To the Graduate Council:

I am submitting herewith a dissertation written by Alice E. Hanson Freeman entitled "A Floristic Study of the Genus Agaricus for the Southeastern United States." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Botany.

Ronald H. Petersen, Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:

Vice Chancellor
Graduate Studies and Research

Thesis
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A FLORISTIC STUDY OF THE GENUS AGARICUS FOR THE SOUTHEASTERN UNITED STATES

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Alice E. Hanson Freeman

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ABSTRACT

A floristic study of the genus Agaricus for the southeastern United States is presented. Five species are described as new. Nomenclatural considerations include one species status novus, one nomen novum and 12 nomina dubia. Miscellaneous taxa studied contain one new species and one status novus.

Circumscription of taxa has been based on morphology and microscopic analysis.

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INTRODUCTION

Agaricus as treated by Linnaeus (1753) was envisioned as including all lamellate fungi and was an arbitrary substitution for and synonymous to Amanita of Dillenius (1719). The Linnaean sense was adopted by Fries (1821), the starting point author, who divided the unwieldy assemblage into series based on the color of the spore print. His tribe "Psalliota" contained the annulate, purple-brown spored, free-gilled agarics. Karsten (1879) recognized this as a discrete genus and reapplied the name Agaricus to it, this time in a restricted sense, thus circumscribing the modern genus concept.

The name Agaricus, with A. campestris as type species, was suggested for conservation by Donk (1962, 1964) and appeared as proposal 120 in Taxon (1968). Conservation was officially made with its incorporation in the International Code of Botanical Nomenclature, Seattle ("1969," 1972, p. 254).

Taxa within Agaricus are ubiquitous and up to the present time over 250 species have been described. Although the genus is very distinct and easily recognized, infrageneric taxonomy appears difficult. Current methods of taxonomic analysis include grouping on the basis of spore size (Lange, 1926), color changes upon bruising a fresh fruit body (Møller, 1950, 1952; Heinemann, 1956), the Schaeffer

macrochemical reaction (cross reaction of aniline oil and nitric acid), presence or absence of cheilocystidia and habitat (Isaacs, unpublished data, 1965, 1967). The keys constructed by the preceding authors all utilize characteristics of fresh specimens--practically useless when attempting to identify very young, old, or preserved specimens, especially those with scanty or inadequate notes. Further divisions often include presence or absence of a double annulus--a developmental expression which may or may not be visible macroscopically or microscopically.

European studies are numerous and fairly recent: Barr (1937), Bohus (1961, 1969, 1971), Heinemann (many works between 1952 and 1974, concerning tropical as well as European taxa), Kühner and Romagnesi (1953), Lange (1926), Møller (1950, 1952), Pilát (1951), and Pegler and Raynor (1969). Several regional keys have been constructed for the United States during the past century. Peck ("1883," 1884) made a study and key for seven species in New York state, and also gave many new species names and descriptions during his tenure as State Botanist; Murrill proposed many new taxa from the Pacific coast (1912), the tropical U.S., particularly Florida (1918), and produced a general key to 30 species (1922). A compilation of his personal keys to Florida fungi, including 18 species of Agaricus has recently been published by Kimbrough (1972). Kauffman (1918) did a study of 13 species from the Great Lakes region, and his key was

essentially republished with the addition of one species by Coker in a Chapel Hill study (1928); the latest and most modern treatment of the genus was by Hotson and Stuntz (1938) in a work concerning 24 species from western Washington state. With the exception of Hotson and Stuntz, the former North American works are so superficial as to be useless now.

It is the intention of this study to facilitate classification of herbarium specimens by cataloging and more fully describing species of Agaricus for the United States, but particularly for the southeast where northern species have reached their southern distributional limit and southern species have extended their ranges northward. Nomenclatural problems are discussed and clarified and five new species are proposed.

CHAPTER I

MATERIALS AND METHODS

A Wild Heebrug M20 research microscope utilizing bright field optics and magnifications to 3125X was employed for examination of specimens. Because of the degree of resolution of this microscope, numbers within one-tenth micron of being whole or half have been rounded, but intermediate tenth microns have been left as such and are considered significant. Tissues (dried or fresh) were soaked until soft in a drop of 25% KOH; prior to observation one drop of 1-2% phloxine B was added and then the mount observed in entirety or crushed. Tissues for sectioning were soaked in 95% ethanol for 3-5 minutes, then the ethanol was replaced with water for another 3-5 minutes. Elderberry pith served as support for free-hand razor sections, the sections then being treated and observed as above. The Schaeffer macrochemical test (cross reaction aniline oil with nitric acid) followed the procedure of Heinemann (1961). Colors are quoted from the original author or my own evaluation.

Specimens were examined from the following herbaria: The University of Tennessee (TENN), The New York Botanic Garden (NY), New York State University (NYS), University of North Carolina (NCU), University of Michigan (MICH), Cornell University (CUP), University of Florida (FLAS), National

Fungus Collections (BPI), and Virginia Polytechnic Institute (VPI). Herbarium abbreviations are from those established by Lanjouw and Stafleu (1964). Collection of fresh specimens was done in the Smoky Mountain region of east Tennessee and western North Carolina.

CHAPTER II

TAXONOMIC CHARACTERS

Carpophore. The carpophores of the genus Agaricus assume two general forms (Figure 1) which can be defined as follows: campestroid stature, exemplified by A. campestris L. per Fr., exhibits a pileus diameter-stipe length ratio of one or greater than one (this type is exemplified also by a thick-set fruit body with a thick, equal or subequal stipe and usually a meadow or pasture habitat) and placomycetoid stature, exemplified by A. placomyces Pk., exhibiting a pileus diameter-stipe length ratio of less than one (this type usually exhibits a thin-fleshed fruit body with a slender, bulbous stipe and a woodland habitat).

Pileus. The surface of the pileus may be smooth or may exhibit various forms of ornamentation, ranging from appressed fibrillose to tufted squamulose scales or, as in the case of A. praerimosus Pk., deeply areolate patches. This also may be correlated with habitat, the meadow species being generally smooth or becoming with age only slightly squamulose on the disc, while the woodland species are almost always densely fibrillose or scaly.

The pileus cuticle may be composed of either densely or loosely interwoven, repent, thin-walled, clampless hyphae which may or may not give rise to pileocystidia. When

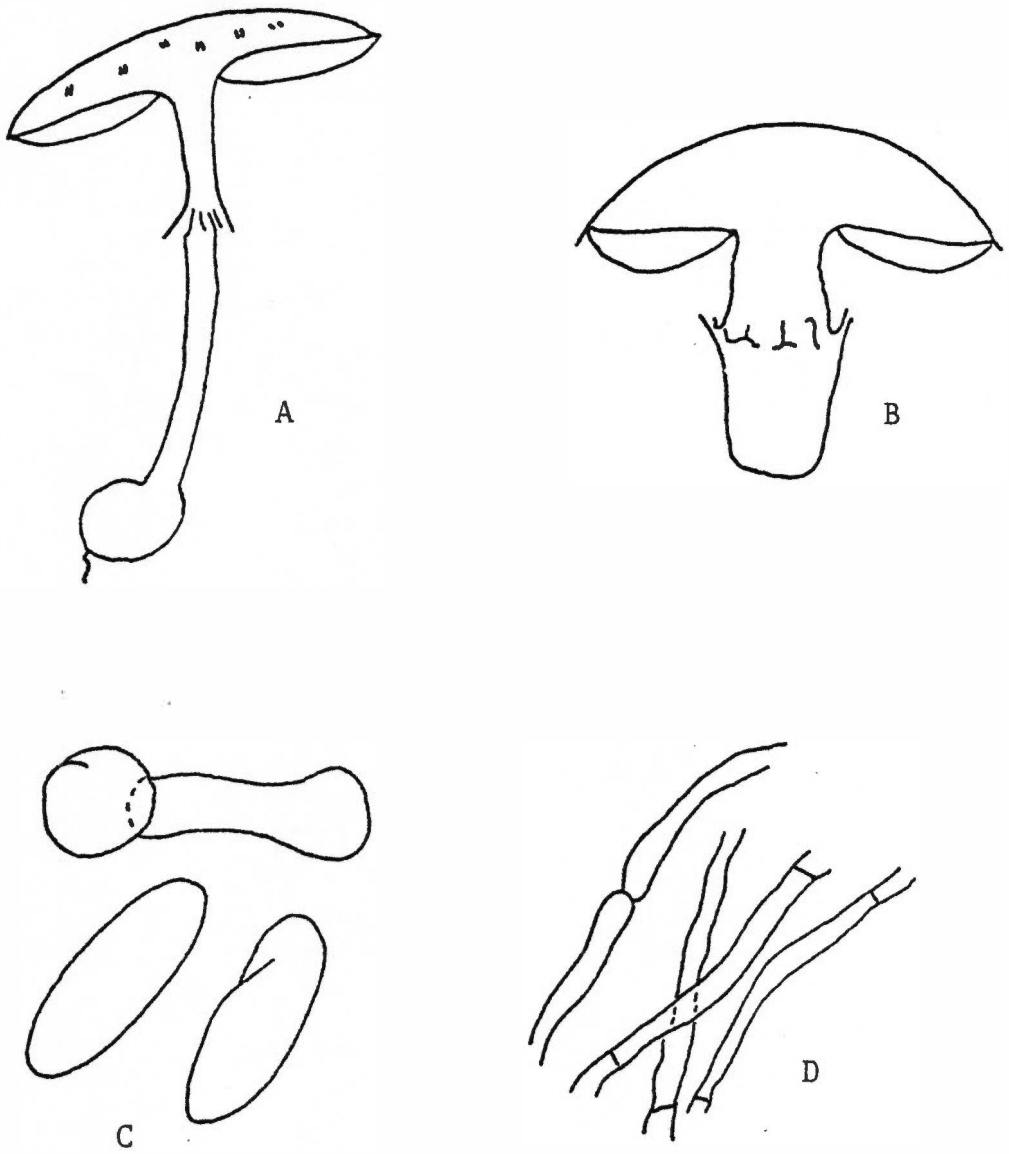


Figure 1. Fruit body form and universal veil types.

A. Placomycetoid stature.

B. Campestroid stature.

C. Cellular universal veil tissue.

D. Hyphal universal veil tissue.

present, the pileocystidia are generally formed from chains of several cells and may be branched or unbranched, fasciculated (forming scales or fibrils) or scattered. The pileus flesh consists of thin-walled, clampless, occasionally highly inflated, interwoven hyphae, generally radially arranged.

Lamellae. The lamellae in this genus become a deep chocolate brown upon maturity of the spores, having been grayish whitish, pinkish or even rosy-pink in youth and are free from the stipe. The number of lamellae is variable and they may be entire, half, third or occasionally quarter length, all becoming rounded toward the stipe. The margin may be even with the entire gills or exceed them by as much as 5 mm.

Basidia. All examined specimens possessed clavate basidia, but differences in length occur, certain species exhibiting very long basidia (i.e., A. maritimus Pk.), others relatively short basidia. Differences also occur in subhymenial form--whereas some species will produce two to four basidia directly from a swollen cell (cellular subhymenium), others tend to form four to six basidia directly from a hypha (hyphal subhymenium), giving a candelabra effect; subtle intergradations, however, diminish this trait as a taxonomic tool.

Cystidia. Sterile elements in the hymenium of Agaricus are common. Cheilocystidial forms range from

clustered capitulate (i.e., A. vinaceo-umbrinus), broadly capitulate to napiform (i.e., A. badius, A. subfloridanus, A. alligator, etc.) to ventricose-rostrate, lageniform or pseudoparaphysoid (i.e., A. cylindriceps var. aureus) and occasionally exhibit slightly thickened walls (Figure 2). Pleurocystidia were never noted.

All examined specimens of Agaricus had an irregular lamella trama. The hyphae may be inflated or not, but all are thin-walled, hyaline and clampless.

Spores. Spores in Agaricus range from subglobose to ovoid or broadly ellipsoid and are generally within the area of 5.5-7.0 x 3.8-5.5 µm; three species are distinguished by possession of considerably larger spores: A. campestris, A. argenteus, and A. solidipes. All spores are smooth; apiculi are either papillate and hyaline or indiscernible at magnifications of up to 3125X. Spore walls appear dark brown and consistently measure near 0.6 µm in thickness. Scanning electron micrographs support light microscopic data with respect to size, shape and lack of surface characters.

Stipe. The stipe may be solid or stuffed and is easily separable from the pileus. It always bears an annulus which may be median or superior and is generally persistent. The ring is usually a smooth tissue covering the young lamellae and then breaking free from the pileus as the cap expands. This leaves the ring as a skirt hanging from the stipe. Occasionally the ring may be more complex,

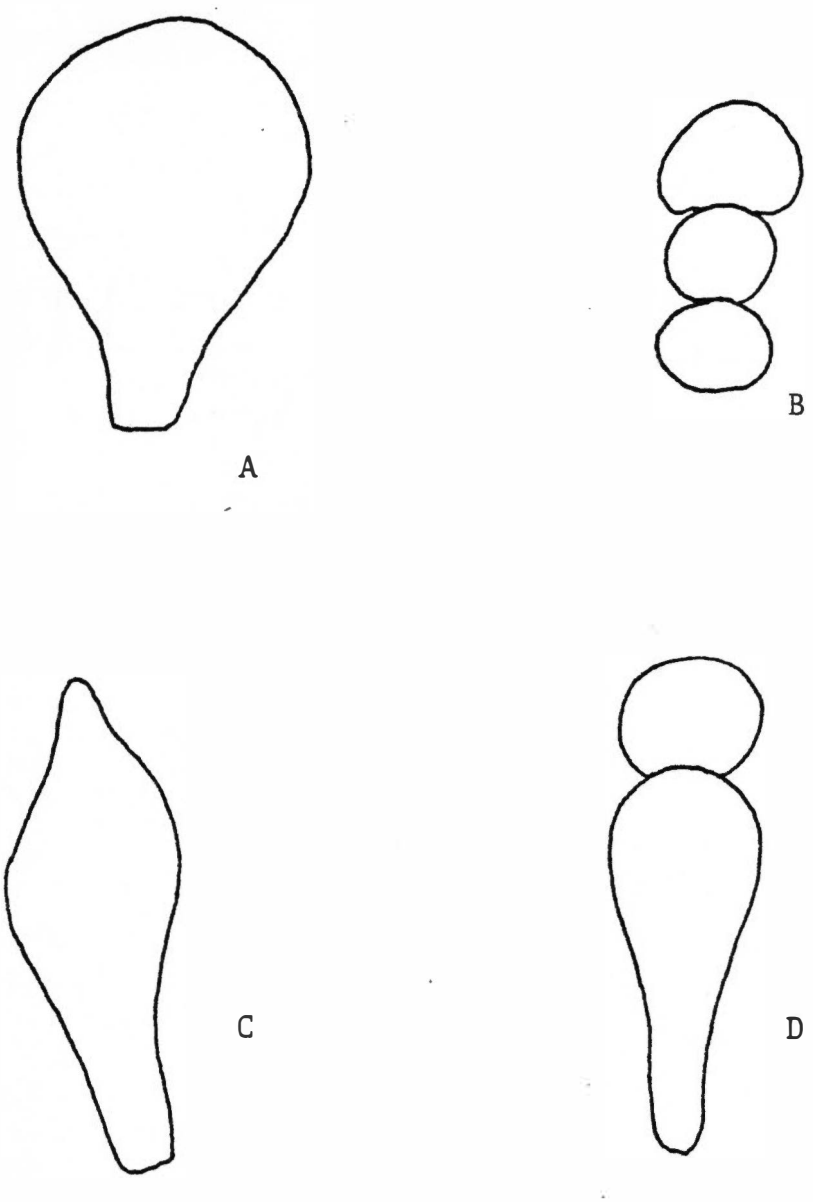


Figure 2. Cystidial forms.

A. Napiform.

B. Multicellular.

C. Lageniform-rostrate.

D. Pseudoparaphysoid.

as in A. pocillator, where a partial veil forms on the lower surface of the marginal veil leaving a discrete ring of tissue on the annulus. In other cases such as A. abruptibulbus, the ring may bear floccose patches of universal veil tissue on its lower surface.

Hyphae of the stipe are similar to those of the pileus flesh, but parallel and tightly packed. Caulocystidia are absent.

Universal veil. The universal veil can be found most easily as a single or double cell layer of tissue (thicker, almost volva-like in A. chlamydopus) on the surface of the stipe below the ring. Remnants of this tissue may also be found on the pileus surface, particularly on the disc, and the underside or margin of the ring. Two types of universal veil tissue have been found (Figure 1, page 7): hyphal universal veil tissue in the form of filamentous or only slightly inflated hyphae (excepting A. argenteus and A. abruptibulbus), most common in meadow species and cellular universal veil tissue existing as regularly or irregularly inflated cells, predominantly observed in woodland species.

Development. Using the terminology of Reijnders (1963), development of Agaricus fruit bodies can be described as hemiangiocarpic (or velangiocarpic). This means the hymenium is formed internally during the primordial stage and remains internal until or just prior

to maturity of the spores. This is achieved by double enclosure of hymenial tissue by a ring and the universal veil (bivelangiocarpic) (Figure 3).

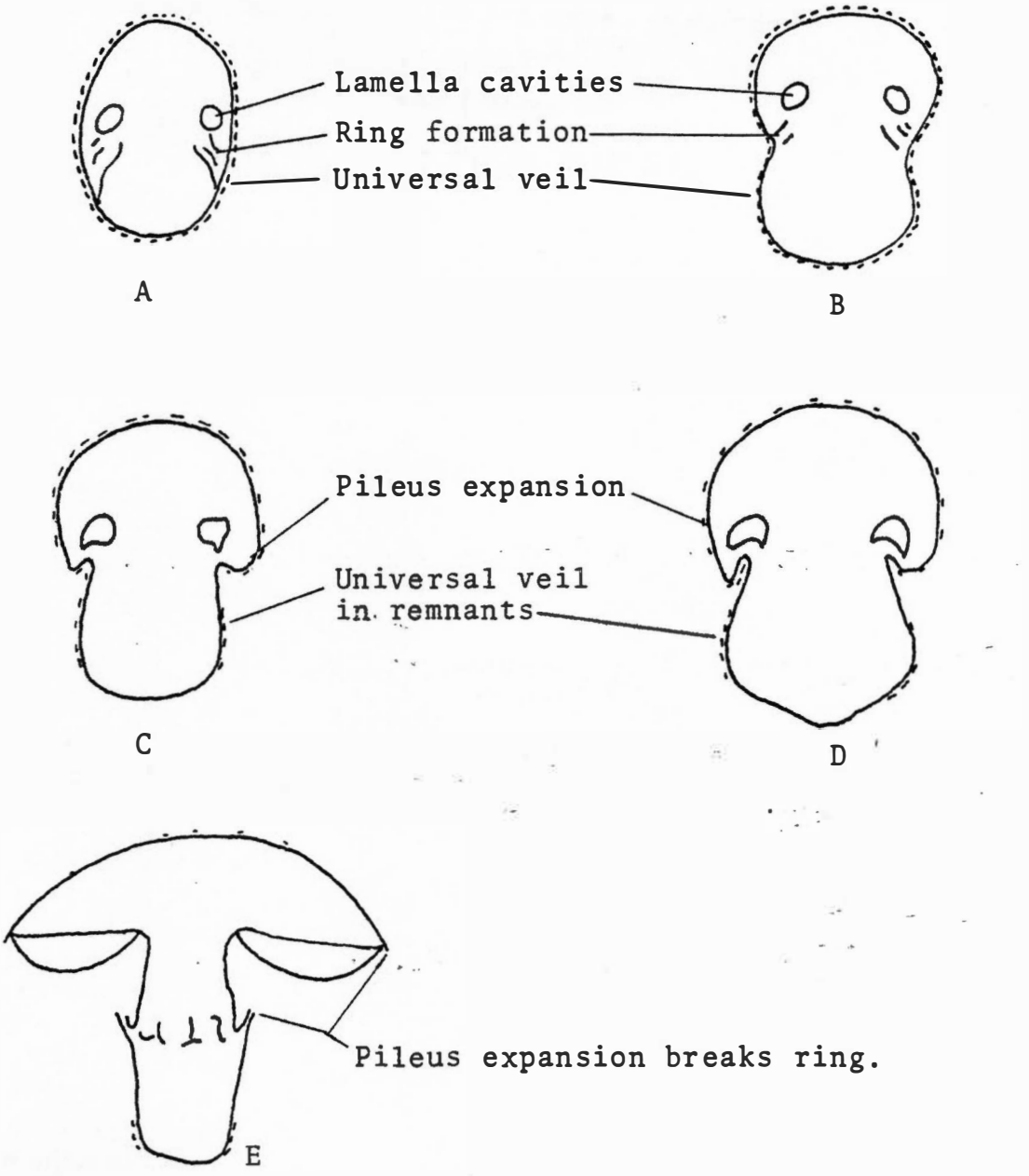


Figure 3. Developmental sequence of A. campestris (ex Atkinson, 1906).

A. Young primordium.

B. Young primordium.

C. Button stage.

D. Button stage.

E. Mature.

CHAPTER III

THE TAXA

Agaricus (L.) Fr.

Syst. Mycol. I. 1821. em. Karsten. 1879. Bidrag till kannedom of finlands natur och folk 32:xxv. pp. 482-487.

≡ Pratella (Pers.) per S. F. Gray. 1821. A Natural Arrangement of British Plants. p. 626. (p. p.)

≡ Psalliota (Fr.) Kummer. 1871. Fuhr. Pilzkunde 72:23.

Habit of carpophore campestroid (pileus diameter-stipe length ratio > 1) or placomycetoid (pileus diameter-stipe length ratio < 1); pileus white or colored, glabrous, silky-fibrillose, fibrillose scaly or occasionally rimose-areolate, dry, never viscid; cuticle of interwoven, usually repent hyphae without clamp connections, rarely cellular (several tropical species); pileocystidia, if present, fasciculate or scattered, branched or unbranched; hyphae of context usually inflated, thin-walled, without clamp connections; hymenophore lamellate, lamellae free, grayish, white to pink or roseous in youth, deep chocolate brown when mature, trama regular, then irregular, hyphae inflated or not, without clamp connections; spore print deep chocolate brown, spores subglobose, ellipsoid or ovoid, wall generally less than 0.6 µm thick, apiculus papillate, hyaline or indiscernible; basidia clavate, 2- or 4-sterigmate, without clamp

connections; cheilocystidia absent or present, napiform, clavate or broadly clavate, several-celled or (rarely) ventricose-rostrate; pleurocystidia absent; ring superior or median, single or double or with floccose patches on the lower surface, hyphae filamentous, occasionally slightly inflated, without clamp connections; stipe equal or bulbous at the base, with or without rhizomorphs; hyphae parallel, tightly packed, thin-walled, without clamp connections; universal veil tissue appressed to lower surface of stipe, occasionally on the surface of the pileus, particularly on the disc, or the lower surface of the ring, composed of thin-walled, filamentous to inflated or even cellular elements (Figure 1, page 7), without clamp connections.

Bruised flesh of stipe or pileus staining reddish, yellowish, brownish or not at all. Schaeffer reaction (cross reaction aniline oil with nitric acid) immediately or slowly positive (fire red to orange) or negative.

Key to Subgenera

1. Universal veil tissue of inflated or uninflated hyphae; fruit bodies thick-set, stature usually campestroid; stipe usually equal or subequal; generally occurring in meadows or pastures.....

Subgenus Agaricus Heinemann em. Freeman, p. 16

1. Universal veil tissue cellular; fruit bodies usually thin-fleshed, stature usually placomycetoid; stipe

often bulbous; generally occurring in woods.....

Subgenus Lanagaricus Heinemann em. Freeman, p. 42

Subgenus Agaricus Heinem. em. Freeman

≡ Euagaricus Pilát. 1951. Acta Mus. Nat. Pragae. 7 B, no. 1. p. 27. (p.p.).

≡ Psalliota Konrad and Maublanc. 1924-1937. Rev. Hymeno. de France. p. 58. (p.p.).

Type Species: Agaricus campestris L. per Fr.

Universal veil of inflated or uninflated hyphae; stature of fruit bodies usually campestroid (pileus diameter-stipe length ratio > 1), stipe usually equal or subequal; annulus often not well-developed; species generally occurring in open areas, pastures or meadows.

Observations: The emendation of Heinemann's subgenera (1956) includes emphasis on the nature of the universal veil tissue and omission of certain chemical tests which were either of no value in the present study (Schaeffer reaction) or required specimens in the fresh condition. Heinemann's third subgenus, Conioagaricus, has been eliminated entirely because it contains species with a cellular cuticle which, up to the present time, have not been found within the geographic limits of this study.

Key to Species of Subgenus Agaricus

1. Stature placomycetoid (Figure 1, page 7); pileus to 3.0 cm diam, squamulose; stipe to 4.0 cm long;

cheilocystidia lacking; spores (4.5)6.0-9.2 x 3.8-5.5 µm.....1. A. suboreades Murr.

1. Stature campestroid (Figure 1, page 7).....2

2. Cheilocystidia present.....3

2. Cheilocystidia absent.....5

3. Cheilocystidia pseudoparaphysoid, lageniform or ventricose-rostrate, to 7.5 µm diam; pileus to 5 cm diam, squamulose to fibrillose; margin inrolled; stipe to 3 cm long; spores (5.3)6.0 x (3.8)4.5 µm.....
2. A. cylindriceps var. aureus Murr.

3. Cheilocystidia clavate, broadly clavate, subpyriform or napiform.....4

4. Universal veil hyphae inflated; cheilocystidia broadly clavate to napiform, 10.7-18.5 µm diam, sparce; pileus glabrous, to 6.0 cm diam; spores (7.0)7.5-9.2 x (4.5)5.5-6.0 µm.....
3. A. andrewii Freeman

4. Universal veil hyphae filamentous or only slightly inflated; cheilocystidia clavate, broadly clavate, or subpyriform, to 10.0 µm diam, numerous; pileus smooth or becoming slightly squamulose with age, to 10 cm diam; spores variable, 5.5-6.0(7.5-10.0) x 3.8-4.5(7.0) µm.....
4. A. campestris L. per Fr. ss. Pilát

5. Pileus surface smooth (or possibly becoming rimose-squamose on disc only with age).....6

5. Pileus surface fibrillose to squamulose.....8

   6. Universal veil hyphae highly inflated (20.0-30.0 µm diam); spores 9.2-13.0 x 6.0-7.5 µm; pileus to 5.0 cm diam; stipe to 3.5 cm long.....5. A. argenteus Braendle in Peck

   6. Universal veil hyphae and spores smaller than above.....7

7. Fruit body extremely thick-set, flesh to 5 mm thick when dried; margin deeply decurved; pileus occasionally rimose-squamose on disc, to 10 cm diam; stipe to 7.5 cm long; spores 6.0 x 4.5-6.0 µm.....
   6. A. rodmanii Peck

7. Fruit body not as squat and full-bodied as above, dried flesh to 3 mm thick, margin even; pileus to 5 cm diam, stipe to 5 cm long; spores 4.5-6.0 x 3.0-4.5 µm.....7. A. comptuliformis Murr.

   8. Spores (7.5)12.2 x (6.0)7.5 µm; pileus surface broken up into rimose-squamose imbricate patches; pileus to 7 cm diam, margin inrolled; stipe to 4 cm long.....8. A. solidipes Pk.

   8. Spores smaller than above.....9

9. Fruit body large, pileus to 12 cm diam; stipe equal, to 12 cm long; margin upturned with age; spores 4.5-6.0 x (3.0)3.8-4.5 µm....9. A. subponderosus Murr.

9. Fruit body smaller than above.....10

10. Pileus cylindric to convex and truncate, then expanded; margin more or less inrolled; surface minutely squamulose; pileus to 8 cm diam; stipe to 7.5 cm long; spores (5.3)6.0 x (3.8)4.5 µm..... 10. A. cylindriceps Murr.

10. Pileus campanulate, expanded, margin projected slightly; surface finely fibrillose; pileus to 4 cm diam; stipe to 3.5 cm long; spores 4.5-5.5(6.0) x (3.0)3.8(4.5) µm..... 11. A. sulphureiceps Murr.

1. Agaricus suboreades Murrill

Lloydia 5:152. 1942.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 14.vii.38, coll. & det. W. A. Murrill, no. 17693. (!)

Stature of carpophore placomycetoid; mature pileus convex to plane or somewhat umbonate, to 3 cm diam, roseous (Murrill), golden brown when dried; surface squamulose; dried flesh to 2 mm thick at disc, thinning to < 1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous, to 4 cm long, appearing fibrous, golden brown when dried; ring superior, membranous, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 2.3-4.5 µm

diam, branched or unbranched; hyphae of pileus flesh 3.0-16.8 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-23.0 µm diam, occasionally inflated; basidia 6.0-9.2 x 15.3-23.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-16.8 µm diam, parallel, tightly packed. Hyphae of ring 2.3-6.0 µm diam. Hyphae of universal veil (stipe surface below ring) uninflated or only slightly so, 2.3-6.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores (4.5)6.0-9.2 x 3.8-5.5 µm, subglobose to broadly ellipsoid or ovoid; wall dark brown, 0.6 µm thick; apiculus a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Observations: This is one of several small placomycetoid species with a scaly pileus, but is readily distinguished from all others by its hyphal universal veil tissue and its large spores. Murrill (1942) seemed to feel that this species lay between A. alachuanus and A. comptulus in its outward appearance. It is, however, distinct from A. alachuanus which has cellular universal veil tissue, smaller spores and cheilocystidia. Agaricus comptulus ss. Pilát (1951) differs in having a glabrous and yellowish pileus and bearing much smaller spores than A. suboreades.

The species is most commonly found on grassy ground, in direct sun or shaded areas (teste Murrill) and up to the

present time has been collected only in Florida. The edibility of this species is unknown, but its small size renders it impractical in this regard.

Specimens examined:

Florida: Gainesville, 14.vii.38, coll. & det. W. A. Murrill, no. 17963 (FLAS, TYPE); Gainesville, 31.viii.39, det. W. A. Murrill, no. 16055 (TENN); Gainesville, 30.viii. 39, det. W. A. Murrill, no. 18447 (TENN); Gainesville, 9/5/38, det. W. A. Murrill, no. F19225 (FLAS); Gainesville, 8.viii.44, det. W. A. Murrill, no. F45885 (FLAS); Gainesville, 23.vii.44, det. W. A. Murrill, s.n. (NCU); Gainesville, 30.viii.39, det. W. A. Murrill, s.n. (BPI).

2. Agaricus cylindriceps var. aureus Murrill

Quart. J. Florida Acad. Sci. 8:194. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 23.x.42, coll. & det. W. A. Murrill, no. 20495. (!)

Stature of carpophore campestroid; pileus cylindric, then expanded, to 5 cm diam (Murrill), pallid with small yellow scales (Murrill), dull gold with golden brown scales when dried; dried flesh to 5 mm thick at disc, thinning to < 1 mm at margin; margin inrolled. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe equal; to 3 cm long, base more or less flattened, appearing fibrous, concolorous with pileus; ring superior, gold when dried;

odor strong, amygdaline (Murrill), flesh readily turning gold when handled (Murrill).

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate, 3.0-10.7 µm diam, unbranched; hyphae of pileus flesh 2.3-18.5 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-10.7 µm diam, slightly inflated to uninflated; basidia 6.0-7.5 x 13.8-23.0 µm, 4-sterigmate, without clamp connections; cystidia (crush mounts) lageniform, ventricose-rostrate or pseudoparaphysoid, to 7.5 µm diam. Hyphae of stipe surface above ring 3.0-15.3 µm diam, parallel, tightly packed. Hyphae of ring 2.3-13.8 µm diam. Hyphae of universal veil (stipe surface below ring) mostly uninflated, to 18.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores (5.3)6.0 x (3.8)4.5 µm, ovoid to ellipsoid; lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus papillate on immature spores, indiscernible on mature spores.

Schaeffer macrochemical reaction: negative.

Observations: The lageniform, ventricose-rostrate or pseudoparaphysoid cystidia immediately characterize this species. In addition, it is macroscopically distinctive for its small size and flattened stipe base.

Murrill (1945) said the species is readily recognized by its strong amygdaline odor and golden coloration when

handled or dried. Agaricus xanthodermus is suggested, particularly as regards the yellowish staining of the fruit body, but according to Pilát (1951), A. xanthodermus has little or no odor, often cracks rimosely on the surface of the pileus and bears considerably larger spores. Murrill also remarked that the species will turn yellow in KOH, a trait which is apparently observed only on fresh specimens. Murrill synonymized the species with A. amygdalinus Curtis (nomen herbariorum), but I have found the two to be distinct.

The species occurs in open wooded areas (teste Murrill) and is known from Florida, Tennessee and South Carolina. Its distribution suggests that this is a coastal plain species which has extended its range into mountainous areas. Edibility is unknown.

Specimens examined:

Florida: Gainesville, 23.x.42, coll. & det. W. A. Murrill, no. 20495 (FLAS, TYPE); Gainesville, 27.v.43, det. W. A. Murrill, no. 21103 (TENN); Gainesville, 19.vi.42, det. W. A. Murrill, no. F20485 (FLAS); Gainesville, 14.ix.41, det. W. A. Murrill, no. F21511 (FLAS); Gainesville, 22.v.43, det. W. A. Murrill, no. F17700 (FLAS); Gainesville, 25.iii.44, det. W. A. Murrill (as Agaricus projectellus), no. 16053 (TENN).

South Carolina: Winnsboro, 23.v.66, det. A. H. Freeman, no. 29019 (TENN).

Tennessee: Knoxville, 6.vi.57, det. A. H. Freeman, no. 9239 (TENN); Knoxville, 6.vi.57, det. A. H. Freeman, no. 21689 (TENN); Knoxville, 30.v.55, det. B. F. Isaacs (as A. subponderosus), no. 21668 (TENN); Knoxville, 24.vi.60, det. A. H. Freeman, no. 23769 (TENN); Knoxville, 30.v.63, det. A. H. Freeman, no. 25526 (TENN); Gatlinburg, 21.vi.76, det. A. H. Freeman, no. 40092 (TENN); Claxton School, Anderson Co., 15.viii.42, coll. L. R. Hesler (as A. silvicola), s.n. (MICH).

3. Agaricus andrewii Freeman sp. nov.

Type Specimen: TENN, West Waynesville, N.C., -.vii.75, coll. G. W. Freeman, det. A. H. Freeman, no. 40331.

Statura campestroidia; pileo 6 cm diam, convexo mox plano, albo, summo serico; stipito aequo, 4.5 cm longo; annulo superiore vel medio; cheilocystidiis paucis, napiformis vel clavis, 10.7-18.5 µm diam; hyphis integumentorum universorum -23.0 µm diam; spores (7.0)7.5-9.2 x (4.5)5.5-6.0 µm.

Stature of carpophore campestroid; mature pileus convex to plane, to 6 cm diam, white, cream colored when dried; surface silky-fibrillose; dried flesh to 4 mm thick at disc, thinning to < 1 mm at margin; margin appendiculate. Lamellae pink in youth, deep chocolate brown when matured, free, to 3 mm deep. Stipe equal to tapering upward, to 4.5 cm long, appearing fibrous, concolorous with pileus; ring

median to superior, cream colored when dried; odor mild.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia 2.3-5.5 µm diam, scattered, unbranched; hyphae of pileus flesh 4.5-24.5(35.0) µm diam, occasionally inflated, thin-walled, without clamp connections. Lamella trama irregular; hyphae 2.3-18.5 µm diam, occasionally inflated; basidia 7.0-9.2 x 18.5-32.0 µm, 2-4-sterigmate, without clamp connections; cheilocystidia broadly clavate to napiform, 10.7-18.5 µm diam, scattered, sparce. Hyphae of stipe surface above ring 4.5-18.5 µm diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Hyphae of universal veil (stipe surface below ring) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores (7.0)7.5-9.2 x (4.5)5.5-6.0 µm, broadly ellipsoid to ovoid; wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: Macroscopically, this species is identical to glabrous forms of A. campestris. Microscopically, however, it is unique. Like A. campestris, A. andrewii bears cheilocystidia, but they are broadly clavate to napiform and sparce, as opposed to the numberous clavate, broadly clavate or subpyriform cheilocystidia of A. campestris. In addition, the universal veil hyphae of A. andrewii are highly inflated, whereas in A. campestris they are uninflated or only slightly so. Agaricus andrewii also produces somewhat

narrower spores than A. campestris.

This is a meadow and pasture species and due to its close resemblance to A. campestris has probably been unwittingly eaten and proved edible. Further collections are needed to establish range of the species.

Specimens examined:

North Carolina: West Waynesville, -.vii.75, coll. G. W. Freeman, det. A. H. Freeman, no. 40331 (TENN, TYPE).

4. Agaricus campestris Linnaeus per Fries ss. Pilat

[Linnaeus. 1753. Species Plantarum. 1173.]

Fries, E. M. 1821. Syst. Mycol. I:281.

Pilát, A. 1951. Acta Mus. Nat. Pragae. 7 B. no. 1. pp. 30-36.

Stature of carpophore campestroid; mature pileus to 10 cm diam, subglobose when young, expanded to plane upon maturity, white, cream when dried; surface silky-fibrillose, occasionally bearing (with age) brownish appressed squamules on the disc; dried flesh to 6 mm thick at disc, thinning at margin; margin projecting 2 mm. Lamellae pink to roseous in youth, deep chocolate brown when mature, free, to 3 mm deep. Stipe to 5 cm long, equal, concolorous with pileus; ring superior, indistinct to absent on older specimens, cream when dried.

Hyphae of pileus cuticle interwoven, repent; pileocystidia lacking; hyphae of pileus flesh 7.5-23.0 µm diam,

inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-7.5 µm diam, uninflated; basidia 7.5-9.2 x 20.0-27.5 µm, 4-sterigmate, without clamp connections; cheilocystidia 7.5-10.0 µm diam, scattered, clavate to broadly clavate to subpyriform. Hyphae of stipe surface above ring 2.3-15.3 µm diam, parallel, tightly packed. Hyphae of ring 2.3-10.7 µm diam. Hyphae of universal veil (stipe surface near base) uninflated or only slightly so, to 12.2 µm diam, without clamp connections, thin-walled, hyaline.

Spores variable, 5.5-10.0 x 3.8-7.0 µm, ovoid to very broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible to minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: Pilát's description and photographs are, I feel, sufficient for identification of this species. The species is ubiquitous and is characterized by uninflated or only slightly inflated universal veil hyphae, numerous cheilocystidia, field habitat and pink lamellae in youth. Spore size seems to be variable; in all other respects, however, small-spored and large-spored forms are identical.

This is a meadow and pasture species, often called "the blusher" or "pink bottom" due to the rosy-pink color of the immature lamellae. It is a prized edible fungus.

Specimens examined:

Florida: Gainesville, 28.iv.43, det. A. H. Smith, s.n. (MICH).

South Carolina: Clemson College campus, 16.viii.26, det. C. H. Kauffman, s.n. (MICH).

Tennessee: Knoxville, 24.vii.37, det. L. R. Hesler, no. 10702 (TENN); Smoky Mt. Nat'l. Park, 29.v.38, det. L. R. Hesler, no. 11441 (TENN); Knoxville, 11.xi.41, det. A. H. Smith, no. 14059 (TENN); Knoxville, 26.x.49, det. L. R. Hesler, no. 19483 (TENN); Knoxville, 26.x.49, det. L. R. Hesler, no. 19484 (TENN); Knoxville, 13.ix.51, det. A. H. Smith, no. 20179 (TENN); Knoxville, 13.ix.51, det. A. H. Smith, no. 20173 (TENN); Knoxville, 27.iv.54, det. A. H. Smith, no. 21342 (TENN); Knoxville, 9.vii.56, det. L. R. Hesler, no. 22314 (TENN); Knoxville, 2.vi.59, det. B. F. Isaacs, no. 22994 (TENN); Knoxville, 7.viii.59, det. L. R. Hesler, no. 23222 (TENN); Knoxville, 25.vi.60, det. L. R. Hesler, no. 23575 (TENN); Knoxville, 20.ix.62, det. L. R. Hesler, no. 24911 (TENN); Knoxville, 9.viii.62, det. L. R. Hesler, no. 24929 (TENN); Knoxville, 23.vii.63, det. L. R. Hesler, no. 27084 (TENN); Knoxville, 5.vi.65, det. B. F. Isaacs, no. 28061 (TENN); Knox Co., 5.vii.71, det. A. H. Freeman, no. 35834 (TENN); Knoxville, 6.x.73, det. L. R. Hesler, no. 39058 (TENN); Knoxville, 20.v.76, det. A. H. Freeman, no. 40091 (TENN).

5. Agaricus argenteus Braendle in Peck

Bull. Torrey Bot. Club 26:68. 1899.

Type Specimen (holotype, implicit): NYS, Washington,

D.C., -.xi.-, coll. & det. F. J. Braendle, s.n. (!).

Stature of carpophore campestroid; mature pileus convex to plane, to 5 cm diam, pale grayish white or grayish brown (Braendle), dingy tan when dried; surface silky; dried flesh to 1 mm thick at disc, thinning at margin. Lamellae brownish at first, never pink, deep chocolate brown when mature, free, to 4 mm deep. Stipe equal, to 3.5 cm long, appearing fibrous, concolorous with pileus, solid; ring superior, evanescent (Braendle).

Hyphae of pileus cuticle tightly interwoven, repent; pileocystidia lacking; hyphae of pileus flesh 4.5-23.0 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-23.0 µm diam, usually uninflated; basidia 6.0-9.2 x 15.3-29.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-26.0 µm diam, parallel, tightly packed. Hyphae of ring 3.0-12.2 µm diam. Hyphae of universal veil (stipe surface near base) inflated, to 26.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores (7.5)9.2-13.0 x 6.0-7.5 µm, ellipsoid to ovoid; wall dark brown, less than 0.6 µm thick; apiculus papillate, hyaline or indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: This is a most distinctive species due

to the highly inflated universal veil tissue, very large spores and lack of cheilocystidia. Peck (1899) remarked that specimens were frequently associated with Stropharia bilamellata.

The species is found on lawns and in meadows and is reportedly edible and delicious. Its range extends as far north as Washington, D.C. and south to South Carolina, preferring, apparently, coastal plain areas.

Specimens examined:

Maryland: Prince Georges Co., 2.vii.73, det. KHM (as Agaricus campestris), no. KHM 13626 (BPI).

North Carolina: Highlands, 8.viii.66, det. A. H. Freeman, no. 29252 (TENN); Chapel Hill, 21.ix.14, coll. W. C. Coker, no. 1240 (NCU); Jackson Co., 3.viii.75, det. A. H. Freeman, no. 40070 (TENN); 25.ix.-, coll. W. C. Coker, no. 434 (NCU); Chapel Hill, 9.vii.14, coll. W. C. Coker, no. 1104 (NCU).

South Carolina: Winnsboro, 16.v.66, det. A. H. Freeman, no. 28985 (TENN); Fairfield Co., 18.v.66, det. A. H. Freeman, no. 29012 (TENN).

Tennessee: Knoxville, 17.xii.71, det. A. H. Freeman, no. 5147 (TENN); Knoxville, 4.xii.41, det. B. F. Isaacs (as A. pampeanus), no. 14090 (TENN); Great Smoky Mtn. Nat'l. Park, 24.v.42, det. A. H. Smith (as A. argentatus), no. 14211 (TENN); Knoxville, 29.x.49, det. B. F. Isaacs, no. 19495 (TENN); Knox Co., 25.xi.54, det. B. F. Isaacs, no.

21572 (TENN); Knoxville, 2.vi.55, det. B. F. Isaacs, no. 21690 (TENN); Oak Ridge, 16.x.66, det. A. H. Freeman, no. 29447 (TENN); Knoxville, 4.xii.41, det. A. H. Smith (as A. argentatus), no. F31330 (FLAS).

Washington, D.C.: -.xi.-, coll. & det. F. J. Braendle, s.n. (TYPE, NYS); 13.xi.30, coll. C. S. & A. L. Parker (as Psalliota arvensis), no. 2014 (BPI).

6. Agaricus rodmani Peck

N.Y. State Mus. Bull. 36:45-46. 1884.

Type Specimen (holotype, implicit): NYS, Astoria, L.I., no date, coll. W. Rodman, det. C. H. Peck, s.n. (!).

Stature of carpophore campestroid; mature pileus convex to plane, to 10 cm diam (Peck), white or whitish to yellowish on disc (Peck), dull tan when dried; surface smooth to slightly rimose-squamose on disc; dried flesh to 5 mm thick at disc, thinning to 1 mm at margin; margin decurved. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe equal, to 7.5 cm long, appearing fibrous, concolorous with pileus, solid; ring median, flaring upward, dull tan when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia abundant, loosely fasciculate, 1.5-6.0 µm diam, unbranched; hyphae of pileus flesh 3.8-21.5 µm diam, inflated, without clamp connections,

thin-walled. Lamella trama irregular; hyphae 2.3-10.7 µm diam, occasionally slightly inflated; basidia 6.0-7.5 x 13.8-23.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-10.7 µm diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Hyphae of universal veil (stipe surface below ring) inflated, to 7.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 4.5-7.0 µm, ovoid to ellipsoid when immature, becoming globose to subglobose when mature; lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: A very squat, thick-fleshed species, A. rodmani is remarkable for its preference for urban habitats. It differs from A. campestris in its lack of cheilocystidia and generally smaller spores. The nature of the ring is highly variable as also noted by Kauffman (1918) and Hotson and Stuntz (1938); at times it is distinctly double, appearing as two single rings, one just above the other, but at other times it appears to be single. There is no difference microscopically between the two forms.

The distribution of these specimens suggests that A. rodmani is a northern species whose range has extended southward. The species is edible and, according to Peck, equal to A. campestris in flavor.

Specimens examined:

New York: Astoria, L.I., no date, det. C. H. Peck, s.n. (NYS, TYPE).

North Carolina: Chapel Hill, 17.x.12, coll. W. B. Cobb (as A. campestris), no. 587 (NCU).

Tennessee: Smoky Mtn. Nat'l Park, Elkmont, 2.xi.41, det. A. H. Freeman, no. 14051 (TENN).

Washington, D.C.: 14.ix.23, det. Dr. C. Thom., s.n. (BPI); 22.v.29, det. V. K. Charles, s.n. (BPI).

7. Agaricus comptuliformis Murrill

Mycologia 14:203. 1922.

Type Specimen (holotype, explicit): NY, Auburn, Ala., 29.vii.99, coll. F. S. Earle, det. W. A. Murrill, s.n. (!).

Stature of carpophore campestroid; mature pileus convex to expanded, to 5 cm diam (Murrill), bright yellow, then white (Murrill), dull tan when dried; surface smooth; dried flesh to 3 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe equal, to 5 cm long, appearing fibrous, white to tawny with more or less fibrous scales below ring (Murrill), concolorous with pileus when dried; ring superior, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia 3.0-6.0 µm diam, scattered, branched

or unbranched; hyphae of pileus flesh 3.0-20.0 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-15.3 µm diam, occasionally inflated; basidia 6.0-7.5 x 18.5-20.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-15.3 µm diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Universal veil hyphae (stipe surface below ring) slightly inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.0-4.5 µm, ellipsoid to ovoid; wall dark brown, 0.6 µm thick; apiculus a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Observations: Agaricus comptuliformis, like A. campestris, possesses uninflated or only slightly inflated universal veil tissue and a glabrous white pileus. Agaricus comptuliformis, however, lacks cheilocystidia and has much smaller spores than A. campestris. The species is also very closely related to A. sulphureiceps from which A. comptuliformis differs primarily in possession of an equal stipe and broadly ellipsoid to ovoid spores.

The species is found in open wooded areas (teste Murrill). Its edibility is unknown. Current distribution includes mountainous and coastal plain areas (Alabama and Tennessee).

Specimens examined:

Alabama: Auburn, 29.vii.99, coll. F. S. Earle, det. W. A. Murrill, s.n. (NY, TYPE); Fusihatchie, 21.vi.42, det. A. H. Smith, s.n. (MICH).

Tennessee: Carter School, Knox Co., 7/10/34, det. B. F. Isaacs, no. 3947 (TENN); Knoxville, 13.vii.41, det. A. H. Smith, no. 13825 (TENN); Knoxville, 13.vi.51, det. B. F. Isaacs, no. 20051 (TENN); Knoxville, 10.vi.60, det. B. F. Isaacs, no. 23709 (TENN); Knoxville, 24.v.74, det. L. R. Hesler, no. 39214 (TENN).

8. Agaricus solidipes Peck

Bull. Torrey Bot. Club. 31:180. 1904.

Type Specimen (holotype, implicit): NYS, Denver, Colo., no date, coll. E. B. Sterling, det. C. H. Peck, s.n. (!).

Stature of carpophore camprestroid; mature pileus convex, to 7 cm diam (Peck), white or whitish (Peck), pale cream when dried; surface squamose or rimose-squamose, scales imbricate, to 4 mm thick; dried flesh to 5 mm thick at disc, thinning to 1 mm at margin; margin involute. Lamellae (mature) deep chocolate brown, free, to 6 mm deep. Stipe equal, to 4 cm long, appearing fibrous, concolorous with pileus, solid; ring superior to appendiculate, cream colored when dried.

Hyphae of pileus cuticle tightly interwoven, repent; pileocystidia lacking; hyphae of pileus flesh highly inflated, to 27.5 µm diam, without clamp connections, thin-walled.

Lamella trama irregular; hyphae 3.0-4.5 µm diam, irregularly inflated; basidia 4.5-7.5 x 20.0-23.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-9.2 µm diam, parallel, tightly packed. Hyphae of ring 3.0-9.2 µm diam. Hyphae of universal veil (stipe surface below ring) inflated, to 16.8 µm diam, without clamp connections, thin-walled, hyaline.

Spores 7.5-12.2 x 6.0-7.5 µm, subglobose to ellipsoid or ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus papillate to barely discernible, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: Although somewhat resembling A. campestris, A. solidipes may be distinguished by its lack of cheilocystidia, imbricate cracking of the pileus and larger spores.

The species is found in meadows and is, according to Peck, edible. Agaricus solidipes currently has a rather disjunct distribution having been collected in Florida and Colorado; further collecting might solidify the distribution, but it may be that this is strictly a coastal plain and prairie species.

Specimens examined:

Colorado: Denver, no date, coll. E. B. Sterling, det. C. H. Peck, s.n. (NYS, TYPE).

Florida: Gainesville, 14.v.43, det. A. H. Smith, no. F1935 (MICH).

9. Agaricus subponderosus Murrill

Quart. J. Florida Acad. Sci. 8:195. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 4.xii.44, coll. & det. W. A. Murrill, no. 21775 (!). Isotype: TENN, no. 21107 (!).

Stature of carpophore robustly campestroid; mature pileus convex to plane, to 12 cm diam (Murrill), white (Murrill), gold when dried; surface squamulose; dried flesh to 12 mm thick around depressed disc, thinning to <1 mm at margin; margin upturned with age. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe equal, to 12 cm long, appearing fibrous, concolorous with pileus, solid; ring appendiculate, superior when adhering to stipe, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 2.3-6.0 µm diam, usually unbranched; hyphae of pileus flesh 3.0-15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 1.5-10.7 µm diam, occasionally inflated; basidia 5.5-7.0 x 12.2-23.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-13.8 µm diam, parallel, tightly packed. Hyphae of ring 2.3-16.8 µm diam. Hyphae of universal veil (stipe surface below ring) uninflated or only slightly so, 3.0-6.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5 µm, subglobose to ellipsoid or ovoid; wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Observations: This is a large, thick-fleshed species, suggesting A. campestris, but lacking cheilocystidia, bearing floccose squamules and having smaller spores. From A. praemagniceps, A. subponderosus may be distinguished by its lack of multicellular cheilocystidia.

The species is found in shaded, grassy areas and is currently known only from Florida and Tennessee. Edibility is unknown.

Specimens examined:

Florida: Gainesville, 4.xii.44, coll. & det. W. A. Murrill, no. 21775 (FLAS, TYPE); Gainesville, 7/11/42, det. W. A. Murrill (as Agaricus cylindriceps), no. F22137 (FLAS).

Tennessee: Knoxville, 17.v.53, det. B. F. Isaacs, no. 20818 (TENN); Knoxville, 1.v.54, det. B. F. Isaacs, no. 21313 (TENN); Knoxville, 2.vi.57, det. B. F. Isaacs, no. 22581 (TENN); Knoxville, 27.v.61, det. B. F. Isaacs, no. 23748 (TENN); Knoxville, 22.v.72, det. L. R. Hesler, no. 36706 (TENN).

10. Agaricus cylindriceps Murrill

Lloydia 7:323. 1944.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 13.viii.37, coll. & det. W. A. Murrill,

no. 16050 (!). Cotype: NY, no. F16050 (!).

Stature of carpophore campestroid; young pileus convex-truncate, with flattened disc, not fully expanded at maturity, to 8 cm diam (Murrill), white or pale yellow-white (Murrill), dull gray-gold when dried; surface minutely squamulose; dried flesh to 6 mm thick at disc, thinning to <1 mm at margin; margin inrolled. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe bulbous, to 7.5 cm long, appearing fibrous, white (Murrill), gray when dried, solid; ring median to superior, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia usually unbranched, fasciculate or scattered, to 7.5 µm diam; hyphae of pileus flesh 3.0-15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 1.5-9.2 µm diam, uninflated or only slightly so; basidia 4.5-7.0 x 12.2-24.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-16.8 µm diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Hyphae of universal veil (stipe surface below ring) inflated slightly, to 7.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5 µm, ovoid to ellipsoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: The convex-truncate nature of the immature pileus, which, even with age, never fully expands, serves to make this species easily identifiable. This shape of the pileus, the inrolled margin and campestroid stature are the species' most distinctive characteristics.

The species is found in grassy exposed areas (teste Murrill) and up to the present time is known only from Florida. Edibility is unknown.

Specimens examined:

Florida: Gainesville, 13.viii.37, coll. & det. W. A. Murrill, no. 16050 (FLAS, TYPE); Gainesville, det. R. Singer, no. F2080/I (MICH); Gainesville, 22.v.43, det. W. A. Murrill, s.n. (MICH); Gainesville, 27.v.43, det. W. A. Murrill, s.n. (MICH); Gainesville, det. W. A. Murrill, s.n. (MICH); Gainesville, 13.vi.42, det. W. A. Murrill, no. 16048 (TENN); Gainesville, 1.vi.44, det. W. A. Murrill. no. F8731 (FLAS); Gainesville, 4.vii.38, det. W. A. Murrill, no. F17350 (FLAS); Gainesville, 21.ix.41, det. W. A. Murrill, no. F9263 (FLAS); Gainesville, 6/2/38, det. W. A. Murrill, no. F16426 (FLAS); Gainesville, 19.vi.42, det. W. A. Murrill, s.n. (NYS); Gainesville, 21.vi.44, det. W. A. Murrill, s.n. (NCU); Gainesville, 14.viii.44, det. W. A. Murrill, s.n. (NCU); Gainesville, 26.xii.41, det. A. H. Smith (as Agaricus bivelatus), s.n. (MICH); Gainesville, -.-.43, det. A. H. Smith (as A. bivelatus), s.n. (MICH).

11. Agaricus sulphureiceps Murrill

Quart. J. Florida Acad. Sci. 8:195. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 18.vi.44, coll. & det. W. A. Murrill, no. 38805 (!).

Stature of carpophore placomycetoid; mature pileus campanulate to expanded, to 4 cm diam (Murrill), sulphureous, slightly darker on the disc (Murrill), gold when dried; surface finely fibrillose; dried flesh 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 1 mm deep. Stipe more or less bulbous, to 3.5 cm long, appearing fibrous, white (Murrill), concolorous with pileus when dried; ring superior, gold when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia scattered, 3.0-4.5 µm diam, unbranched; hyphae of pileus flesh 3.0-12.2 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-7.5 µm diam, uninflated; basidia 6.0-7.5 x 12.2-26.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 2.3-12.2 µm diam, parallel, tightly packed. Hyphae of ring 1.5-9.2 µm diam. Hyphae of universal veil (stipe surface below ring) uninflated or only slightly so, to 12.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-5.5(6.0) x (3.0)3.8 µm, subglobose to broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus

minutely papillate or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Observations: Although very closely related to A. comptuliformis, A. sulphureiceps may be distinguished by its bulbous stipe and subglobose spores. Murrill (1945) also compared the two species, but added that A. sulphureiceps differs also in color and habitat as well as stipe length and shape. Although the two species are very close, I believe the above differences, taken in toto, serve to separate two distinct taxa.

The species is found in open woodlands (teste Murrill) and up to the present time is known only from Florida. Edibility is unknown.

Specimens examined:

Florida: Gainesville, 18.vi.44, coll. & det. W. A. Murrill, no. 38805 (FLAS, TYPE); Gainesville, 25.ix.51, det. W. A. Murrill, no. F45880 (FLAS) Gainesville, 16.vi.49, det. W. A. Murrill, no. F8810 (FLAS) Gainesville, 21.ix.51, det. W. A. Murrill, no. F45882 (FLAS); Gainesville, 12.ix.50, det. W. A. Murrill, no. F45884 (FLAS); Gainesville, 8.viii. 44, det. W. A. Murrill, no. F8929 (FLAS); Gainesville, 18.vi.44, det. W. A. Murrill, no. 21108 (TENN).

Subgenus Lanagaricus Heinem. em. Freeman

≡ Euagaricus Pilát. 1951. Acta Mus. Nat. Pragae. 7 B, no. 1. p. 27. (p.p.).

≡ Psalliota Konrad and Maublanc. 1924-1937. Rev. Hymeno.

de France. p. 58. (p.p.).

Type Species: Agaricus trisulphuratus Berk.

Universal veil cellular, consisting of regularly inflated, barrel-shaped cells, or irregularly inflated or diverticulate cells; stature of fruit bodies usually placomycetoid (pileus diameter-stipe length ratio < 1), stipe usually bulbous; annulus usually well-developed; species generally occurring in wooded areas.

Observations: Emendation of this subgenus is also based on emphasis of the universal veil tissue and omission of the chemical tests conducted by Heinemann. Because I have not examined the type species of this subgenus, I am assuming that my emendation has not significantly altered Heinemann's concept and that A. trisulphuratus will fall within the limits of my subgeneric circumscription.

Key to Species of Subgenus Lanagaricus

1. Stature campestroid.....2
1. Stature placomycetoid.....11
    2. Cheilocystidia absent.....3
    2. Cheilocystidia present.....8
3. Pileus surface bearing colored scales.....4
3. Pileus surface silky or if scaly then the scales concolorous with pileus surface.....6
    4. Spores 6.0-7.5 x 3.8-4.5 µm; pileus to 18 cm diam; stipe to 10 cm long..12. A. praemagnus Murr.
    4. Spores and fruit body smaller than above.....5

5. Universal veil cells highly inflated, to 46.0 µm diam; pileus to 8 cm diam, disc glabrous; spores 4.5-6.0 x 3.8-4.5(6.0) µm .....13. *A. pseudoplacomyces* Murr.

5. Universal veil cells not highly inflated, to 28.5 µm diam; pileus to 4.5 cm diam, gold with gold appressed fibrillose scales when dried; spores 4.5-6.0 x 3.0-4.5 µm.....14. *A. nobelianus* Freeman

6. Spores 6.0-7.5 x 4.5-6.0 µm; pileus to 9 cm diam, margin projecting; stipe bulbous, to 7 cm long.....15. *A. xanthodermoides* Murr.

6. Spores generally smaller than above.....7

7. Ring superior, thick, persistent; spores 5.3-7.0 x 4.5-5.3 µm; pileus to 9 cm diam, margin projecting.....16. *A. blazei* Murr.

7. Ring median to superior, more or less evanescent; spores 4.5-6.0 x 3.8-4.5 µm; pileus to 7 cm diam, margin slightly inrolled .....17. *A. auricolor* Krieger *ss.* Coker

8. Cheilocystidia multicellular, scattered, to 6.0 µm diam; pileus to 15 cm diam, with fibrils on the disc; stipe bulbous, to 10 cm long; spores (4.5)5.3-6.0 x 3.8-4.5 µm .....18. *A. praemagniceps* Murr.

8. Cheilocystidia not as above.....9

9. Pileus imbricate-scaly on disc, to 10 cm diam; margin

projecting 1 mm, more or less inrolled; stipe equal, to 7 cm long; spores 6.0-7.5 x 4.5-6.0 µm; cheilocystidia scattered, napiform, brown, 10.7-15.3 µm diam.....19. A. alligator Murr.

9. Pileus not as above, spores smaller than above.....10

10. Universal veil cells irregularly inflated, to 18.5 µm diam; spores 5.5-6.0 x 3.8-4.5 µm; pileus convex, not fully expanded, to 6.5 cm diam, smooth to fibrillose; stipe to 6 cm long .....20. A. alabamensis Murr.

10. Universal veil cells regularly inflated (barrel-shaped), to 15.3 µm diam; spores 6.0-6.8 x 4.5-5.3 µm; pileus broadly convex to plane, occasionally rimose-areolate, to 15 cm diam; stipe to 10 cm long.....21. A. floridanus Pk.

11. Cheilocystidia present.....12

11. Cheilocystidia absent.....16

12. Spores 7.5-9.2 x (4.5)5.3(6.0) µm; pileus to 7 cm diam; stipe bulbous, to 8 cm long; surface appressed silky fibrillose to scaly on disc; lamella edge sterile with broadly clavate to napiform cheilocystidia, 7.5-17.5 µm diam .....22. A. arvensis var. palustris Smith

12. Spores smaller than above.....13

13. Fruit body small; pileus to 4 cm diam, stipe bulbous, to 4 cm long; surface covered with imbricate purple

scales; cheilocystidia napiform, to 9.2 µm diam; spores 4.5-6.0 x 3.0-3.8 µm....23. A. alachuanus Murr.

13. Fruit body larger than above.....14

14. Pileus surface covered with fine gray to smoky appressed fibrillose scales, to 11 cm diam; stipe bulbous, to 11 cm long; cheilocystidia broadly clavate to napiform, 7.2-10.0 µm diam; spores (4.3)5.0-5.7 x 2.8-3.5 µm .....24. A. praeclaresquamosus nom. nov.

14. Pileus surface not as above.....15

15. Pileus densely brown fibrillose-scaly, to 8 cm diam; pileocystidia 7.0-13.8 µm diam; stipe equal to slightly bulbous, to 5 cm long; cheilocystidia scattered, napiform, to 20.0 µm diam; spores 4.5-5.5(6.0) x 3.0-3.8 µm....25. A. rubribrunnescens Murr.

15. Pileus squamulose, to 12 cm diam; stipe bulbous, to 10 cm long; cheilocystidia scattered, broadly capitulate to napiform, to 6.0 µm diam; spores (4.5)5.5-6.0(8.5) x 3.0-4.5 µm.....26. A. badius Freeman

16. Fruit body small, pileus usually less than 4 cm diam.....17

16. Fruit body larger than above.....21

17. Universal veil cells irregularly inflated, to 14.0 µm diam; spores 4.5-5.3(6.0) x 3.8 µm; pileus to 1.5 cm diam, fibrillose on disc; stipe to 3.5 cm long, equal to slightly bulbous.....27. A. diminutivus Pk.

17. Universal veil cells regularly inflated (barrel-shaped), spores larger than above.....18

    18. Pileus squamulose, to 3.5 cm diam, margin slightly inrolled; stipe equal to tapering upward, to 3 cm long; spores 6.0-7.0 x 4.5 µm.....28. A. subalachuanus Murr.

    18. Pileus minutely scaly or fibrillose, to 2.5 cm diam, margin even.....19

19. Pileus minutely scaly, isabelline, becoming tan to dull brown when dried; stipe to 3.0 cm long; spores 4.5-7.0 x 3.0-4.5 µm.....29. A. subcomptulus Murr.

19. Pileus fibrillose, not scaly.....20

    20. Ring superior, thick, mobile when dried; pileus grayish when fresh; spores 6.0-7.0 x 3.8-4.5 µm .....30. A. hannoni Freeman

    20. Ring superior, evanescent, not mobile when dried; pileus cream-yellow when fresh; spores 4.5-6.0(7.0) x 3.8-4.5 µm.....31. A. tantulus Freeman

21. Pileus innately brown-fibrillose, not scaly.....22

21. Pileus squamulose or smooth.....23

    22. Spores 6.0-8.5 x 5.3-6.0 µm; pileus to 5 cm diam; stipe equal, to 4 cm long .....32. A. subhortensis Murr.

    22. Spores 5.3-6.0 x 3.8-4.5 µm; pileus to 6.5 cm diam; stipe bulbous, to 8 cm long .....33. A. rhoadsii Murr.

23. Pileus appressed fibrillose-squamulose, to 15 cm diam, becoming gold when dried; stipe abruptly bulbous, to 10 cm long, often with one to three rhizomorphic strands; spores 5.5-6.0 x 3.8-4.5 µm .....34. A. auresiccescens Freeman

23. Pileus squamulose, spores larger than above.....24

24. Spores 4.5-7.5(9.2) x 3.8-5.3 µm; size of fruit body variable; pileus to 15 cm diam, always very thick-set; stipe bulbous, to 10 cm long .....35. A. subrufescens Pk.

24. Fruit bodies smaller than above.....25

25. Ring obviously double, the partial veil forming a discrete roll of tissue on the lower surface of the marginal veil; pileus to 10 cm diam, minutely scaly; stipe bulbous, to 8 cm long; spores 4.5-6.0 x 3.0-3.8 µm.....36. A. pocillator Murr.

25. Ring not as above.....26

26. Universal veil cells irregularly inflated.....27

26. Universal veil cells regularly inflated (barrel-shaped).....28

27. Pileus squamulose, to 7.5 cm diam; stipe bulbous, often with one or two rhizomorphic strands attached to the base, to 12.5 cm long; spores 4.5-6.0 x 3.0-3.8(4.5) µm.....37. A. placomyces Pk.

27. Pileus smooth, to 6.5 cm diam; stipe abruptly bulbous, the bulb often somewhat flattened on top,

to 12.5 cm long; spores 6.0-7.5 x 4.5 µm .....38. A. abruptibulbus Pk.

28. Stipe broad at base, tapering upward, to 5 cm long, pileus conic to truncate-convex, with fibrillose scales, to 7 cm diam; spores 4.5-6.0 x 3.8-4.5 µm.....39. A. blockii Murr.

28. Stipe not as above.....29

29. Pileus convex, depressed in center, slightly squamulose, to 5 cm diam; stipe distinctly bulbous, to 3 cm long; spores 4.5-6.0 x 3.8-4.5 µm.40. A. citrinidiscus Murr.

29. Pileus not depressed in center.....30

30. Margin projecting to 5 mm, inrolled; pileus occasionally minutely floccose, to 8 cm diam; spores (4.5)6.0-7.5 x 3.8-5.3 µm .....41. A. projectellus Murr.

30. Margin not projecting; pileus broadly umbonate, to 8 cm diam, squamulose; spores 4.5-6.0 x 4.5-5.5 µm.....42. A. subarvensis Murr.

12. Agaricus praemagnus Murrill

Mycologia 10:78. 1918.

Type Specimen (holotype, explicit): NY, Cuba, 13.v.04, coll. F. S. Earle, det. W. A. Murrill, no. 18 (!).

Stature of carpophore campestroid; mature pileus convex to expanded, to 18 cm diam (Murrill), avellaneous to dirty-white or yellowish with minute appressed

avellaneous or brownish scales (Murrill), dull gold with gray tinges and grayish scales when dried; dried flesh to 7 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe more or less bulbous, to 10 cm long, appearing fibrous, dirty-white (Murrill), dull gray-gold when dried; ring superior, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia 3.0-10.7 µm diam, loosely fasciculate or scattered, unbranched; hyphae of pileus flesh 4.5-15.3 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-16.8 µm diam, occasionally inflated; basidia 5.5-6.0 x 12.2-20.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-16.8 µm diam, parallel, tightly packed. Hyphae of ring 3.8-12.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 20.0(29.0) µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 3.8-4.5 µm, ovoid to broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Observations: Of studied species with cellular universal veil tissue and campestroid stature but lacking cheilocystidia, A. praemagnus is not only larger overall,

but can be distinguished most obviously by its dark colored, appressed, fibrillose scales. It is also interesting to note the range of this species; first described from Cuba, it has since been found in Florida and as far north as Tennessee.

The species is found in grassy areas (teste Murrill). Edibility is unknown.

Specimens examined:

Cuba: 13.v.04, coll. F. S. Earle, det. W. A. Murrill, no. 18 (NY, TYPE).

Florida: Gainesville, 20.vii.45, det. B. F. Isaacs, no. 21109 (TENN).

Tennessee: Knoxville, 11.x.37, det. B. F. Isaacs, no. 10883 (TENN); Knoxville, 11.viii.49, det. B. F. Isaacs, no. 19221 (TENN); Knoxville, 7.x.56, det. B. F. Isaacs, no. 22443 (TENN).

13. Agaricus pseudoplacomyces Murrill.

Quart. J. Florida Acad. Sci. 8:194. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 24.v.44, coll. & det. W. A. Murrill, no. 20483 (!).

Stature of carpophore placomycetoid; mature pileus convex to plane, to 8 cm diam (Murrill), surface covered except on disc with purple-brown scales (Murrill), brown when dried; dried flesh to 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to

3 mm deep. Stipe bulbous or equal, to 5 cm long, appearing fibrous, white (Murrill), concolorous with pileus when dried; ring superior, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia tightly fasciculate, to 9.2 µm diam, unbranched; hyphae of pileus flesh 4.5-21.5 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-12.2 µm diam, uninflated; basidia 6.0-9.2 x 10.7-15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-20.0 µm diam, parallel, tightly packed. Hyphae of ring 4.5-15.3 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 30.0(46.0) µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5(6.0) µm, subglobose to ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: Murrill (1945) adequately distinguished A. pseudoplacomyces from A. placomyces by remarking that A. pseudoplacomyces exhibited a shorter stipe, wider spores, and smaller, less persistent scales than A. placomyces. Agaricus pseudoplacomyces is also almost campestroid in stature, but is very thin-fleshed and generally bears a bulb at the stipe base. The color of the scales and their tendency to be lost, squat stature, highly inflated

universal veil tissue and wider spores all serve to distinguish this species.

The species is found in open woodlands (teste Murrill) and up to the present time is known only from Florida. Edibility is unknown.

Specimens examined:

Florida: Gainesville, 24.v.44, coll. and det. W. A. Murrill, no. 20483 (FLAS, TYPE); Gainesville, 20.iv.44, det. W. A. Murrill, no. F18435 (FLAS); Gainesville, 20.vi.44, det. W. A. Murrill, no. 21106 (TENN); Gainesville, 5.vii.44, det. W. A. Murrill, no. F45896 (FLAS).

14. Agaricus nobelianus sp. nov.

Type Specimen (holotype): FLAS, Gainesville, Fla., -.-.50, coll. and det. W. A. Murrill, no. 19146 (!).

Topotype: FLAS, -.-.51, coll. & det. W. A. Murrill, no. 45904 (!).

≡ A. nobelianus Murrill. nom. herb.

Stature campestroida; pileo convexo mox plano, 4.5 cm diam, fusco, summo squameo; stipito bulboso, 5.5 cm longo; annulo superiore; cheilocystidiis absentes; cellulis integumentorum universorum -28.0 µm diam; spores 4.5-6.0 x 3.0-4.5 µm.

Stature of carpophore campestroid; mature pileus convex to subexpanded, to 4.5 cm diam, dull gold-brown with dark golden brown scales when dried; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin; margin projecting

2 mm. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe slightly bulbous, to 5 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, membranous, gold-brown when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia fasciculate, 3.5-14.3 µm diam, usually unbranched; hyphae of pileus flesh 6.0-15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-6.0 µm diam, uninflated; basidia 6.0 x 13.8-16.8 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-12.2 µm diam, parallel, tightly packed. Hyphae of ring 4.5-9.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 28.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.0-4.5 µm, subglobose to ellipsoid or ovoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: To the best of my knowledge, Murrill never published a description of this taxon. The taxon is distinct and Murrill's original name is retained in acknowledgment of his recognition of the species.

The species is close to A. praemagnus, but may be distinguished from the latter by its smaller overall size and smaller spores; from A. pseudoplacomyces, A. nobelianus

is distinguished by its golden scales, less highly inflated universal veil tissue and slightly smaller spores.

Of several collections other than the type and topotype, all were in too poor condition for positive identification. The type collection consists of a single mature fruit body and brief notes by Murrill; the topotype contains two mature specimens.

Range, habitat preference and edibility are unknown.

15. Agaricus xanthodermoides Murrill

Quart. J. Florida Acad. Sci. 8:195-196. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 25.iii.44, coll. & det. W. A. Murrill, no. 22503 (!). Cotype: TENN, no. 16056 (!).

Stature of carpophore delicately campestroid; pileus convex, then expanded, to 9 cm diam, white (Murrill), dull gray-tan when dried; surface silky to slightly scaly; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin; margin projecting 3 mm. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe slightly bulbous, to 7 cm long, appearing fibrous, pubescent (Murrill), concolorous with pileus when dried, solid; ring appendiculate, superior when adhering to stipe, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia fasciculate or scattered, 3.0-7.5 µm diam, unbranched; hyphae of pileus flesh 4.5-23.0 µm diam, occasionally inflated, without clamp connections, thin-walled.

Lamella trama irregular; hyphae 2.3-13.8 µm diam, occasionally inflated; basidia 6.0-7.5 x 13.8-23.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-20.0 µm diam, parallel, tightly packed. Hyphae of ring 2.3-12.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 29.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 4.5-6.0 µm, globose to broadly ellipsoid; wall dark brown, slightly greater than 0.6 µm thick; apiculus indiscernible or merely a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Observations: This species is one of several exhibiting campestroid stature and cellular universal veil tissue but lacking cheilocystidia. From A. praemagnus, A. xanthodermoides may be distinguished primarily by its smaller size and from A. blazei by its smaller spores. Murrill noted that the cuticle turns yellow in KOH; this is apparently only observed on fresh material.

The species may be found in open grassy areas (teste Murrill). Up to the present time, its distribution is limited to coastal plain regions.

Specimens examined:

Alabama: Auburn, 1.viii.55, det. B. F. Isaacs, no. 21947 (TENN).

Florida: Gainesville, 25.viii.44, coll. & det. W. A. Murrill, no. 22503 (FLAS, TYPE); Gainesville, 18.iv.44, det. W. A. Murrill, s.n. (BPI); Gainesville, 28.iv.43, det. W. A. Murrill (as Agaricus subarvensis), no. 21104 (TENN).

South Carolina: Winnsboro, 16.v.66, det. A. H. Freeman, no. 28467 (TENN).

16. Agaricus blazei Murrill

Quart. J. Florida Acad. Sci. 8:193. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 24.iv.44, coll. R. W. Blaze, det. W. A. Murrill, no. 32911 (!). Cotype: NY, s.n. (!).

Stature of carpophore campestroid; mature pileus subcylindric to subexpanded, to 9 cm diam (Murrill), cream to ochraceous (Murrill), dull gold when dried; surface finely scaly; dried flesh to 11 mm thick at disc, thinning to 1 mm at margin; margin projecting 1 mm. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe equal to sub-bulbous, to 6 cm long, appearing fibrous, concolorous with pileus; ring superior, membranous, dull gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate, 3.0-6.0 µm diam, branched or unbranched; hyphae of pileus flesh 3.0-16.8 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-12.2 µm diam, occasionally inflated; basidia 5.5-9.2 x 15.3-26.0 µm,

4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-20.0 µm diam, parallel, tightly packed. Hyphae of ring 1.5-10.7 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 26.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores (4.5)5.3-7.0 x (3.8)4.5-5.3 µm, subglobose to ovoid or broadly ellipsoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Observations: Agaricus blazei is one of several species with campestroid stature and cellular universal veil tissue, but lacking cheilocystidia. From A. praemagnus it may be distinguished by its smaller size, thicker flesh, projecting margin and delicate scales which are concolorous with the pileus surface. The spores are also somewhat smaller. From A. xanthodermoides it differs in its more robust stature and smaller spores.

The species is found in open grassy areas (teste Murrill); its current distribution is limited to coastal plain areas of Florida and South Carolina. Edibility is unknown.

Specimens examined:

Florida: Gainesville, 24.iv.44, coll. R. W. Blaze, det. W. A. Murrill, no. 32911 (FLAS, TYPE); Gainesville, 25.vi.42, det. R. Singer (as Agaricus subfloridanus),

no. F9784 (FLAS); Gainesville, 4/7/39, det. W. A. Murrill (as A. subfloridanus), no. F19635 (FLAS); Gainesville, 30.iv.50, det. W. A. Murrill (as A. blazei minor), no. F17664 (FLAS); Gainesville, 9.vii.51, det. W. A. Murrill, no. F45918 (FLAS); Gainesville, 20.ix.44, det. W. A. Murrill, no. F45909 (FLAS); Gainesville, 24.iii.51, det. W. A. Murrill, no. F45928 (FLAS); Gainesville, 1.viii.52, det. W. A. Murrill, no. F45929 (FLAS); Gainesville, 29.vi.52, det. W. A. Murrill, no. F45917 (FLAS); Gainesville, 5/12/44, det. W. A. Murrill, no. F9008 (FLAS); Gainesville, 27.v.43, det. W. A. Murrill (as A. cylindriceps), no. F19258 (FLAS); Gainesville, 17.viii.51, det. W. A. Murrill, no. F45926 (FLAS); Gainesville, 2.vii.52, det. W. A. Murrill, no. F45924 (FLAS); Gainesville, 21.vii.51, det. W. A. Murrill, no. F45922 (FLAS); Gainesville, 10.viii.51, det. W. A. Murrill, no. F45925 (FLAS); Gainesville, 13.ix.50, det. W. A. Murrill (as A. blazei minor), no. F45923 (FLAS); Gainesville, 14.vii.52, det. W. A. Murrill, no. F45927 (FLAS); Gainesville, 30.vi.51, det. W. A. Murrill, no. F45916 (FLAS); Gainesville, 29.v.48, det. W. A. Murrill (as A. blazei minor), no. F45908 (FLAS); Gainesville, 26.viii.51, W. A. Murrill, no. 21102 (TENN); Gainesville, 21.vii.50, det. W. A. Murrill, s.n. (BPI); Gainesville, 7/2/50, det. W. A. Murrill, s.n. (BPI); Gainesville, 9.ix.54, det. J. A. Stevenson, s.n. (BPI).

South Carolina: Caesar's Head, 16.vii.38, det. W. C.

Coker (as A. amygdalinus), no. F45913 (G LAS); Winnsboro, 23.v.66, det. A. H. Freeman, no. 29018 (TENN).

17. Agaricus auricolor Krieger ss. Coker
(= A. amygdalinus Curtis fide Coker, nom. herb.)

Stature of carpophore campestroid or placomycetoid; mature pileus convex to plane, to 7 cm diam, dull gold when dried; surface smooth to slightly gold squamulose; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin; margin slightly inrolled. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe slightly bulbous, to 7 cm long, appearing fibrous, flocculose near base, concolorous with pileus; ring median to superior, dull gold when dried; odor when fresh of peach kernels (Coker).

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia scattered, 2.3-5.5 µm diam, unbranched; hyphae of pileus flesh 3.0-16.8 µm diam, occasionally inflated, thin-walled, without clamp connections. Lamella trama irregular; hyphae 3.0-8.5 µm diam, occasionally slightly inflated; basidia 6.0-7.0 x 15.3-18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.8-13.8 µm diam, parallel, tightly packed. Hyphae of ring 3.0-12.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 18.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5 µm, subglobose to ovoid;

wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: All of the collections from NCU had been labeled A. amygdalinus by Coker, but in 1928 he synonymized the name under A. auricolor Krieger, the type of which I have not seen. This species appears to be most readily distinguishable in the fresh state by its very strong odor of peach kernels. When dried, the species resemble dried specimens of A. abruptibulbus, but it is generally campestroid in stature, bears considerably smaller spores and exhibits distinctly cellular, not highly inflated universal veil tissue. Also, unlike A. abruptibulbus, A. auricolor tends to be slightly squamulose on the pileus surface.

Edibility is unknown.

Specimens examined:

North Carolina: Chapel Hill, 31.v.19, coll. W. C. Coker, no. 3274 (NCU); Highlands, 16.vii.38, coll. W. C. Coker, no. 10826 (NCU); Chapel Hill, 7.ix.15, coll. H. R. Totten, no. 1692 (NCU); Chapel Hill, 31.v.19, coll. W. C. Coker, no. 3209 (NCU); Chapel Hill, 8.vii.14, coll. W. C. Coker, no. 1099 (NCU); Chapel Hill, 28.ix.14, coll. W. C. Coker, no. 1279 (NCU); Chapel Hill, 27.vii.15, coll. H. R. Totten, no. 1650 (NCU); Chapel Hill, 24.ix.14, coll. W. C. Coker, no. 1259 (NCU); Chapel Hill, 7.vi.15, coll. W. C. Coker, no. 1542 (NCU); Chapel Hill, 6.vii.14, coll. W. C.

Coker, no. 1092 (NCU); Chapel Hill, 12.vii.14, coll. W. C. Coker, no. 1125 (NCU).

18. Agaricus praemagniceps Murrill

J. Elisha Mitchell Sci. Soc. 54:140. 1938.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 15.viii.37, coll. & det. W. A. Murrill, no. 16051 (!).

Stature of carpophore campestroid; mature pileus cylindric-truncate to convex, expanded, depressed over the disc, to 15 cm diam (Murrill), avellaneous when young, becoming pallid with age (Murrill), gray-gold, brown on the disc when dried; surface smooth with the exception of minute avellaneous fibrils on the disc; dried flesh 3-5 mm thick around the depressed disc, thinning to <1 mm at the margin; margin more or less inrolled. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe bulbous, to 10 cm long, appearing fibrous, white (Murrill), concolorous with the pileus when dried; ring more or less appendiculate, superior when adhering to stipe, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia locally abundant (on disc), loosely fasciculate or scattered, 2.3-7.0 µm diam, usually unbranched; hyphae of pileus flesh 3.0-20.0 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-13.8 µm diam, occasionally inflated; basidia 5.5-7.5 x 15.3-21.5 µm, 4-sterigmate,

without clamp connections; cheilocystidia scattered, catenulate, chains of 2-3-4 cells, to 6.0 µm diam, thin-walled. Hyphae of stipe surface above ring 3.0-18.5 µm diam, parallel, tightly packed. Hyphae of ring 3.0-13.8 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 26.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5 µm, broadly ellipsoid to ovoid, lacking germ pore (SEM); wall dark brown, less than 0.6 µm thick; apiculus indiscernible or merely a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Observations: Of several species exhibiting campestroid stature, cellular universal veil tissue and bearing cheilocystidia, A. praemagniceps alone bears cheilocatenulae and therefore can be easily distinguished.

The species is found in open woodlands (teste Murrill) and up to the present time has been found only in Florida. Murrill reported it "disappointing" from the standpoint of the mycophagist.

Specimens examined:

Florida: Gainesville, 15.viii.37, coll. & det. W. A. Murrill, no. 16051 (FLAS, TYPE); Gainesville, det. W. A. Murrill, no. F8980 (FLAS); Gainesville, 12.ii.49, det. W. A. Murrill, no. F45892 (FLAS); Marion Co., 8/10/39, det. W. A. Murrill, no. F19907 (FLAS); Sugarfoot, 4/11/43, det. W. A.

Murrill, no. F10249 (FLAS); Gainesville, 26.xii.41, det. A. H. Smith, no. F19565 (FLAS); Gainesville, 31.v.47, det. W. A. Murrill, no. F8766 (FLAS); Gainesville, -.-.43, det. A. H. Smith, s.n. (MICH); Gainesville, 17.v.43, det. A. H. Smith (as Agaricus sylvicola), no. F1955A (MICH); Gainesville, 14.vi.39, det. W. A. Murrill, no. 16052 (TENN).

19. Agaricus alligator Murrill

Quart. J. Florida Acad. Sci. 8:193-194. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 17.x.41, coll. & det., W. A. Murrill, no. 19566 (!). Cotype: TENN, no. 21101 (!).

Stature of carpophore campestroid; mature pileus convex to expanded, to 10 cm diam (Murrill), white (Murrill), yellowing when handled (Murrill), dull gray-gold when dried; surface silky, imbricate-scaly on disc; dried flesh to 7 mm thick at disc, thinning to 1 mm at margin; margin projecting 1 mm. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe equal, to 7 cm long, appearing fibrous, concolorous with pileus, yellowing when handled (Murrill), solid; ring median, more or less appendiculate, gray-gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia 3.8-6.0 µm diam, irregularly inflated, branched, loosely fasciculate; hyphae of pileus flesh 3.0-16.8 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-10.0 µm diam, occasionally inflated; basidia 7.5 x 9.2-15.3 µm,

4-sterigmate, without clamp connections; cheilocystidia scattered, napiform, brownish, 10.7-15.3 µm diam. Hyphae of stipe surface above ring 4.5-13.8 µm diam, parallel, tightly packed. Hyphae of ring 3.0-11.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 4.5-6.0 µm, ovoid to broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: A. alligator, along with A. floridanus and A. alabamensis, combines the campestroid stature and cellular universal veil tissue with the presence of cheilocystidia. This species is, however, readily distinguishable by the small, imbricate scales which cover the pileus, particularly the disc, and which gave the species its name. Murrill (1945) also compared the species to A. floridanus, distinguishing A. alligator by its scaly surface, and added that unlike A. floridanus, the pileus and stipe became yellowed where bruised or handled.

The species is found in open grassy areas (teste Murrill) and appears to be restricted to the coastal plain region. Edibility is unknown.

Specimens examined:

Alabama: Tuscaloosa, 19.viii.52, det. A. H. Freeman, no. 20638 (TENN).

Florida: Gainesville, 17.x.41, coll. & det. W. A. Murrill, no. 19566 (FLAS, TYPE).

20. Agaricus alabamensis Murrill

Mycologia 14:202-203. 1922.

Type Specimen (neotype, des. mihi): TENN, no. 10182. Gainesville, Fla., 7.vii.48, det. B. F. Isaacs.

Stature of carpophore campestroid; mature pileus convex, not fully expanded, to 6.5 cm diam, white (Murrill), dull gold when dried; surface smooth to fibrillose; dried flesh to 7 mm thick at disc, thinning to <1 mm at margin; margin projecting 2 mm. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe tapering upward, to 6 cm long, slightly bulbous, appearing fibrous, concolorous with pileus; ring superior, persistent, thicker near margin, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven, repent; pileocystidia lacking; hyphae of pileus flesh 3.0-24.5 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-21.5 µm diam, occasionally inflated; basidia 6.0-7.5 x 13.8-23.0 µm, 4-sterigmate, without clamp connections; cheilocystidia scattered, broadly clavate to napiform, to 12.2 µm diam. Hyphae of stipe surface above ring 3.0-26.0 µm diam, parallel, tightly packed. Hyphae of ring 3.0-18.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 18.5 µm diam,

without clamp connections, thin-walled, hyaline.

Spores 5.5-6.0 x 3.8-4.5 µm, broadly ellipsoid; wall dark brown, 0.6 m thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: Of several species combining the campestroid stature with cellular universal veil tissue and bearing napiform cheilocystidia, A. alabamensis is unique in that it lacks the imbricate scales on the pileus which characterize A. alligator and, unlike A. floridanus, the pileus never becomes rimosely areolate. The spores of A. alabamensis are also much smaller than either of the others. Murrill (1922) compared this species to A. campestris, but said it differed by having a longer stipe and smaller spores; the species does outwardly resemble A. campestris, but microscopically it is distinct.

The species is found in open grass in coastal plains areas. Edibility is unknown.

Specimens examined:

Alabama: Montgomery, -.-.42, det. A. H. Smith, s.n. (MICH).

Florida: Gainesville, Fla., 7.vii.48, det. B. F. Isaacs, no. 10182 (TENN, TYPE).

South Carolina: Winnsboro, 7.v.66, coll. C. Lyles (as Agaricus sp.), no. 27562 (TENN).

21. Agaricus floridanus Peck

N.Y. State Mus. Bull. 150:50. "1910" (1911).

Type Specimen (holotype, implicit): NYS, DeFuniak Springs, Fla., 29.iii.10, coll. G. Clyde Fisher, det. C. H. Peck, s.n. (!). Isotype: FLAS, no. 45919 (!).

Stature of carpophore campestroid; mature pileus broadly convex to plane, to 15 cm diam (Peck), whitish with a yellow or yellowish center (Peck), dull gray-gold when dried; surface rimose-areolate to slightly strigose, becoming glabrous; dried flesh to 1 cm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe equal to bulbous, to 10 cm long, appearing fibrous, ochraceous at base (Murrill), solid; ring superior, appendiculate on young specimens, dull gray-gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia loosely fasciculate to scattered, 3.8-4.5 µm diam, unbranched; hyphae of pileus flesh 4.5-20.0 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-10.7 µm diam, uninflated; basidia 6.0-7.5 x 13.8-24.5 µm, 4-sterigmate, without clamp connections; cheilocystidia napiform, scattered, 12.2-18.5 µm diam, thin-walled. Hyphae of stipe surface above ring 3.0-15.3(30.5) µm diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 30.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores (5.5)6.0-7.5 x (3.8)4.5-5.3 µm, broadly ellipsoid to ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minute to indiscernible, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: Agaricus floridanus, one of several species combining the characters of campestroid stature and cellular universal veil tissue with the presence of napiform cheilocystidia, is readily distinguishable by its thick-fleshed pileus, which is often rimose-areolate. Murrill recognized the species in the field by its ochraceous stipe base.

The species is found in open grassy fields with sandy soil (teste Murrill); it is currently known only from Florida. Edibility is unknown.

Specimens examined:

Florida: DeFuniak Springs, 29.iii.10, coll. G. Clyde Fisher, det. C. H. Peck (NYS, s.n., TYPE; FLAS, no. 45919, ISOTYPE); Gainesville, 2.iv.71, det. J. W. Kimbrough, no. F49096 (FLAS); Newberry Rd., 22.ii.39, det. W. A. Murrill, no. F18535 (FLAS); Gainesville, 22.ii.44, det. W. A. Murrill, no. F32688 (FLAS); Gainesville, 24.ii.45, det. W. A. Murrill, no. 45905 (FLAS); Gainesville, 24.iii.38, det. W. A. Murrill, no. F16064 (FLAS); Gainesville, 4/10/38, det. W. A. Murrill, no. F16200 (FLAS); Gainesville, 19.iii.44, det. W. A. Murrill, no. F18448 (FLAS); Gainesville, 3/1/44,

det. W. A. Murrill, no. 20573 (FLAS); Gainesville, 27.iv.43, det. A. H. Smith, s.n. (MICH); Gainesville, 24.iii.38, det. W. A. Murrill, s.n. (MICH); F19339 (MICH); Gainesville, 19.iii.44, det. W. A. Murrill, no. 16049 (TENN); Winter Park, 21.iii.42, det. V. K. Charles, s.n. (BPI).

22. Agaricus arvensis var. palustris Smith

Pap. Mich. Acad. Sci. Arts Lett. 25:117-118. "1939" (1940).

Type Specimen (holotype, explicit): MICH, Kent Lake, Mich., 13.ix.37, coll. & det. A. H. Smith, s.n. (!).

Stature of carpophore placomycetoid; mature pileus broadly umbonate or convex to plane, to 35 cm diam (Smith), white, creamy or yellowish on the disc (Smith), uniformly gold when dried; surface appressed silky fibrillose to scaly on disc (Smith); dried flesh to 6 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous, to 30 cm long (Smith), appearing fibrous, gray-gold when dried, hollow or stuffed; ring superior, gray-gold when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia 3.0-7.5 µm diam, branched, scattered; hyphae of pileus flesh 4.5-15.3 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-20.0 µm diam, inflated; basidia 7.5-9.2 x 20.0-30.5 µm, 4-sterigmate, without clamp connections; cheilocystidia broadly clavate to napiform, 7.5-17.5 µm diam, fasciculate

or forming a sterile band along entire gill edge. Hyphae of stipe surface above ring 3.0-23.0 µm diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Cells of universal veil (stipe surface below ring, lower surface of ring) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores (7.0)7.5-9.2 x (4.5)5.3-6.0 µm, ovoid to pyriform, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: This species is remarkable for its large cheilocystidia and spores which distinguish it immediately from other near-glabrous, placomycetoid species.

The species is found in swampy areas. Originally described from Michigan, it has since been found in Alabama and Florida. Edibility is unknown.

Specimens examined:

Alabama: Sipsey Swamp, Tuscaloosa Co., 8/9/52, det. A. H. Freeman, no. 20626 (TENN).

Florida: Gainesville, 8.vii.51, det. W. A. Murrill (as Agaricus sulphureiceps), no. F45881 (FLAS).

Michigan: Kent Lake, 13.ix.37, coll. & det. A. H. Smith, s.n. (MICH, TYPE).

23. Agaricus alachuanus Murrill

J. Elisha Mitchell Sci. Soc. 54:140. 1938.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 17.viii.37, coll. & det. W. A. Murrill, no. 15917 (!).

Stature of carpophore placomycetoid; mature pileus convex or slightly depressed, to 4 cm diam, isabelline with imbricate purple scales (Murrill), deep tan with brown scales when dried; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous, to 4 cm long, appearing fibrous, concolorous with pileus; ring median, flaring, gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia loosely fasciculate, 2.3-7.5 µm diam, irregularly inflated, unbranched; hyphae of pileus flesh 4.5-26.0 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-12.2 µm diam, slightly inflated; basidia 6.0-8.5 x 10.7-23.0 µm, 4-sterigmate, without clamp connections; cheilocystidia sparce, saccate to napiform, to 9.2 µm diam. Hyphae of stipe surface above ring 3.0-18.5 µm diam, parallel, tightly packed. Hyphae of ring 3.0-6.0 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 20 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.8 x 3.0-4.5 µm, broadly ellipsoid to subglobose, lacking germ pore (SEM); wall dark brown, 0.6 µm

thick; apiculus minutely papillate or indiscernible, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: Of several small (pileus less than 4.0 cm diam) species of Agaricus exhibiting placomycetoid stature and a squamulose pileus surface, A. alachuanus alone bears cheilocystidia and is therefore easily identifiable.

The species may be found in open woods (teste Murrill) and is currently known only from Florida. Edibility is unknown, but its small size renders it impractical in this regard.

Specimens examined:

Florida: Gainesville, 17.viii.37, coll. & det. W. A. Murrill, no. 15917 (FLAS, TYPE); Gainesville, 30.viii.39, det. W. A. Murrill (as Agaricus subalachuanus), no. 16054 (TENN); Gainesville, 5.ix.43, det. W. A. Murrill, no. 18446 (TENN); Gainesville, 9/6/38, det. W. A. Murrill, no. F18206 (FLAS); Gainesville, 15.vii.44, det. W. A. Murrill, no. F8983 (FLAS); Gainesville, 9/6/43, det. W. A. Murrill, no. F8885 (FLAS); Gainesville, 10/2/38, det. W. A. Murrill, no. F18386 (FLAS); Gainesville, 9/5/43, det. W. A. Murrill, no. F8742 (FLAS); Gainesville, 19.vii.44, det. W. A. Murrill, s.n. (NYS); Gainesville, 8.viii.44, det. W. A. Murrill, s.n. (NCU); Gainesville, 5.ix.43, det. W. A. Murrill, s.n. (BPI).

24. Agaricus praeclaresquamosus nom. nov.

≡ A. meleagris J. Schaeffer ss. Pilát. 1951. Acta Mus. Nat. Pragae. 7 B no. 1. pp. 106-114. (non A. meleagris [Sowerby] Persoon. 1801. Synopsis Methodica Fungorum. p. 347).

Stature of carpophore placomycetoid; mature pileus convex, then expanded, to 11 cm diam, white, ivory, or gray, surface covered with fine gray to smoky black, appressed, fibrillose scales, disc solid gray, pileus drying yellow-cream with gray scales and brownish disc; dried flesh to 5 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe bulbous, to 11 cm long, appearing fibrous, concolorous with pileus; ring superior, occasionally somewhat floccose below, cream to dull brown when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia fasciculate or scattered, 2.3-11.5 µm diam, occasionally inflated, branched or unbranched; hyphae of pileus flesh 3.0-18.5 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae variable, 2.0-20.0 µm diam, occasionally inflated; basidia 5.5-7.0 x 13.0-23.0 µm, 4-sterigmate, without clamp connections; cheilocystidia scattered, 7.2-12.2 µm diam, broadly clavate to napiform. Hyphae of stipe surface above ring 2.3-14.3 µm diam, parallel, tightly packed. Hyphae of ring 3.0-13.8 µm diam. Cells of universal veil (stipe

surface below ring) inflated, to 30.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores variable, (4.3)5.0-5.7(7.5) x 2.8-3.5(4.5) µm, ellipsoid to ovoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: Although I have not examined European specimens, I feel Pilát's descriptions and photographs are a sufficient circumscription of the taxon for identification of the species. The species is distinctive for its coloration and delicate nature of the scales on the pileus surface, resembling those of A. pocillator.

The species is found in mixed woods; its current North American range extends from Maryland to Florida. Edibility is unknown.

Specimens examined:

Florida: Gainesville, 18.v.43, det. A. H. Smith (as Agaricus micromegethus), no. F1963, F1962 (MICH).

Kentucky: Cumberland St. Pk., 22.x.55, det. B. F. Isaacs (as A. sylvaticus), no. 22192 (TENN).

Maryland: Riggs Woods, 17.viii.55, det. J. A. Stevenson (as A. abruptibulbus), s.n. (BPI).

North Carolina: Highlands, 17.vii.55, det. B. F. Isaacs (as A. sylvaticus), no. 21885 (TENN).

Tennessee: GSMNP, 8/11/36, det. B. F. Isaacs (as A. sylvaticus), no. 9287 (TENN); GSMNP, 6/8/37, det. B. F.

Isaacs (as A. sylvaticus), no. 10398 (TENN); GSMNP, 6/10/44, det. B. F. Isaacs (as A. sylvaticus), no. 16388 (TENN); GSMNP, Cades Cove, 12.viii.75, det. A. H. Freeman, no. 40332 (TENN); Univ. Tenn. woodlot, 1.x.75, det. A. H. Freeman, no. 40333 (TENN); Univ. Tenn. woodlot, 1.x.75, det. A. H. Freeman, no. 40334 (TENN); Univ. Tenn. woodlot, det. A. H. Freeman, no. 40335 (TENN); Univ. Tenn. woodlot, 5.x.75, det. A. H. Freeman, no. 40336 (TENN); Univ. Tenn. woodlot, i.x.75, det. A. H. Freeman, no. 40337 (TENN); GSMNP, Roaring Fork, 29.viii.75, det. A. H. Freeman, no. 40338 (TENN); GSMNP, Elkmont, det. C. H. Kauffman (as Psalliota placomyces), s.n. (MICH); GSMNP, Elkmont, 3.ix.37, det. Hesler and Smith (as A. placomyces), s.n. (MICH).

25. Agaricus rubribrunnescens Murrill

Mycologia 14:216. 1922.

Type Specimen (holotype, explicit): NY, N.Y., 8.ix.16, coll. & det. W. A. Murrill, s.n. (!).

Stature of carpophore placomycetoid; mature pileus convex to expanded, to 8 cm diam (Murrill), white with reddish scales (Murrill), brown with darker brown scales when dried; dried flesh to 3 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe equal to more or less bulbous, to 5 cm long, appearing fibrous; ring superior, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate, 3.8-13.8 µm diam, unbranched, brown; hyphae of pileus flesh 3.8-38.3 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-21.5 µm diam, occasionally inflated; basidia 4.5-7.0 x 15.3-21.5 µm, 4-sterigmate, without clamp connections; cheilocystidia scattered, napiform, to 20.0 µm diam. Hyphae of stipe surface above ring 3.0-27.5 µm diam, parallel, tightly packed. Hyphae of ring 3.8-10.7 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 24.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-5.5(6.0) x 3.0-3.8 µm, ellipsoid or broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Observations: This species is remarkable for its conspicuously scaly surface and large napiform cheilocystidia. In the fresh condition, the scales are tufts of more or less erect hyphae; upon drying, however, the pileus surface resembles that of A. placomyces.

The species is found in mixed woods; it seems to be a northern species with a range extension into the southern mountains. Edibility is unknown.

Specimens examined:

New York: 8.ix.16, coll. & det. W. A. Murrill, s.n. (NY, TYPE).

North Carolina: Chapel Hill, 4.vii.49, coll. W. C. Coker (as Psalliota silvatica), no. 14531 (NCU); Chapel Hill, 10.ix.15, det. A. H. Freeman, no. 1731 (NCU); Five Points, 13.ix.74, det. R. L. Shaffer (as Agaricus sanguinarius), s.n. (MICH); Indian Creek Rd., 8.viii.75, det. A. H. Freeman, no. 40088 (TENN); GSMNP, Kephart Trail, 8.viii.75, det. A. H. Freeman, no. 40087 (TENN).

Tennessee: Greenbriar, Sevier Co., 18.x.36, det. A. H. Freeman, no. 9573 (TENN); Cades Cove, 12.vii.41, det. A. H. Freeman, no. 13806 (TENN); Nale's Creek, 21.ix.57, det. A. H. Freeman, no. 19557 (TENN); Knoxville, 23.ix.51, det. A. H. Freeman, no. 20162 (TENN); Cades Cove, 20.viii.64, det. A. H. Freeman, no. 26312 (TENN); Knox Co., 8.x.72, det. A. H. Freeman, no. 37546 (TENN); Cades Cove, 14.viii.75, det. A. H. Freeman, no. 40089 (TENN); Univ. Tenn. woodlot, 1.x.75, det. A. H. Freeman, no. 40090 (TENN).

Virginia: Lynchburg, 11.ix.26, det. W. A. Murrill (as Agaricus diminutivus), no. F10156 (FLAS); Blacksburg, 14.x.73, det. A. H. Freeman, no. OKM9589 (VPI).

Washington, D.C.: 7.ix.36, det. C. S. and A. L. Parker, no. 4734 (BPI); 19.vii.12, det. F.J.V. (as A. placomyces), s.n. (BPI).

26. Agaricus badius Freeman stat. nov.

Mycologia 33:447. 1941.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 7.vi.38, coll. & det. W. A. Murrill,

no. 16402 (!). Isotypes: NY, no. 16402 (!); NCU, s.n. (!); BPI, s.n. (!).

≡ A. subplacomyces var. badius Murrill. nom. illeg.

≡ A. placomyces var. badius Murrill. nom. herb.

Stature of carpophore placomycetoid; mature pileus convex to plane, to 12 cm diam (Murrill), white with bay disc and scales (Murrill), dull gold with brown disc and scales when dried; surface heavily squamulose on disc, becoming glabrous near the margin; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe bulbous, to 10 cm long, glabrous above the ring, floccose below, white (Murrill), concolorous with pileus when dried, stuffed to hollow; ring more or less appendiculate, superior when adhering to stipe, gold when dried; odor fragrant (Murrill).

Hyphae of pileus cuticle loosely interwoven; pileocystidia fasciculate or scattered, 3.0-10.0 µm diam, unbranched; hyphae of pileus flesh 4.5-24.5 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-13.0 µm diam, occasionally inflated; basidia 6.0-7.5 x 15.3-21.5 µm, 4-sterigmate, without clamp connections; cheilocystidia napiform to broadly capitulate, 5.5-6.0 µm diam, scattered. Hyphae of stipe surface above ring 4.5-13.8 µm diam, parallel, tightly packed. Hyphae of ring 3.0-13.8 µm diam.

Cells of universal veil (stipe surface below ring) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.0-4.5 µm, ellipsoid to broadly ellipsoid or ovoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Observations: Although this species outwardly resembles A. placomyces, it is distinct. Agaricus badius is distinguished by the presence of cheilocystidia, which A. placomyces lacks, and universal veil cells which are smaller and more regularly barrel-shaped than those of A. placomyces. Agaricus badius also differs from A. placomyces by exhibiting a shorter, thicker stipe, bay color of the pileus and scales and, as Murrill noted, by having a fragrant odor.

The species is found in open, shady areas (teste Murrill) and up to the present time is known only from Florida. According to Murrill, it is of excellent flavor.

Specimens examined:

Florida: Gainesville, 7.vi.38, coll. & det. W. A. Murrill, no. 16402 (FLAS, TYPE); Gainesville, 29.iv.43, det. R. Singer (as Agaricus placomyces var. badius), no. F1887 (MICH); Gainesville, 25.vii.69, det. J. Kimbrough (as A. alachuanus), no. F48665 (FLAS); Gainesville, 25.x.38, det. W. A. Murrill (as A. placomyces badius), no.

F19256 (FLAS); Sugarfoot, 6/5/38, det. W. A. Murrill (as A. placomyces badius), no. F16279 (FLAS); Gainesville, 13.v.50, det. W. A. Murrill (as A. placomyces badius), no. 15600 (FLAS); Gainesville, 8/9/37, det. W. A. Murrill (as A. subplacomyces var. badius), no. 16050 (TENN).

27. Agaricus diminutivus Peck

Buffalo Soc. Nat. Sci. 1:53. 1873.

Type Specimen (holotype, implicit): NYS, Croghan, N.Y., -.ix.72, coll. & det. C. H. Peck, s.n. (!).

Stature of carpophore placomycetoid; mature pileus plane to slightly umbonate or depressed in center, to 1.5 cm diam, alutaceous (Peck), gray-tan when dried; surface spotted with appressed fibrillose scales; dried flesh to 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 1 mm deep. Stipe to 3.5 cm long, slightly bulbous to equal, concolorous with pileus, hollow or stuffed; ring superior, thin, membranous, pale tan when dried.

Hyphae of pileus cuticle interwoven, repent; pileocystidia loosely fasciculate to scattered, 1.5-6.0 µm diam, unbranched; hyphae of pileus flesh 3.0-23.0 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-23.0 µm diam, inflated; basidia 4.5-6.8 x 12.2-18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe

surface above ring 3.0-20.0 µm diam, parallel, tightly packed. Hyphae of ring 1.5-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 14.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-5.3 x 3.8 µm, ellipsoid to ovoid or subglobose, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus papillate to barely discernible, hyaline.

Schaeffer macrochemical reaction: positive or negative.

Observations: One of several very small, placomycetoid taxa with appressed fibrillose scales on the pileus surface, A. diminutivus may be distinguished from A. subalachuanus by both its smaller overall size and smaller spores. From A. suboreades it may be distinguished by its cellular universal veil tissue. Agaricus diminutivus lacks cheilocystidia, which are present in A. alachuanus, and from A. subcomptulus it differs in its smaller size and larger, more numerous scales.

Coker remarked that this species stains white paper bluish or greenish; I hold to his concept of the taxon, but no other authors have mentioned this phenomenon in the literature. It is possible that the taxon consists of a series of physiological races, some staining paper, some reacting to the Schaeffer reagent, which may be separated by chemical analysis.

The species may be found in mixed woods; it appears to be a northern species which has extended its range southward. Edibility is unknown, but its small size renders it impractical in this regard.

Specimens examined:

Florida: Gainesville, 11/9/32, det. W. A. Murrill, no. F10161 (FLAS); Gainesville, 11/8/32, det. W. A. Murrill, no. F10160 (FLAS).

New York: Croghan, -.ix.72, coll. & det. C. H. Peck, s.n. (NYS, TYPE).

North Carolina: 2.viii.26, coll. Coker & party, no. 8144 (NCU); Haywood Co., 6.viii.26, coll. Coker & party, no. 8043 (NCU); Blowing Rock, 17.viii.22, coll. J. N. Couch, no. 5518 (NCU); 26.ix.12, coll. Cobb & Totten, no. 438 (NCU); Chapel Hill, 21.ix.44, det. A. H. Freeman, no. 13601 (NCU); Chapel Hill, 26.v.22, coll. W. C. Coker (as Agaricus placomyces), no. 5157 (NCU); Chapel Hill, 21.ix.44, det. A. H. Freeman, no. 13599 (NCU); Asheville, -.-.11, det. H. C. Beardslee Jr. (as Psalliota gracilis), s.n. (MICH); -.-.11, det. H. C. Beardslee Jr. (as P. gracilis), s.n. (MICH); Cashiers, 27.viii.67, det. A. H. Freeman, no. 29908 (TENN).

Tennessee: Cades Cove, 18.x.47, det. A. H. Smith, no. 18168 (TENN); Knoxville, 21.ix.52, det. A. H. Freeman, no. 20612 (TENN); Knoxville, 12.vii.56, det. B. F. Isaacs, no. 22317 (TENN).

28. Agaricus subalachuanus Murrill

Lloydia 5:151. 1942.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 29.viii.39, coll. & det. W. A. Murrill, no. 19900 (!). Isotype: NY, s.n. (!).

Stature of carpophore placomycetoid; mature pileus convex to subumbonate, to 3.5 cm diam (Murrill), white with rosy-avellaneous scales (Murrill), gray-gold when dried; dried flesh to 1 mm thick at disc, thinning to <1 mm at margin; margin more or less inrolled. Lamellae white to pink (Murrill), deep chocolate brown when mature, free, to 2 mm deep. Stipe equal to somewhat bulbous, to 3 cm long, appearing fibrous, concolorous with pileus; ring superior when adhering to stipe, appendiculate, cream colored when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia scattered or fasciculate, 3.8-7.5 µm diam, usually unbranched; hyphae of pileus flesh 3.0-15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-15.3 µm diam, occasionally inflated; basidia 6.0-7.5 x 13.8-29.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-18.5 µm diam, parallel, tightly packed. Hyphae of ring 2.3-6.0 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.0 x 4.5 µm, broadly ellipsoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minutely papillate to indiscernible, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: Of several small species (pileus less than 4.0 cm diam) exhibiting placomycetoid stature, a scaly pileus, cellular universal veil tissue and lacking cheilocystidia, A. subalachuanus is larger overall and bears larger spores. This difference in spore size is the most distinctive feature.

The species may be found in open grassy areas (teste Murrill); it appears to be restricted to coastal plain and low elevation mountainous regions. Edibility is unknown.

Specimens examined:

Florida: Gainesville, 29.viii.39, coll. & det. W. A. Murrill, no. 19900 (FLAS, TYPE); Gainesville, 21.ix.44, det. W. A. Murrill, s.n. (BPI); Gainesville, 21.ix.44, det. W. A. Murrill, s.n. (NCU); Gainesville, 30.viii.39, det. W. A. Murrill, no. F19920 (FLAS); Gainesville, 11.viii.44, det. W. A. Murrill, no. 20056 (TENN).

Tennessee: Knoxville, 18.ix.57, det. B. F. Isaacs, no. 14434 (TENN); Knoxville, 16.viii.49, det. B. F. Isaacs, no. 19136 (TENN).

29. Agaricus subcomptulus Murrill

Quart. J. Florida Acad. Sci. 8:194-195. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 2.vii.38, coll. & det. W. A. Murrill, no. 17335 (!).

Stature of carpophore placomycetoid; mature pileus convex to expanded or broadly umbonate, to 2.5 cm diam (Murrill), isabelline, rosy-isabelline on umbo (Murrill), tan to brown when dried; surface minutely scaly; dried flesh 1.5 mm thick at disc, thinning to <1 mm at margin; margin upturned in age. Lamellae (mature) deep chocolate brown, free, to 1.5 mm deep. Stipe bulbous, to 3 cm long, appearing fibrous, white (Murrill), brown when dried; ring superior, gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 2.3-6.0 µm diam, unbranched; hyphae of pileus flesh 3.0-20.0 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-15.3 µm diam, occasionally inflated; basidia 6.0-7.5 x 12.2-20.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-13.8 µm diam, parallel, tightly packed. Hyphae of ring 2.3-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-5.5(7.0) x 3.0-4.5 µm, ellipsoid to broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus

indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Observations: Agaricus subcomptulus is a small species distinguished from A. diminutivus by its distinct umbo, delicate scales and slightly larger size, and from A. subalachuanus by its smaller spores and bulbous stipe.

The species is found in open woods (teste Murrill) and up to the present time has been found only in Florida. Edibility is unknown.

Specimens examined:

Florida: Gainesville, 2.vii.38, coll. & det. W. A. Murrill, no. 17335 (FLAS, TYPE); Gainesville, 8/11/44, det. W. A. Murrill, no. 21105 (TENN); Plauera Hammock, 16.viii. 51, det. W. A. Murrill, no. F45883 (FLAS); Gainesville, 8/4/44, det. W. A. Murrill, no. F19293 (FLAS).

30. Agaricus hannoni sp. nov.

Type Specimen (holotype): FLAS, Gainesville, Fla., 26.x.50, coll. C. J. Hannon, det. W. A. Murrill, no. 39000 (!).

≡ A. hannonii Murrill nom. herb.

Statura placomycetoidia; pileo convexo mox plano, 3 cm diam, fusco ut sicco, summo levi vel serico; stipito abrupte bulboso, 4 cm long; annulo superiore; cheilocystidiis absentes; cellulis integumentorum universorum -14.3 µm diam; sporis 6.0-7.0 x 3.8-4.5 µm.

Stature of carpophore placomycetoid; pileus convex to plane, to 3 cm diam, with gray and dusky disc (Murrill, notes), brown with slightly darker brown disc when dried; surface smooth to fibrillose; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe abruptly bulbous, to 4 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, thick, mobile when dried, dull tan when dried.

Hyphae of pileus cuticle loosely interwoven, usually more or less repent; pileocystidia fasciculate or scattered, 3.0-6.0 µm diam, unbranched; hyphae of pileus flesh 3.0-12.2 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-4.5 µm diam, uninflated; basidia 6.0-7.5 x 18.5-21.5 µm, 4-sterigmate, without clamp connections; cheilocystidia lacking. Hyphae of stipe surface above ring 3.0-12.2 µm diam, parallel, tightly packed. Hyphae of ring 3.0-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 14.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.0 x 3.8-4.5 µm, broadly ellipsoid to ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minutely papillate or indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: To the best of my knowledge, Murrill

never published a description of this taxon. The taxon is distinct and I retain Murrill's original name in acknowledgment of his recognition of the species. The type collection consists of approximately five broken, mature fruit bodies and very brief notes by Murrill.

The species is very close to A. tantulus but is distinguished by its slightly larger size and the tendency for the ring to disassociate from both the pileus margin and the stipe; there is also a clear difference in color when the specimens are fresh.

31. Agaricus tantulus sp. nov.

Type Specimen (holotype): MICH, Gainesville, Fla., -.-.32, coll. West & Murrill, no. F10163.

Statura placomycetoidia; pileo 2.5 cm diam, convexo mox plano, fusco, summo piloso; stipito bulboso, 4.5 cm longo; annulo superiore; cheilocystidiis absentes; cellulis integumentorum universorum -23.0 µm diam; sporis 4.5-6.0 (7.0) x 3.8-4.5 µm.

Stature of carpophore placomycetoid; mature pileus to 2.5 cm diam, convex to plane, cream-yellow when young, darkening with age (Murrill, notes), tannish-brown when dried; surface dark fibrillose; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous, to 4.5 cm long, appearing fibrous, concolorous with pileus when dry; ring superior, evanescent.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 3.8-7.5 µm diam, usually unbranched; hyphae of pileus flesh 4.5-10.7 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-7.5 µm diam, uninflated; basidia 6.0 x 15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-13.8 µm diam, parallel, tightly packed. Hyphae of ring 3.0-6.0 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0(7.0) x 3.8-4.5 µm, broadly ellipsoid to ovoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline or indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: This small placomycetoid species is distinguished not only by its size, but also by the lack of distinct scales on the pileus surface and the color change to brown upon drying.

The type collection consists of approximately fifteen fruit bodies plus fragments. All specimens are mature.

Habitat preference and edibility are unknown.

Specimens examined:

Florida: 1932, det. as Agaricus herradurensis, s.n. (MICH); Gainesville, Alachua Co., 1943, det. A. H. Smith

(as A. herradurensis), s.n. (MICH).

32. Agaricus subhortensis Murrill

Lloydia 9:328. 1946.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 8.i.45, coll. & det. W. A. Murrill, no. 17971 (!).

Stature of carpophore placomycetoid; mature pileus convex to subexpanded, gibbous, to 5 cm diam (Murrill), pallid except for the disc, disc covered with reddish-brown innately fibrillose scales (Murrill), brown when dried; dried flesh to 3 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe equal, to 4 cm long, appearing fibrous, white (Murrill), gold when dried; ring median, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate to scattered, 3.8-6.0 µm diam, unbranched; hyphae of pileus flesh 4.5-23.0 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-8.5(15.3) µm diam, occasionally inflated; basidia 6.0-9.2 x 20.0-29.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-15.3 µm diam, parallel, tightly packed. Hyphae of ring 3.0-13.8 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 18.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-8.5 x 5.3-6.0 µm, subglobose, subovoid, or broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus merely a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Observations: This species is distinguished by its innately brown fibrillose pileus and large spores.

The species may be found in open woods (teste Murrill); its distribution is currently restricted to coastal plain areas. Edibility is unknown.

Specimens examined:

Alabama: Tuscaloosa, 1.xii.62, det. B. F. Isaacs, no. 25184 (TENN).

Florida: Gainesville, 8.i.45, coll. & det. W. A. Murrill, no. 17971 (FLAS, TYPE); Gainesville, 7.vii.50, det. W. A. Murrill (as Agaricus cylindriceps), no. F45907 (FLAS).

North Carolina: Chapel Hill, 6.xii.61, coll. J. N. Couch (as A. campestris), no. 15183 (NCU).

33. Agaricus rhoadsii Murrill

Bull. Torrey Bot. Club 66:29. 1939.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 7.ix.38, coll. Rhoads and Murrill, det. W. A. Murrill, no. 18117 (!).

≡ A. weberianus Murrill. Bull. Torrey Bot. Club 66:29-30. 1939 (!).

Stature of carpophore placomycetoid; mature pileus truncate-conic to expanded, to 6.5 cm diam (Murrill), pale dilute-vinaceous, castaneous on the disc, margin white (Murrill), dull gold with brown fibrils when dried; surface finely fibrillose-squamulose; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae whitish to dull pink (Murrill), deep chocolate brown when mature, free, to 1.5 mm deep. Stipe bulbous, to 8 cm long, appearing fibrous, white (Murrill), concolorous with pileus when dried; ring appendiculate, superior when adhering to stipe, dull gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 3.0-7.5 µm diam, usually unbranched; hyphae of pileus flesh 6.0-13.8 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-13.8 µm diam, uninflated or only slightly so; basidia 4.5-7.0 x 10.7-15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-15.3 µm diam, parallel, tightly packed. Hyphae of ring 3.0-11.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 27.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.3-6.0 x 3.8-4.5 µm, ellipsoid to broadly ellipsoid or ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: When fresh, this species is outstanding for its pale-purple color. When dried, the subcampanulate pileus, dense innate fibrillose texture of the cap and the abruptly bulbous stipe base distinguish the species. Outwardly, it could be confused with a delicate form of A. subrufescens, but the spores of the latter are much larger than those of A. rhoadsii.

The species is found in open woods and up to the present time is known only from Florida. Edibility is unknown.

Specimens examined:

Florida: Gainesville, 7.ix.38, coll. Rhoads and Murrill, no. 18117 (FLAS, TYPE); Gainesville, 28.vii.45, det. W. A. Murrill, no. 19680 (TENN); Gainesville, -.-.40, det. W. A. Murrill, s.n. (MICH); Gainesville, 15.vii.44, det. W. A. Murrill, s.n. (NYS); Gainesville, 15.vii.44, det. W. A. Murrill, s.n. (NCU); Gainesville, 4.viii.44, det. W. A. Murrill, s.n. (BPI).

34. Agaricus auresiccescens sp. nov.

Type Specimen (holotype): NCU, Chapel Hill, N.C., 19.ix.44, coll. W. C. Coker, det. A. H. Freeman, no. 13598.

Statura placomycetoidia; pileo 15 cm diam, convexo mox plano, prope albo, aureo ut sicco; summo prope squameo;

stipito abrupte bulboso, 10 cm long, portanto rades; annulo superiore; cheilocystidiis absentes; cellulis integumentorum universorum -20.0 µm diam; sporis 5.5-6.0 x 3.8-4.5 µm.

Stature of carpophore placomycetoid; mature pileus convex to plane, disc often depressed when dried, to 15 cm diam, nearly white, pale pinkish buff on center (Coker, notes), gold when dried; surface appressed fibrillose squamulose; dried flesh to 3 mm thick at disc, thinning to 1 mm at margin; margin slightly inrolled. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe abruptly bulbous, to 10 cm long, appearing fibrous, brown when dried, lower portion covered with ground mycelium, base often with one to three rhizomorphic strands; ring superior, bearing floccose patches on lower surface, gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 3.0-6.0 µm diam, unbranched; hyphae of pileus flesh 4.5-15.3 µm diam, occasionally inflated, thin-walled, without clamp connections. Lamella trama irregular; hyphae 2.3-18.5 µm diam, occasionally inflated; basidia 6.0-7.5 x 15.3-21.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 2.3-18.5 µm diam, parallel, tightly packed. Hyphae of ring 3.0-12.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 20.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.5-6.0 x 3.8-4.5 µm, broadly ellipsoid to ovoid; wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: Agaricus auresiccescens closely resembles A. abruptibulbus, but is distinguished by the appressed fibrils on the surface of the pileus, the rhizomorphic strands on the stipe base, the distinctly cellular universal veil tissue and smaller spores. When dried, the specimens turn a deep rich gold.

Habitat preference and edibility are unknown.

Specimens examined:

North Carolina: Chapel Hill, 19.ix.44, coll. W. C. Coker, no. 13598 (NCU, TYPE); Chapel Hill, 21.ix.44, coll. W. C. Coker (as Psalliota arvensis), no. 13600 (NCU).

35. Agaricus subrufescens Peck

N.Y. State Mus. Bull. 43:236-238. 1894.

Type Specimen (holotype, implicit): NYS, Glen Cove, L.I., N.Y., -.x.-, coll. W. Falconer, det. C. H. Peck, s.n. (!).

Stature of carpophore placomycetoid; pileus deeply convex or broadly expanded, to 15 cm diam (Peck), whitish, grayish or dull reddish-brown (Peck), dull gold to gray-gold when dried; surface brown silky fibrillose to squamulose; dried flesh to 5 mm thick at disc, thinning to

<1 mm at margin. Lamellae white in youth, deep chocolate brown when mature, free, to 5 mm deep. Stipe bulbous, to 10 cm long, appearing fibrous, concolorous with pileus, stuffed, then hollow (Peck); ring superior, membranous, dull gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate, to 7.5 µm diam, usually unbranched; hyphae of pileus flesh 3.0-18.5 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-15.3 µm diam, occasionally inflated; basidia 4.5-9.2 x 13.8-21.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-12.2 µm diam, parallel, tightly packed. Hyphae of ring 3.0-15.3 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 16.8 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-7.5(9.2) x 3.8-5.3 µm, subglobose to ovoid or ellipsoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate to indiscernible, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: As Kauffman (1918) noted, this is a highly variable species which grows not only in a wild state, but also tends to appear in greenhouses. It is therefore sometimes found exhibiting a squat campestroid stature or a large, thick-set placomycetoid stature. It is

comparable to A. placomyces, but with much thicker flesh, larger numbers of innately fibrillose squamules and larger spores. Peck compared the species to A. campestris, but said it differed in its deeply convex shape when young and the white of the immature lamellae; these differences supported by microscopic data indicate that the two species are distinct.

The species is found in mixed woods or in humus in greenhouses. Its current range extends from New York south to North Carolina.

Specimen examined:

Maryland: Beltsville, 22.ix.38, det. V. K. Charles (as Agaricus placomyces), s.n. (BPI); Beltsville, 17.v.38, det. V. K. Charles (as A. placomyces), s.n. (BPI).

New York: Glen Cove, L.I., -.x.-, coll. W. Falconer, det. C. H. Peck, s.n. (NYS, TYPE).

North Carolina: Chapel Hill, 6.ix.15, coll. W. C. Coker (as Psalliota silvatica), no. 1686 (NCU); Chapel Hill, 6.ix.15, coll. W. C. Coker (as P. silvatica), no. 1685 (NCU); Chapel Hill, 26.x.19, coll. W. C. Coker (as A. silvaticus), no. 3510 (NCU); Chapel Hill, 25.ix.14, coll. H. R. Totten (as P. silvatica), no. 1265 (NCU).

Virginia: Arlington Farm, -.vi.40, coll. E. B. Lambert, s.n. (BPI); Arlington Farm, -.v.40, coll. E. B. Lambert, s.n. (BPI); Chain Bridge, 6.viii.12, det. Peck, s.n. (BPI).

36. Agaricus pocillator Murrill

Mycologia 33:446-447. 1941.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 4.vi.38, coll. & det. W. A. Murrill, no. 16476 (!). Isotypes: NY, no. 16476 (!); NCU s.n. (!); BPI, s.n. (!).

Stature of carpophore placomycetoid; mature pileus truncate-convex to plane, to 10 cm diam (Murrill), white with dark floccose scales, fuscous on the disc (Murrill), dull gray-tan, somewhat darker on the disc when dried; dried flesh to 3 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe bulbous to cupulate at base, to 8 cm long, appearing fibrous, dull brown when dried; ring superior, conspicuously double, the lower portion rounding up into a discrete partial veil, the upper portion (marginal veil) stretching entirely across the lamellae in youth, thin, membranous, brown when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 2.3-6.0 µm diam, unbranched; hyphae of pileus flesh 3.0-20.0 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-10.0 µm diam, occasionally inflated; basidia 4.5-7.0 x 10.7-18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-13.8 µm diam,

parallel, tightly packed. Hyphae of ring 2.3-13.8 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 21.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.0-3.8 µm, ellipsoid to broadly ellipsoid; wall dark brown, less than 0.6 µm thick; apiculus papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: This is a most distinctive species due to the double nature of the ring. Smith ("1939," 1940) considered it merely a variety of A. placomyces, but the obviously double ring, cupulate stipe base, and tiny floccose, gray scales distinguish it.

The species is found in open woods; it appears to be restricted to coastal plain and low elevations of mountainous areas. Edibility is unknown.

Specimens examined:

Alabama: Auburn, 1.viii.55, det. B. F. Isaacs, no. 21948 (TENN).

Florida: Gainesville, 4.vi.38, coll. & det. W. A. Murrill (FLAS, no. 16476, TYPE, NY, s.n., Isotype; NCU, s.n., Isotype; BPI, s.n., Isotype); Gainesville, 22.vii.44, det. W. A. Murrill, s.n. (BPI); Gainesville, -.-.44, det. W. A. Murrill, s.n. (NCU); Gainesville, 22.vii.44, det. W. A. Murrill, s.n. (NYS); Gainesville, 9.vii.51, det. G. F. Weber, no. F45891 (FLAS); New Smyrna, 1920, det.

H. C. Beardslee Jr. (as Psalliota placomyces), s.n. (MICH); Gainesville, -.vii.43, det. R. Singer, s.n. (MICH); Gainesville, -.-.38, det. W. A. Murrill, no. 16051 (TENN).

North Carolina: Chapel Hill, 25.ix.45, det. W. C. Coker, no. 13945 (NCU); Chapel Hill, 8.x.48, coll. W. C. Coker (as Psalliota sp.), no. 14477 (NCU); Chapel Hill, 27.ix.45, coll. J. N. Couch (as P. sp.), no. 13993 (NCU); Chapel Hill, 28.ix.47, coll. W. C. Coker (as P. sp.), no. 14227 (NCU); Chapel Hill, 25.vii.45, coll. J. N. Couch, no. 14015 (NCU); Chapel Hill, 10.viii.48, coll. J. N. Couch (as P. sp.), no. 14479 (NCU); Chapel Hill, 19.ix.47, coll. W. C. Coker (as P. sp.), no. 14198 (NCU); Chapel Hill, 9.vii.46, coll. J. N. Couch (as P. sp.), no. 13714 (NCU); U.N.C. arboretum, 25.ix.44, coll. McCann, no. 13602 (NCU); 11.viii.44, coll. J. N. Couch (as P. sp.), no. 13593 (NCU); 29.ix.44, coll. Coker, no. 13608 (NCU); 21.vii.44, coll. Coker and Couch, no. 13587 (NCU); Highlands, 23.vii.53, det. B. F. Isaacs, no. 20924 (TENN).

Tennessee: Sevier Co., 18.x.36, det. B. F. Isaacs, no. 9589 (TENN); Cades Cove, 3.ix.52, det. L. R. Hesler, no. 20555 (TENN); Norris, 9.x.54, det. B. F. Isaacs, no. 21564 (TENN): Knoxville, 18.viii.66, det. A. H. Freeman, no. 29223 (TENN).

37. Agaricus placomyces Peck var. placomyces

N.Y. State Mus. Bull. 29:40. 1878.

Type Specimen (holotype, implicit): NYS, Knowersville and Oneida, N.Y., no date, coll. & det. C. H. Peck, s.n. (!). Isotype: NCU, s.n. (!).

Stature of carpophore placomycetoid; pileus convex, then expanded to plane, to 8 cm diam (Peck); surface covered with appressed, fibrillose scales, whitish, the disc and scales brown (Peck), dull gray-gold with brown scales when dried; dried flesh to 2 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe bulbous, usually with one or two root-like processes, to 13 cm long, appearing fibrous, white, somewhat stuffed (Peck), dull tan to gray when dried; ring superior, often studded with drops of a dark brown liquid (Peck), gray-tan to brown when dried.

Hyphae of pileus cuticle tightly interwoven, repent; pileocystidia fasciculate or scattered, branched or unbranched, 3.0-9.2 µm diam, golden brown; hyphae of pileus flesh 3.0-20.0 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-18.5 µm diam, irregularly inflated; basidia 6.0-7.0 x 12.2-23.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-23.0 µm diam, parallel, tightly packed. Hyphae of ring 1.5-12.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 26.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores (4.5)5.3-6.0(7.0) x (3.0)3.8-4.5 µm, ellipsoid to ovoid; wall dark brown, less than 0.6 µm thick; apiculus papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: Agaricus placomyces is one of the most common woodland species of Agaricus in the Smoky Mountain area of Tennessee. It is distinguished by the large reddish-brown scales on the pileus and the bulbous stipe base which almost always bears one to several rhizomorphic strands. Although the specimens are occasionally found in deciduous woods, fruit bodies seem to be mainly associated with species of Abies.

Edibility is questionable.

Specimens examined:

Alabama: Montgomery, 16.viii.42, det. A. H. Smith (as Agaricus silvaticus), s.n. (MICH): Robinson's Springs, 29.vi.42, det. A. H. Smith (as A. silvaticus), s.n. (MICH); Robinson's Springs, 29.vi.42, det. A. H. Smith (as A. silvaticus), s.n. (MICH).

Kentucky: Jones Creek Rd., Trigg Co., 16.ix.74, det. W. J. Sundberg, no. 2857 WJS.

Maryland: Herald Harbor, Anne Arundel Co., 27.viii.33, det. V. K. Charles, s.n. (BPI); Great Falls, 7.x.29, coll. C. S. Parker (as Psalliota silvatica), no. 1318-56-A (BPI); Chapel Pt, 20.x.36, det. V.K.C. (as P. silvatica), s.n. (BPI); Herald Harbor, 9/8/25, det. J. A. Stevenson

(as A. silvicola), s.n. (BPI); Cabin John Run, Montgomery Co., 28.ix.52, det. J. A. Stevenson (as A. silvatica), s.n. (BPI); Sutland, 27.iii.33, det. C. S. and A. L. Parker (as P. sp.), s.n. (BPI); Bell Sta., 20.ix.35, det. J. A. Stevenson and E. B. Lambert (as A. silvicola), s.n. (BPI); Bay Ridge, Anne Arundel Co., 30.viii.33, det. C. S. and A. L. Parker (as P. sp.), s.n. (BPI); Wildlife Refuge, 13.ix.67, det. O. K. Miller, no. OKM6102 (VPI).

New York: Knowersville and Oneida, no date, coll. & det. C. H. Peck (NYS, s.n., TYPE; NCU, s.n., ISOTYPE).

North Carolina: Tuxedo, Henderson Co., 15.ix.74, det. A. H. Smith (as A. subrutilescens), KHM 14302 (BPI); Chapel Hill, 18.x.46, coll. W. C. Coker (as P. sp.), no. 14057 (NCU); Chapel Hill, 29.ix.46, det. A. H. Freeman, no. 14036 (NCU); Battles Park, 2.x.09, no. 221 (NCU); no. 223 (NCU); 5.x.12, coll. W. C. Coker, no. 507 (NCU); 12.ix.13, coll. W. C. Coker, no. 738 (NCU); Chapel Hill, 23.x.11, coll. W. B. Cobb, no. 1016 (NCU); Chapel Hill, 18.x.46, coll. W. C. Coker (as P. sp.), no. 14056 (NCU); Chapel Hill, 24.ix.14, coll. H. R. Totten, no. 1256 (NCU); Chapel Hill, 28.ix.14, coll. H. R. Totten, no. 1266 (NCU); Highlands, 2.viii.31, coll. A.H.S., A.J.S. and Clark Foreman, no. 9033 (NCU); Chapel Hill, 12.x.47, coll. W. C. Coker (as P. sp.), no. 14266 (NCU); Indian Creek Rd., 8.viii.75, det. A. H. Freeman, no. 40078 (TENN); Indian Creek Rd., 8.viii.75, det. A. H. Freeman, no. 40074 (TENN); Indian Creek Rd., 8.viii.75,

det. A. H. Freeman, no. 40073 (TENN); Henderson Co., 12.viii.63, det. B. F. Isaacs (as A. bambusigenus), no. 26578 (TENN); Bryson City, 23.viii.36, det. B. F. Isaacs (as A. bambusigenus), no. 9286 (TENN); Cataloochee, 28.vii.35, det. B. F. Isaacs (as A. bambusigenus), no. 8052 (TENN).

Tennessee: Knoxville, 17.vii.34, det. L. R. Hesler, no. 4485 (TENN); Kingston, 5.viii.34, det. L. R. Hesler, no. 5339 (TENN); New Hopewell, 21.x.34, det. B. F. Isaacs (as A. bambusigenus), no. 7107 (TENN); Cosby, 30.vii.36, det. B. F. Isaacs (as A. bambusigenus), no. 9016 (TENN); Sevier Co., Greenbriar, 18.x.36, det. B. F. Isaacs (as A. bambusigenus), no. 9621 (TENN); GSMNP, 16.vi.40, det. L. R. Hesler, no. 12538 (TENN); Mt. LeConte, 20.vii.41, det. B. F. Isaacs (as A. bambusigenus), no. 13852 (TENN); Sevier Co., 12.viii.42, det. A. H. Smith, no. 14479 (TENN); Cades Cove, 27.ix.47, det. B. F. Isaacs (as A. bambusigenus), no. 17898 (TENN); Mt. LeConte, 8.viii.54, det. B. F. Isaacs (as A. bambusigenus), no. 21474 (TENN); Sevier Co., 15.x.55, det. B. F. Isaacs (as A. bambusigenus), no. 22157 (TENN); Mt. LeConte, 6.viii.63, det. B. F. Isaacs (as A. bambusigenus), no. 27526 (TENN); Smokemont, 11.ix.65, det. B. F. Isaacs (as A. bambusigenus), no. 28373 (TENN); Cades Cove, 2.viii.66, det. L. R. Hesler, no. 29325 (TENN); Univ. Tenn. woodlot, 5.x.75, det. A. H. Freeman, no. 40071 (TENN); Univ. Tenn. woodlot, 29.ix.74, det. A. H. Freeman, no. 40072 (TENN);

Univ. Tenn. woodlot, 5.x.75, det. A. H. Freeman, no. 40074 (TENN); Univ. Tenn. woodlot, 29.ix.74, det. A. H. Freeman, no. 40076 (TENN); Cades Cove, 31.vii.75, det. A. H. Freeman, no. 40077 (TENN); Cades Cove, 31.vii.75, det. A. H. Freeman, no. 40079 (TENN); Cades Cove, 18.viii.38, det. A. H. Smith (as A. subrutilescens), s.n. (MICH); Elkmont, 7.ix.37, det. A. H. Smith (as A. subrutilescens), s.n. (MICH); New Hopewell, Knox Co., 13.vii.39, det. L. R. Hesler (as P.), s.n. (MICH); Laurel Falls, 22.viii.38, det. A. H. Smith (as A. subrutilescens), s.n. (MICH).

Virginia: Buckingham Co., 13.ix.61, coll. Dublin (as A. silvatica), s.n. (BPI); Lynchburg, 4.ix.26, det. W. A. Murrill, no. F10151 (FLAS); Occoquam, 10.x.33, det. V. K. Charles (as A. micromegetha), s.n. (BPI).

Washington, D. C.: 22.ix.13, det. Mr. and Mrs. J. N. Rose, s.n. (BPI).

38. Agaricus abruptibulbus Peck.

N.Y. State Mus. Bull. 94:36. "1904" (1905).

Type Specimen (lectotype, des. mihi): NYS, West Albany, N.Y., -.-.92, coll. & det. C. H. Peck, s.n. (!).

≡ A. arvensis var. abtuptus Peck. 1894. N.Y. State Mus. Bull. 48:239.

≡ A. abruptus Peck. 1900. N.Y. State Mus. Mem. 4, vol. 3, pp. 163-164 (non A. abruptus Fries. 1874. Hym. Eur. p. 245).

= A. cretacellus Atkinson. 1902. J. Myc. 8:110 (!).

Stature of carpophore placomycetoid; pileus ovate, convex or plane, to 10 cm diam, white tinged with yellow (Peck), pale gold-tan when dried; surface smooth; dried flesh to 4 mm thick at disc, thinning to 1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe to 13 cm long, bulbous, often rimmed and depressed at base, appearing fibrous, concolorous with pileus, stuffed or hollow; ring superior, bearing floccose patches below, more or less appendiculate, pale gold when dried.

Hyphae of pileus cuticle tightly interwoven, repent; pileocystidia lacking; hyphae of pileus flesh 4.5-15.3 µm diam, occasionally inflated, thin-walled, without clamp connections. Lamella trama irregular; hyphae 3.0-10.7(23.0) µm diam, usually uninflated; basidia 4.5-7.0 x 13.8-20.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-23.0 µm diam, parallel, tightly packed. Hyphae of ring 3.0-13.8 µm diam. Cells of universal veil (stipe surface below ring, patches on lower surface of ring) inflated, to 32.0 µm diam, occasionally almost hypha-like, without clamp connections, thin-walled, hyaline.

Spores (5.5)6.0-7.5 x (3.8)4.5-5.5 µm, ellipsoid to ovoid; wall dark brown, 0.6 µm thick; apiculus a hyaline spot in the spore wall or indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: This species is easily recognized both macroscopically and microscopically; its woodland habitat, placomycetoid stature and glabrous pileus combined with its white coloration make it a unique species for the southeastern taxa. In youth it could be mistaken for a member of the Amanita virosa group, but its lack of a discrete volva and pink tint to the young lamellae distinguish it. Microscopically, the taxon is unique in the nature of the universal veil tissue, which consists of highly inflated, very long, irregularly shaped cells.

The species is known from New York south to Florida; according to Peck, it is edible.

Specimens examined:

Alabama: Robinson's Springs, -.viii.42, det. A. H. Smith (as Agaricus cretacellus), s.n. (MICH).

Florida: Devil's Millhopper, 9/11/68, det. J. Kimbrough (as A. alachuanus), no. F48028 (FLAS); Tung-oil Mill, 7/12/38, det. W. A. Murrill (as A. sylvicola), no. F17785 (FLAS).

Maryland: Cabin John Woods, 23.ix.37, det. V. K. Charles, s.n. (BPI); Bay Ridge, Anne Arundel Co., 30.viii.33, coll. C. S. and A. L. Parker (as Psalliota), no. 4360 (BPI); Woodards Woods, 28.ix.40, coll. C. S. Parker (as P.), no. 10078 (BPI); 20.viii.33, coll. C. S. and A. L. Parker (as P.), no. 4303 (BPI); Harper's Ferry, 27.vii.19, det. C. H. Kauffman, s.n. (BPI); Ardmore, 26.viii.33, coll. C. S. and

A. L. Parker (as P. abruptibulba), no. 4365 (BPI).

New York: West Albany, -.-.92, coll. & det. C. H. Peck, s.n. (NYS, TYPE).

North Carolina: Indian Creek Rd., 8.viii.75, det. A. H. Freeman, no. 40082 (TENN); Indian Creek Rd., 8.viii.75, det. A. H. Freeman, no. 40083 (TENN); Asheville, 1900, det. H. C. Beardslee, s.n. (MICH); Hot Springs, 21.viii.24, det. C. H. Kauffman (as P. cretacella), s.n. (MICH); Highlands, 16.viii.36, det. L. R. Hesler (as P. abruptibulba), s.n. (MICH); Highlands, 11.viii.34, coll. W. C. Coker (as P. sylvatica), no. 9778 (NCU); Chapel Hill, 8.ix.15, coll. H. R. Totten (as A. abruptus), no. 1699 (NCU); Chapel Hill, 23.ix.47, coll. Coker (as P. abruptibulba), no. 14206 (NCU); 15.x.10-22.x.10 (as A. abruptus), no. 220 (NCU); Indian Springs, 24.ix.10 (as A. abruptus), no. 219 (NCU); 8.ix.15, coll. H. R. Totten (as A. abruptus), no. 1700 (NCU); Chapel Hill, 24.ix.14, coll. H. R. Totten (as A. abruptus), no. 1262 (NCU); Chapel Hill, 10.vii.14, coll. W. C. Coker (as A. abruptus), no. 1111 (NCU); 13.ix.13, coll. Totten (as A. abruptus), no. 754 (NCU); 20.vi.13, coll. W. C. Coker (as A. abruptus), no. 706 (NCU); Chapel Hill, 29.ix.46, coll. W. C. Coker (as A.), no. 14031 (NCU); Chapel Hill, 23.ix.14, coll. H. R. Totten, no. 1247 (NCU); 22.vi.16, coll. H. R. Totten (as P. abruptibulba), no. 2264 (NCU); Chapel Hill, 25.x.15, coll. H. R. Totten (as P. abruptibulba), no. 1923 (NCU); Chapel Hill, 8.viii.46, coll. W. C. Coker

(as P. abruptibulba), no. 13727 (NCU); Chapel Hill, 10-14.viii.-, coll. W. C. Coker (as P. abruptibulba), no. 1120 (NCU); Chapel Hill, 28.ix.47, coll. W. C. Coker (as P. abruptibulba), no. 14241 (NCU).

Tennessee: Mt. LeConte, 8/10/34, det. L. R. Hesler (as A. cretacellus), no. 5338 (TENN); Blount Co., 8/23/34, det. L. R. Hesler, no. 6305 (TENN); Crossville, 7.vii.35, det. B. F. Isaacs (as A. cretacellus), no. 7932 (TENN); Crossville, 7.vii.35, det. B. F. Isaacs (as A. cretacellus), no. 7940 (TENN); New Hopewell, 21.viii.35, det. B. F. Isaacs (as A. fabaceus), no. 8278 (TENN); Mt. LeConte, 16.viii.63, det. B. F. Isaacs (as A. cretacellus), no. 10195 (TENN); Mt. LeConte, 6.viii.39, det. B. F. Isaacs (as A. cretacellus), no. 12207 (TENN); Mt. LeConte, 25.viii. 40, det. B. F. Isaacs (as A. cretacellus), no. 12836 (TENN); Mt. LeConte, 30.viii.40, det. A. H. Smith (as A. cretacellus), no. 12854 (TENN); Cades Cove, 1.ix.40, det. B. F. Isaacs (as A. cretacellus), no. 12896 (TENN); Mt. LeConte, 20.vii. 41, det. B. F. Isaacs (as A. fabaceus), no. 13846 (TENN); Cades Cove, 3.viii.64, det. A. H. Freeman, no. 23013 (TENN); GSMNP, 11.x.59, det. B. F. Isaacs (as A. fabaceus), no. 23438 (TENN); Norris, 22.viii.61, det. B. F. Isaacs (as A. cretacellus), no. 24499 (TENN); Norris, 8.vii.63, det. B. F. Isaacs (as A. fabaceus), no. 25668 (TENN); Cades Cove, 2.viii.66, det. A. H. Freeman, no. 29328 (TENN); Pickett State Park, -.ix.74, det. A. H. Freeman, no. 40080 (TENN);

GSMNP, 5.viii.75, det. A. H. Freeman, 40081 (TENN); GSMNP, 13.viii.75, det. A. H. Freeman, no. 40084 (TENN); Cades Cove, 23.vii.75, det. A. H. Freeman, no. 40085 (TENN); Oak Ridge, -.x.74, det. A. H. Freeman, no. 40086 (TENN); Cades Cove, 16.viii.38, det. A. H. Smith (as A. cretacellus), s.n. (MICH); Cades Cove, 18.viii.38, det. A. H. Smith (as A. cretacellus), s.n. (MICH); Mt. LeConte, 23.viii.41, det. L. R. Hesler (as P. abruptibulba), s.n. (MICH); New Hopewell, 21.viii.35, det. A. H. Smith (as P. abruptibulba), s.n. (MICH); Cades Cove, 18.viii.38, det. A. H. Smith (as A. silvicola), s.n. (MICH); Cades Cove, 25.viii.38, det. A. H. Smith (as A. silvicola), s.n. (MICH).

Virginia: Lynchburg, 13.viii.27, det. W. A. Murrill (as A. silvicola), no. F10145 (FLAS); Blacksburg, 22.viii.70, coll. O. K. and Hope Miller, det. A. H. Freeman, no. OKM8648.

Washington, D. C.: 9.ix.36, det. C. S. and A. L. Parker (as A. rodmani), s.n. (BPI); 9.ix.33, coll. C. S. and A. L. Parker, no. 4395 (BPI); Rock Creek Park, 9/6/37, det. L.C.C. Krieger, s.n. (BPI); Rock Creek Park, 26.ix.37, det. V. K. Charles, s.n. (BPI); Rock Creek Park, 30.ix.45, det. J. A. Stevenson, s.n. (BPI).

39. Agaricus blockii Murrill

Mycologia 46:112. 1954.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 6.vii.50, coll. Dr. S. S. Block, det. W. A. Murrill, no. 21533 (!).

Stature of carpophore placomycetoid; mature pileus conic to truncate-convex, to 7 cm diam (Murrill), white with fibrillose scales, isabelline on disc (Murrill), dull gold when dried; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin; margin undulate. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe tapering upward, to 5 cm long, appearing fibrous, white with tawny fibrillose scales pointing upward below the ring (Murrill), concolorous with pileus when dried; ring median, more or less appendiculate, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate or scattered, to 7.5 µm diam, unbranched; hyphae of pileus flesh 4.5-13.8 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-6.0 µm diam, uninflated; basidia 6.0 x 12.2-15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-12.2 µm diam, parallel, tightly packed. Hyphae of ring 4.5-10.7 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 21.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5 µm, broadly ellipsoid to ovoid, often maturing to subglobose, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minute, hyaline.

Schaeffer macrochemical reaction: negative.

Observations: Of collections other than the type, only one was in adequate condition for positive identification. The species seems to be most characterized by its placomycetoid stature and sharply upward-tapering stipe.

The species may be found in open grassy areas (teste Murrill) and up to the present time is known only from Florida.

Specimens examined:

Florida: Gainesville, 6.vii.50, coll. Dr. S. S. Block, det. W. A. Murrill, no. 21533 (FLAS, TYPE); Gainesville, 25.vii.69, det. N. Black (as Agaricus alachuanus), no. 48664 (FLAS).

40. Agaricus citrinidiscus Murrill

Quart. J. Florida Acad. Sci. 8:193. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 11.viii.44, coll. & det. W. A. Murrill, no. 32719 (!).

Stature of carpophore placomycetoid; mature pileus convex or slightly depressed, to 5 cm diam (Murrill), citrinous over disc, fading toward margin (Murrill), dull tan when dried, slightly darker over the disc; surface slightly squamulose; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous, to 3 cm long, appearing fibrous, white (Murrill), dull gold when

dried; ring superior when adhering to stipe, appendiculate, gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia loosely fasciculate, 3.0-10.7 µm diam, branched or unbranched; hyphae of pileus flesh 3.0-15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-15.3 µm diam, some inflated; basidia 4.5-6.0 x 13.8-18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-18.5 µm diam, parallel, tightly packed. Hyphae of ring 3.0-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 23.9 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5 µm, subglobose to broadly ellipsoid or ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: This is a small placomycetoid species, characterized by its citrinous pileus when fresh. When dried, its small size, thin flesh and slightly squamulose surface distinguish it from small forms of A. placomyces.

Murrill referred to this species as rare and delicate. It may be found in open woods. Edibility is unknown.

Specimens examined:

Alabama: Fusihatchie, 5.vii.42, det. A. H. Smith, s.n. (MICH).

Florida: Gainesville, 11.viii.44, coll. & det. W. A. Murrill, no. 32719 (FLAS, TYPE); Gainesville, 28.viii.44, det. W. A. Murrill, no. F9015 (FLAS); Gainesville, 8/3/44, det. W. A. Murrill, no. F32914 (FLAS).

North Carolina: Indian Creek, 23.viii.42, det. B. F. Isaacs, no. 14480 (TENN); Oconee Co., 9.viii.61, det. B. F. Isaacs, no. 27278 (TENN).

41. Agaricus projectellus Murrill

Mycologia 33:447. 1941.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 3.vi.38, coll. E. West, L. Arnold and W. A. Murrill, det. W. A. Murrill, no. 16219 (!).

Isotype: NY, s.n. (!).

Stature of carpophore placomycetoid; mature pileus convex to plane, to 8 cm diam (Murrill), occasionally gibbous, white, more or less cremous on disc (Murrill), pale tan when dried; surface smooth or covered with minute floccose scales; dried flesh to 1.5 mm thick at disc, thinning to <1 mm at margin; margin projecting to 5 mm. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe equal to more or less bulbous, to 8 cm long, appearing fibrous, concolorous with pileus; ring median, somewhat appendiculate, dull gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 3.0-7.5 µm

diam, unbranched; hyphae of pileus flesh mostly highly inflated, (3.0-6.0)10.7-18.5 µm diam, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-12.2 µm diam, occasionally slightly inflated; basidia 6.0-7.5 x 13.8-24.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-12.2 µm diam, parallel, tightly packed. Hyphae of ring 6.0-12.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 29.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores (4.5)6.0-7.5 x 3.8-5.3 µm, broadly ellipsoid to subglobose, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline or indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: Although outwardly resembling A. campestris, A. projectellus can be distinguished by its cellular universal veil tissue, widely projecting margin, lack of cheilocystidia and generally smaller spores. Murrill compared the two species, mentioning also that A. projectellus has much whiter immature lamellae than A. campestris.

The species may be found in pastures or open grassy areas (teste Murrill). It is apparently edible, being easily confused with A. campestris. It is currently known only from Florida.

Specimens examined:

Florida: Gainesville, 3.vi.38, coll. E. West, L. Arnold and W. A. Murrill, det. W. A. Murrill (FLAS, no. 16219, TYPE; NY, s.n., Isotype); Gainesville, 2.vi.38, det. W. A. Murrill, no. F16431 (FLAS); Gainesville, 11.vi.44, det. W. A. Murrill, no. F19341 (FLAS); Gainesville, 14.vi.44, det. W. A. Murrill, s.n. (NYS); Gainesville, -.-.44, det. W. A. Murrill, s.n. (NCU); Gainesville, 21.vi.44, det. W. A. Murrill, s.n. (BPI); Gainesville, 25.iii.44, det. W. A. Murrill, s.n. (BPI).

42. Agaricus subarvensis Murrill

Lloydia 5:151. 1942.

Type Specimen (holotype, explicit): FLAS, Lake Warburg, Alachua Co., Fla., 17.ii.39, coll. J. R. Watson and W. A. Murrill, det. W. A. Murrill, no. 19253 (!).

Stature of carpophore placomycetoid; mature pileus convex to expanded or broadly umbonate, to 8 cm diam (Murrill), pallid (Murrill), gray when dried; surface, except disc, covered with rosy-avellaneous scales (Murrill), dried flesh to 3 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous to slightly tapering upward, to 12 cm long, appearing fibrous, white (Murrill), concolorous with pileus when dried; ring more or less appendiculate, superior when adhering to stipe, gray-gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate, 3.0-7.5 µm diam, unbranched; hyphae of pileus flesh 5.5-24.5 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-7.5 µm diam, uninflated; basidia 4.5-7.5 x 10.7-21.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-18.5 µm diam, parallel, tightly packed. Hyphae of ring 3.0-15.3 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 30.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0(7.5) x (3.0)4.5-5.5 µm, subglobose to broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Observations: A rare species with highly variable spores, A. subarvensis is distinctive for its broadly umbonate pileus and lack of scales on the disc. Several collections contain notes by Murrill mentioning a white cap with a straw-colored disc; this apparently is quite distinctive in the fresh condition.

The species is found in rich, open areas (teste Murrill) and is currently known only from Florida. Edibility is unknown.

Specimens examined:

Florida: Lake Warburg, 17.ii.39, coll. J. R. Watson

and W. A. Murrill, det. W. A. Murrill, no. 19253 (FLAS, TYPE); Gainesville, 28.iv.43, det. W. A. Murrill, no. F25776 (FLAS); Gainesville, 22.v.43, det. W. A. Murrill, no. F16414 (FLAS); Watson's Grove, 2.ii.45, det. W. A. Murrill, no. F8812 (FLAS); Gainesville, 22.v.43, det. W. A. Murrill, no. F17459 (FLAS).

CHAPTER IV

TYPE STUDIES AND MISCELLANEOUS NEW TAXA

Agaricus arvensis var. *abruptus* Peck

N.Y. State Mus. Bull. 48:239. 1894.

≡ *A. abruptus* Peck. 1900. N.Y. State Mus. Mem. 4, 3:163-164. (*non. A. abruptus* Fries. 1874. Hym. Eur. p. 245).

≡ *A. abruptibulbus* Peck. "1904" (1905). N.Y. State Mus. Bull. 94:36.

Type Specimen (lectotype, *des. mihi*): NYS, West Albany, N.Y., -.-.92, coll. & det. C. H. Peck, s.n. (!).

Stature of carpophore placomycetoid; pileus ovate to convex when young, expanded to plane when mature, to 10 cm diam, pale gold-tan when dried; surface smooth; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe to 13 cm long, bulbous, often rimmed and depressed at base, appearing fibrous, concolorous with pileus; ring superior, bearing floccose patches on reverse, more or less appendiculate, pale gold when dried.

Hyphae of pileus cuticle tightly interwoven, repent; pileocystidia lacking; hyphae of pileus flesh to 12.0 µm diam, occasionally inflated, thin-walled, without clamp connections. Lamella trama irregular; hyphae to 4.5 µm diam, uninflated; basidia 6.0-9.2 x 15.3-20.0 µm,

4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-12.2 µm diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Cells of universal veil (stipe surface below ring, patches on lower surface of ring) to 25.0 µm diam, irregularly inflated, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 4.5-5.5 µm, ellipsoid to ovoid; wall dark brown, 0.6 µm thick; apiculus merely a hyaline spot in the spore wall or indiscernible.

Schaeffer macrochemical reaction: negative.

Note: Collection data is insufficient to determine which collection labelled by Peck as A. arvensis var. abruptus was actually in his hand as he wrote the type description. I have chosen this collection as lectotype because it seems to be the better of two collections labelled by Peck and dated prior to the publication of the original description. The lectotype contains several specimens including immature forms.

Agaricus alabamensis Murrill

Mycologia 14:202-203. 1922.

Type Specimen (neotype, des. mihi): TENN, no. 10182, Gainesville, Fla., 7.vii.48, coll. W. A. Murrill, det. B. F. Isaacs (!).

Stature of carpophore campestroid; pileus convex, not

fully expanded, 6.5 cm diam, dull gold when dried; surface smooth to fibrillose; dried flesh to 7 mm thick at disc, thinning to <1 mm at margin; margin projecting 2 mm. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe tapering upward, to 6 cm long, slightly bulbous, appearing fibrous, concolorous with pileus when dried; ring superior, persistent, thicker near margin, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven, repent; pileocystidia lacking; hyphae of pileus flesh 3.0-13.8 µm diam, occasionally slightly inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-9.2 µm diam, uninflated; basidia 7.5 x 18.5-23.0 µm, 4-sterigmate, without clamp connections; cheilocystidia scattered, broadly clavate to napiform, to 12.2 µm diam. Hyphae of stipe surface above ring 3.0-18.5 µm diam, parallel, tightly packed. Hyphae of ring 3.0-12.2 µm diam. Cells of universal veil (stipe surface below ring) irregularly inflated, to 18.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.5-6.0 x 3.8-4.5 µm, broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Note: Because the original type collection of this taxon (NY, Auburn, Ala., 19.v.01, coll. F. S. Earle, det. W. A. Murrill, s.n.) is not only badly broken up but also

overgrown with some other fungus and completely unidentifiable, I have selected this material as a neotype. The neotype collection contains three mature fruit bodies.

Agaricus alachuanus Murrill

J. Elisha Mitchell Sci. Soc. 54:140. 1938.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 17.viii.37, coll. & det. W. A. Murrill, no. 15917 (!).

Stature of carpophore placomycetoid; mature pileus convex or slightly depressed, to 2 cm diam, deep tan with brown, appressed, fibrillose scales when dried; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous, in fragments, appearing fibrous, concolorous with pileus when dried; ring gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia loosely fasciculate, 4.5-7.5 µm diam, irregularly inflated, unbranched; hyphae of pileus flesh 9.2-15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-12.2 µm diam, slightly inflated; basidia 6.0-7.5 x 10.7-15.3 µm, 4-sterigmate, without clamp connections; cheilocystidia sparce, saccate to napiform, to 9.2 µm diam. Hyphae of stipe surface above ring 3.0-15.3 µm diam, parallel, tightly packed. Hyphae of ring 3.0-6.0 µm diam. Cells of universal veil (stipe surface below ring)

regularly elongated, inflated, to 20.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.0-3.8 µm, broadly ellipsoid to ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minutely papillate or indiscernible, hyaline.

Schaeffer macrochemical reaction: negative.

Note: This type collection consists of two broken fruit bodies, both mature. There are also some very brief notes written by Murrill contained with the specimens.

Agaricus albolutescens Zeller

Mycologia 30:468-469. 1938.

Type Specimen (holotype, explicit): NY, Lincoln Co., Ore., 21.xi.34, coll. G. S. Burlingham, det. S. M. Zeller, no. 9158 (!).

Stature of carpophore campestroid; pileus convex to plane, to 6.5 cm diam, golden yellow when dried; surface smooth, fibrous with age; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe bulbous, to 5 cm long, appearing fibrous, concolorous with pileus or slightly darker when dried; ring superior, somewhat appendiculate, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia scattered, 4.5-5.5 µm diam, unbranched; hyphae of pileus flesh 6.0-21.5 µm diam, inflated, without

clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-13.8 µm diam, occasionally inflated; basidia 6.0-8.5 x 21.5-24.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-10.7 µm diam, parallel, tightly packed. Hyphae of ring 3.0-7.5 µm diam. Hyphae of universal veil (stipe surface below ring) inflated, to 30.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores (4.5)6.0-7.0 x 3.8-4.5 µm, ovoid to ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: This type collection consists of two specimens in separate packets. Both fruit bodies are mature; notes on the fresh condition accompany the specimens.

Agaricus alligator Murrill

Quart. J. Florida Acad. Sci. 8:193-194. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 17.x.41, coll. & det. W. A. Murrill, no. 19566 (!). Isotype: TENN, no. 21101 (!).

Stature of carpophore campestroid; mature pileus convex, to 5.5 cm diam, dull gray-gold when dried; surface silky, imbricate-scaly on disc; dried flesh to 7 mm thick at disc, thinning to 1 mm at margin; margin projecting 1 mm. Lamellae (mature) deep chocolate brown, free, to 5 mm deep.

Stipe equal, to 5 cm long, appearing fibrous, concolorous with pileus when dried; ring median, more or less appendiculate, gray-gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia 3.8-6.0 µm diam, irregularly inflated, branched; hyphae of pileus flesh 4.5-10.7 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-10.0 µm diam, occasionally inflated; basidia 7.5 x 9.2-15.3 µm, 4-sterigmate, without clamp connections; cheilocystidia scattered, napiform, brownish, 10.7-15.3 µm diam. Hyphae of stipe surface above ring 4.5-9.2 µm diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 4.5-6.0 µm, ovoid to broadly ellipsoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Note: This type collection contains numerous fragments of mature and young specimens as well as a sketch and notes on the fresh condition written by Murrill.

Agaricus alutaceus sp. nov.

(≡ A. californicus var. alutaceus Peck, nom. herb.)

Type Specimen (holotype): NYS, Palo Alto, Calif., no date, coll. C. F. Baker, det. C. H. Peck, s.n. (!).

Statura campestroidia; pileo 15 cm diam, plano, alutaceo, summo serico; stipito aut aequo aut bulboso, 9 cm long; annulo medio vel superiore; cheilocystidiis absentes; cellulis integumentorum universorum -20.0 µm diam; sporis 4.5-6.0 x 3.8-4.5 µm.

Stature of carpophore campestroid; mature pileus plane, to 15 cm diam (Peck, notes), pale tan (Peck, notes), gray-tan when dried; surface silky-fibrillose; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe more or less bulbous, to 9 cm long (Peck, notes), dark brown when dried; ring median to superior, thick, gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia undifferentiated; hyphae of pileus flesh 4.5-15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-10.7 µm diam, occasionally slightly inflated; basidia 4.5-7.5 x 10.7-15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 1.5-3.0 µm diam, parallel, tightly packed. Hyphae of ring 3.0-9.2 µm diam. Cells of universal veil (stipe surface below ring) variously inflated, to 20.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5 µm, subglobose to broadly ellipsoid or ovoid; wall dark brown, 0.6 µm thick; apiculus

minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: Agaricus californicus is a nomen dubium and this variety name a nomen herbariorum. I recognize Peck's name in acknowledgment of Peck's recognition of this taxon as distinct. The type collection consists of a single mature fruit body and brief notes on its fresh condition.

This is a large species, near A. blazei, yet distinct. Agaricus alutaceus is darker in color, bears smaller spores and produces less highly inflated universal veil tissue than A. blazei. Further collections of A. alutaceus from the West might also establish a difference in habitat preference, particularly since A. blazei is currently known only from the coastal plain areas of Florida and South Carolina.

Agaricus angustifolius Murrill

Mycologia 10:74. 1918.

Type Specimen (holotype, explicit): NY, Jamaica, 30.x.02, coll. F. S. Earle, det. W. A. Murrill, no. 287 (!).

Stature of carpophore placomycetoid; mature pileus expanded, to 3 cm diam, golden brown with dark brown fibrils when dried; dried flesh 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 1 mm deep. Stipe equal, to 3.5 cm long, appearing fibrous, dark brown when dried; ring absent on type material.

Hyphae of pileus cuticle interwoven, repent; pileocystidia lacking, scales formed by undulations of cuticle; hyphae of pileus flesh 6.0-15.3 µm, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-10.7 µm diam, occasionally inflated; basidia 4.5-6.0 x 13.8-15.3 µm, 4-sterigmate, without clamp connections; cystidia indiscernible (gill edge infected with second fungus). Hyphae of stipe surface near pileus 4.5-13.8 µm diam, parallel, tightly packed. Hyphae of ring absent. Cells of universal veil (stipe surface near base) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.5-6.0 x 3.0 µm, ellipsoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of three broken fruit bodies, all mature, and brief notes by Murrill on the fresh condition of the specimens.

Agaricus approximans Peck

N.Y. State Mus. Rep. 131:33. 1908.

Type Specimen (holotype, implicit): NYS, Trenton, N.J., 5.ix.08, coll. E. B. Sterling, det. C. H. Peck, s.n. (!).

Stature of carpophore placomycetoid; mature pileus conic or campanulate, umbonate, to 4 cm diam, pale gold when dried; surface radially rimose, excluding the umbo,

covered with brownish squamules; dried flesh to 4 mm thick, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe equal, to 4.5 cm long, appearing fibrous, concolorous with pileus when dried; ring median to superior, thick, draping, dingy gold when dried.

Hyphae of pileus cuticle loosely interwoven, repent; pileocystidia abundant, scattered or loosely fasciculate, to 10.7 µm diam, unbranched; hyphae of pileus flesh 6.0-16.8 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-9.2 µm diam, irregularly inflated; basidia 4.5-6.0 x 10.7-15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-7.5 µm diam, parallel, tightly packed. Hyphae of ring 3.0-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.3-7.5 x 3.0-4.5 µm, ellipsoid to ovoid, lacking germ pore (SEM); wall dark brown, less than 0.6 µm thick; apiculus minutely papillate, hyaline or indiscernible.

Schaeffer macrochemical reaction: negative.

Note: This is considered an implicit holotype because it is the only collection under this name among the Peck specimens and because its date, collection site and collector coincide with the data in the original description.

The collection consists of thirteen fruit bodies plus fragments; all specimens are mature.

Agaricus argenteus Braendle in Peck

Bull. Torrey Bot. Club 26:68. 1899.

Type Specimen (holotype, implicit): NYS, Washington, D.C., -.xi.-, coll. and det. F. J. Braendle, s.n. (!).

Stature of carpophore campestroid; pileus convex to plane, to 4.5 cm diam, dingy tan when dried; surface fibrillose; dried flesh to 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe equal, to 3.5 cm long, appearing fibrous, concolorous with pileus when dried; ring absent on type material.

Hyphae of pileus cuticle tightly interwoven, repent; pileocystidia lacking; hyphae of pileus flesh to 15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae to 6.0 µm diam, usually uninflated; basidia 7.5-9.2 x 15.3-21.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring to 16.8 µm diam, parallel, tightly packed. Ring tissue absent on type material. Hyphae of universal veil (stipe surface near base) inflated, to 26.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 9.2-13.0 x 6.0-7.5 µm, ellipsoid to ovoid;

wall dark brown, less than 0.6 µm thick; apiculus papillate, hyaline or indiscernible.

Schaeffer macrochemical reaction: negative.

Note: This is considered an implicit holotype because it is the only collection under this name among the Peck specimens and because its date, collection site and collector coincide with the data in the original description. The collection consists of eleven mature fruit bodies plus fragments.

Agaricus cylindriceps var. aureus Murrill

J. Florida Acad. Sci. 8:194. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 23.x.42, coll. & det. W. A. Murrill, no. 20495 (!).

Stature of carpophore campestroid; pileus cylindric, to 4.0 cm diam, dull gold with golden brown scales when dried; dried flesh to 5 mm thick at disc, thinning to <1 mm at margin; margin inrolled. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe equal, to 3.0 cm long, appearing fibrous, concolorous with pileus; ring superior, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate , to 6.0 µm diam, unbranched; hyphae of pileus flesh 4.5-15.3 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-3.8 µm diam, uninflated; basidia 7.5 x 13.8-20.0 µm,

4-sterigmate, without clamp connections; cystidia lageniform, ventricose-rostrate or pseudoparaphysoid, to 7.5 µm diam, scattered. Hyphae of stipe surface above ring 3.0-7.5 µm diam, parallel,tightly packed. Hyphae of ring 2.3-7.5 µm diam. Hyphae of universal veil (stipe surface below ring) uninflated, to 6.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores (5.3)6.0 x (3.8)4.5 µm, ovoid to ellipsoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus papillate on immature spores, indiscernible on mature spores.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of one mature fruit body plus fragments, as well as very brief notes by Murrill.

Agaricus subplacomyces var. badius Murrill. nom. illeg.

Mycologia 33:447. 1941.

≡ A. placomyces var. badius Murrill. nom. herb.

≡ A. badius (this dissertation, p. 78).

Type Specimen (holotype): FLAS, Gainesville, Fla., 7.vi.38, coll. & det. W. A. Murrill, no. 16402 (!). Isotypes: NY, no. 16402 (!); NCU, s.n. (!); BPI, s.n. (!).

Stature of carpophore placomycetoid; mature pileus convex, to 5 cm diam, dull gold when brown disc and scales when dried; surface heavily squamulose on disc, glabrous near the margin; dried flesh to 2 mm thick at disc, thinning

to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe bulbous, to 10 cm long, concolorous with pileus when dried; ring more or less appendiculate, superior when adhering to stipe, gold when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia fasciculate or scattered, 3.0-6.0 µm diam, unbranched; hyphae of pileus flesh 4.5-18.5 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-6.0(12.2) µm diam, occasionally inflated; basidia 6.0-7.5 x 18.5-21.5 µm, 4-sterigmate, without clamp connections; cheilocystidia napiform to broadly capitulate, 5.5-6.0 µm diam, scattered. Hyphae of stipe surface above ring 4.5-13.8 µm diam, parallel, tightly packed. Hyphae of ring 3.0-9.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.5-6.0 x 3.0-4.5 µm, ellipsoid to broadly ellipsoid or ovoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: As evidenced by a note in the type collection of this taxon, Murrill clearly meant this to be a variety of A. placomyces. The published description, however, cites the collection as a variety of A. subplacomyces, an

undescribed taxon. I therefore feel that this collection, which is not closely related to A. placomyces, should bear Murrill's varietal name elevated to species rank. The collection consists of seven fruit bodies, two of which are entire. They are all mature specimens.

Agaricus bivelatoides Murrill

Mycologia 4:297. 1912.

Type Specimen (holotype, explicit): NY, Seattle, Wash., 20.x-1.xi.11, coll. & det. W. A. Murrill, no. 493 (!).

Pileus gray-tan with innate brownish fibrils when dried; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, to 2 mm deep. Stipe concolorous with pileus when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia scattered, 2.3-9.2 µm diam, unbranched; hyphae of pileus flesh 3.0-15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-9.2 µm diam, uninflated; basidia 4.5-6.0 x 20.0-24.5 µm, 4-sterigmate, without clamp connections; cheilocystidia napiform, scattered, 6.0-10.7 µm diam. Hyphae of stipe surface near pileus 3.0-15.3 µm diam, parallel, tightly packed. Hyphae of ring absent on type material. Universal veil tissue absent on type material.

Spores 5.5-6.0(7.0) x 3.8-4.5 µm, ellipsoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: This type collection consists solely of fragments.

Agaricus blazei Murrill

Quart. J. Florida Acad. Sci. 8:193. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 24.iv.44, coll. R. W. Blaze, det. W. A. Murrill, no. 32911 (!). Isotype: NY, s.n. (!).

Stature of carpophore campestroid; mature pileus subcylindric to subexpanded, to 7 cm diam, dull gold when dried; surface finely gold scaly; dried flesh to 11 mm thick at disc, thinning to <1 mm at margin; margin projecting 1 mm. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe equal to sub-bulbous, to 5.5 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, membranous, dull gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate, 3.0-6.0 µm diam, branched or unbranched; hyphae of pileus flesh 3.0-10.7 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-6.0(10.7) µm diam, occasionally inflated; basidia 5.5-7.5 x 15.3-20.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 2.3-7.5 µm diam, parallel, tightly packed. Hyphae of ring 1.5-6.0 µm diam. Cells of

universal veil (stipe surface below ring) inflated, to 26.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.3-7.0 x 4.5-5.3 µm, subglobose to ovoid or broadly ellipsoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of three immature and three mature fruit bodies as well as notes and a sketch by Murrill. The isotype contains one mature carpophore.

Agaricus blockii Murrill

Mycologia 46:112. 1954.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 6.vii.50, coll. Dr. S. S. Block, det. W. A. Murrill, no. 21533 (!).

Stature of carpophore placomycetoid; mature pileus conic, to 4.5 cm diam, dull gold when dried; surface covered with delicate, appressed, fibrillose scales; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin; margin undulate. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe tapering upward, to 4.5 cm long, appearing fibrous, concolorous with pileus when dried; ring median, more or less appendiculate, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate or scattered, to 7.5 µm diam,

unbranched; hyphae of pileus flesh 4.5-10.7 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular, hyphae 3.0-6.0 µm diam, uninflated; basidia 6.0 x 12.2-15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-12.2 µm diam, parallel, tightly packed. Hyphae of ring 4.5-10.7 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 21.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5 µm, broadly ellipsoid to ovoid, often matured to subglobose, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus hyaline, minute.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of a single mature fruit body and notes, including a sketch, by Murrill.

Agaricus cervinifolius Zeller

Mycologia 25:388. 1933.

Type Specimen (holotype, explicit): NY, Linn Co., Ore., 20.ix.32, coll. & det. S. M. Zeller, no. 5589 (!).

Stature of carpophore campestroid; mature pileus convex-expanded, to 10 cm diam, dull tan with gray-brown disc and scales when dried; dried flesh to 6 mm thick at

disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 6 mm deep. Stipe slightly bulbous, to 5 cm long, appearing fibrous, gray-brown when dried; ring superior when adhering to stipe, off-white when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate, to 10.7 µm diam, unbranched; hyphae of pileus flesh 3.0-21.5 µm diam, usually inflated, without clamp connection, thin-walled. Lamella trama irregular, hyphae 3.0-7.5 µm diam, occasionally inflated; basidia 6.0 x 18.5-21.5 µm, 4-sterigmate, without clamp connections; cystidia lacking (gill edge sterile, composed of interwoven hyphae). Hyphae of stipe surface above ring 4.5-20.0 µm diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Hyphae of universal veil (stipe surface below ring) inflated, to 30.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores (5.5)6.0-7.5 x 3.8-4.5 µm, ovoid to broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: There are approximately five fruit bodies, all mature, all fragmented, in the type collection.

Agaricus cinchonensis Murrill

Mycologia 10:76. 1918.

Type Specimen (holotype, explicit): NY, Jamaica, 25.xii.08-8.i.09, coll. W. A. & E. L. Murrill, det. W. A. Murrill, no. 444 (!).

Stature of carpophore placomycetoid; mature pileus convex to plane, more or less umbonate, to 4 cm diam, chocolate brown when dried; surface fibrillose; dried flesh to 1 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe slightly bulbous, to 5 cm long, appearing fibrous, gray when dried; ring median where adhering to stipe, gold when dried.

Hyphae of pileus cuticle interwoven, repent; pileocystidia lacking; hyphae of pileus flesh 4.5-16.8 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-13.8 µm diam, occasionally inflated; basidia 4.5-6.0 x 18.5-23.0 µm, 4-sterigmate, without clamp connections; cheilocystidia scattered, sparce, napiform, to 9.2 µm diam. Hyphae of stipe surface above ring 3.0-23.0 µm diam, parallel, tightly packed. Hyphae of ring 2.3-9.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 30.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.0-3.8 µm, broadly ellipsoid to ellipsoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection of this taxon contains five mature fruit bodies, a spore print, and brief notes written by Murrill.

Agaricus ciscoensis Smith

Pap. Mich. Acad. Sci. Arts Lett. 25:136-137. "1939" (1940).

Type Specimen (holotype, explicit): MICH, Cisco, Texas, -.ix.35, coll. E. A. Smith, det. A. H. Smith, s.n. (!).

Stature of carpophore placomycetoid; pileus convex to plane, to 4 cm diam, brown when dried; surface silky-fibrillose, particularly on the disc; dried flesh 1 mm thick, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe equal to slightly bulbous, to 5 cm long, appearing fibrous, gray-tan when dried; ring superior, flaring, somewhat appendiculate, dull gold when dried.

Hyphae of pileus cuticle interwoven; pileocystidia abundant, 3.0-7.5 µm diam, usually unbranched, fasciculate or scattered; hyphae of pileus flesh 2.3-12.2 µm diam, slightly inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-9.2 µm diam, occasionally inflated; basidia 6.0-7.0 x 13.8-16.8 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-10.7 µm diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Cells of universal

veil (stipe surface below ring) inflated, to 12.2 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-9.2 x 3.8-5.3 µm, broadly ellipsoid to more or less truncately ellipsoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible or minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: The type collection apparently consists of several fruit bodies, although only one was made available for study.

Agaricus citrinidiscus Murrill

Quart. J. Florida Acad. Sci. 8:193. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 11.viii.44, coll. & det. W. A. Murrill, no. 32719 (!).

Stature of carpophore placomycetoid; mature pileus plane, to 3.5 cm diam, dull tan with darker disc when dried; surface appearing glabrous; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous, to 3.5 cm long, appearing fibrous, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia loosely fasciculate, 3.0-6.0 µm diam, branched or unbranched; hyphae of pileus flesh 3.0-15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 6.0-15.3 µm

diam, occasionally inflated; basidia not rehydrating on type material; cystidia lacking or also not rehydrating. Hyphae of stipe surface above ring 4.5-10.7 µm diam, parallel, tightly packed. Hyphae of ring 3.0-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5 µm, subglobose to broadly ellipsoid or ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of a portion of one mature pileus and two stipes. There are also brief notes on the fresh condition written by Murrill.

Agaricus comptuliformis Murrill

Mycologia 14:203. 1922.

Type Specimen (holotype, explicit): NY, Auburn, Ala., 29.vii.99, coll. F. S. Earle, det. W. A. Murrill, s.n. (!).

Stature of carpophore campestroid; mature pileus convex to expanded, to 3.5 cm diam, dull tan when dried; surface smooth; dried flesh to 3 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe equal, to 4 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia 2.3-4.5 µm diam, scattered, branched or unbranched; hyphae of pileus flesh 3.0-15.3 µm diam, inflated, without clamp connections, thin-walled. Lamella trama, basidia indiscernible on type material. Hyphae of stipe surface above ring 3.8-10.7 µm diam, parallel, tightly packed. Hyphae of ring 3.0-5.5 µm diam. Universal veil tissue absent on type material.

Spores 4.5-6.0 x 3.0-4.5 µm, ellipsoid to ovoid; wall dark brown, 0.6 µm thick; apiculus a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of one immature fruit body plus numerous fragments of matured specimens.

Agaricus comptuloides Murrill

Mycologia 4:297. 1912.

Type Specimen (holotype, explicit): NY, Seattle, Wash., 20.x.11-1.xi.11, coll. & det. W. A. Murrill, no. 434 (!).

Stature of carpophore placomycetoid; mature pileus conic to convex, umbonate, to 2 cm diam, golden brown when dried; surface slightly fibrillose-scaly; dried flesh to 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous, to 6 cm long, appearing fibrous, tan when dried; ring

median to superior, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate, 3.0-6.0 µm diam, unbranched; hyphae of pileus flesh 3.0-18.5 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-10.7 µm diam, occasionally inflated; basidia 6.0-7.5 x 16.8-18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 6.0-15.3 µm diam, parallel, tightly packed. Hyphae of ring 3.0-5.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 34.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.5-6.0 x 3.0-4.5 µm, broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of two, mature, broken fruit bodies and a water color of a fresh specimen done by Murrill.

Agaricus cothurnatus Peck

Bull. Torrey Bot. Club 31:181. 1904. (non A. cothurnatus Fries, Epicr. Sys. Myc., 1836-1838, p. 218).

≡ A. chlamydopus Peck. N.Y. State Mus. Bull. 94:36. "1904" (1905).

Type Specimen (holotype, implicit): NYS. Denver, Colo., 25.vii.02, coll. E. B. Sterling, det. C. H. Peck, s.n. (!).

Stature of carpophore campestroid; mature pileus convex, to 6 cm diam, cream when dried; surface smooth; dried flesh to 10 mm thick at disc, thinning at margin; margin involute. Lamellae (mature) deep chocolate brown, free, to 7 mm deep. Stipe equal, to 4.5 cm long, appearing fibrous, concolorous with the pileus when dried; ring existing as tufted upper edge of membranous, adherent volva.

Hyphae of pileus cuticle loosely interwoven, repent; pileocystidia few to lacking, to 7.5 µm diam, unbranched; hyphae of pileus flesh 6.0-12.2 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 4.5-6.0 µm diam, occasionally inflated; basidia 7.5-9.2 x 30.0 µm, 4-sterigmate, without clamp connections; cheilocystidia clavate or irregularly clavate, single or fasciculate, to 4.5 µm diam. Hyphae of stipe surface above volva 3.0-4.5 µm diam, parallel, tightly packed. Hyphae of universal veil (pileus margin, volva) inflated, to 13.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 7.0-9.2 x 7.5 µm, subglobose to pyriform, lacking germ pore (SEM); wall dark brown, less than 0.6 µm thick; apiculus papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of two mature fruit bodies.

Agaricus cretacellus Atkinson

J. Myc. 8:110. 1902.

Type Specimen (holotype, explicit): CUP, Cascadilla woods, Ithaca, N.Y., 7.ix.00, coll. & det. Geo. F. Atkinson, no. 5359 (!).

Stature of carpophore placomycetoid; mature pileus convex-expanded, to 6.5 cm diam, cream when dried; surface smooth; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe bulbous, to 6.5 cm long, appearing fibrous; ring superior, cream when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia lacking; hyphae of pileus flesh 3.8-13.8 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-15.3 µm diam, occasionally inflated; basidia 5.5-6.0 x 16.8-21.5 µm, 4-sterigmate, without clamp connections; cheilocystidia lacking. Hyphae of stipe surface above ring 3.0-18.5 µm diam, parallel, tightly packed. Hyphae of ring 2.3-6.0 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.5-6.0 x 3.0-3.8 µm, broadly ellipsoid to

ovoid; wall dark brown, less than 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collection contains approximately ten fruit bodies, three of which are whole. All specimens are mature.

Agaricus cylindriceps Murrill

Lloydia 7:323. 1944.

Type Specimen (holotype, explicit): FLAS, Gainesville, 13.viii.37, coll. & det. W. A. Murrill, no. 16050 (!). Isotype: NY, no. F16050 (!).

Stature of carpophore campestroid; pileus cylindric to convex-truncate, to 4 cm diam, dull gray-gold when dried; surface minutely squamulose; dried flesh to 6 mm thick at disc, thinning to <1 mm at margin; margin inrolled. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe bulbous, to 6 cm long, appearing fibrous, tan when dried; ring median to superior, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia usually unbranched, fasciculate or scattered, to 6.0 µm diam; hyphae of pileus flesh 4.5-12.2 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 1.5-4.5 µm diam, uninflated or only slightly so; basidia 4.5-7.0 x 12.2-18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-12.2 µm

diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Hyphae of universal veil (stipe surface below ring) inflated, to 7.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores (5.3)6.0 x (3.8)4.5 µm, ovoid to ellipsoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of ten immature fruit bodies, a sketch by Murrill and notes by him on the fresh condition of the specimens. The isotype contains fragments of two fruit bodies, one immature.

Agaricus diminutivus Peck

Buffalo Soc. Nat. Sci. 1:53. 1873.

Type Specimen (holotype, implicit): NYS, Croghan, N.Y., -.ix.72, coll. & det. C. H. Peck, s.n., annot. A. H. Freeman, 1976 (!).

Stature of carpophore placomycetoid; mature pileus plane to slightly umbonate or depressed in center, to 1.5 cm diam, gray-tan when dried; surface spotted with appressed fibrillose scales; dried flesh to 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 1 mm deep. Stipe to 3.5 cm long, slightly bulbous to equal, concolorous with pileus when dried; ring superior, thin, membranous, pale tan when dried.

Hyphae of pileus cuticle interwoven, repent; pileocystidia fasciculate, 4.5-6.0 µm diam, unbranched; hyphae of pileus flesh 3.0-7.5 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-4.5 µm diam, inflated; basidia 4.5-6.0 x 13.8-15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-20.0 µm diam, parallel, tightly packed. Hyphae of ring 3.0-4.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 14.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-5.3 x 3.8 µm, ellipsoid to ovoid or subglobose, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus papillate to barely discernible, hyaline.

Schaeffer macrochemical reaction: positive.

Note: The type collection of this taxon consists of four fruit bodies, all mature, and mounted on stiff paper. There is also included a color pencil sketch of a fruit body, apparently drawn by Peck.

Agaricus earlei Murrill

Mycologia 10:79. 1918.

Type Specimen (holotype, explicit): N.Y., Cuba, 17.v.04, coll. F. S. Earle, det. W. A. Murrill, no. 33 (!).

Stature of carpophore placomycetoid; pileus ovoid to convex, then expanded, to 2.5 cm diam, dull gold with

brownish disc and brown appressed fibrillose scales when dried; dried flesh to 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous, to 4 cm long, appearing fibrous, brown when dried; ring superior, brownish when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia scattered or loosely fasciculate, 3.0-6.0 µm diam, unbranched; hyphae of pileus flesh 4.5-16.8 µm diam, inflated, without clamp connections; thin-walled. Lamella trama irregular; hyphae 3.0-6.0 µm, uninflated or only slightly so; basidia 4.5-6.0 x 10.7-15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-21.5 µm diam, parallel, tightly packed. Hyphae of ring 1.5-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-5.5 x 3.0-3.8 µm, broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of approximately fifteen fruit bodies plus fragments; five of them are in the button stage.

Agaricus eastlandensis Smith

Mycologia 36:244. 1944.

Type Specimen (holotype, explicit): MICH, Eastland, Texas, 28.viii.38, coll. E. A. Smith, det. A. H. Smith, s.n. (!).

Stature of carpophore placomycetoid; mature pileus convex to plane, to 1 cm diam, dull cream when dried; surface appressed silky-fibrillose; dried flesh less than 1 mm thick at disc. Lamellae (mature) deep chocolate brown, free, 1 mm deep. Stipe bulbous, to 15.0 mm long, appearing fibrous, concolorous with pileus when dried; ring superior, cream when dried.

Hyphae of lamella trama 3.0-7.5 µm diam, occasionally slightly inflated; basidia 7.5-9.2 x 18.5-24.5 µm, 4-sterigmate, without clamp connections.

Spores 7.5-9.2 x 6.0-7.5 µm, broadly ellipsoid to subglobose, lacking germ pore (SEM); wall dark brown, 1.2 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: This description is incomplete because only one tiny fruit body was made available for study.

Agaricus eludens Peck

N.Y. State Mus. Bull. 139:42-43. 1910.

Type Specimen (holotype, implicit): NYS, Trenton, N.J., 15.ix.08, coll. E. B. Sterling, det. C. H. Peck, s.n. (!).

Stature of carpophore placomycetoid; mature pileus ovate, broadly conic or subcampanulate, to 5.5 cm diam, dull gold when dried; surface except disc covered with brown

appressed fibrillose scales; margin surpassing lamellae by 0.5 mm; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe equal to bulbous, to 8 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, thick, membranous, gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia fasciculate, branched, to 12.0 µm diam; hyphae of pileus flesh 4.5-7.5 µm diam, usually uninflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-6.0(10.7) µm diam, occasionally inflated; basidia 6.0 x 15.3-20.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-13.8 µm diam, parallel, tightly packed. Hyphae of ring 3.0-6.0 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.3-6.0 x 3.0-3.8 µm, broadly ellipsoid to ovoid; wall dark brown, 0.6 µm thick; apiculus barely discernible, hyaline.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of approximately fifty fruit bodies, half of which are immature.

Agaricus placomyces var. flavescens Thiers

Mycologia 51:538. 1959.

Type Specimen (holotype, explicit): MICH, Wellborn, Texas, 7.vi.52, coll. & det. H. D. Thiers, no. 1656 (!).

Stature of carpophore placomycetoid; pileus convex, broadly convex or obscurely broadly umbonate with age, to 12 cm diam, gray-gold when dried; surface covered with appressed to slightly recurved fibrillose scales; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin; margin projecting 1-2 mm. Lamellae (mature) deep chocolate brown, free, to 1 mm deep. Stipe slightly bulbous, concolorous with pileus when dried; ring superior, gold when dried.

Hyphae of pileus flesh 3.0-13.8 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-6.0 µm diam, uninflated; basidia 6.0-8.0 x 15.0-20.0 µm, sterigmata not found, without clamp connections; cheilocystidia catenulate, consisting of globose to pyriform cells, to 9.2 µm diam, scattered. Hyphae of ring 3.0-7.5 µm diam. Universal veil tissue absent on type material.

Spores 4.5-6.2 x 2.8-3.5 µm, ellipsoid to subovoid, lacking germ pore (SEM).

Schaeffer macrochemical reaction: negative.

Note: This description is incomplete because adequate material was not furnished for examination.

Agaricus floridanus Peck

N.Y. St. Mus. Bull. 495:50. 1911.

Type Specimen (holotype, implicit): NYS, DeFuniak Springs, Fla., 29.iii.10, coll. G. Clyde Fisher, det. C. H. Peck, s.n. (!) Isotype: FLAS, no. 45919 (!).

Stature of carpophore campestroid; pileus campanulate, expanded to plane, to 8 cm diam, dull gray-gold when dried; surface rimose-areolate to slightly strigose or glabrous; dried flesh to 1 cm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe equal to bulbous, to 5 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, appendiculate on young specimens, dull gray-gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia lacking; hyphae of pileus flesh 9.2-20.0 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-4.6 µm diam, uninflated; basidia 6.0-7.5 x 15.3-24.5 µm, 4-sterigmate, without clamp connections; cheilocystidia napiform, scattered, 12.2-18.5 µm diam, thin-walled. Hyphae of stipe surface above ring 3.0-9.2 µm diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 4.5-5.3 µm, broadly ellipsoid to ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minute to indiscernible, hyaline.

Schaeffer macrochemical reaction: negative.

Note: The type collection contains seventeen fruit bodies, four of these immature. There are also notes by Peck on the fresh condition of the specimens. The isotype consists of one immature specimen plus pileus fragments.

Agaricus glabrus Zeller

Mycologia 30:469-470. 1938.

Type Specimen (holotype, explicit): NY, Pacific Grove, Calif., 1.ii.37, coll. G. S. Burlingham, det. S. M. Zeller, no. 11532 (!).

Stature of carpophore placomycetoid; pileus subconical to expanded, subumbonate, to 10 cm diam, gray-brown when dried; surface covered with delicate innate brown fibrils; dried flesh to 3 mm thick at disc, thinning to 1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe bulbous, to 9 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, lower portion more or less cottony, upper portion smooth, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia scattered, 3.0-6.0 µm diam, branched or unbranched; hyphae of pileus flesh 4.5-16.8 µm diam, usually inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.8-9.2(13.8) µm diam, occasionally inflated; basidia 5.5-6.0 x 20.0-21.5 µm, 4-sterigmate,

without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 7.5(27.5) µm diam, parallel, tightly packed. Hyphae of ring 3.0-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 20.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores (4.5)5.5-6.0 x 3.8 µm, broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline or indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of nine mature fruit bodies.

Agaricus hondensis Murrill

Mycologia 4:296-297. 1912.

Type Specimen (holotype, explicit): NY, LaHonda, Calif., 25.xi.11, coll. W. A. Murrill and L. S. Abrams, det. W. A. Murrill, no. 1260 (!).

Stature of carpophore placomycetoid; mature pileus convex to plane or depressed, to 4.5 cm diam, tan with brown disc when dried; surface smooth; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous, to 8 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, gold when dried.

Hyphae of pileus cuticle tightly interwoven, repent;

pileocystidia lacking; hyphae of pileus flesh 3.8-15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-15.3 µm diam, occasionally inflated; basidia 4.5 x 12.2-15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.8-12.2 µm diam, parallel, tightly packed. Hyphae of ring 3.0-7.5 µm diam. Cells of universal veil (pileus margin, stipe surface below ring) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores (4.5)5.5-6.0 x 3.8-4.5 µm, subglobose to ovoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: The type collection contains one mature fruit body and brief notes by Murrill.

Agaricus johnstonii Murrill

Mycologia 10:75. 1918.

Type Specimen (lectotype, des. mihi): NY, Rio Piedras, P.R., 12.xii.15, coll. J. R. Johnston, det. W. A. Murrill, no. 3485 (!).

Stature of carpophore placomycetoid; mature pileus expanded, 3.5 cm diam, brown, almost black on disc when dried; surface squamulose; dried flesh to 2 mm thick at disc, thinning to 1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe equal, appearing

fibrous, concolorous with pileus when dried; ring absent on type material.

Hyphae of pileus cuticle tightly interwoven, usually repent; pileocystidia fasciculate, 3.0-7.5 µm diam, unbranched; hyphae of pileus flesh 3.0-13.8 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-6.0 µm diam, uninflated or only slightly so; basidia indiscernible; cystidia indiscernible. Hyphae of stipe surface near pileus 3.0-10.7 µm diam, parallel, tightly packed. Hyphae of ring absent. Cells of universal veil (stipe surface near base) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores (3.8)4.5-6.0 x 3.0 µm, ellipsoid; wall dark brown, 0.6 µm thick; apiculus a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: As the original type of this taxon is in fragments and beyond any recognition, I have established this collection, mentioned in Murrill's original description of the taxon, as a lectotype. The collection contains a single, mature fruit body.

Agaricus kauffmanii Smith

Pap. Mich. Acad. Sci. Arts Lett. 25:126-127. "1939" (1940).

Type Specimen (holotype, explicit): MICH, Takoma Park, Md., 22.vii.19, coll. C. H. Kauffman, det. A. H. Smith, s.n. (!).

Stature of carpophore placomycetoid; pileus dark tan to brown when dried; surface covered with appressed fibrillose scales; dried flesh to 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 1 mm deep. Stipe more or less bulbous, to 9 cm long, fibrous, dark tan when dried; ring absent on type material.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia abundant, usually unbranched, 3.0-9.2 µm diam; hyphae of pileus flesh 3.0-13.8 µm diam, slightly inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 1.5-3.8 µm diam, uninflated; basidia 7.5 x 18.5-24.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface near pileus 3.0-10.7 µm diam, parallel, tightly packed. Hyphae of ring absent on type material. Cells of universal veil (stipe surface near base) inflated, to 18.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.5-6.0 x 3.8-4.5 µm, broadly ellipsoid to subglobose, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: This description is incomplete because only a

portion of the type collection was made available for study.

Agaricus lilaceps Zeller

Mycologia 30:470-471. 1938.

Type Specimen (holotype, explicit): NY, Pacific Grove, Calif., 12.ii.35, coll. G. S. Burlingham, det. S. M. Zeller, no. 9009 (!).

Stature of carpophore campestroid; mature pileus hemispheroid to convex-expanded, to 6.5 cm diam, golden tan when dried; surface smooth to more or less fibrillose; dried flesh to 5 mm thick at disc, thinning to <1 mm at margin; margin projecting somewhat. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe subequal to more or less bulbous, to 5.5 cm long, appearing fibrous, gold when dried; ring somewhat appendiculate, superior when adhering to stipe, gold when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia scattered, 4.5-10.7 µm diam, branched or unbranched; hyphae of pileus flesh 4.5-20.0 µm diam, usually inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.8-15.3 µm diam, usually inflated; basidia 6.0 x 21.5-26.0 µm, 4-sterigmate, without clamp connections; cheilocystidia clavate, subnapiform or slightly capitulate, to 7.5 µm diam, extending beyond hymenium to 20.0 µm. Hyphae of stipe surface above ring 3.0-23.0 µm diam, parallel, tightly packed. Hyphae of ring 3.0-12.2 µm

diam. Hyphae of universal veil (stipe surface below ring) uninflated or only slightly so, 3.0-9.2 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.5-6.0(7.0) x 4.5 µm, subglobose to ovoid; wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: positive.

Note: The type collection contains four fruit bodies, including one immature specimen, and notes on the fresh condition.

Agaricus magnificus Peck

Bull. Torrey Bot. Club 26:67. 1899. (non A. magnificus Fries. 1874. Hymen, Eur. p. 25).

Type Specimen (holotype, implicit): NYS, Mt. Gretna, Pa., -.viii.98, coll. McIlvaine, det. C. H. Peck, s.n. (!).

≡ A. magniceps Peck. "1904" (1905). N.Y. State Mus. Bull. 94:36.

Stature of carpophore robustly placomycetoid; pileus dull brown-gold when dried; surface glabrous. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe bulbous, to 10.5 cm long, appearing fibrous, concolorous with pileus when dried; ring median, draping, adherent, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven, repent; pileocystidia lacking; hyphae of pileus flesh 3.0-12.2 µm

diam, inflated, without clamp connections, thin-walled. Lamella trama, basidia, cystidia impossible to discern. Hyphae of stipe surface above ring 7.5-12.2 µm diam, parallel, tightly packed. Hyphae of ring 3.0-10.7 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 30.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.3-7.5 x 3.0-4.5 µm, ellipsoid to broadly ellipsoid or ovoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: This is considered an implicit holotype because it is the only collection under this name among the Peck specimens and because its date, collection site and collector coincide with data in the original description. The collection consists of a single mature fruit body, badly broken up.

Agaricus campestris var. majusculus Peck

N.Y. State Mus. Bull. 157:57-58, 106. 1912.

Type Specimen (holotype, implicit): NYS, Schenectady, N.Y., -.x.11, coll. Mrs. G. E. Duryee, det. C. H. Peck, s.n. (!).

≡ A. majusculus stat. nov.

Stature of carpophore campestroid; pileus convex, expanded to plane, to 11 cm diam, dull tan when dried;

surface covered with brown, silky fibrillose scales; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin; margin slightly surpassing lamellae. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe equal, to 6 cm long, brown when dried; ring median, dull gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate or scattered, 3.0-6.0 µm diam, usually unbranched; hyphae of pileus flesh 4.5-23.0 µm diam, usually highly inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-9.2 µm diam, uninflated or only slightly so; basidia 5.5-7.5 x 15.3-18.5 µm, 2-sterigmate, without clamp connections; cheilocystidia broadly clavate to napiform, 9.2-12.2 µm diam, scattered. Hyphae of stipe surface above ring 6.0-30.0 µm diam, parallel, tightly packed. Hyphae of ring 3.8-10.7 µm diam. Cells of universal veil (stipe surface below ring) variously inflated, to 29.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 4.5-6.0 µm, subglobose; wall dark brown, 0.6 µm thick; apiculus indiscernible or minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: This is considered an implicit holotype because its collection site, collector and date coincide with the data given in Peck's original description of the taxon.

I feel this taxon is clearly distinct from A. campestris in several respects: A. majusculus exhibits cellular universal veil tissue, 2-sterigmate basidia and is brown in the fresh condition whereas A. campestris has hyphal universal veil tissue, 4-sterigmate basidia and white (or brownish from fibrils) coloration. Peck's name is retained in acknowledgment of his recognition of the taxon.

Agaricus maritimus Peck

Bull. Torrey Bot. Club 26:66. 1899. (non A. maritimus Fries. Syst. Myc. I:198).

Type Specimen (holotype, implicit): NYS, Lynn, Mass., -.xi.-, coll. R. F. Dearborn, det. C. H. Peck, s.n. (!).

≡ A. halophilus Peck. "1904" (1905). N.Y. State Mus. Bull. 94:36.

Stature of carpophore campestroid; pileus at first subglobose, then convex to plane, to 6 cm diam, dull gold when dried; surface smooth to somewhat fibrillose; dried flesh to 1.5 cm thick at disc, thinning to 1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3-4 mm deep. Stipe tapering downward, to 3 cm long, appearing fibrous, concolorous with pileus when dried; ring median to superior, upstanding, dull gold when dried.

Hyphae of pileus cuticle tightly interwoven, repent; pileocystidia lacking; hyphae of pileus flesh 12.2-18.5 µm diam, inflated, without clamp connections, thin-walled.

Lamella trama irregular; hyphae 3.0-4.5 µm diam, uninflated; basidia 4.5-7.5 x 23.0-46.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-7.5 µm diam, parallel, tightly packed. Hyphae of ring 3.0-6.0 µm diam. Hyphae of universal veil (stipe surface below ring, ring margin) inflated, to 10.7 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 5.3-6.0 µm, subglobose; wall dark brown, less than 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: This is considered an implicit holotype because it is the only collection under this name among the Peck specimens and because its collection site and collector coincide with the data in the original description. The collection consists of six fruit bodies, including four immature specimens, plus fragments.

Agaricus placomyces var. microsporus Smith

Pap. Mich. Acad. Sci. Arts Lett. 25:125-126. "1939" (1940).

Type Specimen (holotype, explicit): MICH, Smith River, Cal., 16.xi.37, coll. & det. A. H. Smith, no. 8800 (!).

Stature of carpophore placomycetoid; mature pileus expanded to plane, white, darker on the disc, with gray

fibrils when dried; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous, to 7 cm long, dull tan when dried; ring superior, dull gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate, unbranched, 4.5-7.5 µm diam, grayish; hyphae of pileus flesh 4.5-20.0 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-9.2 µm diam, uninflated or only slightly so; basidia 5.3-6.0 x 12.2-23.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-9.2 µm diam, parallel, tightly packed. Hyphae of ring 3.0-12.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.0-3.8 µm, ellipsoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: Only a portion of the type material was made available for study.

Agaricus ochraceidiscus Murrill

Mycologia 10:80. 1918.

Type Specimen (holotype, explicit): NY, Cuba, 28.ix.04, coll. F. S. Earle, det. W. A. Murrill, no. 265 (!).

Stature of carpophore placomycetoid; mature pileus convex to expanded, to 6.5 cm diam, dull gold with tan disc and tan fibrillose scales when dried; dried flesh to 5 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe slightly bulbous, to 5 cm long, appearing fibrous, golden tan when dried; ring superior, somewhat appendiculate, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate, 1.5-4.5 µm diam, unbranched; hyphae of pileus flesh 3.0-12.2 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-9.2 µm diam, uninflated or only slightly so; basidia 6.0-7.5 x 13.8-15.3 µm, 4-sterigmate, without clamp connections; cheilocystidia scattered, napiform or broadly clavate, to 9.2 µm diam. Hyphae of stipe surface above ring 3.0-9.2 µm diam, parallel, tightly packed. Hyphae of ring 2.3-6.0 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 29.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5 µm, broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of six fruit bodies, all mature, plus fragments and brief notes by Murrill.

Agaricus arvensis var. palustris Smith

Pap. Mich. Acad. Sci. Arts Lett. 25:117-118. "1939" (1940).

Type Specimen (holotype, explicit): MICH, Kent Lake, Mich., 13.ix.37, coll. & det. A. H. Smith, s.n. (!).

Stature of carpophore placomycetoid; mature pileus broadly umbonate to plane, uniformly gold when dried; surface appressed silky fibrillose; dried flesh to 6 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe bulbous, appearing fibrous, gray-gold when dried; ring superior, gray-gold when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia 3.0-6.0 µm diam, scattered, branched; hyphae of pileus flesh 4.5-15.3 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-20.0 µm diam, inflated; basidia 7.5 x 20.0-24.5 µm, 4-sterigmate, without clamp connections; cheilocystidia broadly clavate to napiform, 7.5-17.5 µm diam, fasciculate or forming a sterile band along entire gill edge. Hyphae of stipe surface above ring 4.5-16.8 µm diam, parallel, tightly

packed. Hyphae of ring 3.0-3.8 µm diam. Cells of universal veil (lower surface of ring) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 7.5-9.2 x (4.5)5.3(6.0) µm, ovoid to pyriform, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: Only a portion of the type material was made available for study.

Agaricus pattersonae Peck

Bull. Torrey Bot. Club 34:347. 1907.

Type Specimen (holotype, implicit): NYS, Stanford University, Stanford, Calif., -.i.07, coll. Miss A. M. Patterson, det. C. H. Peck, s.n. (!).

Stature of carpophore campestroid; mature pileus convex to plane, to 4.5 cm diam, dull tan to chocolate brown when dried; surface covered with brown appressed fibrillose scales; dried flesh to 3 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe bulbous, to 6.5 cm long, appearing fibrous, concolorous with pileus when dried; ring two-limbed, superior, more or less appendiculate, flaring, dull gray-tan when dried.

Hyphae of pileus cuticle interwoven, repent; pileocystidia fasciculate, unbranched, to 7.5 µm diam; hyphae of pileus flesh to 9.2 µm diam, inflated, without clamp

connections, thin-walled. Lamella trama irregular; hyphae 3.0-4.5 µm diam, uninflated; basidia 7.5-10.0 x 24.5-39.8 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring to 10.7 µm diam, parallel, tightly packed. Hyphae of ring 4.5-10.7 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 30.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 7.5 x 6.0 µm, subglobose to ovoid; wall dark brown, 0.6 µm thick; apiculus papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: This is considered an implicit holotype because it is the only collection under this name among the Peck specimens and because its date, collection site and collector coincide with the data in the original description. The collection contains one mature and one immature fruit body plus fragments, a spore print, and two black and white photos.

Agaricus placomyces Peck

N.Y. State Mus. Nat. Hist. 29:40. 1878.

Type Specimen (holotype, implicit): NYS, Knowersville and Oneida, N.Y., no date, coll. & det. C. H. Peck, s.n. (!). Isotype: NCU, s.n. (!).

Stature of carpophore placomycetoid; pileus convex expanded to plane, to 8 cm diam, dull gray-brown when dried;

surface covered with appressed, fibrillose scales; dried flesh to 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe bulbous, appearing fibrous, dull tan to gray when dried; ring superior, gray-tan to brown when dried.

Hyphae of pileus cuticle tightly interwoven, repent; pileocystidia fasciculate, unbranched, to 7.5 µm diam, golden brown; hyphae of pileus flesh 4.5-18.5 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-4.5 µm diam, uninflated or only slightly so; basidia 6.0 x 12.2-20.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 6.0-9.2 µm diam, parallel, tightly packed. Hyphae of ring 3.0-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.0-3.8 µm, ellipsoid to ovoid; wall dark brown, 0.6 µm thick; apiculus papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: This is considered an implicit holotype because it is the only collection under this name among the Peck specimens and because its collection site and collector coincide with the data given in the original description. The two collection sites indicate a mixed collection; however, Guzmair attempted to separate the Knowersville and

Oneida specimens, but there was nothing to indicate that this was possible. I have therefore considered the mixed collection, consisting of many pieces which seem to be quite homogeneous, as a single collection and an implicit type.

Agaricus pocillator Murrill

Mycologia 33:446-447. 1941.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 4.vi.38, coll. & det. W. A. Murrill, no. 16476 (!). Isotypes: NY, no. 16476 (!); NCU, s.n. (!); BPI, s.n. (!).

Stature of carpophore placomycetoid; mature pileus plane, depressed in center, to 6 cm diam, dull gray-tan, somewhat darker on the disc when dried; dried flesh to 3 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe bulbous to cupulate at base, to 8 cm long, appearing fibrous, dull brown when dried; ring superior, conspicuously double, the lower portion rounding up into a discrete partial veil, the upper portion (marginal veil) stretching across the lamellae in youth, thin, membranous, brown when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 3.0-6.0 µm diam, unbranched; hyphae of pileus flesh 3.0-15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-4.5 µm diam, uninflated; basidia 4.5-6.0 x 10.7-15.3 µm, 4-sterigmate,

without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-11.5 µm diam, parallel, tightly packed. Hyphae of ring 2.3-6.0 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 21.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.0-3.8 µm, ellipsoid to broadly ellipsoid; wall dark brown, less than 0.6 µm thick; apiculus papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of six fruit bodies, three of which are immature.

Agaricus praemagniceps Murrill

J. Elisha Mitchell Sci. Soc. 54:140. 1938.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 15.viii.37, coll. & det. W. A. Murrill, no. 16051 (!).

Stature of carpophore campestroid; mature pileus convex, depressed over disc, to 8 cm diam, gray-gold, brown on disc when dried; surface smooth with the exception of minute fibrils on the disc; dried flesh to 7 mm thick around the depressed disc, thinning to <1 mm at margin; margin more or less inrolled. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe bulbous, to 6.5 cm long, appearing fibrous, concolorous with pileus when dried; ring more or less appendiculate, superior when adhering to stipe, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia locally abundant (on disc), loosely fasciculate or scattered, 2.3-6.0 µm diam, usually unbranched; hyphae of pileus flesh 3.0-12.2 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-6.0 µm diam, uninflated; basidia 5.5-6.0 x 15.3-18.5 µm, 4-sterigmate, without clamp connections; cheilocystidia scattered, catenulate chains of 2-3-4 cells, to 6.0 µm diam, thin-walled. Hyphae of stipe surface above ring 3.0-15.3 µm diam, parallel, tightly packed. Hyphae of ring 3.0-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 26.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.3-6.0 x 3.8-4.5 µm, broadly ellipsoid to ovoid, lacking germ pore (SEM); wall dark brown, less than 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection contains three fragmented fruit bodies, one mature, two immature, as well as brief notes by Murrill.

Agaricus praemagnus Murrill

Mycologia 10:78. 1918.

Type Specimen (holotype, explicit): NY, Cuba, 13.v.04, coll. F. S. Earle, det. W. A. Murrill, no. 18 (!).

Stature of carpophore campestroid; mature pileus convex to expanded, to 11 cm diam, dull gold with gray tinges and grayish appressed fibrillose scales when dried; dried flesh to 7 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe more or less bulbous, to 9.5 cm long, appearing fibrous, dull gray-gold when dried; ring superior, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia loosely fasciculate or scattered, 3.0-9.2 µm diam, unbranched; hyphae of pileus flesh 4.5-15.3 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-6.0 µm diam, uninflated or only slightly so; basidia 5.5-6.0 x 12.2-16.8 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-10.7 µm diam, parallel, tightly packed. Hyphae of ring 3.8-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 20.0 (29.0) µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 3.8-4.5 µm, ovoid to broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of five mature fruit bodies, four buttons, fragments and notes by Murrill.

Agaricus projectellus Murrill

Mycologia 33:447. 1941.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 3.vi.38, coll. E. West, L. Arnold and W. A. Murrill, det. W. A. Murrill, no. 16219 (!). Isotype: NY, s.n. (!).

Stature of carpophore placomycetoid; mature pileus plane, to 5.5 cm diam, uniformly pale tan when dried; surface appearing smooth; dried flesh to 1.5 mm thick at disc, thinning to <1 mm at margin; margin projecting 5 mm. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe equal to more or less bulbous, to 6 cm long, appearing fibrous, concolorous with pileus when dried; ring median, somewhat appendiculate, dull gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 3.0-7.5 µm diam, unbranched; hyphae of pileus flesh mostly highly inflated, (3.0-6.0)10.7-16.8 µm diam, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-4.5 µm diam, uninflated; basidia 6.0-7.5 x 13.8-24.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-12.2 µm diam, parallel, tightly packed. Hyphae of ring 6.0-12.2 µm diam. Cells of universal veil (pileus surface) inflated, to 29.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 3.8-5.3 µm, broadly ellipsoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick;

apiculus minutely papillate, hyaline or indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collection contains three entire mature fruit bodies and brief notes by Murrill; the isotype consists of mature and immature fragments.

Agaricus pseudoplacomyces Murrill

Quart. J. Florida Acad. Sci. 8:194. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 24.v.44, coll. & det. W. A. Murrill, no. 20483 (!).

Stature of carpophore placomycetoid; mature pileus convex to plane, to 5 cm diam, brown when dried; surface brown fibrillose; dried flesh to 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe bulbous, to 3 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia tightly fasciculate, to 9.2 µm diam, unbranched; hyphae of pileus flesh 4.5-18.5 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-6.0 µm diam, uninflated; basidia 6.0-9.2 x 10.7-13.8 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-20.0 µm diam, parallel, tightly packed. Hyphae of ring 4.5-13.8 µm diam. Cells of universal veil (stipe

surface below ring) inflated, to 30.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5(6.0) µm, subglobose to ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of one mature and one immature fruit body as well as fragments. Also included are notes and a sketch by Murrill.

Agaricus pusillus Peck

N.Y. State Mus. Rep. 1900. p. 152. (non A. pusillus Pers. per Fries. 1821. Syst. Myc. 1:279; bas. Amanita pusilla Pers. 1797. Obs. Mycol. 2:36).

Type Specimen (lectotype, des. mihi): NYS, Delhi, N.Y., no date, coll. S. Sherwood, det. C. H. Peck, s.n. (!).

≡ A. micromegethus Peck. "1904" (1905) N.Y. State Mus. Bull. 94:36.

Stature of carpophore campestroid; pileus convex to plane, to 3 cm diam, occasionally depressed in center, golden tan with somewhat darker disc when dried; surface silky fibrillose with brown appressed fibrillose scales; dried flesh to 4 mm thick at disc, thinning to 0.5 mm at margin. Lamellae (mature) deep chocolate brown, free, 2-4 mm deep. Stipe equal to slightly bulbous, to 3 cm long, appearing fibrous, concolorous with pileus when dried;

ring appendiculate, median when adhering to stipe, pale gold when dried.

Hyphae of pileus cuticle interwoven, repent; pileocystidia fasciculate or single, rarely branched, to 5.3 µm diam; hyphae of pileus flesh 4.5-13.8 µm diam, usually inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 1.5-4.5 µm diam, uninflated; basidia 3.8-6.0 x 10.7-15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 6.0-9.2 µm diam, parallel, tightly packed. Hyphae of ring 3.0-4.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.0-4.5 µm, broadly ellipsoid to subglobose; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline to indiscernible.

Schaeffer macrochemical reaction: negative.

Note: In Peck's original description he made reference to the fact that the description was based on Delhi specimens plus specimens in Detroit. Because he cites collection data matching that of the Delhi specimens, I have established these specimens as a lectotype. The type consists of nine fruit bodies including two immature forms.

Agaricus rhoadsii Murrill

Bull. Torrey Bot. Club 66:29. 1939.

Type Specimens (holotype, explicit): FLAS, Gainesville, Fla., 7.ix.38, coll. Rhoads and Murrill, det. Murrill, no. 18117 (!).

Stature of carpophore placomycetoid; mature pileus truncate-conic, to 4 cm diam, dull tan with brown fibrils when dried; surface finely fibrillose-squamulose; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 1.5 mm deep. Stipe bulbous, to 6.5 cm long, appearing fibrous, concolorous with pileus when dried; ring appendiculate, superior when adhering to stipe, dull gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 4.5-7.5 µm diam, unbranched; hyphae of pileus flesh 6.0-13.8 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-7.5 µm diam, uninflated or only slightly so; basidia 4.5-7.0 x 10.7-15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-15.3 µm diam, parallel, tightly packed. Hyphae of ring 3.0-11.5 µm diam. Cells of universal veil (stipe surface near base) inflated, to 27.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.3-6.0 x 3.8-4.5 µm, ellipsoid, broadly ellipsoid or ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type consists of one mature fruit body in seven pieces. Notes on the fresh condition written by Murrill accompany the specimen.

Agaricus rodmanii Peck

N.Y. State Mus. Nat. Hist. Ann. Rep. 36:45-46. 1884.

Type Specimen (holotype, explicit): NYS, Astoria, L.I., N.Y., no date, coll. Washington Rodman, det. C. H. Peck, s.n. (!).

Stature of carpophore campestroid; pileus convex, expanded to plane, to 10 cm diam, dull tan when dried; surface smooth to slightly rimose-squamose on disc; dried flesh to 5 mm thick at disc, thinning to 1 mm at margin; margin decurved. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe equal, to 7.5 cm long, appearing fibrous, concolorous with pileus; ring median to inferior, flaring upward, dull tan when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia abundant, loosely fasciculate, 1.5-3.0 µm diam, unbranched; hyphae of pileus flesh to 18.5 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-4.5 µm diam, inflated; basidia 6.0-7.5 x 13.8-18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring to 7.5 µm diam, parallel, tightly packed. Hyphae

of ring 3.0-5.5 µm diam. Hyphae of universal veil (stipe surface below ring) inflated, to 7.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0 x 4.5-6.0 µm, ovoid to ellipsoid when young, globose to subglobose in age, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of fragments of approximately four fruit bodies, all mature.

Agaricus rubribrunnescens Murrill

Mycologia 14:216. 1922.

Type Specimen (holotype, explicit): NY, N.Y., 8.ix.16, coll. and det. W. A. Murrill, s.n. (!).

Stature of carpophore placomycetoid; mature pileus convex to expanded, to 5 cm diam, brown with darker brown scales when dried; dried flesh to 3 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe equal to more or less bulbous, to 4 cm long, appearing fibrous, brown when dried; ring superior, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate, 7.5-13.8 µm diam, unbranched; hyphae of pileus flesh 4.5-38.3 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular;

hyphae 3.0-21.5 µm diam, occasionally inflated; basidia 4.5-7.0 x 15.3-18.5 µm, 4-sterigmate, without clamp connections; cheilocystidia scattered, napiform, to 20.0 µm diam. Hyphae of stipe surface above ring 6.0-27.5 µm diam, parallel, tightly packed. Hyphae of ring 4.5-9.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 24.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-5.5(6.0) x 3.0-3.8 µm, ellipsoid or broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type consists of four mature fruit bodies accompanied by notes written by Murrill.

Agaricus solidipes Peck

Bull. Torrey Bot. Club 31:180. 1904.

Type Specimen (holotype, implicit): NYS, Denver, Colo., no date, coll. E. B. Sterling, det. C. H. Peck, s.n. (!).

Stature of carpophore campestroid; mature pileus convex, to 7 cm diam, pale cream when dried; surface squamose or rimose-squamose, scales imbricate; to 4 mm thick; dried flesh to 5 mm thick disc, thinning to <1 mm at margin; margin involute. Lamellae (mature) deep chocolate brown, free, to 6 mm deep. Stipe equal, to 3.5 cm long, appearing fibrous, concolorous with the pileus when

dried; ring superior to appendiculate, cream colored when dried.

Hyphae of pileus cuticle tightly interwoven, repent; pileocystidia lacking; hyphae of pileus flesh highly inflated, to 27.5 µm diam, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-4.5 µm diam, irregularly inflated; basidia 4.5-7.5 x 20.0-23.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-9.2 µm diam, parallel, tightly packed. Hyphae of ring 3.0-9.2 µm diam. Hyphae of universal veil (stipe surface below ring) inflated, to 16.8 µm diam, without clamp connections, thin-walled, hyaline.

Spores 7.5-12.2 x 6.0-7.5 µm, subglobose to ellipsoid or ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus papillate to barely discernible, hyaline.

Schaeffer macrochemical reaction: negative.

Note: This collection is considered an implicit holotype because it is the only collection whose collection site and collector coincide with the data in the original description. There are sixteen fruit bodies, three of them immature.

Agaricus sphaerosporus Peck

Bull. Torrey Bot. Club 31:181. 1904. (non A. sphaerosporus Krombholz. 1836. Naturgetreue Abbildungen u. Beschreibungen der Essbaren, Schadlichen u. Verdachtigen Schwamme.

Viertes Heft. Prag. p. 10).

Type Specimen (holotype, implicit): NYS, Denver, Colo., 7.vi.02, coll. E. B. Sterling, det. C. H. Peck, s.n. (!).

≡ A. pilosporus Peck. "1904" (1905). N.Y. State Mus. Bull. 94:36.

Stature of carpophore campestroid; mature pileus convex, occasionally depressed in the center, to 12 cm diam, pale gold when dried; surface rimose to a depth of 2 mm; dried flesh to 1 cm thick at disc, thinning to 1 mm at margin; margin incurved. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe equal, to 10 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, flaring, membranous, more or less appendiculate, cream to pale tan when dried.

Hyphae of pileus cuticle loosely interwoven, repent; pileocystidia lacking; hyphae of pileus flesh 3.0-13.8 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-6.0 µm diam, occasionally inflated; basidia 6.0-7.5 x 24.5-29.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-10.7 µm diam, parallel, tightly packed. Hyphae of ring 3.0-6.0 µm diam. Hyphae of universal veil (stipe surface below ring, ring margin) to 15.0 µm diam, inflated, with spathulate tips and intercalary inflations, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 6.0-7.5 µm, subglobose, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minute to barely discernible, hyaline.

Schaeffer macrochemical reaction: negative.

Note: This is considered an implicit holotype because it is the only collection under this name among the Peck specimens and because its date, collection site and collector coincide with the data in the original description. The collection consists of six fruit bodies plus fragments; one of the six is an immature form.

Agaricus subalachuanus Murrill

Lloydia 5:151. 1942.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 29.viii.39, coll. and det. W. A. Murrill, no. 19000 (!). Isotype: NY, s.n. (!).

Stature of carpophore placomycetoid; mature pileus convex to subumbonate, to 1.5 cm diam, gold when dried, surface appearing fibrillose; dried flesh 1 mm thick at disc, thinning at margin; margin more or less inrolled. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe equal to somewhat bulbous, to 2.5 cm long, appearing fibrous, concolorous with pileus when dried; ring superior when adhering to stipe, appendiculate, cream colored when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia scattered or fasciculate, to 4.5 µm diam,

usually unbranched; hyphae of pileus flesh 3.0-12.2 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-6.0 µm diam, uninflated; basidia 7.5 x 21.5-29.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.8-16.8 µm diam, parallel, tightly packed. Hyphae of ring 2.3-6.0 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.0 x 4.5 µm, broadly ellipsoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minutely papillate to indiscernible, hyaline.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of approximately seven fruit bodies, all mature, plus fragments and brief notes by Murrill.

Agaricus subarvensis Murrill

Lloydia 5:151. 1942.

Type Specimen (holotype, explicit): FLAS, Lake Warburg, Alachua Co., Fla., 17.ii.39, coll. J. R. Watson and W. A. Murrill, det. W. A. Murrill, no. 19253 (!).

Stature of carpophore placomycetoid; mature pileus convex to broadly umbonate, to 6 cm diam, gray when dried; surface appearing glabrous; dried flesh to 3 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep

chocolate brown, free, to 2 mm deep. Stipe bulbous, to 9 cm long, appearing fibrous, concolorous with pileus when dried; ring more or less appendiculate, superior when adhering to stipe, gray-gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate, 3.0-7.5 µm diam, unbranched; hyphae of pileus flesh 6.0-13.8 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 4.5-6.0 µm diam, uninflated; basidia 4.5-5.5 x 10.7 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-10.0 µm diam, parallel, tightly packed. Hyphae of ring 3.8-13.8 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 30.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 4.5-5.5 µm, subglobose to broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of a single mature fruit body in five pieces plus a sketch and notes on the fresh condition by Murrill.

Agaricus subcomptulus Murrill

Quart. J. Florida Acad. Sci. 8:194-195. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville,

Fla., 2.vii.38, coll. and det. W. A. Murrill, no. 17335 (!).

Stature of carpophore placomycetoid; mature pileus convex to expanded or broadly umbonate, to 1.5 cm diam, tan to brown when dried; surface fibrillose; dried flesh 1.5 mm thick at disc, thinning to <1 mm at margin; margin upturned with age. Lamellae (mature) deep chocolate brown, free, to 1.5 mm deep. Stipe bulbous, to 2.5 cm long, appearing fibrous, brown when dried; ring superior, gold when dried.

Hyphae of pileus cuticle loosely interwoven, usually repent; pileocystidia loosely fasciculate, 2.3-4.5 µm diam, unbranched; hyphae of pileus flesh 6.0-10.7 µm diam, somewhat inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-5.5 µm diam, uninflated; basidia 6.0-7.5 x 13.8-18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-13.8 µm diam, parallel, tightly packed. Hyphae of ring 3.0-6.0 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-7.0 x 3.0-4.5 µm, ellipsoid to broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of three fragmented mature fruit bodies accompanied by brief notes by Murrill.

Agaricus subfloridanus Murrill

Lloydia 5:151-152. 1942.

Type Specimen (holotype, explicit): FLAS, Alachua Co., Gainesville, Fla., 12.iii.39, coll. and det. W. A. Murrill, no. 18611 (!). Isotype: NY, s.n. (!).

Stature of carpophore campestroid; mature pileus expanded, to 8 cm diam, dull gold when dried; dried flesh to 6 mm thick around depressed disc, thinning to <1 mm at margin; margin projecting 2-3 mm. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe bulbous, cupulate, to 4 cm long, appearing fibrous, gray-gold when dried; ring median, brown when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate, unbranched, 3.0-7.5 µm diam; hyphae of pileus flesh inflated, to 21.5 µm diam, without clamp connections, thin-walled. Lamella trama irregular; hyphae 1.5-4.5 µm diam, uninflated; basidia 7.5 x 15.3-21.5 µm, 4-sterigmate, without clamp connections; cheilocystidia scattered, napiform, 7.5-12.2 µm diam. Hyphae of stipe surface above ring 5.3-15.3 µm diam, parallel, tightly packed. Hyphae of ring 7.0-12.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 46.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.3-6.0 x 3.8-4.5 µm, broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collection, one broken, mature fruit body, is accompanied by a sketch and description of the fresh condition by Murrill. The isotype contains one mature pileus.

Agaricus subhortensis Murrill

Lloydia 9:328. 1946.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 8.i.45, coll. and det. W. A. Murrill, no. 17971 (!).

Stature of carpophore placomycetoid; mature pileus convex to plane, to 4.5 cm diam, brown, surface covered with brown appressed fibrils when dried; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe equal, to 3 cm long, appearing fibrous, brown when dried; ring absent on type material.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate, to 7.5 µm diam, unbranched; hyphae of pileus flesh 4.5-23.0 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 4.5-7.5(15.3) µm diam, occasionally inflated; basidia 7.5-9.2 x 20.0-27.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Cells of universal veil (stipe surface near base) inflated, to 18.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-8.5 x 5.3-6.0 µm, subglobose, subovoid or broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of one mature, broken fruit body and brief notes by Murrill.

Agaricus subnitens Peck

Bull. Torrey Bot. Club 36:335. 1909.

Type Specimen (holotype, implicit): NYS, Claremont, Calif., -.i.09, coll. C. F. Baker, det. C. H. Peck, s.n. (!).

Stature of carpophore campestroid; mature pileus broadly convex or depressed in center, to 5.5 cm diam, dull tan when dried; surface fibrillose; dried flesh to 2 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe subequal to bulbous, to 4.5 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, cream-gray when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia abundant, to 9.2 µm diam, unbranched, fasciculate; hyphae of pileus flesh to 15.3 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 1.5-3.0 µm diam, uninflated; basidia 4.5-6.0 x 13.8-18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-7.5 µm diam, parallel, tightly packed.

Hyphae of ring 4.5-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 23.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-9.2 x 4.5-6.0 µm, broadly ellipsoid to ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minutely papillate or indiscernible.

Schaeffer macrochemical reaction: negative.

Note: This is considered an implicit holotype because it is the only collection under this name among the Peck specimens and because its date, collection site and collector coincide with the data in the original description. The collection contains four fruit bodies including two immature forms plus fragments and brief notes.

Agaricus suboreades Murrill

Lloydia 5:152. 1942.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 14.vii.38, coll. and det. W. A. Murrill, no. 17693 (!). Topotype: 28.vi.38, coll. and det. W. A. Murrill, no. 17257 (!).

Stature of carpophore placomycetoid; mature pileus convex to plane or somewhat umbonate, to 2.0 cm diam, golden brown when dried; surface brown squamulose; dried flesh to 2.0 mm thick at disc, thinning to <1.0 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2.0 mm deep. Stipe bulbous, to 3.5 cm long, appearing fibrous,

concolorous with pileus when dried; ring superior, membranous, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 2.3-3.1 µm diam, branched or unbranched; hyphae of pileus flesh 4.6-15.3 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-4.6 µm diam, uninflated; basidia 6.1-7.6 x 16.8-21.4 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.6-10.7 µm diam, parallel, tightly packed. Hyphae of ring 2.3-4.6 µm diam. Hyphae of universal veil (stipe surface below ring) 2.3-6.1 µm diam, uninflated or only slightly so, without clamp connections, thin-walled, hyaline.

Spores 6.1-9.2 x 3.8-5.4 µm, ellipsoid to ovoid; wall dark brown, 0.6 µm thick; apiculus a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of twelve fruit bodies, three of which are entire. All specimens are mature. The topotype contains two mature fruit bodies.

Agaricus subponderosus Murrill

Quart. J. Florida Acad. Sci. 8:195. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 4.xii.44, coll. and det. W. A. Murrill, no. 21775 (!). Isotype: TENN, no. 21107 (!).

Stature of carpophore robustly campestroid; mature pileus convex to plane, to 8 cm diam, gold when dried; surface lightly squamulose; dried flesh to 12 mm thick around depressed disc, thinning to <1 mm at margin; margin upturned with age. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe equal, to 11 cm long, appearing fibrous, concolorous with pileus when dried; ring appendiculate, superior when adhering to stipe, gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 2.3-4.5 µm diam, usually unbranched; hyphae of pileus flesh 3.0-12.2 µm diam, occasionally inflated; without clamp connections, thin-walled. Lamella trama irregular; hyphae 1.5-3.8(10.7) µm diam, occasionally inflated; basidia 6.0-7.0 x 12.2-15.3 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-12.2 µm diam, parallel, tightly packed. Hyphae of ring 2.3-9.2 µm diam. Hyphae of universal veil (stipe surface below ring) uninflated or only slightly so, 3.0-6.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-6.0 x 3.8-4.5 µm, subglobose to ellipsoid or ovoid; wall dark brown, 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection, in two boxes, consists of

five fragmented, mature fruit bodies plus a description of their fresh condition written by Murrill.

Agaricus subpratensis Murrill

Mycologia 10:77. 1918.

Type Specimen (holotype, explicit): NY, Jamaica, 9-10.i.09, coll. & det. W. A. Murrill, no. 824 (!).

Stature of carpophore campestroid; mature pileus globose to convex, to 7 cm diam, off-white with scattered brown appressed fibrillose scales when dried; dried flesh to 14 mm thick at disc, thinning to 1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe slightly bulbous, to 5 cm long, appearing fibrous, concolorous with pileus when dried; ring appendiculate, superior to median when adhering to stipe, off-white when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate or scattered, 3.0-5.5 µm diam, branched or unbranched; hyphae of pileus flesh 4.5-8.5 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-7.5 µm diam, occasionally inflated; basidia 7.5-8.5 x 23.0-27.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-7.5 µm diam, parallel, tightly packed. Hyphae of ring 2.3-4.5 µm diam. Hyphae of universal veil (stipe surface below ring) uninflated or only slightly so, 6.0-10.7 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5(8.5) x 6.0 µm, subglobose to ovoid or ellipsoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: The type consists of approximately twenty fruit bodies, plus fragments, and includes at least ten buttons.

Agaricus subrufescens Peck

N.Y. State Mus. Bull. 43:236-238. 1894.

Type Specimen (holotype, implicit): NYS, Glen Cove, L.I., N.Y., -.x.-, coll. W. Falconer, det. C. H. Peck, s.n. (!).

Stature of carpophore placomycetoid; pileus convex or broadly expanded, to 8 cm diam, dull gold to gray-gold when dried; surface silky fibrillose to obscurely squamulose; dried flesh to 5 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 5 mm deep. Stipe bulbous, to 10 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, membranous, dull gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate, to 7.5 µm diam, usually unbranched; hyphae of pileus flesh 3.0-18.5 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae (2.3)3.0-6.0(9.2)

µm diam, uninflated; basidia 4.5-6.0 x 13.8-21.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-6.0 µm diam, parallel, tightly packed. Hyphae of ring 4.5-12.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 16.8 µm diam, without clamp connections, thin-walled, hyaline.

Spores 4.5-7.5 x 4.5-5.5 µm, subglobose to ovoid or ellipsoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate to indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of four mature fruit bodies.

Agaricus subrufescentoides Murrill

Mycologia 4:299. 1912.

Type Specimen (holotype, explicit): NY, Seattle, Wash., 20.x.11-1.xi.11, coll. and det. W. A. Murrill, no. 591 (!).

Stature of carpophore placomycetoid; mature pileus convex to expanded, more or less umbonate, to 7 cm diam, tan with brown disc and brown fibrillose scales when dried; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe equal, to 11 cm long, appearing fibrous, dull gray-gold when dried; ring superior, gold when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia abundant, scattered to loosely fasciculate, 3.8-7.5(10.7) µm diam, usually unbranched; hyphae of pileus flesh (3.0)7.5-18.5 µm diam, usually inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-10.7 µm diam, occasionally inflated; basidia 6.0 x 18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-18.5 µm diam, parallel, tightly packed. Hyphae of ring 2.3-6.0 µm diam. Hyphae of universal veil (stipe surface below ring) with irregularly to clavately inflated tips, to 18.5 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.5-7.0(8.5) x 3.8 µm, ellipsoid to ovoid; wall dark brown, 0.6 µm thick; apiculus papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: The type consists of a single mature fruit body and brief notes by Murrill.

Agaricus subrutilescens Kauffman

Pap. Mich. Acad. Sci. Arts Lett. 5:141-142. "1925" (1926).

Type Specimen (holotype, explicit): MICH, Mt. Hood, Ore., 11.x.22, coll. and det. C. H. Kauffman, s.n. (!).

Stature of carpophore placomycetoid; mature pileus plane, blackish-brown when dried; surface fibrous; dried flesh to 3 mm thick at disc, thinning to <1 mm at margin.

Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe absent from type material.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia fasciculate to scattered, 4.5-12.2 µm diam, unbranched; hyphae of pileus flesh 4.5-13.8 µm diam, occasionally slightly inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 4.5-9.2 µm diam, occasionally slightly inflated; basidia 6.0 x 18.5-20.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface near pileus 4.5-7.5 µm diam, parallel, tightly packed. Hyphae of ring (from edge of pileus) 3.0-10.7 µm diam. Universal veil tissue absent on type material.

Spores 5.5-7.0 x 3.0-3.8 µm, ellipsoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline.

Schaeffer macrochemical reaction: negative.

Note: This description is incomplete because only a portion of the type was made available for study.

Agaricus subsilvicola Murrill

Mycologia 10:75. 1918.

Type Specimen (holotype, explicit): NY, Jamaica, 2.xi.02, coll. F. S. Earle, det. W. A. Murrill, no. 380 (!).

Stature of carpophore placomycetoid; mature pileus expanded, to 5 cm diam, golden tan when dried; surface

smooth; dried flesh to 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe more or less bulbous, to 6 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, gold when dried.

Hyphae of pileus cuticle interwoven, repent; pileocystidia lacking; hyphae of pileus flesh 4.5-18.5 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-4.5 µm diam, uninflated or only slightly so; basidia 5.5-6.0 x 15.3-18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-18.5 µm diam, parallel, tightly packed. Hyphae of ring 1.5-6.0 µm diam. Universal veil tissue absent on type material.

Spores 5.5-7.0 x 3.0-3.8 µm, ellipsoid; wall dark brown, 0.6 µm thick; apiculus papillate or indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of a single mature fruit body with notes by Murrill.

Agaricus sulphureiceps Murrill

Quart. J. Florida Acad. Sci. 8:195. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 18.vi.44, coll. and det. W. A. Murrill, no. 38805 (!).

Stature of carpophore placomycetoid; mature pileus expanded, to 2 cm diam, gold when dried; surface appearing

glabrous; dried flesh 1 mm thick at disc, thinning at margin. Lamellae (mature) deep chocolate brown, free, to 1 mm deep. Stipe more or less bulbous, to 3 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, gold when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia scattered, 3.0-4.5 µm diam, unbranched; hyphae of pileus flesh 3.0-12.2 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-6.0 µm diam, uninflated; basidia 6.0-7.5 x 12.2-18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-7.5 µm diam, parallel, tightly packed. Hyphae of ring 1.5-9.2 µm diam. Universal veil tissue absent on type material.

Spores 4.5-5.5 x 3.8 µm, subglobose to broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of a single, mature fruit body in several pieces. It is accompanied by brief notes and a sketch by Murrill.

Agaricus tabularis Peck

Bull. Torrey Bot. Club 25:325. 1898. (non A. tabularis Persoon. 1822. Myc. Eur. 3:73; non A. tabularis Fries. 1821. Syst. Myc. I:221).

Type Specimen (neotype, des. mihi): NYS, Leadville, Colo., -.ix.-, coll. E. B. Sterling, det. C. H. Peck, s.n. (!).

≡ A. praerimosus Peck. "1904" (1905). N.Y. State Mus. Bull. 94:36.

Stature of carpophore campestroid; mature pileus convex, to 5 cm diam, dull gray-tan when dried; surface coarsely and deeply rimose-areolate; scales to 1 cm thick, truncately pyramidal, appearing layered as a stack of succeedingly smaller plates, occasionally tomentose; dried flesh to 1 cm thick at disc, thinning to 1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 10 mm deep. Stipe equal to slightly bulbous, to 5 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, more or less appendiculate, pale to dingy tan when dried.

Hyphae of pileus cuticle tightly interwoven, repent; pileocystidia locally abundant (on scale surfaces), fasciculate, unbranched, to 4.5 µm diam; hyphae of pileus flesh to 15.3 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-6.0 µm diam, uninflated or only slightly so; basidia 6.0-7.5 x 18.5-26.0 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-10.7 µm diam, parallel, tightly packed. Hyphae of ring 2.3-4.5 µm diam. Cells of universal veil (stipe surface

below ring) inflated, to 10.7 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 6.0-7.0 µm, subglobose; wall dark brown, 0.6 µm thick; apiculus minute, rarely discernible, hyaline.

Schaeffer macrochemical reaction: negative.

Note: Because this collection is the only one of this taxon among the Peck specimens, but not the one referred to by him in the original description, I have established this as a neotype. The collection consists of numerous fragments in rather poor condition; an immature form is in fair condition.

Agaricus venus Murrill

Mycologia 10:76. 1918.

Type Specimen (holotype, explicit): NY, Jamaica, 29-30.xii.08-2.1.09, coll. W. A. and E. L. Murrill, det. W. A. Murrill, no. 749-1/2 (!).

Stature of carpophore placomycetoid; mature pileus convex to plane or slightly depressed, to 7 cm diam, golden brown, darker on the disc, when dried; surface appearing glabrous; dried flesh to 3 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe subequal, to 6.5 cm long, appearing fibrous, concolorous with pileus when dried; ring median, gold when dried.

Hyphae of pileus cuticle interwoven, repent; pileocystidia lacking; hyphae of pileus flesh 6.0-21.5 µm diam, inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 6.0-26.0 µm diam, usually inflated; basidia 4.5-6.0 x 16.8-21.5 µm, 4-sterigmate, without clamp connections; cheilocystidia scattered, napiform, to 12.2 µm diam. Hyphae of stipe surface above ring 6.0-23.0 µm diam, parallel, tightly packed. Hyphae of ring 4.5-7.5 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 29.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.0 x 3.8-4.5 µm, ellipsoid to broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus minutely papillate, hyaline or indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collections consists of one mature fruit body, a water color drawing and brief notes by Murrill.

Agaricus vinaceo-umbrinus Smith

Mycologia 36:242. 1944.

Type Specimen (holotype, explicit): MICH, Cisco, Texas, 15.ix.35, coll. E. A. Smith, det. A. H. Smith, s.n. (!).

Stature of carpophore placomycetoid; mature pileus campanulate to plano-umbonate, to 3.5 cm diam, dull gray-tan when dried; surface appressed fibrillose silky; dried

flesh to 2 mm thick at umbo, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 2 mm deep. Stipe equal, to 4 cm long, appearing fibrous, concolorous with pileus when dried; ring absent on type material.

Hyphae of pileus cuticle interwoven, repent; pileocystidia loosely fasciculate to matted, to 7.0 µm diam, usually unbranched; hyphae of pileus flesh 1.5-12.5 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-10.7 µm diam, occasionally inflated; basidia 6.0-7.5 x 20.0-26.0 µm, 4-sterigmate, without clamp connections; cheilocystidia capitulate, some minutely warted at tip, to 7.5 µm diam. Hyphae of stipe surface near pileus 3.8-10.7 µm diam, parallel, tightly packed. Hyphae of ring absent on type material. Hyphae of universal veil (stipe surface near base) inflated, to 16.8 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.0 x 4.5-5.5 µm, broadly ellipsoid to ovoid, lacking germ pore (SEM); wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Note: This description is incomplete because only a portion of the type material was made available for study.

Agaricus weberianus Murrill

Bull. Torrey Bot. Club 66:29-30. 1939.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 9.ix.38, coll. and det. W. A. Murrill, no. F18131 (!).

Stature of carpophore placomycetoid; mature pileus expanded, to 5.5 cm diam, surface covered with appressed imbricate scales, yellowish-brown with brown scales when dried; dried flesh to 3 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 1.5 mm deep. Stipe bulbous, to 6.5 cm long, appearing fibrous, concolorous with pileus when dried; ring superior, dull tan when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia loosely fasciculate or scattered, 4.5-9.2 µm diam, usually unbranched; hyphae of pileus flesh 4.5-13.8 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 3.0-12.2 µm diam, occasionally inflated; basidia 6.0-7.5 x 15.3-18.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 4.5-15.3 µm diam, parallel, tightly packed. Hyphae of ring 3.0-7.5 µm diam. Universal veil tissue absent on type material.

Spores 5.5-6.0 x 3.8-4.5 µm, broadly ellipsoid to subovoid; wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collection includes one mature fruit body, a sketch and a brief description of the fresh condition by Murrill.

Agaricus wilmotii Murrill

Lloydia 9:328-329. 1946.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 20.vii.45, coll. W. A. Murrill and R. J. Wilmot, det. W. A. Murrill, no. 45895 (!). Isotype: NY, s.n. (!).

Stature of carpophore placomycetoid; mature pileus convex to plane, broadly umbonate or slightly depressed, to 8.5 cm diam, dull gold with brown scales when dried; surface, with the exception of the disc, covered with appressed-fibrillose scales; dried flesh to 5 mm thick at disc, thinning to <1 mm at margin. Lamellae (mature) deep chocolate brown, free, to 3 mm deep. Stipe equal to slightly bulbous, to 12 cm long, appearing fibrous, tan when dried; ring more or less appendiculate, superior when adhering to stipe, dull gold when dried.

Hyphae of pileus cuticle interwoven, usually repent; pileocystidia 3.0-4.5 µm diam, tightly fasciculate, unbranched; hyphae of pileus flesh 3.0-18.5 µm diam, occasionally inflated, without clamp connections, thin-walled. Lamella trama irregular; hyphae 2.3-6.0(15.3) µm diam, occasionally inflated; basidia 6.0-7.5 x 13.8-21.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 3.0-15.3 µm diam, parallel, tightly packed. Hyphae of ring 2.3-10.7 µm diam. Cells of universal veil (margin of ring) inflated, to 15.3 µm diam, without clamp connections, thin-walled, hyaline.

Spores 5.5-6.0 x 3.8-4.5 µm, subglobose to ovoid or broadly ellipsoid; wall dark brown, 0.6 µm thick; apiculus indiscernible.

Schaeffer macrochemical reaction: negative.

Note: The type collection contains approximately six fruit bodies, all fragmented, mature and immature. There are also extensive notes on the fresh condition taken by Murrill.

Agaricus xanthodermoides Murrill

Quart. J. Florida Acad. Sci. 8:195-196. 1945.

Type Specimen (holotype, explicit): FLAS, Gainesville, Fla., 25.iii.44, coll. and det. W. A. Murrill, no. 22503 (!). Isotype: TENN, no. 16056 (!).

Stature of carpophore delicately campestroid; pileus convex to expanded, to 4 cm diam, dull gray-tan when dried; surface silky to slightly scaly; dried flesh to 4 mm thick at disc, thinning to <1 mm at margin; margin projecting 3 mm. Lamellae (mature) deep chocolate brown, free, to 4 mm deep. Stipe slightly bulbous, to 4.5 cm long, appearing fibrous, concolorous with pileus when dried; ring appendiculate, superior when adhering to stipe, dull gold when dried.

Hyphae of pileus cuticle loosely interwoven; pileocystidia fasciculate or scattered, 4.5-7.5 µm diam, unbranched; hyphae of pileus flesh 4.5-20.0 µm diam, occasionally inflated, without clamp connections, thin-walled.

Lamella trama irregular; hyphae 2.3-4.5 µm diam, uninflated; basidia 6.0-7.5 x 15.3-21.5 µm, 4-sterigmate, without clamp connections; cystidia lacking. Hyphae of stipe surface above ring 6.0-20.0 µm diam, parallel, tightly packed. Hyphae of ring 2.3-12.2 µm diam. Cells of universal veil (stipe surface below ring) inflated, to 29.0 µm diam, without clamp connections, thin-walled, hyaline.

Spores 6.0-7.5 x 4.5-6.0 µm, globose to broadly ellipsoid; wall dark brown, slightly greater than 0.6 µm thick; apiculus indiscernible or a hyaline spot in the spore wall.

Schaeffer macrochemical reaction: negative.

Note: The type collection consists of numerous fragments of old and young specimens.

Nomina Dubia

Agaricus abramsii Murrill

Mycologia 4:299. 1912.

Type Specimen (holotype, explicit): NY, Palo Alto, Calif., 25.xi.11, coll. W. A. Murrill and L. S. Abrams, det. W. A. Murrill, no. 1227 (!).

Note: The type and sole collection of this taxon is completely destroyed.

Agaricus bivelatus Peck

Bull. Torrey Bot. Club 36:335. 1909.

Type Specimen (holotype, implicit): NYS, Claremont, Calif., -.i.-, coll. C. F. Baker, det. C. H. Peck, s.n. (!).

Note: Peck's sole collection of this taxon is completely destroyed; since the name has been rarely and variously applied, I believe it should be dropped.

Agaricus californicus Peck

Bull. Torrey Bot. Club 22:203. 1895.

Type Specimen (holotype, implicit): NYS, Pasadena, Calif., 10.i.95, coll. A. J. McClatchie, det. C. H. Peck, no. 849 (!).

Note: This is considered an implicit holotype because it is the only collection among the Peck specimens with collection data matching that given by Peck in his original description of the taxon. The collection consists, however, of a number of mixed fragments, none of which are outstanding enough to be considered the new taxon. Because of this lack of distinctive material and the fact that the name has been rarely used in the literature, I believe it is of uncertain meaning and should be abandoned.

Agaricus flavitigens Murrill

Mycologia 4:298. 1912.

Type Specimen (holotype, explicit): NY, Seattle, Wash., 20.x-1.xi.11, coll. and det. W. A. Murrill, no. 381 (!).

Note: The type collection has been entirely destroyed. Because the name has not been applied in the

literature and because Murrill himself left no other specimens nor adequate data to delimit the species, I believe the name is meaningless.

Agaricus mcMurphyi Murrill

Mycologia 4:299. 1912.

Type Specimen (holotype, explicit): NY, Searsville Lake, Calif., 6.i.03, coll. J. McMurphy, det. W. A. Murrill, no. 35 (!).

Note: The type collection has been entirely destroyed. Because the name has not been applied in the literature and because Murrill himself left no other specimens nor adequate data to delimit the species, I believe the name is meaningless.

Agaricus rutilescens Peck

Bull. Torrey Bot. Club 31:180. 1904.

Type Specimen (holotype, implicit): NYS, Denver, Colo., 7.vi.02, coll. E. B. Sterling, det. C. H. Peck, no. 101,175 (!).

Note: All that remains of the type collection are the spores (7.0-7.5 x 4.5-6.0 µm) which are not sufficiently distinctive for positive identification. Because the name has not been applied in the literature and because Peck himself left no other specimens nor adequate data to delimit the species, I believe the name is meaningless.

Agaricus sterlingii Peck

Bull. Torrey Bot. Club 29:73. 1902.

Type Specimen (holotype, implicit): NYS, N.J., no date, coll. E. B. Sterling, det. C. H. Peck, s.n. (!).

Note: All that remains of the type collection are the spores (6.0-9.2 x 4.5-6.0 µm) which are not sufficiently distinctive for positive identification. Because the name has not been applied in the literature and because Peck himself left no other specimens nor adequate data to delimit the species, I believe the name is meaningless.

Agaricus herradurensis Murrill

Mycologia 10:78. 1918.

Type Specimen (holotype, explicit): NY, Herradura, Cuba, 3.viii.07, coll. F. S. Earle, det. W. A. Murrill, no. 575 (!).

Note: All that remains of the type collection are the spores (4.5-6.0 x 3.8-4.5 µm) which are not sufficiently distinctive for identification. Because the name has not been applied in the literature and because Murrill himself left no other specimens nor adequate data to delimit the species, I believe the name is meaningless.

Agaricus hillii Murrill

Mycologia 4:298. 1912.

Type Specimen (holotype, explicit): NY, New Westminster, British Columbia, 12.xii.04, coll. A. I. Hill, det. W. A. Murrill, no. 104 (!).

Note: All that remains of the type collection are the spores (5.5-6.0 x 3.8 µm) which are not sufficiently distinctive for positive identification. Because the name has not been applied in the literature and because Murrill himself left no other specimens nor adequate data to delimit the species, I believe the name is meaningless.

Agaricus hornei Murrill

Mycologia 10:80. 1918.

Type Specimen (holotype, explicit): NY, Herradura, Cuba, 25.xii.07, coll. F. S. Earle and W. J. Horne, det. W. A. Murrill, no. 579 (!).

Note: All that remains of the type collection are the spores (5.5-7.0 x 4.5 µm) which are not sufficiently distinctive for positive identification. Because the name has not been applied in the literature and because Murrill himself left no other specimens nor adequate data to delimit the species, I believe the name is meaningless.

Agaricus shaferi Murrill

Mycologia 10:81. 1918.

Type Specimen (holotype, explicit): NY, Pindar del Rio, Cuba, 12.xii.11, coll. J. A. Shafer, det. W. A. Murrill, no. 11269 (!).

Note: All that remains of the type collection are the spores (4.5-6.0 x 3.8-4.5 µm) which are not sufficiently distinctive for positive identification. Because the name

has not been applied in the literature and because Murrill himself left no other specimens nor adequate data to delimit the species, I believe the name is meaningless.

Agaricus xuchilensis Murrill

Mycologia 10:79. 1918.

Type Specimen (holotype, explicit): NY, Xuchiles, Mexico, 17.i.10, coll. W. A. and E. L. Murrill, det. W. A. Murrill, no. 1156 (!).

Note: All that remains of the type collection are the spores (6.0-10.0 x 3.0-4.5 µm) which are not sufficiently distinctive for positive identification. Because the name has not been applied in the literature and because Murrill himself left no other specimens nor adequate data to delimit the species, I believe the name is meaningless.

CHAPTER V

CONCLUSION

In the past, infrageneric taxonomy of Agaricus relied almost entirely on characteristics of fresh specimens with emphasis being placed on color changes of bruised flesh and odor (Hotson and Stuntz, 1938; Møller, 1950, 1952). Responsibility of identification, therefore, rested on whoever identified the specimen while fresh, making later verification virtually impossible. Also confusing the issue was the Schaeffer reaction employed by Heinemann, Møller, and Kühner and Romagnesi. According to Heinemann (1961), results could readily be obtained on dried specimens. The present study disclosed only two positive reactions with dried material, however, in A. lilaceps (type) and various collections of A. diminutivus. The reaction, therefore, is questionable on dried material or of only very limited value in North America. Identification of fresh or dried material has, as can be seen, been difficult if not impossible to ascertain.

The subgeneric concept envisioned by Møller combined the characters of color change of bruised flesh, odor and Schaeffer reaction. His two "groups" were: Rubescentes, comprising those species whose flesh turns red where bruises, odor is "acidulous" and Schaeffer reaction is

negative; and Flavescentes, containing species whose flesh yellows where bruised, odor is of almonds and Schaeffer reaction is positive except for one group which smells of acid and reacts negatively to the Schaeffer reagents. Møller's keys to species utilized some morphological characters, habitat and color. These characters are apparently striking when dealing with fresh specimens, but are impossible to verify in the dried condition (with the possible exception of the Schaeffer reaction which, in this case, is only useful if positive).

Pilát, unfortunately, accepted Melanophyllum as part of Agaricus and erected two subgenera based on this: subgenus Melanophyllum, containing one species whose spore print is smoky-purple and Euagaricus, containing all species now generally regarded as Agaricus. This did nothing to aid classification or indicate affinities within the currently accepted genus. His keys to sections and species are similar to those of Møller.

Authors have attempted to use constant characters for identification. Lange (1926) based subgenera on spore size. The subgenus Megasporae contained species whose spores were generally larger than 6.5 x 4 µm and Microsporae whose spores were less than 6 x 4 µm. This holds for only a small number of species, however. Not only are the ranges only half a micron in difference, but overlap and variability in many species render the system

useless. Other keys (Kauffman, 1918; Coker, 1928; Murrill, 1912, 1918, 1922, 1938) are based on size of carpophore, presence or absence of scales on the pileus surface, color and habitat, but are far too general for accurate identification and consist only of keys to species with no subgeneric designations.

The first author to attempt to combine macroscopic (fresh condition) and microscopic characters was Heinemann (1956). His three subgenera were: Agaricus, which contains those species with a poorly developed general (universal) veil, pileus consisting of radially arranged hyphae and pileus surface smooth, fibrillose or squamulose; Lanagaricus, containing species with a well-developed general veil and thick-fleshed, scaly pileus and Conioagaricus, containing species with a thin-fleshed pileus often exhibiting a striate margin, a highly reduced annulus and cuticle hyphae which are often encrusted. His sectional keys then were based primarily on flesh coloration when bruised and the Schaeffer reaction. The present study revealed no members of his subgenus Conioagaricus, which consists of only a very few tropical members.

The most logical classification scheme for the present work was Heinemann's modern treatment. Preliminary studies, which revealed hyphal and cellular universal veil types, reinforced the importance of this character for taxonomy. Weighting of this character not only provides a

useful tool for the taxonomist but is also a reflection of the ontogeny of the species themselves. Problems arose initially in determining what Heinemann meant by "voile général peu développé" as opposed to "voile général plus ou moins abondant." The degree of development is difficult to precisely ascertain. However, as I have interpreted the condition, the subgenus Agaricus contains those species with the "peu développé" or hyphal universal veil, while the "plus ou moins abondant" group, Lanagaricus, contains those species with cellular universal veil tissue. Further support of this interpretation is the observation that hyphal universal veil tissue is generally found as only one or two hyphal layers at the stipe base, whereas cellular universal veil tissue can be observed on the stipe base and often on the pileus surface. "Abondant," then, is perceived as easily observed in more than one area on the carpophore.

Correlated with these veil types is stature and habitat. Campestroid, meadow or pasture inhabiting species almost always possess hyphal universal veil tissue; conversely, placomycetoid, forest inhabiting species almost always possess cellular universal veil tissue. Overlap of any of these characters is slight. In view of these findings, Heinemann's subgenera, which accommodate southeastern species, were emended to acknowledge the above correlated characters. The present study, in support of

Heinemann's scheme, reinforces the fact that it is now possible to accurately identify presently known taxa, whether fresh or dried, as well as to verify earlier determinations. This will not only enlighten the taxonomist, but will enable culture work to proceed with accurately identified specimens.

Collecting in the southeastern United States has been scattered. Murrill collected extensively in the vicinity of Gainesville, Florida, Coker around Chapel Hill, North Carolina, and various collectors have fairly well covered east Tennessee, particularly the Great Smoky Mountains National Park. The present work resulted from study of specimens from primarily these three areas.

Closer examination of herbarium specimens and collecting by the author have resulted in the discovery of five interesting new species. Belonging to the A. campestris species complex, yet distinct, is A. andrewii. This species is macroscopically identical to the common field mushroom, occupies the same habitat and has probably been unwittingly consumed and proven edible. Its distinction lies in microscopic characters, most notably in its possession of highly inflated universal veil tissue. Not only does A. campestris possess uninflated universal veil tissue, but also bears numerous clavate to subpyriform cheilocystidia; those of A. andrewii are broadly clavate to napiform. The species has been collected only once, in North Carolina. Due to

its similarity to the common field mushroom, the species is probably often overlooked or simply eaten and never recognized.

Collected by Coker and labeled Psalliota arvensis are two unique collections which have been described as a new species, A. auresiccescens. As its name implies, this species is remarkable for its color change upon drying; the entire carpophore, white when fresh, turns a deep rich gold. Agaricus auresiccescens is macroscopically similar to A. abruptibulbus, but may be distinguished by the appressed fibrils on the surface of the pileus, the rhizomorphic strands on the stipe base, the distinctly cellular universal veil tissue and smaller spores. Habitat preference was not recorded, but this is most likely a woodland species. It is currently known only from North Carolina.

Two species collected and named by Murrill, but never published by him, are A. nobelianus and A. hannoni. Agaricus hannoni is a small species, near A. tantulus, but peculiar in that the annulus dissociates from both the pileus and the stipe leaving a moveable ring. Agaricus hannoni is also slightly larger than A. tantulus and differs in fresh coloration. Agaricus nobelianus, which dries golden with golden scales, is near A. praemagnus from which it differs in having smaller spores and A. pseudoplacomyces from which A. nobelianus may be distinguished

by its scales and smaller spores.

Agaricus tantulus, another Florida species, is unique for its small size and glabrous pileus. Reminiscent of A. diminutivus, A. tantulus may be distinguished by the lack of scales on the pileus surface and a slightly heavier-set carpophore. Its habitat preference is unknown, but it, too, is probably a woodland species.

Variability in the genus Agaricus, such as placomycetoid versus campestroid stature, glabrous versus squamulose pilei, woodland versus meadow habitat has, in the past, made species relationships difficult, if not impossible, to determine. Adaptive radiations within species complexes could not be postulated because relationships were too unclear. It is hoped that this study, in emphasizing the universal veil types and correlated characters, will be the groundwork for positive identifications and reveal true interspecific relationships so that we may recognize the evolutionary patterns within this large, interesting genus.

BIBLIOGRAPHY

BIBLIOGRAPHY

Atkinson, G. F. 1906. The development of Agaricus campestris. Botanical Gazette 42(4):241-262.

Barr, P. 1937. Un genre embrouille en mycologie: le genre Psalliota Fr. Bull. Soc. Roy. Belgique, Tems 70.

Bohus, G. 1961. Psalliota studies I. Critical species, critical notes. Ann. Hist.-Nat. Mus. Nat. Hung. pars Bot., 53:187-194.

_____. 1969. Agaricus studies II. Critical species, critical notes. Ann. Hist.-Nat. Mus. Nat. Hung. pars Bot., 61:151-156.

_____. 1971. Agaricus studies III. Critical species, critical notes. Ann. Hist.-Nat. Mus. Nat. Hung. pars Bot., 63:77-82.

Coker, W. C. 1928. The Chapel Hill species of the genus Psalliota. J. Elisha Mitchell Sci. Soc. July, pp. 243-255.

Dillenius. 1719. Catalogus plantarum sponte circa Gissam nascentium, cum appendice qua plantae post editum catalogum. x + 160, xii + 240. Frankfurt am Main.

Donk, M. A. 1962. The generic names proposed for Agaricaceae. Beihefte zur Nova Hedwigia, Heft 5, pp. 11-13.

_____. 1964. Nomina conservanda proposita. Regnum Vegetabile 34:32.

Fries, E. M. 1821. Systema Mycologicum I.

Heinemann, P. 1952. Etudes sur le genre Agaricus Fr. s.s. Bull. Soc. Myc. France 68:4.

_____. 1953. Etat actuel de l'etude systematique du genre Agaricus Fr. s.s. (Psalliota). Mushroom Sci. II. Gembloux.

_____. 1956. Champignon recolte au Congo Belge par Madame M. Goossens-Fontana, II Agaricus Fr. s.s. Bull. Jard. Bot. Etat Brux. 26.

_____. 1956. Flore Icon. des Champ. du Congo. Fasicle #5.

_____. 1957. Flore Icon. des Champ. du Congo. Fasicle #6.

_____. 1957. Agaricus robynsianus sp. nov. Bull. Jard. Bot. Etat Brux. Sept.

_____. 1961. Agarici-Americani: I Agaricus of Trinidad. Kew Bull. 15:231-248.

_____. 1962a. Agarici-Austro-Americani: II Agaricus de Bolivie. Bull. Jard. Bot. Etat Brux.

_____. 1962b. Agarici-Austro-Americani: III Trois Agaricus de la Jamaique. Bull. Jard. Bot. Etat Brux.

_____. 1962c. Agarici-Austro-Americani: IV quatre Agaricus du Venezuela. Bull. Jard. Bot. Etat Brux.

_____. 1965. Notes sur les Psalliotes (Agaricus) du Maroc. Bull. Soc. Myc. de France 81:3.

_____. 1974a. Agaricus kuehnerianus nov. sp. la Psalliote geante des Alpes de Haute provence. Bull. Soc. Linn. Lyon, Feb.

_____. 1974b. Quelque Agaricus de Nouvelle-Zealande. Bull. Jard. Bot. Not. Belg. Bull. Nat. Plantentuin Belg. 44(3/4):355-366, Dec.

Hotson, J. W. and D. E. Stuntz. 1938. The genus Agaricus in western Washington. Mycologia 30:204-234.

Karsten, P. 1879. Bidr. Kann. Finl. Nat. Folk 32:xxv.

Kauffman, C. H. 1918. The Gilled Mushrooms (Agaricaceae) of Michigan and the Great Lakes Region. Mich. Geo. and Bio. Survey #26, Biological Series 5.

Kimbrough, J. W. (Ed.). 1972. Keys to the Fleshy Basidiomycetes of Florida. Wm. A. Murrill. Institute of Food and Agricultural Sciences. University of Florida.

Kühner, R. and H. Romagnesi. 1953. Flore Analytique des Champignons Superieurs. Libraires de L'Academie de Medecine, Paris, pp. 408-417.

Lange, J. E. 1926. Studies in the agarics of Denmark. Part 6: Psalliota. Dansk. Botanisk Arkiv. Bd. 4 Nr. 12, pp. 1-11.

Lanjouw, J. and F. A. Stafleu. 1964. Index Herbariorum. Regnum Vegetabile 31. Utrect, Netherlands.

Linneaus, C. 1753. Species Plantarum 2:1171.

Møller, F. H. 1950. Danish Psalliota species. Friesia 4:1-60.

_____. 1952. Danish Psalliota species. Friesia 4:135-220.

Murrill, W. A. 1912. The Agaricaceae of the Pacific coast III. Mycologia 4:294-300.

_____. 1918. The Agaricaceae of tropical North America. Mycologia 10:62-85.

_____. 1922. Dark-spores agarics--III. Agaricus. Mycologia 14:200-221.

_____. 1938. Agaricus at Gainesville, Fla. J. Elisha Mitchell Sci. Soc. 54:139-141.

Peck, C. H. "1883" (1884). N.Y. State Mus. Bull. 36:42.

Pegler, D. N. and R. W. Raynor. 1969. A contribution to the agaric flora of Kenya. Kew Bull. 23:351-359.

Pilát, A. 1951. The Bohemian species of the genus Agaricus. Acta Mus. Nat. Pragae. 7 B n° 1:1-142.

Reijnders, A.F.M. 1963. Les problems de developpement des carpophores des Agaricales et de quelque groupes voisins. Uitgeverij Dr. J. W. Junk-den Haag, 412 pp.

Report of the committee for fungi and lichens. 1968. Taxon 17:580-581.

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