at the base, dull brownish as dried but still with adhering flecks of fibrils from the outer veil.

Spores 12–15×7–9 μ, smooth, apical pore distinct and apex somewhat truncate (see immature, pale-colored spores), shape in face view ovate to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH at first dark rusty brown becoming "mummy brown" to darker, in Melzer's bay to bay-brown, wall 0.8–1 μ thick.
Psathyrella salmonescens A. H. Smith, sp. nov.

Pileus 1–2 cm latus, late convexus, sparse albo-fibrillosus, demum sub-squamulosus, glabrescens, badius vel castaneus, dein sordide incarnatus; lamellae confertae latae, dilute brunneae demum fumoso-fuscae; stipes 2–3 cm longus, 1–2 mm crassus, subbadius, fibrillosus; sporae 10–13×5.5–6.5 μ; pleurocystidia 44–56×10–18 μ, subutriformia vel late fusoide ventricosa; fibulae adsunt. Typus. Smith 5023 (MICH); legit prope Stockbridge, Michigan.

Illustr. Text Figs. 337, 339, 340.

Pileus 1–2 cm broad, obtuse to convex, broadly convex in age, at first thinly coated by white fibrils which aggregate into fascicles as pileus expands, the margin straight at first and fringed with veil fibrils, glabrescent, when moist “chestnut” (dark red-brown), hygrophanous, fading to “salmon-buff” (a dingy pink) or with a stronger red tinge. Context thin, rufous tinged, fragile, odor and taste not distinctive.

Lamellae close, broad, adnate, pale brownish, finally dark smoky brown, edges white-fimbriate.

Stipe 2–3 cm long, 1–2 mm thick, equal, tinged reddish brown beneath the fibrils, pruinose above, glabrous in age, at first the tubule stuffed with a white pith.

Spores near “benzo brown” in deposit, 10–13×5.5–6.5 μ, smooth, apical pore distinct and apex truncate, shape in face view elliptic to subovate, rarely sub-oblong, in profile subelliptic to obscurely inequilateral, color in KOH coffee-bean brown quickly changing to dark chocolate-color, in Melzer’s dark bay-red, wall about 0.5 μ thick.

Basidia 4-spored, 18–23×6–9 μ, clavate, hyaline in KOH. Pleurocystidia 44–56×10–18 μ, subutriform to broadly fusoid-ventricose with rounded to obtuse apex, wall smooth, thin and hyaline, content not distinctive in KOH or Melzer’s, apex in some divided into 2–3 obtuse protuberances and in some the apex of the protuberance subacute. Cheilocystidia similar to pleurocystidia or more ventricose and with narrower neck terminating in a subacute apex, some vesiculose cells also present. Caulocystidia very rare, and those seen were merely scattered,
recurved, clavate hyphal ends. Hyphae of stipe roughened and with pale cinnamon deposits in the region of the septa.

Gill trama regular, rusty brown in KOH, the subhymenium cellular and also rusty brown. Pileus trama floccose, interwoven, dark rusty brown in KOH and with incrustations on the wall especially near the septa. Cuticle formed by a single layer of vesiculose cells some of which are pedicellate but they are not arranged in a distinct palisade. Clamp connections present but rare.

Type locality. Stockbridge, Michigan.

Habit and habitat. Scattered on black muck.

Distribution. Known only from the type locality.

Observations. This is one of the few species where the hyphae of the stipe show pigment deposits near the septa. This feature, rarity of clamp connections, and the salmon tint to the faded pileus are distinctive.

151. Psathyrella fatiscens A. H. Smith, sp. nov.

Pileus 1-3 cm latus, obtuse conicus demum planus, sparse squamulosus, glabrescens, ad marginem rimosus, cinnamomeo-brunneus; lamellae confertae, angustae demum latae, sordide cinnamomeae demum vinaceo-brunneae; sporae 9-12 × 5-6 μ; pleurocystidia 36-52 (-58) × 10-16 (-22) μ, utriformia vel late fusoido-ventricosa, late rotundata; fibulae adsunt. Typus. Smith 67365 (MICH); legit prope Manchester, Michigan.

Illust. Text Figs. 341-344.

Pileus 1-3 cm broad, obtuse with the margin straight at first, expanding to plane or with the margin uplifted slightly, with or without a slight umbo, often splitting along the margin; outer veil white, thin, soon broken into minute squamules which soon vanish; surface moist and hygrophanous, cinnamon-brown fading to grayish buff, striate to disc when moist. Context very crumbly and fragile, thin, concolorous with surface, odor and taste not distinctive, FeSO₄ no reaction.

Lamellae close, narrow becoming moderately broad, adnate, pale dull cinnamon becoming cocoa-color and finally dark vinaceous brown; edges even, pallid, not deliquescing.

Stipe 2-4 cm long, 1-3 mm thick, equal, hollow, exceedingly fragile, whitish over all at first, darker below when moist but when faded concolorous throughout, thinly fibrillose from remains of the veil.

Spores 9-12 × 5-6 μ, smooth, apical pore small and apex obscurely truncate (or “pore” bulging out in KOH mounts to form a bubble), shape in face view elliptic to ovate, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH dark cocoa-color slowly becoming dark chocolate-color, in Melzer’s dark reddish tawny, wall about 0.5 μ thick.

Basidia 4-spored, 25-30 × 9-12 μ, clavate, hyaline in KOH. Brachybasidioles present in age. Pleurocystidia 36-52 (-58) × 10-16 (-22) μ, utriform to fusoido-ventricose with broadly rounded apex, neck indistinct or well developed but wide, some cells subcylindric-pedicellate, some subglobose-pedicellate, thin-walled, smooth, hyaline, cell content not distinctive. Cheilocystidia similar to pleurocystidia but smaller. Caulocystidia versiform (Fig. 341) thin-walled, smooth, cell content not distinctive.

Gill trama regular, hyphal walls vinaceous-cocoa-color in KOH but fading; subhymenium cellular. Pileus trama of hyphae vinaceous-cocoa-color in KOH, with distinct incrustations on the walls. Cuticle of pileus a layer of inflated cells
2–3 deep, the walls thin and smooth, hyaline to faintly cocoa-color in KOH. Clamp connections present.

Type locality. Near Manchester, Michigan.

Habit and habitat. Gregarious on muck in a hardwood swamp, September.

Distribution. Known only from the type locality.

Observations. Young pilei just beginning to produce spores show no sign of basidioles differentiating into brachybasidioles but in old caps it is very clear, the brachybasidioles being 8–11 μ wide and practically isodiametric. There is no tendency whatever toward autodigestion, but the manner in which the pileus expands certainly suggests a *Coprinus*.

152. *Psathyrella vulgaris* A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, convexus, dein late convexus, sparse fibrillosus, glabrescens, cinnamomeo-brunneus; lamellae confertae, subdistantes, latae, adnatae, dilute bruneae, demum sordide ecaacoolor; stipes 2–3 cm longus, 1–1.5 mm crassus, albidus deorsum albo-fibrillosus; sporae 8–11(–12) × 4.5–6 μ; pleurocystidia 32–53 × 12–20 μ, ellipsoidea vel subutriformia; fibulae adsunt. Typus. Smith 32027 (MICH); legit prope Manchester, Michigan.

Illust. Text Figs. 345, 346.

Pileus 1–2.5 cm broad, convex, expanding to broadly convex, surface moist and hygrophanous beneath a thin superficial layer of white fibrils constituting the remains of a universal veil, fibrillose layer soon breaking up into fascicles of fibrils and these disappearing as pileus expands, glabrous and near cinnamon-brown near maturity, hygrophanous, fading to ocherous-buff. Context thin and fragile, watery brown becoming pallid buff on fading, odor and taste not recorded.

Lamellae close to subdistant, broad, broadly adnate, pallid brownish becoming near “Verona brown” (dull reddish cinnamon) at maturity, edges even.

Stipe 2–3 cm long, 1–1.5 mm thick, equal, white to whitish, lower third coated with white fibrils of outer veil material, naked to slightly pruinose above.

Spores 8–11(–12) × 4.5–6 μ, smooth, apical pore distinct and apex obscurely truncate in many, shape in face view elliptic to ovate (obovate rarely), in profile obscurely inequilateral to subelliptic, (rarely apex terminating in a snoutlike projection), color in KOH coffee brown slowly darker, in Melzer’s rich tawny, wall about 0.5 μ thick.

Basidia 18–26 × 7–9 μ, clavate, 4-spored, hyaline in KOH. Basidioles developing into brachybasidioles by late maturity. Pleurocystidia 32–53 × 12–20 μ, in optical section mostly elliptic to subelliptic above the pedicel, apex broadly rounded, wall thin, smooth and hyaline, content not distinctive in either KOH or Melzer’s. Cheilocystidia similar to pleurocystidia but varying to vesiculose. Caulocystidia scattered in fascicles and similar to pleurocystidia.

Gill trama dark cinnamon-brown tinged with cocoa-color when first revived, gradually fading to nearly hyaline. Pileus trama colored like the gill trama and also slowly fading, pigment incrustations present on the walls but not conspicuous. Cuticle of pileus a layer of vesiculose cells and long-ellipsoid cells (the latter often upright), one to several cells deep as a layer, the long cells not numerous enough to form a palisade, the walls smooth, thin and hyaline, cell content not distinctive in KOH or Melzer’s. Clamp connections present.

Type locality. Sharon Hollow, near Manchester, Washtenaw County, Michigan.

Habit and habitat. On sand where logs had been skidded.
Observations. This very ordinary-appearing *Psathyrella* has truly distinctive pleurocystidia for a member of this section. The variation in spore size and shape may indicate that the cytological history of the species is somewhat irregular. This point should be investigated.

Material examined. Michigan: Potter 7483; Smith 32027 (Type), 32028, 34110.

Subsection Squamiferae A. H. Smith, subsect. nov.

Sporae magnae (9–12 × 5–6 μ vel maior); pleurocystidia subacuta. Typus. *Psathyrella abortiva.*

Key to the Species of Subsection Squamiferae

1. Spores 13–15(–18) × 6.5–8(–9) μ.
   1. Spores smaller.
      2. Growing on burned areas; stipe pallid and unchanging. 153. *P. sublanata.*
      3. Not as above.
         4. Stipe 4–8 cm long, 2–5 mm thick; lamellae narrow; cespitose on wood. 155. *P. victor.*
   5. Not as above.
      6. Occurring near dung of herbivores or on well fertilized soil such as barnyards or gardens. see 230. *P. hirta.*
   7. Spores compressed, 9–11.5 × 4.5–5.5 × 5.5–7 μ.
      8. Stipe snow-white and silky-fibrillose; spores 9–12 × 5.5–7 μ; spores in face view (at least some) angular-ovate. 159. *P. latispora.*
      9. Spore apex truncate (or pore broad and lens-shaped).
      12. Spores 11–14 × 5.5–6.5 μ; base of stipe somewhat strigose. 163. *P. substrigosipes.*

153. *Psathyrella sublanata* A. H. Smith, sp. nov.

Pileus 5–10 mm latus, obtusus demum convexus, sparse fibrilloso-floccosus; glabrescens, cinnamomeo-brunneus, saepe rugulosus; lamellae confertae, latae adnatae atro-brunneae; stipes 2–3 cm longus, 2.5 mm crassus, fragilis, fibrillosus, floccosus; sporae 13–15(–18) × 6.5–8 μ; pleurocystidia 46–62 × 9–15 μ, fusoides ventricosa; fibulae adsunt; ad aream ambustum. Typus. Smith 34609 (MICH); legit prope Laramie, Wyoming.

Pileus 5–10 mm broad, obtuse to convex, surface at first with minute flecks of superficial fibrils from the remains of an outer veil, glabrescent, surface moist,
near cinnamon-brown, hygrophanous, fading to pallid, rugulose at times. Context very thin and fragile, odor none, taste not recorded.

Lamellae close, broad, adnate, blackish at maturity.

Stipe 2–3 cm long, about 2.5 mm thick, equal, fragile, pallid, fibrillose from remains of the veil, glabrescent.

Spores 13–15(–18) × 6.5–8 μ, smooth, apex truncate from a broad apical pore, shape in face view ovate, in profile somewhat inequilateral, color in KOH bister to mummy brown, slowly becoming dark chocolate-brown, in Melzer’s dull reddish tawny to bay-red, wall about 1 μ thick.

Basidia 2- and 4-spored, 20–34 × 10–13 μ, hyaline or nearly so in KOH. Pleurocystidia scattered, 46–62 × 9–15 μ, fusoid-ventricose with tapered neck and very acute apex, hyaline in KOH, smooth, thin-walled, cell content not distinctive in KOH or Melzer’s. Cheilocystidia abundant, similar to pleurocystidia or slightly smaller, many smaller ellipsoid to clavate cells yellowish in KOH intermingled with them. Caulocystidia similar to the pleurocystidia but more variable in size.

Gill trama dark cocoa-brown in KOH. Pileus trama dark cocoa-brown in KOH, pigment thickenings in the wall near the septa numerous. Cuticle of pileus a palisade of clavate to ellipsoid cells about 1 deep (or staggered somewhat), the walls hyaline or ochraceous in KOH but near the base or in the pedicel pale rusty brown. Clamp connections present. No distinctive reaction on any tissue in Melzer’s.

Type locality. Pole Mt. near Laramie, Wyoming.

Habit and habitat. Gregarious on campfire sites of recent (about a year old) activity.

Distribution. Wyoming.

Observations. This species has the cystidial and tramal features of *P. carbonicola* but differs in having much larger spores.

Material examined. Wyoming: Smith 34553, 34609 (Type), 34612.

154. *Psathyrella subrubella* A. H. Smith, sp. nov.

Pileus 8–15 mm latus, conicus demum convexus, albo-fibrillosus, glabrescens, fusco-brunneus dein avellaneus, tarde ad marginem incarnatus; lamellae latae, confertaes, adnataes, atro-brunneae; stipes 5–6 cm longus, 1–1.5 mm crassus, fragilis, pallidus demum griseus, fibrillosus, glabrescens; sporae (12–)13.5–17(–20) × 6.5–8(–9) μ; basidia tetraspora; pleurocystidia 30–44(–50) × 9–14 μ, fusoid ventricosa, acuta; fibulae adsunt. Typus. Smith 22041 (MICH); legit prope Douglas Lake, Michigan.

Illust. Text Fig. 347.

Pileus 8–15 mm broad, evenly and obtusely conic, becoming nearly convex, surface at first covered by small patches of white fibrils from the remains of the outer veil, moist and translucent striate, hygrophanous, chocolate-brown fading to avellaneous but soon assuming a distinctly pinkish tint. Context membranous and exceedingly fragile, pallid.

Lamellae broad, close, adnate, chocolate-brown to blackish, edges whitish.

Stipe 5–6 cm long, 1–1.5 mm thick, equal, very fragile, glabrous, whitish but becoming dingy drab, yellowish tan when dry, soon glabrous, base white-strigose.

Spores (12–)13.5–17(–20) × 6.5–8(–9) μ, smooth, apical pore broad and causing apex to appear truncated, shape in face view elliptic to narrowly ovate, in profile suboval to obscurely inequilateral, at times the apical region extended into a short
"snout," color in KOH dark bister to blackish brown ("mummy brown"), in Melzer's dark reddish tawny, wall about 1 μ thick.

Basidia 2-spored, 17–22 × 9–14 μ, clavate, hyaline in KOH. Pleurocystidia scattered, 36–44 (~50) × 9–14 μ, fusoid-ventricose with acute apex, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia but smaller. Caulocystidia 35–70 × 10–18 μ, mostly clavate but varying to fusoid-ventricose with obtuse apex, smooth, thin-walled, hyaline in KOH.

Gill trama hyaline to pale sordid brownish in KOH, the cells greatly enlarged and more or less regularly arranged. Pileus trama also of greatly enlarged cells and nearly hyaline in KOH; cuticle formed of upright clavate to ellipsoid or globose cells arranged in more or less of a palisade, the cells hyaline, thin-walled, smooth and lacking distinctive content in KOH or Melzer's. Veil hyphae yellowish in KOH and some of the end cells with slightly thickened refractive walls. Clamp connections present.

Type locality. Wolf's Bog, Cheboygan County, Michigan.

Habit and habitat. Scattered on black muck.


Observations. The color change to yellow in KOH of the veil hyphae and the tendency for the end cells to have thickened refractive walls, the large spores, and generally shorter pleurocystidia than *P. gracilis* distinguish this species along with the habitat.

Material examined. Michigan: Smith 33–611, 22041 (Type), 74613; Oregon: Smith 19338.

155. **Psathyrella victori** A. H. Smith, sp. nov.

Pileus 1.5–4 cm latus, late conicus demum convexus, floccoso-squamulosus, glabrescens, fulvus dein sordide fulvidulus; lamellae confertae, perangustae, adnatae, bruneolae, demum subfulvulae; stipes 4–8 cm long, 2–5 mm erussus, albidus, floccose squamulosus, glabrescens, deorsum demum sordide fulvulae; sporae 8–11 × 5–6 μ; pleurocystidia 34–46 × 8–13 μ, fusoid ventricosa; fibulae adsunt. Typus. Potter 10560 (MICH); legit prope Ithaca, Michigan.

Pileus 1.5–4 cm broad, obtuse, expanding to broadly conic or finally convex with a decurved margin, surface at first covered with white appressed flocci, glabrescent, margin not appendiculate, color rusty brown and fading to dingy tawny, hygrophanous, dingy tawny as dried. Context thin and fragile.

Lamellae close to crowded, very narrow, ascending adnate, brownish when young, then with a rusty tan tone and as dried cocoa-brown; edges even.

Stipe 4–8 cm long, 2–5 mm thick, at times more or less connate at the base, hollow, fragile, white at first and with patches of whitish veil remnants, tan in age beneath the fibrils (or when dried), base mycelioid to strigose, arising from buried wood but lacking a pseudorhiza.

Spores 8–11 × 5–6 μ, smooth, truncate from an apical pore or apex only obscurely truncate, shape in face view ovate to elliptic, in profile, subelliptic or ovate or obscurely inequilateral, color in KOH dull chocolate-color to chocolate-gray and then pallid grayish with a tinge of ocher; in Melzer's dull tawny, wall about 0.4 μ thick.

Basidia 4-spored, clavate, 7–9 μ wide, 18–25 μ long. Pleurocystidia scattered, 34–46 × 8–13 μ, fusoid-ventricose, the neck often flexuous and apex subacute,
smooth, thin-walled, hyaline. Cheilocystidia more or less similar to pleurocystidia, hyaline in KOH.

Cuticle of pileus a layer of vesiculose cells 1–2 deep, the walls thin but slightly refractive, smooth, hyaline to ochraceous in KOH. Hyphae of subcuticular zone pale to rich rusty brown in KOH (paler on standing), walls roughened when highly pigmented. Clamps present.

Type locality. Ithaca, Michigan.

Habit and habitat. Cespitose on rotten wood inside a hollow soft-maple tree, October.

Distribution. Known only from the type locality.

Observations. This species appears to be related to *P. emmetensis* but differs in the features of the pleurocystidia and in the rapidity with which the spores fade to pale chocolate-gray with a slight ochraceous tint when mounted in KOH. There was no rooting base or any evidence of even a rudimentary oozonium.


Pileus 10–25 mm broad, obtusely conic at first and the margin appressed against the stipe, becoming broadly conic or finally nearly plane, surface at first covered with superficial easily removed white fibrils, the fibrils becoming appressed into fascicles or scales and finally the pileus glabrous, color “chocolate-brown” to “warm sepia” (deep reddish brown), hygrophanous and fading to “pinkish buff” or “cinnamon-buff” (very pale alutaceous), not conspicuously striate when moist. Context very thin and fragile, odor none, taste not recorded.

Lamellae narrow, close, adnate, cinnamon-buff then blackish brown, margin white-fimbriate.

Stipe 8–12 cm long, 1.5–2.5 mm thick, equal, strict, hollow, very fragile, surface whitish from a fibrillose covering or the fibrils loosely arranged in fascicles, somewhat glabrescent, more or less fibrillose-pruinose near the apex.

Spores 10–13×4.5–6.6 μ, smooth, apical pore distinct and apex somewhat truncate if hyaline apical lens-shaped cap has collapsed, shape in face view elliptic to slightly ovate, in profile subelliptic to obscurely inequilateral, color in KOH chocolate-brown, in Melzer's reddish tawny, wall about 0.5 μ thick.

Basidia 4-spored, 26–30×10–14 μ, pedicel long and slender, hyaline. Pleurocystidia abundant 44–56(-60)×10–16 μ, fusoid-ventricose with narrow (4–6 μ) neck and obtuse to subacute apex, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia but usually smaller. Caulocystidia in patches, roughly resembling the pleuro- and cheilocystidia.

Gill trama regular, of large irregular cells more or less loosely interwoven, dark rusty brown in KOH (not cocon-colored). Pileus having a cuticle formed by a palisade of ellipsoid to clavate cells with broad bases, their walls faintly yellow to cinnamon (near base) in KOH. Hyphae of the pileus trama dark rusty brown in KOH and the hyphae conspicuously incrusted with pigment patches and bands. Clamp connections present.

Type locality. Finland.

Habit and habitat. Scattered on debris and mulch under alder and *Thuja* mixed.


Observations. This is a long-stiped species with smaller spores than *P. gracilis* and with a well developed veil. Van Waveren (1971) discusses this species in
relation to *P. gracilis*, but lists it as a synonym of *P. microrhiza*, a species I have not recognized from North America. The original concept of *P. microrhiza* Lasch as copied by Saccardo (Sylloge Fung. 5: 1073) states of the pileus “Pileo . . . primitus luteo-piloso . . .” which to me indicates clearly that the species has a yellow veil. It also had close narrow gills. On the basis of these characters I do not accept the current concepts of *P. microrhiza*.


Pileus 1–2 cm latus, conicus demum subplanus, copiose albo-fibrillosus vel squamulosus, glabrescens, albidus demum fulvus; lamellae subdistantes, adnatae, latae (3–4 mm), albidae demum brumneolae dein purpureo-brunneae; stipes 3–4 cm longus, 3–3.5 mm crassus, copiose fibrillosus, glabrescens; ad basem cum carpophoroidis; sporae 9–11 (–12) × 4.5–6 (–7) μ; pleurocystidia 32–48 × 8–12 μ, fusoid-ventricosa, obtusa; fibulae adsunt. Typus. Smith 33–1099 (MICH); legit prope Whitmore Lake, Michigan.

Illust. Pl. 58 figs. a, b; Text Figs. 348–351.

Pileus 1–2 cm broad, obtusely conic, becoming convex and finally nearly plane, the margin appressed against the stipe at first, pure white when young, becoming “ochraceous-tawny” with a russet tinge while moist, hygrophanous, fading to a dull ochraceous-buff, when young covered by a dense layer of white fibrils, at maturity covered by recurved or erect fibrillose scales, margin fringed, in age nearly glabrous, not striate. Context thin, white, fragile, odor and taste none.

Lamellae narrowly adnate, seceding, subdistant, moderately broad (3–4 mm), white to sordid brownish when young, gradually becoming dark purplish brown.

Stipe 3–4 cm long, 3–3.5 mm thick, hollow, very fragile, equal, at first densely covered by a white fibrous coating of recurved fibrillose scales, slowly glabrescent, apex fibrillose to pruinose; numerous soft, fleshy, pallid carpophoroids 2–7 mm in diam. occur in the vicinity of the basidiocarps or attached to them.

Spores 9–11 (–12) × 4.5–6 (–7) μ, smooth, apical pore distinct but small and apex not truncate, shape in face view elliptic to ovate or in largest spores the apical region snoutlike, in profile subelliptic to obscurely inequilateral, color in *KOH* very soon dark chocolate-color, in Melzer’s deep tawny-red, wall about 0.3–0.4 μ thick.

Basidia 4-spored, 26–28 × 8–10 μ, hyaline in *KOH*, clavate. Pleurocystidia scattered to rare, 32–48 × 8–12 μ, fusoid-ventricose, the apex obtuse, wall thin, smooth and hyaline, content of cell not distinctive in either *KOH* or Melzer’s. Cheilocystidia similar to pleurocystidia or with longer necks, 36–52 × 8–14 μ, obtuse, wall not colored in *KOH*. Caulocystidia clavate, scattered, 40–65 × 14–20 μ, not infrequently with a “false clamp” (Fig. 351) wall thin, smooth and hyaline, cell content not distinctive.

Gill trama with a narrow central strand of elongated cells bordered on each side by large inflated cells, hyaline in *KOH* and weakly yellowish in Melzer’s. Pileus having a cuticle of hyaline vesiculose cells several deep, the walls thin, smooth and hyaline, cell content not distinctive. Hyphae of the context perfectly hyaline in *KOH*. Clamp connections present. No distinctive reactions on any tissue when mounted in Melzer’s.

Type locality. Whitmore Lake, Michigan.

Habit and habitat. Gregarious on very rich humus in elm and soft maple swamps.
Distribution. Known only from the type locality.

Observations. Smith (1934) identified this material as *P. hirta* Peck but this was a mistake. The latter is coprophilous. The abortive bodies (earphoroids) are smaller than those of *Rhodophyllum abortivus* but are of the same consistency.


158. *Psathyrella monticola* A. H. Smith, sp. nov.

Pileus 8–15 mm latus, conicus, demum late conicus, subcacaocolor, sparse fibrillosus, glabrescens, ad marginem fimbriatus, glabrescens; lamellae brunneo-lae, demum subcacaocolor, latae, subdistantes; stipes 1.5–2 cm longus, 1–1.5 mm crassus, dilute alutaceus; sparse fibrillosus; sporae 9–11.5 × 5.5–7 × 4.5–5.5 μ; pleurocystidia 34–45 × 10–16 μ, late fusido-ventricosa, obtusa vel subacuta; fibulae adsunt. Typus. Smith 65132 (MICH); legit prope New Meadows, Idaho.


Pileus 8–15 mm broad, obtusely conic, the margin straight, expanding to broadly conic to almost convex, surface moist and hygrophanous, near "Verona brown" (dull cinnamon) moist, fading to dingy cocoa-color, broad, adnate, seceding, subdistant, edges even.

Stipe 1.5–2 cm long, 1–1.5 mm thick, equal, watery cinnamon-buff over all, at first faintly fibrillose from the pallid veil but soon glabrescent, (no zones or patches of veil material evident).

Spores 9–11.5 × 5.5–7 × 4.5–5.5 μ, smooth, truncate from an apical pore, compressed slightly, in face view broadly ovate to elliptic, in profile very obscurely inequilateral (plage area flattened slightly) to subelliptic, color in KOH dark chocolate-color, in Melzer's dark bay-red, wall about 0.5 μ thick.

Basidia 4-spored, 23–30 × 9–12 μ, hyaline in KOH. Pleurocystidia scattered, 34–45 × 10–16 μ, broadly ventricose with a short neck and obtuse to subacute apex, walls thin and smooth, content not distinctive, the cystidia collapsing and difficult to revive. Cheilocystidia covering the gill edge, vesiculose, to broadly fusoid-ventricose, thin-walled, smooth, hyaline or content in some smoky vinaceous-brown. Caulocystidia absent to rare and resembling cheilocystidia (an occasional inflated hyphal end cell). Hyphae of stipe cortex weakly vinaceous-brown in KOH when seen collectively.

Cuticle of pileus a layer of inflated and pedicellate cells 1–2 deep, the base of the pedicels often with thickened (0.5 μ) colored walls in KOH. Subeuticular layer of tubular to inflated hyphal cells, the layer dark vinaceous brown in KOH but fading, hyphal walls roughened somewhat. Context hyphae also vinaceous-brown in KOH but fading. Clamps present. No distinctive reaction with Melzer's on any tissue.

Type locality. Goose Lake, New Meadows, Idaho.

Habit and habitat. On earth in an old burn, July.

Distribution. Known only from the type locality.

Observations. This species is distinguished by the slightly compressed spores, the short broad pleurocystidia, the numerous vesiculose cheilocystidia, the thin veil and the dingy honey-colored stipe. It is questionable if the habitat is sig-
significant since the burn was a very old one. In late maturity the basidioles begin to resemble brachybasidioles by becoming inflated. The dark color of sections when first revived in KOH is much like that of the group of species around *P. velibrunnescens*.

159. **Psathyrella latispora** A. H. Smith, sp. nov.

Pileus 15–25 mm latus, late convexus, albo-fibrillosus, glabrescens, cinnamomea-brunneus; lamellae latae, confertae triste vinaceo-brunneae; stipes 5–6 cm longus, 2–3 mm crassus, candidus, sparse fibrillosus, glabrescens; spora 9–12 × 5.5–7 μ; pleurocystidia 40–65 × 12–18 μ, clavata vel ad apicem cum 1–3 processi; fibulae adsunt. Typus. Potter 8871 (MICH); legit prope Ithaca, Michigan.

Illust. Text Figs. 355–357.

Pileus 15–25 mm broad, convex, broadly so in age, moist and hygrophanous, surface at first covered with fascicles of fibrils from the remains of a universal (outer) veil, more or less glabrescent by maturity, pale to dark cinnamon-brown moist, fading to avellaneous on the margin and tinged cinnamon-buff on the disc. Context thin and fragile.

Lamellae broad, close, bluntly adnate, dark vinaceous-brown “natal brown” as dried, edges whitish.

Stipes 5–6 cm long, 2–3 mm thick, equal, fragile, shining white over all and white when dried, silky, with scattered fibrils from the veil at first but these vanishing by maturity.

Spores 9–12 × 5.5–7 μ, smooth, apical pore present but inconspicuous and the pore not causing the apex to appear truncate, shape in face view broadly ovate to elliptic or angular-ovate, in profile broadly and obscurely inequilateral, in cross section terete or practically so, color in KOH dull cocoa-color, slowly darkening to bister (about the color of *Psilocybe* spores in KOH), in Melzer’s dull tawny, wall about 1 μ thick.

Basidia 4-spored, 23–28 × 9–11 μ, clavate, hyaline in KOH. Pleurocystidia scattered, 40–65 × 12–18 μ, clavate but narrowed somewhat near apex which is obtuse or furnished with 1–3 short finger-like processes or knobs, some fusoid-ventricose with subacute apex, smooth, thin-walled and hyaline in KOH, content not distinctive. Cheilocystidia saccate to clavate to fusoid-ventricose, smaller than the pleurocystidia and apex in fusoid-ventricose cells sometimes branched. Caulocystidia apparently very rare to absent (apex of stipe silky).

Gill trama hyaline to yellowish in KOH. Pileus trama ochraceous to rusty brown in KOH, the walls roughened or incrusted with pigment. The cuticle an irregular palisade of ellipsoid and pedicellate-inflated cells intermingled, walls smooth, thin, and hyaline and cell content not distinctive. Veil hyphae yellowish in KOH and with some cells having slightly thickened and highly refractive walls. Clamp connections present.

Type locality. Ithaca, Michigan.

Habit and habitat. Solitary to subcespitose on sticks.

Distribution. Known only from the type locality.

Observations. The spores become a medium-dark chocolate in about an hour in KOH. The broad spores often obscurely angular in face view, the shining white stipe and the cystidia having a strong tendency to produce protuberances at or near the apex, along with the outer veil, characterize this species.
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160. Psathyrella longicystis A. H. Smith, sp. nov.

Pileus 8–12 mm latus, convexus, dilute cinnamomeo-brunneus, dein triste brunneo-griseus; fibrilloso-floccosus, glabrescens; lamellae latae adnatae, demum subdistantes, brunneolae demum violaceo-brunneae (fuscae); stipes 4–6 cm longus, 1 mm crassus, pallidus, deorsum fibrillosus, glabrescens; sporae 9–12 × 6–7 μ; pleurocystidia 50–80 × 10–15 μ, fusioide ventricosa; fibulae adsunt. Typus. Smith 33683 (MICH); legit prope Burt Lake, Michigan.

Illust. Text Figs. 358–360.

Pileus 8–12 mm broad, convex, moist and hygrophanous, pale cinnamon-brown when young, drab-gray to pale fuscous when mature, surface at first covered by delicate pallid flecks of fibrils representing remains of an outer veil. Context very membranous-fragile, no odor evident, taste not recorded.

Lamellae broad, broadly adnate, close becoming subdistant, brownish when young fuscous when mature, edges whitish.

Stipe 4–6 cm long, about 1 mm thick, whitish to dingy but not distinctly darkening in the lower portion, pruinose above, at first fibrillose below from the remains of the veil, glabrescent, very fragile and delicate.

Spores 9–12 × 6–7 μ, smooth, apical pore present but inconspicuous and the apex rounded, shape in face view broadly ovate to broadly elliptic, in profile subelliptic to obscurely inequilateral, color in KOH dull cocoa-color darkening to dark chocolate-color, in Melzer’s rich tawny, wall about 0.4 μ thick.

Basidia 4-spored, 20–35 × 9–12 μ, elongate-clavate to merely clavate, hyaline in KOH. Brachybasidioles not differentiated. Pleurocystidia abundant, 50–80 × 10–15 μ, ventricose near base, with a greatly elongated neck and apex obtuse, wall thin, smooth and hyaline, cell content not distinctive in KOH or in Melzer’s, apex in some forked or with protuberances. Cheilocystidia similar to the pleurocystidia but smaller.

Gill trama ochraceous in KOH, regular, cells inflated. Pileus trama of hyphae with rich rusty brown walls in KOH with distinct pigment incrustations; the cuticle of inflated cells 2–3 deep and having yellowish to hyaline, thin, smooth walls, cell content not distinctive in KOH or Melzer’s. Clamp connections present.

Type locality. Colonial Point, Burt Lake, Cheboygan County, Michigan.

Habit and habitat. On decaying leaves of beech-maple forest.

Distribution. Known only from type locality.

Observations. The aspect of the basidiocarp is that of the P. gracilis group but the outer veil and the forked condition of many of the pleurocystidia along with the rather obscure apical pore of the basidiospores indicate otherwise.

161. Psathyrella salictaria A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, conicus, demum campanulatus, sparse fibrillosus, glabrescens, griseo-cinnamomeus; lamellae confertae, latae, cinnamomeo-brunneae, demum griseo-fuscae; stipes 3–5 cm longus, 1–1.5 mm crassus, sparse fibrillosus, glabrescens, sordide brunneus sed ad apicem pallidus; sporae 9–12 × 5–6 μ; pleurocystidia 37–54 × 8–14 μ, fusioide ventricosa, acuta vel subacuta; fibulae adsunt. Typus. Smith 66291 (MICH); legit prope Burgdorf, Idaho.

Illust. Text Figs. 361–364.

Pileus 1–2.5 cm broad, obtusely conic becoming obtusely umbonate, moist and hygrophanous, color a grayish cinnamon-brown, when moist translucent striate half way to disc, at first with scattered fascicles of pallid fibrils over marginal
area, finally entirely glabrous, hygrophanous and fading to a dingy tan. Context very thin and delicate, concolorous with surface, no odor or taste evident.

Lamellae close, broad, adnate, seceding, dingy cinnamon-brown before becoming gray-brown (“hair brown”) from the spores.

Stipe 3–5 cm long, 1–1.5 mm thick, equal, hollow, delicate and fragile, with scattered fibrils over lower portion but soon glabrescent, dingy brown over all except the pallid apical region, pruinose above.

Spores 9–12 × 5–6 μ, smooth, apical pore distinct, in face view elliptic to oblong, in profile as seen in optical section the ventral line nearly straight and the dorsal line convex (very obscurely inequilateral), color in KOH a medium fuscous, in Melzer’s bay-red, wall about 0.4 μ thick.

Basidia 4-spored, 18–24 × 9–12 μ, clavate, hyaline in KOH. Pleurocystidia 37–54 × 8–14 μ, fusoid-ventricose with short or long flexuous neck ending in an acute to subacute apex, smooth, thin-walled, hyaline in KOH, content not distinctive in KOH or in Melzer’s. Chelio­cystidia fusoid-ventricose and like the pleurocystidia but varying to vesiculose or neck very short. Caulocystidia similar to pleurocystidia but up to 70 × 18 μ occasionally, also numerous vesiculose cells present in patches of the caulocystidia.

Pileus with a cuticle of a layer of inflated cells 1–2 deep, the cells with hyaline, smooth, thin walls and lacking a distinctive content in either KOH or in Melzer’s. Trama of pileus including the subcutis of brown-walled hyphae as revived in KOH but the color fading and the cell walls smooth. Clamps present. No distinctive reactions observed on any tissue in Melzer’s.

Type locality. Burgdorf, Idaho County, Idaho.

Habit and habitat. Gregarious on wet moss under willow and dwarf birch, August.

Distribution. Known only from the type locality.

Observations. The medium-large spores, acute pleurocystidia of the P. gracilis type, lack of brachybasidioles in the hymenium, very delicate brown stipe, striate pileus when moist, and lack of any change to pink on the gill edges distinguish this species.

162. Psathyrella rubescens A. H. Smith, sp. nov.

Pileus 10–15 (–20) mm latus, obtuse conicus demum campanulatus, albofloccosus, glabrescens, spadiceus, dein ad marginem incarnatus; lamellae latae, conferiae, avellaneae demum griseo-fuscae; stipes 3–5 cm longus, 1–1.5 mm crassus, deorsum sordide brunneus, fibrilloeus, glabrescens; sporae 10–13 (–14) × 5.5–6.5 (20 × 12) μ; pleurocystidia 30–42 × 10–15 μ, late fusoid ventricosa, obtusa vel subacuta; fibulae adsunt. Typus. Smith 29352 (MICH); legit prope lower Tahoma Creek, Mt. Rainier National Park, Washington.

Pileus 10–15 (–20) mm broad, obtusely conic, becoming campanulate to expanded-umbonate, surface of buttons decorated over all with fine white superficial flecks of the outer-veil fibrils, soon becoming entirely glabrous, when young the disc “Prout’s brown” and the remainder “cinnamon-brown” beneath the white veil, with a pink tinge pervading the marginal area at least before changing color from fading, fading to cinnamon-buff or pale pinkish buff on the disc first, margin fading to near “vinaceous-buff.” Context thin and fragile, concolorous with surface either moist or faded, finally pallid, odor and taste not distinctive.

Lamellae only moderately close, broad, ascending to bluntly adnate, “avellaneous” to near wood brown, becoming “hair brown” at maturity (with a strong gray cast), edges even.
Stipe 3–5 cm long, 1–1.5 mm thick, equal, hollow, fragile, whitish, becoming dingy or even dull brownish near base, lower part at first with veil fibrils variously dispersed, glabrescent, apex pruinose.

Spores 10–13 (–14) × 5.5–6.5 μ (occasional giant spores 20 × 12 μ approximately also present), smooth, apical pore broad and apex truncate, shape in face view more pointed at the apiculate end than at the apex (where in dark colored spores the pore as such does not show clearly), basically elliptic, in profile somewhat inequilateral to obscurely inequilateral, color in KOH blackish brown but many paler spores present, in Melzer’s dark tawny-red, wall 0.6–1.5 μ thick.

Basidia 2- and 4-spored 20–25 × 10–14 μ, hyaline in KOH, subglobose-pedicellate. Brachybasidioles present. Pleurocystidia scattered to abundant, 30–42 × 10–15 μ, broadly fusoid-ventricose with short neck and obtuse to sub-acute apex, hyaline in KOH, smooth, thin-walled. Cheilocystidia of three types: the first rare and resembling the pleurocystidia, the second rare and inconspicuous, subcylindric to subfusoid, 12–15 × 4–6 μ, and some of these with a refractive thickening in the apex, the third type clavate-vesiculose 10–16 × 7–12 μ, the basal hyphae slightly yellowish in KOH on some. Caulocystidia resembling all of the different types of cheilocystidia.

Gill trama vinaceous-brown fading to cocoa-brown and in old pilei fading to near hyaline. Pileus trama cocoa-vinaceous in young material mounted in KOH, paler to near hyaline on old pilei. Cuticle of pileus a layer of vesiculose-pedicellate cells one cell deep, the walls thin, smooth and hyaline, the content of the cells not distinctive. Clamp connections present.

Type locality. Lower Tahoma Creek, Mt. Rainier National Park, Washington.

Habit and habitat. Gregarious on rich humus under alder.


Observations. The distinct outer veil, the tendency for the pileus to become pink over the marginal area, the generally delicate stature, large spores, characteristic pleurocystidia, and KOH reactions of the tramal hyphae in pileus and hymenophore distinguish it. It is close to *P. trepida* but has a distinct veil.

Material examined. Washington: Smith 29352 (Type), 29353, 29354, 29355, 29596, 29766.

163. *Psathyrella substrigosipes* A. H. Smith, sp. nov.

Pileus 10–15 mm latus, late conicus vel convexus, fibrilloso-floccosus, glabrescent, cinnamomeo-brunneus; lamellae confertae, latae, brunneolae demum purpureo-brunneae; stipes 3–5 cm longus, 1–1.5 mm crassus, brunneus sed deorsum sordide brunneus; sporae 11–14 × 5.5–6.5 μ; pleurocystidia 48–64 × 10–18 μ; fusoido-ventricosa, ad apicem late rotundata vel obtusa; fibulae adsunt. Typos. Smith 75678 (MICH); legit prope Burt Lake, Michigan.

Illustr. Pl. 88, fig. b.

Pileus 10–15 mm broad, obtuse when young, expanding to broadly conic or convex, with or without a slight umbo, margin with scattered squamules of veil fibrils but these soon vanishing and pileus glabrous and shining, cinnamom-brown fading to pale tan and scarcely atomate when faded. Context dark colored, very thin, odor not distinctive.

Lamellae close, broad when mature, ascending and adnate with a decurrent tooth (hooked), seceding, brownish pallid at first, becoming cocoa-brown and then darker from the spores, edges crenulate and pallid.
Stipe 3–5 cm long, 1–1.5 mm thick, equal, fragile, strigose at base, brown over all but darker below, at first thinly fibrillose from veil remnants.

Spores 11–14 × 5.5–6.5 μ, smooth, apex truncate from a broad apical pore, shape in face view elliptic to nearly oblong, in profile obscurely inequilateral, color in KOH dark cocoa-brown quickly becoming chocolate-brown to dark chocolate, in Melzer’s bay-brown, wall 0.7–1 μ thick.

Basidia 4-spored, 12–13 μ broad, length variable, hyaline in KOH. Pleurocystidia abundant, 48–64 × 10–18 μ, fusoid-ventricose with obtuse to nearly rounded apex or in age subacute, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia shorter and more subfusoid, otherwise resembling the pleurocystidia. Pileus cuticle a layer of vesiculose cells 2–3 deep, walls pale cinnamon in KOH when young, hyaline in age. Hyphae of subcuticular zone rusty brown from conspicuous rusty brown pigment incrustations on the walls. Clamp connections present.

Type locality. Colonial Point, Burt Lake, Cheboygan County, Michigan.

Habit and Habitat. Solitary to scattered on small sticks in muddy or wet soil, July.


Observations. This is a smaller species than P. gracilis, has a thin veil, darker brown pileus and stipe, slightly smaller spores, and shorter cystidia.

Material examined. Michigan: Smith 49832, 50168, 75678 (Type).

164. Psathyrella rufogrisea A. H. Smith, sp. nov.

Pileus 10–15 (–20) mm latus, late conicus vel expanso-umbonatus, floccosofibrillosus, glabresecentis, castaneus; lamellae latae, confertae avellaneae demum fusco-brunneae; stipes 3–5 cm longus, 1–1.5 mm crassus, pallidus, deorsum demum brunneus, fibrillosus, glabresecentis; sporae 9–12 × 5.5–6.5 μ; pleurocystidia 40–60 × 10–15 μ, fusoido-ventricosa, subacuta; fibulae adsunt. Typus. Smith 23780 (MICH); legit Mt. Hood National Forest, Oregon.

var. rufogrisea

Illust. Pl. 59, fig. a; Text Figs. 365–368.

Pileus 10–15 (–20) mm latus, late conicus vel expanso-umbonatus, floccosofibrillosus, glabresecentis, castaneus; lamellae latae, confertae avellaneae demum fusco-brunneae; stipes 3–5 cm longus, 1–1.5 mm crassus, pallidus, deorsum demum brunneus, fibrillosus, glabresecentis; sporae 9–12 × 5.5–6.5 μ; pleurocystidia 40–60 × 10–15 μ, fusoido-ventricosa, subacuta; fibulae adsunt. Typus. Smith 23780 (MICH); legit Mt. Hood National Forest, Oregon.
differentiated. Pleurocystidia abundant, 42–60 × 10–15 μ, fusoid-ventricose, the neck elongated and apex subacute, wall thin, smooth and hyaline, cell content not distinctive in either KOH or Melzer's. Cheilocystidia of two types, the first like the pleurocystidia but smaller, and the second of vesiculose to clavate cells, the latter not numerous. Caulocystidia 28–52 × 5–12 μ, irregularly fusoid with subacute to acute apex and thin hyaline refractive walls, content of cells not distinctive.

Gill trama of interwoven more or less enlarged hyphae, dull brown in KOH and smooth or with slight incrustations, finally dingy yellowish brown. Pileus trama dark vinaceous-brown and with conspicuous incrustations and/or pigment thickenings, not becoming appreciably paler; cuticle of a palisade of vesiculose pedicellate cells to elliptic cells hyaline to slightly yellowish in KOH, cells 15–30 μ wide and content not distinctive. Clamps present.

**Type locality.** Mt. Hood National Forest, Oregon.

**Habit and habitat.** Cespitose in small clusters on soil.

**Distribution.** Known only from the type locality.

**Observations.** This species is close to *P. longicystis* but differs in the wider germ pore of the basidiospore, the longer and frequently forked cystidia and the darkening lower portion of the stipe.

164a. *Psathyrella rufogrisea* var. *riparia* A. H. Smith, var. nov.

A typo differt: pleurocystidia 42–74 × 12–18 μ; caulocystidia versiformia-clavata, globosa vel fusoide ventricosa: Typus. Smith 53268 (MICH); legit prope McCall, Idaho.

Pileus 6–15 mm broad, obtusely conic, the margin straight at first, expanding to broadly conic or nearly plane, surface when young coated with a superficial layer of white fibrils radially arranged and rather coarse in texture, as pileus expands the fibrils becoming arranged in radially disposed squamules, the margin remaining fringed with fibrils for sometime, color “russet” on the disc, “cinnamon-brown” on the margin (dark rusty brown to dingy dark cinnamon), fading to cinnamon-buff on disc and paler near the margin. Context very thin and delicate, taste or odor not distinctive.

Lamellae close, adnate, seceding readily, dull brownish when young, becoming cocoa-brown and finally “hair brown” (dark grayish brown), edges even and not appreciably fimbriate.

Stipe 3–4 cm long, about 1 mm thick, equal, very fragile, hyaline-gray at first covered with white radially arranged fibrils of the veil, glabrescent and in age the stipe naked except for a pruinosity over the apical region.

Spores 9–12.5 × 5–6 μ, smooth, apical pore broad and apex often appearing somewhat truncate, color in KOH chocolate-fuscous, in Melzer’s bay-brown, shape in face view oblong to narrowly elliptic, in profile obscurely bean-shaped to subelliptic, wall about 0.4 μ thick.

Basidia 4-spored, clavate, 8–10 μ broad. Pleurocystidia scattered, 42–74 × 12–18 μ, fusoid-ventricose with apex acute to subacute, wall thin, smooth, and hyaline, cell content not distinctive or with some refractive particles (revived in KOH), not colored in Melzer’s. Cheilocystidia similar to pleurocystidia but more irregular in outline and more fusoid, the same size or smaller than the pleurocystidia. Caulocystidia versiform (globose, clavate, fusoid or fusoid-ventricose), scattered to abundant near stipe apex, thin-walled, hyaline in KOH, smooth, content not distinctive.
Pileus cuticle a palisade of clavate to subvesiculose cells with hyaline walls and content, or base of pedicel with slightly thickened bright rusty brown walls (in KOH), in Melzer's no distinctive color change observed. Subcuticular region as revived in KOH with bright fulvous wall thickenings in places giving thin sections of the tissue a decidedly spotty appearance, the thickenings mostly near the septa, in Melzer's the color not distinctive. Clamps present.

Type locality. McCall, Idaho.

Habit and habitat. Scattered on wet earth near a stream, September.

Distribution. Known only from the type locality.

Observations. This is a rather distinctive little agaric featuring large readily collapsing pleurocystidia, decidedly versiform caulocystidia, spores 9–12.5 × 5–6.5 μ, and the pileus cuticle a palisade of cells as described. The coarse veil and dark color of the pileus in contrast to the hyaline grayish stipe also aid in distinguishing it.

164b. Psathyrella rufogrisea var. bonnerensis A. H. Smith, var. nov.

A typo differt: lignatilis; stipes deorsum demum sordide brunneus, ad apicem pallidus. Typus. Smith 54189 (MICH); legit prope Priest River, Idaho.

Illust. Pl. 59, fig. b.

Pileus 10–15 mm broad, obtusely conic expanding to campanulate, surface at first covered with superficial squamules composed of white fibrils (but margin not appendiculate), at maturity glabrous or nearly so, russet to “Mars brown” on the disc, pale cinnamon-brown toward the margin, when moist closely translucent-striate, hygrophanous and fading to tan on the disc first. Context thin, concolorous with surface, odor and taste not distinctive.

Lamellae dingy brownish when young, dark grayish cocoa-color in age, close, broad, ascending-adnate, edges even, not becoming pinkish as far as is known.

Stipe 3–5 cm long, 1–1.5 mm at apex, equal or slightly enlarged downward, apex pallid, becoming dark dingy brown from the base upward in aging, surface white-fibrillose at first from the white outer-veil remnants, glabrescent, apical region pruinose, base slightly radiate-strigose.

Spores 9–12 × 5.5–6.5 μ, smooth, apical pore present but obscure and spore apex at most only obscurely truncate, in face view elliptic to subovate, in profile obscurely bean-shaped to elliptic, color in KOH dark cocoa-color, becoming dark chocolate-color, in Melzer's tawny or slightly more rusty brown; wall about 1 μ thick.

Basidia 4-spored, 10–12 μ broad, clavate. Pleurocystidia scattered, 38–60 × 12–16 μ, fusoid-ventricose, with subacute apex, walls thin and smooth, content “empty” or with scattered refractive granules, no distinctive reaction when mounted in Melzer's. Cheilocystidia similar to pleurocystidia or shorter and more obtuse; clavate hyaline cells also present. Caulocystidia subglobose, clavate or fusoid-ventricose, scattered, size variable, walls thin and hyaline. Hyphae of cortex with some pigmentation near the septa in lower part of stipe but septa not appearing as dark bands under the microscope.

Type locality. Priest River Experimental Forest, Priest River, Idaho.

Habit and habitat. On sticks of wood along a stream, October.

Distribution. Known only from the type locality.

Observations. This variant is too similar to P. rufogrisea to be regarded as a distinct species. It is described here as a variety mainly because it is clearly on wood rather than moist earth, and the stipe darkens from the base upward.
In view of the fact that much moist earth was present in the immediate location, the difference in habitat appears significant.

Subsection Pannucia

Key to the Stirpes of Subsection Pannucia

1. Outer veil yellow to buff to pale tan. stirps Luteovelata.
   2. Outer veil white to pallid to grayish.

2. Pileus white to pallid or tinged buff only on the disc. stirps Pallida.
   2. Pileus some shade of tan to rusty brown to grayish or violaceous-brown.

3. Gills for a long time rusty brown to dark yellow-brown (bister, mummy brown, etc.). stirps Frustulenta.
   3. Gills soon violaceous-brown to violaceous-drab or chocolate-color in various shades.

4. Spores small, under $8 \times 4 \mu$. stirps Minutisperma.
   4. Spores larger. stirps Fibrillosa.

Stirps Luteovelata

Key to the Species of Stirps Luteovelata

1. Spores very rarely over 4.5 $\mu$ wide.
   2. Spores 4.5-5.5(-7) $\mu$ wide.

2. Pleurocystidia with broadly rounded apex. 166. P. citrinovelata.
   166. P. luteovelata.
   2. Pleurocystidia acute to obtuse.

   3. Veil not as above.

4. Clamps not abundant (they are small and inconspicuous also); veil pale tan but copious and remnants at first as strap-shaped squamules near margin of pileus. 168. P. ligulata.
   4. Not as above.

5. Pileus yellow at first; caulocystidia very diverse. 169. P. variabilissima.
   5. Pileus dark dull cinnamon; caulocystidia greatly elongated. 170. P. tenuivelata.


Illustr. 1. c. pl. 10, fig. 2; pl. 29, figs. 7–8. Pl. 61, fig. b; Text Figs. 369–371.

Pileus 2–4 cm broad, obtusely conic when young, becoming broadly campanulate in age, margin appressed against the stipe at first, surface covered by delicate “ivory yellow” or brighter fibrils and the margin appendiculate from the remains of the yellow veil, soon glabrescent, when moist “sayal brown” to “cinnamon-brown” (dull cinnamon to dark rusty brown) beneath the fibrils, hygrophanous, fading to near “wood brown” on the margin and “light ochraceous-buff” on the disc, with watery streaks while fading. Context very soft and fragile, concolorous with the surface, odor and taste not distinctive.

Lamellae bluntly adnate but soon seceding, close, 27–30 reach the stipe, broad (about 3.5 mm), broadest at the stipe and tapered to the margin, pallid brownish at first, “light-drab” at maturity, edges minutely fimbriate.

Stipe 4–5 cm long, 2.5–3.5 mm thick, equal, fragile, hollow, whitish, at first covered by “ivory yellow” patches of fibrils or zone of veil remnants, glabrescent.

Spores 7–9×3.5–4 $\mu$, smooth, apical pore present and apex obscurely truncate in optical section under high power oil-immersion lens, shape in face view oblong to narrowly elliptic, in profile obscurely inequilateral, color in KOH cocoa-color soon becoming chocolate-brown (duller), in Melzer’s reddish tawny, wall about 0.3 $\mu$ thick.

Basidia 4-spored, 18–22×6–8 $\mu$, clavate, hyaline in KOH. Pleurocystidia and cheilocystidia similar, abundant to scattered, 38–56×10–15 $\mu$, fusoid-ventricose
to narrowly fusoid-ventricose, apex obtuse to subacute, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer’s. Caulocystidia in clusters, 38-64×7-12 μ, flexuous-clavate or branched 1-2 times at apex or merely with rudimentary protuberances, hyaline, thin-walled.

Gill trama regular, the hyphae 8-15 μ wide and subparallel, pale cocoa-color fading to sordid cinnamon-brown to hyaline when revived in KOH. Pileus having a cuticle of hyaline or very pale brown vesiculose cells 15-30 μ wide, the layer 1-2 cells deep, walls smooth and thin and cell content not distinctive. Hyphae of the subcortical region with smooth pale cinnamon walls (the layer cocoa-color when first revived in KOH). Clamp connections present. No distinctive reactions on any tissue when mounted in Melzer’s.

Type locality. Elwha River Ranger Station, Olympic National Forest, Washington.

Habit and habitat. Solitary to gregarious on humus under alder and cottonwood.


Observations. In Smith 73932 from Priest Lake, Idaho, the pleurocystidia have very thin walls at and near the apex, and the apical region is granular-roughened as revived in KOH. The side walls are refractive in KOH and about 0.3 μ thick. It was found on decaying alder.


166. Psathyrella citrinovelata A. H. Smith, sp. nov.

Pileus 1-3 cm latus, convexus, cinnamomeo-brunneo, fibrillosus vel sub-squamulosus (velum pallide citrinum), ad marginem sparse appendiculatus vel fimbriatus; lamellae brunneoelae demum violaceo-fuscæ; stipes 3-7 cm longus, 2-4 mm crassus, albidus, copiose fibrillosus, glabrescens, sursum fibrilloso-annulatus; sporae 7-9×4-4.5 μ; pleurocystidia 38-52×12-16 μ, fusoid ventricosa, ad apicem late rotundata; fibulae adsunt. Typus. Smith 25392 (MICH); legit prope Harbor Springs, Michigan.

Illustr. Text Figs. 372-374.

Pileus 1-2 cm broad, convex, cinnamon-brown moist, hygrophanous fading to a grayish cinnamon-buff, surface at first decorated with conspicuous very pale lemon yellow fascicles of the remains of the fibrillose outer veil, the margin also slightly appendiculate with yellowish veil remnants. Context thin, fragile, brownish fading to pallid, odor not noticeable, taste not recorded.

Lamellae close, broad, adnate, pallid brownish becoming dark brownish violaceous (“benzo brown”), edges whitish.

Stipe 3-7 cm long, 2-4 mm thick, equal, white, very densely squamulose with yellowish veil remnants to the subannular zone left by the broken partial veil, densely white-squamulose above this zone to near the apex.

Spores 7-9×4-4.5 μ, smooth, apical pore present but apex rounded, shape in face view elliptic to slightly ovate, in profile somewhat inequilateral to obscurely so, color in KOH dull cocoa-color slowly changing to chocolate-brown, in Melzer’s tawny to reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 15-20×7-9 μ, clavate, hyaline in KOH. Pleurocystidia scattered, 38-52×12-16 μ, fusoid-ventricose with broadly rounded apex, in age the neck elongated somewhat but apex rounded to obtuse, wall thin, hyaline and smooth, cell content not distinctive in KOH or in Melzer’s. Cheilocystidia 50-
65(–75) × 9–14 μ, abundant, neck greatly elongated and wavy, apex subacute, basal portion ventricose, smooth, thin-walled, hyaline, content not distinctive. Caulocystidia mostly resembling the cheilocystidia, also many narrowly clavate hyphal ends also present, all thin-walled, hyaline in KOH.

Gill trama interwoven, brownish in KOH but fading. Pileus trama of hyphae with brownish walls but fading (in KOH); cuticle of pileus a layer of vesiculose cells 3–4 cells deep and walls slightly yellowish in KOH, their content not distinctive. Clamp connections present. No distinctive reaction on any tissue when revived in Melzer's.

Type locality. Harbor Springs, Michigan.

Habit and habitat. Solitary on debris and leaf-mats in hardwood forests.


Observations. The broadly rounded pleurocystidia and the greatly elongated cheilocystidia distinguish this species from Psathyrella luteovelata. There is also a very slight difference in spore size (7–9 × 4–4.5 as compared to 7–8 × 3.5–4 μ), but it is too slight to be taxonomically significant.

Material examined. Michigan: Smith 15452, 25392 (Type), 25440.


Illustr. Pl. 60, fig. c; Text Figs. 375–377.

Pileus 1–2.5 cm broad, obtusely conic with the margin appressed against the stipe at first, finally convex to broadly convex, surface at first covered over all by a thin coating of superficial pale tan fibrils, the margin fibrillose-appendiculate, soon entirely glabrous, moist, hygrophanous, "cinnamon-brown" to "russet" or "buckthorn brown" toward the margin, dark rusty brown over all or the margin yellowish and paler, closely striate, fading to "light ochraceous-buff" or somewhat darker (pale to medium buff), atomate in age if faded. Context fragile membranous, odor and taste not distinctive.

Lamellae close, moderately broad, bluntly adnate, dark reddish brown, scarcely purplish brown even in age, edges even.

Stipe 3–5 cm long, 1–2 mm thick, hollow, very fragile, equal, white to brownish, pale above, darker toward the base, pruinose near apex, more or less fibrillose toward the base from the pale tan fibrils of the veil.

Spores 7–10 × 5–6 μ, smooth, apical pore small and apex obscurely truncate at the most, shape in face view ovate to elliptic, in profile obscurely inequilateral to ovate, color in KOH cocoa-color becoming chocolate-gray, in Melzer's tawny, wall about 0.3 μ thick.

Basidia 4-spored, 20–26 × 7–9 μ, clavate, hyaline in KOH. Pleurocystidia rare and similar to the cheilocystidia. Cheilocystidia 32–46 × 8–16 μ, fusoid-ventricose with obtuse apex, wall thin, hyaline and smooth, cell content not distinctive in either KOH or in Melzer's. Caulocystidia subutriform to fusoid-ventricose, of various sizes but seldom over 60 × 15 μ, thin-walled, hyaline, smooth, content homogeneous.

Gill trama parallel to subparallel, pale tawny in KOH, darker toward the subhymenium, subhymenium cellular. Pileus trama of interwoven pale tawny to ochraceous-tawny hyphae with smooth walls. Cuticle of pileus a layer of inflated cells about one cell deep, some clavate cells present, wall thin and smooth, pale cinnamon fading to yellowish and finally hyaline, content homogeneous. Clamp connections apparently absent.

Type locality. England.
Habit and habitat. Gregarious on beech logs.

Observations. Over one hundred isolated basidia were examined and no sign of a clamp connection was found, and none were found on the hyphae of the stipe though one must be careful there not to misinterpret clamplike branches which do not occur in conjunction with a cross wall. The pale tan outer veil is a good field character. The spores become nearly hyaline after an hour in KOH. Orton's description covers the American material remarkably well.

Material examined. Michigan: Smith 993, 25641, 36234.

168. Psathyrella ligulata A. H. Smith, sp. nov.

Pileus 1–3 cm latus, convexus, demum late convexus, copiose fibrillosus demum squamulosus, (squamulae ligulatae), glabrescens, cinnamomeo-brunneus demum rugulosus; lamellae latae, confertae, pallidae demum atro-brunneae; stipes 3–8 cm longus, 1.5–4 mm erassus, cavus, albidus, fibrilloso-squamulosus; sporae 8–10× 4.5–5.5 μ; pleurocystidia 32–44×8–14 μ, fusioide ventricosa, subaeuta; fibulae adsunt. Typus. Smith 1743 (MICH); legit prope Ann Arbor, Michigan.

Illustr. Pl. 61, fig. a; Text Figs. 378, 379.

Pileus 1–3 cm broad, convex when young, becoming broadly convex to nearly plane, surface at first covered by a superficial layer of fibrils which soon become aggregated into somewhat strap-shaped recurved fibrillose scales and become worn away by the time the pileus is mature, margin at first fringed or appendiculate with veil-remnants, the fibrils tinged pale buff (paler than "pinkish buff"), surface of pileus "cinnamon-brown" when fresh and moist, hygrophanous, fading to light buff, even or radially rugose near the margin when faded. Context fragile, thin, odor and taste not distinctive.

Lamellae adnate, soon seceding, broad, widest at the stipe, tapered to pileus margin, close, whitish but soon brownish to avellaneous and finally dark blackish brown, edges white fimbriate.

Stipe 3–8 cm long, 1.5–4 mm thick, hollow, fragile, cartilaginous, white, covered by a dense but evanescent coating of recurved pallid buff fibrillose squamules.

Spores 8–10×4.5–5.5 μ, smooth, apical pore distinct but apex only obscurely truncate or not at all so, shape in face view subovate with a pointed apiculate end, varying to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH "mummy-brown" (blackish brown), in Melzer's very dark rusty brown (not reddish), wall about 0.5 μ thick.

Basidia 4-spored, 18–22×8–9 μ, clavate, hyaline in KOH. Pleurocystidia scattered to abundant, 32–44×8–14 μ, fusoid-ventricose with apex obtuse to subacute, wall smooth, thin and hyaline, cell content not distinctive in KOH or in Melzer's (no globule observed in water mounts when fresh). Cheilocystidia similar to pleurocystidia or shorter and more obtuse.

Gill trama regular, the hyphae nearly parallel and hyaline to pallid cinnamon revived in KOH. Pileus having a cuticle of vesiculose hyaline cells 2–3 deep, the walls thin, smooth and hyaline, the content of the cells not distinctive. Hyphae of context interwoven and pale reddish cinnamon to tawny-brown in KOH. Clamp connections small and inconspicuous but present. No distinctive reaction observed on any tissue mounted in Melzer's.

Type locality. Ann Arbor, Michigan.

Habit and habitat. Closely gregarious on soil at edge of pine woods, August.

Observations. The concept of _P. gossypina_ current in Europe is for a _Psathyrella_ having a globular inclusion in the very large pleurocystidia. Hence my previous assignment of the material described here to _P. gossypina_ is best regarded as an error even though the macroscopic features with the exception of the slightly colored veil answer the Friesian description rather well.

Material examined. Michigan: Smith 1743 (Type), 72629.

169. _Psathyrella variabilissima_ A. H. Smith, sp. nov.

_Pileus_ 1–2.5 cm latus, conicus demum campanulatus vel late convexus, sparse fibrillose-squamosus glabrescens, pallide ochraceus demum rugulosus; lamellae confertae, subdistantes, latae, ochroleucae demum purpureo-brunneae; stipes 4–5.5 cm longus, (1.5)2–4 mm crassus, albidus demum lateolus, fibrillosus, glabrescens; spores 8–10×4.5–5.5 μ, (12–15×3.5–4.5 μ); pleurocystidia (42–)56–70 (–84)×9–16 μ, fusoid-ventricosa, obtusa vel subcapitata; fibulae adsunt. Typus. Smith 5 (MICH); legit prope Ann Arbor, Michigan.

Illustr. Text Figs. 380, 381.

_Pileus_ 1–2.5 cm broad, obtusely conic when young, expanding to campanulate and finally nearly plane, surface at first covered by scattered fibrils from the remains of the veil but soon glabrescent, margin fibrillose-appendiculate for a short time, color evenly pale yellow ("warm buff") over all and radially rugulose at least near the margin, finally becoming drab as spores mature. Context moderately thick but brittle, odor and taste slightly fungoid (not distinctive).

_Lamellae_ close to subdistant, slightly adnexed, moderately broad, concolorous with pileus or finally purple-brown.

_Stipe_ 4–5.5 cm long, (1.5–)2–4 mm thick, white or sordid yellowish, hollow, fragile, equal, with scattered pale buff fibrillose patches from the veil, nearly glabrous in age or merely somewhat appressed fibrillose.

_Spores_ very variable in size, typical range 8–10×4.5–5.5 μ, variations include spores up to 22×4 μ, narrow fusoid spores 12–15×3.5–4.5 μ, and various other assortments of shapes (Fig. 381), wall smooth, pore present as a hyaline spot but apex not truncate, shape typically (in face view) elliptic to oblong, in profile subelliptic to obscurely inequilateral, color in KOH bister, slowly darkening toward "mummy brown," in Melzer's dull tawny-red, wall about 0.2 μ thick.

_Basidia_ 23–32×8–11 μ, 2-spored and 4-spored, clavate, hyaline in KOH. Pleurocystidia very abundant, (42–)56–70 (–84)×9–16 μ, fusoid-ventricosa with obtuse to subcapitate apex or the apex branched or merely obtusely and obscurely mucronate, sometimes irregular in shape, the upper part with one or more constrictions and the walls flexuous toward the base, wall thin, smooth and hyaline, cell content in KOH or in Melzer's not distinctive. Cheilocystidia similar to pleurocystidia or shorter and more saccate. Caulocystidia not located in revived material. Hyphae of the veil with ochraceous content as revived in KOH.

_Gill trama_ of parallel hyphae pale cinnamon to ochraceous in KOH. _Pileus_ with a cuticle of staggered inflated-pedicellate cells so arranged as not to form a palisade and to appear to be several cells deep, their walls smooth, thin and nearly hyaline in KOH. Hyphae of the trama pale rusty cinnamon in KOH in the subcuticular region and with inclusions on them. Clamp connections present.

_Type locality._ Whitmore Lake, Michigan.
Habit and habitat. On debris under aspen and sumac on very wet soil in the marginal ditch of a bog, scattered to gregarious, June.


Observations. The yellow pileus when young, pale buff veil, and the large pleurocystidia are distinctive. The type of variation in spore size and shape encountered here is known for many groups of fleshy fungi even including the genus Rhizopogon, and probably indicates irregularity in the meiotic divisions.


170. Psathyrella tenuivelata A. H. Smith, sp. nov.

Pileus 2–3 cm latus, convexus demum late convexus, sparsissime fibrillosus, glabrescens, fumoso-cinnamomeus; lamellae confertae latae (± 5 mm), avellaneae demum triste vinaceo-brunneae; stipes 2–3 cm longus, 2–4 mm crassus, deorsum avellaneus, fibrillosus, glabrescens; velum pallide melleum; sporae 7–9 (–10) × 5–6.5 (–7) μ, pleurocystidia (36–) 42–64 × 9–13 μ, pedicellato-elliptica vel fusoid-ventricosa, ad apicerum obtuse vel rotundata; fibulae adsunt. Typus. Smith 15020 (MICH); legit prope Milford, Michigan.

Illust. Pl. 60, fig. a; Text Figs. 382–385.

Pileus 2–3 cm broad, convex, the margin appressed against the stipe when young, expanding to broadly convex, at first more or less covered with thin appressed patches of pale buff fibrils, the margin at first with a faint fibrillose fringe, opaque but becoming faintly translucent striate before fading, when moist "warm sepia" (dark dingy cinnamon), fading to dark avellaneous ("wood brown"). Context thin and very fragile, pale brownish, odor and taste mild.

Lamellae horizontally adnate, close, 23–35 reach the stipe, 3 tiers of lamellulae, broad (about 5 mm), oval in outline, pale avellaneous becoming dull dark vinaceous-brown ("bone brown") to "Natal brown," edges eroded.

Stipe 2–3 cm long, 2–4 mm thick, equal or slightly enlarged below, hollow fragile, pallid above, dull avellaneous toward the base, lower two-thirds covered by a thin coating of buff fibrillose remains of the veil, glabrous in age.

Spores 7–9 (–10) × 5–6.5 (–7) μ, smooth, a broad lens-shaped pore present but apex at most only obscurely truncate, shape in face view broadly elliptic to obscurely angular-elliptic, in profile broadly subelliptic to broadly and obscurely inequilateral to slightly bean-shaped, wall about 0.4 μ thick, color in KOH soon chocolate-brown revived in KOH, in Melzer's pale to rich tawny to reddish tawny.

Basidia 4-spored, 18–24 × 7.5–11 μ, clavate, hyaline in KOH. Pleurocystidia scattered, (36–) 42–64 × 9–13 μ, pedicellato-elliptic to fusoid-ventricose, the apex broadly rounded but in many with one or more finger-like protuberances, wall thin, smooth and hyaline, content of cell not distinctive in KOH or Melzer's. Cheilocystidia mostly clavate, saccate or more or less ellipsoid, 22–36 (–60) × 9–15 μ, thin-walled and hyaline in KOH, a few ventricose cells also present and some of these bearing finger-like processes near or at the apex, wall smooth, hyaline, thin, cell content not distinctive. Caulocystidia scattered, subfusoid and 100–200 × 10–20 μ, hyaline, wall thickened to 0.5 μ, cell content in some appearing "colloidal" (opalescent).

Gill trama of parallel to loosely interwoven hyphae pale vinaceous-brown becoming nearly hyaline (as revived in KOH), water mounts of fresh material pale brownish. Pileus trama dull cocco-brown in KOH, the pigment incrusted
on the walls. Cuticle of pileus formed by a palisade of pedicellate cells with occasional vesiculose cells intermingled, pale brownish in water mounts, very pale yellowish becoming hyaline in KOH. Clamp connections present. No distinctive reaction on any tissue when mounted in Melzer's.

Type locality. Near Milford, Michigan.

Habit and habitat. Gregarious on wet leaves around woodland pools.

Distribution. Known only from the type locality.

Observations. The cystidia, especially those with ornamentation, remind one of those of *P. corinifericystis* but the spores are much too wide and in addition *P. tenuivelata* has a pale buff colored veil.

Stirps Pallida

Key to the Species of Stirps Pallida

1. Spores 8–10 × 5–5.5 μ.

1. Spores 3–4.5 μ wide.

2. Clamp connections not present on hyphae of stipe; pleurocystidia utriform.

171. *P. vestita*.

2. Clamp connections readily demonstrated on hyphae of stipe; pleurocystidia acute to subacute at apex.

172. *P. pelletonensis*.

173. *P. pallida*.


*Atylospora vestita* (Pk.) Murrill, Mycologia 14: 255. 1922.

Illustr. Text Figs. 386–388.

Pileus 8–16 mm broad, ovoid, conic or subcampanulate, obtuse, surface at first covered with white floccose fibrils, usually with a rufescent tint, soon paler or white and silky-fibrilllose, some times slightly striate on the margin. Context thin and submembranous.

Lamellae thin, narrow, close, adnate, white when young, becoming blackish brown.

Stipe 2.5–4 cm long, 2–3 mm thick, equal, hollow, flexuous, floccose-fibrilllose, becoming silky-fibrilllose, mealy and often striate at the apex.

Spores 8–10 × 5–5.5 μ, smooth, truncate from a distinct apical pore, shape in face view ovate to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH near "mummy brown" (blackish brown), in Melzer's dull rusty brown, wall about 0.4 μ thick.

Basidia 4-spored, 8–9 μ wide at apex, hyaline in KOH. Pleurocystidia scattered, 43–60 × 9–15 μ, fusoid-ventricose to the obtuse apex, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia scattered, similar to the pleurocystidia.

Pileus trama hyaline to pale sordid brownish in KOH. Cuticle of pileus of vesiculose cells 3–4 μ deep, the wall smooth, thin and hyaline, cell content not distinctive in either KOH or Melzer's. Clamp connections present but very inconspicuous and difficult to demonstrate even on hyphae of the stipe.

Type locality. North Elba, New York.

Habit and habitat. On fallen leaves and grass. Probably scattered to cespitose.


Observations. The medium-sized spores, pale pileus, copious outer veil, spores
truncate at apex, the color of the spores in Melzer’s and thin, narrow, white, immature gills make this a rather distinct species.


172. Psathyrella pellstonensis A. H. Smith, sp. nov.

Pileus 1–2 cm latus, anguste conicus demum campanulatus, candidus, sparse fibrilloso-squamosus, glabrescens; lamellae conertae, angustae, candidae demum violaceo-fuscae; stipes 4–6 cm longus, 2–3 mm crassus, candidus, deorsum fibrillosus, glabrescens; sporae 6–7 × 3.5–4 μ; pleurocystidia 32–44 × 9–14 μ, utriformia; fibulae desunt. Typus. Smith 39186 (MICH); legit prope Pellston, Michigan.

Illust. Pl. 58, fig. c; Text Figs. 389–392.

Pileus 1–2 cm broad, narrowly conic and expanding to narrowly campanulate, snow-white over all and thinly covered by appressed scattered fascicles of white veil fibrils, white beneath the veil, hygrophanous, fading to a dead white and the disc finally cream color, glabrescent in age and dingy over marginal area as gills become wood-brown. Context white and exceedingly fragile, odor and taste not distinctive.

Lamellae close, ascending adnate, narrow, white, becoming “wood brown” to “benzo brown” (violaceous-fuscous) and lacking a red component in the color, edges even.

Stipe 4–6 cm long, 2–3 mm thick at apex, equal, very fragile, snow-white and unchanging, with scattered white remains of the veil over lower half but these variously dispersed and not forming an annular zone.

Spores 6–7 × 3.5–4 μ, smooth, germ pore scarcely evident, in H₂O dark cocoa-color, dark chocolate in KOH, subellipsoid.

Basidia 18–24 × 6–7(–8) μ, short-clavate, 4-spored, hyaline in KOH. Pleurocystidia 32–44 × 9–14 μ, utriform, thin-walled, hyaline in KOH, smooth, content in no way distinctive in KOH or Melzer’s. Cheilocystidia similar to pleurocystidia. Caulocystidia abundant near the apex only, 32–54 × 9–15 μ, utriform and similar to pleurocystidia or clavate to fusoid-ventricose, rarely with a lateral protuberance, content of cell hyaline in KOH, walls thin and smooth.

Pileus cuticle of vesiculose cells up to 30 μ wide, the layer 2–3 cells deep, their walls thin, smooth and hyaline in KOH, occasional filamentous hyphae 3–4 μ diam. projecting as pileocystidia. Subcutis of hyaline inflated hyphae, numerous laticiferous elements present which in Melzer’s are bright yellow and have a homogeneous content. No amyloid or other distinctive reaction present on any tissue as revived in Melzer’s. Clamp connections could not be found.

Type locality. Pellston, Michigan, in the hills west of town.

Habit and habitat. Scattered along an old logging road in beech-maple forest, September.


Observations. This species features an apparent lack of clamps on the hyphae of the basidiocarp—a very unusual feature in the genus. The well-developed outer veil is typical of the group. The lack of distinct pigmentation in the pileus and the presence of utriform pleurocystidia along with the small spores amply distinguish it as a species.

Material examined. Michigan: Smith 39186 (Type), 42130, 60920, 63558, 63630, 63706, 63711.
173. *Psathyrella pallida* A. H. Smith, sp. nov.

Pileus 10–25 mm latus, circa 2 cm altus, conicus, candido-fibrillosus vel sub-granulosus, glabrescens, sordide albidus demun ad centrum dilute argillaceus; lamellae albidae demun cacaocolor, confertae, latae; stipes 2–3 cm longus, 1.5–2.5 mm crassus, albidus, fibrillosus, glabrescens; sporae 6.5–7.5 X 4–4.5 μ; pleurocystidia 34–57 X 9–15 μ, fusoid-ventricosa, ad apicerum acuta; fibulae in hyphis stiparum. Typus. Smith 53359 (MICH); legit prope Riggins, Idaho.

Illust. Text Figs. 393, 394.

Pileus 10–25 mm broad and about 2 cm high, broadly conic, surface at first snow-white from a granular-fibrillose coating of superficial veil remnants, margin fringed at first, soon glabrescent over all and dull white but with a "pale pinkish buff" (pale buff) disc at times, not changing in appearance appreciably from moist to faded condition. Context very fragile, white, odor and taste not distinctive.

Lamellae white when young, becoming cocoa-brown, close, ascending, moderately broad, edges even.

Stipe 2–3 cm long, 1.5–2.5 mm thick, equal or enlarged downward, hollow, fragile, white, at first with superficial white fibrils as remnants of the veil and extending to a superior fibrillose zone which finally is obliterated, glabrescent, pruinose above the veil line, not discoloring appreciably in age or where handled.

Spores 6.5–7.5 X 4–4.5 μ, smooth, apical pore present but apex only obscurely truncate; shape in profile subovate, the plage area at most only slightly flattened, in face view elliptic to ovate, color in KOH cinnamon-ochraceous, in Melzer's pale tawny, wall about 0.2 μ thick.

Basidia 4-spored, 18–24 X 7–8 μ, hyaline in KOH. Pleurocystidia abundant, 34–57 X 9–15 μ, fusoid to fusoid-ventricose with acute apex, thin-walled, hyaline, walls rigid (many cystidia broken cleanly near the base), content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia but usually smaller. Caulocystidia not found but veil hyphae often in the form of chains of ellipsoid cells or short more or less uninflated cells some of which disarticulate. Cuticle of pileus a layer of inflated cells 15–30 μ wide, with smooth hyaline walls revived in KOH and no colored zone beneath the cuticle. Scattered pileocystidia project from the cellular cuticle, the cystidia 28–40 X 8–14 μ, clavate to fusoid-ventricose. No amyloid or fleeting amyloid reaction present on any tissue of the basidiocarp. Clamp connections readily found on hyphae of the stipe.

Type locality. Seven-Devils Mountains, Nezperce National Forest, Idaho.

Habit and habitat. On debris in mixed woods (alder and conifers), September.

Distribution. Known only from the type locality.

Observations. The distinguishing features of this species are the cocoa-brown colored spores, veil material of wide short cells at times disarticulating, acutely pointed pleurocystidia, short relatively broad spores, white pileus and copious veil. In this species we find the initials of the differentiation of subgenus *Cystopsathyra*. When we have learned more about the genus, we shall probably have demonstrated that the progression to *Cystopsathyra* is a gradual one with a number of intermediate species.

Stirps Frustulenta


Key to the Species of Stirps Frustulenta

1. Spores ochraceous to rusty brown when first mounted in KOH. 2
1. Spores in KOH cocoa-brown or darker. 3
2. Spores 7–8.5 × 4.5–5.5 μ, apical pore not distinct under low-power oil-immersion (see 185. P. subcespitosa also). 174. P. frustulenta.

2. Spores 7–9 × 4–5 μ, apical pore distinct; outer veil leaving remnants mostly near pileus margin. 175. P. nolitangere.

3. Stipe 6–10 cm long, 3–5 mm thick; spore apex broadly truncate. 176. P. bifrons.

3. Not as above. 4

4. Outer veil leaving pileus conspicuously squamulose as it breaks up; pleurocystidia 50–70 × 9–18 μ. 177. P. squamosa.

4. Not as above. 5

5. Walls of cuticular cells hyaline to weakly yellowish in KOH. 178. P. fulvobrunnea.

5. Walls of cuticular cells rusty brown to pale cinnamon (either when fresh or revived in KOH). 179. P. similissima.


P. frustulenta (Fr.) Saccardo, Sylloge Fung. 5: 1070. 1887.

Illustr. Smith, 1. c. pl. 31, figs. 3–5. Text Figs. 395–397.

Pileus 1.5–3 cm broad, obtusely conic and with an appressed margin when young, becoming nearly plane in age or remaining unexpanded, with a flaring margin at times, entire surface at first covered by a superficial coating of white fibrils which become arranged into recurved scales, glabrescent, the margin sometimes remaining appendiculate with patches of the broken veil, color “ochraceous-tawny” to “cinnamon-brown” becoming “tawny-olive” to “buckthorn brown” and striate before fading (fulvous to cinnamon-brown becoming honey-brown), fading to “cinnamon-buff” more or less, sometimes old remoistened pilei russet (dark rusty brown) over all. Context very thin and fragile, brownish, odor and taste not distinctive.

Lamellae bluntly adnate, soon seceding, close (18–20 reach the stipe), broad (about 3 mm), white or whitish when young, “russet” to “cinnamon-brown” in age or with a smoky tinge, edges even and whitish.

Stipe 3–9 cm long, 2.5–4 mm thick, equal, hollow, very fragile, white or buff-tinged in age, apex silky to pruinose, lower part covered with squamules or patches of white fibrils, finally glabrescent.

Spores 7–8.5 × 4.5–5.5 μ, smooth, apical pore not distinct, shape in face view elliptic varying to oblong or ovate, in profile elliptic to subelliptic, color in KOH bright ochraceous as revived, becoming duller on standing, in Melzer’s dingy pale tawny, wall thin (about 0.2 μ). In fresh material the color is pale to dark reddish brown or in some collections pale reddish cinnamon as revived in KOH.

Basidia 4-spored, 12–15 × 7–8 μ, or in some collections up to 30×9 μ, ellipsoidal to clavate, hyaline in KOH. Pleurocystidia abundant, 38–63×8–15 μ, narrowly to broadly fusoid-ventricose, at times subcylindric, apex acute to obtuse or occasionally rounded but with a mucro, wall thin, smooth and hyaline, content (in most) not distinctive but in a few with yellow granules as revived in KOH. Cheilocystidia abundant, 34–42×9–14 μ, fusoid-ventricose with obtuse apex varying to saccate, hyaline, thin-walled. Caulocystidia present as fascicles of clavate to ellipsoid cells 30–56×10–16 μ, thin-walled and reviving poorly.

Gill trama regular, more or less tawny brownish in KOH. Pileus trama regular, more or less tawny brownish (pale fulvous) in KOH and with pigment thickenings on or in the walls near the cross-walls. Cuticle of pileus of hyaline vesiculose cells, the layer 1–3 cells deep, cell content not distinctive. Clamp connections present. No distinctive reaction noted on any tissue in Melzer’s.

Type locality. Sweden.
Habit and habitat. Scattered to gregarious under ferns on conifer needles.


Observations. As presented here, the species is a collective one and in need of further study. It is in this species, in North America (and in northern California in particular), that one encounters various degrees of sterility in the basidiocarps. This is reflected not only in the number of spores produced individually, but in their color as well—when fresh or revived in various reagents. Hence considerable latitude in the variation of spore color has been “allowed” in the concept presented here, though it must be admitted that the differences are largely those of intensity and the rusty brown tone is maintained throughout. There is also some variation in the degree to which the outer veil develops. In Smith 73917 the veil in button stages was marginal, the central part of the pileus being glabrous. In its microscopic features, however, it is typical Psathyrella frustulenta. In typical material, as indicated in the description, the outer veil at first covers the entire pileus.


Psathyra nolitangere (Fr.) Quélet, Fungi Jura & Vosges, 150. 1872.
Drosophila nolitangere (Fr.) Quélet, Enchir. Fung. 118, 1886.

Pileus 1–3 cm broad, convex with a straight margin, when young more obtuse, expanding to broadly convex and the margin typically remaining decurved, glabrous except for particles of the veil arranged on the margin or scattered near the edge, color dark rusty brown when moist (“russet” to “cinnamon-brown”), hygrophanous and fading to dingy tan but on drying becoming dingy rusty brown. Context thin and fragile, concolorous with surface when moist or faded, odor not distinctive.

Lamellae close, adnate, moderately broad, pale brown when young and dark rusty brown when mature, edges white-fimbriate, when dried the faces near “bone brown” (a dark vinaceous-brown).

Stipe 2.5–4 cm long, 2–4 mm thick, equal or nearly so, fragile, hollow, watery pallid above, honey-colored below at maturity, veil remnants at first scattered over lower portion.

Spores 7–9×4.2–5 μ, smooth, with a distinct apical pore causing apex to appear slightly truncate, shape in face view ovate to elliptic, in profile obscurely inequilateral to subelliptic, color in KOH dark rusty cinnamon becoming chocolate color (grayer) on standing, in Melzer’s reddish tawny, wall about 0.3 μ thick.

Basidia 23–26×8–10 μ, 4-spored, hyaline in KOH, clavate. Pleurocystidia 46–60×10–15 μ, fusoid-ventricose, apex subacute to obtuse, smooth, thin and hyaline, content of cell not distinctive in KOH or Melzer’s. Cheilocystidia similar to pleurocystidia but with shorter necks (not common), or clavate to broadly fusoid-ventricose with obtuse apex and measuring 22–38×9–16 μ, some clavate-mucronate, all thin-walled, smooth and the cell content not distinctive. Caulocystidia resembling the cheilocystidia but very few seen.
Psathyrella cuticle a layer of vesiculose cells 2–3 deep, the uppermost with hyaline walls, those toward the subcutis with ochraceous walls. Hyphae of subcuticular region vinaceous-cinnamon in KOH when first revived, fading to pale cinnamon, walls smooth or nearly so. Clamp connections present.

Type locality. Europe.

Habit and habitat. Cespitose-gregarious on wet earth.


Observations. Some pleurocystidia are narrowly utriform but the typical range is from an obtuse to a subacute apex. Some of the cystidia showed a refractive wall but most did not. Nathorst-Windahl (1961) described and discussed his collections from Sweden. My concept of the species appears to correspond well with his. The species is rare in my collecting areas also.


Agaricus bifrons Berkeley, Smith English Flora 5: 114. 1836.
Psathyra bifrons (Berk.) Quelét, Champ. Jura et Vosges, Suppl. 7: 52. 1880.
Drosophila bifrons (Berk.) Quelét, Enchir. Fung. 117. 1886.

Illust. Text Figs. 398, 399.

Pileus 1–2 cm broad, obtusely conic, remaining so or the margin flaring slightly, sometimes campanulate, surface at first densely white-fibrillose from the remnants of the outer veil, the fibrils becoming arranged into recurved evanescent scales, margin appendiculate, entirely glabrous in age, color beneath the scales pale buff and gradually changing to sordid cinnamon-brown, hygrophanous, fading to sordid tan. Context very thin and fragile, pallid to watery brown, odor and taste not distinctive.

Lamellae crowded, moderately broad, adnate, equal, white when young, soon tinged brownish and in age "cinnamon-brown," finally with a smoky tinge, margin even.

Stipe 6–10 cm long, 3–5 mm thick, tubular, very brittle, watery white, covered by loose white fascicles of fibrils up to the densely pruinose apex, glabrescent, the base at times slightly enlarged.

Spores 8–11 × 4.5–5.5 μ, smooth, apical pore prominent and apex broadly truncate, shape in face view elliptic (pointed at the base in many) to subovate, in profile somewhat inequilateral to obscurely so, color in KOH near bister slowly changing to chocolate-brown, in Melzer's reddish tawny, wall about 0.6 μ thick.

Basidia 4-spored, 18–24 × 7–11 μ, hyaline in KOH. Brachybasidioles present in old specimens (the basidioles inflate considerably). Pleurocystidia absent or a few near the edge and similar to cheilocystidia. Cheilocystidia numerous, 40–62 × 8–12 (–15) μ, fusoid-ventricose with apex subacute, some saccate to clavate and 9–14 μ wide, wall thin, smooth and usually hyaline.

Gill trama regular, the hyphae somewhat interwoven and with the cells inflated, hyaline or nearly so in KOH. Pileus having a cuticle of hyaline vesiculose cells several deep, walls thin, smooth and hyaline, content not distinctive in KOH or in Melzer's. Hyphae of the trama of enlarged hyaline cells with smooth walls. Clamp connections present. No distinctive reactions noted for any tissue revived in Melzer's.

Type locality. British Isles.
Habit and habitat. On wet soil and organic debris, scattered.


Observations. This agaric features a longer stipe than either *P. fibrillosa* or *P. gossypina*. Further studies on it are desirable since Moser (1967) gives the spores as 12–15 × 6.5–8 μ.


*Psathyra squamosa* (Karst.) Karsten, Hedwigia 32: 59. 1893.

Pileus 10–20 mm broad, obtuse with an appressed margin becoming convex to broadly convex, surface at first covered by white fibrils, or fascicles of fibrils from the superficial outer veil, the margin at first appendiculate-fringed, soon entirely glabrous, moist and hygrophanous, pale honey-color fading to pallid buff, in age becoming more or less avellaneous toward the margin, the disc retaining a tawny tinge. Context thin and fragile, odor and taste not recorded.

Lamellae moderately close, two tiers of lamellulae, narrow, broadly adnate, pale brown when young, dull yellowish brown in age or clouded from the spores (near “Dresden brown” to “mummy brown” as dried), edges white fimbriate.

Stipe 2.5–4 cm long, 1.5–2.5 mm thick, equal, fragile, white or whitish, tinged yellowish when dry, lower portion more or less white-fibrillose from the remains of the veil, pruinose above.

Spores 7.5–10 × 4.5–5 μ, smooth, apical pore distinct and apex slightly truncate, shape in face view elliptic to ovate, in profile subelliptic to obscurely inequilateral, color in KOH near “mummy-brown,” somewhat grayer on standing, in Melzer’s tawny, wall about 0.3 μ thick.

Basidia 18–22 × 7–9 μ, 4-spored, hyaline in KOH, clavate. Pleurocystidia very abundant, 50–70 × 8–18 μ, fusoid-ventricose, the apex acute to subacute and on some with granules adhering around the apex, wall thin to slightly thickened and distinctly refractive, cell content not distinctive in KOH or in Melzer’s. Cheilocystidia 28–36 (–40) × 9–15 μ, broadly fusoid-ventricose with acute apex or varying to clavate or saccate, the latter 12–18 × 7–12 μ, hyaline in KOH. Caulocystidia mostly as clavate cells which collapse and do not revive well.

Gill trama hyaline in KOH, the hyphae somewhat interwoven. Pileus trama hyaline to pale yellowish in KOH, no inerusting pigment noted. Cuticle of the pileus of vesiculose cells, the layer several deep and the cells hyaline, thin-walled and the cell content not distinctive. Clamp connections present. No distinctive reactions noted for any tissue mounted in Melzer’s.

Type locality. Finland.

Habit and habitat. On humus and debris.


Observations. The short stipe and large pleurocystidia are distinctive in this group.

178. Psathyrella fulvobrunnea A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, conicus demum campanulatus vel convexus, sparse fibrillosus, glabrescens, pallide fulvus, demum fusco-spadiceus; lamellae 2–4 mm latae, conferatae, demum subdistantes, brunneolae, demum fumoso-fulvae, stipes 3–4 cm longus, 2–3 mm crassus, fragilis, pallidus, fibrillosus demum glabrescens; sporae 7–9×4–5 μ; pleurocystidia 40–55×9–13 μ, anguste fusoideo-ventricosa; fibulae adsunt. Typus. Smith 33–766 (MICH); legit prope Hulbert, Michigan.

Pileus 1–2.5 cm broad, obtusely conic, soon convex to campanulate or nearly plane, surface at first with a thin coating of superficial fibrils which become aggregated into scattered fascicles and eventually disappear, surface moist, hygrophanous, striate to disc and tawny (“ochraceous-tawny”) at first, gradually becoming umber-brown (“mummy brown”) but fading later to a pale buff (“warm buff”), slightly rugose when faded. Context pallid, odor and taste not distinctive.

Lamellae broad (2–4 mm), bluntly adnate, close, becoming subdistant, pallid brownish, finally dull rusty reddish brown or clouded with umber, edges even or slightly fimbriate.

Stipe 3–4 cm long, 2–3 mm thick, fragile, equal, whitish, fibrous-striate or with loose fibrils from the veil, pruinose above.

Spores 7–9×4–5 μ, smooth, apical pore distinct and apex obscurely truncate to rounded, shape in face view ovate to elliptic, in profile obscurely inequilateral to somewhat bean-shaped, color in KOH cocoa-color slowly becoming clouded gray (a medium chocolate-color), tawny to slightly redder in Melzer’s, wall about 0.3 μ thick.

Basidia 18–22×8–10 μ, 4-spored, hyaline in KOH, clavate. Pleurocystidia 40–55×9–13 μ, narrowly fusoid-ventricose, apex subacute to obtuse, wall smooth, thin and hyaline, cell content not distinctive in Melzer’s or KOH. Cheilocystidia similar to pleurocystidia or shorter. Caulocystidia mostly clavate hyphal ends but a few resembling the pleurocystidia.

Gill trama regular, the cells inflated and somewhat irregularly arranged, hyaline to pale tawny in KOH. Pileus trama pale tawny in KOH, the pigment in the wall but walls smooth for the most part (a few pigment deposits near the septa). Cuticle of pileus of inflated cells 1–2 deep, the walls thin and smooth, hyaline to weakly yellowish (in KOH), cell content not distinctive. Clamps present.

Type locality. Hulbert, Michigan.

Habit and habitat. Solitary on small sticks of hardwoods.

Observations. The medium-sized spores, the thin pallid veil, ochraceous-tawny color at first and subacute pleurocystidia are the important features.

179. Psathyrella similissima A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, conicus, demum campanulatus, sparse fibrillosus, glabrescens, cinnamomeo-fulvus; lamellae pallidae, demum cinnamomeo-fulvae, conferatae; stipes 3–5 cm longus, 1.5–2.5 mm crassus, melleicolor, sparse fibrillosus, glabrescens; sporae 7–8.5×4–4.5(–5) μ; pleurocystidia 40–60×10–16 μ, fusoido ventricosa; fibulae adsunt. Typus. Smith 71809 (MICH); legit prope Hulbert, Michigan.

Illust. Pl. 89, fig. b; Text Figs. 400–403.

Pileus 1–2.5 cm broad, obtusely conic with a straight margin, expanding to campanulate or rarely convex at first, covered with a thin but very distinct outer
veil of appressed white fibrils and with fibrils forming a fringe on the margin, soon becoming entirely glabrous, surface moist and hygrophanous, at first dark rusty brown ("Mars brown") soon ochraceous-tawny (paler) near marginal area, fading to pale tan ("cinnamon-buff"). Context thin, concolorous with surface moist or faded, fragile, odor and taste not distinctive.

Lamellae pallid buff when young, becoming dark rusty brown like the pileus, adnate but soon seceding, close, margins whitish and minutely crenulate.

Stipe 3–5 cm long, 1.5–2.5 mm at apex, nearly equal, fragile, pallid in upper region, soon dull honey-color to tan from the base upward, frosted-pruinose above, lower down thinly coated with pallid fibrils from the veil, slowly glabrescent.

Spore deposit near "benzo brown" (lacking a red component). Spores 7–8.5 × 4–4.5 (–5) μ, smooth, apical pore indistinct (apex rounded), shape in face view ovate to obscurely wedge-shaped, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH dark cocoa-color and remaining so, in Melzer's reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 18–24 × 7–9 μ, clavate, hyaline. Pleurocystidia 40–60 × 10–16 μ, fusoid-ventricose with obtuse to subacute apex, varying to subfusoid, smooth, walls thin and hyaline, content not distinctive in either KOH or Melzer's. Cheilocystidia like the pleurocystidia but smaller and more of them subfusoid; clavate to saccate cells also present and 9–15 μ broad. Caulocystidia similar to pleurocystidia or larger, a small number broadly utriform and up to 20 μ wide, many clavate to inflated-versiform, all types hyaline and thin-walled.

Cuticle of pileus of inflated cells 3–5 cells deep, the walls rusty brown in KOH when fresh, when revived pale cinnamon. Tramal hyphae rusty cinnamon in KOH and with incrustations. Clamp connections present. No distinctive reaction on any tissue when revived in Melzer's.

Type locality. Hulbert, Michigan.

Habit and habitat. Cespitose-gregarious on a rotten hardwood log, July.

Distribution. Known only from the type locality.

Observations. This species features a thin outer veil of appressed fibrils, russet coloration, large pleurocystidia rarely with a slight resinous incrustation over the apex, broad gills, medium small spores, and a stipe which darkens from the base up in addition to the key characters.

Stirps Minutisperma

Key to the Species of Stirps Minutisperma

2. Spores larger. 181. *P. carbonicola*.
   2. Growing on burned areas. 3
   2. Not as above. 4
   3. Not as above. 4
   4. Spores not truncate; on barren sandy soil. 407. *P. parva*.
   4. Not as above. 5
4. Around decaying stumps and wood of hardwoods (see *P. cornifericystis* also). 182. *P. pseudosenex*.
   5. Under larch; spores truncate. see 123. *P. laricina*.

180. *Psathyrella minutisperma* A. H. Smith, sp. nov.

Pileus 8–12 mm latus, conicus vel campanulatus, albido granulosus vel subfibrillosus, ad marginem albo denticulatus, glabrescens, melleus vel subspadiceus;
lamellae latae, subdistantes, griseae, demum griseo-brunneae; stipes 1-2 cm longus, 1 mm crassus, deorsum melleus; floccosus, glabrescens; velum subgranulosum; sporae 4-5 x 2.5-3 µ; pleurocystidia 28-42 x 7-12 µ, ventricosa-rostrata vel fusioide ventricosa, acuta; fibulae adsunt. Typus. Smith 39274; legit prope Tahquamenon Falls State Park, Michigan.

Illustr. Text Figs. 404-408.

Pileus 8-12 mm broad, obtusely conic, expanding to campanulate, surface at first white-frosted from remains of the outer veil and margin appendiculate-dentate from outer veil remnants, soon glabrescent over all, color dingy yellow-brown ("buckthorn brown") before spores mature, near wood brown (gray-brown) later. Context very thin and delicate.

Lamellae broadly adnate, subdistant, broad, grayish when young, becoming grayish brown from the spores.

Stipe 1-2 cm long, 1 mm thick, pallid above, honey-color below, delicate, at first coated with minute white flecks of veil material but soon glabrous.

Spores 4-5 x 2.5-3 µ, smooth, apical pore evident, dark chocolate-color in KOH, shape in face view ovate to elliptic, in profile subelliptic to obscurely bean-shaped, wall about 0.2 µ thick.

Basidia 4-spored, 5-6 µ wide, clavate. Pleurocystidia 28-42 x 7-12 µ, scattered, fusoid-ventricose to rostrate, neck 2-3 µ wide and apex acute, wall thin and smooth, content not distinctive. Cheilocystidia similar to pleurocystidia (small), neck generally not as narrow and apex more obtuse, at times narrowly clavate-mucronate. Caulocystidia fusoid-ventricose to clavate or clavate-mucronate, 32-52 x 7-13 µ, apex subacute to obtuse. Veil cystidia also present and subcylindric to subventricose with obtuse apex, 40-60 x 10-14 µ, walls thin and smooth, hyaline in KOH. Hyphae of stipe cortex pale cinnamon revived in KOH.

Pileus cuticle a layer 2-3 cells deep of vesiculose cells up to 35 µ wide, walls hyaline to weakly ochraceous in KOH and thin; subcuticular region pale tawny in KOH, the pigment in the hyphal walls. Context hyphae hyaline, the cells greatly inflated. Clamp connections present.

Type locality. Tahquamenon Falls State Park, Michigan.

Habit and habitat. Gregarious on hardwood logs, July.

Distribution. Known only from the type locality.

Observations. This is a very distinctive species because of its minute spores and small pointed pleurocystidia.


Pileus (1.5-) 3-6 cm broad, obtusely conic to convex at first, in age broadly convex to plane, surface at first covered by superficial white fibrillose patches of veil material, the scales appressed or somewhat recurved, glabrescent, surface smooth or rugulose, color "chocolate" to "bister" when fresh, becoming nearly "wood brown" and striatulate before fading, hygrophanous, when faded sordid cinnamon-buff or near avellaneous. Context thin or thickish (up to 3 mm in large pilei), tapering gradually toward the margin, very fragile, watery brown, odor faintly disagreeable, taste mild.

Lamellae close to crowded, adnate, narrow, pallid brownish, bister (dark yellow-brown) when mature but finally purple-brown and dried dark vinaceous-brown (near "bone brown"), edges whitish but even.

Stipe 3-7 cm long, 2-5 (-6) mm thick, equal, tubular, cartilaginous, fragile,
surface fibrillos to scaly up to the evanescent annular zone, more or less glabrescent in age (rarely with a membranous annulus), white, becoming pallid brownish.

Spores (6-)6.5–7.5(-8) × 3–4.2 μ, smooth, with a practically invisible apical pore which in no way modifies the shape of the spore apex, shape in face view elliptic to ovate, in profile subelliptic to obscurely inequilateral, color in KOH soon dark chocolate-color, in Melzer’s tawny-red, wall about 0.3 μ thick. Spore deposit dark purplish brown.

Basidia 4-spored, 16–22 × 5–8 μ, clavate, hyaline in KOH. Pleurocystidia and cheilocystidia abundant and similar, 34–50(-58) × 9–14 μ, fusoid to fusoid-ventricose usually tapered evenly to a sharply pointed apex, wall usually hyaline in KOH but in some vinaceous-gray to avellaneous, wall often refractive (but scarcely thickened) to within a short distance of the apex, this part reviving well but the apex often remaining collapsed, smooth, cell content not distinctive in either KOH or Melzer’s. Caulocystidia distinctive, 36–64 × 9–15 μ, subfusoid to fusoid-ventricose but in a large number the apical region showing 1–3 irregular to fingerlike protrusions, wall hyaline, smooth and thin, cell content not distinctive.

Gill trama regular, the hyphae parallel to somewhat interwoven, hyaline or nearly so in KOH as revived. Pileus having a cuticle of hyaline vesiculose cells about two deep, the cells 20–60 × 10–40 μ, wall smooth and thin, cell content not distinctive. Hyphae of subcuticular zone vinaceous-brown to cinnamon in KOH and with distinct pigment incrustations, these may extend to the bases of the cuticular cells. Clamp connections present. No distinctive reaction on any tissue when mounted in Melzer’s.

Type locality. Booth, Oregon, near Lake Tahkenitch.

Habit and habitat. Cespitose to gregarious on burned ground.


Observations. Fries in his various works described the gills of Agaricus pennatus “livido fusco-nigricantibus” a feature not applying to P. carbonicola. Hence I do not accept the synonymy proposed by Kühner & Romagnesi (1953). In view of the pattern of speciation encountered in this genus here in North America, and considering the confusion surrounding the application of the name Psathyra pennata in Europe, it seems clearly indicated to me that we have here a stirps with variants from the type form of the species both in Europe and North America. A peculiar feature shown by the type of P. carbonicola is the way in which the pleurocystidia fail to revive at the apex. It is very clear that the wall in this region is different from the wall of the remainder of the cystidium. This is a feature mentioned in this work for a number of species, and is one which may turn out to be of taxonomic significance. A difference in the thickness of the cystidial wall in the apical region may also be noted on completely revived cells.

A. A. Pearson (1943) described P. pennata f. annulata. The spore size given for his variant is that of P. carbonicola. An apparently similar American variant is illustrated here (Pl. 95c). A variant very close to Lange’s (1936) concept of P. pennata is illustrated (Pl. 95b). As for all species described from Europe in the early stages of agaric systematics, we now need to have neotypes designated to fix the concepts.

182. Psathyrella pseudosenex A. H. Smith, sp. nov.

Pileus 1–2 cm latus, convexus, albo-floccosus glabrescens, pallide spadiceus, ad centrum cinnamomeo-brunneus; lamellae confertae, adnatae, pallidae demum brunneo-griseae; stipes 2–3 cm longus, 1.5–2 mm crassus, albidus, deorsum sordide brunneus, floccoso-fibrillosus, glabrescens; sporae 6–8×3.5–4 μ; pleurocystidia 34–46×9–14 μ, fusoid-ventricosa; fibulae adsunt. Typus. Smith 22312 (MICH); legit prope Douglas Lake, Michigan.

Illustr. Text Figs. 412, 413a, 414.

Pileus 1–2 cm broad, convex, remaining so or becoming merely more broadly expanded, surface at first covered by delicate white flecks of fibrils of outer veil material, these soon evanescent, the margin at first fringed with white fibrils, surface moist and hygrophanous, when moist near “tawny olive” over marginal area and cinnamon-brown over the disc, fading to pale buff. Context very delicate, fragile, watery, brownish fading to pallid, odor and taste not distinctive.

Lamellae close, broad, adnate, readily seceding, pallid becoming drab (dark brownish gray), edges uneven.

Stipe 2–3 cm long, 1.5–2 mm thick, equal, white, base slightly sordid brown, lower two-thirds white floccose-fibrillose, upper portion white and pruinose.

Spores 6–8×3.5–4 μ, smooth, apical pore present and in some apex appearing truncate, or hyaline membrane over the pore protruding bubble-like, shape in face view ovate to elliptic, in profile mostly obscurely inequilateral, color in KOH dull cinnamon-brown slowly becoming chocolate color, in Melzer’s reddish tawny, wall about 0.3 μ thick.

Basidia 16–20×7–9 μ, short-clavate, hyaline in KOH, 4-spored. Pleurocystidia scattered, 34–46×9–14 μ, fusoid-ventricose with obtuse apex, and the protoplasmic content not extending quite to the apex in many, wall thin, smooth and hyaline, content of cells not distinctive in KOH or in Melzer’s. Caulocystidia subclavate, fusoid-ventricose or subcylindric, smooth, wall thin but in some refractive, smooth, cell content not distinctive.

Cuticle of pileus a layer of vesiculose cells 1–2 deep, the walls toward the subeuticular region pale cinnamon, cell content not distinctive. Hyphae of subeuticular region cinnamon to pale cinnamon in KOH with few pigmented wall thickenings. Clamp connections present. No distinctive reactions noted on any tissue as revived in Melzer’s.

Type locality. Near Cheboygan, Michigan.

Habit and habitat. Around decaying stumps of hardwoods, August.

Distribution. Michigan and California.

Observations. This species is distinct from P. senex in having narrower spores. Both have relatively thin outer veils. P. laricina keys out here also but is terrestrial, the hymenium contains brachybasidioles at maturity, and the pleurocystidia have narrow necks and acute apices.


183. Psathyrella fibrillosipes A. H. Smith, sp. nov.

Pileus 8–15 mm latus, demum late convexus, albo-floccosus glabrescens, ad marginem appendiculatus vel fimbriatus, fumoso-fulvus; lamellae latae, subdistantes, subhepaticolor; stipes 1.5–2.5 cm longus, circa 1.5 mm crassus, copiose fibrillosus, albus; sporae 6–7.5 (–8)×3.5–3.5 μ; pleurocystidia 36–48×7–13 μ, anguste fusoido-ventricosa, subacuta; fibulae adsunt. Typus. Smith 32–455 (MICH); legit prope Stockbridge, Michigan.
Pileus 8–15 mm broad, obtuse with an appressed margin when young, expanding to broadly convex or retaining a slight umbo, surface at first covered by the white fibrillose remains of the outer veil, soon fibrillose-scaly and finally glabrous, the margin at first appendiculate with fragments of the veil or merely fringed, evenly dull reddish brown, hygrophanous, more or less avellaneous when faded. Context very thin and fragile, odor and taste not recorded.

Lamellae broad, subdistant, 1–2 tiers of lamellulae, bluntly adnate, dark reddish brown ("carob brown") at maturity, edges slightly fimbriate.

Stipe 1.5–2.5 cm long, up to 1.5 mm thick, equal, fragile, white, densely fibrillose over lower portion, pruinose above.

Spores 6–7.5(–8) × 3–3.5 μ, smooth, apical pore present but apex not truncate, shape in face view narrowly elliptic to oblong, in profile obscurely inequilateral to obscurely bean-shaped, color in KOH chocolate color and slowly becoming slightly darker, in Melzer's reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 18–22 × 5–7 μ, clavate, hyaline in KOH. Pleurocystidia scattered to abundant, 36–48 × 7–13 μ, narrowly fusoid-ventricose with subacute apex, or shorter (about 32 × 14 μ) and with a more rounded apex, the latter type not abundant, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia or clavate to globose and 12–18 × 8–13 μ, hyaline in KOH. Caulocystidia similar to the cheilocystidia.

Gill trama regular, pale to moderately dark cocoa-color in KOH (nearly hyaline in thin sections). Pileus trama cocoa-color in KOH, hyphal walls smooth or practically so. Cuticle of pileus formed by a layer of inflated hyaline cells several deep, the walls hyaline to weakly cinnamon in KOH, cell content not distinctive. Clamp connections present. No distinctive reaction noted on any tissue mounted in Melzer's.

Type locality. Near Stockbridge, Michigan.

Habit and habitat. Gregarious on debris under a brush pile (in hardwoods).


Observations. This species might be sought for under section Appendiculatae in this work as the margin in a few basidiocarps was truly appendiculate. The small spores are distinctive in comparisons with the P. fibrillosa group.

Material examined. Michigan: Potter 6355, Smith 32-455 (Type), 36067.

Stirps Fibrillosa

Key to the Species of Stirps Fibrillosa

1. Many pleurocystidia having 1-3 finger-like projections at or near the apex.
   184. P. cornicericystis.

2. Not as above—only rarely one finds a cystidium having projections.
   2. Spores bright ochraceous-tawny when first mounted in KOH; basidiocarps typically cespitose.
   185. P. subcaespitosa.

3. Stipe and pileus drying violaceous umber to violaceous-cinereous; spore apex distinctly truncate; cuticle of pileus 2-3 cell deep.
   186. P. umbrinescens.

4. Not as above.
   4. Habitat on sphagnum.
   187. P. laurentiana.

5. Spores 8-11 × 4-5 μ.
   5. Spores 6-9 × 3-4.5 μ (rarely 5-6 μ wide).

6. Stipe 3-5.5 cm long; pleurocystidia (at least some) having dingy vinaceous-brown tints in KOH.
   193. P. harrisonii.
6. Stipe 8–11 cm long; pleurocystidia all hyaline in KOH (see *P. roothaanensis* also).

7. Scattered on decaying wood of hardwoods.

8. Spores 5–6 μ wide (see *P. depauperata* also).

9. Spores 3.5–5 μ wide.

10. Hyphae in subcuticular region smooth to minutely roughened.

184. **Psathyrella cornifericystis** A. H. Smith, sp. nov.

Pileus 1.5–3.5 cm latus, late convexus vel expanso-umbonatus, sparse fibrillosus glabrescens, ad marginem saepe plicatus; spadiceus vel pallide spadiceus; lamellae 5–7 mm latae, demum ventricosae, pallidae demum melleae dein triste violaceo-griseae; stipes 2.5–3.5 cm longus, 2–4 (–5) mm crassus, pallidus, fibrillosus glabrescens; sporae 6–7.5 (–8) × 4–4.5 μ; pleurocystidia 48–65 × 8–13 μ, anguste fusideo-ventricosa vel fusideo ventricosa, ad apicerum cum 1–3 processis; fibulae adsunt. Typus. Smith 21384 (MICH); legit prope Ann Arbor, Michigan.

Illustr. Pl. 63, figs. a–b; Pl. 91, fig. a; Text Figs. 418–421.

Pileus 1.5–3.5 cm broad, convex to obtusely conic, expanding to broadly convex or finally nearly plane, somewhat umbonate at times, surface moist and hygrophanous, at first coated with superficial white fibrils but soon glabrous or merely with silky fibrils adhering along the margin, margin fringed with fibrils at first but soon naked and frequently plicate-crenate, margin straight at first, color evenly "Saccardo's umber" or a little paler and near "snuff brown" fading to near avellaneous but at times some finally changing to sordid honey color. Context thin, fragile, concolorous with surface, very brittle, odor and taste not distinctive.

Lamellae broad (5–7 mm), horizontal, becoming ventricose, pallid to pale honey yellow at first, nearly drab to dusky drab (dark violaceous-gray) in age, edges conspicuously white-fimbriate.

Stipe short, 2.5–3.5 cm long, 2–4 (–5) mm thick, fragile, hollow, equal or slightly enlarged above, white to whitish and not discoloring, or merely watery gray beneath the fibrils, more or less covered with white fibrils, base often radiate-strigose.

Spores 6–7.5 (–8) × 4–4.5 μ, smooth, apical pore inconspicuous and spore apex only obscurely truncate, shape in face view broadly ovate to broadly elliptic, in profile obscurely inequilateral to subelliptic, color in KOH dull cocoa-color soon changing to a medium dark chocolate-color, reddish tawny in Melzer's, wall about 0.2 μ thick.

Basidia 17–24 × 5–7 μ, 4-spored, hyaline in KOH. Pleurocystidia very abundant, 48–65 × 8–12 μ, narrowly subfusoid to fusoid-ventricose, apex obtuse to subacute and in many with 1–3 protuberances or fingerlike projections more or less well developed, wall thin, smooth and hyaline, cell content not distinctive in KOH or in Melzer's. Cheilocystidia 36–45 × 8–11 μ, basically similar to pleurocystidia; also small clavate to vesiculose cells present. Caulocystidia abundant 26–62 × 6–15 μ, versiform (Fig. 419), wall thin, smooth and hyaline, cell content not distinctive.

Gill trama interwoven, hyaline in water mounts when fresh and hyaline as revived in KOH, or if pale vinaceous-brown in young caps fading quickly. Pileus having a cuticle of clavate-pedicellate and vesiculose cells mixed, their walls slightly yellowish in water mounts when fresh, dingy pale vinaceous to dingy pale.
cinnamon as revived in KOH (finally nearly hyaline), wall smooth and thin, cell content not distinctive; some cells in the layer projecting as broadly fusoid to fusoid-ventricose pileocystidia. Hyphae of the subcuticular region pale dingy vinaceous-cinnamon revived in KOH and with smooth walls. Clamp connections present. No distinctive reaction seen on any tissue when mounted in Melzer's.

Type locality. Ann Arbor, Michigan.

Habit and habitat. Scattered to subcespite on sticks of elm and red maple and on chip-dirt of hardwood trees, etc.


Observations. There is no red tinge to the gills. The small spores, branched pleurocystidia, and dingy yellow-brown color beneath the veil are distinctive.


185. Psathyrella subcaespitosa A. H. Smith, sp. nov.

Pileus 1.5-3 cm latus, obtuse conicus demum late convexus, albo-fibrillosus glabrescens, ad marginem appendiculatus, spadiceus vel fumoso-cinnamomeus; lamellae pallidae demum avellaneae dein brunneo-griseae, latae, confertae vel subdistantes; stipes 3-5 cm longus, 2.5-4 mm crassus, fibrillosus glabrescens, deorsum sordide melleus; sporae 6.5-8×4-5 μ; pleurocystidia 36-47×8-14 μ, fusoide ventricosa vel subcylindrica obtusa; fibulae adsunt. Typus. Smith 27594 (MICH), legit prope Bear Springs, Mt. Hood National Forest, Oregon.

Illust. Text Figs. 422-424.

Pileus 1.5-3 cm broad, obtuse to convex, expanding to broadly conic or convex, surface at first with a hoary coating of whitish fibrils which soon become arranged into minute squamules and finally disappear, margin at first appendiculate with remains of a rather thick cottony-fibrillose partial veil, glabrescent, surface moist and cinnamon-brown to snuff brown, hygrophanous and fading to grayish buff and becoming distinctly atomate, margin when moist scarcely translucent-striate. Context very thin and exceedingly fragile, odor and taste not distinctive.

Lamellae whitish young but soon avellaneous to wood brown and finally nearly drab but when dried dingy ochraceous-tawny, ascending-adnate and readily seceding, moderately close and broad, the edges even.

Stipe 3-5 cm long, 2.5-4 mm thick, equal, hollow, fragile, surface densely fibrillose from pallid veil remnants loosely dispersed to more or less appressed, glabrescent, pallid beneath the fibrils or in old basidiocarps pale honey-color near the base, near the apex fibrillose-pruinose.

Spores 6.5-8×4-5 μ, smooth, apical pore distinct and some spores with a truncated apex in optical section, shape in face view ovate to elliptic, in profile somewhat inequilateral to subelliptic, color in KOH bright ochraceous-tawny becoming slowly snuff brown and finally clouded with gray, in Melzer's ochraceous-tawny to clay color and only slightly reddish on standing, wall about 0.2 μ thick.

Basidia 4-spored, very short and fat (15-18×8-10 μ), with scarcely any pedicel, hyaline in KOH. Brachybasidioles and basidioles practically indistinguishable. Pleurocystidia scattered, 36-47×8-14 μ, fusoid-ventricose to narrowly fusoid-ventricose or subcylindric, apex obtuse, wall thin, smooth and hyaline, the tip area long remaining collapsed (in KOH) but no thickening or refractive nature observed in the remainder of the wall, content of cell not distinctive. Cheilocystidia 28-42×9-15 μ, fusoid-ventricose with short neck and obtuse apex vary-
ing to clavate or subelliptic (in optical section), content not distinctive, wall thin, smooth and hyaline. Caulocystidia present as scattered clavate hyphal end cells.

Pileus with a cuticle of inflated cells 3–5 deep, those over the surface with practically hyaline walls, those toward the subcuticular zone pale cinnamon and smooth or with only scattered pigmented thickenings. Hyphae of the subcuticular zone pale cinnamon to reddish cinnamon in KOH and with pigmented wall thickenings especially near the cross walls; cell content not distinctive. Clamp connections present. No distinctive reaction on any tissue as mounted in Melzer’s.

Type locality. Bear Springs, Mt. Hood National Forest, Oregon.

Habit and habitat. Cespitose-gregarious on wet soil, October.

Distribution. Known only from the type locality.

Observations. *Psathyrella subcaespitosa* differs from *P. frustulenta* in the gray tone of the fresh gills, in the thick partial veil, and clustered habit of growth.

186. *Psathyrella umbrinescens* A. H. Smith, sp. nov.

Pileus 1–3 cm latus, acute conicus demum campanulatus, interdum convexus, fibrilloso-squamulosus, glabrescens, cinnamomeo-brunneus, denique violaceo-umbrinus; lamellae confertae, angustae demum latae, brunneolae dein atro­brunneae; stipes 3–6 cm longus, 2–3 mm crassus, pallidus fibrillosus, glabrescens; sporae 7–9 × 4–5 μ; pleurocystidia 38–52 × 12–18 μ, late fusideo, subacuta, vel fusideo-ventricosa; fibulae adsunt. Typus. Smith 50422 (MICH); legit Tahquamenon Falls State Park, Michigan.

Pileus 1–3 cm broad, sharply to obtusely conic expanding to campanulate or convex, margin curved in slightly at first and then copiously decorated with veil remnants, squamules from the pallid veil at first decorating the entire pileus but these soon vanishing, surface moist and hygrophanous, dull cinnamon-brown fading to dingy tan and then slowly becoming umber, dark violaceous-umber as dried. Context very thin and fragile, odor and taste not recorded.

Lamellae crowded, narrow, becoming moderately broad, dull brown when young, blackish brown as dried, edges even.

Stipe 3–6 cm long, 2–3 mm thick, equal, slender, very fragile, whitish drying violaceous-cinereous, appressed fibrillose to the veil line at first, glabrescent, apex slightly pruinose.

Spore deposit chocolate-fuscous; spores 7–9 × 4–5 μ, smooth, apical pore distinct and apex truncate, shape in face view elliptic to almost oblong, in profile obscurely inequilateral to elliptic, color in KOH very dark rich rusty brown slowly becoming dark chocolate-color, in Melzer’s bay-brown, wall about 0.3 μ thick.

Basidia 4-spored, 18–24 × 8–9 μ, short-clavate, hyaline. Pleurocystidia scattered, 38–52 × 12–18 μ, broadly fusoid to a subacute apex or fusoid-ventricose, walls thin, smooth and hyaline, cell content not distinctive. Cheilocystidia mostly fusoid-ventricose, 32–45 × 9–15 μ, fusoid-ventricose with subacute to obtuse apex. Pileus cuticle a layer of vesiculose cells 2–3 deep, the walls more or less ochraceous-tan or paler, thin-walled and smooth. Hyphae of the subcuticular area hyaline to brownish in KOH, the wall smooth. Clamp connections present.

Type locality. Tahquamenon Falls State Park, Luce County, Michigan.

Habit and habitat. Gregarious on mud, Michigan.

Distribution. Known only from the type locality.

Observations. This species is distinguished by the violaceous-umber pileus as dried, copious outer veil which soon vanishes, very thin delicate stipe, broadly fusoid pleurocystidia and very dark rusty brown spores as first revived in KOH.
187. Psathyrella laurentiana A. H. Smith, sp. nov.

Pileus 10–15 mm latus, convexus vel late convexus, albo-floccosus, cinnamomeo-brunneus; lamellae sordide cinnamomeae demum violaceo-griseae; angustae, conflerta; stipes 3–4 cm longus, circa 1 mm crassus, albidus, fibrillosus, glabrescens; spora 8–10×4–5 μ; pleurocystidia 44–66×10–16 μ, fusoides ventricosa ad apicem obtusa vel subacuta; fibulae adsunt. Typus. Smith 61654 (MICH); legit prope Le Gite, Quebec, Canada. Illust. Text Figs. 425–427.

Pileus 10–15 mm broad, convex to broadly convex, margin appressed at first, surface at first covered with a white fibrillose veil which breaks up into squamules and disappears, margin fringed in young stages, surface moist and hygrophanous, cinnamon-brown fading to dingy tan but in drying becoming cinnamon-brown again. Context very thin and fragile.

Lamellae dingy dull cinnamon becoming violaceous-drab by maturity but drying about concolorous with pileus, narrow, close, adnate-seceding, edges even.

Stipe 3–4 cm long, about 1 mm thick, equal, white, unchanging, at first with veil fibrils variously dispersed over lower half, glabrescent, pruinose above.

Spores 8–10×4–5 μ, smooth, apical pore distinct and apex somewhat truncate, shape in face view narrowly to broadly ovate, in profile obscurely inequilateral to somewhat so, varying to subelliptic, color in KOH chocolate-brown becoming chocolate-gray, in Melzer's reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, short-clavate, 17–23×8–9 μ, hyaline. Brachybasidioles present at maturity (about 10 μ wide), an occasional one seen with 1–5 echinulate processes over the upper half. Pleurocystidia abundant, 44–66×10–16 μ, fusoid-ventricose with obtuse to subacute apex, when first revived with granular material adhering around and over the apex, and the walls hyaline and thin, on standing for 5 minutes or so in KOH the wall in many of the cystidia swelling slightly to 0.3–0.4 μ thick and becoming weakly ochraceous. Cheilocystidia varying from similar to pleurocystidia to clavate or vesiculose, hyaline to yellowish in KOH, walls thin and smooth. Pileus cuticle a layer of inflated cells about 2 deep, the walls thin and smooth, weakly ochraceous to hyaline in KOH. Hyphae of the context brownish when first revived in KOH, walls smooth or practically so. Clamp connections present.

Type locality. Le Gite, Laurentide Provincial Park, Quebec, Canada.

Habit and habitat. Solitary on Sphagnum in bogs, August.

Distribution. Known only from type locality.

Observations. This species differs from P. sphagnicola in lacking a membranous veil, and from P. borealis in having a well developed fibrillose outer veil, as well as pleurocystidia some of which develop ochraceous tints in the wall in KOH. To date it has been found only one basidiocarp at a time.

188. Psathyrella senex (Peck) A. H. Smith, comb. nov.

Psilocybe senex Peck, Rep. N. Y. State Mus. 41: 70. 1888.

Pileus 1–3 cm broad, hemispheric to convex or occasionally obtuse, the margin incurved slightly at first but soon straight, broadly convex in age, surface glabrous over the disc when mature but toward the margin usually with small fasicles of whitish fibrils from the remains of the outer veil, the margin at times fringed slightly but usually glabrous in age, moist and hygrophanous, more or less
cinnamon-brown or tinged livid in age, fading to "light buff" or "pale ochraceous-buff" but soon pale grayish over all except the disc, margin faintly striate when fresh and at times in age slightly sulcate. Context thin and fragile, odor and taste none.

Lamellae adnate, soon seceding, broad, subdistant or in small unexpanded pilei appearing close, pallid at first, becoming avellaneous and finally purplish brown, edges even.

Stipe 3–6 cm long, 2–3 mm thick, equal, fragile, hollow, whitish to pallid, lower portion with scattered fibrils at first but glabrescent, apex pruinose and somewhat striate, base becoming discolored slightly (to dingy brown color) in age.

Spores 7–8×4.5–5.2 μm, smooth, apical pore indistinct but apex obscurely truncate in some, shape in face view broadly elliptic to ovate, in profile obscurely inequilateral to subovate, color in KOH cocoa-color and only slowly clouded grayish, for a long time (half an hour ±) remaining dingy yellowish brown, in Melzer's tawny, wall about 0.2 μm thick.

Basidia 4-spored, 16–22(–24)×8–10 μm, clavate to ellipsoid, hyaline in KOH. Brachybasidioles apparently differentiated at maturity (but change from a basidiole to a brachybasidiole very slight in this species over most of the gill surface). Pleurocystidia abundant, (36–)48–56(–64)×8–12(–15) μm, narrowly fusoid-ventricose with obtuse apex, some subcylindric above a pedicel, wall thin, hyaline, smooth or rarely with granules adhering around the apex, cell content not distinctive in KOH or Melzer's. Cheilocystidia resembling the pleurocystidia (but often smaller), and clavate to vesiculose cells 20–30×10–16 μm present, the wall thin to slightly thickened and yellowish to hyaline in KOH.

Pileus with a cuticle of vesiculose cells 1–2 deep, the wall thin, smooth and hyaline to yellowish (in KOH), cell content not distinctive. Hyphae of the subcuticular zone rather bright reddish cinnamon in KOH but fading, walls smooth or only weakly incrusted. Clamp connections present.

Type locality. Catskill Mountains, New York.

Habit and habitat. Scattered on decaying wood of hardwoods.


Observations. The description is drawn from Michigan collections. Some details were difficult to ascertain from the type. The distinctive features are the relatively thin white veil, broad gills at maturity, wide spores for their length, pallid stipe discoloring slightly in age near the base, and the prominent pleurocystidia. It is a very "commonplace" appearing Psathyrella.


189. Psathyrella cascadensis A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, obtuse conicus, demum late convexus, sparse fibrillosus, glabrescentis, pallide fulvae; lamellae confertae, latae, deorsum violaceo-fuscae vel fuscae; stipes 4–6 cm longus, 1.5–3 mm crassus, pallidus, deorsum mellebrunneus, fibrillosis glabrescentis; sporae 9–10.5×5–6 μm; pleurocystidia 42–65×9–13 μm, fusoid-ventricosa, obtusa vel subacuta; fibulae adsunt. Typus. Smith 30392 (MICH); legit prope Longmire, Mt. Rainier National Park, Washington.
Illustr. Text Figs. 430–434.

Pileus 1–2.5 cm broad, obtusely conic, expanding to convex or nearly so, surface at first covered with a very thin coating of outer veil fibrils which soon become arranged in scattered fascicles and disappear, margin fringed at first, surface moist, hygrophanous, color "ochraceous-tawny" to cinnamon-brown (about as in *P. frustulenta*), fading to pinkish buff or paler but some dingy tan in age when faded. Context thin and fragile, watery brownish moist, odor and taste not recorded.

Lamellae close, moderately broad, ascending adnate, pallid brownish becoming "benzo brown" (violaceous-fuscous) to "hair brown" (dark brownish gray), and when dried "chateura drab" (pale fuscous), not showing vinaceous-brown tones, edges whitish.

Stipe 4–6 cm long, 1.5–3 mm thick, equal, fragile, whitish, base finally dingy honey-brownish but not discoloring conspicuously, whitish when well dried, fibrillose at first with fibrils from the veil but soon glabrescent.

Spores 9–10.5 × 5–6 μ, smooth, pore apical and small (not affecting the contour of the apex), shape in face view elliptic to slightly ovate, in profile subelliptic to obscurely inequilateral, color in KOH dull cocoa-brown slowly becoming a grayer chocolate-brown, reddish tawny in Melzer’s wall about 0.4 μ thick.

Basidia 18–20 × 8–9 μ, 4-spored, hyaline in KOH, short-clavate. Pleurocystidia scattered, fusoid-ventricose with elongated necks and obtuse to subacute apex, 42–65 × 9–13 μ, wall thin, hyaline and smooth, cell content not distinctive. Cheilocystidia of two types: the first like the pleurocystidia but the neck not as long, the second clavate to vesiculose and 10–20 × 6–12 μ, having the cell walls slightly thickened in the lower part or over all and when revived in KOH the color pale bister, the supporting hyphae often similarly colored. Caulocystidia scattered in small groups, clavate to subcylindric or fusoid-ventricose, rarely with refractive material adhering to inner surface of wall at or near the apex, extremely variable in size from 70 × 20 μ for large fusoid-ventricose cells down to 15 × 10 μ for small subglobose cells, all hyaline in KOH.

Gill trama cocoa-color in KOH at first but fading, pigment in the smooth wall. Pileus trama vinaceous-brown fading to cocoa-brown, color rather persistent in young pilei (located in the wall). Cuticle of pileus a layer of vesiculose cells several cells deep and with pale ochraceous to cinnamon walls next to the hyphae of the subcutis. Clamp connections present.

Type locality. Lower Tahoma Creek, Mt. Rainier National Park, Washington.

Habit and habitat. Gregarious under alder.


Observations. This species is peculiar because of the coloration of the pileus and the lack of reddish tones in the gills after spores have formed. The pale bister (yellow-brown) cheilocystidia are also unusual.

Material examined. Michigan: Potter 7127, 7139, 7163; Smith 34124. Washington: Imshaug 1309; Smith 29417, 29488, 29514, 29515, 29531, 29640, 29641, 29821, 29923, 30168, 30221, 30227, 30392 (Type) 31507.

**190. Psathyrella affinis** A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, obtusum conicus demum expanso-umbonatus, fusco-brunneus, fibrillosus, glabrescens, demum rugulosus; lamellae brunneolae demum violaceo-griseae, latae, demum subdistantes; stipes 1–3 (–4) cm longus, 1–1.5 (–2) mm crassus, pallidus, deorsum brunneus, fibrillosus, glabrescens; sporae
(7–)8–10 × 5–6 μ (12 × 7.5 μ); pleurocystidia 32–46 × 10–16 μ, ventricosa, obtusa; fibulae adsunt. Typus. Smith 20414 (MICH); legit prope Highland, Michigan.

Illustr. Pl. 64, fig. a; Text Figs. 435–439.

Pileus 1–2.5 cm broad, obtusely conic becoming broadly campanulate or expanded umbonate, chocolate-brown moist and surface more or less covered with white appressed superficial fibrils, glabrescent, hygrophanous, fading to pale tan (“cinnamon-buff”) on the disc and darker alutaceous in age, the margin paler but retaining a cinnamon-buff tinge, rugulose when faded. Context when moist brownish, pallid when faded, very thin and fragile, odor and taste not distinctive.

Lamellae dull brown becoming drab (no red tones present), horizontally adnate, broad (3.5 mm), close to nearly subdistant, edges fimbriate.

Stipe 1–3 (–4) cm long, 1–1.5 (–2) mm thick at apex, whitish or soon tinged sordid brownish but no distinct color change evident, soon glabrous, the veil remnants white and at first forming a thin layer breaking into appressed patches, fragile and hollow.

Spores (7–)8–10 × 5–6 μ or rarely 12 × 7.5 μ, smooth, pore apical to oblique and apex not truncate, shape in face view strongly ovate to elliptic, in profile ovate to elliptic, color in KOH dark bister, in Melzer’s tawny-red, wall about 0.3 μ thick.

Basidia 4-spored, 18–24 × 7–9 μ, elliptic-pedicellate to clavate, hyaline in KOH. Pleurocystidia 32–46 × 10–16 μ, abruptly ventricose with a neck 4–6 μ wide ending in an obtuse apex, wall thin, smooth and hyaline, content not distinctive in either KOH or Melzer’s. Cheilocystidia clavate to vesiculose, 18–30 × 9–15 μ, hyaline or with faintly yellowish pedicels. Caulocystidia similar to pleurocystidia varying to clavate, smooth, thin-walled and hyaline.

Pileus with a cuticle of vesiculose cells in more or less of a palisade 1–2 cells deep, the walls thin, smooth and hyaline, the cells’ content not distinctive in KOH or Melzer’s, or the pedicels of some with slightly brownish walls. Hyphae of the trama ochraceous as revived in KOH and with incrusting material, yellowish in Melzer’s. Clamp connections present.

Type locality. Highland, Michigan.

Habit and habitat. Gregarious to scattered on wet leaves and moss in a swamp.


Observations. The spores are medium sized for Psathyrella and distinct because many have an oblique germ pore and the spore apex does not appear truncate.

Material examined. Michigan: Smith 20414 (Type), 33742.


*Psathyra fibrillosa* (Fr.) Kummer, Führ. Pilzk. 70. 1871.

*Drosophila fibrillosa* (Fr.) Quélet, Enchir. Fung. 117. 1886.

Illustr. Pl. 64, fig. b; Pl. 69, fig. b; Text Figs. 440, 441.

Pileus (1.5–)2–3.5 cm broad, obtuse becoming campanulate and finally convex to nearly plane, or with a slight umbo, surface at first covered with small fascicles of whitish fibrils, soon glabrous, hygrophanous, when moist “buckthorn brown” to “cinnamon-brown” (honey brown to cinnamon-brown), fading to grayish cinnamon-buff to pallid, slightly striate when moist. Context thin, brownish when moist, pallid faded, odor and taste not distinctive.
Lamellae broad, broadly adnate, close at first, subdistant in age, pallid buff becoming dark bister and finally nearly fuscous, edges even.

Stipe 3–6 (–8) cm long, 2–3 mm thick, equal, hollow, white, fragile, at first with scattered fibrils in squamules or patches but soon glabrous, apex faintly pruinose.

Spores 7–9 × 4.4–4.8 μm, smooth, apical pore distinct and apex somewhat truncated (if the lens-membrane over the pore collapses), shape in face view elliptic or nearly so, in profile obscurely inequilateral to subelliptic, color in KOH coffee-color becoming chocolate-color (a violaceous component develops), reddish tawny in Melzer's, wall about 0.3 μm thick.

Basidia 17–22 × 7–9 μm, 4-spored, hyaline in KOH, short-clavate. Brachybasidioles present in age (at least the basidioles become more inflated in age). Pleurocystidia scattered (26–)36–50 × 9–14 μm, fusoid-ventricose, apex subacute to obtuse, wall thin, smooth and hyaline, content of cell not distinctive in either KOH or Melzer's. Cheilocystidia similar to pleurocystidia; a few clavate, hyaline, thin-walled cells also present. Caulocystidia versiform (Fig. 441), thin-walled, smooth, hyaline, content not distinctive.

Gill trama interwoven, dull vinaceous-brown in KOH. Pileus trama vinaceous-brown in KOH, fading, some pigment incrustations and wall thickenings present especially near the cross walls. Pileus cuticle of hyaline vesiculose cells about 2 deep, their walls thin, smooth and hyaline, cell content not distinctive. Clamp connections present. No distinctive reaction on any tissue in Melzer's.

Type locality. Europe.

Habit and habitat. Solitary to gregarious on debris in mixed conifer-hardwood forests, late summer and fall.


Observations. This species answers well to the features of distinction in the Friesian descriptions. However, the species apparently does not have a clear and widely accepted concept in Europe by present-day mycologists. Hence the name is used here tentatively.


192. Psathyrella payettensis A. H. Smith, sp. nov.

Pileus 1.5–2.5 cm latus, late conicus, albo-squamulosus glabrescens, sordide cinnamomeus; lamellae pallide demum fusco-brunneae, latae, subdistantes; stipes 3–4.5 cm longus, 1.5–3 cm crassus, albidus, deorsum floccosus, glabrescens, ad basem demum sordide brunneus; sporae 7–8 × 4.5–5 μm; pleurocystidia 38–52 (–60) × 9–16 μm, fusoid-ventricosa, obtusa vel subacuta; fibulae adaeunt. Typus. Smith 70160 (MICH); legit prope Warren, Idaho.


Pileus 1.5–2.5 cm broad, obtusely conic and margin straight, becoming broadly conic, surface at first covered by minute white superficial squamules from the outer veil, soon glabrous, margin merely fringed with fibrils at first, surface moist and hygrophanous, near “Sayal brown” (dingy cinnamon) or slightly darker at first, paler on the faintly striate margin. Context exceedingly fragile, odor and taste not distinctive, with FeSO₄ no color change.

Lamellae pallid brownish becoming “wood brown” or darker, close to subdistant, broad, seceding, edges even.
Stipe 3–4.5 cm long, 1.5–3 mm thick, equal, very fragile, white, pruinose above, white floccose below from veil remnants, merely slightly brownish in base of stipe in age.

Spores 7–8×4.5–5 µ, smooth, apical pore indistinct (apex rounded), shape in face view broadly ovate to broadly elliptic, in profile broadly subovate to elliptic (the ventral line slightly concave in some), color in KOH pale tawny but on standing becoming pale cocoa-color, in Melzer's pale reddish tawny, wall about 0.3 µ thick.

Basidia 4-spored, 20–27×8–10 µ, hyaline in KOH. Pleurocystidia scattered, 38–52(--60)×9–16 µ, fusoid-ventricose, apex obtuse to acute, wall thin and smooth, hyaline in KOH, content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia but usually shorter, some vesiculose to clavate, small cells also present. Caulocystidia versiform (Fig. 445), thin-walled, hyaline.

Pileus cuticle a layer of vesiculose cells 2–3 deep, the walls smooth, thin, yellowish to hyaline in KOH, content not distinctive in either Melzer's or KOH. Hyphae of context particularly in region of subcutis tawny in KOH, the walls smooth, no distinctive reaction noted on any tissue in mounts revived in Melzer's. Clamps present.

Type locality. Warren, Idaho County, Idaho.

Habit and habitat. Scattered on conifer duff, September.

Distribution. Known only from the type locality.

Observations. The spores of this species remind one of those of *P. senex* but are pale tawny when first revived in KOH, and the basidiocarps are scattered on the duff under conifers. It is not closely related to *Agaricus cascus* Fries, which Fries in Epicrisis placed next to *A. candollei*. *Drosophila pseudocasca* Romagnesi however is quite similar and a critical comparison with *P. payettensis* should be made, but the latter has obtuse to subacute pleurocystidia whereas in *D. pseudocasca* the neck is said to be scarcely different from the ventricose part.

193. *Psathyrella harrisonii* A. H. Smith, sp. nov.

Pileus 1–3.5 cm latus, late convexus, albo-squamulosus glabrescens, griseo-brunneus; lamellae latae, confertae, brunneo-lae, demum fusco-brunneae; stipes 2–5 mm crassus, albidus, deorsum demum sordide brunneus; fibrillosus, glabrescent; sporae 8–11(--12)×4–5 µ; pleurocystidia 20–35(--40)×10–18 µ, fusoida vel fusoido-ventricosa, acuta vel obtusa, subcrassotunicata (tunica 0.6 µ crassa, in "KOH" griseo-vinacea vel hyalina). Typus. Harrison 7659 (MICH); legit prope Aylesford Lake, King County, Nova Scotia, Canada.

Pileus 1–3.4 cm broad, obtuse, expanding to broadly convex or nearly plane, surface at first covered with small whitish squamules composed of fascicles of outer-veil fibrils, margin fringed by fibrils also, glabrescent, moist and hygrophanous, dull gray-brown fading to dingy tan, striatulate when moist. Context thin and fragile.

Lamellae broad, close, adnate, seceding, pallid brownish becoming rusty brown and finally chocolate-brown, drying chocolate brown; edge white-fimbriate.

Stipe 3–5.5 cm long, 2–5 mm thick, hollow, fragile, slightly and evenly enlarged downward, white but discoloring to brownish at least slightly, at first somewhat fibrillose from veil remnants but soon glabrous.

Spores 8–11(--12)×4–5 µ, smooth, apical pore distinct and spore apex slightly truncate, shape in face view narrowly elongate-elliptic to oblong, in profile sub-oblung to obscurely inequilateral, color in KOH cocoa-brown becoming chocolate-brown, in Melzer's tawny, wall about 3 µ thick.
Basidia 4-spored, 17–22 (−36) × 8–9 μ, clavate. Pleurocystidia abundant, 46–70 (−80) × (8–)10–18 μ, fusoid to fusoid-ventricose, apex acute to obtuse, wall smooth and up to 0.6 μ thick, dingy brownish to vinaceous to hyaline in KOH. Cheilocystidia clavate, 12–20 × 6–14 μ, hyaline to ochraceous in KOH, the color in the wall; also cells somewhat like the pleurocystidia present but many merely fusoid-ventricose with thin walls.

Pileus cuticle a layer of hyaline to yellowish inflated cells, 2–3 deep and with thin, smooth walls, content not distinctive. Hyphae of subcuticular region merely ochraceous to brownish in KOH and having smooth walls. Clamps present.

Type locality. Aylesford Lake, King County, Nova Scotia, Canada.

Habit and habitat. Scattered on soil at edge of a bog, July.

Distribution. Known only from type locality.

Observations. This species appears to be close to *P. squamosa* but features cystidia coloring vinaceous-brown to some extent when revived in KOH, in their having thinner walls, and in the spores being more elongate.

**194. Psathyrella undulatipes** A.H. Smith, sp. nov.

Pileus 2–4.5 cm latus, conicus vel late conicus, floccoso-squamulosus, glabrescent, spadiceus; lamellae confertae, latae, brunneolae demum fusco-brunnae; stipes 8–11 cm longus, fragilissimus undulatus, fibrillosus, glabrescens; spora 8–11 × 4–4.5 (−5) μ; pleurocystidia 38–64 (−76) × 10–17 μ, fusoid-ventricosa, obtusa vel subacuta; fibulae adsunt. Typus. Smith 20084 (MICH); legit prope Rhododendron, Oregon.

Pileus 2–4.5 cm broad, obtusely conic, remaining so or expanding to broadly conic, surface at first dotted with fine fibrillose squamules from the remains of a white outer veil, soon glabrous over all including the margin, color “Prout’s brown” becoming dingy wood brown (medium date brown becoming grayer in maturing), striatulate on margin when moist, hygrophanous and fading to dingy tan, fading first on the margin. Context exceedingly thin and fragile but rigid, concolorous with surface, odor and taste not distinctive.

Lamellae moderately close, 2 tiers of lamellulae present, broadest at stipe and tapered to the pileus margin, adnate, not readily seceding (breaking near the stipe before separating from it), color dingy pale brownish becoming chocolate-brown to a more violaceous-brown, dark vinaceous-brown as dried, edges even.

Stipe 8–11 cm long, 2.5–3.5 mm thick above, equal or slightly enlarged downward, hollow, exceedingly fragile, hollow, white, most of them conspicuously undulating, at first with scattered white fibrils from the veil over the lower portion and with an evanescent fibrillose zone where the veil breaks.

Spores 8–11 × 4–4.5 (−5) μ, smooth, apical pore present but small and inconspicuous, spore apex not truncate, shape in face view oblong to narrowly elliptic, in profile obscurely bean-shaped to narrowly elliptic, color in KOH cocoa-color darkening to chocolate-brown and finally pale chocolate-gray, in Melzer’s tawny to reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, short-clavate, 16–20 × 8–9 μ, hyaline. Pleurocystidia abundant, 38–64 (−76) × 10–17 μ, fusoid-ventricose with apex obtuse to subaeute, surface often with scattered adhering granules or coagulated droplets, hyaline, thin-walled, content of cell not distinctive. Cheilocystidia similar to pleurocystidia but smaller, often with adhering granules or droplets.

Pileus cuticle a layer of inflated cells 2–3 deep, their walls thin, smooth, hyaline and slightly refractive in KOH, the cell content not distinctive (“empty”).
Hyphae of the subcuticular region and remainder of trama vinaceous-cinnamon when first revived in KOH and fading rapidly, walls incrusted at first but less so after standing in KOH. Clamp connections present.

Type locality. Rhododendron, Clackamas County, Oregon.

Habit and habitat. Gregarious on wood and debris of conifers, October.

Distribution. Known only from the type locality.

Observations. There was alder in the habitat and the debris, possibly, was a mixture of both alder and conifer material. Consequently habitat is not emphasized in delimiting the species. The important features are the consistently rather long narrow spores, subacute pleurocystidia, the white undulating very fragile stipe and the white outer veil. It is close to P. fibrillosa but the more elongate spores distinguish it. It is close to Drosophila lutensis Romagn. but the spores are scarcely truncate and the cystidia lacked a mucilaginous exudate.

**Psathyrella** subg. Homophron (Britz.) Singer, Lilloa **22**: 468. 1951.


This subgenus features thick-walled pleurocystidia and by definition contains species in which the cystidial wall is 0.5 μ or more thick in some part such as the neck or the ventricose portion. Some with crystalline incrustations over the apex of the cystidium are also included here, but it must be recognized that this subgenus merges gradually with subg. *Pannucia* both in cystidial features and in the degree to which the veil is developed.

The subgenus is divided into two sections: (1) sect. *Homophron* in which the spores are hyaline to pinkish hyaline or yellowish hyaline in KOH, a veil is absent, the pleurocystidia have distinctively thickened walls and the apex of the cell is typically incrusted with crystals or amorphous material. Not all the species, however, have all of these characters; (2) sect. *Cystidiosae* for the most part features major departures from the above section. A collection belongs in this group if the spores are cocoa-color or darker when first revived in KOH, if the wall of the cystidium is slightly thickened to distinctly thickened and incrustations are present over apex and if the incrustations are conspicuous the cystidial wall may be less than 0.5 μ thick. The outer veil varies from absent to well-developed, and the margin of the pileus is typically incurved at first.

Type. *Psathyrella spadicea*.

**Key to Sections of Subgenus Homophron**

1. Spores in KOH nearly hyaline and not darkening on standing. sect. *Homophron*.
   1. Spores soon cocoa-color or darker in KOH. sect. *Cystidiosae*.

**Section Homophron**

**Key to the Species of Section Homophron**

1. Both lamprocystidia and leptocystidia present (usually on a single lamella); spores 8-11 × 4.5-5.5 μ; lamellae narrow (see 408. *P. populorum* also). 196. *P. variata*.
   2. Not as above.
   3. Spore deposit more or less brick red (see 202. *P. camptopoda* also).
   4. Spore deposit wood brown to cocoa-brown.
   5. Lamellae broad; stipe staining red at the base when bruised. 409. *P. rhodospora*.
   6. Not as above.
   7. Many pleurocystidia showing refractive amorphous bodies in the interior (revived in KOH); cheilocystidia 20-65 × 10-25 μ. 197. *P. littenii*.
   8. Not as above.
5. Stipe (5-)8-15(-20) mm thick; many caulocystidia 40–90×6–12 μ, ventricose at base and with very long neck.

5. Stipe 2.5–5 mm thick; caulocystidia subvesiculose to clavate and up to 70×20 μ.

6. Spores 7–9(-10)×4–5.5 μ.


7. Spores slightly broader in face than in profile view (slightly compressed), 5–5.8(-6)×3.5–4×4.7(-5) μ.

7. Spores not compressed as seen from an end-view.

8. Spore deposit cocoa-reddish; pileus dull honey-brown becoming dull cinnamon before becoming wood brown.

8. Spore deposit chocolate-brown; pileus pallid when young, becoming cocoa brown to dull vinaceous-brown.

196. Psathyrella variata A.H. Smith, sp. nov.

Pileus 2–5 cm latus, late convexus, pallidus demum cacaocolor, glaber; velum nullum; lamellae confertae, angustae, brunneoalae demum cacaocolor dein vinaceo-brunneas; stipes 3–6 cm longus, 3–6 mm crassus, pallidus, ad basem strigosus, cartilaginosus; sporae 8–11(–12)×4–5.5(–6) μ; pleurocystidia: (1) 30–60×8–22 μ, erassotunicata; (2) 43–60×9–15 μ, tenutunica; fibulae adsunt. Typus. Smith 71092 (MICH); legit prope Priest Lake, Idaho.

Illustr. Text Figs. 446–452.

Pileus 2–5 cm broad, convex expanding to broadly convex, margin incurved at first and naked to merely hoary-pruinose, pallid to dingy cinnamon but as spores mature developing a vinaceous tone (cocoa-color is a common intermediate stage) and retaining a reddish cast on drying. Context thin, brittle, odor not distinctive.

Lamellae close to crowded, narrow, more or less horizontal, pallid brownish becoming cocoa-color to dark reddish (vinaceous) brown (near “army brown”) and retaining this color dried, edges slightly white-fimbriate.

Stipe 3–6 cm long, 3–6 mm thick, equal or nearly so, naked (or merely pruinose above), pallid becoming dingy on aging, base somewhat strigose, tubular, consistency fairly cartilaginous.

Spores 8–11 (–12)×4–5.5(–6) μ, smooth, apical pore present as only a minute spot under high oil-immersion (N.A. 1.4), shape in face view oblong to elliptic, varying to ovate, in profile obscurely bean-shaped to subelliptic, color in KOH (under microscope) dingy yellowish vinaceous with a few pale cocoa-color, in Melzer's pale dull dingy yellowish becoming pale cinnamon tinted on standing, wall about 0.2 μ thick.

Basidia 4-spored, 17–24×6–8 μ, clavate to cylindric (when sporulating) and some projecting 8–12 μ, hyaline to weakly brownish (in groups) in KOH. Pleurocystidia present both as lamprocystidia (30–60×8–22 μ) and leptocystidia 43–60×9–15 μ with the longest being the narrowest, all setiform to fusoid-ventricose in shape, mostly originating in the subhymenium, content not distinctive in KOH or Melzer's, mostly smooth as revived in KOH. Cheilocystidia varying from "lamprocystidia" to "leptocystidia" and from setiform to ovate-mucronate, also some clavate to vesiculose cells with ochraceous walls present, the walls of the latter ~0.5 μ thick. Caulocystidia as in P. sublateritia—many greatly elongated but many different shapes present in addition—clavate, fusoid-ventricose, mucronate, elongate-fusoid, etc.; however, no thick-walled elements were observed.

Gill trama with the area next to the cellular subhymenium colored snuff brown in KOH, the walls slightly thickened but smooth, subhymenium paler;
hyphae of the central area also colored in KOH at least in age but the layer not appearing dark colored because of the width of the cells.

Cuticle of pileus of vesiculose cells in a layer 2–3 cells deep, the walls more or less refractive and up to 0.5 μ thick in some, smooth, cell content not distinctive. Hyphae of subcutis colored like those of the gill trama, no incrustations clearly visible. Clamp connections present.

Type locality. Priest Lake, Idaho.

Habit and habitat. Subcespitose on a cottonwood log, October.

Distribution. Known only from the type locality.

Observations. The stature is that of *P. conissans*, the caulocystidia are most like those of *P. sublateritia*, and the spore color is closest to that of *P. spadicea*. This species appears worthy of placing on record for a number of reasons, but to me the most important one is the complete progression from leptocystidia to lamprocystidia on single pilei. This progression was demonstrated on mature pilei where the age of the cell could not be questioned. In this species the lamprocystidia become about as large as is known for the genus. If one were to postulate that higher fungi hybridize, this species could be cited as a good example of such a possible hybrid.

197. *Psathyrella littenii* A.H. Smith. sp. nov.

Pileus 3.5–5 cm latus, late convexus, pallidus vel brunneolus, demum cacao-color; velum nullum; lamellae perangustae, confertae, brunneolae demum vinaceorufae; stipes 3–5 cm longus, 3–6 mm crassus, glaber, pallidus, ad basem myceliosus; sporae 7–8.5 × (3.5–)4–4.5 μ; pleurocystidia 32–43 × 8–16 μ, ovato-mucronata, maura 0.6–3 μ crasso; fibulae adsunt. Typus. Litten 8–27–67 (MICH); legit prope Hulbert, Michigan.

Illust. Text Figs. 453–455.

Pileus 3.5–5 cm broad, convex with an inrolled margin, expanding to broadly convex or nearly plane, pallid to brownish when young, becoming reddish cocom-color as the spores mature, glabrous, moist and hygrophanous. Context thin and subcartilaginous, brownish fading to pallid brownish, odor not distinctive.

Lamellae very narrow and crowded, adnate but soon seceding, pallid brownish but soon becoming dull reddish vinaceous and strongly vinaceous-red as dried, edges fimbriate in age.

Stipe 3–5 cm long, 3–6 mm thick, equal or nearly so, subcartilaginous, tubular, base slightly myceloid, surface pruinose above, naked below, veil absent.

Spore deposit (on stipe) dull red. Spores 7–8.5 × (3.5–)4–4.5 μ, smooth, apical pore absent (for any practical purpose), shape in face view ovate to elliptic, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH hyaline with a pinkish reflection, in Melzer's nearly hyaline, wall about 0.3 μ thick.

Basidia 4-spored, 17–22 × 6–7 μ, clavate, hyaline in KOH in well dried material. Pleurocystidia 32–43 × 8–16 μ, ovate-mucronate with wall in neck 0.6–3 μ thick, apex incrusted at first, content often distinctive by way of numerous isodiametric masses of highly refractive material 2–5 μ diam or in some these often adhering to inner surface of the wall (as revived in KOH). Cheilocystidia 30–65 × 10–25 μ, subelliptic, utriform, clavate, or ventricose with rounded apex, thin-walled, content not distinctive, wall hyaline to yellowish in KOH. Caulocystidia mostly clavate to inflated variously (vesiculose, utriform, etc.) but generally like the cheilocystidia.

Gill trama snuff brown in the zone next to the subhymenium; subhymenium
a very narrow zone of narrow hyphae with short cells, the zone often rather indistinct as revived in KOH. Cuticle of pileus of vesiculose cells in a layer 3–4 deep, the walls thin and hyaline and the cell content not distinctive. Hyphae of the subcutis brownish in KOH on mature pilei (possibly hyaline at first), smooth, lacking distinctive content. Clamp connections present.

Type locality. Near the old town of Emerson, Michigan in Chippewa County.

Habit and habitat. Gregarious on decaying hardwood log, August.

Distribution. Known only from the type locality.

Observations. The collection was made by Mr. Walter Litten of Rochester, New York. The species is amply distinct by virtue of its narrow, crowded lamellae, very short pleurocystidia which when revived in KOH have the curious content of refractive particles, and the dull red spore deposit. The large size of the cheilocystidia is also unusual in this section. A variant with broad gills and growing on old conifer logs occurs in Idaho (Smith 65095). The inclusions and inerustations of the cystidia do not react in NH₂OH.


Illust. *Pl.* 65; *Pl.* 68, fig. a; *Text Figs.* 456–458.

Pileus 3–6 (–10) cm broad, obtuse to convex when young, the margin inrolled and naked, expanding to obtusely umbonate, broadly convex or nearly plane with the margin often undulating or wavy, sometimes irregular in outline from mutual pressure, moist, glabrous and smooth, hygrophanous, when moist pale date brown to pale or dark chocolate-brown, when faded pallid alutaceous, often irregularly cracked in age. Context thin but rigid and firm, becoming fragile finally, odor and taste not distinctive.

Lamellae adnate to sinuate, narrow but finally becoming moderately broad, crowded, pallid at first, soon tinged incarnate and finally dark purple-brown from the spores, edges usually white-floccose.

Stipe 4–8 (–12) cm long, 4–10 (–12) mm thick, stuffed becoming hollow, equal or slightly enlarged below, straight to somewhat curved, somewhat fleshy but rigid and brittle, pruinose above, somewhat silky-striate toward the base, base more or less white-myeloid, white over all or in age discoloring to dingy reddish brown at least near the base; no veil present.

Spore deposit "fawn color" to "wood brown" (dark grayish brown). Spores 7–9 (–10) × 4–5.5 μ, smooth, apical pore not evident except under very high power oil-immersion and then visible only in an optical section of the spore, shape in face view ovate to elliptic to oblong, in profile obscurely inequilateral to somewhat bean-shaped, color in KOH singly nearly hyaline but with a vinaceous tint, on standing the vinaceous tint duller and stronger (spores in small groups pale cocoa-color), in Melzer's pale tan to pale reddish tawny, wall about 0.2 μ thick (as mounted in KOH).

Basidia 4-spored, 18–24 × 5–8 μ, clavate, hyaline in KOH. Pleurocystidia abundant, 36–58 (–67) × 9–15 (–18) μ, broadly fusoid, apex acute to subacute, wall up to 2–3 μ thick in the neck near the apex and the latter often variously inerusted, otherwise the wall smooth, content not distinctive in KOH or in Melzer's. Cheilocystidia similar to pleurocystidia or broader and shorter, also numerous
inflated cells 25–35×10–20 μm, forming an almost sterile band along the edge, their walls hyaline to yellowish in KOH and thin to very slightly thickened (0.5 μm) and refractive, content not distinctive. Caulocystidia abundant and versiform (Fig. 458).

Gill trama homogeneous, hyaline in KOH, hyphae subparallel. Pileus having a cuticle consisting of a layer of vesiculose cells about 2 deep, their walls thin, smooth and hyaline, the cell content not distinctive in KOH or in Melzer’s. Clamp connections present. In mounts in Melzer’s no tissue or cells give a distinctive reaction.

Type locality. Bavaria.
Habit and habitat. Commonly clustered on the ground or on bases of stumps and trees of Populus species, spring and fall.

Observations. The color of the spore deposit, and also of the mature lamellae in the fresh state, distinguish this species from *P. sublateritia*. In *P. spadicea* the spore print, if a dense one is obtained, is some shade of chocolate-brown rather than predominantly red as in *P. sublateritia*. This is reflected in a difference in degree of the color as seen under the microscope. In the color of the spore deposit one is reminded of that found for *Clitocybe benekii* by Bigelow and Smith (1970). There apparently is a difference in the caulocystidia between *P. spadicea* and *P. sublateritia*, but it is difficult to be sure for either species that an observer has seen all the variations which are present on either one.


199. *Psathyrella sublateritia* A. H. Smith, sp. nov.

Pileus (3–)5–10(–12) cm latus, convexus vel planus, glaber, demum rugulosus, griseo-vinaceus demum lateritius vel vinaceo-brunneus; velum nullum; lamellae confertae, vel subdistantes; pallidae demum lateritiae; stipes 6–10 cm longus, (5–)8–15(–20) mm crassus cavus, fragilis, pallidus sursum pruinosus; sporae in cumulis lateritiae; 7.5–9(–10) × 4.5–5.5 μm; pleurocystidia 40–60×10–20 μm, late fusoida, maura 2–3 μm erass.; fibulae adsunt. Typus. Smith 18303 (MICH); legit prope St. Helens, Michigan.

Illust. Pl. 66; Text Figs. 459–462.

Pileus (3–)5–10(–12) cm broad, obtuse to convex, with an incurved margin at first, becoming broadly convex to plane or some with a low obtuse umbo, in age the margin frequently uplifted and wavy, surface moist, glabrous, even or rugulose over the disc and reticulate toward the margin, vinaceous-brown “fawn color” in buttons, soon pallid on the disc, hygrophanous, at maturity “wood brown” to “army brown” (dark avellaneous or tinged flesh-color in age), fading to pallid or pale vinaceous (“pale vinaceous-fawn” to vinaceous-buff”), brick red where dusted with the spores, often atomate when faded. Context thick (5–9 mm), tapered evenly to the margin, pale watery grayish to pale vinaceous-
brown moist, pallid when faded, fragile, taste mild, odor faintly acidulous or lacking, FeSO₄ no reaction.

Lamellae adnate but soon seceding, close to subdistant, 3 tiers of lamellulae, broad [8–12 (-15) mm], pallid to brownish when young, sordid brick red in age, margins even or nearly so.

Stipe 6–10 cm long, (5–)8–15 (-20) mm thick, equal or base slightly enlarged, hollow, fragile, terete or compressed, with a cartilaginous rind, white or whitish in age grayish, often dusted brick red from the spores, pruinose above, appressed fibrillose downward and sometimes longitudinally fibrillose-striate; veil absent.

Spore deposit brick red. Spores 7.5–9 (-10) × 4.5–5.5 μ, smooth, apical pore apparently absent, shape in face view elliptic to oblong or obscurely ovate, in profile somewhat bean-shaped to subovate, color in KOH pallid vinaceous-cinnamon to merely weakly ochraceous (depending on light intensity), in Melzer's nearly hyaline to obscurely yellowish cinnamon, wall about 0.5 μ in Melzer's and up to 0.3 μ thick in KOH.

Basidia 4-spored, 20–25 × 7–9 μ, hyaline in KOH, clavate. Pleurocystidia scattered, 40–60 × 10–18 (-20) μ, broadly fusoid, the wall thickened in apical third to 2–3 μ thick, apex acute to subacute and at first (in KOH) incrusted but the material dissolving in the mounting medium in a short time, hyaline, content not distinctive in either KOH or in Melzer's. Cheilocystidia similar to pleurocystidia or clavate to saccate, the latter usually thin-walled but at times the wall slightly thickened above, usually smooth, all intergradations from clavate to fusoid type present, walls thick or thin. Caulocystidia distinctive, 40–90 × 6–12 μ, ventricose at base and with a filamentose extension accounting for most of the length of the cell (Fig. 462), smooth, hyaline, clavate, vesiculose, fusoid-ventricose and fusoid cells showing various degrees of wall thickenings and apical incrustations also present.

Gill trama regular, hyphae parallel, subhymenium cellular, pallid to yellowish in KOH. Pileus having a cuticle of vesiculose cells about 2 deep, some clavate to pear-shaped cells present but not organized into a palisade, wall smooth hyaline and thin (in KOH), cell content not distinctive in KOH or in Melzer's. Hyphae of the context interwoven and hyaline to pale yellowish in KOH, walls smooth. No distinctive color changes observed in any tissue when mounted in Melzer's. Clamp connections present.

Type locality. Ogemaw State Forest near St. Helens, Michigan.

Habit and habitat. Cespitose around hardwood stumps and dead trees.


Observations. In the course of discussing the problem of the identity of P. sarcocephala with Peter Orton we took occasion to refer back to Fries' description in Epiceris p. 228. Here the lamellae of P. sarcocephala (as Agaricus) are described as follows: "lamellis adnatis confertis cinereo-fuligineis nigricantibus." In his later works Fries stated that the gills finally became subfuligineus from the spores. This excludes the friesian species from consideration in comparison with the present species in which the gills get redder from the spores. I question whether P. sublateritia occurs in Europe. The reddish spored fungus often referred to under the name Psilocybe sarcocephala, and which also has, apparently, reddish spores, needs to be critically restudied. Kühner and Romagnesi (1953) commented on this problem.

Material examined. UNITED STATES. California: Smith 8334, 8848. Colorado: Kauffman 8–18–17; Smith 51812, 51948. Idaho: Smith 73944. Michi-
200. **Psathyrella conissans** (Peck) A.H. Smith, comb. nov.

*Clitopilus conissans* Peck, Rep. N. Y. State Mus. **41**: 64. 1888.


Illustr. Pl. 67; Pl. 68, fig. b; Pl. 69, fig. a; Text Figs. 463–466.

Pileus 2–5 cm broad, obtuse to convex, with an inrolled margin when young, soon expanding to broadly convex or nearly plane, surface moist, glabrous, even or at times rugulose, the margin translucent striatulate when moist, hygrophanous, pale watery brown to pale chestnut, fading to pale alutaceous or buff but often tinged vinaceous-red from the spores dusting the surface, margin naked. Context thin, whitish, odor and taste not distinctive, with FeSO₄ merely brownish.

Lamellae thin, crowded, narrow, adnate but soon becoming adnexed, often rounded next to the stipe, pallid brownish but soon vinaceous-red from the spores, edges crenulate.

Stipe 2.5–6 cm long, 2.5–5 mm thick, equal, hollow, rigid but brittle, often flexuous or curved at least at the base, white, somewhat fibrillose at the base, glabrous above or at apex pruinose; no veil present.

Spores 6.5–8×3.5–5 μ, smooth, apical pore not distinct, shape in face view oblong to slightly ovate, in profile somewhat bean-shaped to subelliptic, color in KOH ochraceous-hyaline with a tinge of vinaceous, in Melzer's nearly hyaline varying to weakly ochraceous but paler on standing; wall about 0.2 μ thick.

Basidia 4-spored, 15–18×5.5–7 μ, narrowly clavate. Pleurocystidia 32–44×10–17 μ, scattered, hyaline in KOH, broadly ventricose and abruptly tapered to an acute apex, neck very short thus causing the cell to appear ovate in optical section, wall thin near the base but thick in the apex, apex not incrusted when the cell is revived in KOH, content not distinctive in either KOH or Melzer's. Cheilocystidia similar to pleurocystidia or clavate to saccate and thin-walled, the latter 26–35×10–20 μ. Caulocystidia fairly abundant over the apical region, subvesiculose to clavate, up to 70 μ long and 20 μ wide, wall thin, smooth and hyaline, content of cell not distinctive.

Gill trama regular, the hyphae nearly parallel, as revived in KOH hyaline to dingy yellowish brown, wall smooth, more sordid brown in the subhymenial area in some sections. Pileus having a cuticle of vesiculose cells 2–3 deep, the wall thin, smooth and hyaline, cell content not distinctive in either KOH or Melzer's. Hyphae of the context dingy ochraceous as revived in KOH, walls smooth, cell content not distinctive. Clamp connections present. No distinctive reactions for any tissue observed in mounts in Melzer's.

Type locality. Catskill Mountains, New York.

Habit and habitat. Cespitose on humus around the bases of trees and stumps.


Observations. This species, by some authors, has been reduced to synonymy with *Agaricus subcernuus* Schulzer, but I do not accept this. Moser (1967) has
attributed “fast rundlich” spores to the European species. Peck’s species differs from *P. sublateritia* in narrower spores, in the cheilocystidia, and in a generally more slender stature. There is a delicate difference in the color of the spore deposit also, that of Peck’s species being pinker.


Illust. 1. c. fig. 18e, f, g, h, i. Pl. 70, fig. b; Pl. 78, fig. c; Text Figs. 467–469.

Pileus 1–3 cm broad, broadly convex with an incurved margin, becoming plane or the margin uplifted, glabrous, when moist striatulate on the margin, hygrophanous “cinnamon brown” (dark cinnamon) moist, fading to “cinnamon-buff” or “pinkish buff,” fading on the disc first. Context thin but relatively firm, pallid, no odor or taste worthy of mention.

Lamellae pallid when young, soon tinged cinnamon and becoming dark cinnamon-brown, finally with a purplish red tinge, close to crowded, narrow, horizontal and bluntly adnate, becoming shallowly adnexed, edges even.

Stipe short, 1–2.5 cm long, 2–3 mm thick at apex, usually curved, glabrous, stuffed with a pallid to white pith, distinctly cartilaginous-pliant, rather than fragile, surface pruinose above, pallid honey-color young, cinnamon-buff or darker in age, base slightly mycelioid; veil none.

Spore deposit dark vinaceous-brown (“Verona brown”). Spores 5–5.8(-6) × 3.5–4 × 4–4.7(-5) μ, smooth, apical pore minute and inconspicuous, shape in face view subovate to subcircular, in profile subelliptic to somewhat ovate, very pale under the microscope as revived in H₂O or when fresh, in KOH becoming cocoa-gray, in Melzer’s reddish to tan, wall thin.

Basidia 4-spored, 15–17 × 5.5–6.3 μ, hyaline in KOH. Pleurocystidia abundant, 28–36 × 8–14 μ, fusoid-ventricose to ventricose-mucronate, thick-walled at least in the narrowed portion, apex usually incrusted with an exudate, hyaline in KOH. Cheilocystidia similar to pleurocystidia or 26–34 × 10–16 μ, clavate or vesiculose.

Pileus with a cuticle of an irregular palisade of clavate cells from between many of which clavate to subcylindric pileocystidia arise, the latter sometimes elongated into filaments. Trama hyaline in KOH. Clamp connections present.

Type locality. Mt. Rainer National Park, Washington.

Habit and habitat. Gregarious to scattered on very decayed alder logs, lower Nisqually River, August.

Distribution. Known only from the type locality.

Observations. This species closely resembles *P. camptopoda* in habit, habitat on hardwood logs, pale spores under the microscope, thick-walled pleurocystidia and stature. It differs chiefly in its much broader spores in face view.


*Pelicybe camptopoda* (Pk.) Saccardo, Sylloge Fung. 5: 1057. 1887.

Illustr. Pl. 63, fig. e; Pl. 70, fig. d; Text Figs. 470–472.

Pileus 1–3 cm broad, convex with an inrolled margin, becoming broadly convex to nearly plane, not umbonate, surface glabrous and moist, closely translucent striate on the margin before fading, no veil remnants present, colors dull watery yellowish brown to putty-color (“buckthorn brown” to “cinnamon” becoming “wood brown”), hygrophanous and pallid (“tilleul buff” to “olive-buff”) when faded. Context thin and somewhat cartilaginous and pliant, pallid to grayish moist, whitish when faded, odor and taste not distinctive.

Lamellae crowded, thin, broadly adnate or becoming slightly sinuate, narrow but in age becoming moderately broad, pallid when young, becoming “wood brown” or finally somewhat pinkish brown from the spores.

Stipe short, 1–3 cm long, 1.5–3 mm thick, nearly always curved, hollow, fragile, whitish to grayish, pruinose near apex, glabrous or nearly so downward but the base somewhat stipigose.

Spores 5–6×3–3.5 μm, smooth, no apical germ pore visible, in face view elliptic or nearly so varying to oblong, in profile slightly bean-shaped, color in KOH hyaline with a faint pinkish tinge, tinged brick red in mass, in Melzer’s yellowish to cinnamon-buff, walls thin (–0.2 μm thick).

Basidia 4-spored, 12–14 (–20) × 5–7 μm, hyaline in KOH. Pleurocystidia numerous 32–44×8–14 μm, shape variable, fusoid to ovate- to elliptic-pedicellate, some distinctly ventricose, hyaline in KOH, thick-walled, apex often inerusted. Cheilocystidia of two types: some similar to pleurocystidia but the majority balloon-shaped to saccate, 25–40×10–20 μm, thin-walled, yellowish in KOH. Caulocystidia similar to the pleurocystidia but varying from thin to thick-walled and various amounts of incrustation over apex.

Gill trama regular, the hyphae parallel, pale sordid yellowish in KOH. Pileus having a cuticle of vesiculose cells one cell thick, but not forming a palisade, wall thin, smooth and hyaline, cell content not distinctive. Hyphae of the context interwoven and hyaline to pale yellowish in KOH, walls smooth. Clamps present. No distinctive reactions noted on any tissue when mounted in Melzer’s.

Type locality. Catskill Mountains, New York.

Habit and habitat. Scattered to subcespitose on rotten hardwood logs.


Observations. Among the species with very small basidiocarps we have here an almost identical situation to that shown by *P. spadicea* and *P. sublateritia* among those with large basidiocarps. Two very similar species morphologically differ in that one gives a spore deposit in the brick-red series and the other a deposit in the chocolate brown series—even though both have very pale spores in KOH under the microscope.

203. **Psathyrella naucorioides** A. H. Smith, sp. nov.

Pileus 9–30 mm latus, late convexus, glaber, pallidus demum sordide vinaceo-brunneae; lamellae angustae, pallidae, brunneolae demum vinaceo-brunneae; stipes 1–3 cm longus, 1–2.5 mm crassus, hyalinus; velum nullum; sporae 5–6×3.5–4 μ, in “KOH” subhyalinae; pleurocystidia 38–47×12–17 μ, late fusioidea, acuta, crassotunicata (±3 μ crassa); fibulae adsunt. Typus. Smith 73467 (MICH); legit prope Priest Lake, Idaho.

Illust. Pl. 70, fig. a & c; Text Figs. 473–476.

Pileus 9–30 mm broad, broadly convex with an inrolled margin, in age nearly plane with an even to slightly crenulate margin, surface glabrous and hygrophanous, when young pallid at least on the margin, with the central area avellaneous, later wood-brown to “Verona brown” (dingy vinaceous-brown), striatulate when moist. Context thin and cartilaginous-fragile, odor and taste mild, no reaction with FeSO₄.

Lamellae close, narrow, horizontal, pallid then brownish and finally dull vinaceous-brown (“army brown”), edge even.

Stipe 1–3 cm long, 1–2.5 mm thick, equal, cartilaginous, with a whitish tuft of mycelium at the base, hyaline, and naked over all or soon watery-pallid, becoming dusted from the spores, faintly pruinose near apex; veil absent on even the smallest buttons.

Spore deposit chocolate-brown. Spores 5–6×3.5–4 μ, smooth, apical pore not evident, shape in face view elliptic to slightly ovate, in profile obscurely inequilateral to obscurely bean-shaped, color in KOH pale smoky ochraceous-hyaline, in Melzer’s faintly reddish to pale ochraceous, wall thin.

Basidia 15–20×6–7.5 μ, 4-spored, hyaline in KOH, projecting about half their length when sporulating. Pleurocystidia abundant, 38–47×12–17 μ, broadly fusoid-pointed, apex often incrusted as revived in KOH, wall up to 3 μ thick near apex, hyaline, content of cell not distinctive. Cheilocystidia similar to pleurocystidia or vesiculose to saccate. Caulocystidia cylindric to vesiculose, walls yellowish when fresh or revived in KOH, thin to thickened, some similar to pleurocystidia and also many intermediate types present, walls hyaline to yellow.

Cuticle of pileus a layer of vesiculose cells and clavate cells 1–2 deep, walls smooth, hyaline to yellowish in KOH, about 0.2–0.3 μ, thick; hyphae of the subcuticular region smooth and merely weakly ochraceous in KOH, flushed orange to reddish or paler in Melzer’s as is the subhymenium at times. Clamp connections present.

Type locality. Upper Priest River, Boundary County, Idaho.

Habit and habitat. Cespitose to gregarious on cottonwood logs.


Observations. In *P. naucoria* the spores are flattened somewhat, and the pileus when young is cinnamon-brown. The difference between *P. camptopoda* and *P. naucorioides* in spore color parallels that between *P. spadicea* and *P. sublateritia*.

Material examined. Idaho: Harrison 6304; Smith 73467 (Type), 73627. Washington: Smith 49012, 49009.

Section **Cystidiosae** A. H. Smith, sect. nov.

Sporae in “KOH” subcinamomeae; pleurocystidia crasso-tunicata vel tenuitunicata, ad apicem saepe subgranulosa. Typus. *Psathyrella cystidiosa*.
Key to the Species of Section *Cystidiosae*

1. Wall of pleurocystidia frequently or regularly 2 μ thick or more at least in the neck near the apex.
2. Outer veil absent.
2. Outer veil present.
3. Spores 7–8.5 × 4–4.5 μ; outer veil thin and represented by a few patches of fibrils near the margin of the pileus.
3. Spores 8–9.5(–10.5) × 4–5(–5.5) μ; outer veil copious and leaving fibrillose squamules over entire pileus at first.
4. Pleurocystidia very sharply pointed; spores usually somewhat inequilateral in profile.
5. Not as above.
6. Pleurocystidia with walls ±1.5 μ thick; pileus dark cinnamon brown at first.
7. Pleurocystidia with walls ±0.5 μ thick; pileus ochraceous tawny young.
8. Pileus developing pinkish tints when faded; spores ovate to angular-ovate in face view.
9. Not as above.
10. Spores 8–11 × 5–6 μ; pileus margin appendiculate.
11. Cheilocystidia voluminous (40–120 × 9–15 μ); spores 7–8 × 4–4.5 × 4.5–5.5 μ.
12. Spores 7–9 × 3.5–4.5 μ.
13. Spores 6–7.5 × 3.5–4.5 μ.
14. Pleurocystidia with walls up to 0.7 μ thick, the apex subacute to obtuse.
15. Pleurocystidia thinned-walled, utriform to obtusely fusoid-ventricose.
16. Psathyrella sublongipes A. H. Smith, sp. nov.

*Psathyrella sublongipes* A. H. Smith, sp. nov.

Pileus 1–4 cm latus, convexus, glaber, spadiceus; lamellae confertae, angustae, brunneo-olae, demum fusco-brunneae; stipes 5–9 cm longus, 2.5–4 mm crassus; albidus, sursum pruinosus, glaber (velum nullum); sporae 8–11 × 5–6 μ; pleurocystidia 40–70 × 10–18 μ, late fusideo-ventricosa, late rotundata vel obtusa; fibulae adsunt. Typus. Smith 37181 (MICH); legit prope Riggins, Idaho.

Pileus 1–4 cm broad, convex, expanding to plane with a spreading margin, surface glabrous, moist, hygrophanous, striatulate before fading, color dingy yellow-brown (near "Dresden brown"), becoming paler (near "buckthorn brown") before fading to pinkish buff, margin at first appendiculate with remnants of the veil. Context very thin and fragile, odor not distinctive.

Lamellae close, narrow, adnate, seceding, pallid brownish but finally darkening to fusaceous, edges pallid, crenulate under a lens (no pink present).

Stipe 5–9 cm long, 2.5–4 mm thick, equal, white to whitish, fragile, not appreciably discoloring below, apex pruinose, glabrous or with a few appressed fibrils lower down.

Spores 8–11 × 5–6 μ, smooth, apical pore distinct and apex truncate, shape in
face view broadly elliptic to ovate, in profile obscurely inequilateral to sub-elliptic, color when first revived in KOH resembling that of a roasted coffee bean, soon darkening to fuscous, in Melzer's dark tawny-red, wall about 0.4 μ thick.

Basidia 4-spored, 16–20×10–13 μ, subglobose-pedicellate, hyaline in KOH. Brachybasidioles present. Pleurocystidia 40–70×10–18 μ, fusoid-ventricose with broadly rounded to obtuse apex, smooth, wall thin (in a few), in most the wall 1–1.5 μ thick in the neck and highly refractive, but thin again over the apex, content of cell not distinctive. Cheilocystidia more or less similar to pleurocystidia but walls typically thin to 0.6 μ thick.

Gill trama regular, the hyphae with greatly inflated cells with hyaline to dingy ochraceous walls. Pileus trama vinaceous-brown in KOH but soon fading, having pigment thickenings near the cross walls. Cuticle of pileus a layer of vesiculose cells 2–3 cells deep, their walls thin, smooth and hyaline to ochraceous. Clamp connections present.

Type locality. Papoose Creek, near Riggins, Idaho.

Habit and habitat. Under birch, gregarious.

Distribution. Known only from the type locality.

Observations. The thickened walls of the pleurocystidia as revived in KOH distinguish this species readily from P. atrofolia. It illustrates again, how individual characters appear scattered through the genus. In this case we have the correlation of brachybasidioles, pleurocystidia with thickened walls, and a submembranous partial veil. In my estimation the species is not closely related to those grouped around P. cystidiosa.

205. Psathyrella cloverae A. H. Smith, sp. nov.

Pileus 1.5–3 cm latus, demum convexus, copiose fibrillosus, glabrescens, sordide cinnamomeus; lamellae angustae confertae, sordide brunneae; stipes 2–3 cm longus, 2.5–3.5 mm crassus, glaber; sporae 8–9.5(-10.5) × 4–5(-5.5) μ, in "KOH" tarde fusco-brunneae; pleurocystidia 50–90×8–22 μ, crassotunicata (±3 μ). Typhus. Clover 1229 (MICH); legit prope Hildalgo County, Texas.

Illust. Text Figs. 477, 480.

Pileus 15–30 mm broad, obtusely conic to convex, surface tawny or darker beneath a dense coating of delicate white fibrillose flecks representing the remains of an outer veil, surface lubricous beneath the veil because of a slight gelatinization of the cuticular cells, when dried near "Sayal brown" or with a stronger cast of cinnamon. Context apparently rather firm and pliant (judged by the way the tissue revived), odor and taste not recorded.

Lamellae narrow, crowded, narrowly adnate, dull brownish when dried.

Stipe short, 2–3 cm long, 2.5–3.5 mm thick, nearly equal above a narrow marginate basal bulb (as seen on dried material), glabrous and pallid above, brownish below (data taken from dried specimens).

Spores 8–9.5(-10.5) × 4–5(-5.5) μ, smooth, apical pore present but not prominent and apex not distinctly truncate, shape in face view oblong to elliptic, in profile obscurely inequilateral to bean-shaped, color in KOH cocoa-color slowly darkening to chocolate-brown, in Melzer's tawny to reddish tan, wall about 0.3 μ thick.

Basidia 26–30×7–9 μ, narrowly clavate, 4-spored, hyaline in KOH. Pleurocystidia very abundant, 50–90×8–22 μ, essentially fusoid but variable as to shape, with walls up to 3 μ or more thick, apex incrusted or smooth, content not distinctive in either Melzer's or KOH. Cheilocystidia present, of two types:
either like the pleurocystidia but smaller or clavate to saccate, hyaline, thin-walled and only 15–22 × 7–12 μ. Caulocystidia scattered, fusoid, fusoid-ventricose or more versiform, thick-walled, of various sizes but generally much smaller than the pleurocystidia, apex obtuse to subacute and smooth to incrusted, content of cell not distinctive. Hyphae of the stipe cortex with refractive walls in part at least and 0.2–0.5 μ thick, hyaline in KOH.

Gill trama dark rusty brown to yellow-brown in KOH. Pileus trama colored like the gill trama or paler, the hyphae not conspicuously incrusted. Cuticle a layer of vesiculose cells 1–3 deep but wall refractive and subgelatinous in KOH, some clavate to pedicellate elements present in the layer, cell content not distinctive. No distinctive reaction on any tissue when mounted in Melzer’s.

Type locality. Mission, Hildalgo County, Texas.

Habit and habitat. Scattered on the ground, June.

Distribution. Known only from the type locality.

Observations. This species is close to P. cystidiosa but is distinguished at once by the presence of a copious universal veil and long narrow basidia. It is named in honor of Dr. Elzada U. Clover, who collected in the lower Rio Grande Valley.

206. **Psathyrella hesleri** A.H. Smith, sp. nov.

Pileus 3–8 cm latus, late convexus vel planus, sparse fibrillosus, glabrescens, griseo-brunneus vel “drab”; lamellae demum latae, confertae, vinaceo-brunneae; stipes 5–8 cm longus, 5–8 mm crassus, albidus, glaber, fragilis; sporae 7–8.5 × 4–4.5 μ in “KOH” demum fusco-brunneae; fibulae adsunt. Typus. Hesler 17725; legit Knoxville, Tennessee (TENN).

Illustr. Text Figs. 478, 479, 481.

Pileus 3–8 cm broad, convex, expanding to plane or with margin turned up in age and in a few becoming lobed, at first with scattered white fibrils, soon glabrescent, moist and slightly hygrophanous, dull grayish brown (near “drab”), when dried near “wood brown” on disc and margin “drab” or nearly so, margin faintly striatulate moist. Context thin, very fragile, moist, dingy brownish, odor and taste not distinctive.

Lamellae narrowly and rounded-adnate, crowded, narrow but becoming moderately broad, nearly white at first, gradually darkening to between “Natal brown” and “benzo brown” as seen when dried but in fresh material in age nearly drab, edges fimbriate.

Stipe 5–8 cm long, 5–8 mm thick, silky, hollow, white and drying white, fragile, equal.

Spore deposit “chocolate-brown” to “warm sepia.” Spores 7–8.5 × 4–4.5 (–5) μ, smooth, apical pore present and apex obscurely truncate, shape in face view ovate to obscurely wedge-shaped (obscurely inequilateral to elliptic, color in KOH a medium date brown slowly becoming cocoa-color and finally chocolate-color, in Melzer’s pale tawny to a medium reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 11–15 × 7–9 μ (short and broad), hyaline in KOH. Basidioles more or less resembling brachybasidioles at maturity. Pleurocystidia abundant 40–62 × 13–20 μ, very broadly fusoid, apex acute, smooth or with incrustations of hyaline crystalline material, hyaline in KOH, wall thick (up to 2 μ or more near apex), no color changes noted in KOH or in Melzer’s. Cheilocystidia similar to pleurocystidia (not abundant) to vesiculose and smooth-walled (abundant), some intermediate types with slight apical incrustation and various degrees of
wall thickening also present. Caulocystidia in clusters, similar to pleurocystidia, rather abundant.

Gill trama of regularly arranged much enlarged cells sordid to brownish to hyaline in KOH, subhymenium cellular, hyaline. Pileus having a cuticle of hyaline vesiculose cells 10–30 μ wide and about 3–4 cells deep, wall thin, smooth and hyaline, content not distinctive in KOH or Melzer’s. Hyphae of the trama cocoa-colored to nearly hyaline in KOH in the subcuticular region, paler toward the subhymenium. Clamp connections present. No distinctive reactions on any tissue mounted in Melzer’s.

Type locality. Knoxville, Tennessee.

Habit and habitat. On a lawn, gregarious, September.

Distribution. Known only from the type locality.

Observations. This species has somewhat the aspect of P. subagrarria, particularly in its coloration, but the thick-walled cystidia separate it at once. It differs from P. spadacea in habit, presence of an outer veil, and in color of the spores in KOH.

207. Psathyrella cystidiosa (Peck) A. H. Smith, comb. nov.


Illustr. Text Figs. 482–484.

Pileus 2–4 cm broad, convex or subconic, surface glabrous, hygrophanous, pale brown when moist, yellowish drab with a brownish center and sometimes obscurely striate on the margin when dry, becoming lacerate at times when expanded. Context white, with a nutty taste.

Lamellae adnate, crowded, thin, whitish becoming purplish brown.

Stipe 4–5 cm long, 2–4 mm thick, equal or slightly tapering upward, hollow, pruinose at the top, white, often with a subglobose mass of earth adhering to the base.

Spores 7–9.5 × 4–5 μ, smooth, apex with a distinct pore but the apex not truncate, shape in face view oblong to elliptic, in profile suboblong to elliptic or slightly bean-shaped, color in KOH chocolate-brown and darkening somewhat on standing.

Basidia 4-spored, 14–18 × 6–8 μ, clavate, hyaline in KOH. Pleurocystidia very abundant, 60–80 × 12–20 μ, smooth, thick-walled, arising from deep in the gill trama, hyaline in KOH, fusoid to fusoid-ventricose, the apex subacute to acute and filled with wall material. Cheilocystidia similar to pleurocystidia but smaller and also in the form of vesiculose to clavate cells 26–37 × 10–15 μ, these thin-walled and hyaline to yellowish in KOH.

Gill trama with a central cinnamon-brown strand of hyphae flanked on either side by hyaline pseudoparenchymatous tissue. Pileus having a cuticle one to two cells deep composed of vesiculose elements with hyaline smooth, thin walls and the cell content not distinctive. Hyphae of the trama as revived in KOH pale cinnamon-brown.

Type locality. Minneapolis, Minnesota.

Habit and habitat. Solitary to cespitose.

Distribution. Known only from the type locality.

Observations. Data not obtained from the type when it was studied over twenty years ago have been supplemented by data as follows from “co-type” material sent to Kauffman by Dr. Whetstone: The spores are tawny in Melzer’s, measure 7–10 × 4–5 μ, are chocolate-brown in KOH, and many are obscurely
bean-shaped in profile view. The tissues of the basidiocarp show no distinctive reactions in Melzer's, and clamp connections are numerous. Caulocystidia are abundant and similar to the pleurocystidia but more variable in size, and some smooth, thin-walled clavate cells are also present. The drawings are from the "co-type" material.

208. **Psathyrella stuntzii** A. H. Smith, sp. nov.

Pileus 1.5–3 cm latus, campanulatus vel convexus, glaber, sublubricus, albidus, demum sublacteus; lamellae adnatae perlatae (4–5 mm), conferta, griseae demum fuscae vel subatratæ; stipes 2–3 cm longus, 3–5 mm crassus, dissiliens, nitens, seriseus, fibrillosus vel squamulosus, glabrescens; sporae 8–10(−11) × 4–5.5(−6.5) μ; pleurocystidia 44–65 × 10–18 μ, in "KOH" griseo-vinaceae; fibulae adsunt. Typus. Stuntz 8–7–38 (MICH); legit prope Lake Chelan, Washington.

Illustr. Text Figs. 485–487.

Pileus 1.5–3 cm broad, obtuse to campanulate, expanding to broadly convex, the margin at first incurved, surface glabrous, faintly striate in some, smooth, sublubricious, atomate when faded, whitish to pale creamy buff, but becoming tinged avellaneous or vinaceous. Context rather thick (3 mm on the disc), tapered evenly to the margin, firm but fragile, white or pallid, odorless.

Lamellae broadly and squarely adnate, shallowly rounded at the stipe, very broad (4–5 mm), close, thin, 2 tiers of lamellulae, "drab" becoming "fuscous" and finally blackish, edges distinctly white-fimbriate.

Stipe 2–3 cm long, 3–5 mm thick, terete or compressed, equal or tapered downward, the apex usually flaring, hollow, brittle, splitting easily longitudinally, surface satiny-shining but covered with silky white fibrils which are aggregated into irregularly reflexed squamules everywhere except at the pruinose apical region, pure white over all.

Spores 8–10(−11) × 4–5.5(−6.5) μ, smooth, apical pore very minute, the apex rounded, shape in face view ovate to subelliptic, in profile somewhat inequilateral to obscurely so, more rarely obscurely bean-shaped, color in KOH dark chocolate-color finally, near mummy brown at first, when fresh deep purplish, spore print deep purplish black, in Melzer's amber brown, wall about 0.5–0.6 μ.

Basidia 4-spored, 14–16 × 6–9 μ, hyaline in KOH. Pleurocystidia 44–65 × 10–18 μ, abundant, fusoid with flexuous walls and pointed apex, when revived in KOH at least a large number of them pale vinaceous to avellaneous (the color apparently in the wall), smooth, the walls very slightly thickened in the midportion, in some pilei many forked at the apex into two pointed prongs, no distinctive reactions observed in Melzer's. Cheilocystidia of two types: the first similar to the pleurocystidia but smaller, the second globose to elliptic, the cells 10–16 × 7–12 μ, pale yellowish when revived in KOH. Caulocystidia present only as clavate hyphal tips (in the material examined).

Gill trama regular, the hyphae more or less parallel, hyaline to pale dingy yellowish when revived in KOH. Pileus trama of floccose interwoven hyphae pale dingy ochraceous in KOH. Cuticle of pileus a layer of vesiculate cells irregularly two cells thick, the walls thin, smooth and hyaline to dingy and weakly ochraceous, cell content not distinctive, in Melzer's no distinctive reactions observed. Clamp connections present.

Type locality. Chesapeake Saddle, elev. 6,000 ft., Lake Chelan, Washington.
Habit and habitat. Gregarious on moss and needle carpet under *Pinus contorta*.

Distribution. Known only from the type locality.

Observations. This is another of the subalpine species associated with conifers and easily recognized by the medium large spores, pallid pileus, drab gills at maturity, flexuous pointed pleurocystidia, and merely clavate caulocystidia.

It is named in honor of its collector Dr. D. E. Stuntz of the University of Washington, Seattle.


Illust. Text Figs. 488-490.

Pileus 8-20(-30) mm broad, convex to broadly convex, the margin inrolled at first, glabrous, moist, hygrophanous, dull cinnamon (dark “Sayal brown”) fading to pale tan (“pinkish buff”), striate when moist. Context thin, subcartilaginous, pallid when faded, odor and taste not distinctive.

Lamellae adnate, close, becoming ventricose, weakly brownish becoming cocoa-color as the spores mature, very dark brown (near “bone brown”) as dried, edges even and whitish.

Stipe 1-4 cm long, 1-2.5 mm thick, equal, rigid and fragile, white over all at first, brownish in lower part in age; no veil present.

Spores 6-7×3.5-4.5 μ, smooth, apical pore very obscure under oil (apex rounded), in face view elliptic to ovate, in profile obscurely bean-shaped to obscurely inequilateral, dull cocoa-color slowly becoming dark chocolate (in KOH), in Melzer’s reddish tawny, wall about 0.2 μ thick.

Basidia 17-21×5-6 μ, clavate, 4-spored, hyaline in KOH. Pleurocystidia 36-47×9-14 μ, fusoid to fusoid-ventricose with subacute to obtuse apex which long remains incrusted with amorphous debris (in KOH), wall thin to slightly thickened (to 0.7 μ), hyaline in KOH. Cheilocystidia 32-40×8-12 μ, subfusoid with somewhat rounded apex, some present and similar to pleurocystidia. Caulocystidia present on apical area of stipe, clavate to saccate, thin-walled, variable as to size.

Cuticle of pileus a layer of hyaline vesiculose cells 2-3 cells deep, the walls thin, and smooth and the content not distinctive. Subcuticular region weakly ochraceous in KOH and with local ochraceous wall thickenings; the remainder of the trama hyaline, hyphal walls smooth. Clamp connections present. No distinctive reactions noted in any tissue when mounted in Melzer’s.

Type locality. Ithaca, New York.

Habit and habitat. Cespitose to gregarious on rotten wood of hardwoods.


Observations. This species features dark colored small spores, the lack of a veil, cystidia in which the apical inerustations slowly dissolve in KOH and pleurocystidia with walls mostly intermediate between “thick” and “thin.”


Illust. Text Figs. 491-493.

Pileus 1-2 cm broad, convex with an incurved margin, expanding to obtuse with a spreading margin, some becoming nearly plane, surface glabrous, moist,
hygrophanous, when young pallid with disc tinged ochraceous, margin becoming faintly striatulate, gradually becoming avellaneous to wood brown (pale to dark grayish brown) as spores mature. Context very thin and fragile, odor and taste mild, very soon riddled by insect larvae.

Lamellae close, narrow, adnate to depressed-adnate, pallid to brownish becoming dark cocoa-color from the spores, edges even.

Stipe short, 1–3 cm long, 2–2.5 (–3) mm thick, equal, hollow, very fragile, white to whitish, glabrous, not darkening distinctly at the base.

Spores 6.5–7.5 × 3.5–4 μ, smooth, apical pore indistinct, shape in face view ovate to elliptic and many showing a slight angularity, in profile suboblong to obscurely inequilateral, color in KOH soon dark chocolate-color, in Melzer's reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 14–18 (–22) × 5–7 μ, hyaline, clavate. Pleurocystidia scattered, 28–37 (–45) × 9–13 μ, utriform to fusoid-ventricose, with an amorphous incrustation over apex which slowly dissolves in KOH, thin-walled, reviving poorly, hyaline and content empty as revived in KOH or Melzer's. Cheilocystidia similar to the pleurocystidia and incrusted like them. Caulocystidia not present in any significant number. Hyphae of the stipe cortex with very fine incrusting material in some areas but hyphal walls not distinctively colored in either KOH or Melzer's.

Pileus cuticle of inflated cells 1–2 deep, the walls yellowish to hyaline in KOH, smooth, thin, and many cells of the cuticle projecting somewhat or merely elevate but with a projecting proliferated apex. Hyphae of subcutis not distinctly colored in KOH or Melzer's. Clamps present. No distinctive reaction as revived in Melzer's for any tissue.

Type locality. New York.

Habitat and habit. Cespitose at base of hardwood trees, especially sugar maple, late summer.


Observations. This is one of the very few species of *Psathyrella* which sometimes is readily attacked by insect larvae to the degree of often riddling the basidiocarps by the time they are mature. In *Pholiota veris* the same pattern has been observed. The pallid pileus when young and the very fragile consistency appear to distinguish it from *P. polycephala*.

The spores of Peck's type had the cocoa-color to darker reaction in KOH which clearly indicates the genus *Psathyrella*. Since the hyphal details of the type were difficult to ascertain the above description is taken entirely from the Michigan collections. This description checks well with Peck's original.

Material examined. MICHIGAN: Smith 38229, 81001. NEW YORK: Peck's Type.

211. *Psathyrella polycephala* (Fries) A. H. Smith, comb. nov.


Agaricus *polycephalus* (Fr.) Lévillé, Iconogr. Champs. Paulet, 60. 1855.

Psilocybe *spadicea* var. *polycephala* (Fr.) Sacc., Sylloge Fung. 5: 1053. 1887.

Psilocybe *polycephala* (Fr.) Peck, Bull. N. Y. State Mus. 157: 55. 1912.

Illustr. Lévillé l. c. pl. 111, figs. 1, 2. Peck, l. c. pl. 127, figs. 1–9. Pl. 71, figs. a–h.

Pileus 1–3 cm broad, obtuse to broadly convex, the margin inrolled, soon plane or with a somewhat wavy margin, surface glabrous and moist, even to rugose-reticulate, margin opaque at first but soon striatulate, occasionally scalloped, no veil remnants present, hygrophanous "pale pinkish buff" with a whitish margin, at times darker and "cinnamon-buff" (pale tan or argillaceous)
on the disc, becoming grayish ("avellaneous" to "cinnamon-drab") as the spores mature, opaque and whitish when faded unless dusted purplish brown from the spores. Context moderately thick, whitish to pale pinkish buff, cartilaginous and not particularly fragile, odor and taste not distinctive.

Lamellae crowded, narrow, squarely adnate, white, becoming "Rood's brown" (dark vinaceous-brown) at maturity, edges even but in age minutely fimbriate.

Stipe 3–5 cm long, 3–5 mm thick at apex, slightly enlarged downward, white or whitish, longitudinally striate below, pruinose-seabrous above, base with cottony mycelium, no sign of a veil on smallest buttons.

Spores 7–8.5(–9) × 3.5–4.5 µ, smooth, apical pore present but small and apex not distinctly truncated, shape in face view oblong to elliptic or slightly ovate, in profile suboblong to obscurely inequilateral or some obscurely bean-shaped, color in KOH cocoa-color becoming dark chocolate-color, in Melzer's tawny, wall about 0.3 µ thick.

Basidia 4-spored, 18–27×6–9 µ, clavate, hyaline in KOH. Pleurocystidia scattered, 36–62×(8–)10–15 µ, fusoid-ventricose, the apex obtuse and when revived in KOH capped with amorphous to somewhat crystalline material, wall thin and hyaline, content not distinctive in either KOH or in Melzer's. Cheilocystidia 32–50×9–18 µ, fusoid-ventricose, apex usually incrusted, some with one or more irregular protuberances. Caulocystidia varying from subcylindric to subvesiculose, mostly broadly to narrowly clavate and 30–60×10–15 µ, thin-walled, content not distinctive, surface mostly smooth or very slightly incrusted.

Type locality. France.

Habit and habitat. Densely cespitose around dead hardwood trees and stumps or on chip dirt.


Observations. This name is here used tentatively since in Europe it is usually referred to P. cernua as a synonym. Fries however described its gills as subventricose and white becoming cinereous and added "fusco-nigricantibus." In our material in North America they are white and become dark vinaceous brown (with a strong reddish tinge). See appendix II for an additional variant.

The group of species P. crenulata, P. cernua, P. polycephala, P. submaculata and P. saccarinophila represent a typical stirps or collective species. Once the group is circumscribed it will be interesting to see how many more variants can be discovered by way of ascertaining patterns of developing diversity such as those featuring P. crenulata and P. submaculata. A study of this group in culture would be most appropriate.


Pileus 2–4 cm broad, convex with the margin connivent with the stipe, expanding to nearly plane in age, margin smooth, strongly hygrophanous, when moist light to dark brown, becoming grayish and sometimes tinged pinkish fading to pallid ochraceous, glabrous, veil remnants lacking on button stages, margin
translucent striate moist. Context concolorous with surface, whitish when faded, thin (2-5 mm), pliant, odor not distinct, taste mildly fungoid.

Lamellae pallid very soon becoming brownish and finally a medium dark brown, moderately broad at maturity (up to 6 mm), ascending adnate to slightly adnexed, close, margin slightly crenulate.

Stipe 3.5-6 cm long, 2-4 mm thick at apex, equal or nearly so, pallid whitish to slightly ochraceous, sometimes tinged slightly brownish, polished and shining, glabrous, pruinose above, base white-mycelioid. Veil absent.

Spores 7-9 x 4-4.5 μ, smooth, with a minute apical pore but apex not truncate, shape in face view narrowly elliptic to subovate, rarely obscurely angular, in profile obscurely inequilateral varying to subelliptic or ovate, color in KOH cocoa-color but soon pale chocolate-gray, pale dull tawny in Melzer's, wall about 0.2 μ thick.

Basidia 4-spored, 18-26 x 7-8 μ, clavate, hyaline. Pleurocystidia 36-54 x 8-14 μ, narrowly fusoid-ventricose, with crystalline material over the apex which slowly dissolves in KOH, wall thin, smooth except for apex, apex obtuse to rounded. Cheilocystidia similar to pleurocystidia but often smaller, some clavate cells present, some cells up to 23 μ wide.

Cuticle of pileus of vesiculose cells 2-3 deep and with hyaline mostly thin (but refractive) walls, cell content not distinctive. Hyphae of the subcuticular zone soon hyaline in KOH, the walls smooth. Clamp connections present.

Type locality. Europe.

Habit and habitat. Growing densely gregarious to cespitose around a cottonwood stump, very abundant, August.

Distribution. Alaska.

Observations. This material has broader gills than P. polycephala which are in the color range described by Fries when mature. A possible clinching feature by which the species may be recognized is the color change of the spores to chocolate-gray in KOH. This color is much paler than that shown by P. polycephala. We cannot resolve the problem of the identity of these variants at present. It is obvious, however, that in the study a careful correlation of macroscopic and microscopic characters must be made (and the data recorded) for all collections of fresh material used.


213. Psathyrella crenulata A. H. Smith, sp. nov.

Pileus 15-35 mm latus, late convexus, difete alutaceus, demum cinnamomeo-brunneus, dein pallidus, glaber; lamellae albideae, demum sordide vinaceo-brunneae, confertae, angusta; stipes 2-6 cm longus, 2-4 mm crassus, pallidus, deorsum subalutaceus; sporeae 7-8 x 4-4.5 x 4.5-5.5 μ; pleurocystidea 34-56 x 8-15 μ; cheilocystidea (40-)60-120 x 9-16 μ; fibulae adsunt. Typus. Wells-Kempton 8-10-64 no. 5 (MICH); legit prope Butte, Alaska.

Pileus 15-35 mm broad, convex with an incurved margin, expanding to broadly convex to plane or finally with the margin uplifted and/or undulating, strongly hygrophanous, pale watery tan when young, becoming dark cinnamon-brown by maturity, when faded very pale buff to nearly white, fading from disc outward, surface glabrous and smooth to rugulose, when moist the margin translucent-striatulate. Context concolorous with surface when either moist or faded, thin (under 2 mm) at disc, tapered evenly outward, brittle, odor and taste not distinctive.
Lamellae pallid to whitish becoming pale tan to medium brown with a reddish tinge, near “bone brown” as dried, adnate, moderately narrow (under 3 mm), close, edges pallid and white-crenulate but in age concolorous with gills (from spores lodged among the cheilocystidia?).

Stipe 2–6 cm long, 2–4 mm thick, brittle, nearly equal, pallid, whitish to pale tan, over upper part pallid pruinose-punetate, naked to faintly longitudinally silky below, base white-myceiioid; veil none.

Spores 7–8×4.5–5.5 μ, smooth, apex in many obscurely truncate from a distinct apical pore, shape in face view somewhat ovate to subelliptic, in profile obscurely inequilateral to very slightly bean-shaped, color in KOH cocoa-brown slowly becoming duller (pale chocolate—with less red), in Melzer’s reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 17–23×6–7 μ, narrowly clavate. Pleurocystidia 34–56×8–15 μ, fusoid-ventricose with short neck and obtuse apex and both thin-walled and smooth, but in age with granular incrustations on apex and neck, considerably elongated, varying to narrowly clavate-mucronate, content hyaline in KOH or Melzer’s, reviving poorly in KOH in mature gills. Cheilocystidia similar to pleurocystidia but by maturity greatly enlarged and tending to remain collapsed, (40–)60–120×9–18 μ, fusoid-ventricose, subcylindric, clavate-pedicellate, etc.—shape variable, walls thin and hyaline or slightly yellowish in KOH, many finally with incrusting granules on or around apex, reviving poorly on mature gills.

Gill trama hyaline in KOH. Pileus cuticle a layer of clavate-pedicellate and inflated cells 1–2 deep, walls thin and hyaline in KOH. Hyphae of subcutis hyaline in KOH on young pilei. Clamp connections present.

Type locality. Butte Area, Alaska.

Habit and habitat. Densely gregarious to subcespitose in moss around base of a living cottonwood tree.

Distribution. Known only from type locality.

Observations. This is the most distinctive species in the P. cernua group by reason of the voluminous cheilocystidia. Kühner & Romagnesi (1953) indicate that gill trama for P. cernua is colored as in some Lacrymaria—a feature not shown in the Alaskan material of P. cernua (?) or P. crenulata.

Material examined. Alaska: Wells-Kempton 8–10–64 no. 5.


Illustr. 1. c. pls. 12; 29, figs. 5, 9; pl. 30, fig. 1. Pl. 71, fig. c; Pl. 72, fig. a. Text Figs. 494–496.

Pileus 1–4 cm broad, obtusely conic to convex, becoming nearly plane or remaining unexpanded, at times slightly umbonate, margin appressed against the stipe when young, covered by a thin layer of fibrils from an outer veil or surface glabrous but with the margin decorated from scattered remains of the thin partial veil, striatulate when moist, “Mars brown” to “cinnamon-brown” (dusky rusty brown), hygrophanous and fading to sordid “pinkish buff” or dull dingy tan, the surface even or slightly rugulose when faded. Context thin to moderately thick, dark brown when moist, pallid when faded, fragile, odor and taste not distinctive.

Lamellae bluntly adnate, soon seceding, close, 29–35 reach the stipe, broad (about 3 mm), pallid brownish when young, “drab” at maturity, edges whitish.

Stipe 3–5 cm long, 2–5 mm thick, equal, hollow, fragile, white, densely white-fibrillose over the lower part, fibrillose-squamulose to coarsely pruinose above and faintly striate.
Spores 7–9(--10) × 4–5 μ, smooth, apical pore present as a small hyaline spot, shape in face view elliptic to narrowly (slightly) ovate, some with a shallow medial depression, in profile bean-shaped to obscurely inequilateral, color in H₂O mounts when fresh bright reddish brown, and chocolate-brown revived in KOH, tawny in Melzer’s, wall about 0.3 μ thick.

Basidia 4-spored, 17–22 × 8–9 μ, clavate, hyaline in KOH. Pleurocystidia and cheilocystidia similar, abundant 38–65 × 9–18 μ, fusoid-ventricose, the apex obtuse to subacute varying to broadly rounded (and cystidium utriform), the wall usually thickened to 1–1.5 μ, apex often slightly incrusted, hyaline in H₂O mounts when fresh, dull vinaceous-brown to avellaneous (the color in the wall in old revived material), in Melzer’s no distinctive reaction in the cell content or wall (the cystidia reviving better in Melzer’s than in KOH). Caulocystidia abundant, in bunches, 32–60 × 8–17 μ, fusoid-ventricose with obtuse to rounded apex and the latter incrusted with amorphous material, the walls thin and hyaline, content hyaline; some smooth broadly ventricose cells with thin entirely smooth walls also present and up to 22 μ broad.

Gill trama regular, the hyphae reddish brown in water mounts when fresh and dingy brown to nearly hyaline when revived in KOH. Pileus having a cuticle of hyaline vesiculose cells 30–60 μ wide, the walls smooth and thin, cell content not distinctive in KOH or Melzer’s. Hyphae of the context reddish brown in water mounts when fresh, when revived in KOH pale dingy brown with a vinaceous tinge. Clamp connections present. No distinctive reaction on any tissue in mounts in Melzer’s.

Type locality. Jackson Guard Station, Olympic National Park, Washington.

Habit and habitat. Scattered to gregarious on old wood and debris of alder and cottonwood.


Observations. The vinaceous to avellaneous tint to the pleurocystidia is a somewhat variable feature in that not all the cystidia on a gill show it, but it is a feature of a number of species in various groups as indicated in the present work. In the present instance it is correlated with thickened walls, but in other species showing it, the cystidia are often only slightly thickened and a veil is present.


215. Psathyrella solitaria A. H. Smith, sp. nov.

Pileus 8–15 mm latus, subplanus, glaber, vel ad marginem sparse fibrillosus, pallide fulvus vel sordide cinnamomeus; lamellae confertae, angustae pallide cinnamomeae demum cacaocolor; stipes 3–4 cm longus, 1–2 mm crassus, albidus, floccoso-fibrillosus vel squamulosus, glabrescens; sporae 7.5–9 × 4.5–5.5 μ; pleurocystidia 38–46 × 9–15 μ, fusoid-ventricosa, ad apicem obtusa vel late rotundata, crassotunicata (0.5 μ), maura eum “KOH” griseo-vinacea; fibulae adsunt. Typus. Smith 20523 (MICH); legit prope Ann Arbor, Michigan.

Pileus 8–15 mm broad, convex becoming nearly plane, surface moist and hygrophanous, at first with a few pallid to white fibrils along the margin from the remnants of the veil, soon entirely glabrous, “ochraceous-tawny” to “Sayal
brown” moist, fading only slightly and near “warm sepia” when dried. Context fragile, very thin, odor and taste not recorded.

Lamellae adnate, close, narrow, pallid cinnamon becoming more or less cocoa-color at maturity, edges even, whitish.

Stipe 3–4 cm long, 1–2 mm thick, equal, hollow, fragile, white, at first with scattered white flecks of fibrils from the veil but soon glabrous.

Spores reddish cocoa-color in mass, 7.5–9 x 4.5–5.5 μ, smooth, apical pore inconspicuous and apex not truncate, shape in face view broadly elliptic to slightly oval, in profile bean-shaped to obscurely inequilateral, color in KOH dull cocoa-color but slowly darkening slightly and clouded grayish, in Melzer’s dull tawny, wall about 0.4 μ thick.

Basidia 4-spored, 14–20 x 8–9 μ, hyaline in KOH, clavate. Pleurocystidia abundant, 38–46 x 9–15 μ, fusoid-ventricose, apex obtuse to rounded and usually with incrusting material, wall about 0.5 μ thick (many cystidia remain collapsed), wall becoming dingy vinaceous-brown to avellaneous in KOH. Cheilocystidia 32–48 x 8–14 μ, fusoid-ventricose, often smooth, apex obtuse; some small clavate to vesiculose elements also present.

Gill trama rusty brown revived in KOH. Pileus trama rather bright yellowish to cinnamon-brown but gradually becoming duller, walls smooth or with pigment thickenings near the septa. Cuticle of the pileus formed by a layer of vesiculose cells 2–3 deep and with pale cinnamon walls (as seen in groups), walls smooth. Cell content not distinctive in KOH or Melzer’s. Clamps present.

Type locality. Ann Arbor, Michigan.

Habit and habitat. Solitary on wet humus under brush.

Distribution. Known only from the type locality.

Observations. The pleurocystidia have thinner walls than in P. olympiana, the color of the spore deposit is redder and the young pileus is ochraceous-tawny.

216. Psathyrella sharonensis A. H. Smith, sp. nov.

Pileus 10–40 mm latus, late convexus, glaber, dilute griseo-brunneus; lamellae confertae latae, pallide fulvo-cinnamomeae demum fumoso-cinnamomeae; stipes 1–5 cm longus, 1–4 (–5) mm crassus, subcinereus, demum sordidus; sporae 6–7 x 3.5–4 μ; pleurocystidia 28–40 x 8–12 μ, fusoid-ventricosa, ad apiicurum, rotundata; fibulae adsunt. Typus. Smith 64638 (MICH); legit prope Manchester, Michigan.

Illustr. Pl. 72, fig. c; Text Figs. 497–499.

Pileus 10–40 mm broad, convex, becoming broadly convex to nearly plane, glabrous, moist, hygrophanous, watery gray-brown when young, becoming darker and more rusty brown as spores mature, when moist translucent striate about half way to the disc, fading in streaks and patches causing surface to appear silvery in age, when faded near pinkish buff. Context very thin, fragile, odor and taste mild, no reaction with KOH or FeSO₄.

Lamellae close, adnate-seeding, moderately broad, pale rusty cinnamon becoming “Mars brown” and retaining a dark rusty brown tone on drying, edges even.

Stipe 1–5 cm long, 1–4 (–5) mm thick, equal or apex enlarged slightly, grayish white, naked to faintly fibrous-striate, apex naked or nearly so, color brownish throughout but in age not typically discoloring from the base upward.

Spores 6–7 x 3.5–4 μ, smooth, apical pore minute, shape in face view ovate to almost angular-ovate, some obscurely triangular, in profile obscurely inequilateral to subelliptic, dull rusty brown when revived in KOH but slowly changing to dark chocolate-color, dull tawny-red in Melzer’s, wall about 0.2 μ thick.
Basidia 4-spored, 6–7 μ broad, short-clavate, hyaline in KOH. Pleurocystidia 28–40×8–12 μ, subcylindric with rounded apex, or fusoid-ventricose with obtuse apex, when first mounted in KOH the apex incrusted with amorphous material, wall thin, hyaline, cell content not distinctive. Cheilocystidia 34–47×10–15 μ, fusoid-ventricose, with incrustations on apex at first (as revived in KOH). Caulocystidia very few present and those seen resembled the cheilocystidia.

Cuticle of pileus a layer of vesiculose cells 1–2 deep, walls hyaline to yellowish in KOH, thin and smooth, content of cell not distinctive. Cheilocystidia 34–47×10–15 μ, fusoid-ventricose, with incrustations on apex at first (as revived in KOH).

Type locality. Sharon Hollow, near Manchester, Washtenaw County, Michigan.

Habit and habitat. Cespitose-gregarious on old logs of elm, etc., October.

Distribution. Known only from the type locality.

Observations. The tendency of the pileus to be pinkish when faded, the granular incrusted pleurocystidia, very small spores and gray-brown pileus when young are distinctive along with the lack of a veil.


Naucoria euthugramma (Berk. & Curt.) Saccardo, Sylloge Fung. 5: 835. 1887.

Illustr. Text Figs. 500, 501.

Pileus 7–9 mm broad, convex, striate, umbrinus. Context very delicate and fragile.

Lamellae adnexed, fuscous.

Stipe 1 cm long, filiform, hyaline, strigose at the base.

Spores 5–6.2×3.8–4.6 μ, smooth, elliptic to ovate in face view, pale dull brown (near avellaneous when revived in KOH).

Basidia 14–16×4.5–6 μ, 4-spored, hyaline in KOH. Pleurocystidia very abundant, 28–36×9–12 (–14) μ, hyaline in KOH, thin-walled or wall slightly thickened in the apex and upper neck. Cheilocystidia similar to pleurocystidia or more saccate. Gill trama parallel, hyaline or nearly so. Pileus trama not reviving well; cuticle apparently filamentous but this could not be accurately determined from the type and since the cystidia and spores are typical of Psathyrella, the species is placed here.

Type locality. Cuba.

Habit and habitat. Cespitose on rotting logs.

Distribution: Cuba.

Discussion. Dennis (Kew Bull. 15:127, 1961) has given a redescriptions of this species, as follows:

Pileus 8–14 mm diameter, hemispherical, then convex or expanded, light grey-brown, striate to the disc, at first with a fibrillose cream coloured veil and the margin appendiculate, finally naked; flesh thin, hygrophanous, concolorous; lamellae rather crowded, ventricose, 1.5 mm wide, adnexed, gray-brown; stipe equal, 10–25×1 mm., shining white, sometimes with an annual zone from the veil, base strigose; spores ellipsoidal, brown, 5.5–7×3–3.5 μ; cheilocystidia utriform, 20–40×14–17 μ, interspersed with smaller vesicular cells; cells of the pileus surface 30–35 μ diameter.
Psathyrella subg. Psathyrella

These fungi feature the absence of or rather the slight development of both an outer and inner veil. They form a large group intermediate between subg. Pannucia on the one hand and the genus Pseudocoprinus on the other, but within it one can discern groups of species defined by the same characters used to recognize groups in the other subgenera, i.e., absence of pleurocystidia, the type if present, large and small spores, etc.

Type Psathyrella gracilis.

Key to Sections and Subsections of Subgenus Psathyrella

1. Either coprophilous or growing on very well fertilized soil
2. Habitat not as above.
3. Spores 9-12.5 μ long or longer.
4. Pleurocystidia utriform, with broadly rounded apex (often subcapitate).
5. Spores in 5-10 μ range for length.
6. Pleurocystidia acute to obtuse.

Section Atomatae (Romagnesi) Singer, Lilloa 22: 469. 1951.

Type. Psathyrella prona.

Key to the Species of Section Atomatae

1. Spores 6-10 μ long.
2. Spores longer than in above choice.
3. Pleurocystidia 40-60 μ long, apex obtuse to subacute.
4. Not as above.

219. P. galericolor.
220. P. minima.
221. P. pseudolimicola.
222. P. pratensis.
223. P. odorata.
224. P. nezpercii.
7. Stipe 1.5–3 cm long, 1–2 mm thick, darker below; veil rudimentary; gill edges not known to be pink in age. 225. *P. potteri.*

7. Not as above.
9. Stipe remaining white to pallid throughout. 9

10. Stipe remaining white to pallid when young. 10

10. Stipe dark rusty brown fading to pale tan. 11

11. Pileus 6–12 mm broad; lamellae pale grayish brown when young. 227. *P. prona.*

11. Pileus 1–4 cm broad; lamellae white to pallid when young. 10


11. Pileus with only the margin fibrillose at first. 229. *P. prona.*


11. Pileus dark rusty brown fading to pale tan. 11


219. *Psathyrella galericolor* A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, conicus vel convexus, glaber, fulvus; lamellae subdistantes, latae, brunneoae demum fumoso-fulvae; stipes 2–4 cm longus, 1.5–2.5 mm crassus, albidus, deorsum demum melleibrunneus, sparse fibrillosus, glabrescentes; sporae 7–9 × 4–5 μ; pleurocystidia 42–60 × 9–14 (–16) μ, anguste fusoido-ventricosa, obtusa vel subacuta; cheilocystidia saepe subvesiculosa; fibulae adsunt. Typus. Smith 43054 (MICH) ; legit prope Cross Village, Michigan.

Pileus 1–2.5 cm latus, conicus vel convexus, glaber, fulvus; lamellae subdistantes, latae, brunneoae demum fumoso-fulvae; stipes 2–4 cm longus, 1.5–2.5 mm crassus, albidus, deorsum demum melleibrunneus, sparse fibrillosus, glabrescentes; sporae 7–9 × 4–5 μ; pleurocystidia 42–60 × 9–14 (–16) μ, anguste fusoido-ventricosa, obtusa vel subacuta; cheilocystidia saepe subvesiculosa; fibulae adsunt. Typus. Smith 43054 (MICH) ; legit prope Cross Village, Michigan.

Pileus 1–2.5 cm broad, obtuse when young, expanding to broadly conic or convex, surface glabrous, moist and hygrophanous, marginal area pale tawny and edge fringed with fibrils for a time from the rudimentary veil, disc tawny or darker, fading to ochraceous-tan. Context thin and fragile.

Lamellae subdistant, broad, adnate, pallid brownish becoming dingy tawny and finally duller from the spores, edges pallid.

Stipe 2–4 cm long, 1.5–2.5 mm thick, equal, hollow, fragile with a patch of radiating mycelium at the base, white at first but dingy honey brown over lower area in age, faintly fibrillose becoming glabrous.

Spores 7–9 × 4–5 μ, smooth, apical pore scarcely evident, apex only very obscurely truncated in a few, shape in face view fairly broadly elliptic to obscurely ovate, in profile somewhat bean-shaped to obscurely inequilateral, color in KOH ochraceous tawny, slowly darkening slightly, in Melzer's pale tawny; wall about 0.2 μ thick.

Basidia 4-spored, narrowly clavate, 20–24 × 7–9 μ, hyaline in KOH. Pleurocystidia 42–60 × 9–14 (–16) μ, narrowly fusoid-ventricose with the apex obtuse to subacute and when first revived in KOH with particles of coagulated material adhering near the apex, thin-walled but wall in KOH refractive to apex where it is very thin and often bursts in KOH mounts; cell content not distinctive in KOH or in Melzer's. Cheilocystidia mostly subvesiculose to clavate and 20–32 × 9–18 μ, some fusoid-ventricose cells 28–36 × 8–12 μ also present.

Gill trama regular, hyphae with walls hyaline to pale rusty in KOH. Pileus with a cuticle of inflated cells 2–3 cells deep, walls hyaline to ochraceous in KOH or near the subcutis tawny wall thickenings evident. Hyphae of subcutis with tawny inerusted pigment and wall thickenings (mostly near the septa). Clamps present.

Type locality. Wilderness State Park, Emmet County, Michigan.

Habit and habitat. On piles of porcupine dung, gregarious.

Distribution. Known only from the type locality.

Observations. The pale ochraceous-tawny spores slowly darkening to dull cocoa-color in KOH, the “Galerina-like” aspect, practical lack of a veil (no small buttons were available for study), and the long narrow pleurocystidia are distinctive. The species, actually, appears to be closely related to *P. fulvescens.*
Psathyrella minima Peck, Rep. N. Y. State Mus. 41: 70. 1888.

Pileus 1–4 mm broad, margin appressed against the stipe at first, cap conic and becoming nearly campanulate, when young appearing frosted or minutely pubescent under a lens from pileocystidium-like hairs, soon glabrous, “buckthorn brown” to “cinnamon-buff,” hygrophanous and fading to pale pinkish buff. Context very delicate and membranous.

Lamellae bluntly adnate, distant (5–7 reach the stipe, 1 tier of lamellulae), broad, pallid honey-color becoming more or less wood brown from the spores, edges even.

Stipe up to 20 mm long, filiform, pallid watery gray to pale honey-color, flecked with white tufts (of caulocystidia ?), no veil observed.

Spores 6–8×3–4 μ, cocoa-color in H₂O mounts when fresh, darker revived in KOH.


Type locality. Adirondack Mountains, New York.

Habit and habitat. Scattered to gregarious on deer dung.


Observations. The exceedingly small delicate basidiocarps make preservation by drying almost impossible.


Psathyrella pseudolimicola A. H. Smith, sp. nov.

Pileus 1–3 cm latus, late convexus, glaber, sordide cinnamomeus; lamellae brunneolae demum violaceo-fuscae; stipes 3–8 cm longus, 2–3.5 mm crassus, albidus demum sordidus, sparse fibrillosus, glabrescens; sporae 8.5–11×4.5–5 (12×6) μ; pleurocystidia 36–45(–50)×9–15 μ, utriformia vel ventricoso-rostrata, ad apicem saepe subcapitata; fibulae adsunt. Typus. Smith 65850 (MICH); legit prope Riggins, Idaho.

Illost. Text Figs. 502–505.

Pileus 1–3 cm broad, obtuse to convex, expanding to nearly plane, surface moist and hygrophanous, dingy “Verona brown” to pale dull cinnamon-brown when fresh, fading to cinnamon-buff or finally pale pinkish buff on margin, disc remaining cinnamon-buff, striate when moist, decidedly atomate when faded; margin at first decorated with a fringe or patches of pallid veil material, glabrescent.

Lamellae pallid brownish when young, when mature “benzo brown” (grayish violaceous-brown), close, broadly adnate, broad, horizontal, edges whitish.

Stipe 3–8 cm long, 2–3.5 mm thick, equal, fragile, hollow, white and scarcely discoloring, only faintly fibrillose when very young, soon naked except for the base which is fibrillose-squamulose from white fibrils.

Spores 8.5–11×4.5–5(–12×6) μ, smooth, apical pore distinct, shape in face view elliptic to slightly ovate, in profile subelliptic, wall about 0.3 μ thick, color in KOH dark chocolate-color, in Melzer’s tawny-red.
Basidia 4-spored, 9–11 μ wide, clavate, hyaline in KOH. Pleurocystidia 36–45
(−50) × 9–15 μ, utriform or ventricose-rostrate with subcapitate apex, wall thin,
smooth, hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia
vesiculose to elliptic-pedicellate and 28–42 × 10–16 μ, or ventricose with a short
neck and rounded apex, smooth hyaline, thin-walled. Caulocystidia resembling
pleurocystidia or 32–48 × 10–20 μ, and clavate to elliptic in optical section, hyaline,
thin-walled, content not distinctive.

Pileus cuticle 1–2 cells deep in a staggered arrangement, walls thin, hyaline,
smooth. Subcuticular region not distinctively colored in KOH, smooth. Remainder
of trama of inflated hyaline cells. Clamps present. No distinctive reactions on
any tissue in Melzer's.

Type locality. Papoose Creek, Nezperce National Forest, Idaho.

Habit and habitat. Gregarious on mud in a cow pasture (mud and manure
were present), August.

Distribution. Known only from the type locality.

Observations. The question could be raised in regard to this species as to
whether or not it is coprophilous. However, it was not found on cow dung though
ample opportunity was at hand. Its features are the medium-sized spores, broadly
rounded capitate pleurocystidia and generous mixture of ventricose and vesiculose
cheilocystidia.

222. Psathyrella pratensis A. H. Smith, sp. nov.

Pileus 10–20 mm latus, convexus, glaber, cinnamomeo-brunneus; velum spar-
sum pallide griseo-luteolum; lamellae latae (3–4.5 mm), conflatae, griseo-luteolae
demum atro-brunneae; stipes 1.5–3 cm longus, 1.5–2.5 mm crassus, melleus,
fibrillosus vel subsquamulosus, glabrescens; sporae 9–12 × 5–6.5 μ; pleurocystidia
34–40 × 9–12 μ, fusoideo-ventricosa, obtusa; fibulae rarissimae vel desunt. Typus.
Smith 20793 (MICH); legit prope Ann Arbor, Michigan.

Illustr. Text Figs. 506–508.

Pileus 10–20 mm broad, convex, glabrous except for a faint fringe of fibrils
along the margin, surface moist and hygrophanous, cinnamon-brown, fading to
ochraceous-buff, the veil very pale buff. Context thin, fragile, no distinctive odor
or taste present.

Lamellae adnate, broad (3–4.5 mm), close, sordid ochraceous-buff when young,
nearly black at maturity.

Stipe short, 1.5–3 cm long, 1.5–2.5 mm thick, hollow, fragile, pale honey-color,
fibrillose to fibrillose scaly over lower half or two-thirds, upper portion furfurace-
cous to pruinose.

Spores 9–12 × 5–6.5 μ, smooth, apical pore distinct but not broad, shape in face
view ovate to elliptic, in profile subelliptic to obscurely inequilateral, color in
KOH soon a medium dark chocolate-color, in Melzer’s dark reddish tawny to bay,
wall about 0.6 μ thick.

Basidia 4-spored, (possibly some 2-spored), 18–23 × 8–10 μ, hyaline in KOH.
Brachybasidioles not differentiated. Pleurocystidia 34–40 × 9–12 μ, fusoid-
ventricose, obtuse; wall smooth, hyaline and thin (in KOH); cell content not
distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia varying
to broadly fusoid to subclavate. Caulocystidia similar to pleurocystidia but more
irregular as well as more variable in size.

Gill trama cocoa-colored to cocoa vinaceous in KOH and the color persistent.
Pileus with a cuticle of a layer of vesiculose cells about one cell deep, the cell walls
weakly cinnamon-buff in KOH to nearly hyaline, smooth, cell content not distinctive. Hyphae of context in region of subcutis cocoa-color in KOH from pigment in the wall and incrusted on it, incrustations very fine and most conspicuous on the narrow hyphae, the broad ones often smooth. Clamps rare to absent (one seen on over 100 septa examined). No distinctive reaction on any tissue as mounted in Melzer's.

Type locality. Ann Arbor, Michigan.

Habit and habitat. In pastures near but not on cow dung.


Observations. In this species clamp-like branches are not infrequent on cells of the stipe but often at places where there is no cross wall, so in ascertaining the number of true clamps present one must be exceedingly careful. The degree of color in the veil is probably not of great taxonomic value because it is so slight. In many respects the species recalls *P. obtusata* but the spores at once distinguish it.

Material examined. Michigan: Potter 3306, 3558; Smith 20718, 20793 (Type).


Illust. Text Figs. 509–511.

Pileus 2.5–5 cm broad, ovoid-convex, at length expanded, surface smooth, hygrophanous, dark reddish brown and striatulate on the margin when moist, when faded dingy white or clay-colored with a pinkish tint and somewhat atomate and radiately rugose. Context thin, fragile, with a strong odor resembling that of *Sambucus pubens*.

Lamellae crowded, broad, attached with a slight spurious decurrent tooth, dingy flesh-colored then rosy brown, finally black with whitish edges.

Stipe 5–8 cm long, 2–4 mm thick, equal, hollow, base slightly enlarged, pallid, slightly mealy and striate at the apex, subfibrillose when young.

Spores 13–15×6.5–8 μ, smooth, apical pore present but small and apex not obviously truncate, pore oblique in some spores, shape in face view oblong to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH dark date brown becoming chocolate-gray-brown on standing, in Melzer's dark reddish tawny, wall about 1 μ thick (measured in KOH on broken spores).

Basidia 22–33×10–14 μ, 4-spored, hyaline in KOH, with a narrow pedicel. Brachybasidioles not differentiated. Pleurocystidia scattered to abundant, 40–70×9–18 μ, broadly fusoid-ventricose with rounded apex to subcylindric or elliptic-pedicellate and all with broadly rounded apex; wall smooth, thin and hyaline; content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia but shorter and varying to clavate or saccate, 24–42×10–15 μ. Caulocystidia similar to cheilocystidia, readily collapsing.

Gill trama not reviving well but apparently regular, slightly brownish in KOH, the color in the walls but fading on standing. Pileus having a cuticle of hyaline thin-walled vesiculose cells several deep, the cell content not distinctive. Context in region of subcuticular zone rusty brown in KOH but fading, with pigment thickenings in the wall or slight incrustations (near the septa). Clamp connections present on hyphae of the stipe. No distinctive reaction on any tissue mounted in Melzer's.

Type locality. West Albany, New York.

Habit and habitat. Around manure heaps, gregarious to subcespitose.

Observations. The large spores, numerous broadly rounded pleurocystidia, the medium-sized stature, strong odor, pinkish tint when faded and veil absent or rudimentary, along with the habitat are its distinguishing features.

Material examined. The type.

224. Psathyrella nezpercii A. H. Smith, sp. nov.

Pileus 5–12 mm latus, late convexus, glaber, fusco-brunneus, dein (ad margine) demum incarnato-tinctus; lamellae subdistantes, latae, bruneolae demum fusco-brunneae, ad acierum incarnatae; stipes 3–6 cm longus, 1 mm crassus, deorsum bruneolus, sursum pallidus, glaber; sporae 14–16.5 × 7–8.5 μ; pleurocystidia 26–35 × 9–14 μ, ventricoso-rostrata vel fusideo-ventricosa; fibulae adsunt.

Typus. Smith 65852 (MICH); legit prope Riggins, Idaho.

Pileus 5–12 mm broad, convex to obtusely conic becoming broadly convex, surface moist, hygrophanous, glabrous, chocolate-brown moist, fading to fawn color or avellaneous and later developing pinkish tones, surface irregularly rimose in age. Context exceedingly fragile, lacking an odor or taste.

Lamellae subdistant, broad, adnate, seceding, pallid brownish becoming chocolate-color and on the edges finally pinkish.

Stipe 3–6 cm long, about 1 mm thick, delicate, equal, brownish below, pallid above, naked.

Spores 14–16.5 × 7–8.5 μ, smooth, truncate from an apical pore, in face view narrowly oval to subelliptic, in profile obscurely inequilateral to subelliptic, color in KOH fuscous-brown ("mummy brown"), in Melzer’s dark bay-red, wall 0.6–0.8 μ thick.

Basidia 4-spored, 24–30 × 12–16 μ, broadly clavate. Pleurocystidia scattered, 26–35 × 9–14 μ, ventricoso-rostrate to fusoid-ventricose, smooth, thin-walled, hyaline; content as revived in KOH or Melzer's not distinctive. Brachybasidioles present, 10–16 μ wide. Cheilocystidia similar to pleurocystidia or vesiculose and with yellowish walls as revived in KOH, content not distinctive in KOH or Melzer's. Caulocystidia none.

Pileus cuticle a layer of vesiculose cells 1–2 deep, the walls hyaline and thin, the content not distinctive. Tramal hyphae dingy cinnamon in KOH, the walls smooth to very minutely roughened, the cell content not distinctive. Clamp connections present. No distinctive reactions on any tissue when mounted in Melzer's.

Type locality. Papoose Creek, Nezperce National Forest, Idaho, near Riggins.

Habit and habitat. Scattered on mud in a pasture, August.

Distribution. Idaho.

Observations. This species features an apparent lack of caulocystidia, presence of brachybasidioles, lack of a veil, large spores, blackish spore deposit, small pleurocystidia and gill edges becoming pinkish in age. The manner in which the cuticle of the pileus breaks up is not regarded as important taxonomically. The species appears to be close to *P. potteri*.

Material examined. Idaho: Smith 47272, 53656, 65852 (Type).

225. Psathyrella potteri A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, conicus vel campanulatus, glaber, cinnamomeo-fulvae; lamellae latae, demum subdistantes, atratae; stipes 1.5–3 cm longus, 1–1.5 (–2) mm crassus, pallidus, sparse fibrillosus, glabrescens; sporae 12–14 × 7–8.5 μ;
pleurocystidia 32–46 × 12–16 μ, rara, late fusideo-ventricosa, obtusa vel sub-acuta; fibulae adsunt. Typus. Potter 7186 (MICH); legit prope Sumner, Michigan.

Illustr. Text Figs. 515–517.

Pileus 1–2.5 cm broad, obtusely conic expanding to campanulate or nearly convex, surface moist and hygrophanous, glabrous, veil rudimentary to lacking, rusty brown to cinnamon-brown fading to pale alutaceous over the disc and margin grayish. Context thin, brown, watery, odor and taste not recorded.

Lamellae broad, close to subdistant, more or less horizontally adnate, soon black, edges white-fimbriate.

Stipe short, 1.5–3 cm long, 1–1.5 (–2) mm thick, equal, whitish (but discolored somewhat), not darkening from the base up in age, glabrous or soon becoming so.

Spores black in deposit, 12–14 × 7–8.5 μ, pore apical and large, the spore apex truncate, shape in face view elliptic to a somewhat pointed apiculate end, in profile obscurely inequilateral, color bistert to blackish brown in KOH, in Melzer's bay-red, wall about 0.5 μ thick.

Basidia 4-spored, 18–22 × 11–15 μ, (short and fat). Brachybasidioles present.

Pleurocystidia rare to scattered, 32–46 × 12–16 μ, broadly fusoid-ventricose and tapered to a narrow neck with an obtuse to subacute apex; wall thin, hyaline and smooth; cell content not distinctive. Cheilocystidia abundant, similar to the pleurocystidia.

Gill trama regular, hyphal cells considerably inflated, in KOH colored dark to pale cinnamon-brown. Pileus with a cuticle of a layer of hyaline vesiculose cells about one deep and with hyaline walls. Hyphae of the subcuticular zone dark cinnamon-brown in KOH. Clamp connections present.

Type locality. Sumner, Michigan.

Habit and habitat. Gregarious on ground around horse dung.


Observations. *Psathyrella nezpercii* has a longer more slender stipe, a thicker pilear cuticle, and develops pinkish tints after the pileus fades. Also, it is associated with cow manure rather than horse manure. *Psathyrella stercoraria* Kühner & Romagnesi is close but is a small species much like *Psathyrella minima* but with larger spores.


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226. *Psathyrella pruinosipes* A. H. Smith, sp. nov.

Pileus 10–15 mm latus, conicus, glaber atro-spadiceus, demum brunneo-griseus; lamellae latae, confertae, griseolae demum fusco-griseae; stipes 2–4 cm longus, 1–2 mm erassus, pallidus deorsum semum sordide brunneus, pruinosus, sporae 11–13.5 × 6.5–8.5 μ; pleurocystidia rara, 24–32 (–40) × 9–14 μ, fusideo-ventricosa, acuta; fibulae adsunt. Typus. Smith 20460 (MICH); legit L. E. Wehmeyer prope Ann Arbor, Michigan.

Illustr. Text Figs. 518, 519.

Pileus 10–15 mm broad, obtusely conic, not expanding, surface glabrous, "mummy brown" on disc, "sepia" near margin, fading to "hair brown" (brownish gray) or paler, disc retaining a dingy alutaceous tinge (colors much as in *Panaeolus campanulatus*), appearing unpolished when faded, margin slightly crenate. Context exceedingly thin and fragile, odor none.
Lamellae only moderately close, broad, ascending-adnate, slightly toothed, faces pallid gray and gradually becoming evenly chocolate-gray, edges even and whitish.

Stipe 2–4 cm long, 1–2 mm thick, equal, hollow, fragile, pruinose over all at first, finally naked, hyaline grayish white above, basal region dull dingy brown in mature basidiocears but not distinctly discoloring when broken or bruised.

Spores 11–13.5 × 6.5–8.5 μ, smooth, apex truncate from a distinct apical pore, shape in face view elliptic to slightly ovate, in profile subovate to nearly elliptic, color in KOH blackish brown becoming dark chocolate-color (grayer), in Melzer’s bay-red, wall about 1 μ thick.

Basidia 4-spored, clavate, subcapitate, hyaline in KOH, 18–24 × 10–15 μ. Brachybasidioles present by late maturity. Pleurocystidia very rare, 24–32 (–40) × 9–14 μ, fusoid-ventricose with acute apex; wall thin, smooth and hyaline; cell content not distinctive in KOH or Melzer’s. Cheilocystidia similar to pleurocystidia or clavate to saccate and 26–40 × 10–16 μ. Caulocystidia present as filaments.

Gill trama thin, pallid brownish revived in KOH. Pileus trama sordid yellowish brown in KOH. Cuticle of pileus of vesiculose cells in a layer about one cell deep; wall thin, smooth and hyaline; cell content not distinctive in KOH or Melzer’s. Clamp connections present. No distinctive reaction noted on any tissue in Melzer’s.

Type locality. Ann Arbor, Michigan.

Habit and habitat. Scattered on manured soil.

Distribution. Known only from type locality.

Observations. The caulocystidia require further study preferably from fresh material. The filaments noted on the stipe as revived in KOH could have been fibrils from a rudimentary veil, though this is not likely as some were seen to originate from hyphae of the cortex.

227. Psathyrella prona (Fries) Gillet, Les Hymén. 618. 1874.

Agaricus pronus Fries, Epier. Syst. Mycol. 239. 1838.
Coprinarius prona (Fr.) Quélet, Enchir. Fung. 120. 1886.
Psathyra prona (Fr.) Lange, Flora Agar. Danica 4: 101. 1939.

Illust. Gillet, 1. c., pl., 589. Lange, 1. c. pl. 155, fig. C & C’. Pl. 78, fig. e; Text Figs. 520–522.

Pileus 6–12 mm broad, up to 15 mm high, ovoid, becoming obtusely conic or campanulate, glabrous except for scattered fibrils over the marginal area at first, margin soon glabrescent, translucent striate, smooth and sordid “buckthorn brown” when moist, the marginal area soon “wood brown,” hygrophanous, fading to “avellaneous” or paler over all, atomate and somewhat rugulose when faded, sometimes tinged pinkish along the margin or over all in age. Context very thin and fragile, concolorous with the pileus when moist or faded, odor and taste not distinctive.

Lamellae ascending adnate, subdistant (about 15 reach the stipe) very broad (about 3 mm), pale grayish brown when young, becoming “benzo brown” to “fuscous” at maturity, edges white-fimbriate at first, often pinkish when mature.

Stipe 3–6 cm long, 1–1.5 mm thick, equal, hollow, very fragile, hyaline white to “tilleul buff” or more grayish toward the base, with very thin evanescent patches of veil remnants below, soon glabrescent, base slightly strigose, apex pruinose.
Spores 13–15 × 7–8.5 μ, smooth, apical pore distinct and apex obscurely truncate, shape in face view elliptic to slightly ovate, in profile obscurely inequilateral to subelliptic, color in KOH soon dark chocolate-color, in Melzer's rather dark reddish tawny, wall about 1 μ thick.

Basidia 4-spored, 18–24 × 10–14 μ, hyaline in KOH, clavate above a narrow pedicel. Brachybasidioles present at late maturity. Pleurocystidia rare and similar to cheilocystidia. Cheilocystidia abundant, 38–56 × 10–16 μ fusoid-ventricose; apex acute to subacute; wall thin, smooth and hyaline; cell content at times pink from soluble material. Caulocystidia ventricose-rostrate; apex acute, smooth as revived in KOH, thin-walled and hyaline, 28–43 × 9–14 μ.

Gill trama regular, the hyphae of enlarged cells, pale to dull rusty brown in KOH. Pileus having a cuticle of inflated or pear-shaped cells 1–2 deep which are hyaline over the enlarged portion but may have pale tawny-brown walls at the base or in the pedicel (as revived in KOH), the cells not arranged in a true palisade. Context hyphae dark rusty brown in KOH, the walls uneven from pigment thickenings or minute inerustations. Clamps present. No distinctive reaction on any tissue when mounted in Melzer's.

Type locality. Europe.

Habit and habitat. Scattered on soil and straw in barnyards and on fertilized soil.


Observations. This species is distinguished by its thin veil, non-darkening stipe, obscurely truncate spores and tendency toward pink tints in age.


228. Psathyrella argentata A. H. Smith, sp. nov.

Pileus 1–2 (–3) cm latus, conicus demum plano-umbonatus, glaber, violaceo-brunneus, demum atomatissimus; lamellae distantes, latae, pallidae demum brunneo-griseae; stipes 4–6 cm longus, 1–2.5 mm crassus, pallidus demum argenteus; velum sparsissimum; sporae 14–18 × 6.5–8 μ; pleurocystidia rarissima, 37–46 × 8–15 μ, ventricoso-rostrata; fibulae adsunt. Typus. Smith 53629 (MICH); legit prope Priest Lake, Idaho.

Illust. Text Figs. 523–525.

Pileus 1–2 (–3) cm broad, obtuse expanding to obtusely conic or plano-umbonate (in one), glabrous, moist, hygrophanous, violaceous-brown ("benzo brown") moist, fading to vinaceous-gray except for the cinnamon-buff disc, decidedly atomate when faded. Context thin, fragile, pallid, odor and taste not distinctive.

Lamellae distant, broad, adnate, pallid when young, hair brown (dark brownish gray) when mature, edges even and whitish.

Stipe 4–6 cm long, 1–2.5 mm at apex, equal, whitish, silvery in age and base not darkening, veil rudimentary (a trace found in one button).

Spores blackish in deposit, 14–18 × 6.5–8 μ, smooth, apical pore distinct, shape in face view elongate-elliptic, in profile obscurely bean-shaped to subelliptic, color in KOH blackish, in Melzer's bay-red, wall about 0.7 μ thick.

Basidia 4-spored, 24–35 × 10–15 μ, hyaline or base of pedicel brownish as revived in KOH. Pleurocystidia rare to absent, 37–46 × 8–15 μ, ventricoso-rostrate (like a basidium with an apical finger-like projection); wall thin, smooth and hyaline. Cheilocystidia 24–35 × 8–15 μ, clavate to broadly fusoid-ventricose
with obtuse apex; wall thin, smooth and hyaline; caulocystidia not observed.

Cuticle of pileus a layer of vesiculose cells 2–3 cells deep, walls smooth and hyaline to yellowish in KOH, subcuticular region of inflated hyphal cells vinaceous-brown revived in KOH and the hyphae of the gill trama the same, elongate inclusions (crystals) present in pilear and lamellar tramae when fresh and as revived (in either KOH or Melzer’s). Clamps present. No distinctive amyloid reactions observed in any tissue or any type of cell.

Type locality. Priest Lake, Idaho.

Habit and habitat. Scattered on cow dung.

Distribution. Known only from the type locality.

Observations. The distinguishing features of the species are the large black spores, the benzo brown pileus when fresh, delicate silvery stipes, practical absence of pleurocystidia, and lack of a change to pink in age.

229. Psathyrella equina A. H. Smith, sp. nov.

Pileus 1.5–4 cm latus, conicus, glaber, cinnamomeo-brunneus; contextu dilute brunneus; lamellae latae, confertae, albidae demum subfuscæ; stipes 4–6 cm longus, 2.5–3.5 mm crassus, albidus, sursum pruinosis; velum parvum; sporae 11–13×5.5–7 μ; pleurocystidia nulla; fibulae adsunt. Typus. Smith 15816 (MICH); legit prope McCall, Idaho.

Illustr. Text Figs. 526, 527.

Pileus 1.5–4 cm broad, obtusely conic, expanding to broadly conic but not becoming convex, surface glabrous or the margin with a faint fringe of white fibrils at first, moist but not translucent-striate “cinnamon-brown” to “Prout’s brown” or nearly “mummy brown” in age, hygrophanous, fading to “cinnamon-buff” or nearly whitish. Context very thin and equal, very fragile, watery brown but soon fading to buff or whitish, odor and taste not distinctive.

Lamellae ascending adnate and soon seceding, moderately broad and oval in outline, close, 20–24 reach the stipe, 1–2 tiers of lamellulae, white when young, dull grayish brown in age.

Stipe 4–6 cm long, 2.5–3.5 mm thick at apex, slightly enlarged below, hollow, white, unpolished, pruinose above, veil remnants very slight and not leaving a fibrillosé zone.

Spores 11–13×5.5–7 μ, smooth apical pore small and apex obscurely truncate, shape in face view elliptic to slightly ovate, in profile elliptic to subelliptic, color in KOH near “mummy brown” becoming dark chocolate-color slowly, in Melzer’s tawny if immature, bay-colored in old ones, wall about 1 μ thick.

Basidia 18–23×10–13 μ, broadly clavate, hyaline in KOH. Brachybasidioles present. Pleurocystidia absent. Cheilocystidia 22–36×7–12 μ, somewhat ventricose with generally broadly rounded apex, thin-walled, smooth, hyaline, content not distinctive in either KOH or in Melzer’s. Caulocystidia scattered in groups, subcylindric to narrowly ventricose and apex rounded to obtuse, some filamentous-flexuous end cells also present.

Gill trama of more or less parallel hyphae of broad short cells, hyaline to pale chocolate-color in KOH, darker toward the base of the gill. Pileus trama dark cocoa-brown to sordid rusty brown near the gills, paler and only dull brownish in the subcuticular region. Pileus cuticle of vesiculose cells but not very sharply differentiated from the cells of the upper half of the trama, hyaline to dull brownish in KOH. Clamps present but inconspicuous. No distinctive reactions noted on any tissue as mounted in Melzer’s.
Type locality. McCall, Idaho.
Habit and habitat. Gregarious on horse dung.

Observations. The species is close to *P. hirta* which has a well-developed veil. *Drosophila stercoraria* Kühn. & Josserand is close but the pilei are only 5–8 mm wide. The American species is not likely to be confused with *P. pronaria*.


Illust. Pl. 56 b; Pl. 57a.

Pileus 1–2.5 (–3) cm broad, obtuse to convex, becoming broadly convex, the margin at first appressed against the stipe, surface covered by a dense coating of white patches of fibrils or fibrillose scales, margin fringed with fibrils at first, glabrescent and soon entirely naked, color “Prout’s brown” to “cinnamon-brown” (dark rusty brown), the margin faintly striatulate when moist, hygrophanous, fading to near “clay color” or dingy buff in age. Context very fragile, watery cinnamon-brown, thin, odor and taste mild.

Lamellae squarely adnate or slightly toothed, subdistant, 17–20 reach the stipe, 2 tiers of lamellulae, broad (up to 1 cm at the stipe), pallid when young, “fuscous” at maturity, the edges whitish.

Stipe 3–5.5 cm long, 1.5–3.5 mm thick, white, equal, hollow, fragile, densely white-fibrillose scaly up to the zone left by the broken veil, finally glabrescent, apex pruinose.

Spores 10–13×6–7.5 (–9) µ, smooth, apical hyaline pore distinct but apex not distinctly truncate, shape in face view elliptic to obscurely ovate, in profile view elliptic to subelliptic, color in KOH soon dark chocolate-color, in Melzer’s dark bay-brown, wall about 0.5 µ thick.

Basidia 4-spored (a few 2-spored), hyaline in KOH, clavate, 16–22×7–11 µ. Pleurocystidia abundant, 36–54×6–14 µ, fusoid-ventricose but often elongated and subcylindric; apex acute to subacute; wall thin, smooth and hyaline; content not distinctive in either KOH or Melzer’s. Cheilocystidia similar to pleurocystidia but usually shorter, some sacate cells present in addition. Caulocystidia scattered in bunches 34–56×9–14 µ, fusoid-ventricose with subacute apex to subfusoid, hyaline, smooth, thin-walled. Pileocystidia rare and mostly near the pileus margin, resembling the caulocystidia.

Gill trama regular, the hyphae of enlarged cells and somewhat interwoven, dingy vinaceous-brown in KOH, the walls with heavier pigmentation near the septa but no significant degree of incrustation observed. Pileus cuticle of vesicullose hyaline cells the layer about 1 or 1–2 cells deep, the walls smooth and the cell content not distinctive. Hyphae of the subcuticular region vinaceous-brown in KOH (in revived sections), no significant degree of incrustation seen. Clamps present.

Type locality. Minerva, New York.
Habit and habitat. Subcespitose to scattered on manure or fertilized soil.

Observations. For the species Smith (1934) previously identified as this species see *P. abortiva* of this work. Orton (personal communication) has questioned
assigning the American specimens to *P. coprobia* on the basis of their somewhat wider spores. The following account of *P. hirta* is based entirely on a study of the type.

Pileus 8-12 mm broad, hemispheric, surface hygrophanous, at first covered with erect fascicles of hairs, reddish brown when moist, grayish brown or whitish when dry. Context thin and membranous. Lamellae adnate or subdecurrent, suberoded, broad, pallid to black. Stipe 2.4–5 cm long, 2–3 mm thick, flexuous, shining, white, hollow, squamose.

Spores 9–13 × 6–7.5 μ, broadly ellipsoid to suboblong or subovoid, smooth, dark chocolate-color revived in KOH, apical hyaline pore present but apex not obviously truncate. Basidia 4-spored, 18–22 × 9–11 μ. Pleuro- and cheilocystidia similar, 36–48 × (8–) 19–14 μ, fusoid-ventricose with narrow necks but obtuse to subacute at apex, hyaline and thin-walled; some cheilocystidia saccate to clavate and 24–28 × 8–14 μ.

Gill trama regular, sordid yellowish to hyaline in KOH. Pileus having a cuticle of vesiculose cells 1–2 cells deep; wall thin, smooth and hyaline and cell content not distinctive, pileocystidia 34–40 × 6–9 μ occasionally projecting from among the vesiculose cells. Hyphae of the context dingy cinnamon in KOH and slowly fading to pallid.


Section *Subatratae* (Romagnesi) Singer, Sydowia 15: 68. 1961

Type. *Psathyrella subatrata*.

Subsection *Subatratae*

Key to the Series of Subsection *Subatratae*

1. Spores 9–12 μ or more long.
1. Spores 5–10 μ long.

Series *Subatratae*.

Key to the Species of Series *Subatratae*

1. Pileus with pronounced vinaceous tints; lamellae pale vinaceous at first.

1. Not with above colors.
   2. Fulvous-walled setae present on the pileus.
   3. Lacking setae on the pileus.

3. Typically scattered to gregarious in groups of 2–3; pileus shining when moist.

3. Densely cespitose (6–50 basidiocarps in a cluster).
   4. Spores smaller, 10–12 × 5.5–6.5 × 6.5–8 μ. *P. circeellatipes* var. *microspora* (12–15 × 6–8 μ, 234. *P. circeellatipes* var. *circeellatipes*).

5. Growing on sand dunes, base of stipe usually a cylinder of sand and mycelium; spores 9–12 × 5–6 μ, elliptic in face view.

5. Not as above.
   6. Spores 12.5–16 (–17) × 5.5–7 μ.

7. Stipe brown, fibrils on it grayish.
    7. Stipe white, fibrils on it white.

8. Scattered on wet earth; spores 9–11 × 5–6 (–7) μ.
8. Cespitose on herbaceous debris; spores 10–13 × 5.5–6.5 μ.

Pileus 1.5–3 cm broad, obtusely conic with an appressed margin at first, becoming conic-campanulate, rarely expanding further, a rudimentary veil present on the smallest buttons, surface glabrous, moist, lubricous evenly “Natal brown” when young (with a strong vinaceous tinge), fading to sordid gray or on the disc watery pale sordid alutaceous, surface closely wrinkled-striate to near the disc but not becoming plicate-striate as in *Pseudocoprinus*. Context very delicate, thin, fragile, odor and taste none.

Lamellae “light vinaceous-fawn” (pale vinaceous) young, becoming pallid and finally “hair brown” (dark drab), close, very narrow, ascending-adnate, edges even.

Stipe 3–5 cm long, 1.5–2.5 mm thick at apex, hollow, fragile, white and unchanging, pruinose above, slightly fibrillose below, glabrescent.

Spores 11–13 × 5.5–6.5 μ, smooth, apical pore small but distinct and spore apex only obscurely truncate, shape in face view narrowly elliptic to oblong, in profile subelliptic, color in KOH bister (a medium date brown) when first revived in KOH, slowly darkening to chocolate-color (with a gray cast), in Melzer’s dull reddish tawny, wall about 0.4 μ thick.


Gill trama of irregularly arranged inflated cells, hyaline when revived in KOH and in water mounts of fresh material. Pileus having a cuticle of inflated to vesiculose cells with thin hyaline walls, pedicels of inflated cells also thin and hyaline. Context of loosely arranged enlarged hyphal cells with hyaline metalic-apparing laticifers scattered among them, hyaline in water mounts of fresh material and when revived in KOH. Clamps present. No tissue with a distinctive reaction in Melzer’s.

Type locality. Ann Arbor, Michigan.

Habit and habitat. Gregarious to scattered on a compost pile of remains of tropical plants.

Distribution. Known only from the type locality.

Observations. The lack of pleurocystidia and lack of distinctive color on the subcuticular hyphae as revived in KOH along with more vinaceous-brown than purplish tones in the pileus distinguish this species from *P. barlae* and *P. bipellis*. It is close to *P. conopilea* but no setae were found on the pileus after repeated attempts were made to find them.

232. **Psathyrella atrosora** A. H. Smith, sp. nov.

Pileus 1–2 cm latus, conicus, glaber, castaneus; lamellae confertae, latae, fuscae demum atro-fuscae; stipes 4–5 cm longus, 2–3 mm erassus, albidus, deorsum brunneus; sporae 15–20 (~21) × 7–9 × 8–10 μ; cheilocystidia 28–50 × 10–30 μ, fusoido-ventricosa vel ellipsoidea; fibulae adsunt. Typus. Thiers 25248 (MICH); legit prope Mesa Grande, California.

Pileus 1–2 cm broad, obtusely conic expanding to convex or broadly conic, surface glabrous moist and hygrophanous, chestnut-brown fading to amber brown, striate on the marginal area when moist. Context thin and fragile, concolorous with surface, odor and taste mild.
Lamellae close, broad, ascending-adnate, seceding, fuscous in young and old specimens alike, margins conspicuously white crenulate.

Stipe 4–5 cm long, 2–3 mm thick, equal, fragile, translucent-whitish becoming brownish in drying, naked; no veil present.

Spores 15–20 (–21) x 7–9 x 8–10 μ, smooth, germ pore indistinct on mature spores and often oblique as seen in profile view, apex of spore not truncate, shape in face view oblong to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH blackish brown, in Melzer’s bay-brown, wall about 0.5 μ thick.

Basidia 4-spored, clavate, hyaline, 23–32 x 10–15 μ. Brachybasidioles present. Pleurocystidia not found. Cheilocystidia fusoid-ventricose, 28–50 x 10–30 μ, varying to subelliptic, hyaline in KOH or walls weakly ochraceous and up to 0.3–0.4 μ thick at times, smooth, cell content not distinctive.

Gill trama regular, hyphal walls yellowish brown, some inverting yellow-brown pigment present. Pileus trama yellow-brown from inverting amorphous patches of pigment, cuticle of pileus of inflated cells 2–3 deep, weakly ochraceous-tawny to hyaline in KOH, with pigmented wall thickenings in the angles at least on basal cells, rusty brown flexuous thick-walled setae 80–200 x 4–7 μ originating in the cuticle, setae occasional on stipe as caulocystidia. Clamps present.

Type locality. Ketchen Creek, near Mesa Grande, San Diego County, California.

Habit and habitat. Cespitose in humus near rotten oak logs, March.

Distribution. Known only from the type locality.

Observations. This species is clearly in the P. conopilea group, but, as dried, is dull colored more as in basidiocarps of Psathyrella foenisecii. It is distinguished in the group by its very large spores and cheilocystidia. No setae were found in the hymenium.


Agaricus conopilus Fries, Syst. Mycol. 1: 504. 1821.
Agaricus subatratus Fries, Epicr. Syst. Mycol. 238. 1838.
Psathyra conopilus (Fr.) Kummer, Führ. Pilzk. 70. 1871.
Psathyrella gracillipes (Pk.) Saccardo, Sylloge Fung. 5: 1127. 1887.
Pilocybe castaneicolor Murrill, Mycologia 15: 19. 1923.
Hypholoma gracile F. E. & E. S. Clements, Cryptogamae Form. Coloradensium #387.

Illust. Peck, 1. e. pl. 1, figs. 1–4. Pl. 73.

Pileus (15–)20–40 mm broad, obtusely conic to ovoid at first, the margin straight, broadly conic to almost convex at maturity, glabrous and moist, smooth, sometimes rugulose, striate on margin when moist, color at first russet to “cinnamon-brown” or paler (“ochraceous-tawny”), hygrophanous and fading to pale buff or avellaneous, sometimes darker, at times becoming almost dark avellaneous before losing moisture, atomate when faded. Context watery and extremely fragile, thin, odor and taste mild.

Lamellae close, narrow, adnate but soon seceding, pale alutaceous when young, (“cinnamon-buff” or more cinnamon (“pinkish cinnamon”), soon dark blackish brown from spores, edges white and fimbriate.

Stipe (6–)10–15 cm long, (2.5–)3–5 mm thick, equal, strict, fragile, splitting readily, hollow, glabrous or faintly silky, dull white, veil rudimentary or lacking.
Spores 14–17(–19) × 7–8.5 μ, smooth, pore usually eccentric (view spore in profile position), spore apex slightly truncate in face view; shape in face view oblong to narrowly elliptic, in profile subelliptic to obscurely inequilateral, color in KOH about “mummy brown” (blackish brown), in Melzer’s tawny-red to bay, wall about 0.4 μ thick (thin for such a long spore).

Basidia 4-spored, 28–34 × 11–14 μ, subcapitate, brownish to hyaline revived in KOH. Brachybasioides 10–14 × 10–12 μ. Pleurocystidia none. Cheilocystidia of two types: one fusoid-ventricose with obtuse apex, 30–44 × 9–14 μ, abundant; the other 18–20 × 14–18 μ, saccate to globose, rare to scattered and brownish in KOH. Caulocystidia not found on revived material.

Pileus having a cuticle of vesiculose to pear-shaped cells arranged in more or less of a palisade, their walls hyaline to yellowish in KOH, thin and smooth, thick-walled setae measuring 100–250 × 4–8 μ originating from between the cuticular cells or from the hyphae of the subcutis. Hyphae of the subcutis ochraceous-tawny in KOH and often more highly colored at the septa, walls smooth to very minutely roughened. Clamps present.

Type locality. Europe.

Habit and habitat. Solitary to gregarious on sticks and debris on rich humus, occasionally on dung.


Observations. It is now clear that the feature of setae on the pileus is a feature of a number of species. Smith 65851 from Papoose Creek, near Riggins, Idaho has spores 10–13 × 6–7.5 μ. Setae on the pileus are typical.


var. circellatipes

Illust. Pl. 74, fig. a; Text Figs. 528–531.

Pileus 1–4.5 cm broad, ovate with an appressed margin, becoming obtusely conic and remaining unexpanded or becoming nearly convex, glabrous, moist, striatulate before fading, dark rusty brown (“russet”) becoming paler to dingy tawny or more grayish brown as spores mature, lubricous when moist, atomate when faded, fading to pale dingy tan, not sulcate-striate at any time. Context very thin, fragile, odor and taste not distinctive.

Lamellae close, becoming moderately broad (4–5 mm) and ventricose, ascending adnate, soon seceding, pallid to light brownish to dark gray-brown and finally dark chocolate-brown when mature, edges even to crenulate and pallid.

Stipe 4–7 cm long, 1.5–4 mm thick, equal, fragile, with brownish flecks of tomentum near the base, white to pale tan or grayish throughout but darker at the base in age, with some tawny mycelium around the base in young basidiocarps (an oozonium), this mat permeating the substratum and the clusters of basidiocarps arising from it, surface of stipe pruinose-punctate at apex.

Spores (10–)12–15 × 6–8 μ, smooth, with a distinct apical to subapical hyaline pore, ovate to elliptic in face view, in profile obscurely inequilateral to subelliptic, blackish in KOH, dark reddish brown in Melzer’s, wall about 0.7 μ thick.

Basidia 4-spored, clavate, 9–12 μ broad, hyaline in KOH. Brachybasioides present and nearly vesiculose at maturity. Pleurocystidia none. Cheilocystidia
30–47×10–18 μ, utriform, smooth, walls thin and hyaline to slightly yellowish (in KOH), varying to fusoid-ventricose with obtuse apex and hyaline or yellowish at base of pedicel, content not distinctive. Caulocystidia 26–48×10–16 μ, utriform clavate, bulbous-rostrate or fusoid-ventricose, apex obtuse to rounded, hyaline, thin-walled, content not distinctive.

Pileus cuticle of inflated cells 15–30 μ wide, with hyaline to ochraceous walls in KOH, from the layer extend rusty brown, thick-walled setae up to 250 μ long (but usually broken and found in shorter pieces), the walls 1.5–2.5 μ thick, base at times 7–11 μ thick, neck 5–7 μ, outer surface rarely with slight inclusions. Hyphae of subcuticular zone ochraceous-tawny in KOH and with fine pigment inclusions, the color fading. Clamp connections present. No amyloid reactions present on any tissue.

Type locality. France.

Habit and habitat. Cespitose on rotten wood and on humus under *Populus* species in North America. Spring and early summer.


Observations. *Psathyrella conopilea* is solitary to gregarious often in garden soil. The pileus is not sulcate-striate. Benoist's species is associated with aspen wood in the western states and occurs in large clusters. Benoist found it with oak. It is interesting to note that this fungus, apparently very rare in Europe, is actually one of the common species in the aspen area of our western mountains.


**234a. Psathyrella circellatipes var. microspora** A. H. Smith, var. nov.

Pileus 1–3 cm latus, conicus vel campanulatus, glaber, interdum ad marginem sparse luteo fibrillosus, castaneus; lamellae cinnamomeae demum fusco-brunneae, confertae demum latae; stipes 4–8 cm longus, 1–2.5 mm crassus, glaber sed ad basem fibrillosus; sporae 10–12×5–6×6.5–8 μ; cheilocystidia 36–50×10–16 μ, versiformia; fibulae adsunt. Typus. Smith 35326 (MICH); legit prope Laramie, Wyoming.

Pileus 1–3 cm broad, obtusely conic expanding to broadly conic or campanulate, at times nearly convex, glabrous, under a lens scattered brown hairs (setae) visible, at times with the remains of the thin yellow veil along the margin, lubricous to subviscid, moist, hygrophanous and soon fading, “chestnut-brown” but becoming cinnamon-brown to ochraceous-tawny before fading to cinnamon-buff or pinkish buff, translucent striate in age before fading (not plicate), very atomate when faded. Context thin and exceedingly fragile, odor and taste not distinctive.

Lamellae pale dull cinnamon when young, chocolate-color at maturity, close, narrow to moderately broad, adnate and readily seceding, edges even and scarcely whitish.

Stipe 4–8 cm long, 1–2.5 mm thick, equal or nearly so, perfectly glabrous over all except at the extreme base which typically is dotted with orange-yellow fibrillose flecks from a rudimentary partial veil.

Spores 10–12×5–6.5×6.5–8 μ, compressed slightly, apical pore present but apex not distinctly truncate, color “mummy brown” to black in KOH, in Melzer's dark reddish brown, shape in face view ovate to elliptic, in profile somewhat to
obscurley inequilateral but mostly subelliptic and with the germ pore oblique, wall about 1 µ thick.

Basidia 4-spored, 20–28(-33) × 10–12 µ, elongate-clavate, hyaline in KOH or tinged cinnamon on young specimens when first revived in KOH. Brachybasidioles not differentiated. Pleurocystidia lacking or a few close to the gill edge and resembling the cheilocystidia. Cheilocystidia abundant 36–50×10–16 µ, fusoid-ventricose, apex obtuse to rounded, hyaline in KOH, wall thin, smooth and hyaline, content not distinctive in either KOH or Melzer's. Caulocystidia rare and approximately similar to the cheilocystidia. Hyphae of the stipe cortex with weakly ochraceous pigmentation at septa and at times on the clamp.

Gill trama dark cinnamon in KOH fading to ochraceous-tawny or nearly hyaline finally. Pileus trama dark rusty brown fading to ochraceous-tawny and with hyphae roughened with pigment inclusions. Cuticle of pileus a palisade of clavate to pear-shaped cells as in Conocybe, the pedicels often with ochraceous-tawny slightly thickened wall extending to the flaring portion in which the wall is thin, ochraceous to hyaline and smooth. Setae 80–250×4–7 µ, with thickened walls tawny in KOH, numerous in the cuticle and arising from the context. Clamps present.

Type locality. Pole Mountain near Laramie, Wyoming.

Habit and habitat. Densely cespitose to subcespitose on soil and hummocks in the vicinity of Populus tremuloides, spring and early summer.

Distribution. Wyoming.

Observations. This variant has slightly compressed spores and dull cinnamon gills when young. It may eventually be found desirable to recognize it as a distinct species.

Material examined. Wyoming: Smith 34727, 34729, 34731, 34732, 35326 (Type), 35327.

235. Psathyrella arenulina (Peck) A. H. Smith, comb. nov.

Agaricus arenulimus Peck, Rep. N. Y. State Mus. 30: 42. 1878.
Psilocybe arenulina (Pk.) Saccardo, Sylloge Fung. 5: 1057. 1887.

Illust. Text Figs. 532–534.

Pileus 1–3 cm broad, convex, becoming plane or centrally depressed, rarely umbo nate, in age sometimes with the margin uneven or wavy and widely and irregularly striate, surface glabrous, hygrophanous, dark brown and slowly becoming wood brown as spores mature, fading to pale buff or practically white. Context thin, rigid, very fragile, concolorous with pileus in moist or faded condition, odor and taste not distinctive.

Lamellae close, adnate, cinnamon-brown becoming dark purplish brown, edges even, not pink in age.

Stipe 3–5 cm long, 1.5–3.5 mm thick, hollow, slightly tapered upward, often radicating and the underground portion enlarged from adhering sand, whitish above ground, no veil seen.

Spores 9–12(–12.5) × 5–6 µ, smooth, apical pore distinct and spore apex truncate (but not broadly), shape in face view elliptic to somewhat wedge-shaped (more broadly truncate at base than at apex) or ovate, in profile subelliptic to obscurely bean-shaped, color in KOH cocoa-color slowly becoming darker, in Melzer's reddish tawny, wall about 0.3 µ thick.

Basidia 4-spored, 20–30 × 9–12 µ, clavate, hyaline, projecting 1/4 to 1/2 their length when sporulating. Pleurocystidia none. Cheilocystidia abundant, 20–32×
10–15 \( \mu \), saccate to clavate to fusoid-ventricose with broadly rounded apex, thin-walled and hyaline or wall yellow and in some the wall slightly thickened over the apical region and yellowish, content not distinctive. Caulocystidia similar to cheilocystidia or more versiform and variable in size.

Gill trama regular, rusty brown fading to nearly hyaline (in KOH). Pileus trama with a cuticle of vesiculose cells to clavate cells vertically arranged and staggered to form a layer 1–2 cells deep, the walls yellowish to hyaline in inflated part and brownish ochraceous in the pedicels. Hyphae of the subcuticular region rusty brown in KOH and showing conspicuous patches of incrusting plates or patches of pigment especially near the septa. Clamp connections present.

Type locality. West Albany, New York.

Habit and habitat. Gregarious in sandy soil on dunes, etc. associated with dune grasses.


Observations. Psathyrella ammophila (Dur. & Lév.) Orton, the European counterpart of this species, apparently has slightly wider spores. A critical restudy of both should be made. I have not observed a veil on the Michigan collections, but admittedly very few buttons have been found. P. flexispora Wallace & Orton has pleurocystidia but is otherwise very close to P. arenulina.


Illustr. Text Figs. 534A.

Pileus 1.5–3.5 cm broad, campanulate to umbonate, surface striate nearly to the umbo, in dried material somewhat sulcate along the margin but not typically plicate-striate, subhyaline to whitish, becoming grayish and when dried more or less pale ochraceous-buff. Context membranous and fragile.

Lamellae adnate, thin, narrow, crowded, whitish when young, becoming black.

Stipe 5–8 cm long, 2–3.5 mm thick, slender, weak, flexuous, never erect, hollow, white.

Spores 12.5–16 (–17) \( \times \) 5.5–7 \( \mu \), smooth, apical pore distinct and apex of spore showing a narrow truncation, shape in face view elliptic to slightly ventricose or ovate, in profile subelliptic to obscurely inequilateral varying to obscurely bean-shaped, color in KOH bister to “mummy brown” (blackish-brown) on standing, near bister when first revived, many pallid spores in the mount (of the type); in Melzer's bay-red, wall about 0.6 \( \mu \) thick as revived in KOH.

Basidia 4-spored, 24–28 \( \times \) 9–10 \( \mu \), hyaline in KOH, clavate. Brachybasidioles 14–16 \( \times \) 10–12 \( \mu \), more or less saccate from a broad base. Pleurocystidia none. Cheilocystidia scattered, more or less fusoid-ventricose, 25–34 \( \times \) 9–12 (–15) \( \mu \), apex obtuse to subacute, hyaline and thin-walled.

Gill trama made up of vesiculose hyaline cells, subhymenium cellular and hyaline. Pileus trama hyaline, the cuticle of vesiculose enlarged cells and hence the difference between these and the cells of the trama1 hyphae not very striking, the walls thin, smooth, hyaline, and the cell content not distinctive. Clamps present.

Type locality. Rooks County, Kansas.

Habit and habitat. On damp ground attached to decaying leaves.
Distribution. Known only from the type locality.
Observations. The material in the Ellis collection is not the same as the type (Bartholomew 2199, July 20, 1896). The pallid pileus when young, presence of brachybasidioles in the hymenium, and the slight differentiation between the cuticular and tramal hyphal cells are distinctive. The cuticle of the pileus is about 2 cells deep. *Psathyrella badiophylla* Romagn. is close to this species.

Illust. Text Fig. 534B.

Pileus 1.5–3 cm broad, subconic or convex, surface glabrous, striate on the margin, pale brown. Context thin and fragile.

Lamellae close, nearly plane, adnate, brownish becoming black.

Stipe 2.5–4 cm long, scarcely 2 mm thick, slender, flexuous, hollow, adorned with a few grayish fibrils, pale brown.

Spores 9–12×5–6 μm, smooth, apical pore well developed and apex of spore truncate, shape in face view ovate to elliptic, in profile obscurely inequilateral to subelliptic, wall about 1 μ thick, color in KOH blackish brown, in Melzer's dull bay-red.

Basidia 4-spored, 9–12 μ broad at apex, 20–26 μ long, clavate, hyaline in KOH. Brachybasidioles present at maturity. Pleurocystidia not found (type material did not revive well). Cheilocystidia 28–33×9–12(–15) μ, vesiculose, clavate or broadly fusoid-ventricose with rounded apex, hyaline, thin-walled, smooth.

Gill trama not reviving well, tawny in KOH. Pileus trama of tawny-brown hyphae with inerusted patches of pigment on the walls (dark vinaceous-brown in Michigan collections). Cuticle of pileus of vesiculose hyaline cells with a mucilaginous thickening lining the interior wall causing it to appear thickened in the manner of a *Rhizopogon* basidium, color pale cinnamon to nearly hyaline in KOH. Clamp connections present but difficult to demonstrate in the type.

Type locality. Rockport, Kansas.
Habit and habitat. On wet ground in woods, also on green humus.
Distribution. Kansas, Michigan (?)

Observations. The material lining the interior of the cuticular cells may not be a "good" taxonomic feature—the details of the preservation of the specimen are not known. This material does not show in all cells or in all collections. The lack of pleurocystidia, presence of brachybasidioles, blackish spores in KOH, the well-developed apical pore of the spores, and the brown color in KOH of the subcuticular zone or hyphae of the pileus context when revived are distinctive.


238. *Psathyrella agrestis* A. H. Smith, sp. nov.

Pileus 1–3 cm latus, convexus, glaber vel ad marginem sparse albo-flocculosa, glabrescens, fusco-brunneus; lamellae latae (±5 mm); pallidae demum cinerea vel fusco-brunneae; stipes 3–5 cm longus, 1.5–3 mm crassus, albidus, deorsum sparse floccosus, glabrescens; sporae (8–)9–11×5–6(–7) μ; pleurocystidia nulla; fibulae adsunt. Typus. Smith 10921 (MICH); legit prope Ann Arbor, Michigan.
Illust. Pl. 74, fig. b; Text Figs. 534C, 535.

Pileus 1–3 cm broad, convex, becoming broadly convex but not plane, glabrous except for concentric white patches of fibrils from the thin veil along the margin on immature pilei, surface radially wrinkled or somewhat netted at times near the
margin, moist, hygrophanous. Context pale chocolate-brown and opaque, fading to avellaneous, thin, fragile, odor and taste none.

Lamellae moderately close, 20–25 reach the stipe, 2 tiers of lamellulae, broad, (up to 5 mm), adnate with a decurrent tooth, pallid to grayish when young, dull chocolate-color at maturity, edges even or nearly so.

Stipe 3–5 cm long, 1.5–3 mm thick, slightly enlarged downward, fragile, hollow, white, with patches or a zone of veil fibrils over the lower portion, finally glabrescent, upper portion nearly naked.

Spores (8–)9–11×5–6(–7) μ smooth, apical pore abroad and apex of spore broadly truncate, shape in face view elliptic to ovate, in profile subelliptic to obscurely inequilateral, color in KOH dull cocoa-color soon changing to color of a roasted coffee bean and then finally chocolate-black, in Melzer's reddish tawny, wall about 0.4 μ thick.

Basidia 4-spored, 22–28×7–10 μ, clavate, hyaline in KOH. Pleurocystidia none. Cheilocystidia clavate to saccate, 35–46×10–18 μ, and some very small and cylindric (10–14×5–9 μ), yellowish in KOH and with slightly thickened walls. Caulocystidia not found on revived material.

Gill trama regular, the hyphae somewhat interwoven, hyaline in KOH. Pileus trama of floccose interwoven hyphae, hyaline to only dingy pale yellowish in KOH. Cuticle of pileus formed of a layer of vesiculose cells about two cells deep, some pedicellate to pear-shaped cells intermingled but not forming a palisade, the walls thin, smooth and hyaline, content not distinctive. Clamp connections present.

Type locality. Ann Arbor, Michigan.

Habit and habitat. On wet earth in a wheat field after the wheat had been harvested.

Distribution. Known only from the type locality.

Observations. The broadly truncate spores, white stipe, dark colored context of the pileus, terrestrial habitat and absence of pleurocystidia are distinctive. It is curious that in this species with dark colored pileus context when fresh, that, as revived in KOH, the hyphae are hyaline or nearly so.

239. *Psathyrella sepulcreti* A. H. Smith, sp. nov.

Pileus circa 8 mm latus, circa 10 mm altus, conicus, glaber, griseo-brunneus; lamellae confertae, pallidae demum griseo-brunneae; stipes circa 4.5 cm longus, 2 mm crassus, albidos, intus dilute brunneus, ad basem floccose-myeliosus; sporae 10–13×5.5–6.5 μ; pleurocystidia nulla; fibulae adsunt. Typus. Brooks 1620 (MICH); legit Highland Cemetery, Geary County, Kansas.

Illustr. Text Fig. 536.

Pileus up to 1 cm high and 8 mm wide, obtusely conic in button stages, campanulate to obtusely umbonate at maturity, not becoming broadly expanded, glabrous except for a few scattered fibrils near the margin from the thin veil, translucent striate when moist, opaque and even when faded, grayish brown on disc when young, the margin grayer, entire cap fading toward gray but finally light grayish brown and when dried near "clay color." Context thin, moist and hygrophanous, brownish.

Lamellae moderately broad, narrowly adnate, close, whitish at first but becoming almost concolorous with pileus, edges even.

Stipe up to 4.5 cm long, up to 2 mm thick, white, silky-striatulae, interior at apex slightly brownish, with a white mass of fluffy fibrils around the base from the remains of the veil.
Spores 10–13 × 5.5–6.5 μ, smooth, truncate from a broad apical pore, shape in face view ovate-pointed (at apiculate end) to elliptic but pointed somewhat at apiculate end, in profile somewhat to obscurely inequilateral, color in KOH date brown, paler when immature, dark date-brown when mature, in Melzer's tawny-red to bay, wall about 0.16 μ thick.

Basidia 4-spored, hyaline in KOH, 10–12 μ broad, hyaline, readily collapsing. Pleurocystidia and cheilocystidia none or a few clavate hyaline cells present as the latter.

Gill trama hyaline in KOH. Pileus trama slightly yellowish to sordid tawny in KOH for the subcuticular region. Cuticle a layer of inflated cells 2–3 deep; the walls thin, smooth and hyaline. Clamps present.

Type locality. Highland Cemetery, Geary County, Kansas.

Habit and habitat. Cespitose on herbaceous stems and decaying vegetation in the soil.

Distribution. Known only from the type locality.

Observations. The grayish brown color of the pileus when young but drying clay color, white stipe, slight veil, and the spores somewhat pointed at the apiculate (basal) end, appear distinctive in this subsection.

Series Atricastaneae A. H. Smith, ser. nov.


Observations. The presence or absence of pleurocystidia has not been finally ascertained for a number of southern species because it was impossible to revive sections of the types well enough to give reliable data. These species are placed here because no evidence of pleurocystidia was obtained, and because there appears to be a rather large group of southern taxa lacking these structures. For additional species possibly lacking a veil see Candolleaneae.

Key to the Species of Series Atricastaneae

1. Spores lemon-shaped but smooth. 240. P. diminutiva.
1. Spores not as above.
   2. Spores when first mounted in KOH nearly hyaline to ochraceous-hyaline. 3
   2. Spores in KOH cinnamon, avellaneous or darker. 7
3. Spores 7–9 × 4–5 μ. 4
   4. Pileus dark chestnut-brown at first; on buried wood, Cuba. 241. P. atricastanea.
5. In Melzer's the region next to and including the subhymenium of the hymenophoral trama orange-red in revived mounts. 243. P. hoseneyae.
5. Not as above.
   6. Lamellae broad; stipe shining white. 244. P. albipes.
   6. Lamellae narrow; stipe white (see 44. P. singeri also) 245. P. musae.
7. Spores 5.5–6.5 × 3.2–3.8 μ, stipe snow white. 246. P. plana.
7. Spores larger (if cespitose see 348. P. multipedata also)
   8. Lamellae narrow.
   9. Pileus grayish brown then argillaceous; spore apex not truncate. 247. P. campestris.
   9. Spore apex truncate (or pore "bubble-like" revived in KOH). 10
11. Not as above.
   12. Terrestrial. 13
   12. Lignicolous. 14
13. Spores in KOH yellowish-avellaneous becoming avellaneous.
13. Spores in KOH dull cocoa-color becoming bister (dark brown).
14. Pileus white to pallid when young.
14. Pileus more distinctly pigmented.
15. Stipe white changing to reddish.
15. Stipe white and unchanging; growing on Roystonia.
16. Lamellae crowded and arcuate.
16. Lamellae distant and adnected.


Pileus 6 mm broad, 2 mm high, hemispheric to broadly convex, with a small umbo, not expanding, surface striate, uniformly avellaneous, glabrous, margin straight, entire, concolorous. Context very thin and fragile.

Lamellae adnate, ventricose, distant, umbrinous to fuliginous, paler and entire on the edges.

Stipe 5 mm long, 0.5 mm thick, curved, equal, slightly roughened, umbrinous.

Spores broadly lemon-shaped, smooth, subopaque, uniguttulate, purplish brown under the microscope, about 5 × 4 μ.

Type locality. Cinchona, Jamaica.

Habit and habitat. Scattered on fallen sticks.

Distribution. Known only from the type locality.

Observations. The above account is taken entirely from the original. No details were obtained from the type. There is a chance that the species can be recognized on the basis of the small lemon-shaped spores.


Illustr. Text Fig. 537.

Pileus 2–3 cm broad, broadly campanulate to subexpanded, surface strongly hygrophanous, glabrous, dark chestnut, becoming pallid when dry except on the disc, margin concolorous, not striate. Context very soft, delicate and fragile.

Lamellae adnate, crowded, rather broad, concolorous, cinnamon-brown when dried.

Stipe 4–5 cm long, 2–4 mm thick, subcylindric, white, minutely floccose, hollow, veil said to be lacking in even the young stages of the basidiocarps.

Spores 7–9 × 4–5 μ, smooth, with an obscure apical pore, apex somewhat truncated if lens-shaped pore-cover collapses, shape in face view ovate to elliptic, in profile obscurely inequilateral to subelliptic, color in KOH weakly dingy ochraceous but soon becoming pale avellaneous, in Melzer's dingy ochraceous to pale tan, wall thin (~2 μ thick).

Basidia 4-spored, 15–18 × 8–10 μ, hyaline in KOH. Pleurocystidia none. Cheilocystidia scattered, 24–36 × 10–14 μ, ellipsoid to ventricose with broadly rounded apex, hyaline in KOH, thin-walled and readily collapsing.

Gill trama poorly reviving and not distinctively colored in KOH. Pileus trama of hyphae reviving poorly and merely dingy ochraceous in KOH; cuticle of vesiculose cells 1–2 deep, the walls thin and smooth, yellowish to hyaline in KOH. Clamps present, but difficult to demonstrate.

Type locality. Santiago de las Vegas, Cuba.

Habit and habitat. Gregarious from buried wood.

Distribution. Known only from the type locality.
Observations. The white stipe, chestnut-colored pileus and medium-small spores very pale when first revived in KOH are distinctive. The species appears to be related to *P. hymenocephala* but has darker colors and lacks a veil.


Pileus (0.5–)1–2 cm latus, demum convexus, glaber, luteo-brunneus; lamellae confertae, latae, pallidae demum fusco-brunneae; stipes 2–5 cm longus, 1–2 mm crassus, fragilis, albidus, nitens, sursum pruinosus; velum nullum; sporae 7–9×4.5–6 μ; in "KOH" subhyalinae; pleurocystidia nulla; fibulae adsunt. Typus. Hesler 23083 (MICH); legit Knoxville, Tennessee.

Pileus (0.5–)1–2 cm broad, obtusely conic to convex, scarcely expanding, glabrous, moist, hygrophanous, dingy yellow-brown moist, pallid olivaceous faded but drying pale dull cinnamon, striate to disc when moist, atomate when faded. Context pallid, fragile, odor and taste mild.

Lamellae adnate to adnexed, close, moderately broad, soon seceding, pallid when young, “wood brown” mature, dull cinnamon when dried, edges even.

Stipe 2–5 cm long, 1–2 mm thick, equal, fragile, hollow, white and shining, apex pruinose, naked lower down. Veil none.

Spores “hair brown” to “drab” in a deposit, 7–9×4.5–6 μ, smooth, apical pore not distinct, shape in face view ovate to elliptic, in profile obscurely to somewhat inequilateral, color in KOH subhyaline (dilute brownish under microscope—Hesler), yellowish in Melzer’s, wall ~0.2 μ thick.

Basidia 4-spored, (10–)12–18×7–10 μ, subglobose to broadly clavate, hyaline in KOH. Brachybasidioles present, 9–11 μ wide. Pleurocystidia none. Cheilocystidia clavate to utriform—much as in *P. hymenocephala*, hyaline to yellowish in KOH.

Gill trama yellowish-hyaline in KOH, hyphal cells greatly inflated, hyphae interwoven; subhymenium of large (8–15 μ) inflated cells. Pileus cuticle of greatly inflated cells (up to 60 μ), yellowish-hyaline in KOH, thin-walled, hyphae of subcuticular region yellowish-hyaline in KOH, walls smooth. Clamps present.

Type locality. Knoxville, Tennessee.

Habit and habitat. Gregarious on humus, May.

Distribution. Known only from type locality.

Observations. This species has the stature of *Pseudocoprinus disseminatus* but appears to be closely related to *Psathyrella singeri*. In fact it is one of a “cluster” of species, mostly southern in distribution, with pale colored spores in KOH.

243. *Psathyrella hoseneyae* A. H. Smith, sp. nov.

Pileus 1–4 cm latus, campanulatus, cacaocolor, glaber; contextu cacaocolor; lamellae angustae, confertae, brunneoae demum cacaocolor; stipes 3–6 cm longus, 2–4 mm crassus, pallidus, sursum pruinosus, deorsum glaber; sporae 6–7×4–4.5 μ; pleurocystidia nulla; fibulae adsunt. Typus. Hoseney 90 (MICH); legit prope Ann Arbor, Michigan.

Illust. Text Figs. 538, 539.

Pileus 1–4 cm broad, obtusely conic expanding to broadly conic or broadly campanulate, more or less of a rich cocoa-brown when young, becoming paler (dull cinnamon-tan) and finally grayer as the spores mature, a dull alutaceous as dried, glabrous, margin naked and appressed against the stipe when young, not
distinctly striate when moist. Context thin, exceedingly fragile, concolorous with surface either moist or faded, odor not distinctive.

Lamellae very narrow and very crowded, ascending adnate, pallid brownish gradually becoming cocoa-brown and when dried about the color of the pileus, edges even.

Stipe 3–6 cm long, 2–4 mm thick, equal, fragile, hollow, pruinose above, naked downward, white to pallid and not appreciably discoloring.

Spore deposit (on the stipe) cocoa-brown. Spores 6–7\( \times \)4–4.5 \( \mu \), smooth, lacking a distinct apical pore, shape in face view fairly broadly elliptic, in profile subelliptic to very obscurely inequilateral, color in KOH buffy hyaline, slowly developing a faint avellaneous tinge, in Melzer’s merely weakly ochraceous, wall \(-0.2 \mu \) thick (rather thin).

Basidia 4-spored, 23–28\( \times \)9–12 \( \mu \), narrowly clavate, hyaline. Pleurocystidia none. Cheilocystidia clavate, elliptic or ovate-pedicellate or utriform, 26–38\( \times \)10–16 \( \mu \), hyaline, thin-walled, smooth, content not distinctive in Melzer’s or KOH. Caulocystidia similar to the cheilocystidia but measuring up to twice as large at times.

Gill trama on young hymenophore bright orange-red in the region near the subhymenium (in Melzer’s) but this color not evident in age; the same color pervading the pileus trama in immature basidiocarps. Pileus cuticle a staggered layer 1–2 cells deep of inflated cells; the hyphae immediately beneath this layer colored cinnamon to rusty ochraceous but pigment fading rapidly after mounting in KOH. Clamps present.

Type locality. Ann Arbor, Michigan.

Habit and habitat. Cespitose-gregarious around hardwood stumps.


Observations. This species is clearly closely related to \textit{P. hymenocephala} but is distinct by the absence of a veil. There are also numerous other minor features which make it evident that the collections do not represent a single-character variant of \textit{P. hymenocephala}. \textit{Psathyrella varicosa} Pearson (1950) is closely related but is paler (“milky coffee”) colored, the pileus is radiately veined, the gills have eroded edges, the stipe is 6–12 cm long, and it was found in the Cape region of South Africa. It grows in troops on the ground. The Michigan species is named for the collector, Mrs. Florence Hoseney of the Michigan Botanical Club.

Material examined: Michigan: Hoseney 73, 76; Smith 72930, 72941.

244. \textit{Psathyrella albipes} (Murrill) A. H. Smith, comb. nov.

\textit{Atylospora albipes} Murrill, Mycologia 10: 22. 1918.

\textit{Psathyra albipes} (Murrill) Murrill, Mycologia 10: 33. 1918.

Pileus convex, about 1 cm broad, not umbonate, surface striate, finely asperulate, pale avellaneous, isabelline on the disc, margin straight, entire concolorous. Context very thin and fragile.

Lamellae adnate, rather broad, crowded, white to pinkish, at length discolored. Stipe 2–3 cm long, 1–2 mm thick, very slender, subcartilaginous, equal, white, shining, hollow.

Spores 6–6.5\( \times \)4–4.2 \( \mu \), smooth, with an obscure hyaline pore and spore apex not truncate, shape in face view ovate to elliptic, subelliptic to obscurely inequilateral in profile, color in KOH a pale grayish brown.

Hymenium not reviving well enough to study. Cheilocystidia clavate to saccate, 24–32\( \times \)9–12 \( \mu \), thin-walled, hyaline, apparently smooth (reviving poorly).
Pileus cuticle of vesiculose cells with thin walls. No other details obtainable.

Type locality. Hope Gardens, Jamaica.

Habit and habitat. Scattered on decayed banana stalk.

Distribution. Known only from the type locality.

Observations. The shining white stipe, very small spores, and rather broad crowded gills are distinctive. It is not clear just what is meant by “pinkish” in the original description.

245. Psathyrella musae (Earle) A. H. Smith, comb. nov.


Illustr. Earle, 1. c. pl. 37, fig. 2. Text Fig. 540.

Pileus 1-3 cm broad, convex, then expanded, silky, striatulate, hygrophanous, pale ochraceous tinged with purple-brown, becoming pallid or whitish when dry (faded). Context thin, watery, fragile.

Lamellae narrow, crowded, adnexed, whitish at first, becoming purple-brown. Stipe 3-6 cm long, 2 mm thick, slender, fragile, hollow, white, glabrous, the apex slightly mealy and the base mycelioid.

Spores 6-7.5×4-4.5 μ, smooth, apex with a broad often bulging (in KOH) apical pore, shape in face view oblong to elliptic or slightly ovate, in profile obscurely inequilateral to subelliptic, color in KOH pale yellowish avellaneous when first revived in KOH, slowly darkening, in Melzer’s ochraceous-tawny, wall 0.2 μ thick.

Basidia 4-spored, 12-16×5-6 μ, hyaline in KOH. Pleurocystidia not found. Cheilocystidia scattered, 26-32×10-12 μ, ventricose with broadly rounded apex, hyaline, thin-walled, smooth, readily collapsing.

Pileus with a cuticle of vesiculose cells hyaline in KOH and thin-walled. Context hyaline to brownish as revived but hyphae reviving very poorly. Clamps present on hyphae of the cortex of the stipe.

Type locality. Cuba.

Habit and habitat. Subcespitose on fallen dead stems and leaves of banana trees.

Distribution. Cuba.

Observations. The combination of features which apparently distinguish this species is: The lack of a veil, the pale ochraceous pileus, crowded narrow lamellae, small spores and in particular their pale color when first revived in KOH. The question of pleurocystidia needs to be restudied from fresh material.

246. Psathyrella plana (Murrill) A. H. Smith, comb. nov.


*Psathyra plana* (Murrill) Murrill, Mycologia 10: 33. 1918.

Illustr. Text Figs. 541, 542.

Pileus 2 cm broad, expanded, almost perfectly plane, surface striate, glabrous, avellaneous-isabelline, becoming isabelline when dry (faded), margin concolorous, subentire, recurved in drying. Context very thin and delicate. Lamellae adnate, narrow, crowded, becoming purplish brown, whitish on the edges.

Stipe 3 cm long, 2 mm thick, slender, equal, smooth, glabrous, snow-white, yellowish when dried.
Spores 5.5–6.5 (–7) × 3.2–3.8 μ, smooth, apical pore present but small and apex not truncate, shape in face view oblong to elliptic, in profile subelliptic or obscurely inequilateral, color in KOH pale avellaneous with a suggestion of an ochraceous overtone, darkening to pale chocolate-color, in Melzer's tawny to more reddish-cinnamon, wall about 0.2 μ thick or less.

Basidia 14–16 × 6–7 μ, 4-spored, hyaline in KOH. Brachybasidioles possibly present at maturity. Pleurocystidia not found (type revived poorly). Cheilocystidia abundant and very large, 32–44 × 10–20 μ, ventricose with broadly rounded apex varying to ellipsoid, hyaline, thin-walled and readily collapsing.

Gill trama more or less parallel in hyphal arrangement, hyaline in KOH. Pileus trama of interwoven hyaline (in KOH) hyphae; the cuticle of vesiculose hyaline cells in a layer one-cell thick.

Type locality. Cinchona, Jamaica.

Habit and habitat. Solitary on decaying logs.

Distribution. Known only from the type locality.

Observations. The very small spores, lignicolous habitat, snow-white stipe, lack of a veil and large cheilocystidia are distinctive. The species needs to be restudied from fresh material. In mounts of the pileus tissue in Melzer's some patches of dark violet (amyloid ?) debris were found in some of the hyphae, reminding one of the content of some cystidia in the bolete genus Tylopilus! These, if characteristic, would form an additional important taxonomic character.


*Drosophila campestris* (Earle) Murrill, Mycologia 10: 64. 1918.

Illust. Earle, l. c. pl. 38. Text Figs 543, 544.

Pileus 2–5 cm broad, campanulate then expanded, glabrous, hygrophanous, at first grayish brown, then argillaceous, darker in the center, becoming reticulate and striatulate when dry. Context very thin, very fragile.

Lamellae narrow, close, adnexed, at first grayish brown, at length dark brown.

Stipe 4–6 cm long, 2–4 mm thick, fistulose, fragile, white, glabrous except at the summit where it is striate and floccose and pulverulent.

Spores 7–9 × 4.5–5.5 μ, smooth, apical pore small and spore apex not truncate, shape in face view elliptic to ovate, in profile elliptic to obscurely inequilateral, color in KOH a dull cinnamon (“Sayal brown”), darkening slowly, in Melzer's tawny to reddish tawny, wall about 0.2 μ thick.

Basidia short and fat, 18–20 × 10–12 μ, 4-spored, hyaline in KOH. Pleurocystidia none. Cheilocystidia abundant, ventricose with broadly rounded apex to subcylindric, hyaline in KOH, collapsing readily, 28–42 × 10–15 μ. Caulocystidia scattered over apical region, 28–65 × 8–20 μ, clavate, fusoid-ventricose with broadly rounded apex or subcylindric and 6–9 μ wide, some with localized refractive thickenings on interior wall, some apparently filled with a mucilaginous substance.

Gill trama not reviving well, apparently merely brownish to hyaline in KOH. Pileus trama colored like the gill trama and also reviving poorly. Cuticle of pileus of vesiculose cells apparently about 1 cell deep. Clamp connections present but difficult to demonstrate.

Type locality. Santiago de las Vegas, Cuba.
Habit and habitat. Gregarious on lawns.
Distribution. Cuba.
Observations. The dried basidiocarps have distinctly vinaceous, narrow, crowded gills and the whole aspect is that of *P. hymenocephala* save for the absence of a veil. *Psathyrella thiersii* has much the same aspect but smaller spores and a submembranous partial veil.

248. **Psathyrella castaneidisca** (Murrill) A. H. Smith, comb. nov.


Ilust. Text Fig. 545.
Pileus 2.5 cm broad, convex, surface hygrophanous, avellaneous, slightly tinged with chestnut, pale chestnut on the disc, margin straight, entire, concolorous, striate. Context very thin and fragile.
Lamellae adnate, narrow, crowded, chestnut.
Stipe 3 cm long, 2 mm thick, cylindric, equal, smooth, white, furfuraceous.
Spores 7–9 (–10) × 4.6–6 μ, smooth, apical pore distinct and apex truncate though not conspicuously so, shape in face view ovate to elliptic, in profile obscurely inequilateral to subovate, color in KOH dull cinnamon (near “Sayal brown”), slowly darkening to near wood brown, in Melzer’s tawny, wall about 0.3 μ thick.
Basidia 4-spored, 8–10 μ broad, hyaline in KOH. Pleurocystidia none. Cheilocystidia broadly cylindric to ventricose, the apex broadly rounded and the neck only slightly narrowed, hyaline in KOH, thin-walled, readily collapsing hence difficult to measure in the type (approximately 23–26 × 9–16 μ). Gill trama not reviving in type. Pileus having a cuticle of vesiculose cells one or two deep, the wall pale brownish to nearly hyaline and thin. Context of cinnamon-brown hyphae but poorly revived and details of wall not reliable.
Type locality. Castelton Gardens, Jamaica.
Habit and habitat. Solitary on soil in a rubbish heap.
Distribution. Known only from the type locality.
Observations. This account is based entirely on the type and original description. The distinguishing features of the species are the chestnut colored pileus, narrow crowded lamellae, white stipe, and the cuticle of the pileus being typically one cell deep. Again, this species reminds one of *P. hymenocephala* but the spores are wider and a veil is lacking.

249. **Psathyrella australis** (Murrill) A. H. Smith, comb. nov.

Pileus 1–3 cm broad, expanded, subumbonate, surface glabrous, hygrophanous, slightly striate, pale fawn color, slightly darker on the disc. Context very soft and fragile.
Lamellae adnexed, crowded, rather narrow, concolorous, then brownish.
Stipe 4–6 cm long, 2–3 mm thick, rigid-fragile, cylindric to slightly tapering above, hollow, glabrous or somewhat atomaceous, pure white; veil slight, white, all traces soon vanishing.
Spores 7–9 × 4–5 μ, smooth, with apical hyaline germ pore but scarcely appearing truncate at the apex, shape in face view oblong to elliptic, in profile sub-elliptic to obscurely inequilateral, color in KOH pale dull brown becoming nearly avellaneous (paler and grayer).
Basidia 4-spored, 10–14×9–10 μ, nearly elliptic in optical section, hyaline in KOH. Brachybasidioles present at maturity. Pleurocystidia rare to scattered, similar to cheilocystidia. Cheilocystidia clavate to ventricose with short neck and broadly rounded apex, hyaline in KOH, smooth, readily collapsing. Cuticle of the pileus of inflated cells, the layer one cell deep, the walls dull cinnamon at the base or in the pedicel (if pedicellate). Hyphae of the context not reviving.

Type locality. City Park, New Orleans, Louisiana.

Habit and habitat. Gregarious to cespitose on rotten wood and humus.

Distribution. Louisiana.

Observations. The presence of brachybasidioles, if indeed they can be properly so designated in view of the ellipsoid to subellipsoid basidia, the slight veil and the medium-small spores are its most distinguishing features. In spore features it seems very close to *P. candolleana* but the hymenial elements along with the cinnamon walls in the bases of the cuticular cells distinguish it. From the information available from the type, the species appears to be a variant ambiguous between *P. hymenocephala* and *P. candolleana*.

250. *Psathyrella byssina* (Murrill) A. H. Smith, comb. nov.


Pileus 5–10 mm broad, strongly convex to plane, not umbonate, surface varying from pinkish gray to brown tinged with pink, glabrous, nearly smooth, margin entire, concolorous. Context very thin and fragile.

Lamellae adnate, crowded, rather broad, becoming dark purplish brown or almost black.

Stipe 1.5 cm long, less than 1 mm thick, filiform, pallid or rosy-isabelline smooth, glabrous, attached to the substratum by a very conspicuous radiating mass of tomentum which is evidently white when fresh but slightly yellowish in dried specimens.

Spores ellipsoid, smooth, 6.4–7.8×4.5–5 μ, very pale purplish brown under the microscope (Murrill), chocolate-gray when revived in KOH, apical pore present (no additional details were obtainable). The type could not be found and the Johnston collections (no. 330 and 420) are in very poor condition.

Type locality. Rio Piedras, Puerto Rico.

Habit and habitat. Gregarious on decayed logs.


Observations. The small pale spores, basal mat of mycelium, lack of a veil, and broad gills for such a small fungus distinguish it. It should be redescribed from fresh material.


Illust. Text Fig. 546.

Pileus 1–1.5 cm broad, convex to expanded and slightly depressed, surface glabrous, hygrophanous, pale chestnut, paler when dry, margin faintly striate, concolorous. Context thin and delicate.

Lamellae adnexed, crowded, subventricose, pallid to purplish brown, entire and concolorous on the edges.
Stipe cylindric, 3 cm long, 1–2 mm thick, white, shining, glabrous, hollow.

Spores 7–8.5(–9) × 4–5 μ, smooth, with an obscure apical hyaline pore and spore apex not obviously truncate, shape in face view oblong to somewhat ovate (many elliptic), in profile obscurely inequilateral to subelliptic, color in KOH ochraceous-avellaneous when first revived, becoming avellaneous, in Melzer's pale tawny, wall about 0.3 μ thick.


Type locality. Santiago de las Vegas, Cuba.

Habit and habitat. Along paths.

Distribution. Known only from the type locality.

Observations. The subventricose gills are unusual in this group. It appears to be close to P. castaneidisca.


Illustr. Text Fig. 547.

Pileus 3–4 cm broad, convex, surface hygrophanous, subglabrous, brownish, paler when dry, faintly striate. Context very thin, watery, fragile.

Lamellae adnexed or adnate, subcrowded, rather broad, reddish brown when mature.

Stipe 7–8 cm long, 3 mm thick, cylindric, glabrous, shining white, fragile, hollow; veil not evident when collected.

Spores 7–9 × 4–5 μ, smooth, apical hyaline pore distinct but small and apex not distinctly truncate, shape in face view ovate to elliptic, in profile obscurely inequilateral to subelliptic, color in KOH dull cocoa-color but soon pale bistre and in 15 minutes yellowish gray, "decidedly purplish brown in water mounts of fresh material," in Melzer's ochraceous-tawny or slightly more reddish cinnamon, wall about 0.2 μ thick.

Basidia 4-spored. Brachybasidioles possibly present. Pleurocystidia not seen. Cheilocystidia scatteated, 28–36 × 10–12 μ, fusoid-ventricose to subcyllindric with broadly rounded apex, hyaline, thin-walled, smooth and readily collapsing. Caulocystidia present and similar to cheilocystidia or apex merely obtuse. Pileus having a cuticle of vesiculose cells (no other details obtainable). Clamp connections present.

Type locality. El Yunque, Cuba.

Habit and habitat. Subcespitose on ground in woods.

Distribution. Known only from the type locality.

Observations. The above account is based on the type and the original description. The color of the spores revived in KOH appears to distinguish this species from *P. murrillii*, though the generalized original descriptions do not leave much to choose from by way of distinguishing features.


Pileus about 10–20 mm broad, convex becoming plane, the margin finally revolute, glabrous, white. Context very thin and fragile.
Lamellae broad, adnate, pallid fuscous.
Stipe 10–20 mm long, white, changing to reddish, equal, slightly fistulose (pileus and stipe tawny when dry).
Spores \(7–8 \times 4–4.5 \mu m\), smooth, with an obscure apical pore hence apex not truncate, shape in face view oblong to elliptic, in profile subelliptic to obscurely bean-shaped, near “wood-brown” (gray-brown) in KOH.
Basidia 4-spored, 16–18 \(\times\) 6–7 \(\mu m\), hyaline in KOH. Basidioles present rather than brachybasidioles. Pleurocystidia none. Chelioctydia saccate, 22–28 \(\times\) 9–12 \(\mu m\), hyaline, thin-walled, readily collapsing.
Gill trama not reliable because of being parasitized. Pileus having a cuticle of vesiculose cells in a layer 1–2 cells deep. Hyphae of the subcuticular region hyaline in KOH and with irregular refractive laticiferous elements present. Clamps not demonstrated (but hyphae revived poorly).
Type locality. Cuba.
Habit and habitat. On logs.
Distribution. Known only from the type locality.
Observations. The white pileus, broad fuscous lamellae, white stipe changing to reddish, and apparently the lack of brachybasidioles distinguish this species.

254. \textit{Psathyrella roystoniae} (Earle) A. H. Smith, comb. nov.

\textit{Aty/ospora roystoniae} (Earle) Murrill, Mycologia 10: 24. 1918.

Illustr. Earle, l. e. pl. 37, fig. 3. Text Fig. 548.

Pileus 1–3 cm broad, convex then expanded, obtuse, glabrous, somewhat reticulate and striatulate, hygrophanous, pallid tinged with purple, becoming whitish when dry (faded). Context thin and fragile.
Lamellae moderately broad, close, adnexed, at first pallid, at length purple-brown.
Stipe 2 cm long, 2 mm thick, short, fistulose, glabrous, white, with a mycelioid base.
Spores \(7–8 \times 4–4.5 \mu m\), smooth, apical pore distinct and apex truncate in most but this obscure because the germ pore often bulges slightly in KOH (the outer membrane becomes convex instead of remaining flat or concave), shape in face view elliptic to obscurely ovate, in profile elliptic to obscurely inequilateral, color in KOH pale dull cocoa-color becoming avellaneous and finally fading to nearly hyaline, pale ochraceous-tawny in Melzer’s, wall \(-0.2 \mu m\) thick.
Basidia 4-spored, hyaline in KOH, 7–8 \(\mu m\) broad, clavate. Brachybasidioles apparently present (reviving poorly). Pleurocystidia none. Chelioctydia scattered, saccate to ellipsoid, some broadly ventricose with obtuse apex, 22–28 \(\times\) 9–14 \(\mu m\), hyaline in KOH, thin-walled, readily collapsing. Gill trama not reviving well but not distinctively colored. Pileus having a cuticle of vesiculose hyaline cells about one cell deep. Hyphae of the subcuticular region merely dingy ochraceous in KOH. Clamp connections present.
Type locality. Managua, Cuba.
Habit and habitat. Subcespitose on rotten trunks of \textit{Roystonia}.
Distribution. Known only from the type locality.
Observations. The pallid pileus at first and the broad gills along with the habitat appear distinctive. Singer’s (1951 p. 470) publication of the combination \textit{P. roystoniae} is not valid.
255. **Psathyrella cordobaensis** A. H. Smith, nom. nov.


Pileus about 1 cm broad, convex, not fully expanding, not umbonate, surface glabrous, smooth, sometimes pitted or reticulate, rugose in dried specimens, uniformly avellaneous-isabelline, margin paler, thin, entire, not incurved but deflexed and appressed when young.

Lamellae adnate, arcuate, broad, rather crowded, white to pale avellaneous and finally purplish brown with white edges.

Stipe 1.5 cm long, 2 mm thick, curved, tapering upward, white, smooth, glabrous above, with abundant cottony tomentum at the base.

Spores 6–7.5 × 3.8–4.4 μ, smooth, apical pore indistinct and apex not truncate, shape in face view elliptic to oblong, in profile elliptic to obscurely inequilateral, color in KOH pale avellaneous, becoming somewhat darker (the avellaneous tone weak and tinged ochraceous at first), in Melzer's pale tawny to reddish tawny, wall about 0.3 μ thick.

Basidia 16–19 × 6–7 μ, 4-spored, hyaline in KOH. Pleurocystidia none. Cheilocystidia saccate to ellipsoid, 22–30 × 9–12 μ, hyaline, smooth, very difficult to revive in the type. Gill trama parallel, hyaline in KOH.

Pileus having a cuticle of pedicellate to saccate or vesiculose cells all intermingled, hyaline in KOH. Hyphae of the context hyaline in KOH. Clamps present.

Type locality. Motzorongo, near Córdoba, Mexico.

Habit and habitat. Gregarious to subcespitose on decaying wood.

Distribution. Known only from the type locality.

Observations. The pileus which becomes rugose to pitted, lamellae white at first and arcuate, the abundant cottony mycelium at the base of the stipe and the small spores appear distinctive.

256. **Psathyrella dichroma** (Berkeley & Curtis) A. H. Smith, comb. nov.


Pileus 10–12 mm broad, at first conic, expanding to plane, glabrous, yellowish brown. Context thin.

Lamellae thin, distant, adnexed, fuscous.

Stipe 2.5 cm long, 2–3 mm thick, fistulose, glabrous, white.

Spores 6–7.5 × 4–5 μ, smooth, with an obscure apical hyaline pore, pale chocolate-brown to dull cinnamon-brown when revived in KOH, soon fading and becoming very pale grayish brown. Cheilocystidia saccate, 20–26 × 10–15 μ, hyaline and rather badly collapsed. Pileus trama with a cuticle of vesiculose hyaline cells.

Type locality. Cuba.

Habit and habitat. On rotten wood.

Distribution. Cuba.

Observations. The species is clearly a *Psathyrella* and should be recognizable by the distant fuscous gills and lack of a veil. The species needs to be redescribed from fresh material.
Section Umbonatae A. H. Smith, sect. nov.

Pleurocystidiis utriformibus vel late obtusis; sporae 9–12 μ vel maiior longae. Typus. Psathyrella umbonata.

Key to the Species of Section Umbonatae

1. Spores 12–17 μ long. 2
2. Stipe tinged vinaceous at first; pleurocystidia voluminous. 9
3. Not as above. 3
4. Spores 9–12.5 μ long. 4
5. Taste farinaceous; growing in clusters. 5
6. Not as above. 6
7. Growing on conifer duff. 7
8. Faded pileus margin flushed pink in some basidiocarps; veil absent. 8
9. Stipe 6–12 mm thick. 9
10. Spore apex not truncate (apical pore very narrow under oil). 10
11. Basidiocarp small and Galerina-like; stipe less than 1 mm thick. 11
12. Pileus gray to grayish when young; spores clay color immediately upon being revived in KOH. 12
13. Not as above. 13
14. Gregarious on chips of pine; spores 9–12 × 5–7.5 μ. 14
15. Spores rather distinctly inequilateral in profile. 15
16. On burned areas; hyphae of pileus context heavily incrusted; pileus shining when moist (as in lubricous pilei). 16
17. Pleurocystidia 48–72 × 8–12 μ. 17
18. Pleurocystidia shorter than in above choice. 18
19. Cuticle of pileus about one cell deep. 19
20. Cuticle of pileus 3–5 cells deep. 20

257. Psathyrella pseudocorrugata A. H. Smith, sp. nov.

Pileus 1–3.5 cm latus, conicus, glaber, hepaticolor, demum rugosus; contextu in “KOH” griseus; lamellae “vinaceous buff” demum vinaceo-brunneae dein fusco-brunneae, latae, demum subistantes; stipes 3–7 cm longus, 2–3.5 mm crassus, vinaceo-tinctus demum pallidus deorsum sparse fibrillosus; velum sparsum; sporae 14–16 × 5.5–7.5 μ; pleurocystidia 46–80 × 12–25 μ versiformia; fibulae ad- sunt. Typus Smith. 64875 (MICH); legit prope Ann Arbor, Michigan.
Pileus 1–3.5 cm broad, obtusely conic with a straight margin, expanding to plane or with a low umbo, surface moist and hygrophanous, “Rood’s brown” to “Hay’s brown” dark vinaceous-brown when moist, fading to vinaceous-pallid or a dingy pinkish tan, in age the margin brighter pink as in *P. gracilis* but in some the margins not changing, the disc pinkish buff, at first with a thin coating of white fibrils over the marginal half, soon glabrescent, the edge naked, surface in age often wrinkled. Context fragile, quickly gray in KOH, taste mild, odor metallic-disagreeable but not strong.

Lamellae vinaceous-buff when young, then vinaceous-brown and finally chocolate-brown or darker, adnate-seceding, broad, close to nearly subdistant, broad, edges whitish.

Stipe 3–7 cm long, 2–3.5 cm thick, equal, fragile, undulating, hollow, at first tinged vinaceous, white at maturity or in age, white fibrillose over lower part, apex faintly so, not discoloring at base but merely finally dingy over all in age; veil not leaving a zone or ring on stipe when it breaks.

Spores 14–16×5.5–7.5 μ, smooth, with an apical hyaline pore often at a slight angle (not truly apical), in profile elliptic or nearly so, in face view elliptic to slightly ovate, fuscous in KOH (many pale ones present), in Melzer’s dark reddish brown, wall about 1 μ thick.

Basidia 4-spored, 12–15 μ broad, clavate. Pleurocystidia voluminous, 46–80×12–25 μ, elliptic pedicellate to ovate-pedicellate to fusoid-ventricose, neck 7–10 μ wide in elongated cells, apex rounded or obtuse, wall thin and smooth, cells mostly remaining partly collapsed. Cheilocystidia similar to pleurocystidia but smaller and varying to fusoid. Caulocystidia near apex of the stipe closely resembling the cheilocystidia, rare lower down. No distinctive reactions were noted on mounts made of any tissue in Melzer’s.

Pileus cuticle of voluminous cells 15–50 μ wide, some with a broad pedicel, walls smooth, hyaline to brownish in KOH, the layer 2–3 cells deep or if cells are 50–70 μ long only 1–2 cells deep. Subcuticular region dingy vinaceous-brown in KOH, fading slowly. Clamps present.

Type locality. Ann Arbor, Michigan.

Habit and habitat. On chip-dirt of elm, May.

Distribution. Known only from the type locality.

Observations. The slight veil, dark vinaceous-brown pilei, vinaceous tinge in the stipe at first, large spores and voluminous pleurocystidia are distinctive. In these features as well as in the colors of the basidiocarps the species is very close to *P. barlae* but the vinaceous-brown KOH reaction of the pileus trama in *P. pseudocorrugata* and the gray KOH reaction of the fresh context appear sufficient to distinguish them.


Pileus 1.5–2.5 cm broad, convex to subumbonate, surface striate to disc or subsulcate near the margin, grayish brown to fleshy-gray. Context thin, taste farinaceous.

Lamellae thin, subdistant, adnate, cinereous, becoming black or blackish brown.

Stipe 6–7 cm long, 2–3 mm thick, slender, hollow, mealy and white at the top, brownish below.

Spores 14–19(–20)×7–9(–10) μ, smooth, obscurely truncate from a small but
distinct apical pore, shape in face view ovate to oblong, in profile obscurely inequilateral to subelliptic, color in KOH dark mummy-brown (blackish), the immature spores more ochraceous brown, Melzer's reaction not obtained, wall about 1.2 μ thick.

Basidia 4-spored, hyaline in KOH. Pleurocystidia 40–56 × 10–15 μ, utriform to fusoid-ventricose with rounded apex; wall thin, smooth and hyaline; content not distinctive in KOH. Cheilocystidia similar to or shorter than the pleurocystidia and more of them fusoid-ventricose; wall thin, smooth and hyaline. Caulocystidia not studied.

Gill trama not reviving. Pileus with a cuticle of vesiculose hyaline cells one or possibly two cells deep, hyaline, thin-walled, smooth, content not distinctive in KOH. Context not reviving well and apparently the hyphae not distinctive in either KOH or in Melzer's, and lacking any distinctive type of organization.

Type locality. San Jose, California.

Habit and habitat. Cespitose in rich soil and grassy places under Sycamore.

Distribution. Known only from the type locality.

Observations. The gigantic spores, utriform or broadly rounded cystidia and the stipe discoloring at the base along with the clustered habit are its claim to distinction. Type studied.


Illustr. Text Figs. 552, 553.

Pileus about 1 cm high and 1 cm broad, campanulate, umbonate, surface dry, glabrous, radiate-sulcate, uniformly pale avellaneous tinged with old rose, (very likely hygrophanous but faded when collected—A.H.S.), margin straight entire, sulcate. Context very thin pallid, fragile.

Lamellae adnate, broad, distant, entire, with white edges.

Stipe 5–7 cm long, less than 1 mm thick, very slender, equal, smooth, glabrous, pale reddish brown.

Spores 13–16(-18) × 7–9.5(-10) μ, smooth, black in KOH, ovoid to ellipsoid, not flattened, apical pore broad and distinct, apex truncate.

Basidia 18–23 × 10–14 μ, 4-spored, broadly clavate, hyaline in KOH. Pleurocystidia scattered, 36–48 × 10–18 μ, ventricose above a relatively long narrow pedicel, neck very broad and apex broadly rounded, some elliptic-pedicellate, thin-walled, hyaline in KOH, some with scattered highly refractive granules and some with local lens-shaped wall thickenings. Cheilocystidia similar (or nearly so) to the pleurocystidia, varying to ellipsoid, yellowish to hyaline in KOH (pigment in the wall). Caulocystidia not studied.

Gill trama of more or less interwoven hyphae. Pileus cuticle formed by globose to clavate cells in a loose palisade, hyaline in KOH, cell content not distinctive.

Type locality. Camp Roosevelt, Marion County, Florida.

Habit and habitat. In sandy soil on an exposed grassy road-shoulder.

Distribution. Known only from the type locality.

Observations. This species is distinguished by the rose tint of the faded pileus, the broad distant lamellae, pale reddish brown stipe, large spores, very broadly rounded pleurocystidia and the loose palisade forming the cuticle of the pileus. The local wall thickenings in some cystidia are of a type observed in various fleshy Basidiomycetes and Ascomycetes and are here not regarded as of taxonomic significance. A closely related species is *Drosophila calcarea* Romag-
nesi (1966) which is vernal, grows in calcareous situations, and lacks rose tints in age.


Illustr. Text Figs. 554, 556.

Pileus 1.5 cm broad and high, conic, not expanding, not umbonate, surface smooth, glabrous not striate, uniformly rosy isabelline, margin entire, concolorous. Context thin and fragile.

Lamellae adnate, crowded, broad, whitish at first, becoming dark isabelline, with a rosy tint in addition.

Stipe 5 cm long, 1.5–2 mm thick, slightly larger below, glabrous, paler than the pileus, rather brittle.

Spores 12–15 × 6–8 μ, smooth with an oblique distinct apical pore causing the apex to be somewhat truncated, shape in face view elliptic to slightly ovate, in profile obscurely inequilateral to subelliptic, color in KOH fuscous becoming dark chocolate-color, in Melzer's reddish tawny, wall about 1.0 μ thick.

Basidia 4-spored, 20–28 × 10–15 μ, clavate, hyaline in KOH. Brachybasidioles apparently differentiated in old caps. Pleurocystidia abundant, 42–64 × 10–18 μ, ventricose above a narrow pedicel, tapered to an obtuse to broadly rounded apex, the apical region of the cell filled with highly refractive granules as revived in KOH (the granules yellowish in Melzer's), wall thin and colorless. Cheilocystidia similar to pleurocystidia varying to saccate but with apical region containing granular material.

Gill trama regular, sordid yellowish brown in KOH. Pileus trama sordid yellowish brown in KOH, no obvious pigment inercrustations seen (on mounts of the type). Pileus cuticle of hyaline vesiculose cells 1–2 cells deep; the walls thin, smooth and hyaline; cell content not distinctive. Clamp connections present.

Type locality. Orizaba, Mexico.

Habit and habitat. Solitary to scattered on the soil.


Observations. Among the large spored species the granular content of the apical region in the cystidium is the key character.


261. *Psathyrella pseudofrustulenta* A. H. Smith, sp. nov.

Pileus 10–15 mm latus, convexus demum planus, sparse fibrillosus, glabrescens, fulvus; lamellae latae, subdistantes, fulvae; stipites 1–2 cm longus, 1 mm erassus, sparse fibrillosus; pallidus; spora 11–14 (–15) × 5.5–7 μ; pleurocystidia 37–48 (–56) × 10–16 μ, fusoidae ventricose, obtusa vel rotundata; fibulae adsunt. Typhus. Smith 39894 (MICH); legit Mt. Rainier National Park, Washington.

Illustr. Text Figs. 555, 557, 558.

Pileus 10–15 mm broad, convex expanding to plane, the margin straight or bent in slightly at first, the surface at first with a thin coating of pallid to grayish fibrils, soon glabrescent, color "russet" (dark rusty brown), hygrophanous and fading to cinnamon-tan. Context very thin and fragile, lacking a distinctive odor or taste.
Lamellae broad, adnate, subdistant, becoming horizontal, dull rusty brown and drying this color, edges even.

Stipe 1–2 cm long, about 1 mm thick, equal, delicate, pallid, thinly coated at first with pallid fibrils from the remains of a thin veil, not discolored appreciably in age.

Spores 11–14 (–15) × 5.5–7 μm, smooth, apical pore indistinct and apex rounded, shape in face view mostly ovate, in profile somewhat inequilateral, color in KOH dull cocoa-color to fuscous (with an obscure ochraceous tint), slowly becoming dark chocolate-color, in Melzer's reddish tawny, wall about 0.3 μm thick.

Basidia 4-spored, clavate, 18–26 × 8–10 μm, hyaline in KOH or pedicel weakly cinnamon colored. Pleurocystidia scattered, 37–48 (–56) × 10–16 μm, fusoid-ventricose, apex obtuse to rounded, wall thin, smooth and hyaline, or a few with a granular inkerustation over the apex, content not distinctive in either KOH or Melzer's. Cheilocystidia 30–40 × 10–15 μm, broadly ventricose, neck short and apex obtuse to rounded, wall and content as in pleurocystidia. Caulocystidia clavate, scattered, reviving poorly, walls weakly ochraceous in KOH. Hyphae of cortex weakly cinnamon in mass and with cinnamon debris in places, much granular material present in KOH mounts and some adhering to the hyphae.

Cuticle of pileus a layer of vesiculose cells 1–2 deep, the walls weakly colored cinnamon or more ochraceous in KOH, thin and smooth or nearly so. Hyphae of pileus trama cinnamon in KOH and with some inkerustation material on the narrower hyphae. Clamps present. No distinctive reactions on any tissue in Melzer's.

Type locality. Mt. Rainier National Park, Washington.

Habit and habitat. Scattered on conifer needles (a mixed stand of hemlock, Abies and Pseudotsuga).

Distribution. Known only from type locality.

Observations. Psathyrella pseudofrustulenta is distinguished by the grayish veil fibrils, rusty brown color of pileus reminding one of P. frustulenta, broad subdistant lamellae, large spores somewhat inequilateral in profile view, and rather “average” pleurocystidia for the genus. The lack of a distinct germ pore in a spore of this size is also unusual in this genus.

262. Psathyrella pseudofoeniscii A. H. Smith, sp. nov.

Pileus 1–3 cm latus, conicus, glaber, purpureo-brunneus demum pallidus dein ad marginem incarnatus; lamellae latae, subdistantes, brunneolae, demum fuscæ; stipes 4–7 cm longus, 2.5–3.5 cm erassus; pallidus ad basem albo-myceliosus, tactus deorsum vinaceo-brunneus; sporae 12–16 × 6–7.5 μm; pleurocystidia 38–57 × 12–18 μm, fusoide ventricosa, obtusa vel rotundata; fibulae adsunt. Typus. Nimke 99 (MICH); legit Ann Arbor, Michigan.

Pileus 1–3 cm broad, obtusely conic becoming broadly conic, margin straight when young, surface glabrous, dingy purplish brown moist, pallid (whitish) when faded and later becoming flushed pink near the margin; no veil present. Context very fragile, thin, pallid when faded, odor and taste not distinctive, FeSO₄ no reaction.

Lamellae ascending adnate, broad, subdistant, “wood brown” when mature, merely pallid brownish yellow, edges even and pallid.

Stipe 4–7 cm long, 2.5–3.5 mm thick, equal, hollow, fragile, pallid overall,
with white mycelium at the base, when crushed staining slowly to dingy vinaceous-brown, naked.

Spores 12–16 × 6–7.5 μ, fuscous-brown in deposit, smooth, germ pore eccentric to subapical and apex not truly truncate, shape in face view elliptic to subovate, in profile subelliptic to obscurely bean-shaped (or ventral line straight), color in KOH chocolate becoming dark chocolate, in Melzer’s dark bay-brown, wall about 0.4 μ thick.

Basidia 4-spored, short-clavate, 18–22 × 7–9 μ, hyaline. Brachybasidioles present in mature hymenium. Pleurocystidia 38–57 × 12–18 μ, fusoid-ventricose with short neck and very obtuse to rounded apex, varying to nearly utriform, smooth, thin-walled or wall about 0.4 μ thick in some, hyaline in KOH, content not distinctive in KOH or Melzer’s. Cheilocystidia similar to the pleurocystidia or varying to clavate.

Pileus cuticle a layer of vesiculose cells about 1 deep, walls thin, smooth and hyaline, hyphae of subcuticular region hyaline in KOH and with smooth walls. Clamps present.

Type locality. Ann Arbor, Michigan.

Habit and habitat. Gregarious on a lawn near shrubs and an old elm stump, June.

Distribution. Known only from the type locality.

Observations. This species was at first mistaken for *Psathyrella foenisecii* but the spores are smooth and pleurocystidia are present. Both species may fade to whitish over the pileus. As dried, the pilei in the type collection are coarsely striate but this was not evident on fresh material.


*Atylospora umbonata* (Pk.) Murrill, Mycologia 14: 267. 1922.

Pileus 2–5 cm broad, campanulate, umbonate, margin straight when young and with vestiges of a grayish fibrillose veil, purplish brown and striatulate when moist, grayish white when dry, even or slightly rugulose, atomate, the umbo commonly paler than the marginal area. Context submembranous, fragile.

Lamellae rather broad, moderately close, ventricose, subadnate, brownish red, becoming purplish brown and finally almost black.

Stipe 5–10 cm long, 2–3 mm thick, slender, flexuous, hollow, white, commonly hairy-tomentose at the base and slightly mealy at the top.

Spores 12–15 × 6.5–8 μ, smooth, somewhat truncate from an apical hyaline pore, shape in face view elliptic to slightly angular-elliptic or ovate, in profile subelliptic to obscurely inequilateral, color in KOH soon chocolate-brown, in Melzer’s more or less bay-red, wall about 1 μ thick.

Basidia 18–24 × 12–14 μ, 4-spored, hyaline in KOH. Pleurocystidia scattered, 40–60 × 10–16 μ, utriform, hyaline, thin-walled, smooth, cell content not distinctive in KOH or in Melzer’s. Cheilocystidia abundant, similar to the pleurocystidia in shape but often smaller. Caulocystidia not studied.

Gill trama not reviving. Pileus trama poorly revived; cuticle of pileus of vesiculose cells, no setae present.

Type locality. Lake Pleasant, New York.

Habit and habitat. Gregarious on chip-dirt.


Observations. This is a relatively large *Psathyrella* for this subsection and
features large spores, utriform pleurocystidia, a rudimentary grayish fibrillose veil and no brown-walled setae on the pileus. As far as is known there is no pseudorhiza.


264. **Psathyrella pseudolarga** A. H. Smith, sp. nov.

Pileus 4–9 cm latus, convexus vel planus, rugulosa, glaber; lamellae triste vinaceo-brunneae, latae, confluenta; stipites 8–14 cm longus, 6–12 mm crassus, albidus, sparse fibrillosus; velum nullum; sporae (8–)9–12 × (4.5–)5–6.5 (–7) μ; pleurocystidia 42–60 × 10–18 μ, utriformia; fibulae adsunt. Typus. Smith 55955 (MICH) ; legit prope Crescent City, California.

Illustr. Pl. 76; Text Figs. 559–561.

Pileus 4–9 cm broad, obtuse to convex, expanding to plane, surface glabrous, moist, hygrophanous, radially wrinkled, “warm sepia” (dark cinnamon), fading to pinkish buff. Context very thin and fragile, odor and taste not distinctive.

Lamellae when young grayish brown, in age dark vinaceous-brown (“Natal brown”), broad, adnate, seceding, close, edges even and not beaded with drops.

Stipe 8–14 cm long, 6–12 mm thick, equal, fragile, hollow, whitish over all inside and out, surface appressed fibrillose below and silky above; no veil evident even on the button stages.

Spores (8–)9–12 × (4.5–)5–6.5 (–7) μ, variable in size, smooth, apical pore distinct, shape in face view ovate to elliptic, in profile somewhat bean-shaped to obscurely inequilateral, dingy cocoa-color when revived in KOH and becoming paler on standing, in Melzer’s reddish tawny.

Basidia 4-spored, 8–10 μ broad, 20–25 μ long. Pleurocystidia 42–60 × 10–18 μ, broadly utriform, apex subcapitate in many, wall 0.2–0.5 μ thick and hyaline to yellowish in KOH, smooth, content not distinctive in KOH or in Melzer’s. Cheilocystidia vesiculose to clavate or subutriform (neck poorly developed), edge ochraceous from collapsed cells (color in the wall but dilute to the degree that isolated cells appear hyaline). Caulocystidia rare to scattered, clavate to vesiculose or varying to utriform, very delicate and reviving poorly (apparently there is a mixture of pleuro- and cheilocystidial types).

Pileus with a cuticle of inflated cells 2–3 deep, the long axis of the cells perpendicular to the pileus surface, walls (double-wall) about 1 μ thick, hyaline in KOH; subcutis and context hyphae weakly brown in KOH and becoming paler, walls thin and smooth, hyaline lens-shaped wall thickening present erratically in the tissues of the basidiocarp. Clamp connections present. No distinctive reaction observed on any tissue as mounted in Melzer’s.

Type locality. Crescent City, California.

Habit and habitat. On a log of *Madroño*, November.

Distribution. Known only from type locality.

Observations. This species is closely related to *P. larga* but differs in the larger spores, in the absence of a veil and in that the color of the spores become paler in KOH rather than darker on standing (for a short time).

265. **Psathyrella galerinoides** A. H. Smith, sp. nov.

Pileus 2–5 mm latus campanulatus, glaber, griseo-brunneus, mollis; lamellae latae, distantes pallidae demum violaceo-brunneae; stipites 1–2 longus, circa 0.5 mm crassus, mollis, pruinosus, aquose cinereus; sporae 8–11 × 5–6 μ; pleurocystidia
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26–34 × 7–12 μ, fusioide ventricosa, ad apicerum late rotundata; fibulae rarissimae. Typus. Smith 42551 (MICH); legit prope Pike Lake, Luce County, Michigan.

Illust. Text Figs. 562–564.

Pileus 2–5 mm broad, obtusely conic to campanulate, hygrophanous, wood brown on the disc and avellaneous to pallid on the margin, no veil remnants evident. Context membranous and very soft and fragile.

Lamellae broad, distant, ascending-adnate, seceding, pallid becoming “benzo brown” (fuscous-violaceous), edges minutely white-serrulate.

Stipe 1–2 cm long, about 0.5 mm thick, equal, fragile, soft, faintly pruinose from caulocystidia, glabrous downward, pallid to watery gray over all and unchanging.

Spores 8–11 × 5–6 μ, smooth, apical pore evident only under highest oil immersion lens, the apex rounded, shape in face view narrowly ovate to elliptic, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH pale fuscous, wall about 0.2 μ thick.

Basidia 4-spored, 26–30 × 7–9 (–10) μ, clavate, hyaline. Pleurocystidia of two sizes: (1) 26–34 × 7–12 μ and fusoid-ventricose with acute apex; (2) fusoid-ventricose and 36–54 (–65) × 10–16 μ, with apex obtuse to broadly rounded, some with greatly elongated neck only 2–3 μ wide, rarely with a secondary septum just distal to the ventricose portion, all types smooth, thin-walled, hyaline and lacking distinctive contents. Cheilocystidia mostly resembling type 2 above. Caulocystidia versiform and resembling the cheilocystidia and about the same size. Hyphae of the stipe pale dull cinnamon in groups as observed on crushed portions. Oleiferous hyphae with dull cinnamon content numerous. Walls of cortical hyphae smooth to minutely roughened.

Cuticle of pileus of clavate cells in a palisade (one cell deep), walls hyaline to weakly cinnamon in KOH, smooth. Tramal hyphae in KOH dingy vinaceous-brown but fading slowly to cinnamon. Clamps very rare (those seen might have been a contamination).

Type locality. Pike Lake, Luce County, Michigan.

Habit and habitat. Solitary on wet moss with Galerina species.

Distribution. Known only from the type locality.

Observations. This species is exceedingly delicate, has medium-sized spores, a wide range in size and shape of pleurocystidia, distant broad gills and lacks any trace of a veil. The cheilocystidia rarely show a bifurcate condition near the apex, or a protuberance may develop on the neck. The overall length varies greatly because some elongate producing a neck 30–40 μ long.

266. Psathyrella inflatocystis A. H. Smith, sp. nov.

Pileus 3–6 cm latus, convexus vel late umbonatus, subcinereus vel olivaceo-cinereus, glaber demum rugulosus; lamellae confractae, latae, cinereae demum griseo-brunneae; stipites 5–9 cm longus, 2.5–6 mm crassus, glaber, albidus; velum sparsum, albidum; sporae 8–11 × 5–6.5 μ; pleurocystidia 40–62 × 10–20 μ, late fusioide ventricosa vel utriformia vel elliptica; fibulae adsunt. Typus. Hesler 21319 (MICH); legit prope Chimneys, Great Smoky Mountains National Park, Tennessee.

Illust. Text Figs. 565, 566.

Pileus 3–6 cm broad, convex, expanding to broadly convex or convex-umbonate, “pale drab-gray” to “pale olive-buff” (grayish) fading to pale pinkish
buff or retaining a grayish tinge, when water-soaked pale watery brown, faintly fibrillose, becoming radially rugulose, margin not appendiculate. Context moderately thick on disc, thin on margin, pallid when faded, odor and taste not distinctive.

Lamellae adnate to decurrent by a line, close, moderately broad, pale gray becoming “hair brown” (dark brownish gray), as dried dark vinaceous-brown, edges fimbriate and pallid.

Stipe 5–9 cm long, 2.5–6 mm thick, equal, fragile-cartilaginous, glabrous, apex white-pruinose, longitudinally striate, white and unchanging, often sharply curved at the base and matted-mycelioioid. Veil white, arachnoid and all traces soon vanishing.

Spores “fuscous” in deposits, 8–11 × 5–6.5 µ, smooth, apical pore indistinct and apex not truncate, shape in face view ovate to elliptic, in profile somewhat inequilateral to obscurely bean-shaped, color in KOH immediately clay color to dull ochraceous-tawny, slowly becoming nearly hyaline, in Melzer’s tawny, wall about 0.4 µ thick in Melzer’s and 0.6–0.7 µ in KOH.

Basidia 4-spored, 20–24 × 6–8 µ, narrowly clavate. Pleurocystidia rare to scattered, 40–62 × 10–20 µ, broadly fusoid-ventricose with obtuse to rounded apex, utriform, or pedicellate-elliptic to sub fusiform, readily collapsing, wall thin, smooth and hyaline, content not distinctive. Cheilocystidia (30–)40–60 × 10–25 (–30) µ, broadly utriform, broadly fusoid-ventricose with rounded apex, or clavate-pedicellulate to pedicellate-sub fusiform (large and conspicuous), all types thin-walled, smooth and hyaline in KOH.

Hyphae of gill trama with greatly inflated cells with smooth hyaline walls, sub hyphenium narrow and indistinct. Pileus cuticle a layer of vesiculose cells 2–4 deep, their walls smooth, hyaline or nearly so. Hyphae of the sub cutis hyaline or nearly so in KOH and the walls smooth. Clamp connections present.

Type locality. Great Smoky Mountains National Park, Tennessee.

Habit and habitat. Scattered on rich humus in mixed forest.

Distribution. Known only from type locality.

Observations. This species is most closely related to *P. subagraria* but is distinguished by the very slight development of the veil, the color of the spores in KOH, by the often extremely broad cheilocystidia, and to some degree by the narrower stipe although there is significant overlap in this last feature.

267. *Psathyrella baileyi* A. H. Smith, sp. nov.

Pileus 2–3.5 cm latus, convexus, glaber, cinnamomeo-brunneae, demum sulcato striatus; lamellae conflerta, latae, atro-brunneae; stipes 5–10 cm longus, 2–3.5 mm crassus, glaber, ad basem albo-myceliosus, sursum pruinosis; velum nullum; sporae 9–12 × 5–6 µ; pleurocystidia 40–55 × 6–14 µ, utriformia; fibulae adsunt. Typus. Bailey 125 (MICH); legit Isle Royal National Park, Michigan.

Illust. Text Figs. 567, 568.

Pileus 2–3.5 cm broad, obtuse to convex, becoming broadly convex, surface glabrous, moist, translucent striate on the margin, in age slightly sulcate, dark cinnamon-brown to a redder brown when moist, fading to pale dingy tan or more or less avellaneous (grayish). No veil remnants present. Context very thin and fragile, brownish; odor and taste not recorded.

Lamellae close but not crowded, bluntly adnate, moderately broad, blackish at maturity but edges whitish to pallid (not pink).

Stipe 5–10 cm long, 2–3.5 mm thick, equal, white mycelioi at the base,
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Glabrous above or at first faintly frosted near the apex, white, very fragile. No evidence of a veil anywhere.

Spores 9-12×5-6 μ smooth, apical pore present but spore apex not truncate, shape in face view ovate to broadly elliptic, in profile mostly obscurely inequilateral, color in KOH immediately chocolate-black, in Melzer's dull bay, wall about 1 μ thick.

Basidia 4-spored, clavate, 9-11 μ wide, hyaline in KOH. Brachybasidioles present. Pleurocystidia and cheilocystidia similar, 40-55×6-14 μ, utriform, wall thin, smooth and hyaline, cell content not distinctive. Caulocystidia scattered and utriform to fusoid-ventricose with obtuse apex, hyaline, thin-walled, content not distinctive.

Gill trama reddish brown in KOH but fading. Pileus trama of hyphae dull vinaceous-brown in KOH, the pigment inerusted on the wall and to some extent the wall itself also colored, fading on standing. Pileus cuticle of a region of inflated cells 1–2 deep, the wall thin, smooth and yellowish to hyaline, cell content not distinctive. Clamps present. No distinctive reaction seen on any tissue mounted in Melzer's.

Type locality. Isle Royale National Park, Michigan.

Habit and habitat. Gregarious on wet earth.

Distribution. Known only from type locality.

Observations. The very dark colored spores when first mounted in KOH, the utriform to narrowly fusoid-ventricose pleurocystidia, the lack of a veil and the relatively long slender stipe distinguish P. baileyi. It is to be regarded as close to P. gracilis but has smaller spores and different cystidia.

268. Psathyrella pinicola A. H. Smith, sp. nov.

Pileus 2–3 cm latus, late convexus, cinnamomeo-brunneus, striatulatus, glaber; lamellae latae ventricoseae confertae griseae; stipes 4–5 cm longus, 3–4 mm crassus, pallidus, sursum pruinosus, flexuosus; sporae 9–12×5–7.5 μ; pleurocystidia 34–60×10–18 μ, utriformia vel fusoid-ventricosa, ad apicem late rotundata; fibulae adsunt. Typus. Hesler 15917 (MICH); legit prope Claxton School, Anderson County, Tennessee.

Illust. Text Figs. 569, 570.

Pileus 2–3 cm broad, convex-expanded, hygrophanous, more or less cinnamon-brown when moist and also striatulate, fading to yellowish (“cartridge buff”) or whitish, margin even or slightly sulcate when faded, no veil remnants evident. Context thin, concolorous or whitish, odor and taste fungoid.

Lamellae rounded-adsenate, ventricose, broad, close, “neutral gray” (lacking a cinnamon tinge), edge fimbriate.

Stipe 4–5 cm long, 3–4 mm thick, whitish, apex pruinose, naked elsewhere, flexuosus, hollow.

Spores 9–12×5–7.5 μ, smooth, with a small but distinct apical pore, the spore apex not being distinctly truncate, shape in face view broadly elliptic, in profile subelliptic to obscurely inequilateral to obscurely bean-shaped or elliptic, color in KOH blackish brown and remaining so, in Melzer's bay-brown, wall about 0.5 μ thick.

Basidia 18–24×8–12 μ, subcapitate, 4-spored. Brachybasidioles 12–14×12–15 μ, readily collapsing. Pleurocystidia rare to scattered, 34–60×10–18 μ, utriform to fusoid-ventricose with broadly rounded apex, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia similar to pleurocystidia but
typically not as elongated in age. Caulocystidia rare, merely clavate hyphal end
cells. Hyphae of stipe cortex with numerous small to large highly refractive
crystals present in and around them.

Gill trama with a central strand of greatly enlarged hyphal cells (50–90 ×
15–30 µ), hyaline or nearly so in KOH, the walls smooth and thin. Pileus with
a cuticle of vesiculose cells 1–2 deep, the cells 15–30 µ or more wide, not arranged
in a palisade but a few with pedicels. Hyphae of the context as revived in KOH
hyaline or nearly so and the walls smooth and thin. Clamps present.

Type locality. Claxton School, Anderson County, Tennessee.

Habit and habitat. Gregarious on chips of pine.

Distribution. Known only from type locality.

Observations. The absence of a veil, gray lamellae, whitish stipe, mostly
utriform pleurocystidia, and hyaline hyphae of the context as revived in KOH
appear distinctive.

269. Psathyrella parvivelosa A. H. Smith, sp. nov.

Pileus 1.5–3 cm latus, conicus vel plano-umbonatus, sparse fibrillosus glabres-
cens, pallide spadiceus demum fusco-griseus; lamellae pallidae vel brunneoae
demum cinnamomeo-griseae; longus, 2–4 mm
crassus, candidus, adpresse fibrillosus, deorsum intus griseus, sporia 9–11 × 5–6 µ;
pleurocystidia 50–70 × 12–20 µ, late ventricosa ad apicerum obtuse vel rotundata;
fibulae adsunt. Typus. Smith 34861 (MICH); legit prope Libbey Creek,
Centennial, Wyoming.

Pileus 1.5–3 cm broad, obtusely conic when young, expanding to broadly conic
or nearly plano-umbonate, surface at first thinly covered with white veil remnants
which disappear without forming squamules, margin fringed at first, color when
young “buckthorn brown” (honey brown) to pale Verona brown (dull cinnamon),
becoming wood brown (grayish brown) to dark grayish brown (“hair brown”),
fading to grayish. Context pallid, fragile, thin, odor and taste not distinctive.

Lamellae pallid to brownish and finally near cinnamon-drab, close, ascending-
adnate to nearly horizontally-adnate in age, moderately broad, readily seceding
edges whitish.

Stipe 3–5 cm long, 2–4 mm thick, slightly enlarged downward, shining white
from a thin fibrillose coating which does not completely disappear, watery gray
at the base within, no distinctive color changes observed on bruising.

Spores 9–11 × 5–6 µ, smooth, apical pore small and apex not truncate, shape
in face view ovate to elliptic, in profile mostly somewhat inequilateral, in KOH
dull cocoa-color but darkening slowly to a medium chocolate-brown, in Melzer’s
dark tawny to amber brown, wall about 0.4 µ thick.

Basidia 4-spored, 20–25 × 8–9 µ, hyaline in KOH, clavate. Pleurocystidia
abundant, 50–70 × 12–20 µ, broadly ventricose and evenly narrowed to an obtuse
or broadly rounded apex, or fusoid-ventricose with obtuse apex, wall thin, smooth
and hyaline, content somewhat colloidal in KOH, not distinctive in Melzer’s.
Cheilocystidia similar to pleurocystidia or more of them fusoid-ventricose with
apex subacute to subcapitate. Caulocystidia subcylindric to broadly clavate or
some with a lateral protuberance or branch, wall thin, smooth and hyaline, cell
content not distinctive.

Pileus having a cuticle of a layer of vesiculose cells several deep, their walls
smooth, thin and hyaline, their content not distinctive in KOH or Melzer’s.
Hyphae of the trama weakly ochraceous-brown in KOH becoming paler on standing. Clamp connections present.

Type locality. Near Centennial, Wyoming.

Habit and habitat. Cespitose on and by an aspen stub.

Distribution. Known only from type locality.

Observations. This species connects to *P. obtusata* and *P. fulvescens* but has larger spores than either and it also fruits in clusters.

Material examined. Wyoming: Smith 34861 (Type), 35204.

270. *Psathyrella pruniliformis* (Murrill) A. H. Smith, comb. nov.

*Atylospora pruniliformis* Murrill, Mycologia 14: 266. 1922.

*Psathyra pruniliformis* (Murrill) Murrill, Mycologia 14: 278. 1922.

Illustr. Text figs. 576, 577.

Pileus about 1 cm broad, obtuse to convex, surface glabrous, dry, rugose, pale fawn color of light tan, margin concolorous, substriate. Context thin, pale tawny, taste mild.

Lamellae adnate, broad, subdistant, subventricose, white.

Stipe about 5 cm long and 1 mm thick, equal, very slender, glabrous, concolorous, paler and brownish at the apex, hollow, whitish mycelioid at the base.

(Notes on the type): The structure of the pileus indicates clearly that the species is very hygrophanous, and hence the above description (the original) should be regarded as applying to faded basidiocarps. The material sectioned was semisterile. This accounts for the pale gills as described.

Spores 10–12.5 × 5.6–7 μ, smooth, apex truncate from a broad apical pore, shape in face view ovate to elliptic, in profile somewhat inequilateral to obscurely so, as revived in KOH the mature spores chocolate-brown.

Basidia 4-spored, 18–20 × 8.5–10 μ, hyaline in KOH. Pleurocystidia and cheilocystidia similar and abundant, fusoid-ventricose with obtuse to rounded apex, 26–40 × 9–15 μ, wall thin, smooth and hyaline, cell content not distinctive. Caulocystidia not studied.

Gill trama regular, hyaline to yellowish in KOH (not distinctive). Pileus trama brownish, the cuticle of vesiculose cells one cell deep, wall hyaline or ochraceous to tan only at base, content not distinctive.

Type locality. New York Botanical Garden, New York.

Habit and habitat. In sandy soil in mixed wood, gregarious to clustered.

Distribution. New York (type examined).

Observations. The spores are more inequilateral in profile view than usual for this genus and it is on this feature mainly that the species has been recognized. Because of the partial sterility it is doubtful in this case as to whether the type represents a normally reproducing population.

271. *Psathyrella laeta* A. H. Smith, sp. nov.

Pileus 2–4 cm latus late campanulatus vel convexus, glaber, fusco-cinnamomeo-brunneus, nitens; lamellae angustae confertae sordide cinnamomeae demum fusco-brunneae dein fusco-vinaceo-brunneae; stipes 4–6 cm longus, 3–5 mm crassus, albidus sursum pruinosus; velum nullum; sporae 9–12 × 5–6 μ; pleurocystidia 34–48 × 12–17 μ, fusoido-ventricosa, obtusa vel rotundata; fibulae adsunt. Typus. Smith 43177 (MICH); legit prope Mackinaw City, Michigan.

Pileus 2–4 cm broad, obtusely conic expanding to broadly campanulate or
convex, surface glabrous, moist and hygrophanous, color dark russet to cinnamon-brown and shining when moist, dingy tan when faded and drying, dull cinnamon, margin incurved at first. Context thin, fragile, odorless.

Lamellae narrow, close, adnate seceding, dingy cinnamon when young, chocolate-brown mature and dark vinaceous-brown ("bone brown") in age, edges whitish.

Stipe 4–6 cm long, 3–5 mm thick, equal, fragile, white, naked (no veil present), apex faintly pruinose.

Spores 9–12×5–6 μ, smooth, apical pore distinct and apex truncate, shape in face view oblong to broadly elliptic or ovate, in profile elliptic to obscurely inequilateral, color in KOH dark cocoa-color slowly becoming chocolate-brown, in Melzer's reddish tawny, wall about 0.4 μ thick.

Basidia 4-spored, clavate, 18–25×7–9 μ, hyaline in KOH. Pleurocystidia scattered, 34–48×12–17 μ, fusoid-ventricose with broadly rounded to obtuse apex, neck 8–10 μ thick, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia clavate to broadly and obtusely fusoid, 10–18 μ wide, thin-walled, hyaline. Pileus cuticle a layer of vesiculose cells 2–3 deep, walls yellowish to hyaline and thin. Hyphae of the context strongly vinaceous and heavily incrusted with pigment. Clamp connections present.

Type locality. Wilderness Park, Emmet County, Michigan.

Habit and habitat. Gregarious on burned soil (where a brush pile had been burned), September.

Distribution. Known only from the type locality.

Observations. The diagnostic features of this species are the medium large cocoa-colored spores, the habitat, lack of a veil, shining white stipe and shining pileus when wet.

272. Psathyrella ramicola A. H. Smith, sp. nov.

Pileus 1–2 cm latus campanulatus vel convexus, demum distincte atomatus, avellaneus; lamellae conflatae latae brunneolae demum cinnamome-brunneae; stipes 3–5 cm longus, 1–1.5 mm crassus, pallidus sursum pruinatus, deorsum sparse fibrillosus, glabrescens, demum sordide brunneus; sporae 9–12×5.5–6.6 μ; pleurocystidia (48–)55–72×8–12 (14) μ, fusoid ventricosa, subcapitata; fibulae adsunt. Typus. Smith 23922 (MICH); legit prope Cherryville, Oregon.


Pileus 1–2 cm broad, obtusely conic becoming obtusely campanulate to convex, all pilei faded and coarsely atomate when collected, color near "avellaneus," surface checking circumferentially, margin slightly uneven and with a few fibrillose veil remnants on the smallest pilei. Context very thin and fragile, pallid when faded, odor none, taste not distinctive.

Lamellae close, broad, pallid brownish becoming cinnamon-brown, broadly adnate, edges white and floccose.

Stipe 3–5 cm long, 1–1.5 mm thick, equal, hollow, fragile, pallid and pruinose over upper half, lower portion pruinose or with a few appressed fibrils and becoming dingy brown on aging.

Spores 9–12×5.5–6.6 μ, smooth, apex somewhat truncate from a distinct apical pore, shape in face view very broadly elliptic, in profile broadly elliptic to obscurely inequilateral, color dark dull reddish brown in water mounts when fresh, dingy date brown when first revived in KOH but slowly becoming chocolate-brown, in Melzer's pale tawny, wall less than 0.5 μ thick.
Basidia 4-spored, 22–26 × 9–12 μ, clavate, hyaline in KOH. Pleurocystidia abundant to scattered, (48–)55–72 × 8–12 (–14) μ, when fresh often with a mucilage-cap, typically fusoid-ventricose but the apex rounded and slightly wider than the neck, hyaline, smooth, in KOH some with refractive particles in the interior. Cheilocystidia shorter than the pleurocystidia but of the same type. Caulocystidia versiform (Fig. 581).

Gill trama hyaline in water mounts of fresh material and only slightly brownish revived in KOH. Pileus trama sordid yellowish brown in KOH but fading on standing; pileus cuticle of vesiculose cells 2–3 μ thick and yellowish as revived in KOH. Clamp connections present. No distinctive reactions observed on tissues mounted in Melzer’s.

Type locality. Cherryville, Oregon.

Habit and habitat. Gregarious on small branches of alder slash, October.

Distribution. Known only from the type locality.

Observations. The very broadly elliptic spores, the mucilaginous cap on many cystidia in the fresh condition, the versiform caulocystidia, (many of which have finger-like prolongations), and the discolorations over the lower part of the stipe appear to be distinctive.

273. Psathyrella subpalustris A. H. Smith, sp. nov.

Pileus 8–15 (–20) mm. latus, conicus, sparse griseo-fibrillosus, fusco-cinamomeobrunneus; lamellae confertae, latae brunneolae demum griseo-brunneae; stipes 3–6 cm longus, 1–2.5 mm crassus, pallidae demum brunneae; velum sparsum; sporae 9–11 × 5–6 (12–13 × 5–6) μ; pleurocystidia 32–44 × 10–14 μ, fusoid-ventricosa obtusa vel rotundata; fibulae adsunt. Typus. Smith 21412 (MICH); legit prope Pinckney, Michigan.

Illustr. Text Figs. 582–584.

Pileus 8–15 (–20) mm broad, obtusely conic to convex, the margin slightly incurved, expanding to broadly convex or nearly plane, surface at first covered with a thin coating of grayish fibrils over marginal area, soon glabrescent, moist and hygrophanous, “Mars brown” to “cinnamon-brown,” hygrophanous and fading to near wood brown or avellaneous and closest to wood brown when dried, margin faintly striatulate when moist. Context thin and fragile, odor none, taste not distinctive.

Lamellae close, moderately broad, adnate but readily seceding, pallid brownish young, becoming somewhat darker than “wood brown” at maturity (dark grayish brown).

Stipe 3–6 cm long, 1–2.5 mm thick, hollow, very fragile, equal, pallid, becoming brownish in age, slightly fibrillose at least over lower part from the remains of the veil, glabrescent.

Spores 9–11 × 5–6 μ (a few 12–13 × 5–6 μ), smooth, apex truncate from a wide apical pore, shape in face view broadly elliptic to merely elliptic, in profile elliptic to obscurely inequilateral, in KOH cocoa-color and remaining so for a long time, finally clouded with chocolate-gray, in Melzer’s clear tawny, wall about 1 μ thick.

Basidia 4-spored 17–22 × 9–11 μ, scarcely narrowed downward (6–8 μ at base in many). Pleurocystidia scattered, 32–44 × 10–14 μ, fusoid-ventricose with obtuse to rounded apex, wall hyaline, thin and smooth, content of cells in KOH or Melzer’s not distinctive. Cheilocystidia abundant, similar to the pleurocystidia or saccate to clavate and 22–46 × 10–16 μ, the pedicel with slightly thickened
yellowish walls in KOH. Caulocystidia subcylindric to fusoid-ventricose with obtuse apex, variable in size.

Gill trama hyaline to yellowish in KOH, of enlarged cells. Pileus trama of hyphae with bister walls in KOH, slowly becoming paler yellowish brown on standing; cuticle of pileus a layer one cell deep of voluminous (30–50 μ wide) hyaline vesiculose cells. Clamp connections present.

Type locality. Pinckney Recreation Area, Washtenaw County, Michigan.

Habit and habitat. Scattered on debris among sedges near edge of a bog.


Observations. The cocoa-colored spores revived in KOH, the thin grayish veil, the pleurocystidia intermediate between broadly rounded and obtuse, the vernal fruiting period (May), and the pileus cuticle only one cell deep are distinctive.

Material examined. Michigan: Smith 21412 (Type), 32174.

274. Psathyrella lithocarpi A. H. Smith, sp. nov.

Pileus 2–4 cm latus, convexus vel campanulatus, corrugatus, pallide inearnato-cinnamomeus; lamellae confertae vel subdistantes, angustae, pallidae demum fuscae; stipes 5–9 cm longus, 2–4 mm crassus, albidus, fibrillosus demum glaber; velum nullum; sporae 9–12 × 5–6.5 μ; pleurocystidia 35–50 × 10–15 μ, late fusoido-ventricosa, ad apicerum rotundata; fibulae adsunt. Typus. Thiers 11801 (MICH); legit prope Lake Chaleuma, California.

Pileus 2–4 cm broad, conic when young becoming broadly conic to (finally) campanulate to broadly convex, surface glabrous, moist and hygrophanous, conspicuously corrugated, no veil fibrils in evidence anywhere; color pale buff to pale pinkish cinnamon fading to pale pinkish buff or whitish. Context very thin and fragile, taste and odor not distinctive.

Lamellae ascending-adnate, close to subdistant, narrow, whitish when young, darkening to pale fuscous with whitish margins.

Stipe 5–9 cm long, 2–4 mm thick, equal, white and unchanging, long, slender, surface appressed fibrillose to glabrous, stuffed becoming hollow; veil absent.

Spores 9–12 × 5–6.5 μ, smooth, apex truncate from a broad apical pore, shape in face view ovate, in profile somewhat to obscurely inequilateral, color in KOH dark chocolate, in Melzer’s bay-red, wall about 0.5 μ thick.

Basidia 4-spored, clavate, 18–22 × 8–10 μ. Pleurocystidia 35–50 × 10–15 μ, rare to scattered, broadly fusoid-ventricose with rounded apex, wall smooth, thin and hyaline, cell content not distinctive. Cheilocystidia similar to pleurocystidia.

Gill trama regular, hyphal walls smooth and weakly brownish in KOH. Pileus trama not distinctively colored in KOH, hyphal walls smooth. Cuticle of pileus a layer 3–5 cells deep, their walls smooth and thin. Clamps present.

Type locality. Lake Chaleuma, Santa Barbara County, California.

Habit and habitat. Gregarious near decomposed oak logs, November.

Distribution. California.

Observations. The dried basidiocarps remind one of slender pale specimens of P. candolleana. The medium large spores, broadly rounded pleurocystidia, pale color and lack of a veil are distinctive. Brachybasidioles appear to be present in age but do not revive well.

Section Psathyrella

Subsection Mesospora A. H. Smith, subsect. nov.

Sporae 9–12.5 μ longae; pleurocystidia acuta vel obtusa.

Typus. Psathyrella acutoconica.
Key to the Species of Subsection *Mesosporae*

1. Pileus sharply conic; veil rudimentary; pigment incrusting the hyphae of the subcuticular region of the pileus; growing gregarious on chip-dirt. 275. *P. acutoconica.*

1. Pileus obtuse when young.

2. Growing on tundra-like areas above tree line; subcuticular hyphae heavily pigmented. 276. *P. rainierensis.*

2. Not as above.


3. Spore apex not or only indistinctly truncate.

4. Pileus silky; lamellae bluish gray when mature. 278. *P. S1lbsericea.*

4. Not as above.

5. Spores (on 4-spored basidia) 9-12 × 7-9 μ; on clay soil in Cuba (see 315. *P. ammophila* also). 279. *P. cubensis.*

5. Spores narrower than in above choice.

6. Ligniculus; growing on beech wood. 280. *P. fagetorum.*

6. Growing on debris, mosses or soil.

7. Pileus pinkish on margin when faded; pleurocystidia 36-48 × 10-16 μ (if pleurocystidia up to 85 μ long see *P. superiorensis*, also see *P. duplicata*). 281. *P. orbitarum.*

7. Not with above combination of features.

8. Brachybasidioles present in mature hymenium.

8. Not as above.

9. Veil lacking; stipe 3-3.5 mm thick. 282. *P. pseudofulvescens.*


10. Lamellae dark vinaceous-brown at maturity; caulocystidia with flexuous refractive walls.

10. Lamellae near “benzo brown” (violaceous-drab) at maturity.

11. Stipe rather stiff-cartilaginous, 1-1.5 mm thick, watery white and unchanging (see 405. *P. nimkeae* also). 284. *P. duplicata.*


12. Many pleurocystidia with 2-3 finger-like extensions near apex; growing on black mulch in *Thuja* swamps. 286. *P. thujina.*

12. Not as above.

13. Stipe about 1 mm or less thick; transverse septa of hyphae of cortex of the stipe highly colored in KOH. 287. *P. pseudofulvescens.*

13. Not as above.

14. Pleurocystidia mostly under 60 μ long; spores 8-11 × 5-6.5 μ; pileus chestnut brown moist. 288. *P. clivensis.*

14. Not as above.

15. Pileus cuticle an hymeniform layer of pear-shaped cells. 289. *P. subhepatica.*

15. Pileus cuticle a cellular layer 2-3 cells deep (see 414. *P. velatipes* also).


275. *Psathyrella acutoconica* A. H. Smith, sp. nov.

Pileus 8-15 mm latus, acute conicus, fusco-cinnamomeo-brunneus glaber; lamellae conferatae, latae, brunneolae demum fusco-violaceae; stipes 3-5 cm longus, circa 1 mm crassus, pallidus, deorsum demum brunneus; sporae 10-12.5 × 5-6.5 μ; pleurocystidia 34-50 × 9-16 μ, ventricosa, rostrata, vel fusoidocorticosa, acuta; fibulae adsunt. Typus. Smith 27275 (MICH); legit prope Dexter, Michigan.

Illust. Text Figs. 585-587.

Pileus 8-15 mm broad, sharply conic, expanding to conic-campanulate, surface glabrous, moist, hygrophanous, “Mars brown” when fresh, fading to near cinnamon-buff or pinkish buff, in old caps nearer avellaneous when faded or
dried, veil rudimentary and all traces along the margin soon vanishing. Context thin fragile, rusty brown moist, cinnamon-buff faded, odor none, taste not recorded.

Lamellae moderately close, ascending-adnate but broadly attached, broad, brownish when young, becoming near “benzo brown” (fuscous-violaceous) at maturity or retaining a more reddish tinge; edges even, pallid not pinkish in age.

Stipe 3–5 cm long, about 1 mm thick, equal, fragile, tubular, pallid at first but in age brownish over the lower portion though not discoloring markedly.

Spores 10–12.5×5–6.5 μ, smooth, apical pore present and apex appearing somewhat truncate, shape in face view elliptic to ovate, in profile obscurely inequilateral to elliptic, color in KOH soon dark chocolate-color, in Melzer’s tawny reddish, wall about 1 μ thick (revived in KOH).

Basidia 4-spored, 22–27×9–14 μ, clavate, hyaline in KOH. Pleurocystidia 34–50×9–16 μ, ventricose-rostrate to fusoid-ventricose, the neck narrow (2–3 μ) and the apex very acute, wall hyaline, smooth and thin, cell content not distinctive in KOH or Melzer’s. Cheilocystidia similar to pleurocystidia along with vesiculose cells, hyaline to yellowish as revived in KOH. Caulocystidia versiform: vesiculose-pedicellate and up to 30 μ broad; clavate to ovate or elliptic (in optical section) and up to 100×25 μ; fusoid-ventricose with obtuse to rounded apex and 36–60×9–16 μ; or resembling the pleurocystidia, all types thin-walled, smooth and hyaline, lacking any distinctive content.

Gill tram a vinaceous-brown as revived in KOH but gradually fading to cocacinnamon, pigment in the wall. Pileus tram a dark vinaceous-brown becoming dark cocoa-color, the pigment in the wall or encrusted on it in patches or zones giving sections a spotted appearance. Cuticle of pileus a staggered series of clavate-pedicellate cells and vesiculose cells in somewhat of a palisade, the pedicels of the cells often with colored walls in KOH. Clamps present. No distinctive reactions noted on any tissue in Melzer’s.

Type locality. Dexter, Michigan.

Habit and habitat. Gregarious on chip-dirt.


Observations. The distinguishing features of this species are the medium large very dark colored spores, sharply conic pileus, deep pigmentation of the hyphae of the subcuticular region in the pileus, the very pointed pleurocystidia with their narrow necks, and the tremendously variable caulocystidia along with at most a rudimentary veil.

276. Psathyrella rainierensis A. H. Smith, sp. nov.

Pileus 5–10 mm latus, convexus, glaber, lubricus, ad marginem minute floecosus glabrescens, castaneus; contextu fuso-brunnneus; lamellae latae, subdistantes brunneoiae demum atro-brunnneae; stipes 10–15 mm longus, circa 1 mm crassus, pallide cinnamomeus; sparse fibrillosus; sporae 9–11(-12.5)×5–6.5 μ; pleurocystidia 28–37×(9–)10–15 μ, late fusioideo-ventricosa, obtusa vel subacuta; fibulae adsunt. Typus. Smith 30929 (MICH); legit prope Van Trump Park, Mt. Rainier National Park, Washington.

Illust. Text Fig. 588.

Pileus 5–10 mm broad, convex, expanding to broadly convex, glabrous and lubricous, with minute flecks of fibrils along the margin from the thin whitish veil, moist and hygrophanous, “chestnut” to “russet” (dark rich rusty brown) when moist, fading finally to near “cinnamon-buff” (pale tan) before the
chocolate-gray cast of old age develops. Context fragile, thin, dark brown fading to cinnamon-buff or more cinnamon, odor and taste none.

Lamellae broad, horizontal, subdistant, broadly adnate, cinnamon-buff becoming deep chocolate-color (almost black), edges whitish.

Stipe 10–15 mm long, about 1 mm thick, equal, hollow, pale tan when young, becoming whitish above, with scattered fibrils from the thin veil.

Spores 9–11 (–12.5) × 5–6.5 μ, smooth, apical pore present but apex not truncate, shape in face view ovate to (rarely) elliptic, in profile somewhat inequilateral to obscurely so or (rarely) obscurely bean-shaped, color in KOH dark cocoa-color when first revived in KOH, slowly becoming dark chocolate-color, in Melzer's tawny (not with a strong red component showing), wall about 0.6 μ thick.

Basidia 4-spored, 19–23 × 9–10 μ, short-clavate, hyaline in KOH. Pleurocystidia 28–37 × (9–)10–15 μ, broadly fusoid-ventricose with a short usually narrow neck and obtuse to subacute apex, smooth, hyaline in KOH, rarely with a mucilaginous coating dried down on some part of the surface, content not distinctive. Cheilocystidia 22–37 × 10–18 μ, ventricose-mucronate, clavate, or vesiculose, thin-walled, abundant, wall at base yellowish in KOH on some. Caulocystidia not studied.

Gill trama with an obscure cinnamon tinge when first revived in KOH but this soon fading. Pileus trama rusty yellowish in water mounts of fresh material, pigment incrusted on the hyphae, cinnamon-brown as revived in KOH or in the region of the subcutis darker russet. Cuticle of pileus an irregular palisade of clavate pedicellate cells, these with rusty yellow bases in mounts in water when fresh, and nearly russet revived in KOH, remainder of wall yellowish in KOH. Clamp connections present. No distinctive reactions noted on any tissue in Melzer's.

Type locality. Van Trump Park, elev. 6,000 ft., Mt. Rainier, Washington.

Habit and habitat. Gregarious among lichens.


Observations. The basidiocarps have about the stature of those of *Psilocybe atrorufa*. The heavy pigmentation of the subcuticular hyphae, the somewhat inequilateral spores in profile view, the short but broad pleurocystidia and the broad horizontal subdistant gills along with the stature distinguish it.

277. *Psathyrella subsericea* A. H. Smith, sp. nov.

Pileus 1–2 cm latus, convexus, pallidus, sericeus non-hygrophanus; lamellae latae, confertae griseae vel fusco-griseae; stipes 2–4 cm longus, 2–4 mm crassus, albidus, nitens, sursum pruinosus, deorsum glaber; sporae 9–12 × 4.5–6.5 μ; pleurocystidia 30–52 × 14 μ, subfusoidae vel fusoidae ventricose, interdum flexuosa, acuta vel obtusa; fibulae adsunt. Typus. Hesler 15919 (MICH); legit Knoxville, Tennessee.

Pileus 1–2 cm broad, convex, dry, pallid, disc tinged tawny, not hygrophanous, appearing glabrous but silky under a lens, not atomate, margin striate. Context thin, fragile, odor and taste mild.

Lamellae rounded-adnate, broad, ventricose, close, "light mouse gray" to "mouse gray," edges fimbriate.

Stipe 2–4 cm long, 2–4 mm thick, white and shining, apex pruinose, elsewhere glabrous, hollow, dry, tapering downward or equal.

Spores 9–12 × 4.5–6.5 μ, smooth, apical pore distinct and apex often distinctly
appearing truncate, shape in face view ovate (at times with a snout-like apical third) to elliptic, in profile somewhat inequilateral to obscurely so, color in KOH dark chocolate-color, in Melzer’s reddish tawny, wall about 0.7–1 μ thick.

Basidia 4-spored, 22–28×8–11 μ, hyaline, clavate. Pleurocystidia scattered 30–52×9–14 μ, subfusoid to fusoid-ventricose, wall of neck at times flexuous, apex subacute to obtuse, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia similar to pleurocystidia. Caulocystidia fairly numerous, resembling the cheilocystidia.

Gill trama of enlarged hyphal cells up to 18 μ wide, perfectly hyaline in KOH. Pileus having a cuticle of inflated cells 2–3 deep, the cells 10–25 μ wide, walls thin, smooth and hyaline, cell content not distinctive in either KOH or Melzer’s. Hyphae of pileus context perfectly hyaline in KOH. Scattered hyphae 8–10 μ wide scattered over the surface of the cuticle. Clamps present.

Type locality. Knoxville, Tennessee.
Habit and habitat. Scattered in a lawn.
Distribution. Tennessee.

Observations. The spores with their tendency to taper to a snout-like apical projection as in the typical species of *Lacrymaria*, their dark color in KOH, the bluish-gray tones of the gills, and the silky pileus are distinctive. The species is not closely related to members of subgenus *Pannucia*.


Ilust. Text Fig. 589.

Pileus 1–1.5 cm broad, campanulate to expanded, sometimes upturned at the margin with age, surface glabrous, hygrophanous, sometimes rugose, reddish brown to pale rosy isabelline; margin concolorous, striate becoming irregular or fluted. Context thin and fragile.

Lamellae adnate to adnexed, broad, ventricose, rather crowded at first, pallid, becoming dark purplish brown or almost black.

Stipe 3–5 cm long, 1 mm thick, filiform, glabrous, smooth, white and farinaceous at the apex, reddish below.

Spores 9–12 (11–14) × 7–9 (9–11) μ, smooth, apical pore distinct and apex narrowly truncate, shape in face view broadly ovate to broadly elliptic or (rarely subglobose), in profile broadly elliptic to subovate, more rarely obscurely inequilateral, color in KOH dark date brown slowly becoming dark chocolate, in Melzer’s dull tawny-red, wall up to 1.5 μ thick.

Basidia 2- and 4-spored, 18–24×12–16 μ, clavate, hyaline in KOH. Brachybasidioles present. Pleurocystidia rare, 34–46×10–18 μ, fusoid-ventricose, apex obtuse, scattered, thin-walled, smooth, hyaline, readily collapsing. Caulocystidia not found.

Pileus cuticle a layer of thin-walled vesiculose cells lacking distinctive content and 1–2 cells deep. Pileus trama merely dingy ochraceous in KOH. Clamps present.

Type locality. Santiago de las Vegas, Cuba.
Habit and habitat. On clay soil in a banana field, June.
Distribution. Cuba.

Observations. There are many hyaline spores in mounts of the hymenium, but the shocking experience was to find more hyaline spores deposited on the apex of the stipe than dark brown ones. This would seem to indicate partial albinism in the basidiocarp or that the genetic control of spore color was somehow breaking down.


279. *Psathyrella fagetorum* A. H. Smith, sp. nov.

Pileus 1–2 cm latus, 1.5 cm altus, conicus vel campanulatus, ad marginem sparse fibrillosus glabrescens, alutaceus; contextu alutaceus; lamellae conflatae latae, bruneoalae demum violaceo-brunneae; stipes 2–3 cm longus, 1.5–2.5 mm crassus; deorsum mellebrunneus, fibrillosus glabrescens; sporae 8–10(–11) × 4.5–6 μ; pleurocystidia 38–47(–55) × 10–16 μ, fusoid-ventricosa vel late fusoidea, obtusa; fibulae adsunt. Typus. Smith 78117 (MICH); legit Tahquamenon Falls State Park, Luce County, Michigan.

Pileus 1–2 cm broad at base and 1.5 cm high, obtusely conic, expanding to campanulate, at first with a few scattered fibrils over marginal area and the edge with a delicate fringe, soon completely glabrescent, when moist dull tawny on the disc and paler (pale tan) on the margin, translucent striate moist, as spores mature the marginal area becoming pale chocolate-gray (near wood brown). Context thin, fragile, concolorous with pileus, odor and taste not distinctive, with FeSO₄ no color change.

Lamellae close, broad, adnate, pinkish buff (pale watery tan), becoming "cinnamon-drub" (violaceous-brown with only a faint cinnamon tint).

Stipe 2–3 cm long, 1.5–2.5 mm thick, equal, hollow, fragile, dull honey brown over basal third beneath the white fibrils of the veil, pallid above.

Spores 8–10(–11) × 4.5–6 μ, smooth, apical pore well-defined as a hyaline lens-shaped cap, in face view the spore oblong to elliptic or weakly ovate, in profile subelliptic to obscurely inequilateral, color in KOH dark bister at first, slowly dark chocolate color, in Melzer's dark reddish tawny, wall about 0.4 μ thick.

Basidia 18–24 × 7–9 μ, 4-spored, hyaline, clavate. Pleurocystidia 38–47(–55) × 10–16 μ, fusoid-ventricose with obtuse apex varying to broadly and obtusely fusoid, wall thin and smooth, hyaline or weakly yellowish in the ventricose part, content not distinctive. Cheilocystidia resembling the pleurocystidia, rarely are clavate to vesiculose cells present. Caulocystidia mostly clavate and extremely variable in size, thin-walled, a few utriform to subvesiculose cells present with slightly thickened yellowish walls in KOH.

Pileus cuticle a layer of vesiculose cells 2–3 deep, the walls thin, smooth, hyaline to pale ochraceous-cinnamon in KOH, cell content not distinctive. Hyphae of trama including a subcuticular zone vinaceous-cinnamon in KOH as is the gill trama also, walls smooth or minutely roughened. No distinctive reaction on any tissue in Melzer's. Clamps present.

Type locality. Tahquamenon Falls State Park, Luce County, Michigan.

Habit and habitat. Scattered on a mossy beech log.


Observations. The spores are too large for either *P. obtusata* or *P. fulvescens* and the veil is too thin for subgenus *Pannucia*.


Pileus 5–15 mm broad, obtusely conic to convex, becoming broadly convex to nearly plane, surface glabrous, moist, hygrophanous, atomate when faded, at first dingy ochraceous-tawny on the disc, dingy cinnamon-brown near the margin,
becoming dull dark avellaneous to chocolate-brown, fading to buff ("pinkish buff") and soon tinged pinkish at least along the margin, conspicuously translucent-striate when fresh, opaque when faded and then usually sulcate along the margin and somewhat rugulose. Context very thin and fragile, pallid, odor and taste not distinctive.

Lamellae broad, adnate, subdistant, pallid becoming blackish, edges white at first but pink in age.

Stipe 3–5 cm long, 1–1.5 mm thick, equal, very delicate and fragile, white and translucent, finally sordid in age, glabrous, apex faintly pruinose at first.

Spores 10–13 × 5–6.5 μ, smooth, apex truncate from a broad apical pore, shape in face view oblong to elliptic, in profile obscurely inequilateral, color in KOH dark brown but gradually darkening to blackish brown, in Melzer's tawny or slightly redder, wall about 1/10 thick.

Basidia 4-spored, 9–12 μ wide, clavate, hyaline in KOH. Pleurocystidia 36–48 × 10–16 μ, fusoid-ventricose with acute apex, hyaline, thin-walled, smooth, content not distinctive in KOH or in Melzer’s. Cheilocystidia either similar to pleurocystidia or cylindric to clavate or saccate and then 12–20 × 6–18 μ, the pedicels and the smaller cells usually with yellowish walls as revived in KOH. Caulocystidia scattered and resembling the cheilocystidia except for being hyaline in KOH.

Gill trama regular, pale cinnamon-brown to nearly hyaline in KOH (fading on standing and paler in old basidiocarps). Pileus trama pale cinnamon-brown to pallid, in the subcuticular region the walls roughened at least on some of the narrower hyphae. Cuticle of the pileus a layer of vesiculose cells irregularly one cell deep and not arranged in a distinct palisade. Clamps present. No distinctive reactions noted for any tissue as revived in Melzer’s.

Type locality. France.

Habit and habitat. Scattered to gregarious on wet earth in shady places.


Observations. American material has not been subjected to a detailed comparison with authentic European specimens, but there is nothing in the original description which would exclude my specimens from being placed in this species. Romagnesi mentioned 2-spored basidiocarps whereas ours were 4-spored, but this situation is to be expected in many species in the genus.


281. *Psathyrella pseudolongipes* A. H. Smith, sp. nov.

Pileus 3–4.5 cm latus, conicus, subspadiceus, glaber; lamellae confertae, angustae, griseo-brunneae demum atro-brunneae; stipes 9–10.5 cm longus, 3–3.5 mm crassus, fragilissimus, dilliens, albidus, sursum pruinosis; velum nullum; spores 10–12.5 × 4.5–6 μ; pleurocystidia 42–68 × 9–18 μ, fusoido-ventricosa obtusa; fibusae adsunt. Typus. Smith 16611 (MICH); legit prope Baker Lake, Mt. Baker, Washington.

Illust. Text Figs. 599, 600.

Pileus 3–4.5 cm broad, obtusely conic and not expanding, surface glabrous, hygrophanous, "buckthorn brown" moist, pallid ("tilleul buff") except for the yellowish disc when faded. Context thin, concolorous with the surface, extremely fragile, no distinctive odor or taste present.
Lamellae close, narrow, ascending-adnate, two tiers of lamellulae, dull brownish becoming dark grayish brown ("hair brown") and blackish brown as dried, edges whitish.

Stipe long and flexuous, 9–10.5 cm long, 3–3.5 mm thick at apex, up to 4.5–5 mm near the base, hollow and very fragile, readily splitting lengthwise, surface white, apex pruinose, base slightly fibrillose; veil lacking.

Spores 10–12.5 × 4.5–6 μ, smooth, apical pore distinct and apex of spore truncate, shape in face view ovate varying (less commonly) to elliptic, in profile subovate to obscurely to somewhat inequilateral, color in KOH very dark cocoa-brown at first, becoming a medium chocolate-brown, in Melzer's dark reddish brown to tawny, wall about 0.3 μ thick.

Basidia 4-spored (16–) 18–24 × 8–12 μ, subglobose above a short broad pedicel or merely clavate (when sporulating). Brachybasidioles vesiculose. Pleurocystidia scattered to abundant, 42–68 × 9–18 μ, fusoid-ventricose with obtuse apex, some pedicellate-elliptic in optical section and about 20 μ broad, wall thin to slightly thickened (≈0.5 μ) but highly refractive, hyaline, cell content not distinctive. Chellocystidia very abundant 32–44 × 9–14 μ, fusoid-ventricose, the apex obtuse, smaller than the pleurocystidia, hyaline, thin-walled, content not distinctive.

Gill trama regular, the hyphae more or less parallel, pale chocolate-brown in KOH at first but soon fading to dingy brown to dull pale yellow-brown, finally nearly hyaline. Pileus trama of interwoven hyphae at first cocoa-colored in KOH but gradually fading to dingy brown; walls smooth or practically so. Cuticle of pileus of vesiculose cells one cell deep, the walls thin and hyaline in KOH. Clamps present.


Habit and habitat. On a meadow in a campground.


Observations. The pallid pileus, medium-large spores, highly refractive pleurocystidial walls and dark grayish brown gills at maturity are distinctive. It is close to P. elwhaensis but differs in features of the veil and pleurocystidia.

282. Psathyrella roothaanensis A. H. Smith, sp. nov.

Pileus 1–3 cm latus, conicus vel convexus, ad marginem fibrillosus, glabrescens, cinnamomeus vel cinnamomeo-brunneus; lamellae cinnamomea demum fulvae vel fumoso-fulvae; subdistantes, latae; stipes 4–12 cm longus, 1.5–2.5 mm crassus, fragilissimus, fibrillosus glabrescentes, pallidus; sporae 8–11 (–12) × 5–6 μ; pleurocystidia (34–) 40–60 × 9–16 μ, fusoid ventricosa, acuta; fibulae adsunt. Typus. Smith 73753 (MICH); legit prope Upper Priest River, Idaho.

Illustr. Pl. 77, fig. b; Text Figs. 601–603.

Pileus 1–3 cm broad, obtusely conic to convex, expanding to broadly conic to broadly convex, surface at first with more or less of a zone of white fibrils near the margin and some fibrils over the disc, very soon glabrescent, hygrophanous, dark cinnamon-brown on the disc, grayish cinnamon-brown over the striate margin, striate becoming subsulcate as pileus fades. Context very thin and fragile, odor and taste not distinctive.

Lamellae dull cinnamon-brown becoming pale russet, finally grayish chocolate color, broadly adnate, seceding, subdistant to close, narrow to moderately broad, edges even.

Stipe 4–12 cm long, 1.5–2.5 mm thick, equal, tubular, exceedingly fragile, pallid
and with a thin coating of superficial fibrils from the veil, glabrescent, pruinose above, not discoloring over lower portion.

Spore deposit black. Spores 8–11 (–12) × 5–6 μ, smooth, with a distinct hyaline lens-shaped apical pore, shape in face view elliptic to slightly ovate, in profile subelliptic, color in KOH dark bister but becoming chocolate-black in KOH, in Melzer’s reddish tawny, wall 0.6–0.8 μ thick.

Basidia 20–25 × 8–10 μ, 4-spored, clavate, hyaline in KOH. Brachybasidioles present. Pleurocystidia scattered (34–) 40–60 × 9–16 μ, fusoid-ventricose and with narrow neck and acute to subacute apex, hyaline in KOH, smooth, thin-walled, content not distinctive in KOH or Melzer’s. Cheilocystidia similar to pleurocystidia but usually shorter and varying to broadly fusoid; clavate to vesiculose cells also present and these with yellow walls in KOH at times. Caulocystidia similar to pleurocystidia but larger or vesiculose to versiform—various shapes and up to 18 μ broad.

Cuticle of pileus of vesiculose cells up to 30 μ wide, walls hyaline or nearly so and smooth, cell content not distinctive. Hyphae of trama vinaceous-brown in KOH and conspicuously incrusted. Clamps present. No distinctive reaction on any tissue when mounted in Melzer’s.

Type locality. Upper Priest River, Boundary County, Idaho.

Habit and habitat. Gregarious on moss in a swampy area.


Observations. This species features a cold wet habitat on mosses, a long slender stipe which is very fragile to go along with the habitat, practically black spores in deposit, a fibrillose pileus soon glabrescent, subacute to acute pleurocystidia and medium-sized spores with a broad lens-shaped pore apparatus at the apex. It is dedicated to Father Roothaan, who directed much of the early exploration of the Priest Lake Country in the fur trading days.

283. Psathyrella cheyennensis A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, conicus vel convexus, glaber, castaneus; lamellae confertae, latae, vinaceo-brunneae (in exsiccatis); stipes 3–6 cm longus, 1–2.5 mm crassus, glaber, deorsum sordide brunneus; velum sparsum; sporae 9–11 (–12) × 5–6.5 μ, pleurocystidia 46–60 × 10–14 μ, fusoid ventricosa, acute vel subcapitata; fibulae adsunt. Typus. Smith 34769 (MICH); legit prope Laramie, Wyoming.

Illust. Text Figs. 604–607.

Pileus 1–2.5 cm broad, obtuse, expanding to broadly conic or convex, surface glabrous and moist, dark reddish brown (near chestnut-brown) moist, near wood brown when faded, veil rudimentary and in buttons leaving a few fibrils scattered along the margin. Context thin and fragile, brown when moist, paler faded, odor not distinctive, taste not recorded.

Lamellae close, broad, adnate, near “Natal brown” (dark vinaceous-brown) when dried, edges pallid.

Stipe 3–6 cm long, 1–2.5 mm thick, equal, fragile, glabrous, or lower part at first faintly fibrillose from remnants of a thin veil, dingy brownish below in age.

Spores 9–11 (–12) × 5–6.5 μ, smooth, truncate (often obscurely) from an apical or oblique pore, shape in face view ovate to elliptic, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH dull cocoa-color slowly becoming chocolate-brown and finally dark chocolate, tawny in Melzer’s, wall about 0.6 μ thick.

Basidia 4-spored. Pleurocystidia 46–60 × 10–14 μ, fusoid-ventricose with nar-
rowed neck and subacute apex (or narrowly subcapitate), wall smooth, thin and hyaline, cell content not distinctive in KOH or in Melzer's. Cheilocystidia numerous, 25–46×6–12 (–15) μ, cylindric to fusoid-ventricose, mostly more or less fusoid but with flexuous hyaline sometimes somewhat refractive walls, content not distinctive.

Gill trama pallid to dingy cinnamon in KOH, pigment in or on the wall. Pileus trama rusty cinnamon revived in KOH, the hyphae of the subcuticular region rather heavily incrusted with pigment or with pigmented wall thickenings. Cuticle of pileus of inflated cells 1–2 deep, the walls yellowish to nearly hyaline in KOH except for the bases or pedicels which are pale fulvous. Clamps present. No distinctive reaction on any tissue when mounted in Melzer's.

Type locality. Pole Mountain, near Laramie, Wyoming.

Habit and habitat. Gregarious under aspen.

Distribution. Wyoming.

Observations. The flexuous caulocystidia, the heavy pigment incrustations on the subcuticular hyphae of the pileus, the medium-large spores, and very poorly developed veil appear distinctive.

284. Psathyrella duplicata A. H. Smith, sp. nov.

Pileus 1–3 cm latus, obtuse conicus vel campanulatus, glaber, fusco-cinnamomeus vel fumoso-fulvus, ad marginem demum incarnatus; lamellae subdistantes, lateae, (4 mm), “vinaceous buff” demum brunneo-viaceae, ad acerum demum incarnatae; stipes 3–6 (–8) cm longus, 1–1.5 mm crassus, glaber, pallidus; sporae 10–12.5×5–6.5 μ; pleurocystidia 38–52×10–15 μ; fusoid-ventricosa, acuta; fibulae adsunt. Typus. Smith 14162 (MICH); legit prope Lake Mills, Washington (Olympic National Park).

Illust. Pl. 79, fig. a; Text Figs. 608–610.

Pileus 1–3 cm broad, obtusely conic, becoming broadly campanulate or remaining unexpanded, margin appressed against the stipe at first, surface glabrous and either even or rugulose, when moist “russet” to “Prout’s brown” (dark rusty brown), hygrophanous and fading in streaks, becoming “vinaceous-buff” (pale pinkish tan) and in age tinged decidedly pinkish (“light russet-vinaceous”), margin striatulate when moist. Context very thin and fragile, equal, concolorous with surface, odor and taste mild.

Lamellae subdistant (17–20 reach the stipe), broad, about 4 mm, ascending-adnate, readily seceding, pale dull pinkish buff young (“vinaceous-buff”), sordid purplish brown (“benzo brown”) at maturity, edges whitish when young but often pinkish in age.

Stipe 3–6 (–8) cm long, 1–1.5 mm thick, equal, tubular, strict and cartilaginous (not fragile as in most species of Psathyrella), at times slightly undulating, base attached to leaves by a few strigose hairs, glabrous otherwise and translucent watery white; veil lacking or at times present (on small buttons) but rudimentary, when present composed of a thin layer of white silky fibrils.

Spores 10–12.5×5–6.5 μ, smooth, apical pore broad and apex distinctly truncate, shape in face view elliptie to ovate, in profile somewhat to obscurely inequilateral, more rarely subelliptie, color dark reddish brown in water mounts of fresh material, medium to dark date brown revived in KOH, in Melzer's reddish tawny, wall about 1 μ thick.

Basidia 4-spored, clavate, 24–28×10–13 μ. Pleurocystidia abundant, fusoid to fusoid-ventricose, apex acute to subacute, occasional cells clavate with 2–3
prongs, 38–52 × 10–15 μ, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia of two types, the first fusoid-ventricose, hyaline in KOH and thin-walled, with obtuse to subacute apex, 28–31 × 9–12 μ; the second clavate to ellipsoid and slightly yellowish in KOH, the wall very slightly thickened in some. Caulocystidia more or less resembling the pleurocystidia but variable in size.

Gill trama regular, of somewhat inflated cells, dull brown in KOH but fading. Pileus trama of floccose hyphae interwoven and pale to dark cinnamon-brown in KOH, fading on standing, pigment incrustations clearly evident on the hyphae of immature pilei. Cuticle of pileus formed by a layer of globose and often pedicellate cells one cell deep arranged in a rather loose palisade, the walls thin and in KOH yellowish to hyaline, cell content not distinctive. Clamp connections present.

Type locality. Lake Mills, Olympic National Park, Washington.

Habit and habitat. Gregarious on debris in an alder flat.


Observations. The distinctive features of this species are the practical absence of a veil, the cartilaginous stipe, the pink tints which develop in age on faded pilei, the loose palisade of cells forming the cuticle of the pileus, and the medium-large spores.


285. Psathyrella barlowiana A. H. Smith, sp. nov.

Pileus 10–15 mm latus, conicus, glaber, cinnamomeo-brunneus; lamellae brunneolae, demum brunneo-violaceaev, subdistantes, latae; stipes 4–7 cm longus, 1–2 mm crassus, pallidus; deorsum demum avellaneus; fibrillosus glabrescens; sporae 9–12 × 5–6.5 μ; pleurocystidia 46–62 × 6–12 μ, anguste fusoido-ventricosa; fibulae adsunt. Typus. Smith 24284 (MICH); legit prope Government Camp, Mt. Hood, Oregon.

Illust. Text Figs. 611–613.

Pileus 10–15 mm broad, obtusely conic and expanding merely to broadly conic, glabrous except for a thin fringe of fibrils along the margin which is soon evanescent, moist and hygrophanous “cinnamon-brown” when young and moist, becoming grayer as spores mature, translucent-striate at first, fading to near “cinnamon-buff,” atomate when faded. Context very thin and fragile, concolorous with surface, odor and taste not distinctive.

Lamellae dull brownish, then violaceous-drub (“benzo brown”), subdistant, 2 tiers of lamellulae, ascending but bluntly adnate, readily seceding, broad (3 mm), edges even but whitish.

Stipe 4–7 cm long, 1–2 mm thick, equal, tubular, fragile, whitish above, sordid avellaneus below, lower part decorated with numerous white fibrils from the remains of the thin partial veil, pruinose above.

Spores 9–12 × 5–6.5 μ, smooth, apex truncate from a distinct apical pore, shape in face view ovate to elliptic, in profile obscurely inequilateral to subelliptic, color in KOH medium chocolate-color but when first mounted dull cocoa-color, reddish fulvous in Melzer’s, wall about 0.6 μ thick.

Basidia 4-spored, 18–22 × 9–11 μ, clavate-subcapitate, hyaline in KOH. Pleurocystidia 46–62 × 6–12 μ, narrowly fusoid-ventricose, neck elongate and apex subacute, wall smooth, hyaline and thin, cell content not distinctive in KOH or Melzer’s. Cheilocystidia abundant, 20–38 × 6–10 μ, fusoid-ventricose to clavate,
a few vesiculose. Caulocystidia scattered, more or less similar to the pleurocystidia but usually smaller.

Gill trama of hyaline interwoven hyphae in water mounts of fresh material, slightly brownish as revived in KOH. Pileus trama faintly brownish in water mounts of fresh material and dingy yellowish brown (near “bister”) when revived in KOH, pigment incrustated on the hyphae at least in the subcuticular region. Cuticle of pileus a thin layer 1 cell thick of clavate-pedicellate cells mixed with vesiculose elements, the walls thin, smooth and hyaline, cell content not distinctive. Clamp connections present.

Type locality. On the old Barlow Trail, Mt. Hood, Oregon.

Habit and habitat. Gregarious on alder debris, October.

Distribution. Michigan, Oregon.

Observations. The veil is better developed than in *P. duplicata*, the pleurocystidia are distinctly narrower, and pink tints do not develop in age.


286. *Psathyrella thujina* A. H. Smith, sp. nov.

Pileus 1–2 cm latus, convexus vel campanulatus, glaber, cinnamomeo-brunneus; contextu in “FeSO₄” olivaceo-griseus; lamellae brunneolae demum sordide cinnamomeae, latae, confertae demum subdistantes; stipes 3–6 cm longus, 1–1.5 mm crassus, albus, deorsum brunneolus, glaber; velum nullum; sporae 9–12×5–6 μ; pleurocystidia 38–56×9–15 μ, fusideo-ventricosa, ad apicerum cum 2–3 processis; fibulae adsunt. Typus. Smith 66720 (MICH); legit prope Burt Lake, Michigan.

Illustr. Pl. 89, fig. a; Text Figs. 614–617.

Pileus 1–2 cm broad, obtusely conic, expanding to convex or broadly convex to campanulate, glabrous, moist and hygrophanous, cinnamon-brown fading to wood brown, faintly striatulate moist, opaque when faded, finally pale tan on the disc. Context very soft and fragile, pallid brownish, odor and taste mild, FeSO₄ causing a change slowly to olivaceous-gray.

Lamellae pallid brownish becoming near Verona brown (dull cinnamon), broad, close to subdistant, seceding, edges even.

Stipe 3–6 cm long, 1–1.5 mm thick, equal, white to whitish, base only slightly brownish, no appreciable number of fibrils present; no veil seen.

Spores 9–12×5–6 μ, smooth, apical pore evident, shape in profile subovate to elliptic, dark chocolate-color, in Melzer’s reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 9–11 μ wide at apex, clavate, hyaline. Pleurocystidia 38–56×9–15 μ, ventricose and with a short neck, in the majority the neck branched into 2–3 finger-like extensions which are obtuse at the apex, wall thin, smooth and hyaline, content not distinctive. Cheilocystidia vesiculose and up to 10 μ wide (rare) or clavate to subvesiculose-pedicellate and 32–40×8–16 μ (numerous), and a few resembling the pleurocystidia, all hyaline smooth and thin-walled. Caulocystidia scattered, resembling the cheilocystidia.

Pileus cuticle 1–2 cells deep, the cells vesiculose, 18–40 μ wide, yellowish to brownish in KOH, walls thin and smooth, cell content not distinctive. Subcuticular region vinaceous-brown in KOH and with incrustations on the wall or with local wall thickenings especially near the septa. Clamps present. No distinctive reactions on any tissue when revived in Melzer’s.

Type locality. North end of Burt Lake, Cheboygan County, Michigan.
Habit and habitat. Gregarious on black muck in a spring area.
Distribution. Known only from the type locality.

Observations. The dark medium-sized spores, branched pleurocystidia, occa­sional gigantic vesiculose cheilocystidia, habitat, dark brown pileus and thin veil are distinctive. Branched pleurocystidia are seen in many species of Psathyrella, especially in species with utriform pleurocystidia, but in the present species by far the majority of basidiocarps show this feature.

287. Psathyrella pseudofulvescens A. H. Smith, sp. nov.

Pileus 6–12 (–15) mm latus, convexus vel subplanus, glaber pallide fulvus; lamellae confertae, angustae, pallidae demum brunneo-griseae; stipes 2–3 cm longus, circa 1 mm crassus, glaber, deorsum melleibrunneus; sporae 9–12×5–6 μ; pleurocystidia 46–62×9–16 μ, fusoid ventricosa, acuta; fibulæ adsunt. Typus. Smith 30174 (MICH); legit prope Tahoma Creek, Mt. Rainier National Park, Washington.

Pileus 6–12 (–15) mm broad, obtusely conic expanding to convex or nearly plane, surface glabrous except for inconspicuous marginal fibrils, moist and hygrophanous, pale ochraceous-tawny fading to pale buff, translucent striate moist. Context very thin and fragile, odor and taste not recorded.

Lamellae close, narrow, ascending-adnate, pallid when young, near “hair brown” at maturity, drying with a cinnamon tinge, edges not becoming pink in faded pilei.

Stipe 2–3 cm long, 1 mm thick or less, equal, fragile, glabrous or at first only with scattered fibrils lower down, whitish at first, at maturity honey color over lower portion.

Spores 9–12×5–6 μ, smooth, apical pore distinct but not prominent, spore apex with a slight truncation, shape in face view broadly ovate to elliptic, in profile subovate to obscurely inequilateral varying to elliptic, color in KOH bister becoming paler and avellaneous with an ochraceous tinge, finally the darkest ones chocolate-color (many remaining pallid in KOH mounts), in Melzer’s ochraceous-tawny, wall about 0.3 μ thick.

Basidia 4-spored, 17–24×9–11 μ, broadly clavate, hyaline in KOH. Brachybasidioles present at maturity. Pleurocystidia scattered, 46–62×9–16 μ, fusoid-ventricose with a flexuous narrow neck ending in an acute to subacute apex, hyaline, thin-walled, smooth, content not distinctive. Cheilocystidia similar to but often smaller than the pleurocystidia but some saccate cells also present, hyaline in KOH. Caulocystidia ventricose at base with a long tapering to an equal flexuous neck, 50–80×8–12×3–5 μ, hyaline in KOH, wall smooth and thin. Hyphae of stipe cortex hyaline except near the septa where fulvous pigment deposits occur (as revived in KOH), the septa also fulvous in KOH in many instances.

Gill trama dingy brownish becoming hyaline in KOH. Pileus trama sordid tawny becoming hyaline, the walls with only inconspicuous pigment deposits; cuticle of pileus a layer of vesiculose cells more or less 1–2 cells deep, the cells hyaline or nearly so in KOH. Clamp connections present.

Type locality. Lower Tahoma Creek, Mt. Rainier National Park, Washington.

Habit and habitat. On debris under alder, vine-maple, etc.


Observations. This is one of the few species known to me at present in which
the pigmentation of the transverse septa of the stipe hyphae and the walls near the septa become more highly colored than those forming the subcuticular region of the pileus—and the pigment is more stable in KOH. This feature along with the pigmentation of the spores distinguishes the species from *P. fulvescens* to which it seems most closely related.


_Illust. Text Figs. 622–625._

_Pileus_ 1–2.5 cm broad, obtuse, expanding to broadly conic, surface moist and hygrophanous, rich chestnut-brown moist, dingy tan faded, glabrous except for thin fascicles of fibrils along the margin. Context very thin and fragile, no distinctive odor noted, taste not recorded.

_Lamellae_ close, adnate, moderately broad, dark vinaceous-brown as dried, edges whitish.

_Stipe_ 3–4 cm long, 2–2.5 mm thick, equal, pallid above, brownish below, fragile, at first with a few fibrils from the remains of the veil but soon glabrous.

_Spores_ 8–11 (12.5) × 5–6.5 μ, smooth, apical pore present but apex not distinctly truncate, shape in face view broadly elliptic to broadly but obscurely ovate, in profile elliptic to obscurely bean-shaped, color in KOH cocoa-brown but slowly becoming a medium chocolate-gray, in Melzer’s rusty brown (almost as in _Conocybe_), wall about 0.7 μ thick in KOH.

_Basidia_ 20–24 × 9–12 μ, clavate to elliptic (scarce any pedicel), hyaline in KOH. Brachybasidioles may be present at maturity (but will resemble mature basidia except for the sterigmata). Pleurocystidia 40–56 × 10–13 μ, fusoid-ventricose, apex subacute to obtuse, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia abundant, 28–36 × 10–14 μ, fusoid-ventricose, the neck short and the apex obtuse, smooth and hyaline. Caulocystidia similar to cheilocystidia in patches.

_Gill trama_ yellow-brown in KOH to ochraceous. Pileus trama rich rusty brown in KOH, pigment in and on the wall as inconspicuous incrustations. Pileus with a cuticle of vesiculose cells about one layer deep, some with pedicels but not forming a palisade, wall thin, pale cinnamon to ochraceous in KOH, smooth, cell content not distinctive. Clamp connections present. No distinctive reaction observed on any tissue in Melzer’s.

_Type locality._ England.

_Habit and habitat._ Gregarious on humus near a beaver pond.

_Distribution._ Wyoming (Smith 34911).

_Observations._ The diagnostic combination of features for this species is: (1) the thin veil, (2) chestnut-brown pileus, (3) lower portion of stipe soon brownish, (4) brachybasidioles and basidia similar in outline save for sterigmata of the latter, (5) spore apex not distinctly truncate (under oil), (6) cuticle of pileus a layer about 1 cell deep, (7) highly colored pileus trama near cuticle in KOH. *Psathyrella clivensis* apparently occupies a habitat different from the above in England, but this is not considered as of taxonomic significance here in view of what is known of _Hygrophorus pratensis_ in both regions.
289. *Psathyrella subhepatica* A. H. Smith, sp. nov.

Pileus 1–3 cm latus, conicus, glaber vel ad marginem indistincte fibrillosus, hepaticolor; contextu fusco-brunneus; lamellae confertae, adnatae, subcinereae demum fusco-brunneae; sporae 9.3–12.5 × 5.5–6.5 (–7.5) μ; pleurocystidia 44–70 × 9–15 μ, fusoid-ventricosa, obtusa vel subacuta; fibulae adsunt. Typus. Smith 6220 (MICH); legit prope Sharon Hollow, Michigan.

Illust. Pl. 77, fig. a; Text Figs. 626–629.

Pileus 1–3 cm broad, obtusely conic and remaining obtuse in age, the margin often flaring, margin appressed against the stipe at first and faintly fibrillose from the remains of a rudimentary veil, glabrous otherwise, moist, hygrophanous, dark reddish brown (“liver brown” to “russet”) on disc, the extreme margin paler and near “pinkish buff” (pale tan), fading to pale tawny (“ochraceous-tawny”) or the disc tinged orange, surface sometimes radially rugulose, in age finally becoming avellaneous or darker, sordid ashy brown. Context dark watery brown, fading to buff, thin and fragile, odor and taste not distinctive.

Lamellae close, adnate, moderately broad, seceding, pallid grayish brown becoming dark purplish brown, edges even or faintly fimbriate, not becoming pink.

Stipe 4–10 cm long, 1.5–3 mm thick, equal, white, fragile, base mycelioid, lower portion faintly fibrillose at first, soon glabrous, extreme apex pruinose, sometimes slightly silky in age.

Spores 9.3–12.5 × 5.5–6.5 (–7.5) μ, smooth, apical pore present but apex only obscurely truncate, shape in face view ovate to elliptic, in profile elliptic to obscurely inequilateral, color in KOH soon chocolate-gray to medium chocolate-color, in Melzer’s pale tawny, wall about 0.6 μ thick.

Basidia 4-spored, 24–30 × 10–12 μ, clavate, hyaline in KOH. Pleurocystidia abundant 44–70 × 9–15 μ, elongate fusoid-ventricose, apex obtuse to subacute, wall thin, smooth and hyaline, cell content in some with refractive debris in the ventricose part as revived in KOH. Cheilocystidia 28–42 × 10–25 μ, fusoid-ventricose but the neck short and apex subacute, relatively few clavate cells present. Caulocystidia in bunches and about like the pleurocystidia but walls more flexuous, varying to those similar to cheilocystidia and some vesiculose and 10–15 μ wide.

Gill trama interwoven, hyaline to sordid pale brownish in water mounts when fresh or when revived in KOH, the hyphal cells 50 or more μ long and 7–14 μ wide. Pileus trama floccose and of interwoven hyphae bright to dingy pale cinnamon-brown in water mounts when fresh and when revived in KOH darker but color fading to ochraceous, pigment incrusted on the hyphae especially near or at the septa. Cuticle a palisade of pear-shaped to clavate cells much as in *Conocybe*. Clamps present. No distinctive reaction observed on any tissue mounted in Melzer’s.

Type locality. Sharon Hollow, near Manchester, Washtenaw County, Michigan.

Habit and habitat. Gregarious on wet soil in low woods.


Observations. The white stipe, thin veil, dark liver brown pileus when young, flexuous caulocystidia, spores lacking a distinct apical truncation, and absence of brachybasidioles at maturity appear distinctive.

290. **Psathyrella ruderaaria** A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, obtuse conicus vel late convexus, glaber, cinnamomeus demum griseo-violaceus; contextu fumoso-cinnamomeus; lamellae confertae, latae, brunneolae demum fumoso-cinnamomeae; stipes 2.5–6 cm longus, 1–2 mm crassus; deorsum brunneus, glaber; sporae 9–12×5–6 µ; pleurocystidia (36–) 48–76×9–16 µ, fusoid-ventricosa obtusa vel subacuta; fibulae adsunt. Typus. Smith 51661 (MICH); legit prope Placerville, Colorado.

Pileus 1–2.5 cm broad, obtusely conic expanding to broadly convex, surface glabrous, moist, hygrophanous, dingy cinnamon when young, becoming wood brown and finally “benzo brown,” buffy avellaneous faded, distinctly atomate, drying more or less dingy cinnamon (“Sayal brown”). Context very thin and fragile, dark cinnamon when moist, odor and taste not distinctive.

Lamellae close, moderately broad, adnate, dingy brownish at first, becoming dull cinnamon and finally darker from the spores, drying dark grayish brown.

Stipe 2.5–6 cm long, 1–2 mm thick, equal, fragile, pallid above, brownish below, glabrous and naked, dull tan over all when dried.

Spores 9–12×5–6 µ, smooth, in a profile view the small pore slightly oblique and apex not truncate, shape in face view broadly elliptic to obscurely inequilateral, color in KOH dark rust-brown soon becoming chocolate-color, in Melzer’s tawny-red, wall about 0.4 µ thick (in KOH).

Basidia 4-spored, subellipsoid to clavate, 14–18 (–22)×10–13 µ, hyaline in KOH. Pleurocystidia (36–) 48–76×9–16 µ, fusoid-ventricose, neck becoming greatly elongated, apex obteute (but narrow) to subacute, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia 32–43×9–13 µ, fusoid to fusoid-ventricose, apex subacute to obtuse, thin-walled, smooth. Pileus cuticle of inflated cells up to 20 µ wide, the layer 2–3 cells deep, walls hyaline to pale cinnamon, smooth. Hyphae of the subcutis vinaceous-cinnamon in KOH, walls incrusted but not conspicuously so. Clamps present.

Type locality. Placerville, Colorado.

Habit and habitat. Gregarious around piles of organic debris.

Distribution. Colorado.

Observations. The lack of a veil, medium-sized spores, pleurocystidia with greatly elongating necks and the generally cinnamon-colored basidiocarps as dried are distinctive.

291. **Psathyrella nitens** A. H. Smith, sp. nov.

Pileus 2–3.5 cm latus, late convexus, sparse fibrillosus vel floccosus, glabrescens; subspadiceus; contextu dilute brunneus; lamellae confertae angustae, avelliteae demum griseo-violaceae; stipes 5–8 cm longus, 2–3.5 mm crassus, albidus, undulatus, fibrillosus, glabrescens; sporae 9–10.5×5–6.3 µ; pleurocystidia 48–62×10–15 µ, fusoid-ventricosa obtusata; fibulae adsunt. Typus. Smith 30388 (MICH); legit prope Tahoma Creek, Mt. Rainer National Park, Washington.

Illust. Text Figs. 630–632.

Pileus 2–3.5 cm broad, convex, becoming nearly plane, surface at first thinly covered with white fibrils from the outer veil, the fibrils becoming aggregated into minute flecks and soon vanishing, margin slightly fringed at first, surface moist and hygrophanous, between buckthorn brown and cinnamon-brown when moist and when faded pale cinnamon-buff, but drying a dark dull brown. Context thin and fragile, watery brown moist, odor not distinctive, taste not noted.
Lamellae close, narrow, adnate, near avellaneous becoming “benzo brown” (violaceous-fuscous), and drying near fuscous, edges even.

Stipe 5–8 cm long, 2–3.5 mm thick, equal or nearly so, fragile, white and undulating, drying whitish, fibrillose from veil remnants but becoming glabrous, apex slightly pruinose, shining and not discolored in age.

Spores 9–10.5 × 5–6.3 μ, smooth, apical pore small but distinct and apex only obscurely truncate, shape in face view ovate to narrowly ovate varying to elliptic, in profile obscurely inequilateral to subovate (the ventral line often straighter in optical section than the dorsal line), color in KOH dark chocolate-color immediately, finally becoming slightly paler, in Melzer’s dark fulvous, wall about 0.3 μ thick.

Basidia 18–22 × 8–10 μ, 4-spored, hyaline in KOH. Brachybasidioles present in mature hymenium. Pleurocystidia abundant 48–62 × 10–15 μ, fusoid-ventricose, the neck gradually tapered and apex obtuse, with some mucilaginous material dried in patches on the neck near the apex, wall thin and hyaline, cell content not distinctive. Cheilocystidia abundant, either clavate or fusoid-ventricose with broadly rounded to obtuse apex, hyaline to dingy yellow in KOH, the former 18–32 × 9–14 μ, the latter 26–38 × 10–16 μ. Caulocystidia rare, a few similar to the cheilocystidia were found.

Gill trama cocoa-brown to vinaceous-brown in KOH, the walls smooth. Pileus trama vinaceous in KOH becoming cocoa-color but usually retaining a reddish tone, hyphal walls smooth. Cuticle of pileus a layer of vesiculose cells several deep, their walls thin and smooth but weakly brownish to hyaline in KOH. Cortex hyphae of stipe also weakly flushed vinaceous-gray as revived in KOH as observed in groups of hyphae. Clamps present.

Type locality. Lower Tahoma Creek, Mt. Rainier National Park, Washington.

Habit and habitat. On debris in mixed forests.


Observations. This species is one of those ambiguous between Pannucia and Psathyrella of this work. The shining white stipe, thin white veil, narrow lamellae, and reaction of hyphae of the stipe in KOH are distinctive.

Subsection Psathyrellae

Series Psathyrellae

Pink tints developing on faded pileus margin and/or the gill edges.

Key to the Species of Series Psathyrellae

   292. P. megaspore.
   2

1. Not as above.
   2. Spores not truncate; wall of spore developing a strong violaceous tone in 10–20 minutes in KOH.
      293. P. praetomatata.
      3

2. Not as above.
   3. Scattered fibrils from a thin veil present along the margin of immature pilei.
      4

3. Lacking a fibrillose veil of any sort.
   4. Pleurocystidia rarely over 50 μ long; pith of stipe often separating as a thin rod.
      296. P. trepida.
      5

4. Not as above.
   5. Stipe brown when young; cuticle of pileus mostly of clavate-pedicellate cells.
      294. P. fontinalis.
      6

5. Stipe pallid young, darker in age; cuticle of pileus mostly of vesiculose cells.
   295. P. opacipes.
6. Pleurocystidia nine-pin-shaped to fusoid-ventricose, 36-57 × 10-17 μ; with
   the stature of P. conopilea.

298. P. subdebilis.

6. Not as above.

7. Stipe 6-12 cm long.

7. Stipe 2-6 cm long.

8. Stipe 6-12 cm long.

8. Not as above.

9. Stipe 2-6 cm long.

9. Pleurocystidia rare to scattered and typically less than 50 μ long.

299. P. atomata.

9. Pleurocystidia often 50 μ long.

10. Spores 11-13 × 5.5-6.5 μ; stipe thinly appressed white-fibrillose (but lacking
    a veil); pileus cuticle a layer of vesicular cells 1-2 cells deep.

302. P. superiorensis.

10. Not as above.

11. Stipe dark vinaceous brown when young and fresh; spore apex not conspicuously
    truncate; spores elliptic in face view, 12-14(-17) × 7-8 μ.

297. P. anaglaea.

11. Stipe a medium dark brown when moist; spore apex conspicuously truncate; spores
    typically ovate in face view.

300. P. filamentosa.

292. Psathyrella meagspora A. H. Smith sp. nov.

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Psathyrella meagspora A. H. Smith sp. nov.
"KOH" valde violaceae; pleurocystidia 36-48 × 10-15 µ, fusoid ventricosa, acuta; fibulae adsunt. Typus. Smith 9-28-69 (MICH); legit prope Milford, Michigan.

Pileus 8-15 mm broad, obtusely conic with an appressed margin, expanding to campanulate to convex-umbonate, surface glabrous, moist, hygrophanous, dark chocolate-color fading to cinereous and then conspicuously atomate, disc cinnamon-buff in age, at maturity somewhat sulcate-striate. Context very thin and delicate, dark brown at first.

Lamellae subdistant, broad, broadly adnate, chocolate-brown drying black, edges pallid and crenulate but pinkish in age.

Stipe 2-5 cm long, about 1.5 mm thick, equal, fragile, pallid and naked above, brownish and with a few scattered fibrils below.

(The dried specimens have distinctly hoary pilei and unpolished stipes. The latter are darker at the base than at the apex.)

Spores 11-14 (-15) × 5.5-7 µ, smooth, apical pore present but spore apex not truncate, shape in face view elliptic to ovate, in profile obscurely inequilateral to subovate, color in KOH blackish brown to dark chocolate-color, and finally strongly violaceous, in Melzer's dark rusty brown, wall about 1 µ thick.

Basidia 4-spored, clavate, 25-34 × 10-15 µ, enlarged part hyaline, pedicel often with thickened rusty brown walls at base. Pleurocystidia numerous, ventricose with narrow (3-4 µ) flexuous neck ending in a subacute apex, broadly fusoid-ventricose cells (36-48 × 10-15 µ) also present and having acute apices. Cheilocystidia subfusoid to clavate, or similar to the broadly fusoid-ventricose pleurocystidia, also many hyaline elliptic to subcyindrical cells 8-12 µ wide present.

Gill trama dark rusty brown in KOH and with pigment thickenings and inerustations on the hyphal walls, also numerous hyaline rectangular crystals present. Pileus trama very dark rusty brown toward the subhymenium, in the subcuticular region ochraceous (paler) but incrusted. The cuticle a staggered layer 2-3 cells deep of pedicellate and vesiculose cells with hyaline to ochraceous walls. Clamp connections present on hyphae of the stipe. Hyphae of stipe with smooth hyaline walls.

Type locality. Proud Lake Recreation Area, near Milford, Oakland County, Michigan.

Habit and habitat. Scattered on muck in a dried up swamp, September.


Observations. The strong violet tone developed by the spores in KOH, the heavily pigmented gill-tramal hyphae, the numerous pleurocystidia with more or less of a filamentous neck, and the broad subdistant gills are distinctive. P. ochracea (Drosophila ochracea) is close to this species.

294. Psathyrella fontinalis A. H. Smith, sp. nov.

Pileus 1-3 cm latus, obtuse conicus demum campanulatus demum plicato-crenatus, glaber, pallide fulvus vel fulvus; lamellae pallidae demum griseo-violacea; subdistantes, ad acierum demum vinacea; stipes (3-4) 5-10 cm longus, 1-1.5 mm crassus, melleus, fibrillosus glabrescens; velum sparsum; sporae 11-14 × 6-7.5 (16 × 8.5) µ; pleurocystidia 38-65 × 10-16 µ, ventricoso-elongata, obtusa; fibulae adsunt. Typus. Smith 25644 (MICH); legit prope Brutus, Michigan.

Illust. Text Figs. 633, 634.

Pileus 1-3 cm broad, obtusely conic when young, expanding to campanulate or nearly convex, in age margin often flaring and plicate-crenate to sulcate-striate,
margin occasionally splitting, glabrous, or with pallid fibrils from partial veil remnants along the margin in button stages, colors typically tawny ("ochraceous-tawny") on disc and paler toward the margin, disc in some buttons near "cinnamon-brown," when moist distinctly translucent-striate, fading to near avellaneous (grayish) or pale dingy cinnamon-buff but soon with a pervading pinkish hue. Context exceedingly fragile and thin, odor not distinctive.

Lamellae pallid ("tilleul buff") or slightly darker when young, purple-brown (near "benzo brown") in age, broad, nearly substindent when expanded, ascending-adnate and readily seceding, edges slightly flocculose and in age at times tinged pinkish.

Stipe (3–4) 5–10 cm long, 1–1.5 mm thick at apex, very slightly enlarged downward, pale honey-color or darker when young, in age pallid at apex, base paler in some but mostly remaining honey-color, when young sparingly appressed floccose from remains of the veil, glabrescent. Veil thin pallid and evanescent.

Spores 11–14 × 6–7.5 µ (or up to 16 × 8.5 µ), smooth, apical pore broad and apex truncate, shape in face view elliptic to slightly ovate, in profile obscurely to somewhat inequilateral, color in KOH date brown, darker on standing (finally blackish brown), in Melzer's reddish tawny, wall 1–1.2 µ thick in KOH.

Basidia 20–35 × 10–14 µ, 4-spored or mixed 4- and 2-spored, clavate, hyaline. Pleurocystidia scattered, 38–65 × 10–16 µ, ventricose-elongate with a short neck and obtuse apex to fusoid-ventricose with long neck and subacute apex, smooth, thin-walled, hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia of two types: the first similar to the pleurocystidia having short necks, the second vesiculose to clavate and 15–26 × 8–12 µ, usually yellowish as revived in KOH, the color located in the wall (some fusoid-ventricose cells also yellowish at base). Caulocystidia mostly as hyphal ends cylindric to clavate and scattered over apical region along with cells more or less resembling the fusoid-ventricose cheilocystidia.

Gill trama nearly hyaline in KOH or if brownish soon fading. Pileus trama of hyphae with cinnamon-brown to ochraceous-tawny walls having distinct pigment thickenings and incrustations (especially near cross walls), gradually paler on standing. Cuticle of pileus an irregular palisade consisting mostly of clavate-pedicellate cells with hyaline to hollow walls and tawny pedicels. Clamp connections present. No distinctive reaction seen on any tissue in mounts in Melzer's.

Type locality. Brutus, Emmet County, Michigan.

Habit and habitat. Scattered to gregarious on sticks and black muck in springy areas such as along the edges of elm-ash swamps.


Observations. This species is closely related to *P. gracilis* but is distinct in having a slight veil, more heavily incrusted subcuticular hyphae in the pileus trama, and in the hyphae of the stipe also showing incrustations near the cross walls. As one would expect, the color of the fresh pileus also is much darker in young basidiocarps.

Material examined. Michigan: Smith 25644 (Type), 25645, 25646, 25647, 25649, 25650, 25652, 25656, 25657, 25658, 25703, 25762, 26016, 26175, 26176, 26177, 28746, 28748, 28751, 28753, 32248, 32363, 34120.

295. *Psathyrella opacipes* A. H. Smith, sp. nov.

Pileus 1–3.5 cm latus, convexus vel subplanus; glaber, rufo-fulvus demum spadiceus, ad marginem demum vinaceus; lamellae adnatae latae, demum sub-
Psathyrella distantes pallidae demum dilute brunnea; ad acierum vinaceae; stipes 3-7 cm longus, 1.5-2.4 mm crassus, ad basem strigosus, albus opacus, deorsum fibrillosus, glabrescent; sporiae (12-13)-16.5×6-8 μ; pleurocystidia 38-70×9-16 μ, fusoid-ventricose, acuta; fibrulae adsunt. Typus. Smith 4990 (MICH); legit prope Dexter, Michigan.

Illustr. Pl. 78, fig. b; Text Figs. 635, 636.

Pileus 1-3.5 cm broad, obtusely conic when young, becoming convex to nearly plane, margin straight at first, soon glabrous but when very young with a faint fringe of fibrils along the margin from the remains of the rudimentary veil, when moist "Mars brown" to "cinnamon-brown" to "bister" (dark rusty brown to deep date brown), hygrophanous and fading to pallid alutaceous or avellaneous, occasionally nearly olive-brown when moist and sometimes developing vinaceous tints after fading, margin striate when moist, opaque and atomate when faded. Context thin and fragile, odor and taste not distinctive.

Lamellae adnate, broad, soon seceding, close to subdistant, pallid to pale dull brown at first, dark purplish brown in age, at times developing a vinaceous cast; edges whitish, sometimes becoming bright vinaceous.

Stipe 3-7 cm long, 1.5-2.4 mm thick, equal, base strigose, fragile, hollow, whitish but becoming watery honey-color, when young with silky white fibrils over the lower part from a thin veil, glabrescent, at times pruinose above.

Spores (12-13)-16.5×6.8 μ, smooth, apical pore distinct and apex somewhat truncate, shape in face view oblong to elliptic or slightly ovate, in profile obscurely to somewhat inequilateral, color in KOH medium date brown becoming blackish brown, in Melzer's bay-red, wall about 1.5 μ thick.

Basidia 2-spored or 4-spored, 19-32×10-14 μ, hyaline in KOH, clavate. Pleurocystidia scattered, 38-70×9-16 μ, fusoid-ventricose, the apex acute to subacute, rarely branched at the apex, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia saccate to clavate, 18-26×10-15 μ, hyaline or yellow as revived in KOH, also some cells present which resemble the pleurocystidia. Caulocystidia scattered, resembling pleurocystidia.

Gill trama cocoa-color when revived in KOH, the hyphae somewhat interwoven, pigment incrusted on the hyphae near the septa and fading slowly to pale ochraceous. Pileus trama cocoa-color in KOH, pigment incrusted on the hyphae and slowly fading to ochraceous in KOH. Cuticle of pileus a layer of hyaline to yellow-walled (in KOH) cells one cell deep and the cells vesiculose, a few short-pedicellate, the layer not an even palisade. Clamps present. No distinctive reactions noted for any tissue mounted in Melzer's.

Type locality. Dexter, Michigan.

Habit and habitat. Scattered to gregarious on wet leaves at edge of a marsh. Distribution. Michigan.

Observations. Psathyrella opacipes has a shining white stipe and slightly paler pileus than P. pellucidipes (Drosophila pellucidipes Romagnesi 1966). The long pleurocystidia of the P. gracilis type separate P. opacipes from P. trepida.

Psathyrella trepida (Fries) Gillet, Les Hymén. 615. 1874.

Drosophila trepida (Fr.) Quélet, Fl. Mycol. 57. 1888.

Illustr. Pl. 78, fig. a; Text Figs. 637, 638.

Pileus 1-3 cm broad, obtusely conic, remaining conic or becoming campanulate, glabrous, the extreme margin at first decorated with scattered fibrils from the
rudimentary veil, moist and hygrophanous, "russet" to "Mars brown" and becoming "ochraceous-tawny" before fading, hygrophanous, fading to "cinnamon-buff" in young pilei and "wood brown" in old ones, faded parts becoming dingy pinkish (near vinaceous-fawn), striate when moist, smooth and atomate when faded. Context equal, very thin and fragile, concolorous with the surface, odor and taste not distinctive.

Lamellae adnate, somewhat ascending, readily seceding, close to subdistant, 18–20 reach the stipe, almost equal, moderately broad (3 mm), pallid, soon pale fuscous-brown; edges even, none seen with pinkish margins.

Stipe 4–6 cm long, 1.5–2 mm thick, equal, cartilaginous-brittle, stuffed with a white pith which can sometimes be removed in the form of a thin rod, sometimes hollow, white, grayish white or tinged dingy buff over lower part, decorated below with small patches of fibrils, glabrescent, faintly pruinose toward the apex.

Spores 11–14×6–7 μ, smooth, apical pore well developed and spore apex truncate, shape in face view oblong to narrowly elliptic, in profile narrowly elliptic to obscurely inequilateral, color in KOH dark brown to blackish brown, in Melzer's reddish tan, wall about 1 μ thick.

Basidia 4-spored, 18–22×10–12 μ, clavate from a broad short pedicel, hyaline in KOH. Pleurocystidia scattered, 32–48×9–15 μ, broadly fusoid-ventricose, apex obtuse and neck short or finally somewhat elongated, wall thin, smooth, and hyaline in KOH, cell content not distinctive in KOH or Melzer's. Cheilocystidia abundant, mostly saccate and thin-walled, 30–38×9–15 μ, some fusoid-ventricose and measuring 32–40×9–14 μ, when revived in KOH the hyphae from which they originate are pale yellow in KOH. Caulocystidia resemble the cheilocystidia, scattered, to rare.

Gill trama regular, the hyphal cells much inflated at maturity, pale brown to nearly hyaline as revived in KOH, subhymenium cellular. Pileus trama of hyphae vinaceous-brown when first revived in KOH but fading, darkest in young pilei. Cuticle of pileus of loosely arranged vesiculose cells in a layer one cell deep, walls yellowish to hyaline in KOH, smooth, thin, cell content not distinctive in KOH or Melzer's. Clamp connections present. No distinctive reactions on any tissue as mounted in Melzer's.

Type locality. Europe.

Habit and habitat. Solitary to scattered on organic debris.


Observations. Drosophila pellucidipes Romagn. is very close to my concept of P. trepida but has a shining white stipe, paler more rapidly fading pileus, and longer cystidia.


Illustr. Maire, 1. c. fig. 3. Smith & Hesler, 1. c. fig. 1; F, G, H, K. Text Fig. 639. Pileus 7–15 mm broad, convex, hemispheric or finally somewhat expanded,
very fragile, glabrous, hygrophanous, “Natal brown” (dark vinaceous-brown) when moist, “vinaceous-fawn” (dingy pinkish) and atomate when faded, radially wrinkled to subplicate. Context thin, dingy brownish, odor none.

Lamellae adnate with a decurrent tooth and line, ventricose and broad, sub-triangular, subdistant, two tiers of lamellulae, “benzo brown” (purplish brown) or when dried blackish brown, the edges “vinaceous-fawn” (pinkish).

Stipe 2–4 cm long, 1–1.5 mm thick, equal, hollow, fragile, dingy whitish fresh, pale dull avellaneous when dried, easily splitting, glabrous except for the pruinose apex.

Spores 12–14 (–17) × 7–8 μ, smooth, apical pore present but apex not conspicuously truncate, shape in face view oblong to elliptic, in profile subelliptic to obscurely inequilateral, date brown revived in KOH becoming dark date brown to blackish, in Melzer’s bay to bay-red, wall 1 μ thick or slightly more.

Basidia 4-spored, 23–28×10–15 μ, clavate, hyaline in KOH. Pleurocystidia scattered to rare, 36–63×12–16 μ, broadly ventricose above a narrow pedicel and the apex acute to subacute, neck elongated and narrow and abruptly differentiated from the ventricose part, hyaline smooth and thin-walled, cell content not distinctive in either KOH or Melzer’s. Cheilocystidia abundant, of two types: fusoid-ventricose and hyaline or clavate and yellowish in KOH, the former 30–36×9–12 μ, neck not much elongated, the latter clavate to ellipsoid and with very slightly thickened walls. Caulocystidia very scattered, present as clavate end cells much like some of the cheilocystidia.

Gill trama of enlarged cells more or less parallel and pale cocoa-color to reddish brown in KOH. Pileus trama of floccose interwoven hyphae, pale cocoa-color to sordid tan or finally nearly hyaline (all in KOH), walls of hyphae roughened. Cuticle of pileus of inflated cells with hyaline walls, some clavate or pedicellate cells present but not numerous enough to form a palisade, the layer irregularly 2 cells deep. Clamp connections present. No distinctive reactions observed on any tissue as mounted in Melzer’s.

Type locality. North Africa.

Habit and habitat. Scattered on soil in woods.


Observations. Authentic material has not been examined hence the name is used provisionally.


298. Psathyrella subdebilis A. H. Smith, sp. nov.

Pileus 1–4 cm latus, conicus vel campanulatus, glaber, pallide cinnamomeae; lamellae pallidae demum fusco-brunneae, latae, confertae; stipes 4–11 cm longus, 2–3.5 mm crassus, pallideae, glaber; sporiae 11–14×5.5–7 μ; pleurocystidia lecythiformis vel fusoiddeo-ventricosa, 36–57×10–17 μ; fibulae adsunt. Typus. Smith 78344 (MICH); legit prope Adrian, Michigan.

Pileus 1–4 cm broad, obtusely conic becoming broadly conic to campanulate, surface glabrous, moist and hygrophanous, when mature striate if moist, pale cinnamon fading to pale pinkish buff, margin straight on button stages and naked. Context concolorous with the surface when faded or moist, very fragile, taste mild, odor fungoid, FeSO₄—no reaction.

Lamellae pallid becoming brownish then avellaneous, finally pale to medium
wood brown (grayish brown), close, narrow becoming moderately broad, tapered to the edge of the pileus; edges even and pallid.

Stipe 4–11 cm long, 2–3.5 mm thick, equal, very fragile and weak, hollow, faintly silky at first, in age naked, pallid to dingy pallid overall, in age slightly more so but no distinct color change in the lower part, weakly strigose over the basal area.

Spore deposit violaceous-brown. Spores 11–14×5.5–7 μm, smooth, apical pore present but apex not truly truncate, shape in face view suboblong to elliptic or slightly ovate, in profile slightly bean-shaped to subelliptic (ventral line flattened slightly); color in KOH chocolate-color (medium), in Melzer’s rusty tan and apical pore more distinct than in KOH, wall about 0.3 μm thick.

Basidia 4-spored, short-clavate, 9–13 μm wide. Brachybasidioles present at late maturity. Pleurocystidia nine-pin-shaped to fusoid-ventricose with an obtuse apex, 36–57×10–17 μm, thin-walled, smooth, hyaline in KOH. Cheilocystidia 30–56×8–14 μm, fusoid-ventricose with obtuse apex, hyaline in KOH, thin-walled. Caulocystidia 30–60×9–17 μm, rare, roughly resembling the pleurocystidia but the apical inflation often larger, some with amorphous content in KOH.

Gill trama of much inflated nearly hyaline-walled cells. Pileus trama weakly ochraceous, the hyphae smooth or some debris on the wall (but no typical incrustations present). Cuticle a palisade of clavate to inflated-pedicellate cells 14–30 μm wide, walls hyaline to merely ochraceous in KOH. Clamps present.

Type locality. Near Adrian, Michigan.

Habit and habitat. Gregarious under Impatiens (jewel weed), May.

Distribution. Known only from the type locality.

Observations. The species is likely to be confused in the field with P. conopilea but it lacks setae on the pileus, has smaller spores and pleurocystidia are present. Drosophila polycystis Romagnesi appears to be close to this species.


Agaricus atomatus Fries, Syst. Mycol. 1: 298. 1821.
Psathyra atomata (Fr.) Kummer, Führ. Pilz. 70. 1871.

Pileus 10–25 mm broad, obtusely conic to campanulate, hygrophanous, when moist grayish with a tinge of ochre on the disc, fading to whitish or becoming pale pink (“hydrangea pink”) after fading, atomate, striate when moist, even or wrinkled when faded. Context membranous and fragile, odor and taste not distinctive.

Lamellae adnate, subdistant, 12–16 reach the stipe, broad and becoming ventricose, whitish, becoming black from the spores, edges often pinkish in age.

Stipe 3–5 cm long, 1–2 mm thick, equal, very fragile and often lax, tubular, white, pulverulent over upper portion but soon glabrescent.

Spores 11–13 (–15) × 6–7 (–8) μm, smooth, apical pore distinct and apex truncate (under oil-immersion), shape in face view suboblong to elliptic, in profile subelliptic, color in KOH coffee-bean color when first revived, darkening slowly, in Melzer’s dull reddish brown, wall about 1 μm thick.

Basidia 18–26×9–12 μm, 4-spored, clavate, hyaline in KOH. Brachybasidioles present on mature hymenium. Pleurocystidia absent to rare or scattered and similar to cheilocystidia. Cheilocystidia 35–48×9–14 μm, fusoid-ventricose, apex acute to subacute, neck at times greatly elongated (up to 40 μm long) and 3–4 μm thick, wall thin, smooth and hyaline, cell content not distinctive in KOH.
Gill trama of inflated hyaline cells with thin, smooth walls. Pileus having a cuticle of vesiculose hyaline cells 2–3 deep, walls thin, smooth, hyaline and readily collapsing, cell content not distinctive. Context hyphae hyaline in KOH, cells greatly enlarged and thin-walled. Clamp connections present.

Type locality. Europe.
Habit and habitat. Scattered on grassy ground and on soil in moist places.
Distribution. Michigan, Utah.

Observations. The pleurocystidia are variable in their occurrence in this species, but the relationships of the fungus nevertheless are in this group. In Smith 78106 some pleurocystidia measured up to 18 μ broad. This collection represents a slender delicate form growing under a dense growth of weeds.


300. Psathyrella filamentosa A. H. Smith, sp. nov.

Pileus 5–12 (–15) mm, convexus vel planus, glaber, demum sulcatus, spadiceus, ad marginem demum incarnatae; contextu fragilissimus lamellae confertae, latae, adnatae, melleibruneae, demum atro-brunneae, ad acierum demum incarnatae; stipes 2–5 cm longus, circa 1 mm erassus deorsum brunneus, sursum pallidus; sporae 11–14×5.5–7 μ; pleurocystidia 43–58×10–17 μ, fusoid-ventricosa, obtusa vel subacuta; fibulae adsunt. Typus. Smith 78074 (MICH); legit prope Vanderbilt, Michigan.

Illustr. Text Figs. 640–642.

Pileus 5–12 (–15) mm broad, obtusely conic expanding to convex or nearly plane, surface glabrous, moist, hygrophanous, margin becoming sulcate at times in age (but not plicate-striate), a medium date brown to dark honey brown when moist, pallid to dingy tan when faded and later often developing pink tints. Context almost paper-like in thinness, extremely fragile, odor not distinctive.

Lamellae close, broad, adnate, dingy honey tan becoming blackish brown, edges whitish or in age pink at times.

Stipe 2–5 cm long and 1 mm thick, equal, delicate, brown over basal part, pallid near apex, naked or at apex faintly pruinose.

Spores 11–14×5.5–7 μ, smooth, apex truncate from a broad pore, shape in face view ovate to elliptic, in profile obscurely inequilateral, color in KOH dull rusty brown quickly becoming blackish brown to dark chocolate, dark tawny to near amber brown in Melzer’s, wall about 0.7 μ thick.

Basidia 4-spored, 10–12 μ broad, clavate. Pleurocystidia 43–58×10–17 μ, fusoid-ventricose with apex obtuse to subacute and some with adhering granules (in KOH). Cheilocystidia fusoid-ventricose, 34–45×10–15 μ, fusoid-ventricose, apex acute to subacute, yellow clavate to vesiculose cells 10–18×8–13 μ also present on the gill edge.

Hyphae of the subcuticular zone of the pileus dark to medium rusty brown in KOH and with distinct pigment incrustations. Cuticle of inflated cells 1–2 deep and with clay color to pale tawny walls as revived in KOH, fading to hyaline in places, walls smooth and thin. Clamp connections present.

Type locality. Fisherman’s Road, Cheboygan County, Michigan.
Habit and habitat. Scattered on mud flats in a drying up swamp, September.
Distribution. Known only from the type locality.

Observations. The stipe is almost filamentous and exceedingly delicate. The species is a “satellite” of P. anaglaea. Actually P. superiorensis, P. anaglaea and
P. filamentosa represent a stirps or "collective species"; but the differences presented here should not simply be disregarded. Studies of cultured material would be highly desirable.

301. Psathyrella gracilis (Fries) Quélet, Champ. Jura et Vosges 152. 1872.

_Agaricus gracilis_ Fries, Syst. Mycol. 1: 299. 1821.


_Coprinarius gracilis_ (Fr.) Kummer, Führ. Pilzk. 68. 1871.

_Drosophila gracilis_ (Fr.) Kummer, Führ. Pilzk. 68. 1871.


_Agaricus torpens_ var. _leucophaeus_ Fries, Icon. Hymen. 2: 37. 1877.

_var. gracilis_

Illustr. Fries 1. c., pl. 138, fig. 1. Pl. 80; Pl. 93, fig. a; Text Figs. 643, 644.

Pileus 1.5–3.5 (–5) cm broad, obtusely conic when young, the margin appressed against the stipe, becoming broadly campanulate, convex or nearly plane, sometimes remaining obtusely conic, surface glabrous, smooth, polished, somewhat lubricious when young, margin translucent striate when moist and frequently becoming crenate or sulcate-striate, sometimes scalloped, the surface often more or less rugulose in age, hygrophanous, pale buff to clay color ("cinnamon-buff" to "clay color") when young, gradually becoming pallid and then lead-color as the spores mature, fading to whitish or pallid, the disc often retaining a buff tinge, in age frequently developing a pinkish hue at least along the margin. Context thin, soon fragile, concolorous with the surface, odor and taste mild.

Lamellae moderately broad (4–6 mm), close, 22–25 reach the stipe, about 2 tiers of lamellulae, ascending adnate to horizontally adnate with a decurrent tooth depending on the degree of expansion of the pileus, pallid when young (tilleul buff), becoming dull purple-brown ("benzo brown") in age, edges even, in age both the faces and edges or only the edges sometimes tinged pink.

Stipe 6–12 cm long, 1.5–3 mm thick, equal, strict, hollow, fragile, dull whitish, faintly pruinose to fibrillose-pruinose above, smooth, glabrous downward or very slightly fibrilllose and soon glabrescent, veil absent or very rudimentary, base often with white radiating strigose hairs and at times somewhat rooting but no pseudorhiza present, at times the surface longitudinally striate.

Spore deposit dark chocolate-brown. Spores (10–)11–14 (–15) × 6.5–8 μ, smooth, with a distinct apical pore causing the spore apex to appear slightly truncate, shape in face view oblong to elliptic to weakly ovate, in profile obscurely inequilateral to subelliptic, color in KOH chocolate-brown to (slowly) dark chocolate-color, in Melzer’s dull vinaceous-brown to dull bay (duller than in most species), wall about 1.25 μ thick.

Basidia 4-spored, 27–36 × 10–12 μ, hyaline in KOH, abruptly clavate to pedicellate-subcapitate, the enlarged part projecting somewhat at the time of sporulation. Pleurocystidia very abundant, 54–75 × 10–16 μ, subacicular to fusoid-ventricose, apex acute to subacute, the neck often flexuous, wall thin, smooth and hyaline in KOH, cell content not distinctive in KOH or Melzer’s. Cheilocystidia shorter and more obtuse than the pleurocystidia and often yellowish as revived in KOH, occasional clavate cells also present. Caulocystidia resembling the cheilocystidia but with some sphaero-pedunculate cells 30–40 μ wide present, their walls thin and smooth, cell content not distinctive.

Gill trama of more or less regularly arranged hyaline hyphae, the subhymenium cellular but only a narrow band, hyaline or nearly so in KOH. Pileus trama
pallid to reddish tawny revived in KOH. Cuticle a palisade of pyriform cells and vesiculose to elliptic cells 32–44×10–34 μ also present, their cell walls thin, smooth and hyaline, the cell content not distinctive in either KOH or in Melzer’s. Clamp connections present.

Type locality. Europe.

Habit and habitat. Scattered to gregarious on soil and debris, often in grassy areas under alder and cottonwood, mostly in the fall.


Observations. The distinguishing features are the long thin stipe, large spores, large acutely pointed pleurocystidia, lack of a veil for all practical purposes, and the tendency for pink tints to develop on the gills of old specimens. For a recent treatment of this group in Europe see van Waveren (1971). Smith 66718 represents a 2-spored variant.


301a. Psathyrella gracilis var. fulva A. H. Smith, var. nov.

Pileus 1–3 cm latus, stipes 6–12 cm longus, 1–2 mm crassus, hyalinus, undulatus, deorsum pallide brunneus; sporae 13.5–16×6.5–7.5–(8) μ; pleurocystidia 36–52×9–16 μ. Typus. Smith 63473 (MICH); legit prope Tahquamenon Falls State Park, Michigan.

Illust. Text Figs. 645–647.

Pileus 1–3 cm broad, obtuse to obtusely conic becoming convex, in age finally broadly convex or with a slight umbo, glabrous, moist and hygrophanous, cinnamon-brown when young, becoming grayer as spores mature, fading to pale tan (“pinkish buff”) and finally pale pink to vinaceous especially along the margin; no veil remnants present. Context thin, very fragile, taste mild, odor none.

Lamellae close to subdistant, adnate-seceding, moderately broad, dull brown when young, becoming grayish chocolate color and drying fuscous, edges even, in age weakly pinkish on some gills.

Stipe 6–12 cm long, 1–2 mm thick, naked, hyaline, undulating, in age dull brownish over all but the slightly paler apical region.

Spore deposit blackish; spores 13.5–16×6.5–7.5–(8) μ, smooth, apex truncate from a hyaline pore, pore apical or in atypical spores eccentric, shape in face view elliptic or if spore is atypical the apical third may be narrowed into a snout with the pore at the apex, or the spore may show a medial constriction, in profile view subelliptic to obscurely inequilateral, color in KOH fuscous-brown (lacking a violet component and nearest “mummy brown”), wall 0.5–0.8 μ thick.

Basidia 4-spored, 12–14 μ wide at apex, up to 37 μ long. Pleurocystidia scattered, 36–52×9–16 μ, fusoid-ventricose, apex acute to subacute, walls thin, smooth and hyaline, content not distinctive in either KOH or Melzer’s. Cheilocystidia
versiform: (1) clavate to saccate, 26–38 × 8–15 μm, and walls often yellow as revived in KOH; (2) fusoid-ventricose as for the pleurocystidia but smaller; (3) intermediate types with neck showing various degrees of elongation. Caulocystidia 36–62 × 10–18 μm, broadly ventricose, the neck narrow and apex acute, rarely varying to elliptic in optical section, hyaline, content not distinctive in KOH or in Melzer's.

Pileus cuticle a layer of broadly clavate vesiculose to pedicellate cells 15–35 μm wide, the walls thin and hyaline, or at base or in the pedicel ochraceous as revived in KOH; subcuticular region of the trama dark vinaceous-brown as revived in KOH, the hyphae incrusted with patches of pigment (in age the KOH reaction paler and yellower on crushed out hyphae). No distinctive reactions on any tissue when mounted in Melzer's. Clamps present.

Type locality. Tahquamenon Falls State Park, Chippewa County, Michigan.

Habit and habitat. On debris in a wet area.


Observations. This variant features large spores, deep coloration of the pileus (and this is reflected in the KOH reaction of the trama of young basidiocarps), acute pleurocystidia with narrow neck and very broad mid portion by comparison, in the hyaline nearly naked stipe becoming brown in age, and by the lack of a veil. It may deserve rank as an autonomous species, but should be carefully compared with *P. pseudogracilis* Romagn.

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302. *Psathyrella superiorensis* A. H. Smith, sp. nov.

Pileus 6–14 cm latus, conicus, glaber, demum rugulosa subochraceus, ad marginem demum incarnatae; lamellae confertae demum subdistantes, adnatae, latae, pallidae demum avellaneae, in exsiccatis atratae; stipes 2–4 cm longus, 1–1.5 mm crassus, sparse fibrillosus, glabrescens, deorsum brunneus; velum sparsum; spores 11–13 × 5.5–6.5 μm: pleurocystidia 50–85 × 10–15 μm, fusoid ventricosa (collum elongatum, flexuosa) obtusata; fibulae adsunt. Typus. Ammirati 2251 (MICH); legit Huron Mountain Club, prope Big Bay, Michigan.

Pileus 6–14 mm, broad, obtusely conic becoming broadly conic, finally somewhat campanulate, glabrous, moist, hygrophanous, becoming rugulose in age, pallid to grayish on margin at first and disc grayish tawny, when partly faded developing pinkish tints over marginal area and more or less ochraceous tints over the disc. Context very thin and fragile, odor and taste not distinctive.

Lamellae close becoming subdistant, adnate, broad, pallid becoming grayish and as dried blackish, edges pinkish in age.

Stipe 2–4 cm long, 1–1.5 mm thick, delicate, thinly white fibrillose, pallid above, brownish below, veil if present rudimentary.

Spores 11–13 × 5.5–6.5 μm, smooth, apical pore distinct and spore apex truncate, shape in face view elliptic to ovate, in profile obscurely inequilateral, color in KOH chocolate-brown becoming dark chocolate-color, in Melzer's bay-brown wall about 0.6 μm thick.

Basidia 4-spored, 10–13 μm broad, clavate. Pleurocystidia scattered, 50–85 × 10–15 μm, fusoid-ventricose with long flexuous neck and obtuse apex, some with a lateral subapical protuberance; wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia smaller than pleurocystidia; clavate hyaline to yellowish (in KOH) cells also present.

Pileus cuticle a layer of vesiculose cells 1–2 deep, walls hyaline to yellowish in
**Psathyrella**

KOH, smooth. Hyphae of the subcuticular region heavily incrusted with ochraceous to fulvous amorphous material, septa similarly colored. Clamps present.

Type locality. Huron Mountain Club, Marquette County, Michigan.

Habit and habitat. Gregarious on a drying up pond near the edge.

Distribution. Known only from the type locality.

Observations. This species has the large pleurocystidia of the *P. gracilis* group but the spores are slightly shorter, the subcuticular hyphae are more heavily incrusted, and the stipe is much shorter. It is close to *P. orbitarum* but the pleurocystidia are much larger.

Subsection *Psathyrellae*

Series *Tenerae* A. H. Smith, ser. nov.

Pileus ad marginem demum pallidus vel subochraceus sed non rubellus; lamellae non-rubellae. Typus. *Psathyrella tenera*.

Key to the Species of Series *Tenerae*

1. Stipe with a pseudorhiza; pleurocystidia 52–70 μ long (see 405. *P. nimkeae* and 307. *P. sumstini* also). 303. *P. caudata*.
   2. Not as above.
   3. Stipe snow white and unchanging, 1 mm thick; pileus rugose-striate.
   4. Not as above.
   5. Spore apex not truncate or only indistinctly so.
   6. Spores (at least the larger ones) distinctly truncate.
   7. Clustered, stipes strigose at the base.
   8. Not as above.
   9. Spores in profile with an oblique germ pore.
   10. Not as above.
   11. Lamellae vinaceous-buff when young (see 298. *P. subdebilis* also).
   12. Not as above.
   13. Stipes with a pseudorhiza; pleurocystidia 52–70 μ long (see 405. *P. nimkeae* and 307. *P. sumstini* also).
   14. Spore apex not truncate or only indistinctly so.
   15. Not as above.
   16. Stipes with a pseudorhiza; pleurocystidia 52–70 μ long (see 405. *P. nimkeae* and 307. *P. sumstini* also).

306. *P. subincarnata*.

1. Not as above.
2. Stipe snow white and unchanging, 1 mm thick; pileus rugose-striate.
3. Not as above.
4. Hyphae of the stipe with pigment cinnamon-brown in KOH.
5. Not as above.
6. Stipe 2.5–4 cm long, 1 mm or less thick.
7. Not as above.
8. Lamellae narrow; hyphae of the subcuticular region of pileus dark rusty brown in KOH.
9. Not as above.
10. Lamellae broad, hyphae of subcuticular region pale brownish.
11. Not as above.
12. Pleurocystidia sharply pointed.
13. Not as above.
14. Pleurocystidia 52–70 μ long (see 405. *P. nimkeae* and 307. *P. sumstini* also).
15. Stipes with a pseudorhiza; pleurocystidia 52–70 μ long (see 405. *P. nimkeae* and 307. *P. sumstini* also).
16. Not as above.
17. Stipes with a pseudorhiza; pleurocystidia 52–70 μ long (see 405. *P. nimkeae* and 307. *P. sumstini* also).
18. Stipes with a pseudorhiza; pleurocystidia 52–70 μ long (see 405. *P. nimkeae* and 307. *P. sumstini* also).
19. Not as above.
20. Lamellae vinaceous-buff when young (see 298. *P. subdebilis* also).
21. Not as above.
22. Stipes with a pseudorhiza; pleurocystidia 52–70 μ long (see 405. *P. nimkeae* and 307. *P. sumstini* also).
23. Not as above.
24. Spores (at least the larger ones) distinctly truncate.
25. Clustered, stipes strigose at the base.
26. Not as above.
27. Spores in profile with an oblique germ pore.
28. Not as above.
29. Lamellae narrow; hyphae of the subcuticular region of pileus dark rusty brown in KOH.
30. Not as above.
31. Lamellae broad, hyphae of subcuticular region pale brownish.
32. Not as above.
33. Pleurocystidia sharply pointed.
34. Not as above.
35. Stipes with a pseudorhiza; pleurocystidia 52–70 μ long (see 405. *P. nimkeae* and 307. *P. sumstini* also).
36. Not as above.
37. Stipes with a pseudorhiza; pleurocystidia 52–70 μ long (see 405. *P. nimkeae* and 307. *P. sumstini* also).
38. Not as above.
39. Spores (at least the larger ones) distinctly truncate.
40. Clustered, stipes strigose at the base.
41. Not as above.
42. Spores in profile with an oblique germ pore.
43. Not as above.
44. Lamellae narrow; hyphae of the subcuticular region of pileus dark rusty brown in KOH.
45. Not as above.
46. Lamellae broad, hyphae of subcuticular region pale brownish.
47. Not as above.
48. Pleurocystidia sharply pointed.
49. Not as above.
50. Stipes with a pseudorhiza; pleurocystidia 52–70 μ long (see 405. *P. nimkeae* and 307. *P. sumstini* also).
51. Not as above.
52. Stipes with a pseudorhiza; pleurocystidia 52–70 μ long (see 405. *P. nimkeae* and 307. *P. sumstini* also).
53. Not as above.
54. Spores (at least the larger ones) distinctly truncate.
55. Clustered, stipes strigose at the base.
56. Not as above.
57. Spores in profile with an oblique germ pore.
58. Not as above.
59. Lamellae narrow; hyphae of the subcuticular region of pileus dark rusty brown in KOH.
60. Not as above.
61. Lamellae broad, hyphae of subcuticular region pale brownish.
62. Not as above.
63. Pleurocystidia sharply pointed.
64. Not as above.


*Agaricus caudatus* (Fr.) Fries, Epicer. Syst. Mycol. 239. 1838.

Illust. Text Figs. 648–651.

Pileus 2–5 cm broad, parabolic-campanulate but soon merely obtusely conic, becoming broadly conic and then with a flaring or turned up margin, glabrous and moist, dark dingy cinnamon-brown when young and fresh, hygrophanous and fading to near cinnamon-buff, becoming sulcate-striate at least along the margin when faded. Context thin and fragile. Lamellae narrow but finally becoming somewhat ventricose and broad, pallid cinnamon-buff but soon dark grayish to purplish brown, ascending-adnate, edges whitish.

Stipe 6–10 cm long, (1.5–)2–3(–4) mm thick, equal above a long fibrillose pseudorhiza, whitish or sordid cinnamon-buff near base in age.

Spores 11–13 (–14) × 5.5–7 μ, smooth, apical pore broad and apex somewhat truncate, shape in face view oblong to elliptic, in profile elliptic to obscurely inequilateral, color in KOH dark bister becoming clouded with chocolate, in Melzer’s reddish tan to ferruginous-red, wall about 0.8 μ thick.

Basidia 20–26 × 10–13 μ, clavate, 4-spored, hyaline in KOH. Pleurocystidia 52–70 × 9–16 μ, fusoid-ventricose, apex acute to obtuse, walls thin, smooth and hyaline, cell content not distinctive in KOH or in Melzer’s. Cheilocystidia similar to but smaller than the pleurocystidia and also clavate to vesiculose, the clavate cells (16–)18–32 (–40) × 7–15 μ, and with pedicels with thickened yellowish walls in some (in KOH), vesiculose cells 26–40 × 10–16 μ, hyaline. Caulocystidia small, 26–40 × 7–12 μ, fusoid-ventricose, apex obtuse to subacute, clavate to vesiculose cells also present.

Pileus having a cuticle of clavate to pedicellate cells in more or less of a palisade (best seen in young specimens), the cells hyaline, thin-walled, smooth, content not distinctive. Hyphae of the trama brownish to hyaline in KOH, the walls smooth. Clamps present. No distinctive reactions noted for any tissue mounted in Melzer’s.

Type locality. Sweden.

Habit and habitat. Gregarious to scattered on grassy places in the woods and on humus or sandy soil.

Distribution. Michigan, Oregon.

Observations. Apparently this is a rare species in North America. It is not *P. cattdata* in the sense of Moser which is cespitose in gardens and has spores 12–16 × 8–9 μ. The North American material cited here is perhaps closer to *P. microrhiza* of some authors, but the lack of a veil and the pointed to obtuse pleurocystidia appear to distinguish it. *P. longicauda* Karst. is possibly the same as *P. caudata*.


Illust. Text Fig. 652–654.

Pileus 1 cm broad and high, conic and not expanding, surface hygrophanous, glabrous, rugose-striate, avellaneous, pale isabelline on the disc, margin straight, entire and concolorous.

Lamellae adnate, crowded, rather broad, grayish-white at first, becoming black with age.
Stipe 4 cm long, 1 mm thick, rather fragile, filiform, smooth, snow-white, mycelioid at the base.

Spores 10–13 × 6–7 μ, smooth, truncate from a broad apical pore, shape in face view very broadly elliptic, in profile elliptic to very obscurely inequilateral, color in KOH dark chocolate-color in a short time, in Melzer's dark tawny red, wall about 0.8 μ thick.

Basidia 4-spored, hyaline in KOH, 18–22 × 9–11 μ. Pleurocystidia scattered, 36–44 × 10–14 μ, fusoid-ventricose with obtuse to subacute apex, neck becoming more elongated in age, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer’s. Cheilocystidia either similar to pleurocystidia or clavate to ellipsoid or saccate, 18–28 × 9–15 μ for the inflated types. Caulocystidia not studied.

Pileus having a cuticle of inflated hyaline cells 1–3 deep, some large clavate cells present indicating an arrangement in an irregular palisade. Context hyphae brown in KOH. Clamps present.

Type locality. Motzorongo, Mexico.

Habit and habitat. Solitary on humus.

Distribution. Known only from the type locality.

Observations. The snow-white stipe and very broad ellipsoid spores are its most distinctive features.

305. Psathyrella calvinii A. H. Smith, sp. nov.

Pileus 5–10 mm latus, conicus vel campanulatus, rufofulvus, glaber; lamellae confertae demum subdistantes, latae, brunneolae demum atro-brunneae; stipes 2–5 cm longus, circa 1 mm crassus, glaber, pallidus, deorsum demum brunneus; sporae 12–15 × 7–8 (13–16 × 7–8.5) μ; pleurocystidia 36–52 × 10–16 μ, fusoid-ventricosa, acuta; fibulae adsunt. Typus. Kauffman 9–9–23 (MICH); legit prope Centennial, Wyoming.

Illust. Text Figs. 655, 656.

Pileus 5–10 mm broad, obtusely conic becoming obtusely campanulate, glabrous, moist, color “russet” when young but becoming cinnamon-brown before changing to grayish brown (“buffy brown”) as spores mature, hygrophanous and fading to pale tan (“cinnamon-buff”) or over marginal area avellaneous, atomate when faded. Context very thin and fragile, concolorous with the surface either moist or faded; odor and taste not distinctive.

Lamellae close becoming subdistant, moderately broad to broad, broadly adnate but readily seceding, brownish at first but becoming blackish brown by maturity, edges entire and not distinctively colored.

Stipe 2–5 cm long, about 1 mm thick, slender, fragile, equal, glabrous, whitish to pallid but finally brownish over all, sparingly fibrillose in button stages from the remains of a rudimentary veil.

Spores 12–15 × 7–8 μ (13–16 × 7–8.5 μ on 2-spored basidia), smooth, apical pore distinct but apex obscurely to distinctly truncate (in largest spores), shape in face view oblong to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH date brown becoming “mummy brown” or blacker, in Melzer's reddish tawny, wall about 1.2 μ thick.

Basidia 2- or 4-spored, 24–32 × 10–14 μ, clavate, hyaline or at the base the wall pale tawny. Pleurocystidia rare to scattered, 36–52 × 10–16 μ, ventricose with a narrow neck tapered to a sharp pointed apex, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer’s. Cheilocystidia similar to pleuro-
cystidia or saccate to clavate and 12–18×9–12 μ, or some more elongate and 25–36×8–14 μ, the clavate cells often yellowish in KOH and with walls slightly thickened in places at times. Caulocystidia rare and those seen resembling the cheilocystidia (both types). Hyphae of the stipe with numerous pale fulvous pigment inclusions on the walls as bands or patches and most numerous near the septa (examine the portions of the stipe which become brownish).

Gill trama regular, dark cinnamon-brown in KOH or with a vinaceous tint at first, subhymenial cells also colored, pigment in the wall or incrusted on it. Pileus trama dark cinnamon-brown in KOH or with a faint vinaceous tinge, the pigment masses encrusted on the walls especially in the subcuticular region. Pileus cuticle of clavate pedicellate cells arranged in a palisade, the bases yellowish as seen in groups, inflated part with hyaline to yellowish walls as revived. Clamp connections present. Not reacting in a distinctive manner to Melzer's on any tissue.

Type locality. Centennial, Wyoming.
Habit and habitat. Scattered to gregarious on sand or on soil or muck.
Observations. In the 4-spored form the hyphae of the stipe are more heavily incrusted than in the 2-spored material. No tendency to become pink on aging was noted by me or mentioned by Kauffman. The species is close to *Drosophila opaca* Romagnesi but has a thin veil and larger spores.


306. *Psathyrella subincarnata* A. H. Smith, sp. nov.

Pileus 1–3 cm latus, late convexus, vinaceo-brunneus, glaber; lamellae latae, distantes, sordide vinaceae demum fusco-griseae; stipes 2–4 cm longus, 2–3 mm crassus, glaber, pallidae vel vinaceo-pallidae; sporae 12–15×6–7.5 μ; pleurocystidia 60–80×9–14 μ, anguste fusoid-ventricosa collis elongatis, ad apicem obtusata; fibulae adsunt. Typus. Smith 63594 (MICH); legit prope Douglas Lake, Michigan.

Illust. Text Fig. 662.

Pileus 1–3 cm broad, obtusely conic to convex, expanding to broadly convex, margin straight at first, when young and moist dark vinaceous-brown but fading to vinaceous-gray, striate when moist, glabrous (including the edge). Context thin, fragile, odor and taste not distinctive.

Lamellae broad, distant, dull vinaceous but finally “hair brown” (dark brownish gray), adnate-seceding, edges even and concolorous with the sides.

Stipe 2–4 cm long, 2–3 mm thick, equal fragile, tubular, naked, pallid to vinaceous-pallid.

Spores 12–15×6–7.5 μ, smooth, truncate from an apical pore, shape in face view elliptic to oblong, varying more rarely to narrowly ovate, in profile mostly subelliptic, color in KOH coffee-brown but soon dark chocolate-color, in Melzer's reddish tawny, wall about 0.6 μ thick.

Basidia 4-spored, clavate, 24–30×10–14 μ, hyaline in KOH. Pleurocystidia 60–80×9–14 μ, narrowly fusoid-ventricose with elongated neck and only an obtuse apex, some encased in a thin layer of a hardened mucilaginous substance which is yellowish in KOH and flakes off variously (in KOH mounts). Cheilocystidia smaller than the pleurocystidia.

Pileus cuticle of greatly inflated cells 2–3 deep with thin, hyaline to pale
ochraceous walls in KOH, cell content not distinctive. Hyphae of the context when revived in KOH with incrusted hyphae, the pigment dingy clay color in KOH (not fuscous!), slowly dissolving in KOH and sections soon nearly hyaline. Clamp connections present.

Type locality. Douglas Lake, Cheboygan County, Michigan.

Habit and habitat. Gregarious on mud under pine trees, July.

Distribution. Known only from the type locality.

Observations. This species is at once distinguished from *P. barlae* by smaller size, lack of a veil, and the merely obtuse cystidia. The KOH reaction on pilare tissue distinguishes the two readily.


Pileus 1.5–3.5 cm latus, campanulatus vel convexus, glaber, cinnamomeo-brunneae; lamellae conferta, angustae, rufo-cinnamomeae; stipes 7–14 cm longus, 1.5–3 mm crassus, glaber, ad basem strigosus, pallidus, in exsiccatis pallide alutaceus; sporae 13–15(–17–20) × 6–7.5 μ; pleurocystidia 52–74 × 10–15 μ, fusoidea ad apicem acuta; caulocystidia 24–48(–60) × 8–15 μ, fusoid-ventricosa, ad apicem rotundata vel obtusa. Typus. Sumstine 23 (MICH); legit prope Red Raven, Allegheny County, Pennsylvania.

Illust. Text Figs. 657–661.

Pileus 1.5–3.5 cm broad, obtusely conic becoming campanulate or convex, finally plane or nearly so, glabrous, more or less “cinnamon-brown” when moist, margin striatulate, hygrophanous, fading to near “Sayal brown” (dull cinnamon) or in old pilei avellaneous, retaining a pale dingy tan coloration as dried. Context thin and very fragile, odor and taste not recorded. No veil present.

Lamellae close, adnate to adnexed, narrow, equal, dark reddish brown when dried (near “warm sepia”), edges faintly whitish.

Stipe 7–14 cm long, 1.5–3 mm thick, equal, glabrous, white, hollow, fragile, base somewhat strigose and rooting in the soil but not with a pseudorhiza, when dried more or less evenly pinkish buff over all.

Spores 13–15 (17–20) × 6–7.5 μ, smooth, apical pore present as a distinct hyaline spot but apex only slightly truncate, shape in face view oblong to elliptic to narrowly ovate, in profile obscurely inequilateral to subelliptic, color revived in KOH dull cocoa-color darkening to a medium dark chocolate-color, in Melzer’s tawny reddish, wall about 1.2 μ thick.

Basidia 25–30 × 10–14 μ, 2- and 4-spored, clavate to subcapitate, hyaline in KOH. Pleurocystidia very abundant, 52–74 × 10–15 μ, with a distinct narrow pedicel, ventricose above this and tapered evenly to a subacute apex or the apex subcapitate, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer’s. Cheilocystidia similar to pleurocystidia or the neck not so elongated, some clavate hyaline cells 9–13 μ broad also present. Caulocystidia numerous, 24–48(–60) × 8–15 μ, fusoid-ventricose with rounded to obtuse apex, some with hyaline refractive thickenings (or adhesions?) in the wall as revived in KOH. Hyphae of the stipe cortex smooth.

Gill trama pale yellowish brown as revived in KOH, fading on standing. Pileus trama a darker yellowish brown as revived in KOH, slowly becoming more dingy cinnamon. Cuticle of pileus formed by a palisade of pear-shaped to clavate hyaline cells.

Type locality. Red Raven, Allegheny County, Pennsylvania.

Habit and habitat. Cespitose to gregarious on soil.
308. Psathyrella tepeitensis (Murrill) A. H. Smith, comb. nov.


Illust. Text Figs. 663, 664.

Pileus 2.5 cm broad, convex to plane with a low umbo, surface glabrous, hygrophanous, radiately rugose, dull lateritious, smooth and dark brown on the umbo, margin undulate, dark fuliginous. Context thin and fragile.

Lamellae plane, rather distant, brown to black at maturity.

Stipe tapering upward, 8 cm long, 5 mm thick near the base, smooth, nearly glabrous, hygrophanous, hollow, dull white.

Spores 13-16 x 6.5-8 μ, smooth, apical pore often oblique, small and apex not obviously truncate, shape in face view elliptic to ovate, in profile obscurely inequilateral to subelliptic, color in KOH dark chocolate-color or soon becoming so, in Melzer's dark bay-brown, wall about 1.5 μ thick (in KOH).

Basidia 22-26 x 10-15 μ, hyaline in KOH. Brachybasidioles present, vesiculose, 10-15 x 8-14 μ. Pleurocystidia and cheilocystidia very conspicuous, similar, 60-80(-90) x 9-18(-20) μ, fusoid-ventricose with obtuse apex varying to subcylindric, if ventricose tapered evenly to apex; wall smooth, hyaline in KOH, thin or in the neck 0.5-1 μ thick in some (from material adhering to wall ?), content of cell not distinctive in KOH or in Melzer's.

Gill trama not reviving well (in the type). Pileus having a cuticle of vesiculose cells at least one cell thick, the walls thin, smooth and hyaline, cell content not distinctive in KOH or in Melzer's. Tramal hyphae dingy yellow-brown in KOH (in sections), the walls smooth. Clamps present.

Type locality. Cuernavaca, Mexico.

Habit and habitat. Solitary on humus in woods.

Distribution. Known only from the type locality.

Observations. This species is not placed in subg. *Homophron* because on the data obtained from the type I am not sure that the apparent thickening in cystidial wall is all it seems to be, and it was not present in many cystidia. Also, the relationships of the species on spore features are obviously in this group. The large dark spores with the frequently oblique germ pore, the distant broad lamellae and the brick-colored pileus are distinctive. The cuticle of the pileus is cellular (about 2-3 cells thick), and setae are absent from the layer.

309. Psathyrella uskensis A. H. Smith, sp. nov.

Pileus 1-2.5 cm latus, convexus vel planus, sparse fibrillosus, glabrescens, fusco-brunneus demum griseo-brunneus, praeatomatus; lamellae adnatae confractae angustae, brunneolae demum vinaceo-brunneae, dein purpureo-brunneae, in exsiccatis griseo-fuscae; stipes 6-8 cm longus, 1.5-2 mm crassus, albidus, discolorans, sparse fibrillosus glabrescens; sporae 12-16 x 5.5-7 μ; pleurocystidia 42-65 x 10-16 μ, fusoide ventricosa, ad apicerum acuta; fibulae adsunt. Typus. Smith 73377 (MICH); legit prope Usk, Washington.

Pileus 1-2.5 cm broad, obtusely conic with a straight margin, expanding to
convex or plane, at first covered by a weft of white outer veil fibrils but all traces of this soon gone, chocolate-brown when young and fresh, grayer as spores mature, fading to pallid and then very atomate, in drying becoming avellaneous to wood brown with disc tinged cinnamon. Context very thin and fragile, odor none.

Lamellae close, adnate, narrow, dull brown becoming vinaceous-brown and finally dark purplish brown, when dried near hair brown to fuscous, edges even.

Stipe 6–8 cm long, 1.5–2 mm thick, equal, fragile, white and scarcely discolored in age but dingy tan as dried, at first with scattered fibrils but soon glabrescent.

Spores 12–16 × 5.5–7 μ, smooth, apical pore present but apex scarcely truncate, shape in face view narrowly elliptic to oblong, in profile obscurely inequilateral to narrowly subelliptic, color in KOH soon blackish brown, in Melzer’s reddish tawny, wall about 0.5 μ thick.

Basidia 4-spored, clavate-capitate, 26–30 × 9–13 μ, hyaline in KOH. Pleurocystidia 42–65 × 10–16 μ, fusoid-ventricose the apex acute, wall usually refractive and 0.3–0.6 μ thick (in KOH), hyaline, content not distinctive. Cheilocystidia more or less similar to pleurocystidia. Pileus cuticle 1–2 cells deep, walls pale ochraceous to hyaline and thin. Hyphae of subcuticular region rusty brown in KOH and with pigment incrustations and wall thickenings. Clamps present.

Type locality. Usk, Pend Oreille County, Washington.

Habit and habitat. On mud, under spruce, September.

Distribution. Known only from the type locality.

Observations. The spores are those of *P. gracilis* but the dark brown pilei and thin veil along with the refractive walls of the pleurocystidia distinguish it. The color of the dried basidiocarps is also distinctive. In *P. jontinalis* pinkish tints develop on the faded pileus and the young gills are white at first.

310. *Psathyrella subolivacea* A. H. Smith, sp. nov.

Pileus (1–)2–4 (–5) cm latus, late convexus vel subplanus, glaber rugulosus, subfulvus vel spadiceus, dein olivaceo-brunneus, lamellae demum subdistantes, latae (3–4.5 mm), pallide argillaceae, demum “fuscous”; stipes 5–8 cm longus, 1–2 mm crassus, glaber; sporae 12–15 × 6.5–8 μ; pleurocystidia 40–60 × 9–16 μ, fusoid ventricosa ad apicem acuta; fibulae adsunt. Typus. Smith 11042 (MICH); legit prope Dexter, Michigan.

Illust. Pl. 81, fig. b; Text Figs. 665–668.

Pileus (1–)2–4 (–5) cm broad, obtusely conic to convex, becoming broadly convex or nearly plane, surface smooth to slightly rugulose, glabrous and moist, color variable (“cinnamon-brown” to “ochraceous-tawny” to “tawny-olive” when young, becoming “Dresden brown” to “snuff brown” to “sepia” or “olive-brown” before fading to pinkish buff or “pale olive-buff”), the umber cast developing as the spores mature. Context thin, watery brown, fragile, odor and taste not distinctive.

Lamellae close but becoming subdistant, 18–22 reach the stipe, bluntly adnate, lamellulae in 3 tiers, broad (3–4.5 mm), pallide argillaceae, demum “fuscous”; stipes 5–8 cm longus, 1–2 mm crassus, glaber; sporae 12–15 × 6.5–8 μ; pleurocystidia 40–60 × 9–16 μ, fusoid ventricosa ad apicem acuta; fibulae adsunt. Typus. Smith 11042 (MICH); legit prope Dexter, Michigan.
truly truncate, shape in face view oblong to narrowly ovate, in profile obscurely inequilateral to subelliptic, color in KOH date brown slowly becoming dark chocolate-color, in Melzer's dark reddish tawny, wall about 1 μ thick.

Basidia 22–30×10–13 μ, clavate, 4-spored, hyaline in KOH. Brachybasidioles present by late maturity. Pleurocystidia 40–60×9–16 μ, fusoid-ventricose, tapered to a subacute apex or apex spathulate or branched, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia similar to pleurocystidia varying to shorter, some clavate cells also present. Caulocystidia versiform: fusoid-ventricose, subcylindric or clavate, smaller than the pleurocystidia, apex acute to rounded or at or near apex some branching.

Gill trama regular, hyaline to pale brownish in KOH. Pileus trama regular, hyaline to pale brownish in KOH, ochraceous pigment deposits near the cross walls in many subcuticular hyphae. Pileus cuticle of vesiculose and pear-shaped cells intermingled and one cell deep, hyaline, not arranged in a distinct palisade. Clamps present.

Type locality. Dexter, Michigan.
Habit and habitat. Scattered on wet leaves.
Observations. No change to pink was observed in this species, and many of the pleurocystidia are branched near the apex or show subapical protrusions. It appears to be very close to *P. corrugis*.

Material examined. Michigan: Smith 4991 (Type), 11042.

311. *Psathyrella brachycystis* A. H. Smith, sp. nov.

Pileus 7–12 mm latus, campanulatus, ad marginem sparse floccosus, glabrescent, in exsiccati griseo-alutaceus; lamellae latae, subdistantes fuso-brunneae; stipes 2–3 cm longus, circa 1 mm crassus, in exsicatio brumneus; deorsum fibrilloso-floccosus; spores 11–15×6.5–8 μ; pleurocystidia 34–42×12–19 μ, late fusoido-ventricosa, ad apicem acuta; cutis pileum hymeniformis; fibulae adsunt. Typus. Brooks 1605 (MICH); legit prope Edwards, Kansas.

Illustr. Text Figs. 669–672.

Pileus 7–12 mm broad, broadly campanulate to nearly convex in buttons, becoming more broadly campanulate to nearly hemispheric at maturity, veil not conspicuous and adhering as small patches of white fibrils on or near the margin, glabrescent, color when fresh not noted, when dried grayish over margin and disc tinged with ochraceous-buff. Context very thin and delicate.

Lamellae broadly adnate to slightly arcuate as seen in dried material, broad, subdistant, pallid brownish in dried buttons, chocolate-brown with white fimbriate edges in mature dry pilei.

Stipe short, 2–3 cm long, about 1 mm or less thick, equal, dull brown when dried (consequently very likely discoloring when fresh), with scattered white fibrillose flecks of veil fibrils over lower part, base white mycelioid where attached to the mud.

Spores 11–15×6.5–8 μ, smooth, truncate from a wide apical pore, shape in face view ovate to elliptic, in profile obscurely inequilateral to subovate, color in KOH bister soon becoming dark chocolate-color, in Melzer's reddish tawny to bay, wall about 1 μ thick.

Basidia 4-spored, 26–32×10–13 μ, subcapitate, hyaline in KOH. Pleurocystidia scattered, broadly fusoid-ventricose, 34–42×12–19 μ, neck short and apex acute, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia
abundant, thin-walled, 28–39×9–15 μ, fusoid-ventricose to clavate, subelliptic or vesiculose. Caulocystidia in patches, similar to cheilocystidia but more variable in size.

Gill trama vinaceous in KOH, color fading slowly, incrustations present on hyphae of the central area but not the subhymenium. Pileus trama persistently rather dark vinaceous-brown to pale cocoa-color in KOH, hyphae incrusted. Cuticle of pileus a palisade of large (35–50×10–25 μ) ellipsoid to cystidioid thin-walled hyaline cells with the apex of the cystidioid cells broadly rounded, cell content not distinctive. Clamp connections present. No distinctive reaction noted on any tissue as revived in Melzer's.

Type locality. Edwards, Kansas.

Habit and habitat. Subcespitose on wet soil (mud).

Distribution. Known only from the type locality.

Observations. The thin veil, large spores, short and broad pleurocystidia and short stipes make this a recognizable species.

312. Psathyrella parvicystis A. H. Smith, sp. nov.

Pileus 10–20 mm broad, latus, obtusus vel convexus demum late convexus, ad marginem fibrillosus, glabrescens valde striatus fuscus demum avellaneus; lamellae confertae, latae, pallide avellaneae demum atro-brunneae; stipes 6–8 cm longus, 1–1.5 mm crassus, albidus, deorsum leviter fibrillosus glabrescens; sporae 12–16(–18)×6–8 μ; pleurocystidia rara 28–40×10–15 μ, fusoid-ventricosa, ad apicem acuta; fibulae adsunt. Typus. Smith 18305 (MICH); legit prope West Branch, Michigan.

Illust. Text Figs. 673, 674.

Pileus 10–20 mm broad, obtuse to convex, becoming broadly convex, surface at first with scattered fibrils along the margin from the thin white veil, soon the surface entirely glabrous, conspicuously translucent-striate when moist, somewhat sulcate when faded, color dull wood brown when moist, hygrophanous and pale avellaneous when faded. Context very thin and fragile, odor and taste not distinctive.

Lamellae close, broadly adnate, not readily seceding, narrow to moderately broad, pallid avellaneous becoming blackish brown, edges even. Stipe 6–8 cm long, 1–1.5 mm thick, very fragile and delicate, white, pruinose above, lower portion at first with scattered fibrils from the veil but soon glabrous, attached to the substratum by a white mycelial mat.

Spores 12–16(–18)×6–8 μ, smooth, with a distinct apical pore and apex truncate, shape in face view elliptic, ovate or slightly ventricose, in profile obscurely inequilateral to subelliptic, color mummy brown (blackish brown) with the more immature spores various shades of date brown, in Melzer's bay-brown, wall about 1.3 μ thick.

Basidia 4-spored, 20–24×10–12 μ, capitate to clavate, hyaline in KOH. Brachybasidioles differentiated by late maturity. Pleurocystidia very rare, 28–40×10–15 μ, fusoid-ventricose with acute apex, wall thin, smooth and hyaline, content not distinctive in KOH. Cheilocystidia similar to pleurocystidia and also many clavate to ellipsoid cells 18–24×7–12 μ present, the walls of the cells (especially the bases) and the supporting hyphae often yellow in KOH, walls thin and smooth. Caulocystidia fusoid-ventricose to clavate or vesiculose, apex mostly acute, wall thin, smooth and hyaline, variable in size but not over 50×15 μ.

Gill trama regular, the cells large and somewhat interwoven, dull rusty brown in KOH but with a faint tinge of cocoa-color at first, subhymenium cellular,
hyaline. Pileus trama floccose and loosely interwoven, dull rusty brown in KOH but with a tinge of cocoa-color. Cuticle formed of an irregular palisade of large clavate cells mostly with very broad bases, hyaline or only faintly yellowish in KOH. Clamp connections present.

Type locality. Near West Branch, Michigan.

Habit and habitat. Solitary on muck under aspen.


Observations. In stature this species reminds one of P. gracilis but differs in having much shorter and extremely rare pleurocystidia and in having a veil.

Material examined. Michigan: Potter 4834; Smith 18305 (Type), 26004.


Illust. Text Figs. 675, 676.

Pileus 6–10 mm broad, obtuse to campanulate, surface moist and sub-hygrophanous reddish cinereous when moist, paler when dry, slightly rugulose and atomate when faded. Context thin and very fragile.

Lamellae broad, adnate, plane or but slightly ascending, subdistant, at first pallid or subcinereous, then amber and finally blackish, white on the edges.

Stipe 2.5–4 cm long, scarcely 1 mm thick, slender, glabrous, stuffed or hollow, white, with a white floccose mycelium at the base.

Spores (11–12–15–16) × 5.5–7 µ, smooth, apical pore distinct and apex truncate under oil, shape in face view oblong to narrowly elliptic but more or less pointed at the base, in profile subelliptic or with ventral line straighter than the dorsal line in optical section, color in KOH black or nearly so, in Melzer's bay-brown, wall 1.3 µ thick.

Basidia 4-spored, clavate, hyaline, 20–30 × 9–12 µ. Brachybasidioles present. Pleurocystidia rare to scattered, 27–38 × 8–12 µ, fusoid to fusoid-ventricose, apex obtuse to subacute, wall thin, smooth and hyaline (at first with some granular material adhering but this soon disappearing in KOH or Melzer's), content not distinctive. Cheilocystidia similar to the pleurocystidia, hyaline.

Gill trama hyaline in KOH, of irregularly arranged inflated cells. Cuticle of pileus of vesiculose cells in a layer (1–) 2–3 cells deep, hyaline in KOH and readily collapsing. Hyphae of the context of enlarged cells which are compactly arranged, hyaline in KOH or finally merely slightly discolored. Clamps present.

Type locality. Pierrepont Manor, Jefferson County, New York.

Habit and habitat. On damp mucky ground in open woods.


Observations. This is one of the small delicate species not very often recorded probably because the basidiocarps are so ephemeral.


314. Psathyrella intermedia (Peck) A. H. Smith, comb. nov.


Pileus 13–25 mm broad, campanulate or convex, even, glabrous, moist and hygrophanous, grayish brown.

Lamellae ascending or subarcuate, subdistant, adnate, black when mature.

Stipe 5–10 cm long, 0.5–1.5 mm thick, slender, often elongated, hollow, grayish brown, white-pruinose at the top.
Spores 11–13×6–7.5 μ, smooth, truncate from a broad apical pore, shape in face view oblong to elliptic, in profile elliptic to obscurely inequilateral, color in KOH dark chocolate-color.

Basidia 4-spored, 10–12 μ wide, hyaline in KOH. Pleurocystidia scattered to rare, hyaline, thin-walled, 30–40×9–12 μ, ventricose with subacute apex (typically fusoid-ventricose), wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia either similar to the pleurocystidia or some vesiculose and up to 14 μ broad, yellowish in the wall in the basal portion as revived in KOH.

Gill trama dingy reddish tawny as revived in KOH. Pileus having a cuticle of inflated cells hyaline in KOH and 1–2 cells deep. Hyphae of the context dark tawny to reddish brown as revived in KOH.

Type locality. Pasadena, California.

Habit and habitat. Rich soil along gutters or in canyons.

Distribution. Known only from the type locality.

Observations. The color of the spores in KOH indicates to me that this species is a *Psathyrella*, not a *Panaeolus*. The color of the hyphae of the subcuticular region of the pileus, even though poorly revived, also indicates *Psathyrella*. Its relationships appear to be with *P. gracilis* but it falls in series *Tenerae* since apparently no pink tints developed, either on the pileus or the gill edges.


*Pilocybe ammophila* (Durieu & Lév.) Gillet, Les Hymén. 1: 587. 1874.


Pileus 1.5–4 cm broad, convex with an incurved margin, expanding to broadly convex or plane, margin thinly fibrillose at first but soon naked, color dull rusty brown, fading to tan but soon bleached to nearly white, when dried dingy ochraceous to pinkish cinnamon. Context thick and fleshy (for this genus), odor and taste not distinctive.

Lamellae broad, depressed, adnate, close, thin, dingy brown becoming chocolate-brown and drying blackish, edges even and pallid.

Stipe 3–7 cm long, 3–5 mm thick, sunken in the sand for an additional 2–4 cm, relatively firm and fibrous, tubular, readily separable from pileus, surface unpolished, nearly concolorous with pileus; no veil remnants evident on stipe in the material studied.

Spores 9–14×6–8 μ, smooth, obscurely truncate from an apical pore, shape in face view broadly elliptic to slightly ovate, in profile obscurely inequilateral to subelliptic, color in KOH coffee-bean brown becoming dark chocolate-color, reddish tawny in Melzer's, wall about 0.5 μ thick.

Basidia 4-spored, 25–32×9–12 μ, clavate, hyaline in KOH. Pleurocystidia scattered, 38–55×9–14 μ, fusoid-ventricose, apex acute to subacute, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia similar to the pleurocystidia but varying to clavate or subglobose-pedicellate, hyaline.

Gill trama pale yellowish cinnamon fading to hyaline (revived in KOH), interwoven. Pileus trama darker than gill trama but hyphal walls smooth and thin. Cuticle of pileus (in tangential section), a layer of vesiculose cells 2–3 cells thick and the cells 15–30 μ wide, their walls smooth, thin and concolorous with the hyphae of the trama. Clamps present.
Type locality. Algiers.
Habit and habitat. Cespitose-gregarious on sand dunes, December.
Distribution. California.

Observations. This species has wider spores than \textit{P. arenulina} and pleurocystidia are reasonably abundant though not "volumineuses (×15–22)" as indicated by Kühner & Romagnesi. This point deserves further study. In appearance the dried basidiocarps resemble those of the Strophariaceae more than those of any other \textit{Psathyrella} I have examined. Singer (1968) comments on the spore size. The Californian collection establishes that variants with spores up to 14 μ long occur in both Europe and North America.

Material examined. California: Smith 56813.

316. \textit{Psathyrella alluviana} A. H. Smith, sp. nov.

Pileus 1–3.4 cm latus, campanulatus, glaber, cinnamomeo-brunneae demum umbrosus, demum rugoso reticulatus, valde atomatus; contextu brunneus; lamellae latae (6–10 mm), confertae, brunneo-demum atro-brunneae; stipes 8–12 cm longus, 1.5–2.5 mm crassus, glaber, pallidus deorsum demum ochraceus; sporae 10–12.5 (–13) × 5.5–7 μ; pleurocystidia 46–70 × 8–12 (–14) μ, anguste fusoide ventricosa, ad apicem obtusata vel subacuta; fibulae adsunt. Typus. Smith 19272 (MICH); legit prope Government Camp, Mt. Hood, Oregon.

Illust. Pl. 78, fig. f; Text Figs. 677–681.

Pileus 1–3.4 cm broad, conic-campanulate or conic-umbonate with a flaring margin, glabrous, hygrophanous, "cinnamon-brown" when moist, becoming umber over all except the disc, margin crenate, fading to grayish over the marginal area and ochraceous over the disc or becoming ochraceous throughout, when faded the surface very conspicuously but finely radially reticulate or wrinkled, the wrinkles forking and anastomosing, very atomate to appearing almost furfuraceous, no veil remnants present. Context very thin and exceedingly fragile, concolorous with the surface, odor none.

Lamellae broad (6–10 mm) subdistant to close, adnate, soon seceding, pallid, to pale brown to black, edges slightly crisped at times in age.

Stipe 8–12 cm long, 1.5–2.5 mm thick, tubular, glabrous, pallid to white becoming dingy yellowish at the base, exceedingly fragile.

Spores 10–12.5 (–13) × 5.5–7 μ, smooth, apex truncate from a distinct broad apical pore, shape in face view oblong to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH soon dark chocolate-color, in Melzer's dark reddish tawny, wall about 1 μ thick.

Basidia 22–25 × 10–12 μ, 4-spored, clavate, hyaline in KOH. Pleurocystidia scattered to numerous, narrowly fusoid-ventricose, neck elongated, apex obtuse to subacute, wall hyaline, smooth and thin, cell content not distinctive in KOH or Melzer’s, 46–70 × 8–12 (–14) μ. Cheilocystidia 28–42 × 9–14 μ, fusoid-ventricose with obtuse to subacute apex, thin-walled, some saccate cells also present. Caulocystidia similar to pleurocystidia to subcylindric, scattered, more variable in size than the latter.

Gill trama interwoven, dark chocolate to cocoa-color in KOH, pigment incrusted on the hyphae, subhymenium cellular and also slightly colored (in KOH). Pileus trama dark cocoa-color fading to yellow-brown, pigment conspicuously incrusted on the hyphae. Cuticle of pileus of vesiculose to pedicellate cells not arranged in a distinct palisade but the layer more or less one cell deep, the pedicels of some slightly thickened and vinaceous-brown to yellow-brown in
KOH, some hyaline thin-walled subcapitate pileocystidia projecting from the cuticle, these measuring 48–62×9–12 μ. Clamps present.

Type locality. Mt. Hood, Oregon.

Habit and habitat. Scattered on black muck often in the flood plain of a mountain stream, September.


Observations. The heavily incrusted subcuticular hyphae, the long slender stipe, large spores, lack of a veil, long narrow pleurocystidia and reticulate faded pileus along with the dark color when fresh distinguish it.


317. Psathyrella tahomensis A. H. Smith, sp. nov.

Pileus 1–3 cm latus, conicus, glaber, melleus dein pallide alutaceus; contextu melleus; lamellae pallidae demum avellaneae dein fusco-griseae, late, confertae; stipes 4–6 cm longus, 1–2 mm crassus, albidus vel pallidus, deorsum leviter fibrillosus, glabrescens; sporae 10–13×6–7.5 μ; pleurocystidia 60–80×9–12 (–14) μ, anguste fusoide ventricosa, subacuta; fibulae adsunt. Typus. Smith 29348 (MICH); legit prope Tahoma Creek, Mt. Rainier National Park, Washington.

Pileus 1–3 cm broad, obtusely conic expanding to broadly conic and with a flaring margin, veil rudimentary, surface glabrous, moist, hygrophanous, dingy honey-color moist, fading to "pinkish buff" on disc first, margin only faintly striatulate and gradually becoming drab as spores mature. Context thin and fragile, pallid when faded, honey-color moist, odor and taste none.

Lamellae pallid to avellaneous at first but finally near drab (dark gray), ascending-adnate, moderately broad near the stipe and tapered to margin, close, edges whitish.

Stipe 4–6 cm long, 1–2 mm at apex, equal or nearly so, hyaline whitish to slightly watery grayish within at the base, lower third with a few white scattered fibrils from the rudimentary veil, apex faintly pruinose.

Spores 10–13×6–7.5 μ, smooth, terete, apical pore broad and apex conspicuously truncate, shape in face view oblong to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH medium date brown becoming dark date brown (dark bister), in Melzer's amber brown to tawny, wall about 1 μ thick.

Basidia 4-spored, 20–24×10–12 μ, broadly clavate, hyaline in KOH. Pleurocystidia 60–80×9–12 (–14) μ, subcyllindric to subfusoid or narrowly fusoid-ventricose, apex subacute to obtuse, side-walls often flexuous but thin, hyaline and smooth, content not distinctive. Cheilocystidia clavate to fusoid-ventricose with acute apex and shorter than the pleurocystidia; clavate cells 12–16×6–10 μ, fusoid-ventricose cells 26–34×9–13 μ or some larger. Caulocystidia very scattered and mostly resembling the cheilocystidia.

Gill trama hyaline in KOH or nearly so. Pileus trama hyaline in KOH. Pileus cuticle a single layer of vesiculose cells some of which are pedicellate. Clamp connections present. No distinctive reaction seen on any tissue when mounted in Melzer's.

Type locality. Lower Tahoma Creek, Mt. Rainier National Park, Washington.

Habit and habitat. Gregarious in duff under alder.

Observations. The pale color when young, gray gills at maturity and lack of pink tints in age are distinctive.


318. *Psathyrella coloradensis* A. H. Smith, sp. nov.

Pileus 6–15 mm latus, convexus, ad marginem leviter fibrillosus, glabrescens, fusco-cinnamomeus; lamellae latae, subdistantes brunneolae demum fusco-brunneae; stipes 2–4 cm longus, 1–2 mm crassus, albus, deorsum demum brunneus, glabrescens; velum sparsissimum; sporae 13–15.5 x 6–7.5 μ; pleurocystidia 40–60 x 10–15 μ, fusoide ventricosa, acuta; fibulae adsunt. Typus. Smith 51659 (MICH); legit prope Placerville, Colorado.

Pileus 6–15 mm broad, convex with an appressed margin at first, expanding to broadly convex or retaining a slight obtuse umbo. A thin fibrillose veil leaving scattered fibrils along the margin at first but pileus soon completely glabrous. Pileus moist and hygrophanous, dark cinnamon-brown, when faded a dingy tan and distinctly atomate, when old dark chocolate-brown except for a pallid disc. Context thin and fragile, odor not distinctive, taste mild.

Lamellae broad, subdistant, broadly adnate, dull brown becoming dark chocolate-brown, edges pallid.

Stipe 2–4 cm long, 1–2 mm thick, equal, fragile, whitish above, brownish below, lower portion fibrillose from remains of a thin veil but glabrescent.

Spores blackish in deposit, 13–15.5 x 6–7.5 μ, smooth, apex truncate from an apical pore, shape in face view elliptic to subovate, in profile obscurely inequilateral to subelliptic, color in KOH blackish brown when mature, in Melzer's dark reddish tawny, wall about 0.6 μ thick.

Basidia 4-spored, 26–30 x 9–12 μ, clavate, hyaline. Brachybasidioles possibly present at maturity. Pleurocystidia scattered 40–60 x 10–15 μ, fusoid-ventricose (pedicel 10–15 x 3 μ, neck 15–20 x 3–3.5 μ, apex pointed), hyaline, smooth, thin-walled, cell content not distinctive. Cheilocystidia similar to but smaller than pleurocystidia and lacking a narrow pedicel, apex acute; clavate to vesiculose cells with yellow walls in KOH also present, 8–14 μ wide.

Pileus cuticle about 2 cells deep, the cells greatly inflated, thin-walled and hyaline to ochraceous in KOH. Subcuticular hyphae dingy brown in KOH but fading, with incrusted pigment. Clamp connections present.

Type locality. Placerville, Colorado.

Habit and habitat. Gregarious on debris under willows and brush near a stream, August.

Distribution. Colorado.

Observations. The pilei were not plicate striate and it is questionable if the inflated basidioles can be properly described as brachybasidioles, but it is obvious to me that one could interpret them either way without changing the taxonomic import of the character state in the genus.

Section *Fatuæ* (Romagnesi) Singer, Sydowia 15: 67. 1961


Type. *Psathyrella fatua.*
Key to the Subsections of Section *Fatuae*

1. Habitat lignicolous.  
   subsect. *Lauricolae*.
1. Habitat terrestrial or merely with basidiocarps attached to bits of woody debris.  
   subsect. *Fatuae*

Subsect. *Fatuae*

Note: *Psathyrella subagraria*, *P. parvi fibrillosa*, *P. heterocystis*, *P. subnuda* and *P. lubrica* may key out here also.

Key to the Species of the Subsection *Fatuae*

1. Spores compressed (wider in face than in profile view).
   2. On waste soil among weeds in Kansas.  
      319. *P. ovatispora*.
   4. Spores essentially terete.  
      321. *P. vesiculocystis*.
3. Brachybasidioles present; lamellae blackish as dried; stipe 7-11 cm long, 3-6 mm thick.
   320. *P. abieticola*.
3. Brachybasidioles absent; lamellae dark vinaceous brown as dried; stipe 3-5 cm × 1-2 mm.
   4. Finkish stains or flushes present on faded pilei or on gill edges and with spores lacking a distinct apical truncation.  
      5. Not with the above features.  
         6. Spores 6.5-8 × 3.5-4.5 μ.  
            322. *P. georgiana*.
      7. Spores 8-10(-12) × 4.5-5.2 μ.  
         323. *P. vinescens*.
       8. Spores 7-9 × 3.3-3.8 μ.  
          324. *P. praecox*.
       9. Spores 4-5.5(-6) μ wide.  
          325. *P. distantifolia*.
7. Lamellae distant.
   8. Lamellae close varying to subdistant.
      9. Taste bitter; lamellae close and narrow.
      10. Spores very soon fuscous revived in KOH; stipe white over all.  
          326. *P. amarella*.
      11. Taste mild; lamellae broad to moderately broad.
         10. Spores cocoa-color in KOH at first; stipe whitish above dingy tan below when mature (but see 32a. *P. kauffmanii* var. *exannulata* and *P. lilaceogrisea* also)  
             327. *P. spadiceogrisea*.
     12. Spores not truncate at apex.  
        11. Spores truncate.
       12. Stipe distinctly darkening near base by maturity; pileus when young cinnamon-brown; in open pastures.  
           329. *P. mazzieri*.
       13. Stipe hardly darkening; pileus when young pale honey brown; growing on moist sand in shaded places.  
          330. *P. psammophila*.
     14. Spores containing a medium-sized globule; brachybasidioles present at maturity; on black muck in a swamp.  
         331. *P. ephemera*.
     15. Spores lacking a globule; brachybasidioles not present; on well-drained humus under alder; spores broadly elliptic in face view (but see 376. *P. katmaiensis* and *P. praetenuis* also).  
        332. *P. elliptispora*.

319. *Psathyrella ovatispora* A. H. Smith, sp. nov.

Pileus 8-20 mm latus, late convexus, glaber, cinnamomeo-brunneus; lamellae angustae demum sublatae, conflerta demum subdistantes, fusco-brunneae; stipes 2-3 cm longus, circa 1 mm crassus, pallidus, deorsum demum brunneolus, sursum pruinosus; sporae 7.5-8.8 × 5-5.5 × 5.5-6.3 μ; pleurocystidia 36-44 × 10-12.5 μ, subcylindrica, ad apicera late rotundata; fibulae adsunt. Typus. Brooks 1616 (MICH); legit Geary County, Kansas.
Pileus 8–20 mm broad, convex becoming nearly plane, glabrous (no evidence of a veil anywhere on dried basidiocarps), color more or less cinnamon-brown fresh, fading to pinkish buff or near avellaneous toward the margin, margin typically even. Context thin and delicate, odor and taste not recorded (very likely not distinctive).

Lamellae narrow to moderately broad, close to subdistant, broadly adnate, chocolate-brown at maturity, when dried wood brown to fuscous (not with any distinct vinaceous-brown tint), edges even.

Stipe 2–3 cm long, about 1 mm thick, equal, white-mycelioid at base, pallid to very pale brownish above (probably when young and fresh), upper portion pruinose-punctate or somewhat long-striate, glabrous below.

Spores in deposit dark chocolate-color, 7.5–8.8×5.5–5.5×5.5–6.3 μ, dark chocolate-color under the microscope in KOH, in Melzer’s bay-red, smooth apical pore distinct and apex appearing slightly truncate, shape in face view broadly ovate shaped like the flat side of a kernel of corn, in profile obscurely inequilateral to subelliptic, compressed slightly, wall about 0.5 μ thick.

Basidia 16–19×10–11 μ, almost globose-pedicellate, 4-spored, hyaline in KOH. Brachybasidioles 10–18 μ wide, thin-walled and readily collapsing. Pleurocystidia scattered, 36–44×10–12.5 μ, subcylindric with a broadly rounded apex, thin-walled, hyaline, smooth revived in KOH, content of cells homogeneous or rarely with a plate-like mass of highly refractive solid material in the central cavity (as revived in KOH). Cheilocystidia similar to pleurocystidia, no colored elements present as revived in KOH. Caulocystidia mostly similar to pleurocystidia but varying to clavate, none seen with distinctive content.

Gill trama of enlarged hyphal cells, walls pale vinaceous-brown to nearly hyaline as revived in KOH. Pileus trama persistently vinaceous-brown in KOH, the color both in the hyphal wall and as incrustations on it. Cuticle of pileus a layer of vesiculose cells 2–3 deep, their walls thin, smooth and hyaline to brownish in KOH. Clamp connections present.

Type locality. Geary County, Kansas.

Habit and habitat. Terrestrial, probably gregarious.

Distribution. Known only from the type locality.

Observations. The very dark colored, small but broad spores and the presence of brachybasidioles along with utriform pleurocystidia make this an easily recognized species.
Lamellae narrow, only moderately close, ascending-adnate, seceding, dingy cocoa-brown becoming darker, blackish as dried, edges even.

Stipe 3-5 cm long, 1-2 mm thick, equal, slender, weak and fragile, white and remaining so, naked to unpolished.

Spores 7-9.5 × 4.5-5.5 × 5.5-7 μ, smooth, apical pore distinct and apex truncate typically, shape in face view broadly ovate to angular-ovate rarely subcircular, in profile subelliptic to obscurely inequilateral, color in KOH dark cocoa-brown slowly changing to dark chocolate, in Melzer's dark reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 9-11 μ broad, 17-24 μ long in old pilei, hyaline. Brachybasidioles present. Pleurocystidia 42-58 × 10-17 μ, utriform to fusoid-ventricose with broadly rounded apex, the latter with a coating of granular material over some small areas of some cystidia, wall hyaline and thin, cell content not distinctive. Cheilocystidia scattered to rare, ± similar to pleurocystidia.

Hyphae of the pileus context rusty cinnamon in KOH, with incrustations on the wall and wall thickenings present near the septa. Pileus cuticle of greatly enlarged cells 1-2 deep, the walls thin, pale dingy ochraceous, and the cell content not distinctive. Clamp connections present.

Type locality. Near McCall, Idaho.

Habit and habitat. Gregarious under spruce and fir, July.


Observations. The broad often angular spores as seen in face view, are distinctive for a species in this group. The stature when fresh reminded me of *P. candolleana*, but the pleurocystidia are abundant and characteristic and the spores are also different.

Material examined. Idaho: Smith 58673 (Type). Washington: Smith 48078.

321. *Psathyrella vesiculocystis* A. H. Smith, sp. nov.

Pileus 1.5-4 cm latus, late convexus, cinnamomeo-brunneus; contextu concolor; lamellae confertae, angustae, fuscae, in exsiccatis vinaceo-brunneae; stipes 7-11 cm longus, 3-6 mm crassus, sursum pruinosus, pallidus, deorsum glaber; sporae 8-9.5 × 4-5 × 5-6.5 μ; pleurocystidia 38–65 × 10–18 μ, pedicellato-ellipsoidea vel cylindrica, ad apicerum subverrucosa (processi sparsa vel rara); fibulae adsunt. Typus. Smith 70089 (MICH); legit prope Burgdorf, Idaho.

Illust. Text figs. 690–694.

Pileus 1.5-4 cm broad, convex, expanding to broadly convex, glabrous, moist, hygrophanous, more or less cinnamon-brown when moist, fading to dingy tan but when dried dark vinaceous-brown. Context thin, colored like the surface, fragile, odor not distinctive.

Lamellae crowded, narrow, adnate at first, fuscous at maturity and when dried very dark vinaceous-brown (near "bone brown").

Stipe 7-11 cm long, 3-6 mm at apex, equal or nearly so, very fragile, pruinose above, naked below, watery white to pallid and not discoloring; veil absent.

Spores 8-9.5 × 4-5 × 5-6.5 μ, smooth, truncate from a broad apical pore, shape in face view broadly ovate to obscurely angular-ovate, rarely broadly elliptic, in profile narrowly somewhat- to obscurely-inequilateral varying to ovate, color in KOH very dark brown and quickly becoming chocolate-black, in Melzer's dark rusty brown, wall about 0.3 μ thick.

Basidia 4-spored, 18-25 × 8-9.5 μ, clavate, hyaline. Pleurocystidia 38–65 × 10–18 μ, pedicellato-cylindric, pedicellato-elliptic, or utriform, wall smooth except
near apex where an occasional subechinulate protrusion occurs, hyaline, thin-walled, cell content not distinctive in KOH or Melzer's. Cheilocystidia vesiculose and up to 25 μ broad occasionally, or elliptic in optical section, or clavate or utriform, all thin-wall, smooth and hyaline. Caulocystidia a mixture of cells resembling the pleurocystidia and the cheilocystidia but often larger.

Pileus with hyphae of the subcuticular zone heavily incrusted with patches of vinaceous-brown pigment as amorphous material (in KOH). Cuticle of pileus a staggered palisade of vesiculose and broadly clavate hyaline smooth cells, cell content not distinctive, the layer 1–2 cells deep. Clamp connections present.

Type locality. French Creek Grade, near Burgdorf, Idaho.

Habit and habitat. Gregarious on conifer duff.

Distribution. Idaho.

Observations. The dried basidiocarps have the colors of those of *P. longistriata* but the spores and the lack of a veil easily distinguish it. The tendency of the pleurocystidia to develop subechinulate processes is a most interesting feature in this species.

322. *Psathyrella georgiana* A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, convexus vel subplanus, glaber, rufo-fulvus demum fulvo-cinnamomeus, dein subalutaceus; lamellae confertae, adnatae, pallidae demum griseo-fuscae ad acerum demum incarnatae; stipes 1–5 cm longus, 1–1.8 mm erassus, pallidus, deorsum demum brunneus, sparse fibrillosus, glabrescens; spora 6.5–8×3.5–4.5 μ; pleurocystidia 30–42×10–14 μ, utriformia vel fusoid-ventricosa ad apicerum late rotundata; fibulae adsunt. Typus. Smith 3983 (MICH); legit prope Pinckney, Michigan.

Illustr. Pl. 60, fig. b; Text Figs. 695–698.

Pileus 1–2.5 cm broad, obtusely conic, margin appressed at first, expanding to convex or plane, surface glabrous, partial veil rudimentary and all traces soon vanishing from the margin of the pileus, at first a faint fringe present, moist, color “russet” to “cinnamon-brown” (rusty brown) or even “Sayal brown” to “cinnamon-buff” (dark cinnamon to yellowish brown to sordid tan progressively before fading), hygrophanous, fading to pallid buff with an ochraceous tinged disc, atomate when faded and the margin sulcate to somewhat crenate, translucent striate when moist, when remoistened or in age dark umber-brown over all. Context very thin and very fragile, odor and taste not distinctive.

Lamellae close, adnate, moderately broad, thin and very fragile, not deliquescing, pallid when young, then grayish in age “wood brown” or darker (dark avellaneous), edges pallid at first but stained vinaceous in age.

Stipe 1–5 cm long, 1–1.8 mm thick, equal, very fragile, hollow, whitish, base sordid to dull watery brown, surface at first with scattered patches of fibrils but soon glabrous.

Spores 6.5–8×3.5–4.5 μ, smooth, apical pore small and apex not truncate, shape in face view ovate to elliptic, in profile obscurely inequilateral to subovate, color in KOH dull cocoa-color slowly becoming dark chocolate-color, in Melzer's reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 13–17×7–9 μ, clavate but pedicel short, projecting one-fourth their length when sporulating, hyaline in KOH. Pleurocystidia scattered, 30–42×10–14 μ, utriform to fusoid-ventricose with broadly rounded apex, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia or broader and with shorter neck, some clavate
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to ellipsoid and yellowish at the base in KOH, 10-18×5-10 μ, the wall thin to slightly thickened. Caulocystidia versiform: (Fig. 698) wall thin, smooth and hyaline, cell content not distinctive.

Gill trama of loosely and irregularly arranged sausage-shaped inflated cells, hyaline when revived in KOH or merely pale brownish in places. Pileus trama loosely filamentose, pale cinnamon-brown beneath the cuticle when revived in KOH; cuticle formed of vesiculose and clavate hyaline cells, the layer irregularly 2 cells deep.

Type locality. The Edwin S. George Reserve, Pinckney, Michigan.

Habit and habitat. Gregarious on muck in a bog.


Observations. The short utriform pleurocystidia, versiform caulocystidia, small spores and habitat on muck are distinctive.


323. Psathyrella vinesisens A. H. Smith, sp. nov.

Pileus 1-3(-4) cm latus, convexus vel subplanus, glaber, fumoso-fulvus, ad marginem demum incarnatus; lamellae confertae, latae, triste vinaceo-brunneae; stipes 3-5 cm longus, 2-3.5 mm crassus, pallidus, deorsum melleus glaber; velum sparsum; sporiae 8-10(-12) ×4-5.2 μ; pleurocystidia 32-46×10-15 μ, late fusoid-ventricosa, rotundata vel obtusata; fibulae adsunt. Typus. Smith 33732 (MICH); legit prope Burt Lake, Michigan.

Illust. Pl. 81, fig. a; Text Figs. 699-701.

Pileus 1-3(-4) cm broad, obtuse when young, becoming broadly convex to nearly plane, surface glabrous or with scattered marginal fibrils from rudimentary veil, color very dark rusty brown, chocolate-color when spores mature, fading to tan and usually becoming flushed pink to vinaceous, atomate when faded. Context very thin and exceedingly fragile, no odor or taste noted.

Lamellae close, broad, adnate, "bone brown" at maturity (dull dark vinaceous-brown), edges even; those observed not with pink margins.

Stipe short, 3-5 cm long, 2-3.5 mm thick, equal, at first with a few scattered remnants of the rudimentary veil, soon naked, pallid becoming more or less honey-color in age.

Spores 8-10(-12) ×4-5.2 μ, smooth, apical pore present but apex not obviously truncate, shape in face view ovate to narrowly elliptic, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH long remaining dingy cocoa-color, finally chocolate-brown, wall about 0.3 μ thick (some spores with a "neck" causing them to appear elongated).

Basidia 4-spored, 13-18×6-8 μ, clavate, hyaline in KOH. Pleurocystidia 32-46×10-15 μ, broadly fusoid-ventricose with rounded to obtuse apex, wall hyaline, thin and smooth, content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia but smaller and more obtuse and with less neck. Caulocystidia scattered, basically similar to pleurocystidia but more variable in size down to resembling the cheilocystidia.

Pileus trama having hyphae of the subcuticular region vinaceous-brown in KOH when first revived but the color fading to dull cinnamon, pigment mostly in the wall. Cuticle of pileus a layer of vesiculose cells 2-3 deep, their walls hyaline to yellowish in KOH and content not distinctive. Clamps present.

Type locality. Burt Lake, Cheboygan County, Michigan, on Colonial Point.
Habit and habitat. Scattered on wet soil near a woodland pool.


Observations. The change to pinkish of the faded pileus, the very slight veil, typically rather narrow spores of the P. obtusata complex, and mostly broadly rounded to very obtuse pleurocystidia distinguish it. *Drosophila pseudocorrigis* has spores 6–8 X 4.4–7 μ. *Drosophila murcida* (sensu Ricken) Kühner & Romagnesi is very close to *P. vivescens* but has spores up to 6 μ wide and merely an ochaceous-brown pileus before fading. Detailed comparisons of these two should be made. *Psathyrella vivescens* did not show an incurved pileus margin when young.

Material examined. Michigan: Smith 32154, 33449, 33732 (Type), 50676.

324. *Psathyrella praecox* A. H. Smith, sp. nov.

Pileus 15–30 mm latus, demum late convexus, glaber, pallide fulvus, dein subalbidus; lamellae sublatae, confertae, pallidae vel luteolae demum vinaceo-brunneae; stipes 4–7 cm longus, 1.5–3 mm crassus, albidus, deorsum sparse fibrillosus glabrescent; velum sparsum; sporia (6–) 7–9 X 3.3–3.8 μ; pleurocystidia 34–42 X 10–18 μ, late fusoid ventricosa, ad apicem rotundata vel obtusata; fibulae adsunt. Typus. Smith 18950 (MICH); legit prope Dexter, Michigan.

Illustr. Text Figs. 702–704.

Pileus 15–30 mm broad, obtuse to convex, becoming broadly convex, surface moist, hygrophanous, glabrous or with only a fringe of fibrils along the margin from the rudimentary veil, color “ochraceous-tawny” fading to nearly white. Context thin, pallid when faded, odor none.

Lamellae long remaining narrow but in age moderately broad, bluntly adnate, close, pallid to yellowish pallid, becoming dull reddish brown and when dried dull vinaceous-brown, edges even and whitish.

Stipe 4–7 cm long, 1.5–3 mm thick, equal, white, hollow, pruinose above, lower portion at first slightly fibrillose from the veil fibrils, base more or less white mycelioid.

Spore deposit dark purple-brown. Spores (6–) 7–9 X 3.3–3.8 μ, smooth, apical pore present but small and apex not truly truncate (the base may appear truncate in a fair number), shape in face view oblong to narrowly elliptic, in profile obscurely bean-shaped to suboblong to obscurely inequilateral, color in KOH dingy cocoa-brown slowly becoming chocolate-brown, in Melzer’s tawny to reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 17–24 X 7–8 μ, narrowly clavate, hyaline in KOH. Pleurocystidia abundant, 34–42 X 10–18 μ, ventricose with a broad short neck and very broadly rounded apex, neck more elongated in age and apex varying to obtuse, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia saccate to pedicellate (12–) 20–30 X (8–) 12–20 μ, possibly some similar to the pleurocystidia also, hyaline in KOH, thin-walled. Caulocystidia not found except for a few clavate hyphal end cells near the apex.

Gill trama of somewhat interwoven hyaline to brownish hyphae in KOH, subhymenium cellular and hyaline. Pileus having a cuticle of inflated cells 1–2 deep arranged in a loose palisade in places, cells thin-walled and hyaline or nearly so as revived in KOH. Hyphae of the context interwoven, dingy cocoa-brown in KOH, fading to dull cinnamon-brown or paler. Clamps present.

Type locality. Dexter, Michigan.

Habit and habitat. Solitary to scattered on humus, June.

Observations. The spores are distinctly narrower than in *P. spadiceogrisea* to which it is closely related. In Hesler 19454 the spores are 7–9(-10) × 4.5–4 μ and the pleurocystidia develop apical to subapical protrusions. It deserves further study.

Material examined. Michigan: Potter 4439, 4490; Smith 18950 (Type), 18953, 20296, 25141, 25349, 25653, 32290, 32361.


Illustr. Text Fig. 705.

Pileus about 3 cm broad, convex to expanded, becoming slightly depressed at the center at times, surface dry or slightly hygrophanous, glabrous, conspicuously striate, dark isabelline to fuliginous.

Lamellae adnate or sinuate, broad, distant (not distant on type as dried), becoming dark fumoso to almost ater (black) whitish on the edges.

Stipe 7 cm long, 2–3 mm thick, slender, equal, smooth, white, glabrous, hollow.

Spores 7–9(-10) × 4.5–5(-5.5) μ, smooth, apex truncate by a broad apical hyaline pore, shape in face view ovate to nearly elliptic, in profile subovate to obscurely inequilateral, dark date brown as revived in KOH, in Melzer's dull tawny-red to bay, wall 0.5–0.6 μ thick.

Basidia 4-spored, hyaline, reviving poorly. Pleurocystidia scattered, 32–52 × 9–13 μ, fusoid-ventricose with short thick necks and rounded to obtuse apex, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia (not reviving well in the type). Caulocystidia present as occasional clavate cells.

Pileus cuticle a layer of vesiculose cells 1–2 deep, the wall thin and hyaline, cell content not distinctive. Hyphae of the subcutis not highly colored in KOH (but basidiocarp was old). Clamps present.

Type locality. Bronx Park, New York City, New York.

Habit and habitat. Solitary on loam in woods.

Distribution. Known only from the type locality.

Observations. Although this species is recognized here largely because of the broad distant gills, there is the distinct possibility that it will never be accurately recognized since in the dried specimen the gills do not appear distant.

326. *Psathyrella amarella* A. H. Smith, sp. nov.

Pileus 3–5.5 cm latus, late convexus, glaber, cinnamomeo-brunneus; contextu brunneus; sapor amarus; lamellae confertae demum sublatae, brunneolae demum fusco-brunneae; stipes 6–8 cm longus, 4–6 mm crassus, albidos, deorsum brunneus, sparse fibrillosus; velum sparsum; sporae 7–9 × 4–5 μ; pleurocystidia 38–60 × 9–18 μ utriformia vel fusoid ventricosa, late rotundata vel (rare) subacuta; fibulæ adsunt. Typus. Ammirati 2925 (MICH); legit prope Dynamite Hill, Baraga County, Michigan.

Illustr. Text Figs. 706–708.

Pileus 3–5.5 cm broad, broadly convex expanding to plane or with the margin becoming uplifted, surface glabrous, moist and hygrophanous, color “cinnamon-brown” fading to dingy tan and drying pallid, striate when moist, veil rudimentary. Context thin, fragile brownish fading to pallid, taste bitter, odor not distinctive.

Lamellae close, narrow to moderately broad, adnate, brownish at first then
grayish brown and finally purplish gray, as dried fuscous-brown at least near the margin; edges even.

Stipe 6–8 cm long, 4–6 mm thick, equal, hollow, fragile, striate, whitish at first, later sordid to brownish below, with a thin coating of appressed fibrils; veil rudimentary.

Spores 7–9 × 4–5 μ, smooth, apical pore distinct but apex not truly truncate, shape in face view elliptic to subovate, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH cocoa-brown but becoming chocolate-brown, in Melzer's reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 18–26 × 8–10 μ, clavate, hyaline. Pleurocystidia 38–60 × 9–18 μ, utriform to fusoid-ventricose with broadly rounded apex, rarely one with subacute apex, in most the wall pale ochraceous in the distal portion and with the wall thickened to about 0.3 μ, smooth, cell content not distinctive. Cheilocystidia ochraceous in KOH and usually smaller (and more of them clavate) than for the pleurocystidia.

Pileus cuticle a staggered palisade of clavate-pedicellate and inflated cells in a thick layer, hyaline in KOH, walls thin and cell content not distinctive. Hyphae of the subcuticular region smooth to weakly incrusted with ochraceous (in KOH) deposits; trama below the cuticle ochraceous-hyaline in KOH. Clamps present.

Type locality. Dynamite Hill Road, Silver River Area, Baraga County, Michigan.

Habit and habitat. Gregarious on leaf mold in a hardwood forest, July.


Observations. The bitter taste, utriform cystidia with their slightly thickened ochraceous walls (as revived in KOH) in the distal portion, and the overall resemblance to P. spadiceogrisea are distinctive.

Material examined. Michigan: Ammirati 2925 (Type).


Psathyra spadiceogrisea (Fr.) Kummer, Führ. Pilzk. 70. 1871.
Psilocybe spadiceogrisea (Fr.) Boudier, Icones Mycol. 4: 68. 1911.
Drosophila spadiceogrisea (Fr.) Quélet, Enchir. Fung. 117. 1886.

Illustr. Boudier, 1. c. pl. 135. Pl. 84, fig. c; Text Figs. 709, 710.

Pileus (1)–2–8 cm broad, broadly conic when young, soon convex and finally plane or with a low umbo, surface at first with inconspicuous patches of fibrils or near the margin from the rudimentary white or pallid fibrillose veil, soon entirely glabrous, smooth to rugulose, moist and translucent striate or at times the margin slightly furrowed in age, “russet” to “cinnamon-brown” (rusty brown), hygrophanous and fading to “avellaneous” or “wood brown,” atomate when faded. Context thin, very fragile, pallid brownish, odor fungoid, taste mild.

Lamellae close, 18–27 reach the stipe, 2–3 tiers of lamellulae, bluntly adnate or with a slight decurrent tooth, moderately broad (3–4 mm), pallid brownish young, near “wood brown” (dark avellaneous) at maturity.

Stipe (1)–4–12 cm long, (1)–2.5–6 mm thick, slightly narrowed upward or equal, very fragile, hollow, whitish above, pallid to sordid tan downward, sparsely fibrillose at first from veil remnants, glabrous in age, apex pruinose at first, glabrous in age, apex sometimes striate from the gill impressions.

Spores 7–9 (–10) × 5–5.5 (–6) μ, smooth, apical pore distinct and apex truncate
as viewed in Melzer's but only obscurely so in KOH, shape in face view broadly elliptic to slightly ovate, in profile obscurely inequilateral to subelliptic, color in KOH cocoa-color when first revived fading out to grayish hyaline or nearly so on standing for an hour, in Melzer's tawny, wall 0.3 \( \mu \) thick.

Basidia 4-spored, 18–26 (–30) \( \times \) 7–12 \( \mu \), clavate, hyaline in KOH. Pleurocystidia scattered to fairly abundant, rare at times, fusoid-ventricose, 32–48 \( \times \) 9–15 \( \mu \), apex broadly rounded to obtuse, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia or shorter and with less neck, or clavate and 26–40 \( \times \) 9–18 \( \mu \), thin-walled and hyaline or only the base slightly yellowish in KOH. Caulocystidia present as a few cells resembling the cheilocystidia.

Gill trama of loosely interwoven hyphae with brown walls in water mounts of fresh material and pale rusty brown to hyaline in KOH. Pileus trama of floccose interwoven hyphae with pale brown walls in water mounts of fresh material, and dark rusty brown when revived in KOH and showing distinct pigment incrustations (or wall thickenings) most often near the septa. Cuticle of pileus formed by a layer of enlarged cells arranged into more or less of a palisade, hyaline in water mounts, pale yellowish at least at the base or in the pedicel when revived in KOH.

Type locality. Europe.

Habit and habitat. Gregarious on muck around edges of bogs and pools, vernal.


Observations. This is not the species Smith (1941) previously reported under this name. It is now accepted that the name should apply to a species with broadly rounded cystidia (utriform). The presently described taxon is very close to the one described by Kühner & Romagnesi (1953) but differs in spores which measure 0.5–1 \( \mu \) wider, in having pleurocystidia not typically utriform (they vary from having broadly rounded apices to having the apex obtuse in age), and (possibly) in the degree to which pigment patches show on the subcuticular hyphae.


Psathyra fusca (Fr.) Lange, Flora Agar. Danica 4: 97. 1939.

Illust. Lange, 1. c. pl. 154, fig. C. Pl. 82; Pl. 83, fig. a, Pl. 84, fig. a; Text Figs. 711–714.

Pileus (2.5–) 3–6 cm broad, hemispheric to convex at first, becoming broadly convex to nearly plane, surface glabrous or with scattered fibrils along the margin from the rudimentary veil, moist and hygrophanous, at first “buckthorn brown” to near “cinnamon-brown” becoming nearly fuscous over all as the spores mature, margin usually striatulate, hygrophanous and fading to pale tan (near “cinnamon-
buff” or “clay color”). Context thin or in the disc moderately thick, buff when faded, odor and taste not distinctive.

Lamellae broadly adnate, close, varying to subdistant, broad, pallid to brownish but finally dark bister to nearly fuscous, edges even.

Stipe 4–8 cm long, 4–6 mm thick at apex, equal or up to 8 mm at base, white, tubular to hollow, glabrous or with only scattered appressed fibrils.

Spores (7–)8–10×4–5 µ, smooth, with a hyaline apical pore, shape in face view oblong to elliptic, in profile oblong to obscurely bean-shaped, color in KOH fuscous with a faint ochraceous reflection, darkening slowly, in Melzer’s tawny-red, wall about 0.3 µ thick.

Basidia 4-spored, 18–25×7–9 µ, clavate, hyaline in KOH. Pleurocystidia abundant, 24–48×9–15 µ, fusoid-ventricose to subcylindric, with broadly rounded apex, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia abundant, 18–32×7–16 µ, clavate to finally vesiculose, mostly hyaline. Caulocystidia scattered in small groups, 36–52×9–20 µ, mostly subcylindric-pedicellate to utriform or clavate, more rarely fusoid-ventricose, thin-walled, smooth, colorless.

Pileus cuticle a layer of vesiculose cells irregularly 1–2 cells deep, their walls thin, smooth and colorless, the cell content not distinctive. Hyphae of the trama sordid brownish fading to nearly hyaline (in KOH), no distinctive hyphal incrustations seen on material mounted in KOH. Clamps present.

Type locality. Europe.

Habit and habitat. On humus under Alnus.


Observations. This species is very close to *P. kauffmanii* var. exannulata but the gills are typically darker and the spores in KOH are much darker. *Psathyrella fatua* (Fr.) Pearson may possibly be included in my concept of *P. fusca*. If so, I should be inclined to regard the two as synonymous.


329. *Psathyrella mazzeri* A. H. Smith, sp. nov.

Pileus 1–3 cm latus, campanulatus vel late convexus, cinnamomeo-brunneus, glaber; lamellae confertae, sublatae brunneolae demum fuscae, in exsiccatis atrae; stipes 2–6 cm longus, 1,5–3 mm erasus, pallidus, deorsum demum brunneus; velum sparsissimum; sporae 7–9×4,2–5 µ; pleurocystidia 38–50×12–16×8–11 µ, utriformia vel late fusoido-ventricosa, ad apicum late rotundata; fibulae adsunt. Typus. Mazzer 6023 (MICH); legit prope Otsego, Michigan.

Pileus 1–3 cm broad, obtuse when young, expanding to campanulate to broadly convex, glabrous, moist, hygrophanous, dull cinnamon-brown becoming grayer (near wood brown) as spores mature, striatulate on the margin, fading to a dingy cinnamon-buff or pinkish buff. Context thin and fragile, odor and taste not distinctive.

Lamellae adnate, close, moderately broad, dull brown becoming fuscous by maturity and drying blackish, edges even.

Stipe 2–6 cm long, 1,5–3 mm thick, equal, fragile, watery white, becoming brownish below, naked to the slightly pruinose apex; veil (if present at all) very slight.
Spores 7–9 × 4.2–5 µ, smooth, apical pore distinct but apex not truly truncate, shape in face view oblong to subelliptic, in profile obscurely bean-shaped, color in KOH cocoa-color slowly going to medium chocolate, dull reddish tawny in Melzer’s, wall about 0.2 µ thick.

Basidia 4-spored, short-clavate, 16–20 × 6–8 µ, hyaline. Pleurocystidia 38–50 × 12–16 × 8–11 µ, utriform to broadly fusoid-ventricose with rounded apex, wall thin, smooth and hyaline, content not distinctive. Cheilocystidia mostly clavate and up to 18 µ wide but some narrowly fusoid-ventricose cells 30–42 × 7–10 µ also present, their necks 3–4 µ wide, both types hyaline in KOH.

Pileus cuticle a layer of vesiculose cells 12–30 µ wide, some pedicellate, walls thin and hyaline, content not distinctive. Hyphae of subcuticular zone rusty brown in KOH, hyphal walls mostly smooth. Clamps present.

Type locality. Near Otsego, Allegan County, Michigan.

Habit and habitat. Scattered to gregarious in open pastures (with \textit{Phleum pratense} and \textit{Dactylis glomerata}).

Distribution. Known only from the type locality.

Observations. This species is close to \textit{P. spadiceogrisea} but the spores are too narrow and the habitat is also atypical, in fact the different ecological aspects of both are quite marked. In addition the veil appears to be even more poorly developed than in \textit{P. spadiceogrisea}.

330. \textit{Psathyrella psammophila} A. H. Smith, sp. nov.

Pileus 8–20 mm latus, late conicus, glaber melleus vel melleibrunneus; contextu cum \textit{FeSO$_4$} olivaceo-griseus; stipes 1–2.5 cm longus, 1–2.5 mm crassus, pallidus, deorsum sparse fibrillosus glabrescens; velum sparsum; sporae 7–8 × 4.5–5 µ; pleurocystidia 46–62 × 9–15 µ, utriformia vel obtuse fusoid-ventricosa; fibulae adsunt. Typus. Smith 67836 (MICH); legit prope Pinckney, Michigan.

Illustr. Pl. 88, fig. c; Text Figs. 715–718.

Pileus 8–20 mm broad, obtusely conic expanding to broadly conic, the margin straight, veil rudimentary and not leaving significant traces on the pileus, surface glabrous, moist and hygrophanous, pale honey brown fading to pale buff or whitish, older pilei striate before fading, atomate after fading. Context very thin and fragile, odor and taste not distinctive, \textit{FeSO$_4$} causing a color change to pale olive-buff.

Lamellae broad, close, adnate then seceding, pallid brown, becoming wood brown (dark brownish gray) at maturity, edges whitish.

Stipe 1–2.5 cm long; 1–2.5 mm thick, equal or nearly so, very fragile, pruinose above, thinly fibrillose lower down, base hardly darkening (merely dingy ochraceous in age); veil rudimentary.

Spores 7–8 × 4.5–5 µ, smooth, apical pore present but apex rounded, in face view broadly elliptic to ovate, in profile more or less obscurely bean-shaped, color in KOH cocoa-color, slowly darkening to chocolate-brown (smoky cocoa-color), reddish tawny in Melzer’s, wall about 0.2 µ thick.

Basidia 4-spored, 9–12 µ wide at apex, clavate, hyaline. Pleurocystidia 46–62 × 9–15 µ, utriform to obtusely fusoid-ventricose, smooth or rarely with a slight mucilaginous coating over or near the apex, hyaline, thin-walled, content not distinctive in KOH or in Melzer’s. Cheilocystidia clavate to obtusely fusoid or fusoid-ventricose, smooth, thin-walled, hyaline in KOH. Caulocystidia mostly clavate, thin-walled, hyaline, of various sizes, some “mitten-shaped” in optical section.
Pileus cuticle a cellular layer 1-2 cells deep, cells both vesiculose and pedicellate; wall hyaline to weakly cinnamon in KOH, thin and smooth; cell content not distinctive in KOH or Melzer’s. Hyphae of trama with pale cinnamon smooth walls as revived in KOH. No distinctive reaction on any tissue as revived in Melzer’s. Stipe cortex in KOH containing intercellular small crystals and debris in distinctive amounts. Clamps present.

Type locality. Pinckney, Michigan.
Habit and habitat. Scattered on sandy soil.
Observations. This species has the aspect of *P. obtusata* but grows on sandy soil and has a paler pileus.

### 331. *Psathyrella ephemera* A. H. Smith, sp. nov.

Pileus 0.5-20 mm latus, late convexus, glaber, pallide cinnamomeus, demum fusco-cinereus; lamellae latae, subdistantes, brunneolae demum cacaocolor dein fumoso-brunneae; stipes 1-2 cm longus, 1.5-3 mm crassus, pallidus, fragilissimus; velum sparsissimum; sporiae 8-10×5-6 μ; pleurocystidia 36-48×10-15 μ, utriformia; fibulae adsunt. Typus. Hoseney 1401 (MICH); legit prope Chelsea, Michigan.

Illustr. Text Figs. 719–721.

Pileus 0.5–20 mm broad, broadly convex with a decurved margin, expanding to plane or slightly depressed over the disc, glabrous, even, moist and hygrophanous, pale cinnamon when young becoming avellaneous to dingy cinereous as spores mature, near vinaceous-drab as dried. Context almost paper-thin and exceedingly fragile, odor not distinctive.

Lamellae broad, adnate, subdistant, brownish when young but soon cocoa-color and when dried near cinnamon-drab, edges white, fimbriate at first, not undergoing autodigestion.

Stipe 1-2 cm long, 1.5-3 mm thick, equal, hollow, very delicate, pallid and not discoloring appreciably over the lower part, thinly fibrillose from remains of a rudimentary veil.

Spores 8-10×5-6 μ, smooth, apical pore distinct and apex with a narrow truncation, on a few the apical pore terminating a snout-like prolongation, shape in face view ovate to elliptic, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH dull cocoa-brown but soon becoming dark chocolate-color, most containing a medium-sized globule (oil ?), in Melzer’s tawny or slightly redder, wall 0.3 μ thick.


Pileus cuticle a layer of cells 1-3 thick, some cells up to 60 μ wide, wall thin, smooth and hyaline, content not distinctive. Hyphae of the trama pale brownish vinaceous in KOH, the walls thin but some pigment thickenings occur near the septa. Clamps present.

Type locality. Chelsea, Michigan.
Habit and habitat. Scattered on black muck in a swamp.
Observations. *Psathyrella ephemera* has brachybasidioles but the pileus does not become plicate-striate, hence it is not referable to the genus *Pseudocoprinus*.

332. *Psathyrella elliptispora* A. H. Smith, sp. nov.

Pileus 1.5–3 cm latus, subplanus, glaber fulvo-cinnamomeus; lamellae con-fertae, latae; stipes 4–5 cm longus, 1–2.5 mm crassus, pallidus, sparse fibrillosus glabrescens; velum sparsum; spores 8–11×5–6 μ; pleurocystidia 34–52×10–16 μ, fusideo-ventricosa, ad apicem rotundata vel obtusata; fimbulae adsunt. Typus. Smith 19563 (MICH); legit prope Rhododendron, Oregon.

Illust. Text Figs. 722-724.

Pileus 1.5–3 cm broad, convex, becoming nearly plane, surface moist, glabrous except for scattered fibrils near the margin which may be fringed slightly with veil fibrils at first, dull tawny to cinnamon-brown, hygrophanous and fading to pallid avellaneous or slightly ochraceous on the disc. Context very thin and fragile, odor and taste not distinctive.

Lamellae close, moderately broad, broadly adnate, not seceding in drying, edges even and white-fimbriate.

Stipe 4–5 cm long, 1–2.5 mm thick, equal, hollow, fragile, white, sparsely fibrillose at first, soon glabrous, whitish to pallid as dried.

Spores 8–11×5–6 μ, smooth, apical pore distinct and apex truncate but not broadly so, shape in face view broadly elliptic, in profile broadly elliptic to obscurely inequilateral, color in KOH dull dark cocoa-color becoming chocolate-brown slowly, in Melzer's tawny, wall about 0.3 μ thick.

Basidia 4-spored, 18–26×9–11 μ, clavate, hyaline, cell content not distinctive in either KOH or Melzer's. Pleurocystidia scattered, 34–52×10–16 μ, fusoid-ventricose, with rounded to obtuse apex. Cheilocystidia 28–36×9–14 μ, similar in shape to pleurocystidia or apex merely obtuse; saccate to clavate cells 12–18×8–12 μ also present, hyaline in KOH and thin-walled. Caulocystidia resembling the pleurocystidia but varying to clavate or vesiculose and 20 μ broad, hyaline and thin-walled, some small misshapen cells also present.

Gill trama of somewhat interwoven hyphae hyaline to pale rusty brown in KOH; subhymenium not distinctive. Pileus having a cuticle of inflated cells, some that are pedicellate intermingled, the layer about 2 cells deep, the walls thin, smooth and yellowish to hyaline in KOH, cell content not distinctive. Hyphae of the context dingy rusty brown in subcuticular region, nearly hyaline near the subhymenium, pigment mostly in the wall. Clamps present.

Type locality. Rhododendron, Clackamas County, Oregon.

Habit and habitat. Scattered on humus under alder (*Alnus*).

Distribution. Oregon.

Observations. This species could aptly be characterized as a *P. obtusata* with very broadly ellipsoid spores and broadly rounded pleurocystidia. Its degree of variability deserves further study.

Subsect. *Lauricolae* A. H. Smith, subsect. nov.

Ad truncos, ramulos, etc.; non ad terram. Typus. *Psathyrella lauricola*.

The species placed here were found clearly attached to a woody substratum. For seemingly terrestrial species see the previous series.
Key to the Species of Subsection Lauricolae

1. Spores 4-7 μ long (up to 7.5 μ long in P. subcaerulea var. velata). 2
1. Spores 7-10(-11) μ long.
   2. Spores 4-5 x 3-3.5 μ, mostly ovate in face view. 333. P. ovalispora.
   2. Not as above.
3. Spores 6-7 x 42-4.8 μ; gill edges pink in age; tomentum at base of stipe soon pale dingy blue. 334. P. subcaerulea.
3. Spores 5-6.5 x 3.5-3.8 μ.
   4. Not as above.
5. Pileus cuticle a compacted trichodermal layer with cells (some) up to 80 μ long; spores 5-6 x 3 μ.
   6. Pileus whitish when young, becoming watery gray to drab; some pleurocystidia subfusoid and with slightly thickened walls. 338. P. albocinerascens.
   6. Not as above.
7. Spores 8-11 x 5-6 μ.
   8. Lamellae narrow; stipe 2-3 cm long, 1-1.5 mm thick. 339. P. melleipallida.
   8. Lamellae moderately broad at maturity; stipe 2-4 mm thick. 340. P. argillacea.
9. Pleurocystidia with refractive particles (or a droplet 1-2 μ wide) in the apical region as revived in KOH. 341. P. quercicola.
9. Not as above.
10. Spores 6-7.5 x 4-5 μ.
    11. Spores 7-10 x 4-5 μ.
    8. Lamellae narrow; stipe 2-3 cm long, 1-1.5 mm thick.
    9. Lamellae moderately broad at maturity; stipe 2-4 mm thick.
12. Pleurocystidia (36-44-62(-70) x 8-12 μ. 13

333. Psathyrella ovalispora A. H. Smith, sp. nov.

Pileus 1-2.5 cm latus, late convexus, glaber, rufo-fulvus, glaber; lamellae latae, confertae, brunneolae demum rufo-fulvae; stipes 1-2 cm longus, 1-2.5 mm erassus, pallidus, deorsum brunneolum et sparse fibrillosum, glabrescent; velum sparsum; sporae 4-5 x 3-3.5 μ; pleurocystidia 34-47 x 9-14 μ, utriform vel fusoide ventricosa, obtusata vel subcapitata; fibulæ adsunt. Typus. Smith 63474 (MICH); legit E. Stowell prope Tahquamenon Falls State Park, Michigan.

Illustr. Text Figs. 725, 726.

Pileus 1-2.5 cm broad, broadly convex, expanding to plane, glabrous, russet, translucent-striate, fading to pinkish buff or disc finally yellowish, margin naked at all times (only the most rudimentary of veils seen on the small buttons). Context fragile, odorless, taste mild.

Lamellae broad, close, adnate, seceding, near russet when mature, weakly brownish in youngest basidiocarps seen, edges even.

Stipe 1-2 cm long, 1-2.5 mm thick, short, equal, pallid above, brownish below, naked or with a few scattered fibrils near the base.

Spores 4-5 x 3-3.5 μ, smooth, apical pore present, in face view ovate to elliptic, in profile elliptic to obscurely bean-shaped, color in KOH cocoa-color darkening to chocolate-brown, in Melzer's reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 17-22 x 6-7 μ, hyaline in KOH. Pleurocystidia scattered, 34-47 x 9-14 μ, utriform to ventricose-subcapitate, smooth, wall thin and hyaline,
content not distinctive in either KOH or Melzer's. Cheilocystidia similar to pleurocystidia but scattered or very small clavate to vesiculose cells present (7–10 μ wide) in addition. Caulocystidia scattered, clavate to subclavate-pedicellate, 45–57×10–18 μ, thin-walled, hyaline.

Cuticle of pileus of large vesiculose to vesiculose-pedicellate cells, the layer 1–2 deep, the cell walls yellowish in KOH, smooth. Hyphae of the subcuticular region dingy cinnamon fading to pallid (revived in KOH), hyphal walls smooth. Clamps present. No distinctive reactions on any tissue when mounted in Melzer's.

Type locality. Tahquamenon Falls State Park, Luce County, Michigan.

Habit and habitat. Gregarious on hardwood logs, June.


Observations. This species is close to *P. hydrophila* but has even less veil than the latter, slightly different pleurocystidia and slightly different spores. In southeastern Michigan we have a form which becomes milk-white before moisture has escaped and the colors accompanying spore maturation have set in. The context, however, gives a dark vinaceous reaction in KOH as revived. Hoseney 1445 and 1474 represent this variant. Its spores are often almost rectangular in face view. It may represent a distinct species.

Material examined. Michigan: Hoseney 1445, 1474; Smith 63474 (Type).

334. *Psathyrella subcaerulea* A. H. Smith, sp. nov.

Pileus 6–12 (–15) mm latus, conicus vel convexus, glaber, rufo-fulvus demum fumoso-fuscus; lamellae confluentae, lateae, sordide brunneae demum purpureo-brunneae, ad acerum demum incarnatae; stipites 1–2.5 (–3) cm longus, filiformis, griseus, ad basem caeruleo-myceliosus; sporae 6–7×4.2–4.8 μ; pleurocystidia 38–47×9–13 μ, fusoido-ventricosa, rotundata vel obtusa; fibulae adsunt. Typus. Smith 55549 (MICH); legit prope Grants Pass, Oregon.

var. *subcaerulea*

Pileus 6–12 (–15) mm broad, obtuse conic becoming convex or remaining unexpanded, surface glabrous, moist and hygrophanous, dark rusty brown moist but becoming more chocolate-brown as spores mature, fading to dingy avellaneous but drying dark grayish brown; margin naked. Context thin and fragile.

Lamellae close, broad, adnate, dark brownish, becoming purple-brown from the spores, edges pallid and crenulate but becoming pink by late maturity.

Stipe 1–2.5 (–3) cm long, less than 1 mm thick (filiform), very fragile, grayish and naked to or at apex, faintly pruinose above, brownish below to the basal tomentum which is pallid at first but soon becomes bluish.

Spores 6–7×4.2–4.8 μ, smooth, pore very minute but apex obscurely truncate, shape in face view elliptic to ovate or some obscurely angular, in profile obscurely bean-shaped to obscurely inequilateral or ovate, color in KOH that of a roasted coffee bean but soon grayer (becoming chocolate-gray), in Melzer's fulvous, wall about 0.2 μ thick.

Basidia 4-spored, 12–18×7–9 μ, short-clavate, hyaline in KOH. Brachybasidioles present in age (but basidia may be nearly globose also). Pleurocystidia 38–47×9–13 μ, fusoid-ventricose with elongated neck and rounded to the obtuse apex varying to utriform to narrowly ventricose-capitate, wall thin, smooth and hyaline, content not distinctive. Cheilocystidia similar to pleurocystidia but more with broadly rounded apex, some with yellow walls in KOH and clavate to fusoid but if the latter the apex blunt.
Pileus trama brownish to hyaline in KOH, the hyphae with thin, smooth, hyaline walls. Pileus cuticle a layer of inflated cells 2–3 deep, their walls thin and smooth, hyaline to weakly ochraceous in KOH. Clamp connections present. No distinctive reactions noted for any part as revived in Melzer's.

Type locality. Near Grants Pass, Oregon.

Habit and habitat. Scattered to gregarious on mossy oak trunks (living trees) in November.

Distribution. Oregon.

Observations. The bluish fibrils around the base of the stipe, the dark small spores, cystidia with broadly rounded apex and lack of a veil are distinctive.

Material examined. Oregon: Smith 55529, 55534, 55549 (Type), 55550, 55692, 55788.

334a. Psathyrella subcaerulea var. velata A. H. Smith, var. nov.

A typo differt; velum pallide argillaceum; stipes ad basem fibrillosus, fibrillis pallide argillaceus tarde caerulescentes. Typus. Smith 55376 (MICH); legit prope Grants Pass, Oregon.

Pileus 5–15 (–20) mm broad, obtusely conic to convex, the margin straight, margin at first with the remains of a very thin fibrillose veil which is buff in color, the surface dark tawny fading to dingy tan. Context very thin and delicate.

Lamellae moderately broad, close, adnate, dingy brownish becoming dull rusty brown, edges even.

Stipe 1–3 cm long, filiform, dingy pallid above and brownish below, finally brownish over all, at first faintly fibrillose from the thin buff colored veil.

Spores 6–7.5 × 4–5 μ, ovate to broadly elliptic in face view, in profile ovate to obscurely inequilateral, dark cocoa-brown in KOH, changing slowly (half of them hyaline in one cap), tawny in Melzer's.

Pleurocystidia 38–56 (–64) × 9–15 μ, fusoid-ventricose to utriform, apex broadly rounded to obtuse, wall smooth, thin and hyaline.

Type locality. Near Grants Pass, Oregon.

Habit and habitat. Solitary to gregarious on mossy trunks of living oaks, November.

Distribution. Oregon.

Observations. The six collections of the type variety totaled less than 18 basidiocarps all of which were well on their way to maturity. The collections with the pale buff veil probably represent an autonomous species but further studies of it and P. subcaerulea var. subcaerulea are desirable.

Material examined. Oregon: Smith 55376 (Type), 55526, 55539a.

335. Psathyrella fuscofolia (Peck) A. H. Smith, comb. nov.

Psilocybe fuscofolia Peck, Bull. N. Y. State Mus. 157: 100. 1912.

Illustr. Pls. 34, 35; Text Figs. 727, 728.

Pileus 2.5–5 cm broad, conic to hemispheric, becoming broadly convex, plane or centrally depressed, surface glabrous, hygrophanous, alutaceous to dark chestnut brown when moist and subochraceous and rugose when dry, margin even, incurved. Context fleshy but thin, whitish or yellowish.

Lamellae narrow, thin, crowded, adnate, sometimes forked, pale brown becoming reddish brown.

Stipe 2.5–4 cm long, 2–4 mm thick, equal, slender, hollow, silky-fibrillose,
white, thickened or subbulbous and whitish mycelioid at the base; veil lacking.

Spores 5–6.5 × 3.5–3.8 μ, smooth, apical pore distinct under oil but apex not appreciably truncate, shape in face view slightly wedge-shaped to oblong in Melzer’s, more ellipsoid in KOH, in profile view obscurely to somewhat bean-shaped varying to suboblong, color in KOH dull cocoa-color becoming chocolate-brown, in Melzer’s tawny, wall about 0.2 μ thick.

Basidia 4-spored, 12–14 × 4.5–6 μ, clavate, hyaline in KOH. Pleurocystidia scattered, 26–42 × 9–14 μ, broadly ventricose above a pedicel, with hardly any neck, the apex broadly rounded, smooth, thin-walled, cell content not distinctive. Cheilocystidia similar to the pleurocystidia. Caulocystidia scattered, clavate, up to 20 μ broad, hyaline and thin-walled.

Gill trama regular, of inflated hyphal cells, merely pallid brownish in KOH, subhymenium cellular and hyaline. Pileus having a cuticle of vesiculose cells 1–2 deep, their walls hyaline to dingy ochraceous, smooth, cell content not distinctive. Hyphae of the context merely pale brownish in KOH (from a mature basidiocarp). Clamps present.

Type locality. New York City, New York.

Habit and habitat. Gregarious or cespitose on soil or on decaying wood in woods or open places.


Observations. This species is obviously a segregate from P. hydrophila but is distinguished by the lack or almost lack of a veil, the paler trama in KOH as revived, and the tendency of the pileus color to fade out more quickly. In Michigan we first misidentified this species as a variant of P. hydrophila having only a rudimentary veil. Drosophila laevissima Romagn. may be the same as P. fuscofolia, a careful comparison should be made.


336. Psathyrella ammiratii A. H. Smith, sp. nov.

Pileus 2–3 cm latus, late convexus, glaber, fulvo-cinnamomeus dein argillaceus; contextu brunneolus; lamellae confertae demum subdistantes, demum lata, avelaneae; in exsiccatis vinaceo-brunneae; stipes 3–3.5 cm longus, 2–3 mm crassus, albidus, sursum pruinosis, deorsum demum brunneus, glaber; spores 6–7 × 3–3.5 μ; pleurocystidia 36–48 (–54) × 9–16 μ, utriformia vel lecythiformia, ad apicem 5–9 μ latus, in “KOH” saepe sublutea; fibulae adsunt. Typus. Ammirati 2834 (MICH); legit prope Big Bay, Michigan.

Pileus 2–3 cm broad, broadly convex expanding to plane, margin spreading in age, surface glabrous, moist and hygrophanous, dark rusty brown when moist, fading to “clay color,” dark brown as dried, in age before fading the disc and the incurved margin bister when moist and the spores are mature. Context thin, fragile brownish, odor and taste not distinctive.

Lamellae close becoming subdistant, adnate, narrow to moderately broad, brownish with a gray tint, when dried dark vinaceous-brown.

Stipe 3–3.5 cm long, 2–3 mm thick, equal, fragile, white pruinose above,
brownish over lower area and when dried near "Sayal brown" over all, glabrous or nearly so.

Spores 6–7×3–3.5 μ, smooth, apical pore not evident, apex rounded; shape in face view oblong to elliptic or a few subangular, in profile somewhat bean-shaped; color in KOH cocoa-brown to chocolate-brown to fuscous, pale tan in Melzer’s, wall about 0.2 μ thick.

Basidia 4-spored, clavate, 17–24×6–8 μ, hyaline in KOH. Pleurocystidia scattered, 36–48(–54)×9–16 μ, utriform to nine-pin-shaped and then the apex 5–9 μ broad, hyaline to yellowish in KOH but smooth and thin-walled. Cheilocystidia similar to pleurocystidia varying to clavate, ochraceous (often) in KOH.

Pileus cuticle a layer of inflated cells 2–4 deep, the walls brownish ochraceous in KOH, thin, nearly smooth. Hyphae of subcuticular zone coarsely incrusted with ochraceous-fulvous material and the septa heavily pigmented. Clamps present.

Type locality. Skanee Road, East Branch of Huron River, Baraga County, Michigan.

Habit and habitat. Clustered on rotten conifer logs, June.

Distribution. Known only from the type locality.

Observations. The habitat on conifer wood, the ochraceous cuticular cells as revived in KOH, the predominantly dumbbell-shaped pleurocystidia and brown stipe as dried are distinctive along (apparently) with the lack of a veil. It is closest to *P. fuscofolia*.

337. *Psathyrella acadiensis* A. H. Smith, sp. nov.

Pileus 2.5–6 cm latus, subplanus, glaber, rugoso-rieticulatus, rufo-fulvus, dein pallide brunneus; lamellae angustae, confertae, fulvae, demum vinaceo-brunneae; stipes 4–8 cm longus, 3–6 mm crassus, pallidus, deorsum demum brunneus; velum sparsum; sporae 5–6×3 μ; pleurocystidia 32–48×8–12 μ, utriformia vel fusoid-ventricosa, obtusata; fibulae adsunt. Typus. Harrison 8120 (MICH); legit prope Kentville, Nova Scotia, Canada.

Pileus 2.5–6 cm broad, obtusely conic expanding to nearly plane or with a low broad umbo, surface glabrous, moist, hygrophanous, rugose-rieticulate, russet to cinnamon-brown fading to pale tan, with a thin fibrillose fringe of veil remnants along the margin at first. Context pale tan when faded, darker when moist, odor distinctly musty.

Lamellae narrow, crowded, adnate, soon rusty brown and drying vinaceous-brown to cocoa-brown, edges whitish.

Stipe 4–8 cm long, 3–6 mm thick, equal or enlarged downward, flexuous, hollow, fragile, white-mycelioid around the basal area, surface ridged and roughened, whitish becoming brownish.

Spores 5–6×3 μ, smooth, truncate from an apical pore, shape in face view oblong to narrowly elliptic, in profile suboblong to bean-shaped, color in KOH pale chocolate-brown becoming pale chocolate-gray; pale tawny in Melzer’s, wall about 0.2 μ thick.

Basidia 4-spored, 15–18×5–6 μ, narrowly clavate. Pleurocystidia 32–48×8–12 μ, utriform to fusoid-ventricose with very obtuse apex, smooth, thin-walled, hyaline, often pale cinnamon when first revived, content not distinctive. Cheilocystidia similar to pleurocystidia or varying to clavate, hyaline.

Pileus cuticle a compacted trichodermium with elements 1–3 cells long and having inflated cells or clavate-pedicellate cells some up to 80 μ long, walls hyaline.
at pileus surface but colored cinnamon near the subcuticular region, becoming paler on standing. Hyphae of subcuticular zone vinaceous-cinnamon in KOH, walls smooth to minutely roughened. Clamps present.

Type locality. Kentville, Nova Scotia, Canada.

Habit and habitat. On a well rotted birch log, October.

Distribution. Known only from the type locality.

Observations. This species lacks the wedge-shaped spores (in face view) of *P. fuscofolia*, in fact the spores are almost identical with those of *P. confertissima*. It differs from both in the structure of the cuticle of the pileus.

338. **Psathyrella albocinerascens** A. H. Smith, sp. nov.

Pileus 1-4 cm latus, plano umbonatus vel late convexus, glaber, pallidus demum violaceo-griseus; lamellae latae, subdistantes, albidae demum triste fulvae; stipes 3-6 cm longus (3-)5-8(-10) mm crassus; dissiliens, candidus, ad basem copiosus myceliosus; velum nullum; sporae 7.5-9 × 4-4.5 μ; pleurocystidia 36-52 × 8-14(-17) μ, fusoid-ventricosa, obtusata; fibulae adsunt. Typus. Smith 78300 (MICH); legit prope Highlands, Michigan.

Illust. Text Figs. 729-732.

Pileus 1-4 cm broad, convex with an incurved margin, expanding to broadly umbonate or plane and sometimes the margin recurved, glabrous, moist, hygrophanous, when young whitish to watery gray, becoming drab as the spores mature and the surface at times dusted with them, when fading becoming white, when dried white to grayish. Context thin, fragile, white to watery gray, odor and taste mild, FeSO₄ not causing a color change.

Lamellae adnate but soon seceding, broad, subdistant to close, white when young, soon near russet as the spores mature, edges even.

Stipe 3-6 cm long, (3-)5-8(-10) mm thick, equal or nearly so, hollow, splitting lengthwise readily, arising from a mass of white mycelium reminding one of an oozonium, white over all from youth to age and naked except for a slight pruina near the apex; veil absent.

Spore deposit dark chocolate in color. Spores 7.5-9 × 4-4.5 μ, smooth, apical pore present but inconspicuous under oil, in face view ovate to elliptic, in profile subovate to obscurely inequilateral, color in KOH dark chocolate-color, in Melzer's reddish tawny to bay, wall about 0.2 μ thick.

Basidia 4-spored, 26-32 × 7-9 μ, narrowly clavate, hyaline in KOH, Pleurocystidia 36-52 × 8-14(-17) μ, utriform (rarely) to obtusely fusoid (commonly) or fusoid-ventricose (not as common), wall thin, smooth and hyaline in KOH; other more versiform cells also present; sub fusoid with wall slightly thickened to 0.5 μ near or in the apex and these often bifurcate or with a lateral protuberance near apex; some broadly sub fusoid and with yellowish walls 0.5 μ thick (in KOH); rarely some clavate to misshapen but otherwise like the broadly sub fusoid cells. Cheilocystidia as for the various types of pleurocystidia (versiform) but more with yellow walls in KOH. Caulocystidia versiform as for pleurocystidia but mostly some variation of clavate to cylindrical.

Pileus cuticle a staggered palisade of clavate-pedicellate to inflated-pedicellate cells 15-40 μ wide, walls smooth, thin and hyaline in KOH or Melzer's. Hyphae of context including subcutis hyaline and smooth as revived in KOH. Clamps present. Sub hyphalium orange-rusty (in thick sections) as revived in Melzer's; the pileus trama merely weakly yellowish.

Type locality. Highland, Michigan.
Habit and habitat. On dead elm stumps and logs, October.


Observations. The distinguishing features of this species are the pale pigmentation of the basidiocarps, presence of both thin-walled pleurocystidia and some with slightly thickened walls, the large caulocystidia, the dark chocolate-color of the spore deposit, the pileus cuticle containing so many clavate pedicellate cells and the medium-small spores. It appears to be close to *P. cernua*, a European species.

Material examined. Michigan: Potter 10297; Smith 78300 (Type).

339. *Psathyrella melleipallida* A. H. Smith, sp. nov.

Pileus 10–15 mm latus, late convexus, melleus demum pallidus, glaber; lamellae angustae confertae, albidae, demum brunneo-grisseae, in exsiccatis fuscae; stipes 2–3 cm longus, 1–1.5 mm crassum, albidus, sparse fibrillosus; spores 8–10 × 5–6 μ; pleurocystidia 38–56 × 12–16 μ, pediculato-elliptica vel late ventricosa; fibulae adsunt. Typus. Potter 6424 (MICH); legit prope Ithaca, Michigan.

Illust. Text Figs. 733–736.

Pileus 10–15 mm broad, obtuse becoming broadly convex, moist and hygrophanous, more or less honey-color and fading to pallid (tilleul buff) or with a residual flush of cinnamon, pallid when dried; veil thin, fibrils at first near or along the margin but soon evanescent. Context very thin and delicate.

Lamellae narrow, close, adnate, white at first but gradually becoming brownish gray (near “wood brown”), mature gills pale fuscous as dried, edges even.

Stipe short, 2–3 cm long, 1–1.5 mm thick, equal, fragile, white, with scattered fibrils over the lower part at first, glabrescent, not discoloring appreciably and unicolorous as dried.

Spores 8–10 × 5–6 μ, smooth, truncate from a distinct apical pore, shape in face view elliptic to obscurely ovate, in profile subelliptic to obscurely inequilateral, color in KOH cocoa-color when first revived in KOH and slowly becoming chocolate-gray, in Melzer’s reddish tawny, wall about 0.5 μ thick.

Basidia 4-spored, clavate, 18–21 × 6–9 μ, hyaline in KOH. Pleurocystidia scattered, 38–56 × 12–16 μ, in optical section elliptic beyond a narrow basal pedicel, varying to fusoid-ventricose with a short neck and broadly rounded apex, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer’s. Caulocystidia scattered, 28–52 × 9–14 μ, fusoid-ventricose with obtuse apex or subcylindric with flexuous walls and apex obtuse to subacute, small clavate cells also present, all hyaline, smooth and thin-walled.

Gill trama regular, the hyphae pale brownish to hyaline as revived in KOH. Pileus trama with brown smooth to faintly roughened walls in the subcortical region (in KOH). Cuticle a layer of vesiculose cells one to two deep and hyaline in KOH. Clamps present.

Type locality. Ithaca, Michigan.

Habit and habitat. Gregarious on old logs and surrounding leaf mold at bottom of a dried up pond.


Observations. The pale honey-colored pileus, narrow close gills, white stipe and relatively broad spores are distinctive.

Pileus 1–4 cm latus, convexus demum late convexus, glaber, subspadiceus vel argillaceus; contextu argillaceus; lamellae confertae demum latae, brunneo-lae demum vinaceo-brunneae, in exsiccatis fuscae; stipes 3–5 cm longus, 2–4 mm crassus, pallidus, sparse fibrillosus, glabrescens, deorsum demum bruneus; pleurocystidia 40–55×10–16 μ, fusoid-ventricosa, ad apicera rotundata, rare subacuta; fibulae adsunt. Typus. Smith 33762 (MICH); legit prope Burt Lake, Michigan.

Ilust. Text Figs. 737–739.

Pileus 1–4 cm broad, convex with the margin bent in toward the stipe at first, expanding to broadly convex, partial veil slight to rudimentary and leaving scarcely any remnants along the pileus margin, pileus glabrous over the remainder, hygrophanous, near buckthorn brown moist, near pinkish buff faded or when dried. Context thin, fragile and concolorous with pileus in moist or faded condition. Lamellae close, narrow to moderately broad, adnate, brownish when young, slowly very dingy vinaceous-brown to (finally) fuscous when dried, or retaining a slight reddish tinge, edges even.

Stipe 3–5 cm long, 2–4 mm thick, equal, whitish, fragile, sparsely fibrillose at first but glabrescent, dingy brownish below when mature.

Spores 8–11×4.5–5.5 μ, smooth, pore apical and distinct causing apex to appear somewhat truncated, shape in face view ovate to subelliptic, in profile somewhat inequilateral to subovate, color in KOH dull cocoa-color, slowly becoming clouded chocolate-gray, in Melzer's tawny with a reddish tinge, wall about 0.3 μ thick.

Basidia 4-spored, 20–26×8–10 μ, clavate, hyaline. Pleurocystidia 40–55×10–16 μ, fusoid-ventricose with obtuse to rounded apex (subutriform), rarely is the apex subacute, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia either similar to the pleurocystidia but smaller or clavate to ellipsoid and 18–30×8–15 μ or both occurring intermingled, the wall in the latter type often yellowish in KOH in the basal portion as revived. Caulocystidia more or less similar to pleurocystidia but varying to subcylindric with flexuous outlines (and only 25–34×3–6 μ), when fusoid-ventricose the apex subacute to rounded.

Gill trama of very inflated dingy ochraceous hyphae, pigment in the wall. Pileus trama ochraceous-tawny in region of subcutis, the pigment in the walls which are up to 0.4 μ thick in some cells. Cuticle a layer of vesiculose cells several deep, their walls hyaline to yellowish as revived in KOH. Clamps present. No distinctive reaction seen on any tissue mounted in Melzer's.

Type locality. Colonial Point, Burt Lake, Michigan.

Habit and habitat. On hardwood debris in a slashing, September.


Observations. This species usually occurs solitary, and the basidiocarps resemble those of *P. obtusata*—indeed, this is one member of a stirps which represents the Friesian concept of *P. obtusata*.

Material examined. Michigan: Potter 7164, 7188, 7215, 8627, 8695b, 8777, 8895, 9138; Smith 33762 (Type), 33765, 33804, 36211. Wyoming: Smith 34552, 35220, 35337.

341. *Psathyrella quercicola* A. H. Smith, sp. nov.

Pileus 8–20(–25) mm latus, campanulatus vel late convexus, glaber, cinnamomeo-brunneus; lamellae confertae demum subdistantes, latae, brunneolae
demum fulvae dein fuscae; stipes 2–5 cm longus, deorsum brunneus, sparse fibrillosus, sursum pruinosis; sporae 7–9 × 4.5–5 μ; pleurocystidia 50–75 × 9–14 μ, anguste fusioideo-ventricosa, rotundata vel obtusa; fibulae adsunt. Typus. Smith 55689 (MICH); legit prope McLeod, Oregon.

Pileus 8–20 (–25) mm broad, obtusely conic with a straight margin, becoming campanulate to broadly convex, at first with scattered veil fibrils near the margin but soon glabrous, moist and hygrophanous, cinnamon-brown to dull tawny fading to pale tan but darker when dried. Context thin, concolorous with surface either moist or faded, odor none.

Lamellae close to subdistant, broad, adnate, seceding, brownish when young, rusty brown near maturity and dark wood brown (grayer) finally, but drying cocoa-color; edges even, not becoming pinkish.

Stipe 2–5 cm long, 1–2 mm thick, equal, fragile, tubular, surface brown below and sparsely fibrilllose, paler above and pruinose, brown over all in age, base with pallid mycelium.

Spores 7–9 × 4.5–5 μ, apical pore distinct, smooth, fulvous in KOH, elliptic to ovate in face view, in profile obscurely to somewhat inequilateral, wall –0.3 μ thick.

Basidia 4-spored. Pleurocystidia 50–75 × 9–14 μ, narrowly fusoid-ventricose, the narrow pedicel often longer than the neck, apex obtuse to rounded and frequently with a globule 1–2 μ in diam. in the apex (or a small bit of coagulated highly refractive material adhering to the wall somewhere near the apex), cystidial wall thin and hyaline. Cheilocystidia similar to the pleurocystidia but shorter, some clavate-inflated cells also present. Hyphae of pileus trama rusty cinnamon in KOH and with inerusting material on the wall. Pileus cuticle a layer of inflated cells about 2 deep, the walls pale cinnamon to hyaline, thin.

Type locality. McLeod near Trail, Jackson County, Oregon.

Habit and habitat. Scattered to gregarious on mossy oak trunks or logs, November.

Distribution. Oregon.

Observations. This species is close to *P. fulvescens* but regularly, when revived in KOH, shows the refractive particles in the forward part of the cystidium, or, lacking these, a droplet.

Material examined. Oregon: Smith 55377, 55689 (Type), 55690.

342. *Psathyrella distans* A. H. Smith, sp. nov.

Pileus 2–3.5 cm latus, late convexus, glaber, cinnamomeo-brunneus, ad marginem demum incarnatus; lamellae distantes, latae (7–8 mm), rufo-fulvae; stipes 4–5.5 cm longus, 2.5–3 mm crassus, pallidus, sparse fibrillosus; velum sparsum; sporae 7–9.5 × 4–5 μ; pleurocystidia 40–65 × 10–15 (–17) μ, fusioide ventricosa, obtusa vel rotundata; fibulae adsunt. Typus. Smith 14268 (MICH); legit prope Lake Mills, Port Angeles, Washington.

Illustr. Text Figs. 740–742.

Pileus 2–3.5 cm broad, obtuse becoming convex to hemispheric, glabrous, moist, hygrophanous, cinnamon-brown or in age more or less lead color near the margin, fading to “pale pinkish buff” or “pinkish buff” (pale buff to faintly alutaceous) or developing a pinkish tinge toward the margin when faded, surface rugulose and atomate in faded pilei. Context thin and fragile, odor and taste not distinctive.

Lamellae distant, 15–17 reach the stipe, 2 tiers of lamellulae, broad (7–8 mm),
 bluntly adnate but soon seceding, dark rusty brown at maturity, edges even and concolorous.

Stipe 4–5.5 cm long, 2.5–3 mm thick at apex, slightly and evenly enlarged downward, straight or flexuous, very fragile, whitish, apex slightly fibrilllose-scurfy, the lower portion with scattered loosely adhering fibrils, probably the remains of a thin partial veil.

Spores 7–9.5×4–5 μ, smooth, apical pore small and often bulging slightly (as revived in KOH), apex appearing truncate in some, shape in face view ovate to (rarely) elliptic, in profile ovate to somewhat inequilateral, color in KOH dark cocoa-color soon becoming dark chocolate, in Melzer's reddish tawny to bay, wall about 0.4 μ thick.

Basidia 4-spored, 18–22×7–9 μ, short-clavate, hyaline in KOH. Brachybasidioles present on mature hymenium. Pleurocystidia 40–65×10–15 (–17) μ, often arising in the gill trama, fusoid-ventricose with obtuse to rounded apex, wall thin, smooth and hyaline, content not distinctive. Cheilocystidia either fusoid-ventricose and 32–40×9–12 μ or clavate with the wall slightly thickened and yellowish as revived in KOH, the latter 14–18×8–11 μ. Caulocystidia not found.

Gill trama regular, dull chocolate-brown when first revived in KOH but becoming pale sordid brownish. Pileus trama of interwoven dull chocolate-brown hyphae soon fading to pale dingy brown (in KOH). Cuticle of pileus formed of vesiculose hyaline cells one cell deep and some clavate cells present. Clamps present.

Type locality. Near Lake Mills, Olympic Mountains, Washington.

Habit and habitat. On alder logs.


Observations. The pink tone on the pileus margin in age, the ovate spores, the presence of brachybasidioles, and the short broad basidia are distinctive.


Illustr. l.c., fig. 1: I, J. L; 2: A. Text Figs. 743–745.

Pileus 1–2.5 cm broad, obtuse to convex, the margin appressed at first, surface glabrous, not conspicuously striate, when moist “snuff brown” or more yellowish on the disc (sordid ochraceous), the disc remaining tinged with ochraceous but the remainder soon grayish and finally blackish umber, hygrophanous fading to sordid cinereous on the margin and buff on the disc, conspicuously atomate when fading. Context very thin and fragile, odor and taste not distinctive.

Lamellae adnate, subdistant, broad, blackish brown, edges whitish.

Stipe 3–5 cm long, 1.5–2 mm thick, equal, white, sparsely fibrillose, tubular, rather firm.

Spores 8–10×4–5 μ, smooth, apical pore distinct and apex narrowly truncate, shape in face view elliptic to rarely narrowly ovate, in profile elliptic to very obscurely inequilateral, color in KOH near “mummy brown” (blackish brown), blackish brown in water mounts of fresh material, in Melzer's tawny-red to bay, wall about 0.3 μ thick.

Basidia 14–17×7–9 μ, 4-spored, hyaline in KOH. Pleurocystidia (36–)44–62 (–70)×8–12 μ, subcylindric with broadly rounded apex to somewhat utriform, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's.
Cheilocystidia fusoid-ventricose and shorter than the pleurocystidia and many merely obtuse at apex. Caulocystidia 30–75 × 10–20 µ, utriform to broadly inflated both near the base and apex, broadly rounded, hyaline, smooth, scattered.

Gill trama regular, of large inflated cells rather irregularly arranged, pale brown to rusty brown as revived in KOH. Pileus trama floccose, interwoven, pale rusty brown in KOH, walls smooth to obscurely roughened. Cuticle of pileus of vesiculose hyaline cells one cell deep or irregularly 2 cells deep. Clamps present.

Type locality. Great Smoky Mountains National Park, Tennessee.

Habit and habitat. Clustered on a laurel stub.


Observations. The caulocystidia appear to be an additional distinguishing feature of this species not given in the original description.

Material examined. Alabama: Burke 8–9–42; Tennessee: Smith 10793 (Type).

344. *Psathyrella parvifibrillosa* A. H. Smith, sp. nov.

Pileus 1–3 (–4) cm latus, late conicus, sparse fibrillosus demum glaber, cinnamomeo-brunneae vel fulvus; lamellae latae confertae, brunneo-brunneus; stipes sursum pallidus deorsum sordide brunneus; sporae 7–9 × 4.3–4.8 (8–11 × 4.5–5) µ, pleurocystidia 40–62 (–75) × 9–18 µ, fusioideo-ventricosa, elongata, obtusa; fibulae adsunt. Typus. Smith 39069 (MICH); legit prope Tahquamenon Falls, Luce County, Michigan.

Illust. Pl. 95, fig. a; Text Figs. 746–750.

Pileus 1–3 (–4) cm broad, obtusely conic and expanding to broadly conic, at first covered by a thin layer of pallid fibrils, margin appendiculate with fibrils, soon glabrescent, color “cinnamon-brown” on the disc and “ochraceous-tawny” on the margin which when moist is striatulate, fading to near cinnamon-buff. Context very thin and fragile, odor and taste mild.

Lamellae ascending-adnate, broad, close, pallid brownish becoming gray-brown as spores mature, edges whitish.

Stipe 2–5 cm long, 1.5–2.5 mm thick at apex, equal or nearly so, hollow, fragile, whitish above, dingy brownish below, apex pruinose-scabrous, lower down appressed-fibrilloose, glabrescent.

Spores 7–9 × 4.3–4.8 (8–11 × 4.5–5) µ, smooth, apical pore not readily evident and the apex rounded, in face view ovate to elliptic (or in large spores narrowly wedge-shaped), in profile obscurely inequilateral (or in long spores almost boletoid), color in KOH cocoa-color and darkening very slowly, in Melzer’s reddish tawny, reddish in water mounts when fresh, wall about 0.3 µ thick.

Basidia 4-spored, 17–22 × 7–9 µ, hyaline in KOH. Pleurocystidia 40–62 (–75) × 9–18 µ, elongate fusoid-ventricose with obtuse apex, broadly and obtusely fusoid or (rarely) utriform, often with granular incrustation (revived in KOH) over apical region, wall thin and hyaline, cell content not distinctive in either KOH or Melzer’s. Cheilocystidia vesiculose to saccate-clavate and 24–35 × 9–15 µ, others obtusely fusoid to fusoid-ventricose and 26–38 × 10–14 µ, thin-walled, hyaline, apex of some having granular incrustations. Caulocystidia a mixture of vesiculose to clavate to utriform and fusoid-ventricose types of various sizes, some clavate to obovate-pedicellate cells up to 60 × 25 µ present, walls thin and smooth.

Cuticle of pileus a layer of vesiculose cells yellowish in sections revived in KOH, in sections their walls thin and smooth, content not distinctive. Subcuticular region of hyphae with rusty cinnamon walls in KOH and with incrusting pigment
on them, no distinctive reaction on any tissue in mounts made in Melzer's. Clamps present.

Type locality. Tahquamenon Falls State Park, Luce County, Michigan.

Habit and habitat. Gregarious on a very decayed log of a hardwood tree.


Observations. The distinctive features of *P. parvifibrillosa* are the thin fibrillose outer veil, cinnamon to tawny colors, the stipe darkening appreciably at the base, the variable spore size and shape, and the lignicolous habitat. It may be characterized as a very commonplace *Psathyrella*.


**Section Obtusatae** (Fr.) Singer, Agar. Modern Taxon. 509. 1962 (excluding synonymy)

Veil remnants on pileus greatly reduced to absent, often present as a thin coating of fibrils along the margin; spores up to 10(–11) μ long; pleurocystidia acute to obtuse (rarely broadly rounded and if so then these mixed with others merely obtuse at apex).

Type. *Psathyrella obtusata*.

**Key to the Subsections of Section Obtusatae**

1. Densely cespitose on wood or humus. subsect. Caespitosae.
2. Solitary to gregarious or in small clusters.

1. On wood (or often very rotten remains of logs etc. or on chip dirt).

2. Truly terrestrial (but stipe may be attached to small sticks), or on *Sphagnum*, lichens, or on compost. subsect. Obtusatae.

2. Not as above. subsect. Limicolae.

**Subsection Caespitosae** A. H. Smith, subsect. nov.

Caespitosae. Typus. *Psathyrella multipedata*

**Key to the Species of Subsection Caespitosae**

1. Veil remnants forming a fibrillose volva near base of stipe. 345. *P. columbiana*.
2. Not as above.

2. Spores 5–6 × 2–3.5 μ (see 78. *P. confertissima* also). 346. *P. fragrans*.
3. Spores larger.


4. Veil, if present, white. 348. *P. multipedata*.


4. Not as above.


5. Spores smaller (see 211. *P. polyeepala* and related species also).

7. Pleurocystidia 26–38(–45) × 8–12 μ; stipe 6–12 cm long. 352. *P. heterocystis*.

7. Spores dark coffee brown in KOH, slowly becoming chocolate-color; stipe white over all.

8. Spores cocoa-brown at first in KOH; stipe brownish in age. 353. *P. acuticystis*.

8. Not as above. 354. *P. ophirensis*.

8. Pleurocystidia very variable in shape.


9. Spores 7–9 μ long.
10. Spores truncate.
10. Spores not truncate.
Psathyrella columbiana Harrison & A. H. Smith, sp. nov.

Pileus 1–2 cm latus, late convexus, glaber, cinnamomeus demum griseo-cinnamomeus; lamellae pallidae demum fulvo-cinnamomeae, confertae, subdistantes; stipes 2–4 cm longus, 1.5–2.5 mm crassus, subcaespitosus, subvolvatus, albidus; velum copiosum; sporae 7.5–10 × 3.5–4.5 μ; pleurocystidia 32–47 (--55) × 8–12 μ, lanceolata vel anguste fusoido-ventricosa; subacuta; fibulae adsunt. Typus. Harrison 6222 (MICH); legit prope Glacier National Park, Canada.

Psathyrella fragrans A. H. Smith, sp. nov.

Pileus 10–25 (--30) mm latus, conicus demum planus, rufo-fulvus, demum rugulosus; odor fragrans; lamellae brunneolae demum rufo-fulvae, confertae, latae; stipes 3–5 cm latus, 1–2.5 mm crassus, ad basem luteo-fulvospermous, sursum sparse pruinosis; velum sparsum; sporae 5–6 × 2–3.5 μ; pleurocystidia 28–45 × 9–12 × 6–9 μ, sublecythiformia; fibulae adsunt. Typus. Smith 47114 (MICH); legit prope Upper Payette Lake, Idaho.
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Illustr. Text Figs. 776–779.

Pileus 10–25 (–30) mm broad, obtusely conic with a straight margin at first, expanding to broadly conic or plane, surface moist and hygrophanous “Mars brown” (dark rusty brown) fresh, fading to dingy tan, when faded the surface conspicuously rugulose. Context concolorous with the surface, taste mild, odor fragrant.

Lamellae dull brown becoming dark rusty brown (like the pileus) when mature, close, adnate, seceding, 2–3 tiers of lamellulae, moderately broad, edges even.

Stipe 3–5 cm long, 1–2.5 mm thick, equal or nearly so, whitish but basal mycelium yellowish, faintly pruinose over apical region, silky downward, veil rudimentary and leaving only scattered fibrils.

Spores 5–6×2–3.5 μ, smooth, apical pore present, shape in face view ovate to corn-kernel-shaped, in profile subelliptic to somewhat inequilateral or obscurely bean-shaped, color in KOH pale fuscous with an ochraceous reflection, reddish tawny in Melzer’s, wall about 0.2 μ thick.

Basidia 4-spored, 16–20×5–6 μ, hyaline in KOH. Pleurocystidia 28–45×9–12×6–9 μ, nine-pin-shaped with the apex capitate, wall thin, smooth and hyaline in KOH, content not distinctive in either KOH or Melzer’s. Cheilocystidia clavate, vesiculose or varying to similar to the pleurocystidia, hyaline and thin-walled (in KOH) or rarely a vesiculose cell with yellow wall also present. Caulocystidia versiform: (1) clavate to vesiculose-pedicellate and with the wall slightly thickened (0.5 μ) and yellow in KOH, variable in size; (2) cells similar to pleurocystidia; (3) various shapes intermediate between the first two types.

Pileus cuticle of large vesiculose cells in a layer 2–3 cells deep, the walls hyaline or yellowish in KOH, smooth. Tramal hyphae brownish in KOH fading to nearly hyaline, smooth. Clamp connections present. No distinctive reaction in any tissue when mounted in Melzer’s.

Type locality. Upper Payette Lake, Valley County, Idaho.

Habit and habitat. Cespitose on conifer debris, August.

Distribution. Idaho.

Observations. This species has the appearance of Psathyrella hydrophila but grows on a conifer substrate, has a fragrant odor and has differently shaped spores in face view among other features.

Psathyrella mucrocystis A. H. Smith, sp. nov.

Pileus 1–3 cm latus campanulatus vel expanso-umbonatus, fulvus, glaber; odor leviter fragrans; lamellae confertae, latae, brunneolae demum fulvae dein fumosofulvae; stipes 3–5 cm longus, 4–7 mm crassus, pallidus, deorsum fibrillosus vel subsquamulosus; velum “pale pinkish buff”; sporae 7–8.5×4–4.5 μ; pleurocystidia 28–37×8–14 μ, clavato-mucronata vel clavata; fibulae adsunt. Typus. Smith 65384 (MICH); legit prope Cascade Lake, McCall, Idaho.

Illustr. Text Figs. 780–783.

Pileus 1–3 cm broad (all were immature), obtuse with the margin straight or only slightly incurved, expanding to campanulate or umbonate and with a spreading margin, surface dark rusty brown moist, fading to bright ochraceous-tawny, margin remaining fringed with fibrils until near maturity; veil fibrillose palid buff. Context thick and firm, pale buff, odor faintly fragrant, taste mild, FeSO₄, no reaction.
Lamellae close, broad, adnate, seceding, pallid brownish becoming tawny and in oldest wood brown (gray-brown), edges even.

Stipe 3–5 cm long, 4–7 mm thick, equal, firm, whitish throughout, apex striate from gill impressions, lower down fibrillose to squamulose with buff-colored veil fibrils, veil leaving a zone of fibrils when it breaks but the zone soon evanescent, no sign of the base darkening in oldest basidiocarps seen.

Spores 7–8.5 × 4–4.5 μ, smooth, apical pore very inconspicuous to lacking, shape in profile mostly obscurely to somewhat bean-shaped, in face view oblong to elliptic, color in KOH a dingy pale ochraceous-cinnamon, in Melzer's pale reddish tawny (or broken spores often dark bay-red).

Basidia 4-spored, narrowly clavate, 22–27 × 5–7 μ. Pleurocystidia scattered to abundant, 28–37 × 8–14 μ, clavate-mucronate to merely clavate, the apical protuberance up to 10 μ long and 3 μ wide, wall thin and smooth, content of cell not distinctive in either KOH or Melzer's. Cheilocystidia clavate to (rarely) clavate-mucronate, 24–36 × 8–13 μ, content of some cells ochraceous in KOH. Caulocystidia present as elongate-clavate hyphal ends.

Pileus cuticle a layer of vesiculose cells 2–3 deep, the walls about 0.5 μ thick and rusty ochraceous in KOH but paler on standing; subcutis rusty yellow-brown in KOH but soon fading. Context hyphae hyaline as revived in KOH and of inflated cells. Clamps present. No amyloid reactions on any tissue and no other distinctive reactions present.

Type locality. McCall, Idaho.

Habit and habitat. Cespitose on outwash of a stream, July.

Distribution. Idaho.

Observations. The distinguishing features of this species are the colored cell walls of the cuticular hyphae of the pileus and their thickness (up to 0.5 μ), the pleurocystidia with the shape of typical chrysocystidia but not distinctive as to content, and the color of the spores in KOH—which is strongly reminiscent of those of section Homophron. A spore deposit was not obtained, but the gills of dried specimens have a decided red tinge which has been accentuated, apparently by the naphthalene used as an insect repellent.


Atylospora multipedata (Pk.) Murrill, Mycologia 14: 265. 1922.

Illustr. Pl. 85; Pl. 86, fig. c; Text Figs. 784–786.

Pileus 1–4.5 cm broad, ovoid to obtusely conic, becoming broadly umbonate, convex or nearly plane, surface glabrous, very young buttons with a thin zone of white evanescent fibrils along the margin, surface smooth or at times rugulose, hygrophanous, “buckthorn brown” over all and with a faintly striate margin when moist, varying to cocoa-color, lubricious, fading to whitish, sometimes dull lead gray along the margin and more or less ochraceous-buff on the disc. Context thin and fragile, pallid, odor and taste not distinctive.

Lamellae close, narrow (about 3 mm wide), ascending adnate, whitish, soon sordid purplish brown, edges even and white-fimbriate.

Stipe 5–10 cm long, 2–4 mm thick, equal, hollow, very rigid and fragile, densely cespitose, the clusters branching from the apex of a long pseudorhiza which arises from a depth of a foot or more under the ground, veil remnants slight and either
scattered over the lower third of the stipe as white-fibrillose flecks or forming a faint subbasal white-fibrillose zone, upper two thirds densely pruinose and often slightly striate.

Spores (6.5-)7-9 × (3-)3.5-4.5 μ, smooth, with a distinct hyaline pore causing apex to appear slightly truncated, in face view oblong to elliptic, in profile sub-oblong to very obscurely inequilateral, color in KOH chocolate-brown becoming chocolate-gray (near "wood brown"), in Melzer's reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 12–14 (-24) × 6–8 μ, clavate, hyaline in KOH. Pleurocystidia rare to very scattered and mostly near the gill edge, similar to the cheilocystidia. Cheilocystidia (28-)34-46 (-60) × 8–15 μ, narrowly to broadly fusoid-ventricose, the apex acute to subacute, neck often flexuous, wall thin, smooth and hyaline, cell content not distinctive in either KOH or Melzer's. Caulocystidia variable (Fig. 786), wall thin, smooth and hyaline, content not distinctive.

Gill trama regular, the hyphal cells inflated, pale brownish revived in KOH, walls smooth. Subhymenium cellular. Pileus having a cuticle of more or less perpendicular elongated hyaline cells (35-)40-55 × 10–30 –(40) μ, the wall thin, smooth and hyaline, cell content not distinctive in either KOH or Melzer's. Hyphae of the context pale brown to dingy ochraceous as revived in KOH, dark in young pilei, paler in old ones. Clamp connections present. No distinctive reaction on any tissue as revived in Melzer's.

Type locality. St. Louis, Missouri.

Habit and habitat. Cespitose on the ground but actually coming from buried wood, often abundant on old sawdust piles.

Distribution. Michigan, Missouri, New Mexico, Wyoming.

Observations. It is likely that the pseudorhiza is perennial.


349. Psathyrella longistipes A. H. Smith, sp. nov.

Pileus 2–4 cm longus, late conicus, sordide ochraceus demum glaber; lamellae confertae adnatae, latae, violaceo-fuscae; stipes 6–12 cm longus, caespitosus, 2.5–5 mm crassus, albidus; glaber; velum sparsum; sporae 8-10 × 4.5–6 μ; pleurocystidia 26–38 (-45) × 8–12 μ, anguste fusioideo-ventricosa, subacuta vel obtusa, interdum suberasso-tunicata (0.5 μ); fibulae adsunt. Typus. Smith 52743 (MICH); legit prope Ophir, Colorado.

Illustr. Text figs. 787–789.

Pileus 2–4 cm broad, obtusely conic becoming broadly conic with a flaring margin, surface glabrous, moist, hygrophanous, a very weak "buckthorn brown" when young (pale dingy yellow-brown), becoming gray as spores mature, striate when moist, fading to pale pinkish buff (pallid buff) or whitish, margin lacking veil remnants at all stages. Context thin and fragile, odor and taste not distinctive.

Lamellae close, adnate, seceding, moderately broad, near "benzo brown" (violaceous-drab) when mature, edges even.

Stipe 6–12 cm long, 2.5–5 mm at apex, hollow fragile, white over all and not discoloring, fibrillose-pruinose above but not from veil remnants; veil rudimentary—as a few shreds on small buttons.

Spores 8–10 × 4.5–6 μ, smooth, apical pore broad, in some projecting slightly as a hyaline lens, shape in face view subelliptic to ovate, in profile obscurely
inequilateral to subelliptic (the ventral line nearly straight and the dorsal line convex as seen in optical section), color in KOH pale to medium fuscous, in Melzer's bright reddish tawny, wall about 0.5 μ thick.

Basidia 4-spored, clavate, 8–9 μ wide, hyaline in KOH. Pleurocystidia 26–38 (−45) × 8–12 μ, subfusoid to fusoid-ventricose, content not distinctive in KOH or Melzer's, smooth, wall thin or in some about 0.5 μ thick and yellowish in KOH. Cheilocystidia 24–37 × 7–13 μ, clavate, broadly fusoid- or fusoid-ventricose, smooth, with thin or very slightly thickened walls. Caulocystidia rare to absent, if present clavate to cystidioid and similar to or slightly larger than the cheilocystidia.

Pileus cuticle 1–2 cells deep, of greatly inflated cells with more or less thin, hyaline to yellowish walls. Hyphae beneath the cuticle dingy yellowish in KOH but smooth, slowly becoming nearly hyaline. Clamps present. No amyloid reaction present in any tissue.

Type locality. Ophir, Colorado.

Habit and habitat. Clustered on soil around conifer logs and stumps, August.

Distribution. Colorado, New Mexico.

Observations. The clustered habit (but lack of a pseudorhiza), small pleurocystidia, the very rudimentary veil, spores 8–10 × 4.5–6 μ, long stipe not changing color appreciably in aging, and lack of red or cinnamon in the gills are distinctive. It appears to be closely related to *P. microsperma*. It is readily distinguished from the latter by larger spores.

Material examined. Colorado: Smith 52743 (Type). New Mexico: Barrows 3018.


Pileus 1.5–3 cm broad, convex-campanulate, spadiceus, rugulosus, ad marginem leviter floccosus, glabrescens; lamellae subdistantes, latae, albideae demum fusco-griseae; stipites 5–8 cm longus, 3–4 mm crassus, candidus; deorsum fibrillosus; velum sparsum, albidum; sporae 7–10 × 4.5–5 μ; pleurocystidia 46–64 × 9–12 (–15) μ, anguste fusoido-ventricosa, flexuosa, ad apicem obtusa; fibulae adsunt. Typus. Hesler 22432 (MICH); legit prope Indian Gap, Great Smoky Mountains National Park, Tennessee.

Pileus 1.5–3 cm latus, convexus vel campanulatus, spadiceus, rugulosus, ad marginem leviter floccosus, glabrescens; lamellae subdistantes, latae, albideae demum fusco-griseae; stipites 5–8 cm longus, 3–4 mm crassus, candidus; deorsum fibrillosus; velum sparsum, albidum; sporae 7–10 × 4.5–5 μ; pleurocystidia 46–64 × 9–12 (–15) μ, anguste fusoido-ventricosa, flexuosa, ad apicem obtusa; fibulae adsunt. Typus. Hesler 22432 (MICH); legit prope Indian Gap, Great Smoky Mountains National Park, Tennessee.
hyaline, cell content not distinctive. Cheilocystidia narrowly fusoid to subfusoid,
32–46 × 7–11 μ, hyaline, thin-walled.

Gill trama of greatly inflated hyphal cells with walls dingy vinaceouss-cinnamon and smooth; subhymenium of narrow compactly interwoven hyphae
in a narrow zone. Pileus cuticle a layer of vesiculose cells 2–5 deep, the walls thin,
smooth and hyaline to weakly ochraceous (in KOH). Hyphae of trama vinaceouss-cinnamon in KOH with some incrustations on the walls, the color dark near the
subhymenium and paler near the cuticle (the reverse is normally true). Clamps
present.

Type locality. Indian Gap, Great Smoky Mountains National Park, Tennessee.
Habit and habitat. Gregarious on a fallen beech branch, September.
Distribution. Known only from the type locality.
Observations. This is a distinctive species because of the reverse color pattern
of the pilear trama in KOH, and the greatly inflated cells of the lamellar trama
(central portion) in contrast to the narrow interwoven hyphae of the sub­
hymenium.

351. Psathyrella baragensis A. H. Smith, sp. nov.

Pileus 1–3.5 (–4) cm latus, convexus vel conicus, ad marginem albo-fibrillosus,
glabrescens, spadicus vel cinnamomeo-brunneus; lamellae pallidae demum atro­
brunneae; confertae vel subdistantes, latae, demum ventricosae; stipes 2–4.5 cm
longus, caespitosus vel gregarius, 1.5–5 mm crassus, deorsum dilute brunneus,
fibrillosus, glabrescens; sporae 8–11 × 4–5 μ; pleurocystidia 48–62 × 9–16 μ, fusoid
ventricosa vel subutriformia, obtusa vel subcapitata; fibulae adsunt. Typus.
Ammirati 2784 (MICH); legit prope Herman-Silver River, Baraga
County, Michigan.

Pileus 1–3.5 (–4) cm broad, conic to obtusely conic, becoming expanded to
convex or nearly so, umbo if present typically rounded, margin at first appressed
against the stipe in buttons, spreading at times and splitting in age, fragile, moist,
hygrophanous, smooth, striate on the margin, opaque, when young whitish fibril­
lose on the margin from the veil at first, color "warm sepia" to "bister" becoming
"cinnamon-brown" to "ochraceous-tawny," paler tan when faded, finally dull
brown from the spores, dingy brown as dried. Context thin, watery under the
cuticle, brownish in the disc, odor and taste not distinctive.

Lamellae pallid to very pale cinnamon-buff, then gray, finally dark gray
to black and drying blackish, close to subdistant, ascending adnate to adnexed,
broad at maturity and ventricose finally, no pink tints noted.

Stipe 2–4.5 cm long, apex 1.5–5 mm thick, irregular to curved, equal or slightly
enlarged downward, ground color watery brownish in age, brittle, hollow, context
brownish, fibrillose from the whitish remains of the veil, glabrescent.

Spores 8–11 × 4–5 μ, smooth, apical pore distinct and apex more or less
truncate, shape in face view elliptic to ovate, in profile obscurely inequilateral,
color in KOH cocoa-brown becoming dark chocolate-color, in Melzer’s dark bay.

Basidia 4-spored, 18–26 × 9–11 μ, hyaline in KOH. Pleurocystidia scattered,
48–62 × 9–16 μ, fusoid ventricose to subutriform, apex typically obtuse varying to
subcapitate (but under 6 μ broad), less frequently subacute, smooth, wall thin
to slightly thickened (in KOH) and yellowish, cheilocystidia similar to pleuro­
cystidia (some with thickened yellowish walls).

Gill trama in subhymenial area brownish (as in Lacrymaria), central strand
of inflated hyphal cells with smooth walls very weakly brownish in KOH on
standing. Cuticle of pileus a layer of inflated cells 2-4 deep with dingy ochraceous smooth walls (in KOH) which are somewhat refractive (but not gelatinous). Subcuticular hyphae weakly incrusted and pale fulvous in KOH. Clamps present.

Type locality. Herman-Silver River area, Baraga County, Michigan.

Habit and habitat. Cespitose to gregarious on soil in logging roads about a year old, June.

Distribution. Known only from the type locality.

Observations. This species was found fruiting by the hundreds of basidiocarps. No pseudorhiza was present. The veil is not compactly enough developed to place the species in the subgenus *Pannucia*. The distinguishing features of the species are spore size and color, and the wide range of variation in the shape of the cystidia. It is close to *P. microsperma* but has larger spores.

352. *Psathyrella heterocystis* A. H. Smith, sp. nov.

Pileus 7–30 mm latus, conicus vel campanulatus, glaber, fulvus; oder subgraveolens; sapor leviter raphanicus; lamellae subdistantes vel distantes, pallidae demum sordide brunneae (griseo-brunneae) latae; stipes 2–5 cm longus, 1.5–3 mm crassus, pallidus, deorsum demum sordide brunneus, glabrescens; velum sparsum; sporae 7–9(–10) × 4–5 μ; pleurocystidia 36–47 × 10–16 μ, utriformia, vel 35–50 × 6–20 μ, fusodeae ventricose, ad apiceum rotundata, vel 40–70 × 9–12 μ, anguste fusoido-ventricose; cheilocystidia 20–35 × 9–25 μ, subfusoidae, flexuosa et subacuta, interdum suberassotunicata; fibulae adsunt. Typus. Ammirati 3310 (MICH); legit prope Herman-Silver River, Baraga County, Michigan.

Pileus 7–30 mm broad, cylindric to conic at first and with an appressed margin, becoming obtusely conic to campanulate with (finally) the margin flaring, surface at first with a slight fringe of fibrils along the margin, soon becoming glabrous, moist and hygrophanous, rusty brown on disc at first and paler ochraceous-brown toward the margin, in age watery brown and then translucent-striate, pale dingy buff when faded. Context thin and fragile, whitish to pallid at first but soon watery brownish lower down, finely pruinose above, lower down slightly fibrillose from the rudimentary veil.

Lamellae subdistant to distant when mature, pallid then grayish pallid to brownish, grayish brown when mature, broad, moderately thick, ventricose, ascending-adnexed; edges pallid.

Stipe 2–5 cm long, 1.5–3 mm thick, more or less equal to the slightly bulbous base, white to pallid at first but soon watery brownish lower down, finely pruinose above, lower down slightly fibrillose from the rudimentary veil.

Spores 7–9(–10) × 4–5 μ, smooth, no apical pore evident and spore apex not truncate; shape in face view elliptic to subovate (some elongate and variable in shape—angular to narrowly ovate or wedge-shaped), in profile somewhat bean-shaped to obscurely inequilateral, color in KOH dingy cocoa-color becoming a medium chocolate-gray, in Melzer's tawny, wall about 0.2–0.3 μ thick.

Basidia 4-spored, 18–26 × 8–11 μ, clavate, hyaline. Pleurocystidia: (1) 36–47 × 10–16 μ utriform and with granular debris over the apex (rare); (2) 35–50 × 10–20 μ broadly fusoid-ventricose with rounded apex and also with adhering granular debris (fairly common); (3) 40–70 × 9–12 μ, narrowly fusoid-ventricose with obtuse to subacute apex also with adhering debris (common); (4) 40–60 × 9–18 μ and subfusoid with flexuous walls and apex subacute to rounded and with adhering material or smooth (common), walls thin or slightly thickened in any of above types and all hyaline in KOH (one clavate cell with yellow wall.
observed). The above data are taken from one pileus. Cheilocystidia 20–35 × 9–25 μ, clavate and with yellow mostly slightly thickened walls (0.5 μ thick), some cystoid cells also present on the edge.

Pileus cuticle a layer 1–3 cells thick of inflated smooth thin-walled (but refractive in KOH) cells ochraceous as revived in KOH. Hyphae of subcuticular region near clay color in KOH and with smooth walls (from a mature pileus). Clamps present.

Type locality. Herman-Silver River, Baraga County, Michigan.

Habit and habitat. Cespitose to gregarious on very rotten wood and on debris, July.

Distribution. Known only from the type locality.

Observations. The extremely variable pleurocystidia are distinctive in this group, but the aspect of the basidiocarps is that of P. obtusata.

Material examined. Michigan: Ammirati 3310 (Type).

353. Psathyrella acuticystis A. H. Smith, sp. nov.

Pileus 2–3.5 cm latus, late convexus, sparse fibrillosus glabrescens, albidus demum griseo-brunneus, ad marginem copioso fibrillosus; lamellae confertae, albo-fibrillosus, sursum annulato-zonatus, glabrescens, deorsum mellebrunneus; sporae 6.2–7.5 × 3.5–4 μ; pleurocystidia 42–64 × 9–16, fusoide ventricosa, ad apicerum praeacuta, maura 0.5–0.6 μ crassa; fibulae adsunt. Typus. Smith 73875 (MICH); legit prope Upper Priest River, Idaho.

Illust. Pl. 84, fig. b; Text Figs. 769–772.

Pileus 2–3.5 cm broad, obtuse to convex, expanding to broadly convex, surface thinly coated with white fibrils at first, glabrescent, white when young but brownish to grayish tones evident as the spores mature, subhygrophanous and in age very pale tan "pale pinkish buff" to "pinkish buff," margin at first heavily fringed with white veil remnants. Context thin, fragile, watery pallid becoming pallid, odor and taste not distinctive, with FeSO₄ no color change.

Lamellae close, broadly adnate, broad, brownish pallid when young, soon gray (near avellaneous) and finally "hair brown" (dark brownish gray), edges whitish.

Stipe 2–4.5 cm long, 2.4–4 mm thick, short, often curved, hollow and fragile, densely white-fibrillose to an annular zone, fibrillose-pruinose over apical region, becoming dingy honey-color beneath the veil remnants.

Spore deposit purple-fuscous. Spores 6.2–7.5 × 3.5–4 μ, smooth, apical pore very inconspicuous to absent, shape in face view very obscurely (and bluntly) fusiform to ovate, somewhat pointed at apiculate end, in profile obscurely inequilateral, color revived in KOH chocolate-black, reddish in KOH at first on fresh material, tawny-red in Melzer's, wall about 0.3 μ thick.

Basidia 4-spored, 18–24 × 6–9 μ, hyaline, clavate. Pleurocystidia abundant, 42–64 × 9–16 μ, fusoid-ventricose with sharply acute apex, wall refractive and thickened to 0.5–0.6 μ in the ventricose part, very thin near the apex, hyaline and smooth in KOH, content not distinctive in either KOH or Melzer's. Cheilocystidia similar to pleurocystidia but usually smaller. Caulocystidia versiform: (1) elongate fusoid-ventricose and 50–110 × 9–15 μ, with acute apex, neck often flexuous, wall thickened slightly near the base, hyaline in KOH and often more or less crooked or contorted; (2) vesiculose to clavate and 10–17 μ broad, wall thin to thickened slightly.

Cuticle of pileus a layer one to two cells deep of inflated to pedicellate cells
mixed with vesiculose cells, their walls yellowish-hyaline in KOH, the cell content not distinctive in KOH or Melzer's. Hyphae of the subcuticular zone weakly brownish in KOH; thin-walled, smooth. Clamps present. No distinctive reactions observed for any tissue as mounted in Melzer's.

Type locality. Upper Priest River, Boundary County, Idaho.

Habit and habitat. Cespitose on chip-dirt, October.

Distribution. Idaho.

Observations. The pointed pleurocystidia with slightly thickened walls, the elongate caulocystidia, the white veil and pallid pileus along with the small spores are distinctive.

Material examined. Idaho: Smith 73875 (Type), 74105.

354. *Psathyrella ophirensis* A. H. Smith, sp. nov.

Pileus 1–4 cm latus, late conicus, glaber, subsapidicus vel sordide cinna-momeus; lamellae confertae, latae, brunneo-lae demum griseo-cacaocolor; stipes valde caespitosus, 6–12 cm longus, 2–4 mm crassus, albidus, deorsum fibrillosus; velum sparsum; sporae 7–9×4.5(–5) μ pleurocystidia 28–42×7–12 μ, fusoide ventricosa vel subutriformia; fibulae adsunt. Typus. Smith 51783 (MICH); legit prope Ophir, Colorado.

Pileus 1–4 cm broad, oval to obtusely conic, expanding to broadly conic, surface moist and hygrophanous but none of them striate, “buckthorn brown” to “Sayal brown” when moist, pinkish buff to cinnamon-buff faded, glabrous except when very young and then only with scattered fibrils near the margin. Context thin, fragile, concolorous, odor none, taste not distinctive—merely slightly disagreeable to mild.

Lamellae crowded, adnate, narrow to only moderately broad, pallid brownish at first, dull cocoa-color when mature but in age grayer (near cinnamon-drab). Stipe in massive clusters held together by numerous rhizomorphs and other mycelium (no pseudorhiza present), 6–12 cm long, 2–4 mm thick, white throughout and unchanging, base woolly-fibrillose, apex fibrillose-pruinose; veil white, thin, leaving scattered fibrils on lower part of stipe but not leaving a distinct zone at the point where it breaks.

Spores 7–9×4–4.5(–5) μ, smooth, with an apical hyaline lens-shaped cap causing apex to appear truncate, shape in face view elliptic, in profile elliptic to obscurely bean-shaped (ventral line straight more or less), color in KOH grayish brown and not darkening appreciably, in Melzer's bright reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, 22–28×6–8 μ, clavate, hyaline. Pleurocystidia scattered, 28–42×7–12 μ, fusoid-ventricose with obtuse apex to subutriform, wall thin, smooth, cell content not distinctive in KOH or Melzer's. Cheilocystidia smaller than pleurocystidia but otherwise approximately similar to more fusoid. Caulocystidia near apex similar to cheilocystidia, none found a centimeter from the apex.

Pileus cuticle cellular, 1–2 cells deep, cells 15–40 μ wide, some pedicellate with wall of pedicel thin but cinnamon in color (in KOH), subcuticular zone cinnamon in KOH but fading. In Melzer's all tissues non-amyloid (yellowish), some fine hyaline globules noted in the mount. Clamp connections present.

Type locality. Ophir Valley, Ophir, San Miquel County, Colorado.
Habit and habitat. Densely cespitose around dying aspens and around stumps, August.


Observations. This species is related to *P. multipedata* but differs in slightly larger spores and smaller cheilocystidia as well as in lacking a pseudorhiza. The association was clearly with aspen.


*Atylospora microsperma* (Pk.) Murrill, Mycologia 14: 264. 1922.

Illustr. Pl. 86, fig. a; Text Figs. 793, 794.

Pileus 1–2.5 cm broad, ovoid to obtuse or nearly hemispheric, becoming subcampanulate to broadly convex, even, hygrophanous, brown when moist, paler when dry, slightly floccose when young. Context thin, brownish, fading to pallid.

Lamellae thin, close, adnate, brown.

Stipe 2.5–3 cm long, 2–3 mm thick, equal, hollow, white-fibrillose but soon glabrescent, white or whitish, fragile.

Spores 6.5–8 × 4–4.5 µ, smooth, apical pore indistinct and apex not truncate, shape in face view broadly subfusoid or more ovate (more pointed at base than the apex), varying to subelliptic, in profile obscurely inequilateral or with the ventral line nearly straight and the dorsal line convex (in optical sections), color in KOH at first dull bister (dingy yellow-brown) slowly changing to a dingy cocoa-color and finally more chocolate-brown, in Melzer’s reddish tawny to bay, wall about 0.3 µ thick.

Basidia 4-spored, 12–14 × 6–8 µ, short and obese, hyaline in KOH. Pleurocystidia and cheilocystidia similar 26–37 × 10–13 µ, fusoid-ventricose, the apex acute to subacute (almost needle-like in some), the wall up to within about 10 µ of the apex slightly thickened and highly refractive in many, the thin-walled apical portion slow to revive, hyaline in KOH and content not distinctive. Caulocystidia not found on the fragment of the stipe (from the type) available for examination. Large laticiferous elements present in the stipe cortex.

Pileus cuticle of vesiculose cells more than one cell deep, the walls smooth, thin and hyaline to yellowish in KOH. Hyphae of the subcutis rusty brown in KOH. Clamps present.

Type locality. Ohio.

Habit and habitat. Cespitose about old stumps.


Observations. The clusters seen to date were not as large as in *P. ophtensis*. The two are very close but the feature of the truncate vs. nontruncate spore apex appears to distinguish them.

Subsection Obtusatae

Key to the Species of Subsection Obtusatae

1. Pleurocystidia measuring up to 60 μ long or more.
   1. Pleurocystidia seldom over 50 μ long.
       2. Spores 6.5-9 × 4.45 μ.
       3. Spores 8-10 × 4.5-6 μ.
   3. Pleurocystidia up to 85 μ long; some cheilocystidia with dull cinnamon content in KOH.
      1. Not as above.
          4. Pileus milk-white before maturing.
          5. Veil of grayish fibrils; gills at maturity grayish brown.
          6. Gills cinereous becoming black.
          7. Brachybasidioles present; stipe white and unchanging.
          8. Spores 6-7.5 × 3-4.5 μ.
          9. Spores larger.
          10. Odor of camphor when fresh; veil grayish.
          11. Odor mild; veil white.
          12. Lower portion of stipe soon discoloring.
          13. Lamellae very narrow.
          14. Pileus when young white to whitish.
          15. Spore apex distinctly truncate.

356. Psathyrella directa A. H. Smith, sp. nov.

Pileus 1–3 cm latus, late conicus vel convexus, sparse fibrillosus, cinnamomeo-brunneus dein subochraceus; lamellae subdistantes, latae, brunneolae demum cinnamomeae dein fusco-brunneae (in exsiccati vinaceo-brunneae); stipes 3–5 cm longus, 2–3.5 mm crassus, deorsum brunneus, surfum albidus, fibrillosus, glabrascens; velum fibrillosum; sporae 7–9.5 × 4–5 μ; pleurocystidia 50–80×10–16 μ, fusioide ventricosa, elongata, obtusa vel subacuta; fibulae adsunt. Typus. Smith 23759 (MICH); legit prope Still Creek, Mt. Hood National Forest, Oregon.

Pileus 1–3 cm broad, obtusely conic becoming broadly conic to convex, surface moist and hygrophanous beneath a thin coating of white outer veil fibrils which aggregate into fasicles and finally disappear, when moist cinnamon-brown, fading to warm buff (yellowish) but when dried dull cinnamon (near “Sayal brown”).

Lamellae subdistant, broad, adnate, brownish becoming dull cinnamon before shaded chocolate-color by spores, near “Natal brown” as dried in oldest cap (cocoa-color in younger ones), edges pallid-crenulate.

Stipe 3–5 cm long, 2–3.5 mm thick, equal fragile, hollow, white above, brownish beneath the veil remnants toward the base, coarsely fibrillose at first from remains of the white veil.

Spores 7–9.5 × 4–5 μ, smooth, apex obscurely truncate from a distinct pore, shape in face view oblong to elliptic, in profile subelliptic to obscurely bean-
shaped, color in KOH cocoa-color becoming chocolate-gray, in Melzer's tawny, wall about 0.3 μ thick.

Basidia 4-spored, 18–28 × 8–11 μ, clavate, hyaline in KOH. Pleurocystidia 50–80 × 10–16 μ, elongate-fusoid-ventricose, apex obtuse to subacute, wall thin, smooth and hyaline, content not distinctive. Cheilocystidia 34–50 × 10–14 μ, fusoid-ventricose to clavate, thin-walled, smooth or with some adhering debris, content of some (in limited areas) reddish cinnamon in KOH.

Pileus cuticle of vesiculose and pear-shaped pedicellate cells, the layer 1–4 cells deep, wall near base cinnamon in KOH, near apex hyaline or nearly so (or upper layer very pale and area near subcutis cinnamon-red and some cells filled with cinnamon-red pigment). Hyphae of the pileus trama reddish-cinnamon in KOH or vinaceous-cinnamon, with inconspicuous inerustations except for wall thickenings near or at the septa. Clamp connections present.

Type locality. Mt. Hood National Forest, Oregon.

Habit and habitat. Gregarious on debris of mixed conifer and deciduous forest, September.

Distribution. Oregon.

Observations. This is a very readily identified species because of the extremely long pleurocystidia and colors of the basidiocarp which approximate those of the P. frustulenta group. The pigment noted in the cheilocystidia in places along the gill edge may be distinctive, but it was not found in young specimens.

357. Psathyrella angusticystis A. H. Smith, sp. nov.

Pileus 1–2.5 (–3) cm latus, ovatus demum campanulatus; lacteo-albus demum pallide fusco-brunneus; lamellae latae, confertae demum subdistantes, fusco-brunneae; stipes 3–5 cm longus, 2–2.5 mm crassus, albus demum sordide griseus sparse fibrillosus, glabrescens; sporae 7–9 × 4.5–5 μ; pleurocystidia 38–60 × 8–12 μ, anguste fusideo-ventricosa, elongata; fibulae adsunt. Typus. Smith 43146 (MICH); legit prope Mackinaw City, Michigan.

Illust. Pl. 86, fig. b; Text Figs. 807–809.

Pileus 1–2.5 (–3) cm broad, oval and expanding to obtusely campanulate, surface glabrous, moist, hygrophanous, watery tan ("cinnamon-buff") young, becoming milky white before maturity, when mature avellaneous to wood brown, translucent-striate, with a fringe of fibrils on the margin as the veil breaks but all traces soon vanishing, in age and when faded pale pinkish buff. Context very soft and fragile, odor and taste not distinctive.

Lamellae broad, close to subdistant, ascending-adnate, becoming ventricose, near wood brown when mature, edges even.

Stipe 3–5 cm long, 2–2.5 mm thick, equal, fragile, hollow, white, sparsely fibrillose from the veil at first, watery grayish in age and apex pruinose, glabrescent below.

Spores 7–9 × 4.5–5 μ, smooth, apical pore very inconspicuous, in face view oval to elliptic to suboblong, in profile view obscurely bean-shaped to obscurely inequilateral, color in KOH cocoa-color and not darkening readily, (pale cinnamon in water mounts when fresh), in Melzer's pale reddish tawny, wall about 0.2 μ thick.

Basidia 4-spored, short-clavate, 8–10 μ wide when sporulating. Pleurocystidia 38–60 × 8–12 μ, subcylindric to narrowly ventricose with an elongated neck and obtuse apex, very abundant, smooth, thin-walled, hyaline or wall weakly yellow-
ish (in KOH), content not distinctive in either KOH or Melzer's. Cheilocystidia
vesiculose, 9–15 μ wide, thin-walled, hyaline. Caulocystidia not found.

Pileus cuticle a layer of vesiculose cells 1–2 cells deep, the walls hyaline to
yellowish in KOH, cell content not distinctive. Hyphae of the trama in the
subcuticular region hyaline to yellowish in KOH and the cells smooth. Clamps
present. When revived in Melzer's no distinctive reaction on any tissue noted.

Type locality. Wilderness State Park, Emmet County, Michigan.

Habit and habitat. Gregarious on debris in a clearing for a power line,
September.

Distribution. Michigan, Utah.

Observations. The distinguishing features of this species are the milk-white
pileus just before maturity, the long narrow pleurocystidia, short fat cheilo-
cystidia, pale cocoa-colored spores which in KOH darken slowly and only slightly,
and the white to watery-grayish stipe.


358. Psathyrella subsimilissima A. H. Smith, sp. nov.

Pileus 1–3 cm latus, late conicus, glaber, cinnamomeo-brunneus; contextu cum
“FeSO₄,” sordide olivaceus; lamellae pallidae demum fusco-brunneae, latae, con-
fertae; stipes 2.5–3.5 cm longus, 1–2.5 (–3) mm crassus, deorsum melleibrunneus,
sursum albidus, sparse fibrillosus, glabrescens; velum pallide griseum, sparsum;
sporae 6.5–7.5 (–8) × 4–4.5 (–5) μ, pleurocystidia 38–60 × 9–14 μ, anguste fusideo-
ventricosa, obtusa; fibulae adsunt. Typus. Smith 66680 (MICH); legit prope
Burt Lake, Michigan.

Illustr. Pl. 89, fig. c; Text Figs. 802–804.

Pileus 1–3 cm broad, obtusely conic, expanding to broadly conic, surface
glabrous, moist and hygrophanous, margin fringed with grayish fibrils of the
rudimentary veil, all traces soon vanishing, colors cinnamon-brown on disc and
tawny to ochraceous-tawny on margin at maturity, if moist somewhat striate.
Context watery brown, odor and taste mild or slightly fungoid, with FeSO₄, slightly
olivaceous on the disc.

Lamellae pallid to avellaneous, becoming wood brown, broad, close, adnate-
seceding, edges whitish.

Stipe 2.5–3.5 cm long, 1–2.5 (–3) mm thick, equal or slightly larger below,
surface white above from a thin fibrillose-floccose coating, glabrescent, basal area
discoloring to honey brown.

Spores 6.5–7.5 (–8) × 4–4.5 (–5) μ, smooth, apical pore inconspicuous, shape in
face view ovate to elliptic, in profile bean-shaped to obscurely inequilateral, color
in KOH cocoa-color slowly darkening somewhat, in Melzer's reddish tawny, wall
about 0.2 μ thick.

Basidia 4-spored, 24–30 × 8–10 μ, clavate, hyaline in KOH. Pleurocystidia
abundant, 38–60 × 9–14 μ, subfusoid to narrowly fusoid-ventricose, apex obtuse,
wall thin, smooth, hyaline, cell content not distinctive. Cheilocystidia clavate and
9–16 μ wide or vesiculose, or fusoid to narrowly fusoid-ventricose as for the
pleurocystidia but smaller. Caulocystidia clavate to vesiculose or resembling
pleurocystidia, 10–20 μ wide and of various lengths, hyaline, thin-walled, smooth.

Pileus cuticle 2–5 cells deep, the cells vesiculose to clavate and having walls
colored pale cinnamon in KOH (either on fresh or revived material), walls thin
and smooth. Subcuticular region cinnamon in KOH and the hyphal walls smooth
to minutely roughened. Clamp connections present. No distinctive reactions on any tissue as revived in Melzer's.

Type locality. Burt Lake, Cheboygan County, Michigan.

Habit and habitat. Scattered on a rotten log of a hardwood tree (maple?).


Observations. The incrusted pigment on the hyphal walls of subcuticular region was more pronounced in fresh than in revived material. The distinctive features of the species are the slight olive-fuscous color change with FeSO$_4$, broad gills, rusty cinnamon color, pale cocoa-colored spores, and thin veil.


Agaricus obtusatus Fries, Syst. Mycol. 1: 293. 1821.
Pelocybe obtusata (Fr.) Kummer, Führ. Pilzk. 71. 1871.
Psathyra obtusata (Fr.) Gillet, Les Hymén. 591. 1874.
Drosophila spadiceo-grisea var. obtusata (Fr.) Quélet, Enchir. Fung. 117. 1886.
Drosophila obtusata (Fr.) Quélet, Fl. Mycol. 59. 1888.

Pileus 1–2.5 cm broad, obtusely conic to convex, very fragile and thin, surface at first covered with scattered fibrils but soon glabrous, marginal area sometimes decorated with minute fibrillose squamules at first, hygrophanous, color “russet” to “Mars brown” or “cinnamon-brown” when moist (dark rusty brown), when moist striate to disc, opaque when faded or in age becoming slightly sulcate. Context thin, concolorous with surface, fragile, odor and taste not distinctive.

Lamellae broad, subdistant, adnate, pallid brownish becoming dark reddish brown to purplish brown finally, edges whitish and even.

Stipe short, 2–3 cm long, about 2 mm thick, equal, hollow, fragile, pallid, whitish when young, lower portion sparsely covered with whitish fibrils, glabrescent and in age more or less honey brown over lower portion, near the apex white pruinose and somewhat striate.

Spores 7–9×4–4.5 μ, smooth, apical pore distinct but apex not markedly truncate, shape in face view oblong to elliptic, in profile somewhat bean-shaped to elliptic, color in KOH cocoa-color, darkening slowly, tawny in Melzer's.

Basidia 4-spored, 19–24×7–9 μ, clavate, hyaline in KOH. Pleurocystidia very abundant, 40–60×9–12 (–14) μ, subglobose to fusoid-ventricose, apex obtuse, hyaline in KOH, thin-walled, smooth, cell content not distinctive. Cheilocystidia 14–22×7–12 μ, clavate to saccate, some cells similar to the pleurocystidia also present. Caulocystidia not found on revived material.

Gill trama regular, cinnamon in KOH, slowly fading, pigment patches occasionally present near the cross walls, subhymenium not distinctive. Pileus trama bright reddish cinnamon to cocoa-color in KOH, pigment in patches on the hyphae especially in the subcuticular region. Cuticle of pileus of a layer of vesiculose cells irregularly 2 cells deep, the cells with cinnamon walls revived in KOH but soon fading, pigment thickenings on the wall near the base at the angles or in the pedicels. Clamps present.

Type locality. Europe.

Habit and habitat. Solitary to gregarious on hardwood logs, oak especially.


Observations. The use of this name is tentative pending a designation of a neotype.

Material examined. UNITED STATES. Idaho: Smith 44404, 73998. Maine:

Pileus 1.2–2.5 cm broad, conic or convex, sometimes broadly umbo-nate, surface glabrous, atomate, hygrophanous, fuscous to dark brown when moist, paler when dry. Context thin, membranous or submembranous, fragile.

Lamellae subdistant, cinereous becoming black, white on the margin, broadly adnate, broad when mature.

Stipe 2–4.5 cm long, 1–2 mm thick, fragile, equal, hollow, glabrous, shining white.

Spores 8–10 × 4.5–5.5 μ, smooth, apical pore present and apex truncate under an oil-immersion lens, shape in face view elliptic to slightly ovate, in profile slightly ovate to more or less elliptic or obscurely inequilateral, color in KOH date brown becoming dark chocolate-color, in Melzer’s bay-red, wall about 0.6 μ thick.

Basidia 4-spored, 14–18 × 6–8 μ, clavate, hyaline in KOH. Pleurocystidia scattered, 40–54 (–60) × 10–15 μ, fusoid-ventricose, the apex obtuse to subacute, wall thin and hyaline, smooth, cell content not distinctive. Cheilocystidia 26–38 × 8–12 μ, subclavate to subfusoid or fusoid-ventricose but with a very short neck, hyaline in KOH, smooth.

Pileus having a cuticle of vesiculose hyaline cells with some pedicellate cells intermingled but not in a true palisade, occasional fusoid-ventricose pileocystidia projecting from the cuticle. Context of interwoven hyphae, pale tan to pallid when revived in KOH. Clamp connections present.

Type locality. Stow, Massachusetts.

Habit and habitat. On decaying branches of white birch.

Distribution. Massachusetts, Michigan, North Carolina.

Observations. The grayish lamellae which become black, the shining white stipe, relatively wide dark colored (in KOH) spores, and relatively uncolored (in KOH) hyphae of the subcuticular region of the pileus are distinctive.


Psathyrella subargillacea A. H. Smith, sp. nov.

Pileus 2–3 cm latus, late conicus, glaber, pallide argillaceous; contextu pallide argillaceous; lamellae latae distantes vel subdistantes, bruneolae demum sordide vinaceo-brunneae; stipes 2.5–3 cm longus, 1–1.5 mm crassus, albidus, serieeos-fibrillosus; velum sparsum; sporae 8–11 × 4–5 (–6) μ; pleurocystidia 52–68 (–75) × 10–16, late fusideo-ventricosa, obtusa; fibulae adsunt. Typus. Smith 66717 (MICH); legit prope Tahquamenon Falls, Luce County, Michigan.

Illust. Text Figs. 810–812.

Pileus 2–3 cm broad, obtusely conic, becoming broadly conic, surface glabrous, moist, hygrophanous, watery cinnamon buff moist, dingy pale pinkish buff faded. Context brownish, fragile, odor and taste not distinctive, with FeSO₄, no reaction.
Lamellae broad (5 mm or more), adnate, seceding, distant to subdistant, brownish when young, "Verona brown" when mature, edges whitish.

Stipe 2.5–3 cm long, 1–1.5 mm thick, equal, very fragile, white over all and thinly silky fibrillose to the pruinose apex, veil fibrillose and rudimentary.

Spores 8–11 × 4–5 (–6) µ, smooth, apical pore distinct under low power oil-immersion but spore apex rounded, shape in face view elliptic to ovate, in profile subelliptic to obscurely bean-shaped, color in KOH cocoa-brown, slowly darkening (revived in KOH), in Melzer's tawny-red, wall about 0.5 µ thick.

Basidia 4-spored, 8–12 µ wide. Pleurocystidia 52–68 (–75) × 10–16 µ, broadly fusoid to fusoid-ventricose, rarely bifurcated at the apex, smooth, thin-walled, hyaline, cell content not distinctive, apex obtuse to somewhat rounded. Cheilocystidia vesiculose to clavate, with yellowish walls in KOH and these 0.3–0.5 µ thick as revived in KOH, some fusoid but smaller than the pleurocystidia and hyaline. Caulocystidia versiform, as chains of inflated cells, as clavate to ellipsoid-pedicellate cells or as fusoid-ventricose cells, some clavate cells up to 70 × 25 µ, walls thin, smooth and hyaline.

Cuticle of pileus a layer of inflated cells 3–4 deep, their walls yellowish in KOH, some cells clavate to cystidioid, vesiculose cells up to 50 µ wide also present, cell content not distinctive, walls smooth. Hyphae of the subcuticular region dull cinnamon in KOH but fading to ochraceous, walls smooth or nearly so. Clamps present. No distinctive reactions present on material revived in Melzer's.

Type locality. Tahquamenon Falls State Park, Luce County, Michigan.

Habit and habitat. Scattered on rotten hardwoods—logs, stumps etc., June.


Observations. The distinctive features of this species are the watery cinnamon color of the fresh pileus, broad more or less distant gills, pallid stipe over all, versiform caulocystidia and the large pleurocystidia.


sparsely fibrillose over lower part but soon glabrescent, base somewhat mycelioid.

Spores 7–9 (−10) \times 4–5 (−5.5) \mu m, smooth, apical pore small and apex not truncate, shape in face view elliptic to ovate, in profile somewhat bean-shaped to obscurely inequilateral, color revived in KOH dull cocoa-color becoming chocolate-gray slowly, in Melzer's near ochraceous-tawny, wall about 0.3 \mu m thick.

Basidia 4-spored, 17–22 \times 7–9 \mu m, clavate, hyaline in KOH. Pleurocystidia (38–)45–58 (–68) \times 9–14 \mu m, fusoid-ventricose with long often flexuous necks and an obtuse apex, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia but usually shorter and varying to simply clavate or vesiculose and 8–14 \mu m broad. Caulocystidia resembling the cheilocystidia (all types present) and some fusoid-ventricose with acute apex.

Gill trama of irregularly arranged large inflated but somewhat elongated cells cocoa-brown to pale brownish in KOH, slowly fading to nearly hyaline. Pileus trama of enlarged hyphae, their walls pale brownish with a tinge of cocoa-color when first mounted but soon fading, smooth to minutely roughened, color more accentuated in immature pilei. Cuticle of pileus a layer of greatly inflated more or less globose hyaline to yellowish cells in KOH some of which have a short broad pedicel. Clamps present.

Type locality. France.

Habit and habitat. Scattered on hardwood logs or the debris beside them.


Observations. There remains some question as to whether this concept actually includes Romagnesi's species, but the correspondence in most characters is too great to be disregarded. Also, we have a number of variants in North America deserving further study. Ammirati 3258, 3259, 3260 all possessed a raphanoid taste.


363. Psathyrella camphorata A. H. Smith, sp. nov.

Pileus 8–15 mm latus, obtuse conicus, tenuiter fibrillosus, glabrescens, melleobrunneus deinde subalbidus; fragilis; odor aromaticus; lamellae confertae, latae, pallidae; stipes 2–3 cm longus, 1-mm crassus, tenuiter fibrillosus, glabrescens; sporae 6.5–7.5 \times 3.8–4.5 \mu m; pleurocystidia 33–52 \times 9–15 \mu m, fusoid-ventricosa, subacuta. Typus. Smith 57711 (MICH).

Illustr. Text Figs. 795–797.

Pileus 8–15 mm broad, obtusely conic, broadly conic in age, margin straight at first and thinly coated with grayish fibrils when young, color pale honey-color at first but becoming chocolate-gray as spores mature, hygrophanous, fading to whitish, striate when moist. Context very thin and fragile, taste mild, odor distinctly of spirits of camphor.

Lamellae close, broad, adnate, seceding, pallid becoming dull cocoa-color, edges even.

Stipe 2–3 cm long, 1 mm thick, equal, fragile, pallid above, becoming honey-color below, faintly fibrillose over lower half from a thin veil, pruinose near apex. Spores 6.5–7.5 \times 3.8–4.5 \mu m, smooth, apical pore indistinct but apex flattened
slightly, shape in face view ovate to elliptic, in profile obscurely bean-shaped to subovate, pale fuscous with an obscure ochraceous tint as revived in KOH, tawny in Melzer’s (on standing in KOH slowly becoming dark chocolate-color), wall about 0.3 μ thick.

Basidia 4-spored, 6–7 μ wide, 18–23 μ long, hyaline in KOH. Pleurocystidia scattered, 33–52 × 9–15 μ, fusoid-ventricose to fusoid, apex subacute, wall thin, smooth and hyaline, content not distinctive in either KOH or Melzer’s. Cheilocystidia mostly vesiculose, 10–18 μ wide, walls thin but ochraceous to hyaline in KOH, some cells resembling pleurocystidia also present. Caulocystidia versiform, resembling both the cheilocystidia and pleurocystidia in shape and other features.

Cuticle of pileus a layer of vesiculose cells about 1–2 deep, the walls hyaline to weakly ochraceous as revived in KOH. Subcuticular area dingy ochraceous in KOH, no inclusions present on the cell walls. Hyphae of the trama below the subcutis dingy ochraceous in KOH. Clamps present. No distinctive reactions noted on any tissue as mounted in Melzer’s.

Type locality. Tahquamenon River near White House Landing, Chippewa County, Michigan.

Habit and habitat. Scattered on hardwood debris, August.


Observations. The pale color and the odor of spirits of camphor along with a thin grayish veil distinguish this species in the field. In the herbarium the cheilocystidia—some of which have ochraceous walls—are an aid to identification.

364. Psathyrella albocinnamomea A. H. Smith, sp. nov.

Pileus 1–3 cm latus, conicus, campanulatus, minute albo-squamulosus, glabrescens, fulvus; lamellae conferta, angustae, bruneolae demum fulvae; stipes 2–3.5 cm longus, 1–2.5 mm crassus, deorsum sordide brunneus, fibrillosus, glabrescens; sporae 6–7 × 3 μ; pleurocystidia 32–46 × 9–15 μ, fusoido-ventricosa vel ventricosa vel ventricoso-rostrata; fibulae adsunt. Typus. Potter 10567 (MICH); legit prope Ithaca, Michigan.

Pileus 1–3 cm broad, obtusely conic expanding to broadly conic or campanulate, surface at first covered by delicate white squamules which very soon disappear, margin fringed slightly at first, colors rich ochraceous-tawny fading to buff but dull cinnamon as dried. Context thin, fragile.

Lamellae close, narrow, adnate, pallid brownish becoming rusty brown and dull cinnamon as dried, edges even.

Stipe 2–3.5 cm long, 1–2.5 mm thick, equal, hollow, fragile, white, base finally brownish, fibrillose from veil but glabrescent.

Spores 6–7 × 3 μ, smooth, apical pore present but apex not truncate, shape in face view oblong to narrowly elliptic, in profile somewhat bean-shaped to obtusely inequilateral, color in KOH dark cocoa-brown becoming chocolate-gray, dull tawny reddish in Melzer’s wall about 0.2 μ thick.

Basidia 4-spored, clavate, 6–8 μ wide. Pleurocystidia scattered, 32–46 × 9–15 μ, fusoid-ventricose to rostrate, apex obtuse to subacute, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia similar to pleurocystidia and scattered among the cheilobasidia.

Pileus cuticle a layer of vesiculose cells about 3 deep, the walls yellowish to hyaline in KOH, smooth and thin, the cell content not distinctive. Hyphae of the subcuticular zone near tawny to ochraceous-tawny in KOH, the walls smooth or practically so. Clamp connections present.
Type locality. Ithaca, Michigan.

Habit and habitat. Gregarious on decayed hardwood stumps.


Observations. The short, fat, subacute pleurocystidia, small narrow dark cocoa-brown spores in KOH, white veil and cinnamon color of the dried pilei are distinctive.

365. Psathyrella griseifolia A. H. Smith, sp. nov.

Pileus 1–3 cm latus, late conicus, glaber, fulvus; lamellae confertae, angustae, griseae demum fuscae; stipes 6–11 cm longus, 2–2.5 mm crassus, glaber, deorsum sordide brunneus; velum nullum; sporae 7.5–9×4.5–6 μ; pleurocystidia 28–43×10–15 μ, late fusoid-ventricosa; fibulae adsunt. Typus. Smith 61628 (MICH); legit prope Le Gite, Quebec, Canada.

Illust. Text Figs. 817–820.

Pileus 1–3 cm broad, conic with a straight margin, expanding to broadly conic, surface glabrous, moist, hygrophanous, margin faintly striate when moist, color dull russet (near "Mars brown"), fading in streaks to dingy buff or pale tan. Context very soft and fragile, concolorous with the surface, odor and taste mild.

Lamellae close, narrow, adnate but seceding, "drab" (gray), drying fuscous (no cinnamon tone present), edges even.

Stipe 6–11 cm long, 2–2.5 mm at apex, equal or only slightly thicker at the base, fragile, naked or a few faint white fibrils lower down, pallid above, pale watery brownish below; no veil evident anywhere.

Spores 7.5–9×4.5–6 μ, smooth, apical pore distinct, shape in face view ovate to elliptic, in profile obscurely inequilateral (plage area flattened somewhat) to subelliptic, color in KOH dark chocolate-color in Melzer's dark reddish tawny, wall about 0.4 μ thick.

Basidia 4-spored, 24–28×8–11 μ, short-clavate. Pleurocystidia scattered, 28–43×10–15 μ, broadly fusoid-ventricose with rounded to obtuse apex, thin-walled, smooth, content not distinctive (in either KOH or Melzer's). Cheilocystidia similar to pleurocystidia to clavate or merely subfusoid. Caulocystidia versiform (Fig. 820), the ellipsoid to globose cells mostly with a slightly thickened yellowish wall in KOH.

Pileus with a cuticle of a layer of vesiculose cells about 2 deep, the cells up to 50 μ wide, walls thin and hyaline, content not distinctive. Subcuticular hyphae tawny in KOH, the walls slightly thickened near the septa in many and pale tawny in KOH, hyphae of remainder of trama also pale tawny in KOH at first. Clamps present. No amyloid reaction in any tissue or cell.

Type locality. Le Gite, Laurentide Park, Quebec, Canada.

Habit and habitat. On sticks of alder, subcespitose to solitary, August.

Distribution. Canada: Quebec (Smith 61628, type).

Observations. The distinguishing features of this species are the elliptic to subglobose caulocystidia with slightly thickened colored walls (as revived in KOH), the short, broad and obtuse pleurocystidia, the rather wide spores, close narrow gills, elongated stipe and fuscous-gray gills at maturity.

366. Psathyrella subsquamulosa A. H. Smith, sp. nov.

Pileus 2–4 cm latus, late convexus, spadiceus, ad marginem subsquamulosus, glabrescens; lamellae pallidae, demum subspadiceae dein atro-brunnea; latae,
ventricosae, confertae; stipes 4–7 cm longus, 3–5 mm crassus, pallidus, glaber; velum sparsum; sporae 8–10.5 × 4–5 μ; pleurocystidia in “KOH” ochracea, 32–46 (–56) × 9–20 μ, late fusoid-ventricosa, obtusa; fibulae adsunt. Typus. Wells-Kempton 6/13/64 no. 1 (MICH); legit prope Anchorage, Alaska.

Pileus 2–4 cm broad, convex becoming broadly convex or finally plane, margin connivent at first, but in age sometimes uplifted, obtusely umbonate in some, hygrophanous, fading from disc outward, when moist dark yellow-brown (raw umber), buff colored to dull orange-cinnamon on disc when faded, glabrous overall except for the marginal area which at first is decorated with minute patches or squamules of veil remnants at times concentrically arranged, glabrescent by the time the pileus is fully expanded, shiny in appearance when glabrous and still moist, margin only faintly striatulate when moist. Context concolorous with surface, thin (1.5 mm approximately), tapering to pilear margin, moderately fragile, odor and taste pleasantly fungoid.

Lamellae pallid in buttons, very soon becoming brown (about concolorous with the moist pileus), finally blackish brown, adnate to adnexed, ventricose and moderately broad (up to 5 mm), close to crowded, margins concolorous.

Stipe 4–7 cm long, 3–5 mm thick, brittle, equal, or near the base enlarged slightly, pallid and unchanging, apex pruinose-punctate, glabrous below, smooth, polished in age; veil pallid and fibrillose, thin, all traces often lost by maturity.

Spore deposit violaceous-fuscous. Spores 8–10.5 × 4–5 μ, smooth, apical pore distinct and apex truncate, shape in face view elliptic to obscurely ovate, in profile mostly obscurely inequilateral, color in KOH chocolate soon going to dark chocolate, in Melzer’s dark rusty brown, wall about 0.3 μ thick.

Basidia 4-spored, short-clavate, hyaline in KOH, 16–22 × 7–10 μ. Brachy-basidioles not differentiated. Pleurocystidia 32–46 (–56) × 9–20 μ, broadly fusoid-ventricose with short neck and obtuse apex, varying to merely fusoid-ventricose, wall as revived in KOH thin to slightly thickened (–0.5 μ) and in most weakly dull yellowish in KOH, smooth. Cheilocystidia similar to pleurocystidia but some with refractive particles in the interior near the apex.

Gill trama of inflated cells, weakly yellow-brown in KOH and fading (as revived). Pileus cuticle a layer of vesiculose cells 2–5 deep, their walls yellowish in KOH. Hyphae of the subcutis yellow-brown to rusty brown in KOH and with yellow-brown incrustations—the latter as pigment deposits on some of the lower cells in the cuticle as well (often at the angles of the cells). Clamps present.

Type locality. Near Anchorage, Alaska.

Habit and habitat. Gregarious to subcespitose on and around rotting wood, moss and humus in a bog, mostly willow and cottonwood nearby, June.

Distribution. Alaska.

Observations. This species is readily distinguished by the degree of development of the veil, medium-sized spores, violet-fusoid spore deposit, short, fat yellowish cystidia in KOH, the thick cuticle of the pileus and the vernal fruiting period.

367. Psathyrella umbrosa A. H. Smith, sp. nov.

Pileus 1–3 cm latus, campanulatus vel convexus, glaber, pallide cinnamomeus demum umbrosus; lamellae praegingustae, confertae, brunneoalae demum fuscae; stipes 2–5 cm longus, 1–3 mm crassus, albus demum brunneoalus glaber; sporae 7–9 × 4–5 μ, in cumulis atratae; pleurocystidia 36–48 × 9–13 μ, fusoid-ventricosa,
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obtusa, vel (rare) utriformia; fibulae adsunt. Typus. Barrows 1416 (MICH); legit in Sangre de Christo Mountains, New Mexico.

Pileus 1–3 cm broad, obtusely conic expanding to obtusely campanulate or convex, some nearly plano-umbonate, margin appressed at first, glabrous, moist and hygrophanous, pale dingy cinnamon becoming umber as the spores mature, fading to pallid but drying to nearly "Sayal brown" (dingy cinnamon). Context thin, fragile, odor and taste not distinctive.

Lamellae very narrow, crowded, adnate-seceding, dingy brownish becoming fuscous from the spores but drying dingy cinnamon (slightly darker than the pileus), edges even.

Stipe 2–5 cm long, 1–3 mm thick, equal, fragile, white, becoming brownish in age and when dried almost concolorous with the pileus, some slightly strigose at the base.

Spore deposit blackish. Spores 7–9×4–5 μ, smooth, apical pore small but distinct and apex narrowly truncate, shape in face view elliptic to slightly ovate, in profile obscurely inequilateral to subelliptic, color in KOH coffee-bean brown slowly becoming dark chocolate, in Melzer's reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 20–30×8–9 μ, clavate, hyaline. Pleurocystidia 36–48×9–13 μ, fusoid-ventricose, apex obtuse or (a few) utriform with apex subcapitate and 6–8 μ broad, hyaline, thin-walled, smooth, cell content not distinctive. Cheilocystidia clavate to subfusoid, 28–38×9–15 μ, apex rounded to obtuse, wall thin, smooth and hyaline. Pileus cuticle a cellular layer 1–3 cells deep (some cells up to 50 μ wide), walls thin, smooth, hyaline to pale cinnamon. Hyphae of the subcuticular zone dull pale rusty brown with pale tawny weak incrustations. Clamps present.

Type locality. Sangre de Christo Mountains, New Mexico.

Habit and habitat. Densely gregarious on soil filled with rotten wood, August.

Distribution. New Mexico.

Observations. The densely gregarious manner of growth resembles that of P. agrariella, but the gills are extremely narrow. A large number of basidiocarps were compared on this point.

368. Psathyrella communis A. H. Smith, sp. nov.

Pileus 1–2.5(–3) cm latus, campanulatus vel late umbonatus, glaber, rufo-fulvus demum fusco-brunneus; lamellae confertae, latae, cinnamonae demum atro-brunneae; stipes 2–4 cm longus, 1.5–2.5 mm crassus, sursum pallidus, deorsum brunneus, glaber; velum nullum; sporae 7–8.5×4–4.5 μ; pleurocystidia 36–48×10–15 μ, fusoid ventricosa acuta vel subacuta; fibulae adsunt. Typus. Smith 73951 (MICH); legit K. Harrison prope Priest River, Idaho.

Illust. Text Figs. 821–823.

Pileus 1–2.5(–3) cm broad, obtusely conic expanding to broadly campanulate or convex-umbonate, surface glabrous, moist, hygrophanous, dark rusty brown becoming dark chocolate-brown, hygrophanous and fading to dingy tan, dingy cinnamon as dried. Context dark colored, very thin and delicate, odor lacking.

Lamellae close, adnate, moderately broad, dingy cinnamon becoming dark umber-brown to blackish, edges whitish and crenulate under a lens.

Stipe 2–4 cm long, 1.5–2.5 mm thick, equal, fragile, pallid above, dull tan below, dull brown over all as dried, veil absent and stipe naked.

Spores 7–8.5×4–4.5 μ, smooth, apical pore distinct and apex with a minute
truncation, shape in face view elliptic to obscurely ovate, in profile elliptic to obscurely inequilateral, color in KOH dark chocolate-color as soon as mounted, paler and more of a chocolate-brown on standing, finally violaceous-fuscous, reddish tawny in Melzer's, wall about 0.4 \( \mu \) thick.

Basidia 4-spored, 8–9 \( \mu \) broad, short-clavate, hyaline in KOH. Pleurocystidia scattered, 36–48×10–15 \( \mu \), fusoid-ventricose, apex subacute to acute, apical area on some finely granular, wall thin and hyaline, cell content not distinctive. Cheilocystidia similar to pleurocystidia or smaller; clavate cells also present.

Pileus cuticle of inflated cells pale cinnamon in KOH, wall thin and smooth, the layer 2–3 cells deep. Hyphae of subcuticular area vinaceous-cinnamon in KOH, with pigment thickenings near the septa. Clamps present.

Type locality. Priest River Experimental Forest, Priest River, Bonner County, Idaho.

Habit and habitat. Gregarious on soil with lignicolous debris in it, September.


Observations. The darkly colored pileus, lack of a veil, fairly small spores (which become violaceous-fuscous on standing in KOH), and acute pleurocystidia are distinctive.


369. Psathyrella lactobrunnescens A. H. Smith, sp. nov.

Pileus 10–15 mm latus, conicus, glaber, albidus, demum griseo-brunneus; lamellae latae confertae, albidae demum fusco-griseae; stipes circa 2 cm longus, 1.5 mm crassus, albidus, glaber; sporae 7–8.5×4.5–4.5–5 \( \mu \); pleurocystidia 34–46×9–13 \( \mu \), subfusoidia vel subutriformia, obtusa; fibulae adsunt. Typus. Smith 57709 (MICH); legit prope White House Landing, Tahquamenon River, Chippewa County, Michigan.

Illustr. Text Figs. 773–775.

Pileus 10–15 mm broad, obtuse conically and hardly expanding, surface glabrous, moist, hygrophanous, white and translucent-striate when young, gradually becoming grayish brown as spores mature but when faded white again. Context very thin and delicate, odor none, taste not recorded.

Lamellae close, broad, adnate, soon seceding, white becoming drab from the spores, edges even.

Stipe about 2 cm long, 1.5 mm thick at apex, equal or slightly enlarged downward, white and unchanging or merely watery in age, apex scarcely pruinose, naked and undulating downward.

Spores 7–8.5×4.5–4.5–5 \( \mu \), smooth, apical pore distinct, shape in face view broadly ovate to elliptic, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH at first dark cocoa-brown, slowly becoming darker, reddish tawny in Melzer's, wall about 0.2 \( \mu \) thick.

Basidia 4-spored, 8–9 \( \mu \) wide. Pleurocystidia abundant, 34–46×9–13 \( \mu \), subfuscoid to subtriform, neck not well-differentiated, apex obtuse or rarely rounded, walls thin and hyaline, content not distinctive in either KOH or Melzer’s. Cheilocystidia 13–30×12–18 \( \mu \), vesiculose to subclavate or 25–37×10–15 \( \mu \) and broadly fusoid, vesiculose cells at times with a pale smoky brown content as revived in KOH, walls smooth, hyaline or weakly ochraceous (rarely) as revived in KOH, some cells similar to the pleurocystidia. Caulocystidia scattered and clavate to elliptic, 40–67×15–25 \( \mu \), thin-walled, smooth and hyaline, near apex of stipe versiform and more like the cheilocystidia.
Pileus cuticle of inflated cells (pedicellate cells not numerous), about 2 cells deep, walls thin and hyaline in KOH, cell content not distinctive. Subcuticular region hyaline in KOH, the hyphae smooth. Clamps present. No distinctive reaction seen in any cells or tissues in mounts in Melzer's.

Type locality. Tahquamenon River, near White House Landing, Chippewa County, Michigan.

Habit and habitat. Scattered on debris of hardwoods.


Observations. This species, in the *P. obtusata* complex, is distinguished by its relative lack of pigmentation and lack of a veil. The smoky content of some cheilocystidia would indicate that in the future some basidiocarps might be found having pale brownish gill edges.

### 370. *Psathyrella wilsonensis* A. H. Smith, sp. nov.

Pileus 1–3.5 (–5) cm latus, late conicus, glaber, subspadiceus; lamellae con-fertae, latae, brunneolae demum triste vinaceo-brunneae; stipes 3–7 cm longus, 1.5–2.5 (–3) mm erassus, albidos, sparse fibrillosus glabrescens; velum sparsum; sporae 7.5–9.5 × 4–4.8 μ; pleurocystidia 36–47 × 8–13 μ, fusoid ventricosa inter-dum flexuosa subacuta vel acuta; fibulae adsunt. Typus. Smith 52633 (MICH); legit prope Mt. Wilson, San Juan Mountains, Colorado.

Pileus 1–3.5 (–5) cm broad, obtusely conic expanding to broadly conic, rarely convex, margin straight at first and very soon becoming naked (veil very thin), surface moist and hygrophanous, near "buckthorn brown" when young or "snuff brown" fading to pinkish buff. Context very thin and fragile, odor not distinctive.

Lamellae broad, close, ascending-adnate, pallid to brownish to purplish brown and drying near "bone brown" (dark vinaceous-brown), edges even.

Stipe 3–7 cm long, 1.5–2.5 (–3) mm thick, equal, fragile, hollow, whitish but becoming generally dingy on aging and pinkish buff to pale pinkish buff as dried, at first faintly fibrillose from the rudimentary veil, soon naked or only the very apex slightly pruinose.

Spores 7.5–9.5 × 4–4.8 μ, smooth, apex truncate from a distinct pore, shape in face view elliptic to ovate, in profile obscurely inequilateral to subovate, color in KOH dingy tawny, soon becoming chocolate-gray, in Melzer's reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 20–27 × 7–9 μ, clavate, hyaline. Pleurocystidia scattered, 36–47 × 8–13 μ, fusoid-ventricose with narrow flexuous or straight neck and sub-acute to obtuse apex, wall thin, smooth and hyaline, content of cell not distinctive. Cheilocystidia similar to pleurocystidia but varying to shorter in the neck.

Pileus cuticle a layer of vesiculose cells 2–3 deep, the wall ochraceous to hyaline in KOH, thin and smooth. Hyphae of the subcuticular region pale tawny in KOH, the hyphae smooth to minutely incrusted. Clamp connections present.

Type locality. Mt. Wilson, San Juan Mountains, Colorado.

Habit and habitat. Gregarious on rotten aspen logs, August.

Distribution. Colorado.

Observations. The pleurocystidia are not those of *P. obtusata* or *P. fulvescens*. The basidiocarps remind one of those of *P. gracilis*.

### 371. *Psathyrella subterrestris* A. H. Smith, sp. nov.

Pileus 1–3.5 cm latus, late convexus; glaber, subspadiceus; contextu dilute brunneae; lamellae latae, subdistantes, avellaneae demum griseo-brunneae; stipes
2–5 cm longus, 1.5–3 mm crassus, albidus, sparsim fibrillosus, glabrescens; sporae
7–9 × 4–4.5 μ; pleurocystidia 28–45 × 9–14 μ, obtuse fusoido-ventricosa vel utri-
formia; fibulae adsunt. Typus. Smith 77178 (MICH); legit prope Dexter, Michi-
gan.

Pileus 1–3.5 cm broad, convex to broadly convex, glabrous, striatulate when
moist, margin with only slight traces of the rudimentary veil and these soon
vanishing, color dingy yellow-brown (“buckthorn brown”) when young and at
maturity a pale date brown (slightly darker). Context very fragile, watery brown,
fading like the pileus, odor and taste not distinctive.

Lamellae broad, bluntly adnate, nearly subdistant, edges even, faces avel-
laneous at first then darker grayish brown.

Stipe 2–5 cm long, 1.5–3 mm thick, white, unpolished to faintly fibrillose,
fragile, rarely with a slight zone near the base in buttons, in age or when handled
not discoloring.

Spores 7–9 × 4–4.5 μ, smooth, with a distinct apical pore but apex not truncate,
wall about 0.5 μ thick in Melzer’s, shape in profile obscurely bean-shaped to sub-
eliptic (ventral line in optical section nearly straight), in face view elliptic to
nearly oblong, color in KOH dark chocolate-color, in Melzer’s reddish tawny
(paler).

Basidia 4-spored, subelliptic-pedicellate, 20–28 × 7–9 μ, hyaline. Pleurocystidia
28–45 × 9–14 μ, fusoid-ventricose with obtuse apex to utriform, smooth, thin-
walled, content not distinctive in KOH or Melzer’s. Cheilocystidia versiform:
(1) resembling pleurocystidia, (2) pedicellate-capitate, (3) obscurely nine-pin-
shaped, (4) broadly ventricose with rounded apex and up to 20 μ broad, capitellum
8–12 μ, other types occur in the size range of the pleurocystidia but all are smooth
hyaline and thin-walled.

Pileus cuticle a layer of vesiculose cells 1–2 cells deep, the cells 15–30 μ wide,
the walls hyaline to slightly brownish in KOH, hyaline in Melzer’s, no pedicellate
cells observed. Subcuticular hyphae tubular to inflated, walls dingy vinaceous-
brown in KOH but the color soon fading. Clamps present. No amyloid or other
distinctive reactions evident when mounts are made in Melzer’s.

Type locality. Stinchfield Forest, Dexter, Michigan.

Habit and habitat. Scattered on chip-dirt, June.


Observations. The small subutiform pleurocystidia, the versiform cheilo-
cystidia—especially the pedicellate-capitate type, the dark chocolate-color spores
in KOH, rudimentary veil and a generally top-heavy aspect of the basidiocarps
characterize this species.

A large variant (Smith 34084) was found at Burt Lake, Sept. 22, 1949 by
Wm. B. Gruber. The pilei measured 3–5 cm and the stipes 6–12 cm long and
2.5–6 mm thick. The microscopic features are shown in figs. 849–853. The odd
feature of this collection is the greatly elongated abnormal spores. This variant
deserves further study since it connects up to the complicated P. spadiceogrisea-
P. fusca-P. fatua complex.

Subsect. Limicolae A. H. Smith, subsect. nov.

Ad terram; cystidia acuta vel obtusa. Typus. Psathyrella limicola.
Key to the Series of Subsection *Limicolae*

1. Habitat various as follows: On burned areas, under sagebrush, on *Sphagnum*, and in alpine habitats including volcanic ash.
   1. Habitat on wood or soil, muck, humus, etc.

**Series Boreales** A. H. Smith, ser. nov.

Habitationis specialis. Tybus *Psathyrella borealis*.

Key to the Species of Series *Boreales*

1. On burned areas; spores 8–10×5–6 μ.
   2. Growing under or near sagebrush.
   3. Stipe shining white; spores 8–10×4.5–5 μ.
   4. Habitat on *Sphagnum*.
   5. Spores 6.5–8×4–4.5 μ; veil fibrils usually present on pilear margin.
   7. Walls of cells comprising the pileus cuticle rusty to pale cinnamon in KOH; basidiocarp with aspect of a *Deconica*.
   8. Pleurocystidia typically fusoid-ventricose.

**372. Psathyrella ambusta** A. H. Smith, sp. nov.

Pileus 1–3 cm latus, demum plano-umbonatus, sordide fulvus, glaber; contextu pallide fulvus; lamellae conflatae latae brunneoideae demum fusco-brunneae; stipes 3–4 cm longus, 2.5–4 mm erasus, pallidus, dissilens, sparse fibrillosus; sporae 8–10×5–6 μ; pleurocystidia 40–58×(62)×10–14 μ, fusoid-ventricosa, obtusa vel acuta, interdum bifurcata; fibulae adsunt. Tybus. Smith 34408 (MICH); legit prope French Creek, Medicine Bow Mountains, Wyoming.

Illust. Text Figs. 751–753.

Pileus 1–3 cm broad, obtuse with a straight margin, expanding to plane with a slight umbo, surface moist and hygrophanous, dull tawny to near cinnamon-brown except for pallid margin, fading to cinnamon-buff and in age the cuticle checking into flat scales; veil very thin and showing only a fringe of fibrils along the margin when it breaks. Context thin, concolorous with surface, odor and taste none.

Lamellae close, broad, adnate-seeding, pallid brownish becoming dull chocolate-brown to near drab.

Stipe 3–4 cm long, 2.5–4 mm thick, equal or narrowed downward and sunken in the soil, moderately cartilaginous, whitish, hollow, splitting, surface fibrillose from the thin veil, fibrillose-striate.

Spores 8–10×5–6 μ, smooth, apical pore distinct and apex somewhat truncate, shape in face view ovate to elliptic, in profile somewhat inequilateral to obscurely ovate, in Melzer's tawny to reddish tawny, wall about 0.3 μ thick.
Basidia 4-spored, 20–28 × 9–12 μ. Pleurocystidia scattered, 40–58 (–62) × 10–14 μ, fusoid-ventricose, apex obtuse to acute and some forked into two nipple-like protuberances, wall hyaline, thin and smooth, cell content not distinctive, wall of neck often flexuous as revived in KOH. Cheilocystidia clavate and short, 12–18 × 10–14 μ, abundant, hyaline in KOH or yellowish at the base. Caulocystidia scattered, 20–40 × 6–15 μ, clavate, ventricose or various odd shapes, smooth, thin-walled, hyaline, numerous lens-shaped refractive thickenings present in the cells of the hyphae of the stipe cortex (these are appressed against the inner wall).

Gill trama ochraceous in KOH or in old pilei hyaline. Pileus trama ochraceous in KOH in old pilei, rusty brown in young ones but fading on standing to hyaline. Cuticle of pileus a palisade of clavate to ellipsoid cells with pale ochraceous to hyaline walls (in KOH). Clamp connections present.

Type locality. Lower French Creek, Medicine Bow Mountains, Wyoming.

Habit and habitat. Gregarious on burned over areas.

Distribution. Wyoming.

Observations. There was no true pseudorhiza in this species even though the stipes were sunken appreciably in the soil.

373. Psathyrella deserticola A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, late convexus vel expanso-umbonatus, glaber, castaneus; lamellae brunneoae, demum rufo-fulvae, confertae demum subdistantes, latae; stipes 2–3.5 cm longus, 1–1.5 mm crassus, deorsum brunneus, glaber; velum spar-sissimum; sporae 7–9 × 5–6 (–6.5) μ; pleurocystidia 28–45 × 9–15 μ, fusoid ventricosa, acuta vel subacuta; fibulae adsunt. Typus. Smith 64950 (MICH); legit Ellen Trueblood, in Owyhee County, Idaho.

Illust. Text Figs. 754–757.

Pileus 1–2.5 cm broad, broadly convex, expanding to plane or with a low umbo, surface glabrous, moist, hygrophanous, dark chestnut-brown to cinnamon-brown when moist, dull tawny and opaque when faded. Context thin, fragile, odor and taste not distinctive.

Lamellae dull brownish when young, near “Mars brown” at maturity (deep rusty brown), adnate, soon seceding, close to subdistant, broad, edges even.

Stipe 2–3.5 cm long, 1–1.5 mm at apex, whitish above, dull brownish below, naked or with only a few fibrils present, base white mycelioid.

Spore deposit dark rusty brown (“Mars brown”). Spores 7–9 × 5–6 (–6.5) μ, smooth, apical pore broad and apex more or less truncate, shape in face view broadly elliptic, a few broadly ovate, in profile subelliptic (the supra hilar area flattened to depressed slightly), color in KOH tobacco brown (near “Prout’s brown”), reddish tawny in Melzer’s, wall about 0.5 μ thick.

Basidia 4-spored, 8–9 μ broad, clavate. Pleurocystidia scattered, 28–45 × 9–15 μ, fusoid-ventricose, neck short and apex acute to subacute, hyaline, smooth, wall rigid and 0.3–0.4 μ thick, content not distinctive in KOH or Melzer’s. Cheilocystidia 24–37 × 8–13 μ, clavate to mucronate or fusoid-ventricose, hyaline, smooth, thin-walled. Caulocystidia versiform (Fig. 757), 18–38 × 9–15 μ, fusoid-ventricose to clavate or elliptic, thin-walled, smooth, hyaline.

Pileus with a cuticle of a layer of vesiculose cells 2–3 cells deep and with yellowish walls in KOH, the lower cells with some rusty brown pigment incrustations (in KOH). Hyphae of the subcortical region a layer with inflated to tubular cells having dark dusty brown walls in KOH, the pigment incrustations
and some wall thickenings most numerous near the septa. No amyloid or fleeting amyloid reaction present in any tissues, no distinctive coloration in Melzer's. Clamps present.

Type locality. Owyhee County, Idaho.

Habit and habitat. Gregarious under sagebrush in June after heavy rains.

Distribution. Southwestern Idaho.

Observations. This is obviously a rare species since the conditions favoring its fruiting in a semi-desert habitat may not be realized more than once in ten years. The broadly ellipsoid spores which do not develop a violet-fuscous tone until they have been in KOH a half hour or more are distinctive in the genus. The encrusted hyphae of the subcuticular zone, the rusty brown gills and small pleurocystidia are additional characters.

374. Psathyrella borealis A. H. Smith, sp. nov.

Pileus 1-3 cm latus, conicus vel convexus, subcastaneus, glaber; lamellae violaceo-luteae, confertae latae; stipes 4-6 cm longus, 1.5-2.5 mm crassus, pallidus, demum griseo-brunneus, sparse fibrillosus, glabrescent; sporiae 8-10×4-5 μ; pleurocystidia 42-64×9-15 μ, fusoid-ventricosa, subacuta; fibulae adsunt. Typus. Smith 43743 (MICH); legit prope Castle Rock, St. Ignace, Michigan.

Illustr. Text Figs. 758-761.

Pileus 1-3 cm broad, obtusely conic at first, expanding to broadly conic or convex, a rich cinnamon-brown when moist, fading on disc first to a dull tan or ochraceous-tawny, margin naked or practically so at all times. Context thin, very fragile, odor and taste not distinctive.

Lamellae near benzo brown at maturity (near fuscous), close, broad, adnate, seceding, edges whitish.

Stipe 4-6 cm long, 1.5-2.5 mm thick, equal, fragile, tubular, whitish throughout at first but in age watery gray to watery brownish, at first with a very thin coating of white fibrils from a poorly developed veil, soon glabrescent, apex pruinose.

Spores 8-10×4-5 μ, smooth, apical pore distinct, shape in face view elliptic to subovate, in profile subelliptic to obscurely inequilateral, color in KOH soon dark chocolate-color, in Melzer's soon reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 20-24×7-8 μ, hyaline in KOH. Pleurocystidia 42-64×9-15 μ, fusoid-ventricose, apex subacute, thin-walled, hyaline, smooth, content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia but shorter and an occasional vesiculose cell observed. Caulocystidia fusoid-ventricose and resembling the cheilocystidia (including the presence of vesiculose-pedicellate cells).

Cuticle of pileus a layer of vesiculose cells 1-3 deep and some cells up to 60 μ wide, the cells with hyaline, smooth walls and the cell content not distinctive. The subcuticular region vinaceous-brown in KOH, with incrusted or locally thickened hyphal walls. Clamp connections present. None of the tissues when mounted in Melzer's show a distinctive color reaction.

Type locality. St. Ignace, Michigan.

Habit and habitat. Gregarious in Sphagnum at edge of a bog.


Observations. This species features medium-sized spores, large fusoid-ventricose pleurocystidia with subacute apex, extremely large inflated cells in
the pileus cuticle, the slender stipe which darkens over the lower portion, and
a habitat on sphagnum moss. It is close to P. obtusata in aspect.

Material examined. Idaho: Smith 66306. Michigan: Smith 43743 (Type),
51068.

375. Psathyrella paludosa A. H. Smith, sp. nov.

Pileus 2–3 cm latus, convexus vel campanulatus, glaber, castaneus, demum
rugulosus; sapor subamarus; lamellae latae, confertae, subochraceae demum spa­
diceae; stipes 3–5 cm longus, 3–5 mm crassus, melleibrunneus, deorsum fuscescens,
sparse fibrillosus; sporae 6.5–8×4–4.5 μ; pleurocystidia 27–64×9–15 μ, fusoid–
ventricosa, obtusa vel acuta; fibulae adsunt. Typus. Smith 50734 (MICH); legit
prope Tahquamenon Falls, Luce County, Michigan.

Pileus 2–3 cm broad, obtuse when young, expanding to campanulate or con­
 vex, surface glabrous or with a few appressed fibrils near the margin, margin
fringed at first with grayish remnants of a partial veil, color chestnut-brown when
moist, becoming russet, surface slightly wrinkled. Context thin, fragile, con­
colorous, odor none, taste slightly disagreeable.

Lamellae broad, close, depressed-adnate, 1–2 tiers of lamellulae, dingy buff
when young, becoming nearly date brown ("Saccardo’s umber") at maturity, edges
even.

Stipe 3–5 cm long, 3–5 mm thick, equal, fragile, ground color dingy honey
brown, darkening more at the base, pallid brown from a thin fibrillose to scurfy
coating of veil remnants, apex pallid and striate from gill impressions.

Spores 6.5–8×4–4.5 μ, smooth, with an inconspicuous apical pore (apex not
truncate), shape in face view ovate to elliptic, in profile obscurely bean-shaped
to subelliptic, color in KOH dark chocolate-color, in Melzer’s dull reddish tawny,
wall about 0.2 μ thick.

Basidia 18–22×5–7 μ, short-clavate, hyaline in KOH. Pleurocystidia scat­
tered, 37–64×9–15 μ, fusoid to fusoid-ventricose, apex acute to obtuse, wall thin
and hyaline, with a slight amorphous incrustation near the apex when first revived
in KOH, content "empty." Caulocystidia present on loose fibrils over stipe sur­
face, versiform (Fig. 765), smooth, thin-walled, hyaline. Hyphae of the stipe dull
vinaceous-cinnamon in KOH but fading (sections brown to the naked eye), with
a very fine roughness over the walls of the hyphae of the cortex.

Pileus with a cuticle of a layer of vesiculose cells 2–3 deep and hyaline in
KOH, subcuticular layer vinaceous-cinnamon in KOH but fading, tramal hyphae
also vinaceous-cinnamon in KOH and fading, walls smooth. Clamps present. No
tissue giving a distinctive reaction in Melzer’s.

Type locality. Tahquamenon Falls State Park, Luce County, Michigan.

Habit and habitat. Gregarious on a patch of dead Sphagnum (probably killed
by the fungus), October.


Observations. This species is, possibly, parasitic on the Sphagnum in the
manner of Lyophyllum palustre. It is distinguished by a somewhat disagreeable
taste, highly colored pileus gill and stipe tissue as revived in KOH, a dingy honey-
colored stipe when fresh, small spores and prominent pleurocystidia.

376. Psathyrella katmaiensis. Wells, Kempton & A. H. Smith, sp. nov.

Pileus 9–15(–35) mm latus, campanulatus, ad marginem tenuiter fibrillosus,
glaber, castaneus; contextu castaneus; lamellae pallidae, demum atro-brunneae;
subliberæ, sublatae (2–2.5 mm) demum subdistantes ad acierum crenulatae; stipes 2.5–4 cm longus, 1.5–2 (–3) mm crassus, deorsum bruneolus, sparse fibrillosus, glabrescens; velum parvum; sporae 8–10.5 × 5–6 μ; pleurocystidia 38–47 × 6–15 μ, fusoid-ventricosa, subcapitata vel 6–10 μ lata et subcylindrica; fibulae adsunt. Typus. Wells-Kempton 7/4/64 no. 1 (MICH); legit prope Katmai National Monument, Alaska.

Pileus 9–15 (–35) mm broad, obtuse to campanulate or finally nearly plane, the margin decorated with thin patches of fibrils at first, rarely umbonate in age, glabrous, smooth, hygrophanous, bright chestnut to auburn brown at first, fading to dingy cinnamon-buff, when moist translucent striate nearly halfway to disc. Context concolorous with the surface either moist or faded, moderately thick for size of pileus (about 2 mm), odor and taste not distinctive.

Lamellae pallid in buttons, becoming grayish brown and finally deep blackish brown, ascending adnate to nearly free, moderately broad (2–2.5 mm), close becoming subdistant, edges obscurely pallid and crenulate.

Stipe 2.5–4 cm long, 1.5–2 (–3) mm at apex, nearly equal, pale dingy tan inside and out in lower half, pallid-pruinose punctate above, with scattered pallid long, appressed fibrils from the thin veil lower down, somewhat mycelioid at the base; veil thin and pallid, evanescent.

Spores dark violaceous-brown in deposit, 8–10.5 × 5–6 μ, smooth, apical pore distinct causing apex to be slightly truncate, shape in face view broadly elliptic to somewhat ovate, in profile subelliptic to obscurely bean-shaped, color in KOH medium chocolate-color, soon going to dark chocolate-color, in Melzer’s reddish tawny, wall 0.5 μ thick.

Basidia 18–24 × 5–7 μ, 4-spored, clavate, hyaline. Brachybasidioles not differentiated. Pleurocystidia scattered, 38–47 × 6–15 μ, fusoid-ventricose with obtuse to almost rounded apex (dumbbell-shaped at one extreme) or narrow (6–10 μ wide) and subcylindric (the two types intergrade), wall thin, smooth and hyaline in KOH or Melzer’s, cell content not distinctive in either medium. Cheilocystidia 24–60 × 7–13 μ, elongate, subcapitate to fusoid-ventricose with obtuse apex, thin-walled, hyaline in KOH, smooth; some clavate cells larger than basidiolde are also present. Caulocystidia more or less similar to the pleuro- and cheilocystidia. Cortex hyphae hyaline in KOH but with numerous particles of highly refractive amorphous debris in the cells.

Gill trama with a central strand rusty brown in KOH but fading, subhymenium of inflated cells near the base of the gill, some cells with refractive amorphous particles. Cuticle of pileus a poorly formed layer of somewhat inflated cells 2–3 deep (those at surface collapsing readily). Hyphae of the subcutis yellow-brown in KOH but walls smooth or practically so, cells often with particles of refractive debris (in KOH or Melzer’s). Clamps present.

Type locality. Katmai National Monument, Alaska.

Habit and habitat. Gregarious on volcanic ash and soil with a thin carpet of moss present, July.

Distribution. Alaska.

Observations. This is a rather distinctive species by virtue of the wide spores for their length, variable shape and width of the pleurocystidia, thin but distinct veil, and the large amounts of refractive debris present in the hyphae of stipe and pileus when the tissues are revived in KOH.

377. **Psathyrella mazamensis** A. H. Smith, sp. nov.

Pileus 8–12 mm latus, late convexus, glaber, subspadiceus; lamellae confertae latae, ventricose, violaceo-fuscae; stipes circa 1 cm longus, filiformis pallidus glaber, deorsum sparse fibrillosus; sporae 8–9×4–4.5 μ; pleurocystidia 34–52×5–10 μ, subcylindrica vel anguste fusIDEO-ventricosa acuta vel subacuta; fibulae adsunt. Typus. Smith 31360 (MICH); legit prope Longmire, Mt. Rainier National Park, Washington.

Illustr. Text Figs. 766–768.

Pileus 8–12 mm broad, convex to broadly convex, glabrous except for a few indistinct marginal fibrils, moist and hygrophanous, grayish over marginal area (all with mature spores); disc dingy "buckthorn brown" (fairly dark honey brown), fading to grayish over the margin but drying dull brown. Context very thin and soft, odor and taste not recorded.

Lamellae close, broad, ventricose, horizontal and depressed-adnate, near "benzo brown" at maturity and when dried near fuscous but retaining a slight tinge of cocoa-color.

Stipe about 1 cm long, less than 1 mm thick, sunken in the soil and with debris adhering around the base but no true pseudorhiza present, pallid, glabrous at maturity, at first with scattered fibrils.

Spores 8–9×4–4.5 μ, smooth, apical pore distinct but apex only obscurely truncate, shape in face view narrowly elliptic to oblong, rarely narrowly ovate, in profile suboblong to obscurely inequilateral, color in KOH dark cocoa-color slowly clouded to chocolate-gray, in Melzer's reddish tawny to pale bay, wall about 0.3 μ thick.

Basidia 4-spored, clavate, hyaline in KOH 18–24×6.5–8 μ. Pleurocystidia scattered, 34–52×5–10 μ, subcylindric to narrowly subfusoid, the elongated neck flexuous (3.5–5 μ wide), apex acute to subacute, walls slightly thickened in the base in some, hyaline and smooth in KOH. Cheilocystidia similar to pleurocystidia or clavate to saccate and 7–12 μ wide, both types intermingled, in the clavate to saccate type the walls pallid to tinged cinnamon as revived in KOH.

Pileus trama tinged cinnamon in KOH but fading on standing and in thin sections nearly hyaline. Cuticle of pileus a layer of vesiculose cells 2–3 deep and not distintively colored in KOH. Clamps present.


Observations. This is one of the inconspicuous subalpine species easily overlooked. It is very "ordinary" in most of its features.

378. **Psathyrella psilocyboides** A. H. Smith, sp. nov.

Pileus 8–12 mm latus, convexus, ad marginem rimosus, glaber, castaneus; contextu castaneus; lamellae latae, distantes vel subdistantes, fusico-brunneae; stipes 1–1.5 cm longus, 1 mm crassus, subcastaneus, sparse fibrillosus; sporae 8–10×5–6.5 μ; pleurocystidia 32–46×9–13 μ, fusido ventricosa obtusa vel acuta; fibulae adsunt. Typus. Smith 65135 (MICH); legit prope Goose Lake, New Meadows, Idaho.

Pileus 8–12 mm broad, convex, expanding to nearly plane and splitting along the margin, glabrous, dark chestnut-brown (like a *Deconica*), fading to dull cinnamon. Context thin and fragile, colored like the surface.
Lamellae broad, adnate, distant or subdistant, dark chocolate-brown, edges even.

Stipe 1–1.5 cm long, 1 mm thick, equal, almost concolorous with pileus in age or when dried, with scattered evanescent fibrils.

Spores 8–10 × 5–6.5 μ, smooth, apical pore distinct but apex not truly truncate (merely a hyaline spot which does not affect the contour of the spore apex), shape in face view broadly elliptic to broadly ovate, occasionally truncate at base and obscurely angular, in profile broadly subelliptic to broadly and obscurely inequilateral. Color in KOH soon becoming dark chocolate-color, in Melzer's bay, wall about 0.3 μ thick.

Basidia 4-spored, 18–24 × 9–11 μ, clavate, hyaline in KOH. Pleurocystidia 32–46 × 9–13 μ, fusoid-ventricose with obtuse to subacute apex, or fusoid to a subacute apex, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia more or less similar to pleurocystidia.

Gill trama bright rusty brown in KOH, slowly fading to tawny-cinnamon or paler, color often in the wall thickenings near or at the septa. Pileus trama dark rusty cinnamon from numerous pigmented inclusions on the hyphae and from wall thickenings. Cuticle of pileus of inflated cells several deep and with medium to pale rusty cinnamon to ochraceous-cinnamon walls, the walls thin and smooth. Clamps present.

Type locality. Goose Lake, near New Meadows, Idaho.

Habit and habitat. Scattered on soil in a wet mountain meadow, July.


Observations. The cuticular cells of the pileus are colored somewhat as in P. tsugae and other species inhabiting wood of species of conifers. At first sight the species reminds one of a Psilocybe subg. Deconica but the anatomy of the basidiocarp does not support the impression.


379. Psathyrella boulderensis A. H. Smith, sp. nov.

Pileus 1–2 cm latus, conicus vel convexus, glaber, subcastaneus; contextu subcastaneus; lamellae fusco-brunneae, latae, conferte, late adnatae; stipes 1–3 cm longus, 1.5–2.5 mm crassus, pallidus, deorsum brunneus, glaber, sursum pruinosus; sporae 7–9.5 × 4–5 μ; pleurocystidia 38–56 × 9–15 μ, fusoid ventricosa, obtusa; fibulae adsunt. Typus. Smith 58670 (MICH); legit prope Boulder Lake, McCall, Idaho.

Pileus 1–2 cm broad, obtusely conic expanding to broadly conic or convex, surface glabrous, moist, hygrophanous, when young dark chocolate-color and fading to dark dull tawny, margin naked (no veil present). Context thin, very dark brown, fragile, odor and taste not distinctive.

Lamellae as dried chocolate-black, dark dull brown when young becoming chocolate-brown when mature, broad, close, broadly adnate, seceding; edges even and whitish.

Stipe 1–3 cm long, 1.5–2.5 mm thick, equal or nearly so, fragile, pallid and weakly pruinose near apex, dull brown below and finally almost so over all.

Spore deposit dark chocolate-brown. Spores 7–9.5 × 4–5 μ, smooth, apical pore distinct and spore apex obscurely truncate, shape in face view elliptic to narrowly ovate, varying toward oblong, in profile obscurely inequilateral to subovate, color
in KOH chocolate-brown, on standing becoming chocolate-gray, in Melzer's tawny to reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 7–9 μ broad, clavate, hyaline in KOH. Pleurocystidia 38–56 × 9–15 μ, fusoid-ventricose with more or less elongated neck and obtuse apex, walls not flexuous, cell content not distinctive, walls hyaline and smooth. Cheilocystidia 32–42 × 8–13 μ, fusoid to fusoid-ventricose, apex obtuse, hyaline and smooth in KOH. Pileus trama dark vinaceous-brown revived in KOH, fading but the vinaceous tone remaining, walls with pigment thickenings at and near the septa but incrustations on hyphae not readily apparent. Cuticle of pileus a layer of vesiculose cells 2–4 deep, the walls ochraceous to hyaline in KOH, thin. Clamps present.

Type locality. Boulder Lake, near McCall, Idaho.
Habit and habitat. Gregarious on moist earth in a campground, July.
Distribution. Idaho.

Observations. The distinctive features of this species are the very dark color when young, strongly darkening stipe, lack of a veil, blackish gills as dried, obtuse pleurocystidia and medium-sized spores. It is easily mistaken for a Deconica in the field. It is closest to P. deserticola (excluding the habitat) but lacks the conspicuous incrustations of pigment on the subcuticular hyphae which feature that species.

Material examined. Idaho: Smith 58670 (Type), 58672, 58676.

Series Limicolae

Key to the Species of Series Limicolae

1. Taste farinaceous; spores 9–11 × 4.5–6 μ.
   1. Not as above.
   2. Spores 6–7.5(–8) × 3–4(–4.5) μ. (see 406 P. olivaceocystid also)
      3. Spores 7–10 μ long.
      4. Many pleurocystidia over 50 μ long (measure pedicel also).
      5. Pleurocystidia under 50 μ long.
         4. Pileus margin at first incurved; subcuticular hyphae of pileus yellowish to hyaline in KOH.
         380. P. tezensis.
         5. Pileus margin straight; subcuticular hyphae of pileus pale cinnamon.
         382. P. incondita.
   2. Spores 7–10 μ long.
   3. Many pleurocystidia over 50 μ long (measure pedicel also).
   4. Pileus margin at first incurved; subcuticular hyphae of pileus yellowish to hyaline in KOH.
      381. P. cokeri.
   5. Basidia 14–18 × 7–9 μ (short and fat); caulocystidia abundant and versiform.
      385. P. rubiginosa.
   5. Basidia 12–24 × 6–8 μ; caulocystidia more or less like the cheilocystidia and rare (see Cystidosae of Homophron also).
      6. Pileus ferruginous red before spores mature.
      7. Not as above.
      8. Many pleurocystidia in mature caps 60 μ or more long.
      9. Nearly all pleurocystidia under 50 μ long.
         8. Veil absent; lamellae gray-brown when mature.
         386. P. pseudotrepida.
         9. Veil evident on margin of immature pilei.
      10. Stipe white to whitish; splitting readily when fresh; vernal.
      11. Stipe darkening below; not splitting readily; summer and fall (see 412. P. tenacipes also).
      12. Some pleurocystidia with a capitellum 5–6.5 μ wide; cystidia all hyaline in KOH (see 327. P. spadiceocystid also).
      13. Cystidia lacking a capitellum and some in KOH with a pale purplish brown content.
      390. P. fulcounibrina.
      14. On barren sandy soil with very sparse vegetation; stipe 1 mm or less thick (see 407. P. parva also).
      389. P. seymoureanis.
   7. Not as above.
   11. Veil evident in immature basidiocarps.
   12. Some pleurocystidia with a capitellum 5–6.5 μ wide; cystidia all hyaline in KOH (see 327. P. spadiceocystid also).
   13. Cystidia lacking a capitellum and some in KOH with a pale purplish brown content.
      391. P. fuscospora.
13. Spores truncate (flattened at apex).

14. Stipe whitish; caulocystidia present merely as clavate end cells.
   392. P. limicola.
14. Stipe brownish below; caulocystidia clavate, vesiculose and fusoid ventricose, numerous.
   393. P. warrenensis.
15. Cuticle of pileus 2-3 cells deep.
   394. P. griseopallida.
15. Cuticle of pileus 1(-2) cells deep.
   395. P. pseudocoronata.

16. Lamellae cinnamon brown at maturity; cap margin becoming sulcate upon loss of moisture.
   392a. P. limicola var. subpectinata.
16. Lamellae grayish brown to brownish-violaceous at maturity; pilear margin not sulcate.

380. Psathyrella texensis A. H. Smith, sp. nov.

Pileus 1.5-3 cm latus, late convexus, spadiceus, glaber, sapor farinaceus; odor farinaceus; lamellae angustae, demum subdistantes, violaceo-brunneae; stipes 2.5-3.5 cm longus, 3-5 mm crassus, pallidus, deorsum demum subalutaceus; glaber; velum nullum; sporae 9-11×4.5-6 μ; pleurocystidia 25-37×8-13 μ, late fusoid ventricosa, obtusa; fibulae adsunt. Typus. Thiers 1486 (MICH); legit prope Richards, Texas.

Illust. Text fig. 798.

Pileus 1.5-3 cm broad when fully expanded; convex when young, becoming broadly convex to plano-convex when mature; colored near “Dresden brown” when young but fading to “buckthorn brown” to “ochraceous-buff” when older; surface dry, glabrous, showing no evidence of a veil; margin obscurely striate, inured when young, becoming nearly straight to uplifted when mature, entire, in age at times eroded. Context thin, brittle, concolorous with the surface, taste disagreeable (oily-farinaceous), odor farinaceous.

Lamellae ascending adnate; narrow, close to subdistant; colored near “benzo brown” to “cinnamon-drab” to “brownish drab,” 2-3 tiers of lamellulae, margin entire and concolorous with the faces.

Stipe 2.5-3.5 cm long, 3-5 mm broad at the apex, white at the apex but lower down becoming near “cinnamon-buff,” equal to tapering slightly upward, dry, glabrous, solid; no evidence of a veil.

Spores 9-11×4.5-6 μ, smooth, truncate from a distinct apical pore, shape in face view subovate to elliptic, in profile subelliptic to obscurely inequilateral, color in KOH quickly chocolate-brown, in Melzer’s dark reddish tawny, wall about 0.4 μ thick.

Basidia 4-spored, 20-27×8-12 μ, clavate. Pleurocystidia 25-37×8-13 μ, broadly fusoid ventricose with obtuse apex, wall thin (cells not reviving well), hyaline. Cheilocystidia 24-37×8-12 μ, numerous, fusoid-ventricose to subcylindric hyaline, thin-walled and smooth.

Gill trama of interwoven filamentous hyphae, yellowish hyaline in KOH, subhymenium not distinctive. Pileus cuticle composed of a layer 1–2 cells deep, the cells vesiculose but angular from being compacted, hyaline in KOH. Clamps present.

Type locality. Near Richards, Grimes County, Texas.

Habit and habitat. Gregarious in humus at base of dead stumps in mixed woods.

Distribution. Texas.

Observations. KOH gave no distinctive reaction on either the lamellar or pilear trama.
Psathyrella cokeri (Murrill) A. H. Smith, comb. nov.

Psilocybe cokeri Murrill, Mycologia 15: 12. 1923.

Illustr. Text Figs. 826–828.

Pileus 1–2.5 cm broad, convex to campanulate, not fully expanding, margin incurved when young, surface glabrous, light grayish tan, slightly striate on the margin. Context very thin and fragile, odor and taste not recorded.

Lamellae adnate, rather broad, subcrowded, smoky brown, becoming darker with age, dark vinaceous-brown as dried.

Stipe 5–7 cm long, 2–3 mm thick, equal, smooth, subcartilaginous, hollow, whitish to dirty pallid flesh-color.

Spores 6–7.5(–8) × 3.2–4 µ, smooth, apical pore distinct (under oil) but apex only obscurely truncate, shape in face view elliptic to ovate varying to nearly oblong, in profile obscurely inequilateral to obscurely bean-shaped, color in KOH dark bister slowly becoming dark chocolate-brown, in Melzer's reddish tawny, wall about 0.3 µ thick.

Basidia 4-spored, 12–14 × 6–8 µ, hyaline in KOH, short and obese. Pleurocystidia scattered, 42–58 × 10–13 µ, fusoid-ventricose with obtuse to subacute apex, smooth, hyaline, thin-walled, cell content not distinctive. Cheilocystidia similar to pleurocystidia but many shorter and with broader necks. Caulocystidia in clusters, resembling the cheilocystidia.

Pileus having a cuticle of vesiculose cells one to two cells deep, their walls thin, smooth, and hyaline to yellowish revived in KOH. Hyphae of the context not appreciably colored (in KOH). Clamps present.

Type locality. Chapel Hill, North Carolina.

Habit and habitat. Solitary to gregarious on moist soil mixed with humus.


Observations. There is a question in my mind as to just how "flesh colored" the stipe actually is when it is perfectly fresh. The small spores, however, and lack of pigmentation in the hyphae of the subcuticular region of the pileus as revived in KOH seem to be reliable features and prevent reference of the species to P. fulvescens or to members of the series Limicolae.


Psathyrella incondita A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, late conicus, sparse fibrillosus glabrescens, subspadiceus; contextu fulvus; lamellae confertae, latae, griseae; stipes 4–6 cm longus, 1,5–3 mm erassus, pallidus, deorsum bruneus, minute fibrilloso-floccosus glabrescens; velum sparsum; sporae 6–7.5 × 3.2–3.8(–4) µ; pleurocystidia 42–60 × 8–12 µ; subcylindrica vel anguste fusideo-ventricosa; fibulae adsunt. Typus. Smith 13851 (MICH); legit prope Lake Crescent, Washington.

Illustr. Text Figs. 824, 825.

Pileus 1–2.5 cm broad, obtusely conic when young, becoming broadly conic in age or expanding to campanulate, surface at first with a few fugaceous white fibrils from the remains of the rudimentary veil, soon glabrous over all, "buckthorn brown" to watery "clay color" when moist, hygrophanous, fading to near "vinaceous-buff" or pallid, radially rugulose when faded. Context thin and fragile, watery rusty brown when fresh, paler faded, odor not distinctive, taste mild.

Lamellae moderately close, 22–24 reach the stipe, bluntly adnate and soon
seeding, broad (about 4 mm), "drab-gray" at maturity, the edges whitish and scarcely fimbriate.

Stipe 4–6 cm long, 1.5–3 mm thick, equal, strict, fragile, hollow, whitish, becoming dingy brownish at base, with thin white fibrillose flecks from the remains of a thin veil, glabrescent, apex pruinose.

Spores 6–7.5 × 3.2–3.8 (–4) µ, smooth, apical pore evident and apex somewhat truncate, shape in face view oblong to narrowly ovate, in profile somewhat bean-shaped to obscurely inequilateral, color in KOH pale cocoa-color when first revived, finally a medium chocolate-brown, reddish brown in water mounts when fresh, in Melzer's tawny-red, wall about 0.2 µ thick.

Basidia 4-spored, 14–20 × 6–8 µ, clavate, hyaline in KOH. Pleurocystidia abundant, 42–60 × 8–12 µ, subcylindric to somewhat fusoid-ventricose, neck evenly tapered to an obtuse or subacute apex, smooth, hyaline (in KOH), thin-walled, cell content not distinctive in KOH or Melzer's. Caulocystidia very rare, resembling the pleurocystidia. Cheilocystidia of two types, saccate and 17–26 × 10–15 µ or fusoid-ventricose to subcylindric and 34–54 × 8–13 µ, both types hyaline, smooth and thin-walled.

Gill trama regular, the hyphae somewhat interwoven and with enlarged cells, pallid to reddish brown in KOH. Pileus having a cuticle of vesiculose but somewhat elongated hyaline cells 1–2 cells deep. The hyphae of the context pale cinnamon in KOH in the subcuticular region. Clamps present.

Type locality. Lake Crescent, Clallam County, Washington.

Habit and habitat. Scattered under brush on humus and debris in a mixed conifer and alder stand.


Observations. Since Fries consistently noted P. obtusata as occurring on wood (especially oak), and since I regard the difference between humus dwellers and lignicolous species to be important, I must insist on the typification of P. obtusata in accordance with Fries' notations. This means that the current concepts of the species in Europe will have to be abandoned as I am abandoning my (1941) concept based upon them. *Drosophila pygmea* Qué. has the spores of this species but has no veil and its pleurocystidia are short (under 40 µ long).

383. *Psathyrella rubiginosa* A. H. Smith, sp. nov.

Pileus 10–20 mm latus, late convexus, glaber, rufo-fulvus; contextu rufo-fulvus; lamellae latae, confertae, subdistantes, brunneolae, fulvae demum fumosofulvae; stipes 1–5 cm longus, 1–2 mm crassus, palidus demum brunneolus, glaber; velum nullum; sporiae 7–8 × 4–4.5 µ; pleurocystidia 28–48 × 9–14 µ, obtuse fusoido-ventricosa; fibulae adsunt. Typus. Smith 34616 (MICH); legit prope Laramie, Wyoming.

Illust. Pl. 87, fig. b; Text Figs. 854–856.

Pileus 10–20 mm broad, obtuse expanding to convex or broadly convex, surface glabrous, moist, hygrophanous, no evidence of a veil, color "russet" to "Mars brown" or "cinnamon-brown" (dark rusty brown becoming paler), fading to tan or pale dingy tan, no pinkish tint evident in old faded pilei. Context very thin and delicate, concolorous with surface, odor and taste not distinctive.

Lamellae broad, adnate, close at first, subdistant at maturity, pale brown before becoming colored by spores and then dark rusty brown finally clouded with chocolate-color, the reddish component evident on dried lamellae (color near "Natal brown"), edges even, not pinkish in age.
Stipe 1-5 cm long, 1-2 mm thick, equal, fragile, hollow, pallid at first, becoming brownish over all, slightly pruinose above, scarcely mycelioid at base.

Spores 7-8×4-4.5 μ, smooth, apical pore very inconspicuous and spore apex not truncate, shape in face view narrowly elliptic varying to slightly ovate or to oblong, in profile subelliptic varying to slightly bean-shaped or to obscurely inequilateral, color in KOH cocoa-brown (rather dark) at first, slowly becoming dark chocolate-color, in Melzer's reddish tawny to pale bay, wall about 0.3 μ thick.

Basidia 14-18×7-9 μ, 4-spored, clavate, hyaline in KOH. Pleurocystidia scattered, 28-48×9-14 μ, fusoid-ventricose, apex obtuse, wall thin, hyaline and smooth or with granular material adhering over apical region, cell content not distinctive. Cheilocystidia fusoid-ventricose to vesiculose, the former similar to the pleurocystidia, the latter 12-18 μ wide and hyaline to yellowish in KOH. Caulocystidia versiform (Fig. 856).

Gill trama ochraceous-tawny in KOH, the color in the wall, fading on standing. Pileus trama cinnamon to ochraceous-tawny, fading on standing, walls with incrusted pigment especially near the septa. Cuticle of pileus a layer of vesiculose to pear-shaped cells 1-2 cells deep, not organized into a distinct palisade, walls hyaline to pale cinnamon in KOH, fading on standing. Clamp connections present.

Type locality. Pole Mountain, near Laramie, Wyoming.

Habit and habitat. Gregarious on soil in wet areas.

Distribution. Michigan, New Mexico, Wyoming.

Observations. In the type the basidia are short and fat, and it is difficult to state whether brachybasidioles are present at maturity or not—the difference is not great.


384. Psathyrella limosa A. H. Smith, sp. nov.

Pileus 8-15(-20) mm latus, late conicus vel convexus, glaber, sordide fulvus; contextu cum "FeSO₄" olivaceo-umbrinus; lamellae pallidae demum violaceofuscae, latae, confertae; stipes 1.5-2.5 cm longus, 1-2.5 mm crassus, sparse fibrillosus, pallidus, deorsum demum sordide brunnus; tarde glabrescens; velum albidum; sporae 7-8×4-4.5 μ; pleurocystidia 28-37×9-13 μ, latise exciting vel fusoido ventricosa, subacuta vel rotundata; fibulae adsunt. Typus. Smith 66751 (MICH); legit prope Burt Lake, Michigan.

Illust. Pl. 89, fig. d; Text Figs. 833-835.

Pileus 8-15(-20) mm broad, obtusely conic to convex, the margin straight at first, expanding to broadly conic or convex, surface glabrous, moist, hygrophanous dull tawny when moist, pale dull cinnamon-buff faded, the disc often remaining a darker tan, faintly striatulate when moist. Context thin, very fragile, odor none, taste mild, with FeSO₄ slightly olive-umber.

Lamellae pallid when young, becoming "benzo brown" from the spores (violaceous-brown), broad, close, adnate then seceding.

Stipe 1.5-2.5 cm long, 1-2.5 mm thick, equal, fragile, at first with a faint median white-fibrillose zone left by the breaking of the thin fibrillose veil, becoming dark brown below but base often thinly coated with white mycelium, pallid and naked above the veil line.

Spores 7-8×4-4.5 μ, smooth, apical pore distinct, shape in face view elliptic
to slightly ovate, in profile subelliptic to obscurely inequilateral, color in KOH dark chocolate-color, in Melzer’s reddish tawny, wall about 0.2 μ thick.

Basidia 12–24×6–8 μ, 4-spored, clavate to subelliptic, hyaline in KOH. Pleurocystidia scattered, 28–37×9–13 μ, broadly fusoid- to fusoid-ventricose with a short neck, apex subacute to rounded, wall thin, smooth and hyaline, content not distinctive in either KOH or Melzer’s. Cheilocystidia short-fusoid with obtuse apex, 24–32×8–13 μ, smooth, thin-walled, hyaline in KOH, content not distinctive. Caulocystidia rare to absent over midportion or above.

Cuticle of pileus 1–2 cells deep, the cells inflated and with hyaline to yellowish walls in KOH, cell content not distinctive. Subcutis a layer of cinnamon-colored hyphae which when fresh appear incrusted but are smooth as revived in KOH. Remainder of the trama merely pale ochraceous to hyaline in KOH. Clamps present. No distinctive reactions noted when tissues were revived in Melzer’s.

Type locality. Maple Bay, Burt Lake, Cheboygan County, Michigan.

Habit and habitat. Gregarious to scattered on mud, July.


Observations. This distinctive little species is known by the small dark colored spores in KOH, the FeSO₄ reaction, the thin veil, the very short and relatively broad cystidia and habitat on mud.

385. Psathyrella ferruginea A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, late convexus, glaber, ferrugineus dein melleibruneus; lamellae pallidae demum fuseo-bruneae, conflerta; stipes 3–4.5 cm longus, 1.5–2 mm erassus, pallidus demum sordidus, glabrescens; sporae 8–10×5–6 μ; pleurocystidia 42–58×10–16 μ, fusoid ventricosa, obtusa; fibulae adsunt. Typus. Smith 34853 (MICH); legit prope Libbey Creek, Centennial, Wyoming.

Illust. Text Figs. 829–832.

Pileus 1–2.5 cm broad, obtuse, expanding to broadly convex, surface moist and hygrophanous, glabrous (excellent button stages were present), color “hazel” to “ferruginous” at first, paler to honey brown at maturity (“buckthorn brown”), margin translucent-striate when moist, fading to pinkish buff on disc first; veil none. Context very thin and fragile, odor not distinctive.

Lamellae pallid brownish becoming about “wood brown” to “hair brown” (brownish gray and lacking cocoa-colored tinges), broadly adnate, close, seceding.

Stipe 3–4.5 cm long, 1.5–2 mm thick, pallid but appearing unpolished from a thin coating of fibrils (the smallest button with a faint zone from a rudimentary veil—or merely slightly overgrown from the basal mycelium ?), color in the dingy pallid brownish series over all but the base not darkening on aging.

Spores 8–10×5–6 μ, smooth, apical pore small and apex scarcely appearing truncate, shape in face view elliptic to ovate, in profile obscurely inequilateral to subelliptic, in a few slightly bean-shaped, color in KOH cocoa-color at first, slowly becoming chocolate-brown, in Melzer’s reddish tawny, wall about 0.4 μ thick.

Basidia 18–26×9–11 μ, 4-spored, clavate, hyaline in KOH. Pleurocystidia scattered, 42–58×10–16 μ, subcylindric with obtuse to rounded apex, or fusoid-ventricose to irregularly fusoid, the apex obtuse to subacute, rarely rounded-subcapitate, often with a highly refringent thickening or lining along the interior walls of the apical region, wall smooth, thin and hyaline. Cheilocystidia 30–40×10–14 μ, subclavate to obtusely fusoid-ventricose with hardly any neck, smooth, hyaline in KOH, thin-walled. Caulocystidia similar to the pleurocystidia varying
to clavate or vesiculose and up to 16 μ broad, wall smooth, thin and hyaline in all.

Gill trama ochraceous in water mounts of fresh material and deeper ochraceous revived in KOH. Pileus trama ochraceous to ochraceous-tawny in KOH, the walls smooth to minutely roughened; cuticle of ellipsoid and vesiculose cells 1–3 deep, the walls thin, smooth and hyaline to pale brownish in KOH. Clamps present.

Type locality. Science Camp, Medicine Bow National Forest, near Centennial, Wyoming.

Habit and habitat. Gregarious on soil and humus under aspen.
Distribution. Wyoming.

Observations. The ferruginous pileus and relatively wide spores are a diagnostic combination of characters in this group.
Material examined. Wyoming: Smith 34762, 34853 (Type), 34865.

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386. Psathyrella pseudotrepida A. H. Smith, sp. nov.

Pileus 1–3 cm latus, late conicus, glaber rufo-fulvus; lamellae brunneolae demum brunneo-griseae, latae, subdistantes; stipes 3–5 cm longus, 1–2.5 mm crassus, hyalinus, deorsum brunneus; velum nullum; sporae 8–9 × 4.5–5 μ; pleurocystidia 42–65 × 9–14 (–16) μ, fusoid-ventricosa, subaeuta, cum collis elongatis; fibulae adsunt. Typus. Smith 73953 (MICH); legit prope Priest Lake, Idaho.

Illust. Text. Figs. 840, 841.

Pileus 1–3 cm broad, obtusely conic with a straight naked margin, expanding to broadly conic, glabrous, hygrophanous, when fresh dark rusty brown (“Mars brown” or darker), becoming paler and striatulate on the margin, fading to pale tan (“cinnamon-buff”) on the disc and grayer over marginal area. Context thin and fragile, odor none.

Lamellae dull brown when young, becoming gray-brown (“hair brown”) when mature, broad, adnate, more or less subdistant, soon seceding, edges even.

Stipe 3–5 cm long, 1–2.5 mm thick at the apex, hyaline-white, naked to the faintly pruinose apex, becoming dull brown from base upward, veil none.

Spores 8–9 × 4.5–5 μ, smooth, apical pore well developed, shape in face view elliptic to ovate, in profile subelliptic to obscurely inequilateral, color in KOH dark chocolate-color, in Melzer’s dark bay, wall about 0.3 μ thick.

Basidia 4-spored, 9–11 μ wide at apex, clavate, hyaline in KOH. Pleurocystidia 42–65 × 9–14 (–16) μ, fusoid-ventricose with long equal neck and obtuse to subacute apex, walls thin, smooth, hyaline; content not distinctive in either KOH or Melzer’s. Cheilocystidia similar to pleurocystidia but smaller, clavate to vesiculose cells rare. Caulocystidia not observed except narrowly clavate hyphal ends scattered here and there.

Cuticle of pileus of inflated (vesiculose) and clavate-pedicellate cells 1–2 deep, their walls thin and smooth, hyaline to pale cinnamon in KOH; content not distinctive in KOH or Melzer’s. Hyphae of trama vinaceous-cinnamon in KOH and with pigment incrustations (or wall thickenings) on the wall. No distinctive reaction on any tissue with Melzer’s. Clamps present.

Type locality. Tule Bay, Priest Lake, Idaho.

Habit and habitat. Gregarious on soil, October.

Distribution. Idaho.

Observations. The spores are much too small for P. trepida but otherwise the two are quite similar.

Material examined. Idaho: Smith 58754, 70163, 73953 (Type), 73954.
387. *Psathyrella pseudovernalis* A. H. Smith, sp. nov.

Pileus 2–3.5(–5) cm latus, campanulatus vel late convexus, ad marginem leviter fibrillosus; glabrescens, sordide melleibruneus, demum fusco-brunneus, lamellae confertae, latae (5–6 mm), pallidae demum sordide vinaceo-brunneae, ad acierum demum incarnatae; stipes (3–)4–8(–10) cm longus, (1.5–)2–3(–5) mm crassus, dissiliens, albidus vel pallidus; glaber; velum sparsum; sporae 7–8.5(–9) X 4–5 μ; pleurocystidia 38–60(–70) X 10–15 μ, fusoid-ventricosa, obtusa; fibulae adsunt. Typus. Smith 14037 (MICH); legit prope Lake Crescent, Washington (Olympic National Park).

Illustr. Pl. 93, fig. b; Text Fig. 799–801.

Pileus 2–3.5(–5) cm broad, convex to obtusely conic when young, becoming broadly campanulate to convex or nearly plane, sometimes with a slight umbo, surface at first covered with faint white fibrils along or near the margin, soon glabrous, smooth or slightly rugulose, "ochraceous-tawny" to "buckthorn brown" (dull honey brown) but becoming grayish and then "wood brown" (dark avel­laneous), in age however dark reddish brown ("Mars brown") when wet, hy­grophanous, fading to pale dingy tan. Context concolorous with surface, very thin and fragile, odor and taste not distinctive.

Lamellae close, 28–33 reach the stipe, broad, (5–6 mm), bluntly adnate, soon seceding, pallid ("tilleul buff") young, soon fawn-color and finally "Natal brown" (vinaceous-brown), very fragile, edges concolorous at first, often pinkish in age.

Stipe (3–)4–8(–10) cm long, (1.5–)2–3(–5) mm thick, equal or slightly tapered upward, hollow, very fragile, readily splitting longitudinally when broken, white to whitish, at first with faint white fibrillose flecks from the thin to rudimentary veil, soon glabrous, base sparsely strigose.

Spores 7–8.5(–9) X 4–5 μ, smooth, apical pore distinct but small and apex not distinctively truncate, shape in face view elliptic to ovate, in profile subelliptic to very obscurely inequilateral, color in KOH dark cocoa-color slowly becoming a medium chocolate color, in Melzer's reddish tan to pale bay, wall about 0.5 μ thick (in KOH).

Basidia 4-spored, 17–22 X 7–10 μ, short-clavate, hyaline in KOH. Pleuro­cystidia abundant, 38–60(–70) X 10–15 μ, fusoid-ventricose, apex obtuse, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia similar to pleurocystidia varying to broadly and bluntly fusoid to nearly clavate and 28–37 X 9–15 μ, also present are subcylindric to clavate cells 10–24 X 5–12 μ with yellowish slightly thickened walls as revived in KOH. Caulocystidia present only as a few recurved hyphal ends clavate to more or less subfusoid.

Gill trama of interwoven hyphae with inflated cells dingy vinaceous-brown in KOH but gradually fading particularly in old pilei. Pileus trama colored as for the gill trama or darker but also fading, hyphae of the subcuticular region with fine inclusions or pigment deposits. Cuticle of the pileus a layer of hyaline inflated to clavate cells one or two cells deep, the walls thin, hyaline to yellowish or (when young) cinnamon. Clamps present.

Type locality. Lake Crescent, Washington.

Habit and habitat. Solitary to gregarious on humus and debris under alder and cottonwood, particularly close to logs, stumps etc., vernal.


Observations. *P. vernalis*, a European species, apparently has paler spores.


**var. agrariella**

Pileus 1–3.5 cm broad, convex to expanded, the margin incurved slightly, at times obtuse at first and becoming obtusely campanulate, surface glabrous or with a few fibrils from the rudimentary veil along the margin, hygrophanous, pale reddish brown to pale rufous at first, tinged umber at maturity, fading to pallid ochraceous or pinkish buff, pellucid striate when moist, at times slightly rugose. Context thin and fragile, odor and taste not distinctive.

Lamellae adnate, seceding, close, moderately broad and often ventricose, at length dull purple-brown, edge white fimbriate.

Stipe 4–6 cm long, 1.5–3 (–4) mm thick, equal, fragile, even, apex pruinose, glabrous or with scattered fibrils from the veil when very young, soon hollow, white above, becoming sordid brownish toward the base, base white mycelioid.

Spores 7–9 (–10.5) × 4–5 (–5.5) μ, smooth, apical pore present but small and not affecting the shape of the apex, shape in face view ovate to elliptic, in profile obscurely inequilateral, color in KOH dull cocoa-color slowly darkening to chocolate-brown, in Melzer's tawny, wall about 0.3 μ thick.

Basidia 4-spored, 17–20 × 7–10 μ, short-clavate, hyaline in KOH. Pleurocystidia abundant, fusoid-ventricose, 48–60 × 10–14 μ, tapered evenly to an obtuse to subacute apex (3–4 μ broad), wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer's. Cheilocystidia abundant, broadly ventricose, mucronate (but with homogeneous hyaline content) or saccate, 22–30 × 10–16 μ, slightly yellowish revived in KOH in some.

Gill trama regular, the hyphae somewhat interwoven, when revived in KOH pale cinnamon-brown. Pileus having a cuticle of vesiculose to pear-shaped cells but these not arranged in a definite palisade. Context of interwoven hyphae and pale cinnamon-brown when revived in KOH.

Type locality. Ithaca, New York.

Habit and habitat. Gregarious on moist soil in woods and shady places.


Observations. This is a much more common species than the records indicate.


388a. *Psathyrella agrariella* var. ochrofulva A. H. Smith, var. nov.

Pileus 8–15 (–20) mm latus, late convexus, ad marginem tenuiter fibrillosus vel floccosus, glabrescens; pallide fulvus; contextu ochraceo-fulvus; lamellae pallidae demum brunneaeae dein fusco-brunneae, demum subdistantes; stipes 2–3 cm longus, 1.5–2.5 mm crassus, albus demum pallidus, deorsum demum melleus vel isabellinus; velum pallide fibrillosum; sporiae 7–9 (–10) × 3.8–4.5 (–5) μ; pleurocystidia 40–60 × 9–14 μ, fusoid-ventricosa, subacuta vel interdum cum 1–3 processis; fibulae adsunt. Typus. Smith 33628 (MICH); legit prope Burt Lake, Michigan.

Illust. Pl. 88, fig. a.

Pileus 8–15 (–20) mm broad, obtuse to convex when young expanding to broadly convex or plane, margin somewhat incurved at first, surface moist and
hygrophanous, glabrous except for the remains of the pallid veil along the margin or with scattered particles over the marginal area, glabrescent, "ochraceous-tawny" (yellowish fulvous) when young and moist, dull reddish cinnamon when mature, fading to pallid alutaceous. Context thin and fragile, concolorous with surface when moist or faded, odor not distinctive, taste not recorded.

Lamellae pallid then brownish and near "wood brown" (gray-brown) when spores are mature, broadly adnate, close becoming subdistant, edges even.

Stipe 2–3 cm long, 1.5–2.5 mm thick, equal, fragile, faintly fibrillose from the veil but glabrescent, white to pallid but becoming honey-color at the base.

Spores 7–9(–10) × 3.8–4.5(–5) μ, smooth, apical pore present but spore apex not truncate, shape in face view oblong to elliptic, varying to ovate in longer individuals, in profile obscurely inequilateral varying to somewhat bean-shaped to narrowly ovate, color revived in KOH bright cocoa-color, becoming chocolate color slowly, in Melzer's ochraceous-tawny to tawny, wall about 0.3 μ thick.

Basidia 4-spored, 26–32 × 8–10 μ, hyaline in KOH or slightly cinnamon at base of pedicel revived in KOH. Pleurocystidia 40–60 × 9–14 μ, fusoid-ventricose, wall thin, smooth and hyaline, cell content not distinctive, apex subacute to obtuse, a fair number of cystidia with 2 protrusions (rabbit ears) to form a double apex. Cheilocystidia clavate to saccate 18–28 × 9–15 μ, hyaline or hyaline with yellowish base (revived in KOH). Caulocystidia—no significant ones found on revived portions of the type.

Gill trama of inflated cells, regular, the walls cinnamon as revived in KOH and with some pigment deposits. Pileus trama with hyphae of subcuticular zone rusty cinnamon in KOH and very conspicuously inerusted with cinnamon pigment; pileus cuticle a palisade of clavate-pedicellate upright cells with cinnamon walls varying to yellowish (revived in KOH). Clamp connections present.


Observations. The conspicuously inerusted subcuticular hyphae, the colored pedicels of the basidia, and the well-formed palisade layer forming the cuticle of the pileus are distinctive.

389. Psathyrella seymourensis A. H. Smith, sp. nov.

Pileus 7–15 mm latus, convexus, ad marginem tenuiter fibrillosus, glabrescens, fulvus; lamellae latae, subdecurrentes, brunneolae demum purpureo-brunneae; stipes 1–2 cm longus, circa 1 mm crassus, pallidus demum brunneolus, sparse fibrillosus; velum parvum; sporae 7.5–9 × 4–4.5(–5) μ; pleurocystidia 32–46 × 8–12 μ, acute fusoido-ventricosa (cum collis prae-elongatis); fibulae adsunt. Typus. Smith 18931 (MICH); legit prope Milford, Michigan.

Illust. Text Figs. 846–848.

Pileus 7–15 mm broad, convex becoming broadly convex, at first with scattered fibrils along the margin from the remains of the almost rudimentary veil, soon entirely glabrous, faintly striate when moist, hygrophanous, tawny ("ochraceous-tawny") fading to pale tan ("cinnamon-buff"). Context very thin, pallid brownish moist, pale tan faded, odor and taste not distinctive.

Lamellae broad, arcuate-subdecurrent or merely broadly adnate, not seceding, subdistant, 1–2 tiers of lamellulae, pallid brownish becoming dark purplish brown, the edges faintly whitish.

Stipe slender, 1–2 cm long, about 1 mm thick, pallid to dull brown, becoming
slightly darker in age, very fragile, glabrous or with a few loose fibrils as the remains of the thin veil.

Spores 7.5–9 × 4.5–5 µ, smooth, apical pore small but distinct and apex scarcely truncate, shape in face view elliptic to ovate, in profile obscurely inequilateral, color in KOH dull bistre becoming fuscous then chocolate-brown, in Melzer’s reddish tawny, wall about 0.4 µ thick.

Basidia 4-spored, 15–20 × 7–10 µ, short and broadly clavate, hyaline in KOH. Pleurocystidia scattered, 32–46 × 8–12 µ, fusoid-ventricose with acute to subacute apex, neck often elongated to a flexuous obtuse proliferation, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia either similar to pleurocystidia or clavate and 18–32 × 7–12 µ.

Gill trama regular, of more or less interwoven hyphae with enlarged cells having cocoa-colored walls as revived in KOH, walls smooth to minutely incrusted; subhymenium cellular, the cells with pale cinnamon to hyaline walls. Pileus trama of broad interwoven hyphae yellowish brown to cinnamon in KOH and with walls minutely incrusted, the cross walls often dark cinnamon; cuticle of vesiculose cells about 2 deep and with smooth walls yellowish to cinnamon as revived in KOH. Clamps present.

Habit, habitat and distribution. Solitary to scattered or gregarious in small groups, on sandy waste land near scrub oak, after heavy rains late in the fall, Oakland and Livingston Counties in Michigan. The type was collected at the edge of a pine plantation on the former property of the Seymour Club (now the Proud Lake Recreation Area) in Oakland County.

Observations. The species is easily overlooked because of its small size and the habitat (which is unusual for a Psathyrella). None of the specimens observed showed any tendency toward reddish tints when fresh or faded. The broadly adnate gills remind one of the gill attachment in species of Psilocybe (Deconica), as does the dull brown stipe at maturity or in age. Good collections were made near Oak Grove, Michigan in October 1971 as the present work was being set up in type (Smith 81044, 81045, 81046). A description of this material is given in Appendix I.

390. Psathyrella fulvoumbrina A. H. Smith, sp. nov.

Pileus 1–3 cm latus, late convexus, glaber vel ad marginem tenuiter floccosus, sordide cinnamomeus; lamellae confluentes, latae, brunneo-albus demum purpureo-brunneae; stipes 1.5–3(–4) cm longus, 3–5 mm crassus, pallidus demum brunneo-albus, sparse fibrillosus, glabrescentes; sporae 7–8.5 × 4.5–5 µ; pleurocystidia 32–47 × 9–14 µ; versiformia; fibulæ adsunt. Typus. Trueblood 3167 (MICH); Boulder Creek, Owyhee County, Idaho.

Pileus 1–3 cm broad, obtuse to convex and with an incurved margin when young, expanding to broadly convex or nearly plane and some with a slight umbo, glabrous except for patches of the fibrillose thin veil along the margin at first (not appendiculate), color dingy cinnamon-brown but when dried dark grayish brown (umbrinous), striatulate when moist. Context concolorous with surface when moist, paler brownish faded.

Lamellae close, broad, adnate, dull tan becoming dark purplish brown when mature and dark vinaceous-brown as dried, edges even and concolorous with faces in age, pallid at first.

Stipe short, 1.5–3(–4) cm long, 3–5 mm wide, straight to flexuous, white at
first, dingy brownish in age or as dried, thinly fibrillose from remains of the pallid veil, apex scarcely pruinose.

Spores 7–8.5 × 4.5–5 μ, smooth, apical pore distinct but apex only obscurely truncate, shape in face view ovate to elliptic, in profile subelliptic to obscurely bean-shaped or obscurely inequilateral, color in KOH chocolate-brown becoming dark chocolate, dark reddish tawny in Melzer’s, wall about 0.3 μ thick.

Basidia 4-spored, clavate, 18–24 × 7–9 μ. Pleurocystidia scattered, 32–47 × 9–14 μ, ventricose with a neck narrowed to 4–4.5 μ but ending in a capitellum 5–6.5 μ wide, or cystidium varying to broadly and obtusely fusoid and 40–50 × 13–16 μ, some merely fusoid-ventricose with narrow neck and obtuse apex, all thin-walled, smooth, and hyaline. Cheilocystidia mostly clavate-pedicellate and 9–14 μ wide, hyaline to dingy pale ochraceous.

Gill trama at first with hypha walls fuscous-brown in KOH but soon fading to dull cinnamon, smooth or nearly so. Pileus cuticle a palisade of clavate-pedicellate cells and vesiculose ones intermingled, or irregularly 2–3 cells deep but still basically a palisade, walls smooth, brownish to hyaline in KOH, thin. Hyphae of the subcortical region dark, almost fuscous-brown in KOH but soon fading to dull sepia or warm sepia (dull dark cinnamon), walls roughened but becoming smoother on standing. Clamp connections present.

Type locality. South Fork, Boulder Creek, Owyhee County, Idaho.

Habit and habitat. Gregarious under aspen and fir, June.

Distribution. Idaho.

Observations. The dried specimens resemble in color those of P. umbrinescens. The pigmentation as seen revived in KOH at first resembles that of P. barlæ but this stage is of short duration and a rusty brown tone is soon evident. The nine-pin-shaped pleurocystidia are distinctive but at the same time the overall picture is one of wide variation in cystidial shape.

391. Psathyrella fuscospora A. H. Smith, sp. nov.

Pileus 1–3 cm latus, late convexus, glaber, castaneus; contextu bruneolus; lamellae latae, confertae, bruneolae, demum fusco-brunneae; stipes 3–5 cm longus, 1–2.5 mm crassus, albus, deorsum brunneus; velum sparsum, pallidum; sporae 7.5–9 × 4.5–5 μ; pleurocystidia 38–52 × 9–15 μ, obtuse fusideo-ventricosa; fibulae adsunt. Typus. Smith 64951 (MICH); legit prope Payette Lakes, Idaho.

Illustr. Text Figs. 849–853.

Pileus 1–3 cm broad, obtuse-conic to convex, glabrous except for a few fibrils along the margin, chestnut-brown to cinnamon-brown when moist, fading to dull tan and then somewhat wrinkled. Context brownish, fragile, odor and taste not distinctive.

Lamellae close, broad, adnate, seceding, dull brown at first, fuscous-brown in age and edges concolorous with faces.

Stipe 3–5 cm long, 1–2.5 mm thick, equal, fragile, whitish above, dark brownish below; veil pallid, thin and fibrillose.

Spores 7.5–9 × 4.5–5 μ, smooth, apical pore evident, shape in face view elliptic to ovate, in profile subovate to obscurely inequilateral (in mounts from the gills a fair number of elongated spores also present), color in KOH dark chocolate-color, in Melzer’s tawny reddish, wall about 0.3 μ thick.

Basidia 4-spored, 18–25 × 7–9 μ, hyaline, subclavate. Pleurocystidia 38–52 × 9–15 μ, fusoid-ventricose with obtuse apex, smooth, thin-walled, hyaline or in KOH some with a weakly purplish brown homogeneous cell sap. Cheilocystidia
28–37 × 9–12 μ, fusoid-ventricose with obtuse apex, hyaline, smooth, thin-walled. Caulocystidia scattered to rare, vesiculose to clavate, 9–15 μ broad, thin-walled but wall yellowish in KOH in some.

Pileus cuticle a layer of vesiculose cells 2–4 deep, the walls thin but brownish in KOH, walls smooth. Subcuticular region of hyphae vinaceous-brown in KOH and with roughened walls. Clamps present. No distinctive reactions in Melzer’s.

Type locality. Payette Lakes, Valley County, Idaho.

Habit and habitat. Gregarious on soil along a road.

Distribution. Idaho.

Observations. The dark colors, reflected also in the color of the walls of the cuticular hyphae, the stature of P. obtusata, and the darkening stipe are the most significant features. On the whole it is a very ordinary appearing Psathyrella.

Material examined. Idaho: Smith 64951 (Type).

392. Psathyrella limicola (Peck) A. H. Smith, comb. nov.

Psilocybe limicola (Pk.) Saccardo, Sylloge Fung. 5: 1054. 1887.

var. limicola

Illust. Text Figs. 836, 837, 839.

Pileus 1–2.5 cm broad, convex becoming nearly plane, surface glabrous, hygrophanous, dark brown and striatulate on the margin when moist, pale ochraceous-brown and rugose when dry. Context thin and fragile.

Lamellae crowded, rounded next to the stipe and adnexed, cinnamon-brown, darker when old.

Stipe 3–8 cm long, 1.5–3 mm thick, slender, equal, brittle, silky, hollow, stuffed in the lower portion, whitish.

Spores 8–10.5 × 4.5–5 μ, smooth, apical pore present and apex truncate under low-power oil immersion, shape in face view elliptic to slightly ovate, in profile elliptic to obscurely inequilateral, color in KOH date brown slowly darkening to chocolate-brown or darker date brown, in Melzer’s reddish tawny, wall about 0.5 μ thick.

Basidia 4-spored, 18–22 × 8–10 μ, subellipsoid, hyaline in KOH. Pleurocystidia 38–54 × 10–15 μ, fusoid-ventricose with obtuse apex, wall thin, smooth and hyaline, cell content not distinctive in KOH or Melzer’s. Cheilocystidia similar to the pleurocystidia but not as long. Caulocystidia not distinctive, the only ones seen were merely clavate end cells of hyphae and these 9–14 μ wide.

Cuticle of pileus of vesiculose cells 1–2 cells deep, their walls hyaline to yellowish in KOH, thin and smooth, cell content not distinctive. Clamps present.

Type locality. Greig, New York.

Habit and habitat. Gregarious to cespitose on wet muck soil in woods.


Observations. The pale color of the pileus, generally cinnamon brown lamellae, whitish stipe, medium-sized spores, habitat, and lack of distinctive caulocystidia characterize this species.

392a. Psathyrella limicola var. subpectinata A. H. Smith, var. nov.

Pileus 1.5–3 cm latus, late conicus vel convexus, glaber, cinnamomeo-brunneus, ad marginem demum sulcatus; lamellae late, confertae, brunneolae demum fulvo-brunneae; stipes 1–2.5 cm longus, 1–2 mm crassus, pallidus, sparse fibrillosus glabrescens; sporae 7–9(–10) × 4–4.5 μ; pleurocystidia 34–46 × 9–13 μ, obtuse fusoido-ventricosa; fibulae adsunt. Typus. Smith 34407 (MICH); legit prope French Creek, Medicine Bow National Forest, Wyoming.

Pileus 1.5–3 cm broad, obtuse to convex and expanding to broadly conic to convex, surface moist and glabrous, near cinnamon-brown moist, hygrophanous and fading to near pinkish buff, margin faintly translucent striate moist, becoming sulcate in mature caps on the margin in drying. Context thin, fragile, odor of mushrooms (Agaricus campestris) and taste similar to that species.

Lamellae adnate-seceding, broad, close, pallid brownish at first, at maturity cinnamon-brown.

Stipe short, 1–2.5 cm long, about 1–2 mm thick, equal, whitish, not discolored appreciably in aging, faintly fibrillose at first but soon glabrous, apex faintly fibrillose-pruinose.

Spores 7–9(–10) × 4–4.5 μ, smooth, apex with an inconspicuous pore and the contour of the apex not flattened, shape in face view elliptic varying to ovate or oblong, in profile obscurely inequilateral varying to subelliptic or slightly bean-shaped, a few abnormal spores with a snoutlike apical protrusion and having a distinct pore at the apex, color in KOH bister to dull cocoa-color slowly becoming chocolate-brown to fuscous, in Melzer’s tawny, wall about 0.3 μ thick.

Basidia 4-spored, 13–16 × 8–9 μ, ellipsoid, hyaline. Pleurocystidia scattered, 34–46 × 9–13 μ, fusoid-ventricose, apex obtuse, wall with granules adhering near apex at first but soon smooth (KOH mounts), thin, hyaline, cell content not distinctive. Cheilocystidia similar to pleurocystidia or clavate to hyaline, 8–12 μ wide. Caulocystidia scattered or in groups similar to the cheilocystidia (all types present).

Gill trama dingy ochraceous in KOH fading to hyaline, cells of hyphae greatly inflated. Pileus trama rusty brown in KOH but fading and on mature caps color usually weak. Cuticle of pileus a layer of inflated cells about 1 cell deep, their walls hyaline to ochraceous and smooth. Clamp connections present.

Type locality. Lower French Creek, Medicine Bow National Forest, Wyoming.

Habit and habitat. Gregarious on wet soil along stream.

Distribution. Wyoming.

Observations. This variety has slightly smaller spores than the type variety and the apex is not truncate under equivalent magnification.

393. Psathyrella warrenensis A. H. Smith, sp. nov.

Pileus 1–4 cm latus, convexus, glaber, castaneus; lamellae late, demum subdistantes, pallidae demum brunneolae dein violaceo-fuscae; stipes 4–6 cm longus, 2–3.5 mm crassus, pallidus, deorsum brunneus, glaber; velum nullum; sporae 8–10 × 4–5 μ; pleurocystidia 36–47(–55) × 8–12(–14) μ, anguste fusoido ventricosa; fibulae adsunt. Typus. Smith 70162 (MICH); legit prope Warren, Idaho.

Illust. Text Figs. 842–845.

Pileus 1–4 cm broad, obtuse to convex becoming plane, margin straight and lacking veil remnants, surface glabrous, moist, hygrophanous, rich chestnut-
brown, moist, fading to reddish tawny over the disc and duller over the margin, atomate when faded. Context exceedingly thin and fragile, odor and taste not distinctive, with FeSO₄ no color change.

Lamellae broad, close to subdistant, adnate, pallid, brownish becoming “benzo brown” (violaceous fuscous), edges even.

Stipe 4–6 cm long, 2–3.5 mm thick, equal, fragile, pallid and dull but brownish only at the base, naked to only faintly pruinose at apex, veil none.

Spores 8–10×4–5 μm, smooth, apical pore distinct and spore apex often truncate, shape in face view elliptic to ovate, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH dark chocolate-color immediately upon being mounted, in Melzer’s bay-brown (very dark reddish brown), wall about 0.3 μm thick.

Basidia 4-spored, 15–20×6–8 μm; short-clavate. Brachybasidioles up to 12 μm wide present at maturity. Pleurocystidia 36–47 (−55)×8–12 (−14) μm, narrowly subfusoid to fusoid-ventricose, apex obtuse to subacute, wall thin, smooth and hyaline, content not distinctive in KOH or Melzer’s. Cheilocystidia 32–44×9–12 μm, similar to pleurocystidia but shorter and hence appearing more broadly fusoid-ventricose. Caulocystidia mostly as terminal cells of a chain of inflated cells, the latter being 10–18 μm wide, end cells vesiculose, clavate to fusoid-ventricose, hyaline smooth, thin-walled, content not distinctive.

Pileus cuticle a layer of inflated cells 1–2 deep, the walls hyaline to pale ochraceous-cinnamon as revived in KOH, content of cell not distinctive, walls thin and smooth. Context (including subcortical region) of hyphae vinaceous-cinnamon in KOH and typically with roughened walls. No distinctive reaction on any tissue as revived in Melzer’s. Clamps present.

Type locality. Warren, Idaho.

Habit and habitat. Gregarious on grassy soil.

Distribution. Idaho.

Observations. This is a very commonplace terrestrial species in which by maturity the basidioles inflate considerably. The pleurocystidia are characteristically narrow, and the rich chestnut color of the moist pileus is reflected in the pigmentation of the pilear trama as revived in KOH. The caulocystidia are its most unusual feature—as cells terminating a chain of inflated cells.

394. Psathyrella griseopallida Thiers & A. H. Smith, sp. nov.

Pileus 1–3 cm latus, late convexus, argilleus demum triste griseus dein pallidus; lamellae lateae, pallidae demum fuscæ, confertæ; stipes 2–3 cm longus, 2–4 mm crassus, albus, pruinosis; velum nullum; sporæ 8–10×4–5 μm; pleurocystidia 42–56×10–17 μm, obtuse vel subacutæ fusoidæ-ventricosa; fibulae adsunt. Typus. Thiers 25079 (MICH); legit prope Lake Henshaw, San Diego County, California.

Pileus 1–3 cm broad, convex becoming broadly convex, glabrous moist and hygrophanous, clay color before becoming drab-gray from maturing spores, fading to pallid, cinereous to darker (or if young pallid) on drying, becoming sulcate striate, margin entire and naked. Context thin and fragile (1–2 mm in disc), taste and odor mild.

Lamellae broadly adnate to adnexed, close to subdistant, narrow to moderately broad, pallid becoming pale fuscous, drying a fuscous-gray, edges even.

Stipe 2–3 cm long, 2–4 mm thick, equal, white, unchanging, fragile, dry, naked, pruinose above at first; no veil evident.
Spores 8–10 × 4–5 μ, smooth, apical pore present but apex not truncate, shape in face view elliptic to ovate, in profile obscurely inequilateral to obscurely bean-shaped, color in KOH chocolate-brown becoming dark chocolate-color but finally fuscous-gray, in Melzer’s reddish tawny, wall about 0.3 μ thick.


Pileus trama pale vinaceous-brown to pallid (finally), walls of hyphae smooth or nearly so. Cuticle of pileus a layer of vesiculose cells 2–3 deep, cells thin-walled, hyaline and smooth (in KOH). Clamps present.

Type locality. Near Lake Henshaw, San Diego County, California.

Habit and habitat. Gregarious on sandy soil near an oak log, March.


Observations. This species is close to *P. psammophila* in some respects but looks quite different dried and the spores are larger. The pleurocystidia vary from rounded to obtuse at first but are nearly all merely obtuse when mature.

395. *Psathyrella pseudocoronata* A. H. Smith, sp. nov.

Pileus 1–3 cm latus, late conicus, mellius vel subspadiceus, dein pallidus glaber; lamellae confertae, latae, pallidae, demum violaceo-fuscae; stipes 3–4 cm longus; 2–2.5 mm crassus, albidus, dissiliens, glaber; velum nullum; sporeae 7–9 × 4–4.5 μ; pleurocystidia 36–58 × 10–18 μ, obtuse fusoido-ventricosa; fibulae adsunt. Typus. Smith 34822 (MICH); legit prope Laramie, Wyoming.

Pileus 1–3 cm broad, obtusely conic, glabrous, naked, moist, hygrophanous, pale watery buckthorn brown (honey brown) to nearly avellaneous (when spores mature), fading to whitish, striate on margin; no veil present. Context thin, color of surface either moist or faded, odor not distinctive, taste not recorded.

Lamellae close, broad, ascending-adnate, pallid becoming dark brownish gray (near “benzo brown”), edges pallid.

Stipe 3–4 cm long, 2–2.5 mm thick at apex, equal, whitish, fragile and splitting lengthwise when collected if the base is broken, naked, veil none.

Spores 7–9 × 4–4.5 μ, smooth, apical pore indistinct and apex not truncate, shape in face view oblong to elliptic or narrowly ovate, in profile obscurely inequilateral to subelliptic, color in KOH dull cocoa-color but soon a medium dark chocolate-color, in Melzer’s reddish tawny, wall about 0.3 μ thick.

Basidia 4-spored, 20–26 × 6–9 μ, clavate, hyaline in KOH. Pleurocystidia abundant, 36–58 × 10–18 μ, fusoid-ventricose, neck tapered to an obtuse to subacute apex, wall thin, smooth and hyaline, content not distinctive in KOH or Melzer’s. Cheilocystidia similar to pleurocystidia or shorter and varying to broadly fusoid, wall thin and hyaline, occasionally with debris adhering, when fresh with a large globule in the interior (mounts in H₂O), as revived in KOH “empty” or a few with an amorphous highly refractive irregularly shaped inclusion.

Gill and pileus trama hyaline in KOH. Cuticle of pileus a layer of vesiculose to clavate cells one cell deep but not forming a true palisade. Clamp connections present.

Type locality. Pole Mountain, near Laramie, Wyoming.

Habit and habitat. Scattered on moist earth under aspen.
Distribution. Wyoming.
Observations. This fungus has the appearance of *P. incerta* or *P. coronata* in the field but possesses pleurocystidia and apparently a veil is lacking.


Outer veil powdery, the cells mostly in the form of sphaerocysts which are soon worn away leaving a more or less glabrous pileus.

Type. *Psathyrella kellermanii* (Peck) Singer.

**Key to the Species of Subgenus Cystopsathyra**

1. On soil (in green houses); spores 8-12 × 6-7 μ.
   1. Not as above.
      2. On horse dung. 396. *P. sphaerocystis*.
      2. On hardwood logs.


Illust. Text Figs. 857–861.

Pileus 6–15 mm broad, obtuse when young, expanding to broadly conic or convex, surface dry and granulose-squamulose, in age nearly glabrous, margin fringed at first, color “wood brown” to “avellaneous” and developing a cinnamon-buff tone, when dried “cinnamon.” Context very thin and fragile, buff-colored, taste disagreeable, odor none.

Lamellae broad, subdistant, broadly adnate, dull cinnamon-buff becoming “hair brown” (brownish gray), edges even.

Stipe 2–3.5 (–4) cm long, up to 1 mm thick, more or less glabrescent in age, pallid above, lower part dingy cinnamon-buff.

Spores 7–9 × 4.5–5.5 μ, smooth, pore apical and distinct, the apex truncate, shape in face view broadly ovate to elliptic, in profile obscurely inequilateral varying to subelliptic, color in KOH dark coffee-brown becoming dark chocolate color, in Melzer’s bay-red to tawny-red, wall about 0.4 μ thick.

Basidia 4-spored, short-clavate, 15–22 × 8–9 μ, hyaline. Pleurocystidia 26–38 × 8–12 (–13) μ, fusoid-ventricose, apex subacute to obtuse, wall thin, smooth and hyaline, cell content not distinctive. Cheilocystidia similar to the pleurocystidia or neck almost lacking.

Gill trama vinaceous-cinnamon in KOH, fading on standing. Pileus trama dark vinaceous-cinnamon and hyphae incrusted. Cuticle of pileus of vesiculose cells yellowish in H₂O and cinnamon to vinaceous-cinnamon in KOH, with pigment deposits in the angles. Clamps present.

Type locality. Scotland.

Habit and habitat. On horse dung, September.

Distribution. Idaho.

Observations. This species is truly a granulose *Psathyrella*, and its veil represents the endpoint of cell disarticulation as this occurs in the genus.


Illust. Peck, 1. c., pl. 89.

Pileus 2–3 cm broad, obtuse expanding to plano-umbonate or nearly plane,
in age the margin uplifted in some, at first covered with more or less granulose patches of outer veil material but these soon disappearing, margin appendiculate at first, surface moist and hygrophanous, striatulate nearly to the disc when moist, watery brown moist, fading to grayish brown. Context very thin and fragile, taste slight, odor faint (of decaying wood).

Lamellae thin, close, adnate, a delicate cinnamon-brown becoming darker in age.

Stipe 2.5–4 cm long, 1–2 mm thick, slender, equal or slightly tapering upward, finely striate, minutely scurfy or mealy at least when young, hollow, white.

Spores 8–12 × 6–7 µ (Peck), “8.5–9.3 (–11.5) × 4.7–6 (–6.5) µ (Singer), ellipsoid, rarely somewhat reniform, smooth, brown when seen on lamellae with binocular, brownish hyaline under oil immersion, without metachromatic (pink) endospore in cresyl-blue mounts, pseudoamyloid except for the pore region (but weakly so), with a non-truncate very narrow apical pore which is particularly distinct in the Melzer solution, without suprahilar depression, with homogeneous epi- and endospore.

“Hymenium: Basidia not studied. Cystidia on sides and edges of lamellae equally numerous, 28–40 × 11.5–14.3 µ, vesiculose-elongate ventricose, sometimes with a constriction underneath the apex, always broadly rounded.

“Hyphae: all with clamp connections; hymenophoral trama apparently regular; all hyphae inamyloid.

Covering layer of pileus: Epicutis of the Psathyrella type, cellular, with somewhat compressed subsidiodiametric elements. Stipe with a surface layer consisting of spherocysts (an epithelium)” (quoted material from Singer, 1959).

Type locality. Columbus, Ohio.

Habit and habitat. Gregarious or subcespitose on the ground in a greenhouse, August.

Distribution. Known only from type locality.

Observations. I have seen no material fresh.


This subgenus is a continuation, in a sense, of sect. Psathyrella except for the Conocybe-like cheilocystidia. If an origin of the Coprinaceae from the Bolbitiaceae is accepted, then this group (which includes only the type species) is possibly a primitive Psathyrella. No matter how one visualizes the phylogeny, the type species is certainly a good intermediate between the two families.

Type. Psathyrella michiganensis.


Illustr. Pl. 90a; Text Figs. 862–864.

Pileus 1–2.5 cm broad, obtusely conic and with the margin appressed against the stipe when young, remaining broadly conic or in age the margin flaring somewhat, surface moist, when young minutely pubescent from projecting hairs, soon glabrescent opaque when young and moist, only very faintly striate at maturity, color varying from sordid “tawny-olive” to “bister” or nearly black when the spores mature, sometimes the disc becoming “wood brown” and the margin “avelaneous,” hygrophanous, atomate when faded, fading to dingy ashy brownish or grayish white, margin regular and not sulcate or folded in age. Context very thin and fragile, odor none, taste very faintly of radish.

Lamellae ascending adnate, not readily seceding, moderately close (23–27
reach the stipe), moderately broad, color pale avellaneous when young, slowly becoming fuscous-brown, edges even.

Stipe 2–5 cm long, 1–1.5 mm thick, equal erect, strict and rigid, tubular, densely white pubescent (under a lens) at first, soon glabrous or with scattered fibrillose flecks, whitish above, base sordid brown, in age yellowish or sordid brown over all except the apex, base tinged reddish at times, occasionally longitudinally striate over the lower half.

Spores 8–10×5–6 μ, smooth, truncate from a hyaline apical pore, ellipsoid, dull fuscous in water mounts when fresh, blackish when revived in KOH under the microscope but fading.

Basidia 4-spored. Pleurocystidia absent. Cheilocystidia Conocybe-like, 18–23×10–14×3–4 μ, ventricose in midportion, with abrupt narrow neck terminating in a capitellum. Cuticle of pileus a palisade of pyriform cells measuring 18–50×10–30 μ, slender hyaline hyphae with thin walls project from between the cells of this layer to cause the pubescent appearance of the young pileus.

Type locality. Milford, Michigan.

Habit and habitat. Gregarious on sawdust in a shaded area, September.


Observations. The pigment in the spores is apparently somewhat unstable since, in revived material, at present the spores are by no means as dark as when the original description was written. In fact they now appear to be “off-color Conocybe spores.”


EXCLUDED SPECIES

Since the present work is not intended as a monograph of the genus for the area designated, only certain species which I have been able to study and which are clearly not recognizable or which clearly belong to some other genus are included here.


No spores were located in the portion of the type studied. Pleurocystidia were absent, and the cheilocystidia were 28–30×9–16 μ, clavate to saccate and pale yellow to pale cinnamon in KOH. My examination of the type material causes me to suspect the species as being represented by sterile to partly sterile (possibly) specimens. The “innate-squamulose” pileus, non-appendiculate pileus margin and lack of pleurocystidia are a combination of features which does not allow it to be placed in any of the infrageneric taxa recognized here.


When a description of this species (as a Psathyrella) was submitted to me, I was forced to admit it was a species not in my key or ms. Later, on seeing the type, I recognized it at once as belonging in the A. pediades group of Agrocybe! Dr. Roy Watling of the Royal Botanic Garden of Edinburgh, Scotland, is engaged in preparing a world monograph of Agrocybe and related genera.
LITERATURE CITED


Longman, Rees, Orme, Brown, Green & Longman. 5 v.


APPENDIX I

After the manuscript for this work was submitted for publication, a number of additional undescribed species were discovered by various collectors because of exceptionally favorable local collecting conditions during 1971. These species along with some previously considered but not included are grouped here along with accounts of newly discovered variants of species already in the main body of the text. The species are all keyed out in their proper sections in the keys in the body of the text, and the taxa in this appendix are arranged in alphabetical order. Two previously described species accidentally omitted from the body of the text are also included here.

399. **Psathyrella atomatooides** (Peck) A. H. Smith, comb. nov.


_Psilocybe atomatooides_ (Peck) Saccardo, Sylloge Fung. 5: 1048. 1887.

_Pileus 1–2 cm broad, convex or subcampanulate, then expanded; rugose-wrinkled, subhygrophanous, sprinkled with minute shining particles and with tufts of white floccose fugacious veil, grayish or ochraceous-brown, sometimes with a pinkish tint; flesh cinereous._

_Lamellae rather broad, subventricose, rounded behind, cinereous then dark brown._

_Stipe equal, hollow, clothed when young with minute floccose scales, pruinose above, whitish._

_Spores 7.8–9.3 × 3.7–4.5 μ, smooth, germ pore apical and inconspicuous, shape in face view narrowly ellipsoid to subovoid, in profile somewhat inequilateral, color in KOH a medium chocolate brown._

_Basidia 12–16 × 6–7 μ, 4-spored. Basidioles clavate. Pleurocystidia 36–52 × 9–13 μ, fusoid-ventricose with acute to obtuse apex, nearly hyaline or some brownish as revived in KOH, thin-walled or some with walls up to 1 μ thick; apex in some encrusted with a dried exudate._
Gill and pileus trama not colored distinctly in KOH. Cuticle of pileus of the *Psathyrella*-type (but poorly revived).

Habit, habitat and distribution. “Ground and decaying wood under pine trees, West Albany, June and July” (Peck, 1. c.).

Observations. “In very wet weather the pileus has a dark watery appearance but it dries quickly. The spores in mass are almost black, nevertheless the plant is closely related to the fragile species of *Psilocybe*” (Peck, 1. c.).

It is clear to me from Peck’s comment that he meant to relate this species to *Psathyrella* species formerly grouped in *Psilocybe*, not those presently referred to that genus. Because some of the pleurocystidia are colored as revived in KOH, and some of the pleurocystidia tend toward having thickened walls, this species should be classified in *Homophron*, where, in addition, it appears to have natural affinities. However, more study of it as a species is desirable. It may be that a conifer substrate is a further distinction, as, apparently, is the blackish spore deposit.


*Agaricus battarae* Fries, Syst. Mycol. 1: 175. 1821.

Pileus 3–6 cm broad, broadly convex with an incurved margin, surface dry and conspicuously streaked with innate sepia to bister fibrillose squamules, margin appendiculate at first, ground color pale dingy yellow. Context pallid, odor and taste not distinctive.

Lamellae pallid to brownish becoming wood brown and drying rusty brown, close, narrow, adnate-seceding.

Stipe 4–6 cm long, 5–10 mm thick at apex, equal or nearly so, ground color white to pallid, surface overlaid with fibrils or patches of them similar to those of the pileus, pruinose above; annulus membranous, flaring, with dark scales on under side, not present on all basidiocarps.

Spores 6.5–8.5(-9) × 4–5 × 3.5–4.5 μ, apical pore small and often indistinct, shape in face view corn-kernel-shaped, in profile mostly obscurely bean-shaped, in KOH chocolate-gray on standing, a duller cinnamon at first, tawny in Melzer’s, wall less than 0.5 μ thick.

Basidia 4-spored. Pleurocystidia 38–56 × 13–17 × 10–19 μ (some broadest at the apex), utriform, thin-walled, incrustations soon dissolving in KOH, content brownish in KOH varying to hyaline. Cheilocystidia similar to pleurocystidia and more with brownish content as revived. Cuticle of pileus of appressed hyphae 3–8 μ wide (or wider if inflated), the content ochraceous tan in KOH for most. Beneath this superficial layer occurs a zone of inflated more or less hyaline cells (the typical cuticle of the genus); the hyphae of the pileus trama not distinctly colored in KOH. Clamp connections present.


Observations. The specimens described here remind one of *P. maculata* in the intensity of the color of the fibrils, but the spores distinguish them at once. The annulus varies from well-formed and conspicuous to absent, depending on how the veil breaks. The use of the epithet *battarae* for the material described here is very tentative. I am not sure as of this writing that either it or the epithet
aculeata Quélet apply to the material described. Also, exannulate basidiocarps of the material described are rather similar to those of *P. propinqua*.

401. *Psathyrella depauperata* A. H. Smith, sp. nov.

Pileus 1–3 cm latus, obtuse conicus demum late conicus, pallide fibrillosofloccosus, glabrescens, fulvus, striatus, demum griseobrunneus; fragilis; lamellae pallidae demum griseobrunneae, conferta, latae, adnatae; stipes 1–3(–5) cm longus, 2–3.5 mm crassus, fragilis, griseolus demum brunneolus; sporae in cumulo purpureobrunneae, 7.5–9×4.5–5.5 μ; basidia tetraspora; pleurocystidia 38–52×13–18 μ, subutriformia; caulocystidia 50–75×10–18 μ, obtusata vel subacuta. Typus. Smith 80664 (MICH); legit Sharon Hollow, Michigan, 1 Oct., 1971; ad terram udam.

Pileus 1–3 cm broad, obtusely conic with a straight margin at first, becoming broadly conic or margin finally recurved, at first with pallid fibrillose flecks near the margin but soon entirely glabrous, dull tawny when young and moist, striate and grayish chocolate color when spores have matured; context thin and very fragile, odor not distinctive.

Lamellae pallid, becoming hair-brown (gray-brown), close, broad, adnate, thin, edges even, in some caps badly contorted (diseased?).

Stipe 1–3(–5) cm long, 2–3.5 mm thick, equal, fragile, grayish to pallid, brownish in age, naked or nearly so at maturity, base slightly strigose and watersoaked (when fresh).

Spore deposit dark purple brown. Spores 7.5–9×4.5–5.5 μ, smooth, with a hyaline apical spot but mostly not truncate; shape in face view elliptic or nearly so, in profile slightly bean-shaped to subelliptic, color in KOH soon dark grayish chocolate-color, tawny red in Melzer’s.

Basidia 4-spored, clavate, 9–12 μ wide. Basidioles clavate. Pleurocystidia scattered, 38–52×13–18 μ, subutriform to fusoid-ventricose with rounded apex, thin-walled, hyaline, content not distinctive in KOH or Melzer’s. Cheilocystidia similar to pleurocystidia or smaller. Caulocystidia in patches, 50–75×10–18 μ, apex obtuse to rounded varying to subacute, fusoid-ventricose, thin-walled, some bifurcate near apex.

Pileus cuticle a layer 1–2 cells deep as a staggered palisade, the walls thin and not distinctively colored. Subcutis and adjacent trama strongly vinaceous-brown (revived in KOH) from incrusting pigments. Clamp connections present.

Habit, habitat and distribution. Scattered on muck in an ash (*Fraxinus*) swamp, Sharon Hollow, Washtenaw County, Michigan, October 1, 1971 Smith 80664.

Observations. Some basidiocarps in the area were apparently diseased as was indicated by the malformed strongly intervenose lamellae. The distinguishing features of the species are the conspicuous pigment deposits near the cuticle of the pileus typically dark vinaceous brown soon after mounting dried material in KOH, the large caulocystidia, habitat, and a veil development intermediate between that of subgenus *Psathyrella* and subg. *Pannucia*.


*Drosophila floridana* Murrill, Mycologia 33: 445. 1941

Pileus 1–1.5 cm broad, hemispheric to broadly convex, not fully expanding, not umbonate, hygrophanous, smooth, tomentulose, not viscid, uniformly fulvous;
margin conspicuously appendiculate with a white fringe; context thick, white, unchanging, taste sweet and nutty.

Lamellae broadly adnate with a slight notch, several times inserted, medium close, quite broad, the edges densely fringed with cheilocystidia.

Stipe about 2 cm long, 2–4 mm thick, equal or subequal, smooth, glabrous, white above, floccose and yellowish below, fistulose, pallid within.

Spores 7–7.5 × 4–4.5 μ, smooth, germ pore apical but inconspicuous under oil, cocoa-brown in KOH, slowly darker, bright fulvous in Melzer's; ellipsoid to slightly ovoid.

Basidia 4-spored, 8–9 μ broad. Pleurocystidia none. Cheilocystidia scattered, 22–34 × 9–13 μ, fusoid-ventricose with scarcely any neck and an obtuse to subacute apex, smooth, thin-walled, content not distinctive in KOH or Melzer's, clavate to subvesiculose cells also present.

Cuticle of pileus a layer of vesiculose cells 2–5 deep with a fair number disarticulating in KOH mounts (sphaerocyst-like), walls thin and yellowish to hyaline. Subcutis of cocoa-brown hyphae in KOH and some incrustations present.

Context of interwoven hyaline hyphae with inflated cells. Clamps present.

Habit, habitat and distribution. The specimen studied was sent me by W. A. Murrill and labeled from the type locality, but no date was given. In the original description it was described as growing on bare ground in Gainesville, Fla., May 31, 1938 (F-16227).

Observations. On the basis of the original description and the specimen studied this species appears to be in the Candolleanae of this work in all features except that of the disarticulation of some of the cuticular elements. Because of this feature the species is tentatively placed in Cystopsathyra.

403. Psathyrella grasmerensis Trueblood & A. H. Smith, sp. nov.

Pileus 3–4.5 cm latus, plano-umbonatus, pallide fulvus, usus, striatus, ad marginem tenuiter fibrillosus, glabrescens, fragilis; lamellae adnatae, distantes, latae, pallide brunneae demum rufus-fuscae; stipes 7–8.5 cm longus, 3–5 mm crassus, albidus, nitens; sporae 8–10 × 4.5–5.5 μ; pleurocystidia 35–60 × 12–20 (–30) μ, obtusata, intus ad apicem cum granis hyalinibus. Typus. E. Trueblood 3543 (MICH); legit prope Grasmer, Owyhee County, Idaho, 21 Mai, 1970. ad terram.

Pileus 3–4.5 cm wide when expanded, plane with a low umbo, when moist striate from umbo to the margin, tan or darker when moist, pale tan when dried, margin decorated with a coating of veil fibrils, becoming glabrous. Context very thin, odor and taste not distinctive.

Lamellae adnate, distant, broad, rarely forked, pale brownish becoming reddish fuscous, as dried chocolate color.

Stipe 7–8.5 cm long, 3–5 mm thick, straight to flexuous, shining white, silky, dingy buff as dried.

Spores 8–10 × 4.5–5.5 μ, smooth, with a broad hyaline lens-shaped pore (but apex not truncate), oblong to elliptic in face view, in profile oblong to subelliptic, color as revived in KOH dark chocolate-color very soon, wall about 0.3 μ thick.

Basidia 4-spored. Brachybasidioles not differentiated. Pleurocystidia 35–60 × 12–20 (–30) μ, broadly ventricose and mostly with a short neck arising abruptly from the ventricose portion (rostrate), the neck (or necks, since some branch into 2 or 3 projections) 5–7 μ wide, the apex obtuse and refractive granules usually
present in the apex; wall smooth, thin and slightly refractive in some; hyaline in KOH. Cheilocystidia similar to pleurocystidia or less rostrate (or merely clavate). Cuticle of pileus a layer of vesiculose cells several deep, with ochraceous-hyaline thin walls. Trama vinaceous cinnamon in KOH but soon fading. Clamps present.

Habit, habitat and distribution. Collected on soil in a grassy area at a rest station, south of Grasmere, Highway 51, Owyhee county, Idaho. It was near a creek with sagebrush nearby; E. Trueblood 3543.

Observations. This species is distinct by its desert habitat, the very broadly ventricose pleurocystidia with refractive granules in the neck near the apical region as revived in KOH, and distant gills. It is approximately like *P. candolleana* in stature.

(See) 394. *Psathyrella griseopallida*, Trueblood 4505

Pileus 2.5–4 cm broad, convex expanding to plane, surface glabrous, moist and hygrophanous, the usual dingy cinnamon brown moist and when faded pale dingy brownish but soon dusted black from spores; no evidence of a veil noted on the pileus. Context thin and fragile.

Lamellae at maturity broad, nearly subdistant, adnate, blackish to blackish brown, edges even.

Stipe 4–6 cm long, 2–4 mm thick, equal or at base slightly enlarged, hollow, fragile, white and drying whitish except where dusted with spores, very thinly fibrillose from a rudimentary veil; no evidence of discoloration per se.

Spore deposit blackish. Spores 7–10 × 4–5 μ, smooth apical germ pore distinct, some spores appearing truncate, in face view ovate to elliptic, in profile obscurely bean-shaped to obscurely inequilateral, blackish brown in KOH.

Basidia 4-spored. Pleurocystidia 30–54 × 10–15 μ, fusoid-ventricose (rarely clavate), apex obtuse varying toward subacute, thin-walled, smooth, with some internal refractive granules in neck in many. Cheilocystidia mostly of small clavate to vesiculose pedicellate cells with ochraceous walls in KOH, others present resembling pleurocystidia but smaller.

Cuticle a layer of inflated cells 3–5 deep, walls weakly ochraceous in KOH. Hyphae of subcuticular region vinaceous brown as revived in KOH but not distinctly incrusted. Clamps present.

Habit, habitat and distribution. On soil in grass under aspen, Juniper Mountain, Owyhee County, Idaho, June 9, 1971, Trueblood 4505.

Observations. The type was from under oak in southern California, and the Trueblood collection was from under aspen, but both areas are semiarid and do not present features sufficiently divergent to justify taxonomic emphasis. The more frequently ovate spores in face view, their slightly darker color, and the presence of only a rudimentary veil are the distinctive features of this variant but do not seem too contrasting when compared to the type.

(See) 48a. *Psathyrella incerta* var. *pygmea* A. H. Smith, var. nov.

Pileus 1.5–3 (–4) cm latus, obtuse conicus, ad marginem appendiculatus, floccoso fibrillosus, glabrescens, pallide melleus deinde pallidus vel ad centrum ochroleucus; fragilis; lamellae pallidae demum griseo-lilaceae, confertae angustae, adnatae, secedentes; stipes 2–5 cm longus, 1.5–2.5 mm crassus, fragilissimus, albus, albofibrillosus, glabrescens; sporiae (4–5.5 × 3–3.5) 7–8 × 4–4.5 (8–9 × 4–5) μ; basidia tetraspora. Pleurocystidia nulla. Cheilocystidia 28–42 × 10–15 μ, clavata vel

Pileus 1.5–3(–4) cm broad, obtusely conic; with a straight and appendiculate margin, expanding to broadly conic campanulate or plane; surface at first covered with a thin coating of loose pallid fibrils (a thin outer veil), soon completely glabrous; pale honey-color moist, fading to pallid, white or lilac-white over marginal area and yellowish to pale buff over the disc. Context very thin and delicate but not markedly fragile for the genus.

Lamellae pallid becoming lilac toned but in age or when dried cocoa-brown close, narrow, adnate, seceding, edges even.

Stipe 2–5 cm long, 1.5–2.5 mm thick, slender and delicate, equal or slightly enlarged downward, not markedly fragile (for the group), white, not discoloring, faintly fibrillose becoming glabrous.

Spores 4–5.5 × 3–3.5 μ (rare), 7–8 × 4–4.5 μ (typical), 8–9 × 4–5 μ (uncommon), smooth, truncate (in all types) from a distinct apical pore; in face view elliptic to subovate, in profile obscurely inequilateral to subelliptic; color in KOH cocoa-color becoming a medium chocolate color, in Melzer's reddish tawny.

Basidia 4-spored, clavate. Basidioles not inflated. Pleurocystidia none, Cheilocystidia abundant, 28–42 × 10–15 μ, clavate, fusoid-ventricose with rounded apex, or utriform, thin-walled, smooth, hyaline in KOH. Caulocystidia not distinctive (merely relatively undifferentiated hyphal end cells). Clamp connections present.

Habit, habitat and distribution. Densely gregarious on muck and debris, Mud Lake Bog, Washtenaw County, Michigan, Oct. 3, 1971, (Smith 80694).

Observations. This variety appears to be genetically constant. I have seen it at intervals in our maple-elm swamps in southeastern Michigan, and do not regard it as a mere growth form. It has its own niche, time of fruiting (in the fall during periods following heavy rains preceded by a hot dry summer), and constantly slender stature. The extreme variability in spore size needs to be investigated further since no 1- or 2-spored basidia were observed.

404. Psathyrella lilaceogrisea A. H. Smith, sp. nov.

Pileus 4–7 cm latus, obtuse umbonatus, valde sulcato-rimosus, ad centrum plumbeus vel sordide brunneus, ad marginem lilaceo-plumbeus, glaber, fragilis; lamellae subdistantes, adnatae, angustae, lilaceo-griseae vel ad marginem rufo-brunneo; stipes 6–9 cm longus, 4–5 mm crassus, cavaus, rigidus, glaber, pallidus; velum sparsissimum; sporae 8–11 × 5–6 μ; pleurocystidia 50–65 × 14–22 μ, late ventricoso-pedicellata, ad apicerum late rotundata. Typus. Smith 81042 (MICH), ad terram, Ann Arbor, Michigan, 21 Oct., 1971.

Pileus 4–7 cm broad, plane with a slight broad umbo, radially sulcate-rimose nearly to disc, glabrous, lilac-gray with a lead-color to snuff brown umbo (becoming grayer in age), lubricous. Context thin but rigid and brittle, odor and taste not distinctive.

Lamellae subdistant, adnate, narrow, dingy pallid becoming lilac-grayish and typically at maturity or in age with dark brown margins (caused by adhering
spores), not undergoing autodigestion but in age pallid after spores have been discharged.

Stipe 6–9 cm long, 4–5 mm thick, equal, hollow, firm and rigid (for the genus), naked to the more or less pruinose apex, pallid over all (not darkening below); veil rudimentary.

Spores 8–11 × 5–6 μ, smooth, apex only obscurely or not at all truncate, in face view broadly elliptic to ovate to somewhat angular-ovate at times, in profile obscurely inequilateral to somewhat inequilateral, color near cocoa-brown at first, soon bister or darker revived in KOH.

Basidia 4-spored, projecting 2 different lengths when sporulating. Basidioles broadly clavate. Pleurocystidia 50–65 × 14–22 μ, ventricose-pedicellate with broadly rounded smooth apex, hyaline, thin-walled, smooth. Cheilocystidia not distinct in age (the gill edge somewhat gelatinous) in young pilei basidioles and a few cheilocystidia resembling pleurocystidia present, the cheilocystidia 37–72 × 15–29 μ, fusoid-ventricose to capitate.

Pileus cuticle a layer of greatly inflated more or less short cells hyaline in KOH and with no distinctive content. Clamps present but often difficult to demonstrate.

Habit, habitat and distribution. Solitary to scattered near edge of a road, Ann Arbor, Michigan, Oct. 21, 1971, Smith 81042.

Observations. This species is amply distinguished by the relatively firm stipe, radially splitting pileus as in many Coprini, the large broadly rounded pleurocystidia, and clavate basidioles. The very slight veil is a significant feature but not of great aid to the taxonomist. In mounts of chloral hydrate and water (2:1), the regions of the gill edge where gelatinization was taking place became purple after standing about a half hour.

This species indicates a distinct progression toward Coprinus in the manner in which the pileus splits, but lacks brachybasidioles in the hymenium and no true autodigestion takes place. Young basidiocarps might be mistaken for those of Coprinus insignis Peck.

405. Psathyrella nimkeae A. H. Smith, sp. nov.

Pileus 1–2.5 cm latus, obtusely conicus, demum late conicus, glaber, nitens, melleus demum melleo-griseus; fragilis; lamellae brunneolae, demum griseo-purpureo-brunneae; stipes 3–5 (–6) cm longus, 2–3 mm crassus, glaber, ad basin strigosus, subradicatus, albidus demum sordidus; sporae 12–15 × 6–6.5 μ; pleurocystidia 50–75 × 10–15 μ, fusoid ventricosa, valde pedicellata, subacuta. Typus. Nimke 158 (MICH); Ann Arbor, Michigan, 12 Oct. 1971, ad lignam.

Pileus 1–2.5 cm broad, obtusely conic becoming broadly conic, surface glabrous, naked, shining, when moist dark honey-color becoming paler and grayier before fading to whitish, not atomate, fading on disc first; no veil remnants present. Context thin, fragile, pallid, odorless.

Lamellae pallid brownish, becoming gray-brown, then toned distinctly grayish lilac, finally a dark dull purple brown, ascending-adnate, close, moderately broad, edges pallid.

Stipe 3–5 (–6) cm long, 2–3 mm thick, nearly equal, more or less naked down to the crooked white-strigose, rooting base, whitish and not darkening appreciably on aging.

Spore deposit dark purple brown. Spores 12–15 × 6–6.5 μ, smooth, apical pore distinct and lens-shaped, shape in face view narrowly elliptic to oblong, in profile somewhat bean-shaped to cymbiform or obscurely inequilateral; color near
mummy brown in KOH (but many pale spores present), rusty brown to bay in Melzer’s.

Basidia 4-spored. Basidioles clavate. Pleurocystidia 50–75 × 10–15 μ, fusoid-ventricose with a long pedicel and long, tapered neck to a subacute apex, hyaline, thin-walled, smooth. Cheilocystidia basically similar to pleurocystidia but smaller and some hyaline, clavate cells also present.

Gill trama of hyaline inflated cells; subhymenium “cellular” but present only as a narrow zone 1–2 cells deep. Pileus cuticle a layer of cells 3–4 deep, with hyaline walls. Subcutis hyaline or nearly so in KOH. Clamps present.

Habit, habitat and distribution. Scattered to gregarious on chip dirt, Ann Arbor, Michigan, October 12, 1971, Mrs. Carol Nimke 158.

Observations. The worm-like, rooting, strigose base, the long pleurocystidia, the shiny appearance of the pileus and the grayish lilac state (near maturity) of the gills along with the white stipe and lack of a veil are its distinguishing characters. Ample specimens have been available for study and no tendency toward staining or flushing pink after loss of moisture was noted. It is close to _P. microrhiza_ sensu Van Waveren (1971, p. 267), but the original concept of _P. microrhiza_ calls for a pileus “luteo piloso,” a term in no way applicable to the American collections.

**406. Psathyrella olivaceocystis** A. H. Smith, sp. nov.

Pileus 3–5 cm latus, circa 4 cm altus, glaber, melleobrunneus, deinde pallide subochraceus, levis, firmus; lamellae pallidae demum ochroleucae demum griseobrunneae, confertae, angustae, ad acierum pallidae; stipes 5–7 cm longus, 3–4.5 mm crassus, firmus, albidus vel pallidus, glaber; sporia 6.5–7.5 × 3.5–4 μ; pleurocystidia 36–52 (−62) × 8–12 × 3–4.5 μ, fuside ventricosa, subacuta, cum “KOH” intus olivacea; cheilocystidia 32–56 (−70) × 9–13 × 3–4.5 μ, cum “KOH” intus olivacea. Typus. legit W. Patrick, in Ann Arbor Michigan, 19 Oct., 1971, ad terram (MICH).

Pileus 3–5 cm broad across the base, obtusely conic and up to 4 cm high, surface glabrous, moist and hygrophanous, pale honey-tan when moist, fading to pinkish buff, very smooth both when moist and when faded, (not at all atomate), margin even and lacking evidence of a veil. Context watery buff fading to pallid, firm, odor and taste not distinctive; FeSO4 no reaction; KOH, no reaction.

Lamellae pallid becoming dingy ochroleucous and finally near hair brown, close, narrow to moderately broad, ascending-adnate, edges pallid.

Stipe 5–7 cm long, 3–4.5 mm thick, equal down to a slightly bulbous base, rather firm, dull white throughout and overall, naked, apical third faintly pruinose, no discolorations showing from handling.

Spores 6.5–7.5 × 3.5–4 μ, smooth, apex in many slightly truncate from a small pore, shape in face view oblong to slightly ovate, in profile subelliptic to obscurely bean-shaped or obscurely inequilateral, color cocoa-color in KOH but quickly becoming dark chocolate color.

Basidia up to 8 μ broad, clavate. Basidioles clavate. Pleurocystidia very rare, 36–52 (−62) × 8–12 × 3–4.5 μ, subacute, base ventricose, neck often flexuous, many with pale olive content in KOH (when fresh), rarely with olive areas in the hymenium (including some basidia). Cheilocystidia 32–56 (−70) × 9–13 × 3–4.5 μ, many with olive content in KOH fresh, smooth, thin-walled. Caulocystidia similar to cheilocystidia or longer, many with olive content in KOH.
Pileus cuticle a palisade of cells 50–70×15–20 μ, hyaline in KOH, thin-walled, trama proper of hyaline to brownish hyphae in KOH (fresh). Clamps present.

Habit, habitat and distribution. Scattered under conifers in a lawn, Ann Arbor, Michigan, October 19, 1971, collected by Wally Patrick.

Observations. This, in truth, is one of the most unusual species of _Psathyrella_ known. Its smooth pale buff pileus, naked dull white stipe, lack of a veil, and stature of _P. candolleana_ distinguish it in the field. Under the microscope the large cells of the pileus cuticle arranged in a palisade, the KOH reaction of the cystidia and their shape, and the small spores are distinctive.

407. _Psathyrella parva_ A. H. Smith, sp. nov.

Pileus 9–13 mm latus, conicus, subfulvus deinde pallide cinnamomeus, alboflocculosus vel subsquamosus, glabrescens, valde atomatus, fragilis; lamellae latae, distantes, adnatae, pallide brunneae demum ligno-brunneae (“cinnamon drab”); stipes 1–2 cm longus, 1 mm crassus, valde fragilis, pallidus, deorsum mel­leus, impolitus; sporae 6.5–7.5 (–8) × 3.5–4× 4–5 μ, interdum 6.5–8.5 × 4–5 μ; pleurocystidia 34–48×9–14 μ, fusoide ventricosa, spice subacuta. Typus. Smith 81026 (MICH); legit prope Cedar Lake, Washtenaw County, Michigan, 20 Oct., 1971, ad terram arenaceam.

Pileus 9–13 mm broad across the base, conic, moist and hygrophanous, dingy tan when moist, cinnamon buff on disc when faded, the remainder pinkish buff, at first with delicate white flecks of fibrils from an outer veil and the margin slightly fringed, soon glabrous and when faded very strongly atomate. Context exceedingly delicate-fragile, no odor present.

Lamellae broad, distant, adnate, pallid brownish becoming avellaneous or near wood brown to cinnamon drab, edges whitish.

Stipe 1–2 cm long, 1 mm or less thick, equal, delicate, fragile, pallid overall, becoming weakly honey color over basal area, unpolished, pruinose above.

Spores 6.5–7.5 (–8) × 3.5–4× 4–5 μ or a fair number not compressed and 4–5 μ wide, smooth, lacking a distinct germ pore (apex not truncate), color dark chocolate in KOH, slowly becoming slightly paler, shape in face view subelliptic to ovate-truncate (truncate at base, not the apex), in profile obscurely bean-shaped to subelliptic.

Basidia 4-spored, hyaline, 7–8 μ broad. Brachybasidioles subglobose to broadly clavate, 7–10 μ wide. Pleurocystidia scattered, 34–48×9–14 μ, fusoid-ventricose, neck narrow and apex subacute to obtuse, wall smooth and hyaline, content not distinctive. Cheilocystidia similar to pleurocystidia but clavate to vesiculose cells also present.

Pileus cuticle composed of a layer of pyriform cells in decumbent to upright position (but not in an hymeniform layer at maturity), hyaline, thin-walled. Trama proper of short, greatly inflated hyphal cells pale tan in KOH when fresh but fading, connective hyphae showing some thickened colored sections of wall near transverse septa and some hyphae with incrustations similar to wall thickenings present but in spiral arrangement. Clamps present.


Observations. The tendency toward compressed spores, the habitat on waste sandy soil, and very delicate consistency are distinctive. _P. seymourensis_ occurs in similar habitats but has spores 7–9 μ long and the veil is less well developed. Their appearance at maturity, however, is very similar.
(See) 211. *Psathyrella polycephala* (variant Smith 81000).

Pileus 2–4 cm broad, obtuse to convex expanding to nearly plane, margin involuned at first, surface glabrous, moist, hygrophanous, dark to medium honey brown but fading to dingy buff or pallid (except where blackish from deposited spores); veil rudimentary to absent, all traces soon vanishing.

Lamellae close, moderately broad, adnate, seceding, pallid to brownish when young, blackish at maturity, edges even.

Stipe 4–8 cm long, 2–4 mm thick, equal, fragile-cartilaginous, whitish and bound into clusters at base by whitish mycelium, whitish overall fresh or dried except where dusted by spores, surface unpolished, veil rudimentary and not leaving readily distinct traces.

Spores 6.5–7.5 × 4–4.5 μ, smooth, lacking a distinct apical pore; shape in face view elliptic to ovate, in profile subelliptic to obscurely inequilateral, color in KOH dark chocolate color slowly becoming medium to pale chocolate color, in Melzer’s reddish rusty brown.

Basidia 4-spored, 6–7 μ wide, hymenium pale bister in thick sections revived in KOH but fading on standing. Pleurocystidia scattered, 38–52 × 9–15 μ, fusoid-ventricose with obtuse apex or varying to subcylindric, hyaline in KOH when well-revived, wall thickening present as a slight thickening in the apex, surface smooth. Cheilocystidia similar to pleurocystidia or clavate, but some voluminous (up to 65 × 18 μ), hyaline and smooth in KOH.

Gill trama of interwoven hyphae having inflated cells, hyaline in KOH (or near subhymenium pale bister as revived in KOH); subhymenium bister in KOH, composed of small cells, color fading on standing in mounting medium. Pileus cuticle of inflated cells 2–3 deep, some pyriform (but irregularly arranged); some connective hyphae in region adjacent to cuticle with thickened brown walls at the septa, remainder of trama hyaline. Clamps present.


Observations. The spore deposit as obtained on the surrounding leaves and the caps of basidiocarps in the clusters is nearly black yet in KOH the spores fade slowly to being only moderately dark colored. The gills at maturity are also blackish. The large cheilocystidia are in bunches or small areas along the edge of mature gills. The cystidia are not truly typical of *Homophron* yet the collection is unquestionably very close to *P. cernua* and *P. saccharinophila*. It is placed in *P. polycephala* temporarily at least because the gills finally become blackish and broad. It has the spore size of *P. saccharinophila*.

408. *Psathyrella populorum* Trueblood & A. H. Smith, sp. nov.

Pileus 3–5 cm latus, obtusus demum convexus vel subplumus, aquose cinnameomeus, deinr pallide subochraceus; contextus sordide brunneus, fragilis; lamel- lae pallidae demum vinaceo-brunneae, latae, subdistantes, adnatae; stipes 3–7 cm longus, 3–8 mm crassus, pallidus, ad basin sordidus, glaber, sursum pruinosis; sporae 8–9.5 × 5–6 μ; pleurocystidia 38–65 × 10–18 μ, fusoiode ventricosa; tenuiter tunica vel erassotunica. Typus. E. Trueblood 4485 (MICH); legit Juniper Mountain, Owyhee County, Idaho, 9 June, 1971; subcaesipitosa prope *Populus tremuloides*.

Pileus 3–5 cm broad, obtuse to convex, the margin curved in somewhat, expanding to plane or with a low umbo, pale watery tan moist, fading to pale buff or dingy pallid, in age often dingy cocoa-color as spores mature (color much
as in *Psathyrella*), glabrous (veil none). Context pallid to dingy brownish, cartilaginous, odor and taste not recorded.

Lamellae pallid to brownish to cocoa-color and drying dull vinaceous brown, at maturity broad and subdistant, edges becoming somewhat eroded, adnate, in age seceding.

Stipe 3–7 cm long, 3–8 mm thick, equal or nearly so, slightly pruinose, white to pallid, discoloring over the basal region, veil none.

Spore deposit (air-dried) cocoa-color; spores 8–9.5 × 5–6 μ, smooth, germ pore not clearly defined, wall 0.2 μ thick (±), shape in face view broadly ellipsoid to ovate, in profile slightly bean-shaped to subelliptic, in KOH with a tinge of vinaceous brown but subhyaline and not darkening.

Basidia 7–9 μ broad, 4-spored. Pleurocystidia abundant, 38–65 × 10–18 μ, fusoid-ventricose to broadly ventricose, of 2 types: (1) leptocystidia with smooth walls and with or without some apical incrusting material, and a homogeneous content or containing scattered refractive particles; (2) lamprocystidia with heavily incrusted apex and walls up to 2.5 μ thick, often with an opaque amorphous refractive subgranular content often completely filling the cell. Cheilocystidia clavate (mostly) to fusoid-ventricose, thin-walled, smooth, content homogeneous, or resembling the lamprocystidia of the gill faces. Caulocystidia clavate, elongate-clavate, subutriform, fusoid-ventricose with obtuse to rounded apex and up to 70 × 18 μ, thin-walled, smooth, content not distinctive, rarely with slightly thickened refractive walls in upper portion.

Observations. The spores from a deposit when mounted in KOH are pale cocoa-color and in this respect the species is intermediate between sections *Homophron* and *Cystidiosae*. The content of the pleurocystidia resembles that of "pseudocystidia." In some pilei nearly all pleurocystidia show it but in others some (even many) pleurocystidia lack it or the cell is only partly filled with the granules. Both thick- and thin-walled "lamprocystidia" are present, and both were seen with the granular content. The wide spores and broad subdistant gills distinguish the species from *P. littenii* and *P. variata. P. rhodospora* lacks a distinctive content in the pleurocystidia, but has spores about the same size.


Pileus 3–9.5 cm latus, convexus demum late convexus, glaber demum rugulosus, pallidus vel pallide alutaceus; lamellae 3–8 mm latae, secedentes, confluentes, pallidae demum lateritiae; stipes 3–10 cm longus, 3–15 mm crassus, furfuraceus, subalbidus, tactu ad basin vinaceo-purpureus; sporae in cumulo lateritiae, 9–11 × 4.5–6 μ; basidia tetraspora; pleurocystidia 43–56 × 13–17 μ, late fusioidea interdum ad apiereum inerustata, demum crassotunicata. Typus. Weaver 2204 (MICH).

Pileus 3–9.5 cm broad, convex with an incurved margin, becoming broadly convex or nearly plane, the margin often remaining decurved, shape at times irregular from mutual pressure; surface glabrous (slightly micaceous under a lens), smooth to rugulose, margin in some faintly sulcate; pallid to buff (faded) drying pale dull cinnamon but most of surface dull brick red from spores,
occasionally with faint bluish stains in older specimens. Odor not distinctive. Taste pleasant to slightly bitter. Context about 5 mm or less thick at the stipe, pale buff, unchanging.

Lamellae pallid becoming grayish brown and finally reddish, close, broad, adnate, edges even.

Stipe 3–10 cm long, 3–15 mm thick at apex, tapering downward slightly, curved to flexuous, fibrillo-se-stuffed, becoming hollow; surface with a detersile furfuraceous to squamulose covering from apex to midportion (at least), fibrillo-se-striate near apex, surface light buff with white ornamentation, interior white to buff, unchanging except in extreme base when stipe is torn longitudinally, first becoming deep purplish red in a small area but soon vinaceous over a larger area (spreading from the spot of the original change).

Spore deposit brick red when moist, dark vinaceous red as dried. Spores 9–11 \times 4.5–6 \mu, smooth, apex with a minute hyaline spot (under oil) but apex not truncate, shape in face view elliptic to ovate, in profile obscurely bean-shaped to obscurely inequilateral, color in KOH vinaceous-hyaline, not much darker in Melzer’s (not cocoa-brown in KOH and not becoming darker on standing).

Basidia 4-spored, 20–30 \times 6–8 \mu, narrowly clavate, hyaline in KOH. Basidioles narrowly clavate. Pleurocystidia 43–56 \times 13–17 \mu, broadly fusoid to ventricose-fusoid, smooth or apex incrusted (revived in KOH) in a few, wall thickened somewhat at least near or in the apex (up to 1.5–2 \mu), hyaline in KOH and Melzer’s. Cheilocystidia versiform, (1) fusoid and about like the pleurocystidia but up to 60 \times 10–14 \mu (longer and narrower); (2) fusoid-ventricose with obtuse apex varying to utriform, 42–50 \times 10–15 \mu, thin-walled, smooth; (3) clavate to saccate, hyaline thin-walled, 20–35 \times 9–15 \mu. Caulocystidia mostly large, inflated, versiform thin-walled cells or some shaped about like the pleurocystidia but with thinner walls, all extremely variable in size.

Gill trama regular, cells long and inflated near the subhymenium, brownish in KOH; subhymenium very narrow and of compactly interwoven hyphae. Pileus cuticle a staggered palisade of clavate to pyriform cells with vesiculose cells intermingled, all hyaline and thin-walled. Trama proper of hyaline interwoven hyphae. Clamp connections present.

Habit, habitat and distribution. Cespitose on a basswood stump, Wheeling Township, Rice County, Minnesota near Nerstrand Woods State Park, August 6, 1971, collected by Dr. H. E. Calkins, Mrs. M. G. Weaver no. 2204 (MICH).

Observations. This species resembles \textit{P. variata} to some extent macroscopically, but is at once distinguished by its broad gills and red stains at the base of the stipe. The latter did not appear to be of bacterial origin. Microscopically it is distinguished by having only lamprocystidia in the hymenium. \textit{Psathyrella sublateritia} has the peculiar elongated caulocystidia.

\textbf{(See) 161. \textit{Psathyrella salictaria} (variant Smith 81028)}

Pileus 15–20 mm wide at base, 2 cm high, obtusely conic, at first with a thin outer veil breaking into scattered inconspicuous squamules, margin slightly appendiculate at first, soon glabrescent overall, color near “snuff brown” fading to grayish buff. Context thin and fragile.

Lamellae grayish buff becoming near “wood brown,” close, broad, ascending-adnate.

Stipe 4–5 cm long, 2 mm thick, dingy pallid overall beneath a thin whitish evanescent fibrillo-se coating, apex pallid pruinose, not darkened appreciably at the base.
Spores 9–12 × 5.5–6.5 μ, smooth, apical pore present as a hyaline spot, shape in face view oblong to obscurely ovate, in profile slightly bean-shaped to sub-elliptic; color in KOH cocoa color soon becoming chocolate gray to darker.

Basidia 4-spored, 9–12 μ wide, hyaline. Basidioles clavate. Pleurocystidia scattered, 32–48 × 10–14 μ, fusoid-ventricose with obtuse to subacute apex, smooth, thin-walled, content not distinctive. Cheilocystidia mostly clavate to utriform, up to 17 μ broad, hyaline, smooth and thin-walled.

Cuticle of pileus of vesiculose cells to about 35 μ wide, hyaline, thin-walled, 2–3 cells deep, surface-cells often giving rise to a cystidium-like projection which may elongate into a hyphal proliferation. Trama adjacent to cuticle with some cells having colored wall thickenings or incrustations. Clamps present.

Habit, habitat and distribution. Two together on muck in a swamp, Cedar Lake, Washtenaw County, Michigan, October 20, 1971, Smith 81028.

Observations. This variant is too close to the type of *P. salictaria* to justify describing it as new. No willow was in the habitat and the stipe was not brown but otherwise the Michigan collection appears to belong to this species.

(See) 389. *Psathyrella seymoureensis* (variant Smith 81044)

Pileus 8–20 mm broad, obtusely conic with a straight margin, expanding to broadly conic to campanulate, rarely convex, surface moist and hygrophanous, when young with scattered fibrils from a thin outer veil but these soon evanescent, remaining as a slight fringe (or small patches near the margin) for a longer time, color pale to medium cinnamon brown but soon a chocolate-gray brown as spores mature, fading over marginal area first to chocolate gray (a paler shade than when moist), atomate when faded. Context exceedingly thin and fragile odorless, taste not distinctive.

Lamellae broadly adnate, subdistant, ascending, broad, grayish cocoa-color to "cinnamon drab" at maturity, merely brownish when young, edges whitish.

Stipe 1–3 cm long, 1–1.5 mm thick, equal, pallid above, honey-color below, thinly fibrillose below or fibrils aggregated into minute patches or squamules, glabrescent and dingy in age, very fragile.

Spores 7–9 × 4–5 μ, smooth, apical pore present as a hyaline spot but apex not truncate or only obscurely so in a few spores, shape in face view oblong to elliptic, rarely obscurely ovate, in profile elliptic to very obscurely inequilateral, color in KOH chocolate-brown, somewhat near bister on standing, tawny to pale bay in Melzer's.

Basidia 4-spored, hyaline, broadly clavate. Basidioles broadly clavate. Pleurocystidia 36–50 × 10–15 μ, ventricose with a short to long narrowed neck to a subacute apex, smooth, thin-walled, hyaline (both the wall and the content). Cheilocystidia similar to pleurocystidia but neck often shorter, some clavate cells present. Caulocystidia basically similar to cheilocystidia but wall often more refractive in KOH and possibly swelling more as revived, neck sometimes forked.

Pileus cuticle a layer of cells 3–4 thick, walls thin, pale cinnamon to nearly hyaline in KOH, smooth. Hyphae of trama adjacent to cuticle, pale to medium cinnamon in KOH, or entire trama this color, color located in the wall (some incrustations also present). Clamps present but inconspicuous and often rare.

Habit, habitat and distribution. On waste sandy soil near scattered clumps of grass and patches of *Polytrichum*. It occurs solitary to scattered after heavy rains in the fall at the time when *Amanita muscaria* reaches the peak of its fruiting cycle.
Observations. A comparison of the above description with that of the type form will reveal slight differences in a few features but these are here not regarded as sufficient for the establishment of an additional taxon. As one can readily understand, on such small delicate rare fungi it is a difficult problem to accumulate enough data to establish a pattern of variation.

(See) 44. Psathyrella singeri (variant Nimke 98)

Pileus 5–20 mm broad, obtusely conic expanding to plano-umbonate or remaining obtusely conic, margin straight at first, glabrous, moist, hygrophanous, avelaneous to ochraceous-gray fading to pallid, the colors nondescript in both moist and faded condition, opaque to only faintly striatulate, when faded very atomate. Context exceedingly thin and delicate, odor and taste not distinctive.

Lamellae narrow and close, adnate then seceding, pallid to grayish and finally avelaneous to wood brown, very thin, edges even.

Stipe 10–15 (–20) mm long, 0.7–1.5 mm thick, equal, hollow, exceedingly fragile, naked, pallid over all and not darker at base in old basidiocarps, with sparse radiating white hairs at point of attachment. Veil absent or possibly rudimentary.

Spores avelaneous to wood brown in deposit, 7–9×4–5.5 μ, smooth, wall thin and apical pore not distinct, in KOH nearly hyaline, in Melzer's slowly slightly toned dingy tan (color not distinctive), shape in face view ovate to elliptic, in profile obscurely inequilateral.

Basidia 4-spored, clavate, 15–22×8–10 μ, very short and wide toward gill edge, more clavate-pedicellate near pileus, hyaline. Brachybasidioles possibly finally differentiated. Pleurocystidia none. Cheilocystidia 26–35×10–13 μ, utriform to fusoid-ventricose with rounded apex or subbellipsoid, hyaline, thin-walled, smooth. Caulocystidia not found.

Habit, habitat and distribution. Scattered on sticks and debris in a grassy area, Ann Arbor, Michigan, June 21, 1971, Mrs. Carol Nimke 98.

Observations. This is an extremely delicate variant with nondescript colors, subhyaline spores in KOH, and is one of those Psathyrellae in which it is difficult to distinguish basidioles from brachybasidioles. It differs from the type of the species in having slightly broader spores, more dingy coloration, and generally smaller size. Both were present in the same habitat at the same time and maintained their identity. This could be an indication that both should be ranked as autonomous species.

410. Psathyrella sublongispora A. H. Smith, sp. nov.

Pileus 2.5–4 cm latus, convexus, leviter appendiculatus, demum subplanus, glabrescens, spadiceus, deinde pallide alutaceus; fragilis; lamellae confertae, angustae, adnatae, brunneolae demum brunneogriseae; stipes 2–3 cm longus, 3–4 mm crassus, fistulosus, subfirmus, pallidus; velum sparsum; sporae 8.5–11×3.5–4 (4.5) μ; pleurocystidia nulla. Cheilocystidia 36–52×10–15 μ, utriformia vel
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fusoide ventricosa. Typus. Smith 80861 (MICH); legit prope Midland, Michigan, ad terram arenosam.

Pileus 2.5–4 cm broad, broadly convex with an incurved margin, margin delicately appendiculate but soon naked, expanding to nearly plane with a decurved margin, soon glabrous over all including the edge, no appreciable development of an outer veil, color bister fading (on margin first) to pinkish buff, disc near cinnamon buff as dried. Context thin, pallid, fragile; odor none.

Lamellae close, narrow, bluntly adnate, pallid brownish becoming drab, horizontal, edges even.

Stipe 2–3 cm long, 3–4 mm thick, equal to slightly enlarged downward, tubular, pallid within, not markedly fragile; surface whitish over all and not discoloring appreciably in drying, thinly silky to naked; veil remnants sparse and inconspicuous.

Spores 8.5–11 × 3.5–4 (–4.5) μ, smooth, apical pore indistinct or in large spores apex obscurely snout-like, shape in face view subovate to oblong varying to obscurely angular in some and subfusoid in others, in profile suboblong to narrowly obscurely inequilateral to somewhat bean-shaped, color in KOH cocoa-brown becoming darker in KOH.

Basidia 4-spored. Basidioles clavate. Pleurocystidia none or near edge and then similar to cheilocystidia. Cheilocystidia abundant, 36–52 × 10–15 μ, utriform to fusoid-ventricose with rounded apex, some clavate, hyaline, thin-walled, smooth.

Gill trama of inflated regularly arranged cells, hyaline to brownish in KOH; subhymenium thin but cellular. Pileus cuticle a layer 2–3 cells deep of inflated cells with hyaline to brownish walls in KOH. No distinctive pigment incrustations noted anywhere. Clamps present.

Habit, habitat and distribution. Cespitose in small groups along the side of a sand-road, City Park, Midland, Michigan, Oct. 13, 1971, Smith 80861.

Observations. Although described from a single collection, this species has been recognized for years in the central part of the state, but never in good condition. It features unusually long spores with a snoutlike apex in some (more so from some basidiocarps than others). In the type this feature is not pronounced though still recognizable. It was spore variability in single basidiocarps that caused me to be skeptical as to whether the odd assortment of mature basidiocarps observed over the years actually represented a species.

411. Psathyrella subochracea A. H. Smith, sp. nov.

Pileus 1–2 cm latus, obtuse conicus, ad marginem appendiculatus et rimosus, albosquamulosus, glabrescens, pallide ochraceus, demum olivaceo-brunneus, deinde ochraceo-albidus; valde fragilis; lamellae albidae demum avellaneae, confertae, adnatae, latae; stipes 1–2 cm longus, 1.5 mm crassus, fragilis, cavus, sursum albidus, deorsum melleus, albo-floccosus, glabrescens; sporae 6–7.5 × 3.5–4.5 μ; pleurocystidia nulla. Cheilocystidia 38–56 × 10–15 μ, fusoide ventricosa vel utriformia, intus ad apicerum eum granis hyalinibus. Typus. Smith 78378 (MICH); legit prope Ann Arbor, Washtenaw County, Michigan, 14 July, 1970.

Pileus 1–2 cm broad, obtusely conic becoming broadly conic, oldest ones split on the margin, when young pale dingy ochraceous beneath white squamules of outer veil material; margin appendiculate with pieces of partial veil, glabrescent becoming olive-brownish to avellaneous, then fading to yellowish white and very
atomate, not striate when moist. Context thin, fragile, very delicate, odor and taste not distinctive.

Lamellae white becoming avellaneous, close, adnate, moderately broad, edges whitish, crenate under a lens.

Stipe 1–2 cm long, 1.5 mm thick, equal, fragile, hollow, white but pale honey color in cortex lower down, finely covered with soft white fibrils from the veil up to an evanescent zone.

Spore deposit avellaneous. Spores 6–7.5×3.5–4.5 μ, dull cocoa-color in KOH, grayer and paler on standing, shape in profile obscurely bean-shaped to obscurely inequilateral, in face view elliptic to ovate, germ pore broad but inconspicuous.

Basidia 4-spored. Pleurocystidia absent. Cheilocystidia obtusely fusoid-ventricose to somewhat utriform, 38–56×10–15 μ, thin-walled, content in apex usually consisting in part of refractive particles. Cuticle of pileus a layer of inflated cells 2–3 deep, hyaline or nearly so in KOH. Subcutis nearly hyaline in KOH, fading on standing. Clamps present.


Observations. This species is distinguished in the Candolleana by the refractive debris in the apex of the cheilocystidia, the copious universal veil, and the very delicate stature.

412. *Psathyrella tenacipes* A. H. Smith, sp. nov.

Pileus 1–4 cm latus, obtuse conicus demum late expansus, tenuiter fibrillosus, glabrescens, demum rugulosus, subspadiceus demum argillaceus; contextus fragilis, odor et sapor insipidus; lamellae sordide melleae demum violaceo-brunneae, confertae, latae (5 mm); stipes 3–6 cm longus, 2–3.5 mm crassus, fibrosus, fistulosus, cartilagineus, pallidus; deorsum tenuiter fibrillosus, subsordidus; sporae 7–9×4.5–5.5 μ, leves, truncateae, late ellipticae; pleurocystidia 38–57×9–15 μ, fusoid ventricosa, rotunata vel obtusa Typus. Smith 28717 (MICH); legit prope Douglas Lake, Cheboygan County, Michigan, 13 June 1948. Singer, De Gilio et Smith 28717.

Pileus 1–4 cm broad, obtusely conic to subconvex, expanding to broadly convex or with a slight umbo, buttons with a thin coating of appressed white fibrils over marginal half, very soon entirely glabrous, becoming distinctly rugulose, when fresh and moist "bister" but soon "Saccardo's umber," fading to clay-color and finally wood-brown as spores mature. Context thin, fragile, brownish, no distinct odor or taste.

Lamellae dull yellowish brown except for pallid brownish edges, at maturity dark wood brown, close, broad (± 5 mm), adnate, seceding, edges even.

Stipe 3–6 cm long, 2–3.5 mm thick, equal, rather stringy and fibrous, cartilaginous-pliant, tubular, white and unpolished or lower down thinly coated with veil fibrils below at least at first, becoming off-white in age but not discoloring distinctively.

Spore print near "benzo brown" (violaceous brown). Spores 7–9×4.5–5.5 μ, smooth, apex truncate, shape in face view broadly elliptic to slightly ovate, in profile subelliptic to obscurely inequilateral, color reddish in H₂O fresh, revived in KOH dark cocoa-color, in Melzer's pale bay to tawny red; wall about 0.3 μ thick.

Basidia 4-spored, 18–26×8–10 μ, clavate, hyaline; pleurocystidia 38–57×9–15 μ, fusoid-ventricose, apex obtuse to rounded, neck 5–7 μ wide, apex 4–8 μ
wide, wall, thin smooth and hyaline, content “empty.” Cheilocystidia mostly clavate, 24–33 × 9–14 μ, yellow in KOH for the most part, thin-walled. Caulocystidia, none found.

Pileus cuticle a layer about 1 cell deep, of vesiculose cells, walls yellow to hyaline, some tawny at the base, subcutis fulvous in KOH, the pigment incrusted on the hyphae. Clamps present.


Observations. This species is very close to *P. limicola* but differs in its pliant, fairly tough (for the genus) stipe. It also has more veil fibrils.

413. *Psathyrella turnagainensis* Wells & Kempton, sp. nov.

Pileus 3–8 (–9) cm latus, convexus demum late convexus, laete castaneus, pallidus, 5–7 mm crassus; lamellae 5–8 (–10) mm latae, confluentes, brunneo-albidus; stipes 4.5–14 cm longus, 8–18 mm latus, subaequalis, cavus, pallide luteolbidus, sericeus, subannulatus, deorsum albofloccosus vel sub-squamulosus, ad basin albostrigosus; sporae 7.5–9.5 ×4.2–5.3 μ; pleurocystidia 35–65 × 9.5–13 μ, fusiform ventricosa, interdum rostrata, capitata vel ad apicem 2–3 lobata. Typus. Wells & Kempton 185 (MICH); legit prope Turnagain Pass, Alaska, 6 Sept. 1962. 

Pileus 3–8 (–9) cm broad, convex with margins connivent becoming broadly convex, sometimes with a low umbo, not hygrophanous, dark but bright chestnut brown, often paler on margins, smooth becoming radially rugose, margins at first appendiculate from remains of pale tan fibrillose-subfloccose veil, soon completely glabrous. Context whitish, moderately thin (5–7 mm near disc), brittle, odor and taste not distinctive.

Lamellae emarginate to adnexed, moderately narrow, 5–8 (–10) mm, close, pale tan becoming medium brown and finally dark chocolate-brown.

Stipe 4.5–14 cm long, 8–18 mm broad, ± equal, hollow, brittle, ivory-white, appressed silky fibrillose and longitudinally grooved at the apex, appressed fibrillose to appressed patchy-scaly below the ± median velar zone (which is at times quite distinct), base white-strigose.

Spore deposit dark chocolate brown with lavender tint. Spores 7.5–9.5 ×4.2–5.3 μ, ellipsoid and usually bean-shaped or with a shallow suprahilar depression in profile view, elliptic to oblong with a strong tendency to angularity (sub-rectangular to subtriangular at times) in face view, moderately thick-walled, smooth, apex with hyaline lenticular pore, medium gray-brown in KOH, medium amber in Melzer’s.

Basidia 18–26 × 6–8 μ, 4-spored. Pleurocystidia moderately abundant, 35–65 μ long, 9.5–13 μ broad at ventricose part, 3.5–6 μ broad in the neck, 5.5–8.5 μ broad at apex, ventricose-rostrate with capitata to subcapitate apex or apex sometimes divided into 2–3 obtuse lobes, hyaline, smooth, thin-walled. Cheilocystidia hyaline, thin-walled, smooth, of two types: 1) clavate, and 2) ventricose-rostrate with obtuse to subcapitate apex, the former 16–22.5 × 9.5–11.5 μ, the latter 33–43 × 11.5–13 μ.

Gill trama of parallel, hyaline, smooth, thin- to slightly thick-walled hyphae 3.5–15 μ broad. Pileus trama of interwoven hyphae similar to those in the gill trama, hypodermal region more loosely interwoven and appearing ± floccose.
Pileus epicutis a compact layer ± 50 μ thick, 4–6 cells deep, cells appearing brown to amber in mass but are individually hyaline to yellowish with thin to slightly thickened smooth walls, subglobose, ellipsoid, or clavate, 15–30(–50) μ broad. Clamps present. All hyphae yellowish in Melzer's.

Habit, habitat and distribution. Gregarious to cespitose in deep conifer needle mold along a decaying conifer limb (in a spruce-hemlock woods); Turnagain Pass, Seward Highway, Alaska, Wells & Kempton 184 (Type), 185.

Observations. The two collections cited above were apparently growing from the same mycelium. Both were collected the same year, 1962, the first on July 23 and the other on September 6. We have not seen this species either before or since these collections were made though the area is one of our prime collecting areas. It is a species distinct from all other Alaskan Psathyrellae by its large size, nonhygrophanous pileus, more or less angular spores as seen in face view, and its decidedly capitate to subcapitate pleurocystidia. It appears to be most similar to *P. larga* and *P. subvinacea* but differs in the features as described.

414. **Psathyrella velatipes** A. H. Smith, sp. nov.

Pileus 1.5–5 cm latus, obtusus demum convexus vel planus, ad marginem fibrilloso-zonatus, glabrescens, umbrino-cinnamomeus demum "avellaneus" et sericeus, saepe rugulosus; fragilis; odor subpungens; lamellae confertae, adnatae, secedentes, pallide brunneae demum griseobrunneae; stipes 3–7 cm longus, 2–5 mm crassus, fragilis, albidus vel sordidus, valde albido-floccosus vel subsquamulosus; sporae 8–10(–11) × 5–6 μ; pleurocystidia 38–56 × 8–14 μ, fusoid-ventricosa vel subcylindrica, obtusata; cheilocystidia 18–26 × 7–12 μ, clavata, in KOH subochracea. Typus. Smith 80623 (MICH); legit Ann Arbor, Michigan, 30 Sept. 1971, ad terram.

Pileus 1.5–3 cm broad, obtuse when young, soon broadly convex and in age plane or the margin uplifted slightly, at first with a faint zone of fibrils along the margin and a few scattered fascicles near the edge, cap surface soon glabrous over all; color dull "warm sepia" (dark cinnamon) moist, and fading to "avellaneous" or paler, appearing somewhat silky after fading or some more or less atomate, smooth to slightly rugulose. Context fragile, odor faint but somewhat penetrating.

Lamellae close, broad, adnate, seceding, pallid brownish, at maturity near "drab" to grayish chocolate color, edges even.

Stipe 3–7 cm long, 2–5 mm thick, equal, fragile, white but dull, distinctly white-squamulose to loosely fibrilllose (floccose) in age but no distinct annular zone present, only slightly discolored beneath the squamules in age.

Spore deposit dark chocolate-brown. Spores 8–10(–11) × 5–6 μ, smooth, apical pore present as a broad thin hyaline area bounded by a dark line (apex not truncate); shape in face view elliptic to oblong, in profile subelliptic; color dark chocolate in KOH, slowly changing to date brown (but many pale spores in mounts also), reddish bay in Melzer's.

Basidia 4-spored, hyaline in KOH, clavate. Basidioles clavate. Pleurocystidia scattered to rare, 38–56 × 8–14 μ, subcylindric with obtuse apex, or forked near apex, or fusoid-ventricose with a subacute to obtuse apex, hyaline in KOH, thin-walled, content not distinctive. Cheilocystidia 18–26 × 7–12 μ, mostly clavate and with yellowish walls as revived in KOH. Caulocystidia versiform, present as the end cells of the loosely woven hyphae covering the stipe, hyaline, smooth, thin-walled and varying greatly in size.

Gill trama of subparallel inflated hyphae hyaline to brownish in KOH; sub-
hymenium appearing cellular in sections but cells not much enlarged (5–10 μ wide). Pileus cuticle a layer of vesiculose cells 2–3 deep, the walls hyaline to dingy pale ochraceous (in KOH), cell content not distinctive. Subcutis pale cocoa-color in KOH but fading, no appreciable hyphal incrustations noted. Clamp connections present.

Habit, habitat and distribution. Densely gregarious on soil in the “parking” strip possibly where a shade tree had been removed, Liberty St., Ann Arbor, Michigan, Sept. 30, 1971, Smith 80623.

Observations. The distinguishing features of this species are first its dingy appearance, secondly the whitish rather densely floccose stipe (but lacking an annular velar zone), the rare to scattered pleurocystidia and spores 5–6 μ broad. I have not encountered another species with a similarly ornamented stipe and so little veil on the pileus in young specimens.
APPENDIX II

Text Figures

The drawings were made with the aid of a camera-lucida and as reproduced those of spores are approximately 1200× and those of cystidia and cuticular features about 850×. These drawings were made over a period of 30 years with different microscopes, so for accurate comparisons as to size compare the measurements given in the descriptions. The indications of the germ pore on the spores are schematic and designed to indicate the width of the pore, not the detailed structure.
Formulae

1. Potassium hydroxide (KOH): A 2.5% aqueous solution.
2. Ammonia (NH₄OH): An approximately 14% aqueous solution.
3. Iron salts (as represented by the formulae FeSO₄ or Fe₂Cl₃): a 10% solution.
4. Melzer's reagent (as "Melzer's" in the text):
   KI .......................... 1.5 g.
   Iodine crystals ............. 0.5 g.
   Water ........................ 22.0 g.
   Chloral hydrate ........... 22.0 g.
Figs. 1–11. Figs. 1–4, *P. sepulchralis*: 1, caulocystidia; 2, spores; 3, cheilocystidia; 4, a fascicle of pleurocystidia. Figs. 5–7, *P. echiniceps*: 5, spores; 6, pleurocystidia; 7, cheilocystidia. Figs. 8–11, *P. rigidipes*: 8, cheilocystidia; 9, spores; 10, caulocystidia; 11, one fascicle of pleurocystidia.
Figs. 12-22. Figs. 12-14, *P. velutina*: 12, pleurocystidia; 13, spores; 14, cheilocystidia. Figs. 15-17, *P. subcinnamomea*: 15, spores; 16, pleurocystidia; 17, cheilocystidia. Figs. 18-21, *P. hirtosquamulosa*: 18, caulocystidia; 19, spores; 20, pleurocystidia; 21, cheilocystidia. Fig. 22, spores of *P. tigrina*. 
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(a) *Psathyrella hirtosquamulosa* ×1, Smith 63448
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(a) *Psathyrella propinqua* ×1, Smith 67018
(b) *Psathyrella subamara* ×1, Smith 78178
(c) *Psathyrella weberi* ×1, Smith 73705
Psathyrella lacrymbunda var. lacrymbunda $\times 1$, (a-b) photo Smith
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Psathyrella alboalutacea $\times \frac{1}{2}$, Smith 30687
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(a) *Psathyrella alboalutacea* ×1, Smith 29505
(b) *Psathyrella maculata* ×1, Smith 49082
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(a) *Psathyrella elwahensis* ×1, Smith 14535
(b) *Psathyrella caputmedusae* ×1, Smith 30907
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(a) *Psathyrella delineata* ×1, Smith 36490
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(a) Psathyrella vialis ×1, photo Smith
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(a) *Psathyrella hirta* ×1, Smith 14200
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<td>Margaret H. Fulford</td>
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<td>June, 1966</td>
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<td>June 30, 1969</td>
<td>Cryptogamæ Exsiccatæ, An Annotated Bibliography of Published Exsiccatæ of Algae, Hepaticæ and Musci</td>
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<td>Noel H. Holmgren</td>
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<td>K. P. Dumont</td>
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<td>August 15, 1972</td>
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<td>New and notable Menispermacææ Tribe Tinosporeæe</td>
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<td>December, 1972</td>
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<td>The Flora of the Meseta del Cerro Jána</td>
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