INTRODUCTION.—A recent development in connection with the study of the 'Cyphellaceae' is a paper published by W. B. Cooke (1957) entitled, "The Porotheleaceae: Porotheleum". It will be followed by a second dealing with "Solenia, Phaeosolenia, Leptotus and Chromocyphella". Cooke seems to consider all these genera sufficiently related to be combined into a natural family. I confess from the start that I do not at all concur with this view and that I consider most of these genera not only completely unrelated but also highly artificial. A point in case is Cooke's emendation of Porotheleum (Fr. per Fr.) Fr. (= Stromatoscypha Donk). He combines into this genus, for instance, both Stromatoscypha fimbriatum (Pers. per Fr.) Donk and Solenia poriaeformis (Pers. per Merat) Fuck. The two have so little in common that, in my opinion, they should go into different families. On the other hand, Cooke does not include in Porotheleum the nearest relatives of Solenia poriaeformis, like Cyphella cupuliformis Berk. & Rav. apud Berk. and other species, which, I think, must be placed with it in one genus.

In the present series of notes I hope to develop gradually the thesis that the 'Cyphellaceae' are a heterogeneous assemblage of more or less 'reduced' taxa.
ACKNOWLEDGEMENTS.—I am very much indebted to the directors and curators of the cited herbaria for the loan of important specimens under their care or for facilities extended during visits to their institutes. I also wish to acknowledge the help of Drs L. Weresub and R. W. G. Dennis in correcting the English text of the manuscript.

I.—DEFINITION AND CONTENTS OF THE CYPELLACEAE

W. B. Cooke (1957: 681) stated that “the use of the name Cyphellaceae has never been completely validated. Pilát uses it in several publications.” Therefore, he felt obliged to replace the name Cyphellaceae by the name Porotheleaceae Murrill (“Porotheliaceae”). However, the situation is not as bad as that: those authors who believe that there exists a natural group of genera, like the one Cooke calls Porotheleaceae, may drop this name again and return to the more familiar one of Cyphellaceae, which was validly published more than once prior to Murrill’s name. It may be pointed out that Pilát never claimed to have introduced it himself, but if there had been no previous validation, his repeated publication of the name could constitute validation many times over, since in several cases it was accompanied by a description or a reference to one.

CYPELLACEAE Lotsy


[Sous-tribus Cyphellés: Pat., Essai taxon. Hym. 51, 52. 1900.]


Porotheleaceae Murrill in Mycologia 8: 56. 1916 (“Porotheleaceae”). — Type: Porotheleum Fr.


¹ Pilát introduced this taxon as a “Gruppe” below the rank of a family using the termination of a subtribus for the name. Killermann also calls it Aleurodiscineae, but gave it the rank of a tribus; he thus used an incorrect termination.
PUBL. INST. BOT., BARCELONA 3 (4): 58. 1937 (nomen nudum); SING. IN LLOYDIA 8: 188. 1945 (without Latin description). — TYPE: LEPTOTUS P. KARST.

CYPELLINAE BOND. & SING. IN ANN. MYCOL., BERL. 39: 44, 45. 1941 (subordo; nomen nudum). — TYPE: CYPELLA FR.

DEFINITION.—Homobasidious hymenomycetes. Fruit-body cup- to disk-shaped or tubular, dorsally attached by a constricted base, sessile to stalked, small (at most up to one or a few mm, rarely exceeding 1 cm in diameter); numerous fruit-bodies may be crowded on a resupinate ‘stroma’. Hymenium lining the concave (or at most flat) ‘disk’, smooth and even (rarely more or less wrinkled to folded), not compounded by partitions sterile on edge.

TYPE.—CYPELLA FR.

One will easily call to mind several instances of species answering to this definition, but yet not included to-day even by supporters of the ‘family’: compare MYCOBONIA DISCIFORMIS G. CUNN., PISTICUTA PECK; CORTICTIONS EVOLOVENS (FR. PER FR.) FR., as originally conceived; STEREOUM PERS. PER FR. SENSU STRICTO, which consists essentially of species with dorsally attached fruit-bodies; individual fruit-bodies of MERULIUS TREMELLOUS SCHRAD. PER FR. LIKE THOSE THAT HAVE BEEN PLACED IN A DISTINCT GENUS (TRABECULARIA BON.).

In the above definition of the ‘family’ I have stipulated that the hymenium is not compounded by partitions sterile on edge, to exclude such genera as FAVOLASCHIA (PAT.) PAT. APUD PAT. & LAGERH., RESUPINATUS (C. NEES) PER S. F. GRAY. THE FIRST OF THESE GENERA POSSESSES A HYMENOPHORE THAT MAY BE SAID TO CONSIST OF TUBES AS IN THE POLYPORES, ALTHOUGH IN SOME SPECIES THESE ARE USUALLY FEW, THE OTHERS ARE MORE OR LESS TYPICALLY LAMELLATE AND ARE BETTER REGARDED AS AGARICS. SCHIZOPHYLLUM FR. PER FR., WITH ITS PECULIAR ‘GILLS’ IS ALSO TO BE EXCLUDED.

The definition further excludes genera with convex hymenium (Pistillina Quél., Wiesnerina Höhn.) or with fertile warts (Punctularia Pat. apud Pat. & Lagerh.); with fruit-bodies laterally stalked (Leptoglossum P. Karst., Stereophyllum P. Karst.); and with tubes (‘fruit-bodies’) on a laterally stalked fruit-body (‘stroma’) (Fistulina Bull. per FR.).

Moreover, such genera as have drifted into the ‘family’ by obvious misconceptions or some far-fetched interpretation of characters should not be admitted either: HYPOLYSSUS Pers. sens. Berk. (= Caripia O.K.), Dacryobolus Fr., Trogia Fr., Chlorocyphella Spec. A more detailed review of the excluded genera will be found below.

CONTENTS.—For an annotated enumeration of the generic names proposed for the ‘Cypellaceae’, see Donk (1951). “Additions and corrections” to the cited paper will be published shortly after the Congress at Montreal.

I would now add to the list of cyphellaceous genera Arrhenia Fr. (type species, Cantharellus auriscalpium Fr.; cf. Donk, 1957a: 19). Until a few years ago the type species was so little understood that it was not at all certain that it was correctly identified when redescribed, for instance, by Patouillard (1900: 130 f. 63). Recent descriptions and illustrations published by Pilát (1951: fig. on p. 444; apud Pilát & Nannf., 1955: 33 f. 14) and Favre (1955: 36 f. 13, pl. 4 f. 3) demonstrate that the
young fruit-body is erect, stalked and infundibuliform, and that the cup gradually develops asymmetrically, exposing the disc laterally and even downwards. Such a fruit-body is reminiscent of one of *Geotus* Pilát & Svrček (1953: 9) but in that genus the cap is strictly laterally attached to the stalk. It has also become necessary to compare *Arrhenia* with *Rimbachia* Pat. for from Singer's description (1945: 186) of *Rimbachia paradoxa* Pat. (the type species of Patouillard's genus) no striking differences are evident. Moreover, the position of *Arrhenia pezizoidea* (Speg.) Sing. (l.c.) should come under renewed consideration. Attention is also drawn to a few species described from Europe which ought to be considered in connection with *Arrhenia*, like *Cyphella cochlearis* Bres.

The following list of generic names is based on species supposed here to fall within the limits of the present 'family' (see Table I).

**REGIONAL CONTRIBUTIONS.**—As a rule the 'Cyphellaceae' have not been favoured by mycologists. Those who paid attention to them generally did so fleetingly by describing new species that are often unrecognizable from their too short descriptions (Berkeley, Cooke, Hennings). Such careless work has led to a vast number of species among which nobody can find his way without access to the types. As in several other genera of minute hymenomycetes, Patouillard (1883–9) has done important work in this case for France. This country has also been lucky in having a valuable account of many of its species by Bourdot & Galzin (1928). Pilát (1924–1925a–c) studied the group for Czecho-Slovakia, describing several new species and including a chapter on ecological and phytogeographical aspects (Pilat, 1925b: 31–35). Scattered but noteworthy contributions were published by Petch for Ceylon, while Burt (1914, 1924, 1926) has done much to give a more up-to-date account of the North American species. Recently W. B. Cooke published on the genera *Cytidia* (1951) and *Porotheleum* (1957).

Like so many other groups of fungi, the cyphellas are in urgent need of careful work by local collectors and by monographers.

**2.—SOME HISTORICAL REMARKS**

*Solenia* and *Cyphella*.—The fathers of mycology, who made only incidental use of the compound microscope, were fully aware that most cup-fungi had asci, but hardly that a few species had different bodies of spore-production. Neither Persoon, nor Fries in his earlier work, understood much about these organs. The basidia especially, which Micheli had seen long before, appeared to be a problem to them. In those times it could hardly be expected that the cup-fungi with asci and those with basidia would be separated from each other on the basis of such a fundamental difference. It is, therefore, surprising to note that when the taxonomic importance of these organs became fully appreciated by later authors the segregation of the two kinds of cup-fungi had already taken place. *Peziza* had been restricted by the exclusion of the genera *Solenia, Cyphella*, and *Porotheleum*, and of some species that had been transferred to *Thelephora* and later to *Corticium* (the heterogeneous
### Table I

**List of generic names of Cyphellaceae**

<table>
<thead>
<tr>
<th>Name</th>
<th>Author</th>
<th>Synonyms</th>
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<tbody>
<tr>
<td><em>Aleurocystis</em> Lloyd ex G. Cunn.</td>
<td>—Cytidia hakgallae (Berk. &amp; Br.) G. W. Mart.</td>
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<tr>
<td><em>Aleurodiscus</em> Rab. ex J. Schroet.</td>
<td>—Thelephora amorpha (Pers. per Purt.) Fr.</td>
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<tr>
<td><em>Arrhenia</em> Fr.</td>
<td>—Cantharellus auriscalpium Fr.</td>
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<tr>
<td><em>Auriculariopsis</em> Maire.</td>
<td>—Cyphella ampla Lév.</td>
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<tr>
<td><em>Calyptella</em> Quél.</td>
<td>—Cyphella capula (Holmskj. per Pers.) Fr.</td>
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<tr>
<td><em>Catilla</em> Pat.</td>
<td>—Cyphella pandani Pat.</td>
<td></td>
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<tr>
<td><em>Chromocyphella</em> De Toni &amp; Levi</td>
<td>≡<em>Cymbella</em> Pat.</td>
<td></td>
</tr>
<tr>
<td>†<em>Cymbella</em> Pat.</td>
<td>apud Doass. &amp; Pat.</td>
<td>—<em>Cymbella crouani</em> Pat. &amp; Doass. apud Pat.</td>
</tr>
<tr>
<td><em>Cypharium</em> Clem.</td>
<td>≡<em>Cyphella</em> Fr.</td>
<td></td>
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<tr>
<td><em>Cyphella</em> Fr.</td>
<td>—Cyphella digitalis (A. &amp; S. per Pers.) Fr.</td>
<td></td>
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<tr>
<td><em>Cyphellopsis</em> Donk.</td>
<td>—Solenia anomala (Pers. per Fr.) Fuck.</td>
<td></td>
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<tr>
<td><em>Cytidia</em> Quél.</td>
<td>—Cytidia rutilans (Pers.) ex Quél.</td>
<td></td>
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<tr>
<td><em>Cytidiella</em> Pouz.</td>
<td>—Cytidiella melzeri Pouz.</td>
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<tr>
<td><em>Dendrocyphella</em> Petch.</td>
<td>—Dendrocyphella setosa Petch.</td>
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</tr>
<tr>
<td><em>Flagelloscypha</em> Sing.</td>
<td>—Cyphella minutissima Burt</td>
<td></td>
</tr>
<tr>
<td><em>Gloeosoma</em> Bres.</td>
<td>—<em>Aleurodiscus</em> vitellinus (Lév.) Pat.</td>
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<tr>
<td><em>Henningsomyces</em> O.K.</td>
<td>≡<em>Solenia</em> Pers.</td>
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<tr>
<td><em>Lachnella</em> Fr.</td>
<td>—Peziza alboviolascens (A. &amp; S. per Pers.) Schw.</td>
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<tr>
<td><em>Lachnium</em> Clem.</td>
<td>≡<em>Lachnella</em> Fr.</td>
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<tr>
<td><em>Leptotus</em> P. Karst.</td>
<td>—Cantharellus retirugus (Bull.) per Fr.</td>
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</tr>
<tr>
<td>†<em>Lomatia</em> (Fr.) P. Karst.</td>
<td>—Corticium salicinum (Fr.) Fr.</td>
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</tr>
<tr>
<td>§<em>Lomatina</em> P. Karst.</td>
<td>≡<em>Lomatia</em> (Fr.) P. Karst.</td>
<td></td>
</tr>
<tr>
<td><em>Merismodes</em> Earle.</td>
<td>—Cantharellus fasciculatus Schw.</td>
<td></td>
</tr>
<tr>
<td>§<em>Nodularia</em> Peck.</td>
<td>—<em>Nodularia balsamicola</em> Peck.</td>
<td></td>
</tr>
<tr>
<td>†<em>Phaeocarpus</em> Pat.</td>
<td>≡<em>Cymbella</em> Pat.</td>
<td></td>
</tr>
<tr>
<td><em>Phaeocyphella</em> Pat.</td>
<td>≡<em>Cymbella</em> Pat.</td>
<td></td>
</tr>
<tr>
<td>†<em>Phaeocyphella</em> Spec.</td>
<td>—<em>Phaeocyphella sphaerospora</em> Spec.</td>
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<tr>
<td><em>Phaeosolenia</em> Spec.</td>
<td>—<em>Phaeosolenia platensis</em> Spec.</td>
<td></td>
</tr>
<tr>
<td>†<em>Porotheleum</em> (Fr. per Fr.) Fr.</td>
<td>—<em>Polyporus fimbriatus</em> (Pers.) per Fr.</td>
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<tr>
<td><em>Pseudodasycypha</em> Velen.</td>
<td>—<em>Cyphella hyperici</em> Velen.</td>
<td></td>
</tr>
<tr>
<td><em>Rimbachia</em> Pat.</td>
<td>—<em>Rimbachia paradoxa</em> Pat.</td>
<td></td>
</tr>
<tr>
<td>†<em>Solenia</em> Pers.</td>
<td>—<em>Solenia candida</em> Pers.</td>
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</tr>
<tr>
<td><em>Stigmatolema</em> Kalchbr.</td>
<td>—<em>Stigmatolema incanus</em> Kalchbr.</td>
<td></td>
</tr>
<tr>
<td><em>Stromatoscypha</em> Donk</td>
<td>≡<em>Porotheleum</em> (Fr. per Fr.) Fr.</td>
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</tbody>
</table>

* Names not validly published.
† Names not available for various reasons (illegitimate).
§ Names based on species identifiable with type species of legitimate generic names published earlier.
1 *Aleurodiscus* is conserved against *Cyphella*.
2 Valid publication of name still uncertain.
3 Often fused with *Leptoglossum* P. Karst., which is then the correct name.
4 A later synonym of *Chromocyphella* De Toni & Levi.
group currently called *Cytidia*. Of course there were, and still are, a few retouches to be made.

Persoon (1794: 106) started this process of differentiation by setting aside *Solenia*, with one species, *S. candida* Pers. The leading character was the shape of the fruit-body: “Utriculo sessili membranaceo, cylindrico, ad basin cavo.” Shortly afterwards with reference to *Peziza anomala* Pers. he remarked:—

“*Incertum est... jure sub hoc militet genere [Peziza], etiam haec est... sub microscopico nullas thecas invenire mihi licuit; cum lubentius Soleniis adscripserim, si substantia membranacea & rigida esset: neque etiam ob discum hemisphaericum in apice alii Pezizis similis usque ad basin excavata est.”—Persoon (1796: 29). For translation, see page 32.

The next year he asked tentatively (Persoon, 1797: 73) if it would not also be correct to refer to *Solenia* such species as *Peziza urceolata* Vahl and *P. cuticularis* Dicks., both of which he knew only from their published accounts, and both now confidently suspected to be 'Cyphellaceae'. Still later Persoon (1822: 281) remarked about *Peziza capula* Holmskj. (which he seems not to have known from specimens under that name), “Ni fallor, potius ad familium Thelephorem spectat et forsitan species [Thelephorae] subgeneris Epibryi.”

Fries (1822: 200) accepted *Solenia* and included not only such species as *Solenia ochracea* Hoffm. (added to the genus as early as 1795), *Peziza candida* and *P. fasciculata* Pers. (two other species entered previously), but also *P. anomala*. Of the genus he stated: “Asci nulli. Sporidia elastice secedunt? vix discernibilia.”

Simultaneously with the acceptance of *Solenia*, Fries (1822: 201) introduced *Cyphella* Fr. for non-tubular species, “Asci nulli. Sporidia globosa, majuscula, pulveris instar secedentia.” (The spore-features were evidently taken from *Peziza digitalis* A. & S.) Thus it is clear that Fries, like Persoon for *Peziza anomala*, accepted the fact that the two genera had no asci, but he did not mention basidia.¹ (Compare also Fries, 1822: 39, 206).

Fries (1821: 1v) at first associated *Cyphella* and *Solenia* with *Peziza*, stating however that they differed in the lack of asci, a discrepancy he waved aside with this remark: “Non tamen separo. Eodem modo inter plantas Vasculares, quarum singula series e plantis aquaticis a scendit, infimae basin subdistinguas.”

Basidia were detected and (rather crudely) depicted by Léveillé (1837: pl. 8 f. 10) when he studied *Cyphella taxi* Lév. along with several other hymenomycetes. From that time on *Cyphella* had basidia as far as Léveillé was concerned and when he described *Cyphella gibbosa* Lév. [= *Calyptella capula* (Holmsk. per Pers.) Quél.] and *Cyphella ampla* Lév. [= *Auriculariopsis ampla* (Lév.) Maire] he placed them in

¹ What may be considered the type specimen (ultimate type) of the generic name *Cyphella* is still conserved in Fries's herbarium at Upsala. It is labelled “*Peziza digitalis* Alb. & Schw.” (written by G. Kunze), “*Cyphella Digitalis* Fr. (Dedit. Kunze)” (written by Fries).

² One of the original species of *Cyphella* is *Peziza eruciformis* Batsch, which Fries knew only from the original account by Micheli. If correctly interpreted today, this would be the first species of the ‘Cyphellaceae’ ever to be described.
Cyphella because they belonged to the "Champignons basidiosporés" as opposed to the "thecasporés"; for both species he recorded the "basides tétraspores" from the inside of the cup. It is interesting to note that Montagne (1836: 286–287) at about the same time that Léveillé clearly saw basidia, could not free himself from tradition and recorded the basidia of his interpretation of Peziza campanula C. Nees per Fr. (= Calypella capula) as follows: "Les thèques sont très courtes, en massue, pellucides et contiennent des sporidies globuleuses qu'on n'aperçoit que difficilement et à un très fort grossissement du microscope composé." Montagne, without observing the true spores, clearly described basidia here, basidia with vacuolated contents, but he had not yet learned to recognize them as such. Soon afterwards Fries (1849: 336), presumably inspired by Léveillé's work, introduced in the diagnosis of Cyphella the words, "sporoph. 4-sporis". Solenia he still retained at that time in the discomycetes but with the emphasis on "Discus non discretus."

Peziza alboviolascens (A. & S. per Pers.) Schw. (type species of Lachnella Fr.), a species that was to become a prominent member of Cyphella, has unusually large basidia and one would expect it to be among the first species for which basidia were recorded. This actually happened but because of the preconceived idea that it had asci, it was not recognized. For instance, when Bonorden (1851: 143 f. 215) came across it he called it Myrothecium vitis Bon., although clearly describing and depicting the basidia. Berkeley (1860: 368) acted in a similar manner: "Mr. Jerdon finds a plant very closely resembling [Peziza alboviolascens] on Ulex, with the fruit of a Cyphella. It is probably a sporiferous condition." The next year Berkeley & Broome (1861: 379) redescribed it as a new species, Cyphella curreyi Berk. & Br., with the remark: "This resembles very closely Peziza albo-violascens, but has the fruit of a Cyphella [that is, has basidia]. Mr. Currey was, we believe, the first to observe it; and the structure has been repeatedly brought under our notice by Mr. Jerdon."

Shortly afterwards several authors in rapid succession concluded that P. alboviolascens itself was basidiferous: the Tulasne brothers (1861: 134–135/136; 1865: 173/159)., the Crouan brothers (1867: 61), and Karsten (1867: No. 715; 1869: 191). The detection of basidia in other species up till then referred to Peziza or Solenia occurred simultaneously or shortly afterwards. Since Fries had introduced the basidia as a positive feature in the generic character of Cyphella (and had denied their presence in Solenia) these species were at first all referred to Cyphella, but when it became more and more obvious that the species of Solenia as defined by Fries also had basidia, most authors soon also admitted Solenia as basidiferous and retained both genera.

The recognition of Solenia (Fries's emendation) as a basidiferous genus proceeded

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4 For a similar case, in connection with Aleurodiscus amorphus, see p. 34.
5 The Tulasnes considered this species the same as Cyphella taxi Lév. This is not the case. See also page 103.
6 The double page numbers refer respectively to the original Latin work and to Grove's translation.
on the whole more slowly than in the case of Cyphella. We have seen that for some time the presumed absence of asci in Solenia was believed to be a distinguishing feature between the two genera. A retarding factor in the understanding of the nature of Solenia was undoubtedly contributed by Corda (1839: 39 pl. 6 f. 96) who depicted asci with spores in a fungus of the group of Solenia anomala (called Peziza hoffmanni Spreng. by him), although his drawings are, for that time, in other respects a remarkably accurate and detailed representation of the general structure of the fruit-body. He concluded, "Die Gattung Solenia selbst ist nur aus abnormen, ja monströsen Individuen einzelner Arten der Schüsselpilze (Pezizae) entstanden, und kann als nur imaginäre, in systematischen Schriften existirende Gattung nicht weiter anerkannt werden." A few years later Corda (1842a: 37; 1842b: 154), while still considering his Peziza hoffmanni as representative of Cyphella, stated somewhat less positively: "Wir . . . gestehen offen ein, keinen wesentlichen Unterschied zwischen dieser Gattung und Peziza bisher erkannt zu haben." Perhaps the first authors to record basidia in Solenia anomala were the Tulasnes (1861: 135/136). They remarked in a general way that outward similarity may be coupled with different modes of spore production. As a striking example they mentioned the case of Peziza [= Solenia] anomala, which differed from the true species of Peziza in the structure of the hymenium.

The following collection of excerpts from the work of the Tulasnes (1861, 1865) shows that they fully appreciated that both Solenia and Cyphella had basidia and in this respect differed from the true pezizas.7

"Peziza albo-violascens Alb. & Schw.[8] is retained by Berkeley among the true, i.a. ascophorous Pezizas (Outl. of Brit. Fung. p. 368, no. 58), although he mentions that Jerdon had met with this fungus in the state of a real Cyphella; from this he seems to suspect that Cyphella is a sporophorous (basidiophorous) state of Peziza. But we fear that no one has ever found [Peziza albo-violascens] truly ascophorous, and, therefore, it is wrong to place it among the Pezizas. We hold the same opinion about Peziza anomala Pers., which also finds a place in Berkeley's work (p. 369, no. 81) among Pezizae (Tapesiae) . . ."—Tulasne (1861: 134–135/136).

". . . they are also deceived who, not noticing Persoon's warning, . . . have not recognized that his Peziza anomala (Cyphella Hoffmanni Tul.) is widely distinct from the true Pezizas in the structure of the hymenium. . . . 'It is uncertain', says Persoon (Obs. Myc. part I, 1796, p. 29, no. 61), 'whether this species (Peziza anomala Pers.) finds its true place in this genus (Peziza), since it does not agree with the rest in its mode of growth, its changeable form, etc.; moreover up to the present I have not succeeded in finding thecae under the microscope; if the substance had been membranous and rigid, I would rather have placed it among the Soleniae . . .'. In the previous year G. F. Hoffmann had already met with the same fungus, and had given it the name Solenia ochracea in the second part of his Deutschlands Flora for the year 1795, pl. 8, f. 2.[8] . . . Corda recognized hardly any distinction between Soleniae or Cyphellae and Pezizae, until he had been taught the true structure of the hymenium in Cyphellae by Léveillé. (Cf. his Anleit. z. Stud. d. Mycol. p. 153, 154, 193.) That is the reason why Peziza anomala Pers. or Peziza Hoffmanni Spreng. (Solenia ochracea Hoffm.)[9] is figured by Corda

7 I follow Grove's translation.
8 The Tulasnes applied this name to a mixture of three species (cf. p. 103).
9 It is now generally accepted that Solenia ochracea Hoffm. is not synonymous with Solenia anomala as the Tulasnes thought it was.
among the true Pezizas (Icon. Fung. Vol. iii, 1839, p. 39, pl. 6, f. 96). But though that skilled mycologist asserts that the hymenium is composed of claviform, pellucid, and six-spored asci, while the spores are seen to be ovate and pallid, the figures which he gave scarcely convince us of this, for they show a thelephorous hymenium, i.e. one much thinner than would be suitable for a Peziza, and thecae so vague and uncertain that we cannot help thinking that the draughtsman had incautiously made a mistake about their true nature. . . .”—Tulasne (1861: 135-136/137).

“We have already mentioned (supra, volume i, p. 136/[137] . . .) that Peziza albioviolescens Alb. & Schw. . . . once the type of Fries’s Lachnellae (Fl. Scan. p. 343), which Persoon called fallax (Myc. Europ. vol. i, p. 266, no. 118), belongs to the master of Upsala’s Cyphellae; we are therefore not surprised that de Notaris wasted his time by looking in it for true thecae . . . At this opportunity we may be permitted here again to assert that Peziza anomalas Pers. is nothing but a true Cyphella . . .; for . . . we succeeded in finding that fungus . . . with a hymenium manifestly provided with real basidia and abundance of spores in groups of four; the spores were such as are found in very many thelephoroid fungi, shortly oblong-cylindrical, obtuse and somewhat inaequilateral, each at first supported on a short and often hardly visible sterigma.”—Tulasne (1865: 173/159).

Although the Tulasnes clearly differentiated Peziza (with asci) from Cyphella (with basidia) it may be remembered that they did not yet believe that asci and basidia are typical of widely different taxonomical groups of fungi. The basidia were for them not organs of precisely the same value as asci but rather comparable to such conidiophores as occur in imperfect states of pyrenomycetes. In this respect de Bary was ahead of them. Thus, the Tulasnes (1861: 135/136) remarked: “. . . [We] should be by no means surprised if one and the same pezizoid species should become at one time ascophorous (Peziza), at another basidiophorous (Cyphella), while keeping the same form, as happens among the Sphaeriacei . . .”

The occurrence of basidia in Solenia emend. Fr. was more generally acknowledged as late as around 1870 in different quarters at about the same time. Samples are:—

“[Solenia] has been placed amongst the Discomycetes from neglect of its mode of fruiting; the spores are produced as in Cyphella.”—Broome, quoted by Cooke (1871: 329).

“Ich habe mich jetzt überzeugt, dass weder bei [Solenia anomalas], noch bei den anderen hierher gezogenen, Schläuche vorhanden sind.”—Fuckel (1871: 291). Basidia were described simultaneously for Solenia spadicea Fuck.

Fries never made it very clear what the real differences between Solenia and Cyphella were. In his final work (1874) he differentiated them thus.

Solenia: “. . . Tubuli membranacei, subcylindrici, turbinati, . . . terram definite spectantes, ore connivente, quo a Cyphelia differunt.”—Page 595.


Evidently he was not quite satisfied himself about the two being really different and one wonders how later mycologists could have been content with maintaining both. Patouillard (1900: 54) fused the two into a single genus which he subdivided into three sections. He considered this combination a very homogeneous group.
However, *Solenia* and *Cyphella* survived as distinct genera up till the present time and have remained artificial taxa not satisfactorily separated from each other. In my opinion this situation is best taken care of by recognizing a single artificial genus *Cyphella* embracing all 'Cyphellaceae' and from which the better known elements are to be removed as soon as a more natural position has been worked out for them.

*Aleurodiscus.*—*Peziza amorpha* Pers., the type species of *Aleurodiscus*, has disk-, or rather, lens-shaped fruit-bodies, centrally attached, with even hymenium, and upturned margin. It was originally logically described under *Peziza* and later sometimes either included in *Cyphella* itself or considered to belong to the 'Cyphellaceae'. A discussion on it and similar species may for this reason be included in the present notes.

It was the author of the species himself who began to doubt the inclusion of it among the pezias (Persoon, 1822: 269): "Haecce species quoad structuram melius examinata, ut genus proprium ad familias Thelephorarum referri forsit an debetur et cui adnumeranda esset Thelephora evolvens..." Fries (1828: 183) did not think a new genus was necessary: he included it (with *Thelephora evolvens* Fr. per Fr.) in a special group of *Thelephora* Ehrh. ex Fr. that also contained *Thelephora salicina* Fr. This group is more fully discussed on pages 71-72 in connection with Cytidia.

It is not surprising that a new genus was thought necessary for this remarkable species. Rabenhorst (1874: No. 1824) introduced the generic name *Aleurodiscus* Rab. for it, but did not validly publish the name. He did neither supply a generic description nor a proper reference to a description, although he added drawings of the hymenial elements. This was not sufficient since the only original species was not a new one. The promise, "Das Nähere wird binnen Kurzem in der Hedwizia besprochen werden", he did not fulfil.

Rabenhorst's drawings of the hymenial elements show the spores, the sterile elements ('pseudophyses' of later authors), and the basidia which evidently were not recognized as such: the latter were all drawn without any indication of sterigmata and some of them show internal bodies that look remarkably like the separately drawn spores. Several years earlier de Bary (1866: f. 45) had published exemplary drawings of the basidia and their development, and of the spores; he even noted the fusion nucleus of the basidia. Without detracting anything from de Bary's merits, it should be pointed out that the basidia of this species are very favourable objects because of their large dimensions.

How difficult it was at that time to recognize basidia if one did not quite expect them is shown by a note by Berkeley (1860: 369); he emphatically denied their presence: "Peziza amorpha P., is referred by Fries to Corticum, but it has perfect asci. As I have not seen fresh specimens, I cannot determine to what genus it belongs." When Peck (1872: 96 pl. 4 f. 23-26) came across the fungus he did not recognize it and established a new genus for it, calling the species *Nodularia balsamica* Peck. He, too, did not recognize the basidia, and called them asci. The generic
name Nodularia Peck is pre-empted, and Cooke (1875: 136-137) pointed out that Aleurodiscus and Nodularia were identical. Saccardo (1881: 304-305), many years later, had his doubts about the presence of asci: "Verae endosporae maturae a nemine observatae; quare sic dicta nil nisi basidia videntur." De Bary's textbook (1886) seems to have been much neglected by contemporary mycologists, and the basidia had to be rediscovered independently by Richon (1877: 149 fs. 4, 5)—and again forgotten for quite a number of years!

Berkeley & Broome (1876: 137-138 pl. 9 f. i) arrived at a complicated conclusion, although they are somewhat vague on precisely how the spores are formed. The figure shows them as bursting through the apex of the 'clavate bodies'.

"The hymenium consists of colourless threads, and orange-coloured clavate bodies filled with pigment. These at length project beyond the surface, and produce four globose rough spores, .001 inch in diameter, which contain an angular body within which looks like a cystolith. After a time each spore becomes elliptic, and now measures .0012 inch in length, produces about eight elliptic echinulate sporidia in its cavity, which are from .0004-.0005 inch long—a circumstance without parallel, as far as we know, in Hymenomycetes. All these points have been observed by each of us independently..."

The next important step was made by Schroeter (1888: 429) who furnished the generic description necessary to validate the generic name Aleurodiscus. But he did more: he emphasized the exceptionally large basidia and spores and added to the cyphelloid type species—a totally resupinate fungus, Corticium aurantiacum (Pers. per Fr.) Sacc. This would prove to be a remarkable example of Schroeter's acuteness, since no modern author has as yet ventured to remove it from the genus.

Towards a family of Cyphellaceae.—Although Fries (1874) acknowledged the affinities between Porotheleum, Solenia, and Cyphella, he placed the first two genera in the "Polyporei" and the third in the "Thelephorei", which also included Corticium amorphum (Pers. per Purt.) Fr. and Corticium salicinum (Fr.) Fr. as species of Corticium Fr.

The first step towards a family of Cyphellaceae consisted of the re-uniting of Cyphella and Solenia within a single group. This was done, for instance, by Quélet. That author at first admitted a family "Auricularii" (1886: 201) which agreed with Fries's Thelephorei except for the inclusion of Auricularia Bull. This genus had as species, to mention only the prominent ones, Auricularia mesenterica (Dicks. per S. F. Gray) Fr., Hirneola auricula-judae (Bull. per St-Am.) Berk., Cyphella ampla Lév. (as Auricularia leveillei Quélet.), and Corticium salicinum. Soon afterwards, Quélet (1888: 24) distinguished within the "Auricularii" a tribe "Cyathini" consisting of (i) Auricularia Bull., with A. tremelloides (Bull. per St-Am.) Merat (= A. mesenterica), Hirneola auricula-judae, Cyphella ampla, and Corticium evolvens (Fr. per Fr.) Fr.; (ii) Cystidia Quélet., a new genus for Cystidia rutians (Pers.) ex Quélet. (= Corticium salicinum); (iii) Calypella Quélet., a segregate from Cyphella; (iv) Cyphella, to which Corticium amorphum had been transferred; and (v) Solenia.
At about the same time J. Schroeter (1888: 433) established within the family "Thelephorei" a "Gruppe Cyphellei" including both Solenia and Cyphella—as well as Craterellus.

It was left to Patouillard (1900: 52) to write the most noteworthy synopsis of the 'Cyphellaceae'. This survey, concise as it is, is well informed and clearly demonstrates that he had the best first-hand knowledge on a world-wide scale of these fungi. His "Cyphellés" (as a part of his "Porohydńés") comprise the genera Aleurodiscus, Cytidia, Cyphella (fused with Solenia, and also including Calyptella), Porotheleum, Punctularia Pat., and Phaeocyphella. Here, the three genera Cyphella, Solenia, and Porotheleum appear all united in the same taxon. The genus Punctularia is in many respects so different from the rest that it may as well be excluded from further discussion: the resupinate fruit-body bears blunt warts or ridges instead of cups and the hymenium is localized on these warts only, thus somewhat suggesting many individual 'fruit-bodies' on a common 'stroma' as in Porotheleum.

Maire (1902: 99) introduced the family name "Cyphellacées", which he applied in a very broad circumscription, viz. for all Aphylloporales with chiastic basidia and with smooth, tuberculose, or folded hymenium. One of the tribus is the "Cyphellées" which practically correspond to the "Cyphellaceae" of most modern authors, for instance of Pilat (1925b).

The number of genera has not been much increased since Patouillard's account of 1900. A few small new genera have been generally accepted. Other additions removed from other families have not been admitted by all authors. In this connection may be mentioned as examples: Chlorocyphella Spec., hailed as lichenized cyphellas, still admitted by Pilát (1925b: 45), but in reality imperfect fungi either lichenized or parasitic on lichens; and Fistulina Bull. per Fr. included by Lohwag & Follner (1936), a disposition that was foreshadowed by remarks by Fries.

This inclusion of Fistulina is in my opinion far-fetched. The differences from Porotheleum (which acted as the magnet) are so enormous that little more than a formula like, 'possessing densely crowded but discrete cups or tubes on a common body' holds the two together, but little else. Bondartsev & Singer (1941: 44, 45) accepted the inclusion of Fistulina; they admitted a suborder Cyphellineae, which they divided into two families, the Cyphellaceae, and the Fistulinaceae in which they placed both Porotheleum and Fistulina.

Some years later Singer (1945) divided the Cyphellineae (without any mention of the Fistulinaceae) into (i) the Cyphellaceae, to which were added Rimbachia and Arrhenia, and (ii) the Leptotaceae10 which comprised Leptotus (but not Leptoglossum P. Karst.), Campanella P. Henn., and Favolaschia (Pat.) Pat. apud Pat. & Lagerh. It is difficult to understand some of the additions, especially of Campanella. From a later publication it appears that Singer (1951: 735) is no longer certain of the position of the components of the Leptotaceae.

10 Leptotaceae R. Maire, nomen nudum, formerly tribus Dictyolées Maire; correct name, Dictyolaceae Gaüm.
The genus *Leptotus* is a good example of the difficulties that arise if one is determined to uphold a family Cyphellaceae. One may differ in opinion on whether or not *Leptotus* P. Karst. [type, *Cantharellus retirugus* (Bull.) per Fr.] and *Leptoglossum* P. Karst. [type, *Cantharellus muscigenus* (Bull.) per Fr.; synonym, *Dictyolus* Quél.] should form a single genus, but with our present knowledge one can hardly doubt that they are closely related. Some modern authors combine the two and Singer (1951: 735) even includes a centrally stalked species, *Omphalia muralis* (Sow. per Fr.) Quél. sensu Ricken under the name of *Leptotus rickenii* Sing. If one believes the 'Cyphellaceae'-to represent a good family one will be inclined to keep *Leptotus* (fruit-body dorsally attached) distinct from *Leptoglossum* (with lateral stalk), place the former genus in the Cyphellaceae, and not admit the latter. This is, in my opinion, an altogether artificial solution, that would at once raise the question why the cupulate agarics in general are not transferred to the 'Cyphellaceae', for the latter 'family' already contains a number of species that often develop pronounced folds which may be difficult to distinguish from obtuse gills (*Cantharellus retirugus*, *Cyphella ochroleuca* Berk. & Br). An agaric genus like *Resupinatus* (G. Nees) per. S. F. Gray has its counterpart among the 'Cyphellaceae' in *Stigmatolemma*.

*Aleurodiscus* has also been a problem from the start. It was a name originally given to *Corticium amorphum* only, but J. Schroeter (1888: 429) added to this species with a disk-shaped, centrally attached fruit-body another species which is completely resupinate and has not yet been removed from the genus. It is, therefore, understandable that *Aleurodiscus* has been placed by some (Patouillard) in the 'Cyphellaceae' and by others in the 'Thelephoraceae' (or, better, Corticiaceae). Pilát (1926: 206) made it a special group (Aeurodiscinae) of the Corticiaceae. He was followed by Killermann (1928: 142) who also included *Cytidia* in the tribus Aleurodiscae.

The preceding outline of the history of the 'Cyphellaceae' shows that the family has been widely accepted for a considerable period up till the present time. Recently W. B. Cooke (1957) adopted the group presumably in about the same sense as it has been delimited by Pilát. Yet a careful study of many prominent species has convinced me that the 'Cyphellaceae' are a very heterogeneous assemblage that has not the slightest right to exist. The diverse elements have been held together by superficial likeness but evidently are of various relationships. I believe that Romagnesi (1950) is basically correct when he considers a number of species closely related to, and inseparable from, different groups of agarics, like the Marasmiaceae, Pleurotaceae, and Naucoriaceae (as he understands these taxa). I had reached similar conclusions in regard to a great part of the 'Cyphellaceae' when I met Dr. R. Singer in 1946 (cf. Singer, 1951: 312, *Flagelloscypha* Donk, 343, *Lachnella* Fr., 345, *Merismodes* Earle). I would now mention the Schizophyllaceae as another group (independent of the agarics in my opinion), to which a number of 'Cyphellaceae' show relationship, and there is more in this vein, that I hope to discuss in the present series.
Relationship and phylogeny.—If one includes in a single taxon the horse, the sea elephant, and the mouse and declares them all closely related, one will get a group with relationships in various directions. This is about what has happened with the 'Cyphellaceae'.

The moss-inhabiting species that were later to be transferred to Cyphella were classed by Persoon as species of Thelephora Ehrh. ex Fr. On the occasion of the publication of Thelephora muscigena Pers. he remarked, "In hymenio subrugulosa est, hinc Merulius affinis" (1801: 572). When he introduced Thelephora subgen. Epibryus Pers. (1822: 115) for this and another species, he again stated that the taxon was close to the muscigenous species of Merulius (Persoon's sense). It may be surmised that he thought of such species as Merulius muscigenus (Bull.) Pers., M. retirugus (Bull.) Pers., M. lobatus Pers. which he entered in Merulius subgen. Cantharellus (Juss.) Pers. and which Fries (1821) placed in Cantharellus Adans. per Fr. together with Thelephora muscigena. Afterwards the moss-inhabiting species with an even hymenium were artificially separated from Cantharellus and transferred to Cyphella. Having done this Fries (1822: 201) declared, "Cyphella ... Genus ... ad Pileatos, speciatim Cantharellos, accedit." Of course others agreed:

"On pourrait, à la rigueur, laisser le Cyphella à côté du Thelephora, parce que son hymenium est lisse; mais je pense qu'il conviendrait mieux de le rapprocher du genre Cantharellus, dont plusieurs petites espèces comme le C. muscigenus, bryophilus, retirugus, etc., présentent la consistance, la structure et la disposition des spores, et qui n'en diffèrent que par les lames ou les plis de l'hymenium."—Leveillé (1841: 239).

When it became evident that Cantharellus was a very mixed group, the remaining moss-inhabiting species of this genus were placed in Dictyolus Quél. (in part) = Leptoglossum P. Karst. + Leptotus P. Karst., and the name Cantharellus became substituted by these in discussions on relationship.

It is interesting to note that Persoon (1822) was inclined to associate Solenia with such genera as Boletus (broad sense, inclusive of Polyporus sensu lato). Thus he remarked under Solenia fasciculata Pers. (p. 335): "Haec et antecedens [which means, the genus Solenia as a whole], in serie fungorum (praesertim generum majorum) a completis ad simplices aut vice versa, Boleti (Poriae) esse videntur, qui se tantum ut tubulos exibent."

When Fries decided to remove Solenia and Cyphella from the discomycetes and to arrange them among the hymenomycetes, Solenia was classed in the "Polyporei" along with Porotheleum (Fries, 1874). This genus he associated from the start with Polyporus and also compared it with Solenia at a very early date (Fries, 1821: 506) when he added to Polyporus subgen. Porotheleum (Fr.) per Fr. the definition "Asci nulli. (Solenia)." The theoretical implication behind this arrangement is that Solenia had 'free' pores (tubes) and that a whole colony is comparable to a single fruit-body of a resupinate species of Polyporus (Poria). Incidentally, Persoon (1796: 29) had already remarked about Peziza anomala: "Hab.... ad ramos dejectos, ubi
multa individua ita conferte sibique approximata crescunt, ut quasi unum repraesentent fungum.” He also suggested the relationship of Solenia with Poria (see above). Fries’s ideas were summarized thus:—


This is Fries’s matured view of the relationship of the three oldest genera of ‘Cyphellaceae’ in a nutshell. It dominated the situation for a long time and has not yet been totally abandoned. A remarkable later development is (or, perhaps, was) the renewed inclusion in Poria of Porotheleum fimbriatum (the type of Porotheleum) by American authors like Lloyd, Overholts, and Lowe. This is (was) definitely a long step back because the differences between the two genera are great.

Various authors have accepted the early suggestion of a close relationship between Porotheleum and Fistulina. For instance, J. Schroeter (1888: 494) associated the two in a special group of the Polyporaceae, while Lohwag & Follner (1936) transferred Fistulina to the ‘Cyphellaceae’ of which they considered Porotheleum a member. We have also seen that Bondartsev & Singer (1941: 44, 45) provided for a family of Fistulinaceae (Fistulina and Porotheleum) of the suborder Cyphellineae.

If artificial genera like Cyphella, Solenia, and Porotheleum are combined in a single group, and such as Aleurodiscus and Cytidia added as well, and if in addition one keeps to the supposed relationships, the ‘Cyphellaceae’ will show relations to the Corticiaceae (Aleurodiscus and Cytidia), the Polyporaceae and/or the Fistulinaceae (Porotheleum), and the Agaricaceae and/or the Cantharellaceae (moss-inhabiting cyphellas). For a full review of the phylogenetic speculations in this connection, augmented with personal conclusions, see Pilát (1925b: 41-52).

Here, the following recapitulation may suffice. The origin of the ‘family’ has been sought in (i) the Corticiaceae, especially in Corticium Fr. by the earlier authors on the subject, by Pilát (who also mentions Merulius Fr.), and by Gáumann (1926: 505); and (ii) in Dictyolus (= Leptoglossum plus Leptotus) by Maire (1902: scheme opposite p. 195) and by Vuillemin (1912: 362, scheme).

The following taxa have been considered derived from the ‘Cyphellaceae’ (i) the Polyporaceae (Maire, Vuillemin, Pilát); (ii) the Fistulinaceae (Gáumann); and (iii) Leptoglossum, including Leptotus (Pilát); and (iv) the Corticiaceae (Maire). Chlorocyphella Speg. (which is non-basidiomycetous) also readily found a place in some schemes of derivations as a lichenized member of the ‘Cyphellaceae’ without an actual study of its species.
3.—Excluded genera and species

Excluded genera

The following genera were, or have been, at some time or other admitted to the ‘Cyphellaceae’ or ‘Cyphellineae’, but do not fall under the character given above for that family, or are better excluded for other reasons. As for Maire’s “Famille des Cyphellacées” (1902: 99), only the genera he included in his “Tribu des Cyphellées” have been taken into account. A few odd genera are also discussed to facilitate reference to them.

Campanella P. Henn. — Referred by Singer (1945: 179) to the “Cyphellineae” (fam. Leptotaceae). The hymenophore varies from ‘merulioid’ to lamellate; usually the pattern consists of a few radiating gills with anastomoses of varying height, but this initial condition may become more complicated and finally difficult to observe. The genus should be excluded from the ‘Cyphellaceae’ as here defined and seems better placed among the agarics. There may be a short lateral stalk present, but in most species the fruit-body is cyphelloid.

The key-character Singer (1945: 185) uses to separate Campanella from Leptotus is the nature of the context, viz. hyphae gelatinous for the first, and hyphae not gelatinous for the second genus. In addition, in the generic description Singer (1945: 190) introduces for Campanella the presence of “dichophyses on sterile surfaces forming a more or less conspicuous asterostromelloid structure”. These ‘dichophyses’ are hardly comparable to the true dichophyses (= dichohyphidia) of the corticiaceous genus Vararia P. Karst. (Asterostromella Höhn. & L.). These branched hyphae may be much reduced, but are interesting as they call to mind similar bodies in some agaric genera, Dictyopanus Pat., Mycena (Pers.) per S.F. Gray sensu lato. It may be questioned if these ‘dichophyses’ are essential to the generic character.

For the moment I would suggest inclusion in Campanella of Arrhenia flabellula (Berk. & C. ex Cooke) Dennis, which has been reported as synonymous with Rimbachia cyphelloides (J. Rick) ex Lloyd.

Chaetocypha Corda. — The genus was introduced for a single species, Chaetocypha variabilis Corda, which Fries identified with Cyphella goldbachii Weinm. Because O. Kuntze (1891: 847) considered Cyphella Fr. a later homonym of Cyphelium Ach., he substituted Chaetocypha for Cyphella.

However, there is no sufficient reason to accept Fries’s identification of Chaetocypha variabilis with Cyphella goldbachii. Corda’s species has not been recognized by later mycologists and the author himself soon indicated that the name should be buried. Donk (1951: 208) does not consider it a basidiomycete. In any case I do not recognize a cyphella in Corda’s fungus and, therefore, have to exclude it from consideration. For my interpretation of Cyphella goldbachii, see pag. 85.

Chlorocyphella Speg. — When this genus was published the author remarked, “Genus Hymenolichenibus certe pertinent.” Keissler (1927) gave a good
account of it, but did not at the time deny its basidiferous nature; he could not clearly make out the basidia. Mameli-Calvino (1930) concluded that the spores were not formed on true basidia and that the fructification was that of imperfect fungi. Keissler regarded the species as “Flechtenparasiten” rather than as lichens producing cyphella-like fruit-bodies; Santesson (1952: 41) speaks of parasymbionts. However, Mameli-Calvino concludes that Chlorocyphella subtropica Speg. is a lichen, and sets up a special group of Deuterolichenes for the genus. Keissler also found that Campylidium Müll.-Arg. (1881) and Orthidium Müll.-Arg. (1890) are synonyms, but he rejected these earlier names in favour of Chlorocyphella (1909) because their author had given them to what he supposed to be (basidiferous!) anamorphoses of lichens—hardly a valid reason for rejecting them with our present knowledge about the true nature of the ‘basidia’. Santesson identifies Chlorocyphella with Pyrenotrichum Mont. (1843: 376), a name still earlier than those of J. Müller and Chlorocyphella. He lists nine species for the genus; a few of these received names under Cyphella, viz. Pyrenotrichum splitgerberi Mont. (Cyphella aeruginascens P. Karst.; C. subcyanea Ell. & Ev.; C. lichenicola Keissl.) and P. foliicola (Vain.) R. Sant. (Cyphella foliicola Vain.).

Corniola S. F. Gray. — See under Leptoglossum.

Craterellus Pers. — Schroeter (1888: 436) placed this genus in his “Gruppe Cyphellae” along with Solenia and Cyphella. It is currently classed among the Cantharellaceae. In any case there is no good reason to consider it cyphellaceous.

Dacryobolus Fr. — Odontia sudans (A. & S. per Fr.) Bres. = Dacryobolus sudans (A. & S. per Fr.) Fr. forms thin, somewhat watery looking, closely adherent fruit-bodies bearing teeth with diaphanous, coloured, resin-like bodies resembling minute drops, a single one of which occupies the axis and tip of each tooth. When the teeth are viewed from above they appear hollowed-out, especially if the bodies have fallen away. These ‘cups’ are sterile inside (the hymenium lines the outside) and thus are quite different from the cups of Stromatoscypha. For details, see Lohwag (1931: 89–91 f. 1) and compare the fine photographs published by Lloyd (1917: fs. 1110, 1111). I agree with Eriksson (1958: 115) that Odontia sudans might well be taken to represent a genus of its own (Dacryobolus Fr.). This fungus has several times been described as a new species of Porotheleum = Stromatoscypha, which is why it is here entered among the excluded genera. For examples or possible examples of these species of ‘Porotheleum’, see the discussion of excluded species below: P. confusum Berk. & Br., P. hydnoideum Berk., P. papillatus Peck, and P. stevensoni Berk. & Br. On the other hand, P. friesii Mont. is not one of these.

Dictyolus Quél. — See under Leptoglossum.

Discocyphella P. Henn. — Type species, Discocyphella marasmioides P. Henn. & Nym. apud P. Henn. The generic name is rather misleading: the species is cen-
trally and ventrally stalked. Hymenophore smooth. Not to be included in the 'Cyphellaceae'. To Singer (1951: 373), practically a nomen dubium. Patouillard (1900: 147) and von Höhnel (1911: 167) referred it to Cymatella Pat. which Singer (1951: 310) treats as an agaric genus close to Marasmiellus Murrill emend. Sing.

**Favolaschia** (Pat.) Pat. apud Pat. & Lagerh. — Referred by Singer (1945: 174) to the “Cyphellineae” (fam. Leptotaceae). Since the hymenophore is tubulose, the genus is left out in the present paper because the (artificial) family character adopted above excludes taxa with ‘compounded’ hymenophore. Inclusion among the agarics seems the best solution, but if there is an objection to this course, the genus might be placed in the Polyporaceae, which in the current wide circumscription is quite artificial. Compare also Singer (1951: 732).

Several of the smaller species look like discomycetes, a resemblance which is in some cases expressed in the specific epithets (‘pezizaformis’, ‘pezizoideus’) and on superficial examination may be confused with cyphellas. Some species which have only a few tubes (pores) to the fruit-body may develop individual fruit-bodies that have only one. Such fruit-bodies are ‘cyphellaceous’ in the strict sense of this paper; the accompanying compound ones have been described as ‘aggregate’ by some authors. One or two species that have been included in *Cyphella* are discussed below: *Cyphella subceracea* P. Henn., and compare also *C. australis* Speg. and other species.

**Fistulina** Bull. per Fr. — The prevailing tendency is to classify this genus in a family of its own among the Aphyllophorales, or in a subfamily of the Polyporaceae. See comments on page 36.


**Leptoglossum** P. Karst. — The type species, *Cantharellus muscigenus* (Bull.) per Fr. has laterally stalked fruit-bodies and, therefore, falls outside the ‘Cyphellaceae’ as defined above. *Corniola* S. F. Gray (preoccupied) and *Dictyolus* Quél. are typonyms and to be rejected. The genus is often rather broadly conceived (sometimes under the incorrect names *Leptotus* or *Dictyolus*) by the inclusion of species with dorsally attached fruit-bodies like *Cantharellus retirugus* (Bull.) per Fr.; and, also, by the inclusion of cup-shaped species with more or less typical gills, which in most cases should be transferred to the agarics. As to the position of *Leptoglossum*, it would seem that it may also be placed close to some species that are currently considered to be agarics, like *Pleurotus tremulus* (Schaeff. per Fr.) Kummer and *Omphalia muralis* (Sow. per Fr.) Kummer sensu Ricken. Singer (1951: 735) even included these species in ‘*Leptotus*’.

The character given above of the ‘Cyphellaceae’ necessitates treating of the group without lateral (or central) stalk as cyphellaceous, and some of its components
will be discussed in a future instalment; the stalked species will be left out of account. See also remarks on page 37.

If one decides to keep apart from the species with stalked fruit-body such (muscicolous) species as *Cantharellus retirugus*, these should be excluded under the name *Leptotus*. If one considers the types of *Leptotus* and of *Leptoglossum* congeneric, then the latter name is the correct one (cf. Donk, 1951: 214). The incorrect use of *Leptotus* for this product of fusion has caused the introduction of several stalked species into *Leptotus*. These are:

- *Leptotus glaucus* (Batsch per Fr.) Maire, *Cantharellus glaucus* (Batsch) per Fr., which (if correctly interpreted) has been made type of *Geotus* Pilát & Svrček (1953).
- *Leptotus muscigenus* (Bull. per Fr.) Maire, *Cantharellus muscigenus* (Bull.) per Fr., type of *Leptoglossum* P. Karst.
- *Leptotus rickenii* Sing. (nomen nudum), name change for *Omphalia muralis* (Sow. per Fr.) Quél. sensu Ricken, which is centrally stalked and not evidently muscicolous.
- *Leptotus tremulus* (Schaeff. per Fr.) Sing., *Pleurotus tremulus* (Schaeff. per Fr.) Kummer, with typical gills and truly agaric.

*Marasmius* Fr. — Among the species of this genus, there are a number (especially of those occurring in the tropics) in which the fruit-body has a reduced stalk which may virtually disappear as the fungus develops or is completely stalkless (fruit-body dorsally attached). If in addition, the gills are reduced, sometimes to the point of a completely smooth hymenium, it is not surprising that confusion with *Cyphella* arises. When one finds in the tropics ‘sessile’ cyphellas on small twigs or on coriaceous leaves, with asymmetrical fruit-body, they will usually belong to these species of *Marasmius*. The lateral notch represents the place where the stalk is or was to be found. Similar conditions occur in minute species of *Pleurotus* (Fr.) Kummer (*sensu lato*) and *Clitopilus* (Fr.) Kummer, but in these genera the tendency to develop a smooth hymenophore is hardly evident. These species of *Marasmius* are often associated with thread blights. Petch (1924: 19–23) recognized *Cyphella pulchra* Berk. & Br. as one of them. Recently *Marasmius cyphella* Dennis & Reid (1957: 288 f. 2) was described from among these fungi. I suspect that *Cyphella juruensis* P. Henn. and *C. reniformis* Pat. are additional examples.

*Peniophorina* Höhn. — The genus was introduced for a single species that was identified with *Chaetostroma pedicellatum* Preuss. The author considered it basidiomycetous, and if this were true it would be sought for among the ‘Cyphellaceae’ rather than among the Corticiaceae (lens-shaped fruit-body, but no stalk). However, Donk (1951: 216) concludes that it is non-basidiomycetous.

*Pistillina* Quél. — It has been suggested that this genus may be related to *Cyphella* (Coker, 1923: 6). Since the ‘disk’ is convex and the fruit-body plainly

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11 Some would perhaps consider *Leptotus* P. Karst. preoccupied by two (orthographically slightly different) homonyms, *Leptotes* Lindl. (1833) and *Leptitis* Hoffmansegg (1824). In that case a new name should be coined.
stalked, it is best placed for the time being among the 'Clavariaceae', in its current delimitation an artificial family. See Corner (1950: 107, 497). It is suggested below (p. 47) that Cyphella agariceiformis Pilát belongs to Pistillina.

**Pleurotopsis** (P. Henn.) Earle. — See under Plicatura Peck.

**Plicatura** Peck. — Donk (1951: 217) listed Plicatura and Pleurotopsis (P. Henn.) Earle as cyphellaceous. The reasons for so doing were, first, that he considered the two congeneric, and, secondly, that young fruit-bodies are more or less typically cyphellaceous and that there are a number of cyphellas which seem to be closely related to species of Plicatura. Mature fruit-bodies are usually too big to make a cyphellaceous impression and, in addition, have a strongly folded hymenophore. However, the edges of the folds remain fertile. For the present the genus will be left out of account, but I hope to return to it in a further paper of the present series.

**Punctularia** Pat. — Patouillard (1900: 57) stressed: "Hyménium limité à la surface des tubercules" and thought it came near to Porotheleum, "d'où il est en quelque sorte une forme à hyménium convexe ou plan." In other words, if one conceives the cups lined on the inside with the hymenium of Stromatoscypha replaced by warts to which the hymenium is limited, this would result in a genus like Punctularia. The comparison is evidently far-fetched and there should be little hesitation in excluding Punctularia from the 'Cyphellaceae'. For a recent account of the genus, see Talbot (1958: 140).

**Skepperiella** Pilát in Bull. Soc. mycol. France 43: 56. 1927. — The type species is Skeperia spathularia (Berk. & C.) Pat. which is referred to Rimbachia Pat. by Singer (1951: 741). Apparently it has a lateral stalk, and if so, it cannot belong to the 'Cyphellaceae' as circumscribed in the present paper. It may be that the stalk is only seemingly lateral and is actually strongly excentric, and dorsally attached, in which case it falls within the limits of the 'family' together with Rimbachia. Compare Singer (l.c.), "We may, for the sake of comparison, liken Rimbachia to Peziza, and Skepperiella to Otidea. Both Skepperiella and Otidea are weak genera at least in regard to the main distinguishing feature, the spathulate instead of pezizoid habit."

**Stereophyllum** P. Karst. — Only original species, Stereophyllum pallens P. Karst. A later described species is S. boreale P. Karst. The latter has been considered conspecific with one of the muscicolous cyphellas.

The type species was insuffciently described (no microscopical details). Karsten himself thought, "Affine videtur Stereo cyphelloides Berk. et C." and his description compares well with a recent one of the latter species published by Welden [1958: 42; as Cotylidia cyphelloides (Berk. & C.) Welden]. If there is really affinity between the two, it would seem advisable to reconsider the inclusion of Stereophyllum (name preoccupied) in Cotylidia P. Karst., and to look more closely into the relationship of Cotylidia cyphelloides and Thelephora muscigena Pers. [≡ Cantharellus laevis Fr. ≡ Cyphella laevis (Fr.) Lundell].
**Trabecularia** Bon. — This has for a long time been a forgotten genus. Its generic character places it in the 'Cyphellaceae'. Donk (1938: 14) considers it merely a form of *Merulius tremellosus* Schrad. per Fr. If this disposition is accepted as correct, *Trabecularia* is better excluded from the 'Cyphellaceae' as long as *Merulius* Fr. is not included in that artificial taxon. Some species of *Merulius* have more or less disk- to cup-shaped young fruit-bodies, and in my opinion the cyphellaceous genus *Auriculariopsis* Maire (see p. 76) is difficult to separate from *Merulius*.

**Trogia** Fr. — The genus was introduced for tropical agarics that are not at all likely to be confused with cyphellas, but in later work Fries extended the limits to include such species as were classed afterwards as *Plicatura* Peck. Compare: "*Trogia...* in India orientali hactenus tantum lectum, *Cyphellis* affinitate proximum! *Trogia crispa* (Pers. per Fr.) Fr., *Cantharellus crispus* (Pers.) per Fr. . . . cum genuinis *Trogiis* congruit, ut ad idem genus referre non dubitem..."—Fries (1863: 244). European and North American authors, who did not know the original tropical elements, followed Fries's lead and substituted the name *Trogia* for *Plicatura*. The two genera are widely different; *Trogia* belongs to the agarics (cf. Singer, 1951: 207).

**Urceolus** Velen., Novit. mycol. 44. 1939. — A monotypic genus based on *Urceolus sambucinus* Velen., a species with urceolate fruit-body with vein-like gills. Presumably a 'reduced' agaric. Velenovsky wrote: "Ego autem censeo, hanc speciem et *Pl[eurotus]* Leightonii Berk. itidem sub gen. *Urceolus* referendas esse."

**Wiesnerina** Höhn. — *Peniophorina* Höhn. and *Wiesnerina* have both pin-head-shaped fruit-bodies, sessile with constricted base. They have been placed in the 'Thelephoraceae' (Corticiaceae). Killermann (1928: 138, 139; *Peniophorina* as a section of *Peniophora* Cooke) even placed them next to *Corticium* and *Peniophora* in a tribus Corticieae, which he defines as having the "Frk. ausgebreitet..."! However, in an artificial system the two genera would probably be sought among the 'Cyphellaceae' and Donk (1951: 264) listed them in that connection: they are rather cyphella-like, but with the 'disk' convex (and no evident stalk), as in certain groups consistently referred to the discomycetes. It was not Donk's intention to enter them taxonomically into the 'Cyphellaceae': *Peniophorina* he simultaneously excluded as non-basidiomycetous. Of *Wiesnerina* he noted at that time, but only in manuscript: "*Wiesnerina* Höhn. resembles in general structure *Dimorphocystis capitatus* Corner (Clavariaceae), but it lacks the stalk. Corner's figures (1950: fs. 170, 171) of the capitellae portion of the fruit-body roughly apply to *Wiesnerina*. However, the cystidia are different in some respects from those described in the three species of *Dimorphocystis* Corner."

In the meantime Boedijn (1959: 11) has found that the correct name for *Dimorphocystis* is *Actiniceps* Berk. & Br. and he also includes *Wiesnerina* in that genus. For the present I would not yet subscribe to that solution; it appears that *Wiesnerina*
may be a closely related but different genus. Boedijn, moreover believes that Actiniceps belongs to the "Thelephoraceae". This, apparently, should be understood as 'Thelephoraceae sensu latissimo', since there is certainly no close relation with the Thelephoraceae as recently emended ('Phylacteriaceae'). Since the fruit-body may be frankly stalked, and the stalk in Wiesnerina may be interpreted as present but very short, it might be advisable to refer Actiniceps (and artifical family 'Clavariaceae', as has been done for Dimorphocystis by Corner.

If the stalk of Actiniceps can be imagined so strongly reduced that the fruit-body becomes a sessile, shortly obconical body with the hymenium limited to the convex surface at the top one will arrive at a fruit-body as it occurs in Wiesnerina. The latter genus now includes two species, both tropical, which both differ from Actiniceps in the cystidia. These are similar in both genera to this extent, that a cystidium from either is thick-walled, somewhat ventricose in the lower half, its lumen sometimes widened there but always abruptly expanded toward the apex. However, in Wiesnerina, the surface of the cystidia is densely and regularly studded with papillae all over, except at the extreme tip and around the base. In Wiesnerina secunda Hohn. from Java the cystidia tend to swell in KOH solution and in this respect remind one of Lachnella (p. 97). I have not studied the Brazilian species W. horrida Hohn.

**Excluded species**

The following enumeration deals with those species that have been referred to the genera listed in Table I as cyphellaceous, but that should be excluded from the 'family'. An exception is made for ascomycetous species included in Lachnella. The name Lachnella has for a long time been erroneously applied to a genus of discomycetes in various delimitations. On the other hand, cupulate (not strictly laterally or ventrally stalked) species that have been placed in Dictyolus and Leptoglossum and that are better excluded from the 'family' may also be looked for in this enumeration, which, however, is by no means to be regarded as exhaustive. The synonymy is in most cases not complete.


Not congeneric with the type species of _Nodularia_, which is synonymous with the type species of _Aleurodiscus_. The above mentioned species is an inoperculate ascomycete; compare Seaver (l.c.).


Fide Santesson (1952: 49, 50) = _Pyrenotrichum splitgerberi_ Mont. See also under Chlorocyphella (p. 40).
**agariciformis.** — *Cyphella agariciformis* Pilát in Hedwigia 66: 262 f. B. 1926

This species was described from Bohemia and found on stalks of *Juncus glomeratus*. Judging only from the original account I suggest that it is the same as *Pistillina typhae* (Höhn.) Donk. The general shape of the fruit-body, the consistency (subgelatinous), the spores ("langlich-elliptisch, nach unten langsam zugespitzt, 8–9 µ lang, 3,2–3,6 µ breit"), as well as the habitat, all point in this direction. For a note on the genus *Pistillina* Quél., see above (p. 43).


As far as I have been able to find out, a fungus as yet unidentified which may represent some inoperculate discomycete. Fries (1874: 597) had not seen any specimen when he referred it to *Solenia*: "Non vidi, sed *S. anomalae* ita affinis, ut de genere non dubitem." I am not at all convinced that Fries was correct and consider the species as 'lost'.

**antiquatus.** — *Peziza antiquata* Batsch, Elench. Fung. 119. 1783; Cont. 1: 203 pl. 27 f. 141. 1786 (devalidated name).

Fries (1822: 36) thought of *Thelephora* Ehrh. *ex* Fr. (original wide sense) in connection with this fungus, which has dropped out completely from literature. In shape it is 'cyphelloid', or, rather, *Cytidia*-like. I have compared Batsch's account carefully with *Cytidia salicina* (Fr.) Burt, dried *Exidia recisa* (Ditm. *per* S. F. Gray) Fr., and forms of some species of *Stereum* Pers. *per* S. F. Gray, but could not decide on any of these, although the fungus may well be hymenomycetous. Another 'lost' species.


A 'lost' species that may belong to the agarics; compare *Schizophyllum commune* Fr. *per* Fr. (the substratum being rotting leather).


Sprengel (1827: 511) listed *Peziza axillaris* as a possible synonym (variety) of *Cyphella muscicola* Fr. The original fungus is apparently a discomycete. Some authors admit it as a good species (cf. Seaver, I.e.), but Dennis (1956: 114), after a discussion, concludes that it is still doubtful.

From the description ["pileo . . . extus (sub lente tantum) minutissime pruinuloso, cinereo v. cinereo-glauco"], this might be a species of Favolaschia (see p. 42), like F. saccharina Pat. Although there is no explicit statement about the cup being 'compound', the words "sparsa v. hinc inde 2–5 gregaria" perhaps mean that fruit-bodies with 2–5 tubes were present.


Singer (1945: 191) thinks that it seems to belong to the group of Campanella caerulescens (Berk. & C.) Sing. A lamellate species and presumably agaric.

campanula. — Peziza campanula C. Nees is cited by Fries (1874: 665) as a synonym of Cyphella sulphurea (Batsch) per Fr., which, if correct, would make it an inoperculate discomycete (Belonioscypha Rehm). However, Fries certainly misinterpreted Peziza sulphurea Batsch (see p. 63), and it is likely that the species he had in mind, as well as the original P. campanula, belongs to Calypella. This question will be discussed at greater length on a future occasion.


Persoon (1822: 280) cited this name as a possible synonym of Peziza digitalis A. & S. According to Fries (1822: 187) it belongs to Cenangium ferrugineum Fr. per Fr., an inoperculate discomycete which Rehm (1889: 227) calls Cenangium abietis (Pers.) Rehm = C. abietis (Pers.) per Duby.


Secretan (1833: 303) listed this as a possible synonym of Peziza amorpha Pers. = Aleurodiscus amorphus (Pers. per Purt.) J. Schroet. This is incorrect; Peziza chrysophaea is more likely to be a discomycete: compare Rehm (l.c.)


Two quite different fungi have been associated with this name. Saccardo identified it for some time with a species of the 'Cyphellaceae' that will be discussed on a later occasion. Seaver (1957: 275) agrees, stating: "It is a Cyphella." This interpretation is here rejected and von Schweinitz's species excluded from the Basidiomycetes.
Bresadola and Rehm referred it to the inoperculate discomycetes and Rehm (l.c.) gives what appears to be a good description of Bresadola's interpretation.


Fide Rea (1922: 703) and Reid (1957: 134) = Odontia sudans (A. & S. per Fr.) Bres. = Dacryobolus sudans (A. & S. per Fr.) Fr. For a note on Dacryobolus, see page 41.


Apparently not a basidiomycete: Burt (1914: 380) reports that “the ‘basidia’ are filiform and only 1-spored.”

**cookei.** — For Cyphella cookei Sacc. & P. Syd., see Cyphella fili(ci)cola Cooke.


Another ‘lost’ species. There is no reason for dragging the name along in connection with Leptotus or any other group of ‘Cyphellaceae’. It is here suggested that it may be a synonym of Paxillus panuoides (Fr. per Fr.) Fr., and more particularly, a name given to one of those poorly developed forms occurring in cellars and mines. Pilát (1948a: 18) cites a specimen (PR) named “Agaricus crucibulum Corda” as a synonym of “Crepidotus panuoides (Fr. per Fr.) Pilát. It would seem that Fries himself (1863: 212) thought of that species when he wrote about Cantharellus crucibulum, “... caute distinguendus a Paxillo panuode.” From the same account it also appears that it was found in “locis suffocatis”.


Type.—L 910.267–694.

Persoon’s description of Thelephora cruenta Pers. is very short. This is apparently why the name has been misapplied. The description (“glabra coriacea tuberculata, sanguinea-rubra. Ad cortices arborum ...”) suggests Hymenocheaete mougeotii (Fr.) Cooke, and material in Persoon’s herbarium is in agreement with such a determination. According to the “Synopsis Fungorum” the type (L 910.267–694) was sent
to Persoon by Ludwig. It is labelled in Persoon’s handwriting “Thelephora cruenta / — punicea.” The second name was evidently added on a later occasion. The collection is a good specimen of Hymenochaete mougeotii. A second specimen (L 910.277–344) represents the same species. It is labelled, “Thelephora / in cortice emortuo Pini abietis” in Mougeot’s handwriting. Persoon wrote “cruenta” after ‘Thelephora’. Lloyd marked this sheet as “type”, which is erroneous because the type came from Germany and was sent by Ludwig, before Mougeot started to send specimens to Persoon from the Vosges. A third specimen (L 910.277–341) is labelled by Chaillet, “Thelephora cruenta Pers.? Elle me paroit différer par l’absence des Papilles, du reste elle me paroit entièrement semblable. ... 1818 No. 46.” Persoon added “T. punicea Alb. et Schwein.” The specimen is again Hymenochaete mougeotii. It is thus well established (i) what species Persoon described as Thelephora cruenta, and (ii) that afterwards he thought that he recognized T. punicea A. & S. in his species.

The first authors who erroneously interpreted Persoon’s species (which they called Thelephora cruenta var. sanguinea) were von Albertini & von Schweinitz. Their description and indication of habitat leave not the slightest doubt that they were dealing with the species Fries would later call Thelephora salicina Fr. They added a second variety (which is why they also gave the typical fungus a varietal name), viz. T. cruenta var. roseo-rubra A. & S.; it is not easy to determine with certainty and may be left out of further account.

When Fries re-published Thelephora cruenta in the starting-point book he, too, misapplied it. When he became aware of his error he renamed his interpretation Thelephora sarcoides Fr. This species will be separately discussed below. At the same time Fries (1828: 188) refused to take up Persoon’s name for the correct species, which he renamed Thelephora mougeotii, dropping the name T. cruenta altogether. This was when he had seen Persoon’s species as distributed by Mougeot & Nestler, Stirpes Crypt. vogeso-rhenanae, Fasc. 6: No. 581. 1818, the label of which runs: “581. Thelephora cruenta Pers. Syn. Fung. p. 575. Ad ramos excissatos Pini Piceae. Autumno.” We have seen above that Persoon had so named a specimen he had received from Mougeot. Fries explained his reluctance to accept the name T. cruenta thus:


12 In later work Persoon (1828: 140) not only combined his own species with the one described by von Albertini & von Schweinitz, but he also admitted as a variety T. cruenta var. roseorubra A. & S., which Fries referred to T. sarcoides Fr.
Thelephora cruenta has been taken up again in von Albertini & von Schweinitz’s sense by Schroeter, Karsten, Herter, and other authors. It will be clear from what has been said that this misinterpretation should be discontinued, and that T. cruenta should be removed from the genus Cytidia.

Since Fries did not exclude the original fungus from his treatment of Thelephora cruenta in the starting-point book, the name should be applied in its original sense; hence the following recombination, which now appears to be the correct name for Hymenochaete mougeotii: Hymenochaete cruenta (Pers. per Fr.) Donk, comb. nov. (basinym, Thelephora cruenta Pers., Syn. Fung. 575. 1801 per Fr., Syst. mycol. 1: 444. 1821).

A question that arises in this connection is what Thelephora punicea A. & S. really represents. The current interpretation identifies it with a species of Tomentella Pat., now called T. punicea (A. & S. per Fr.) J. Schroet. (for a description, see Bourdot & Galzin, 1928: 491). This can hardly be correct for the original description (von Albertini & von Schweinitz, 1805: 278) contains, inter alia, “Membrana circumscripta, diametro 1½–3 unc. fere aequans, appressa vel subreflexa...”, which excludes any known red species of Tomentella! The substratum is given as “... ad cortices fagineos... et abietinos”, and, if correct, would exclude Hymenochaete cruenta, or point to a mixture of species, since H. cruenta does not occur on beech. If one narrows the original concept to the fungus on the coniferous substratum, Thelephora punicea may perhaps be listed as a synonym of Hymenochaete cruenta.


This is a gall: compare Berkeley & Curtis (1856: 207); Burt (1914: 380), and Lloyd (1911: 497 f. 385).


This species was redescribed once after 1821, by von Strauss (l.c.). The original description reads like that of one of the minute species of Resupinatus (C. Nees) per S. F. Gray, and Fries seems to have thought of that, too: “Ex Wahlenbergii exemplaribus pro juniore statu A[garici] applicati facile haberem, sed Straussii vere distincta.” Still later he is even more positive (Fries, 1863: 212): “... at examinatis archetypis auctoris meram A. applicati formam juvenilem censeo.” Pleurotus kavinii Pilát is one of the forms around Resupinatus applicatus (Batsch per Fr.) S. F. Gray that has few (5–8), rather low gills and that reminds one of Merulius cupularis in sufficient respects to suggest that Wahlenberg’s species might well be a member of Resupinatus.

See under Arrhenia flabellula (Berk. & C. ex Cooke) Dennis.

discoideus. — Cyphella discoidea Cooke in Grevillea 12: 85. 1884.

Cunningham (1953a: 281; 1953b: 187) reports that examination of the type showed it to consist of empty egg-cases of a spider.

Type.—New Zealand, Napier (W. Colenso 630, K!)


Fide Fries (1822: 105), a form of Peziza punctiformis Fr. = Cyphella punctiformis (Fr.) P. Karst. Later authors have not upheld this disposition and Rehm (1893: 900) cites Persoon’s fungus as belonging to the inoperculate discomycete Lachnum fuscescens (Pers. per Fr.) P. Karst. = Dasyscypha fuscescens (Pers. per Fr.) Rehm.

filicola. — See filicola.


Fide Cunningham (1953a: 282; 1953b: 188) the type consists of empty egg-cases of "some moth or butterfly".


The following note shows that this is another species to be excluded from the basidiomycetes:


Redescribed by Dennis (l.c.) who also reports, that according to Singer "Arrhenia cyphelloides Lloyd" = Rimbachia cyphelloides (J. Rick) ex Lloyd is a synonym. This species hardly fits in Arrhenia (see p. 27); it seems better placed in Campanella
Donk: Cyphellaceae—I

P. Henn. (cf. p. 40) on account, for instance, of its substratum (on logs) and gelatinous consistency.

flocculentus.

Thelephora populina Fr., Elench. 1: 184. 1828 ("ined."); as a synonym; not Thelephora populina Sommerf., Suppl. Fl. lapp. Wahlenb. 284. 1826. — Herbarium name for Thelephora flocculenta Fr.


Type.—Sweden, Femsjö (hb. Fr.-UPS).

As to the identity of this fungus I have come to the conclusion that it is not the one currently connected with the name Cyttidia flocculenta, but that it is a synonym of Corticium evolvens (Fr. per Fr.) Fr. = C. laeve (Pers. per Fr.) Fr. The following lines will show some of the reasons for this conclusion.

Cyphella ampla, with which Corticium flocculentum has been identified by J. Schroeter and many later authors, is exceedingly rare in Sweden, if it occurs in that country at all: I do not remember coming across even a single specimen collected in Sweden in the herbarium at Uppsala.

Moreover, a specimen is available that appears entitled to be regarded as type; it is labelled in Fries's handwriting, "Corticium flocculentum Fr. / Femsjö / Rudera misera." The fungus has completely disappeared from the substratum except for some tiny tissue fragments at one or two points of attachment of fruit-bodies. One of these fragments yielded hyphae of Corticium evolvens. Dr. J. Eriksson, to whom I showed the slide, agrees with this determination.

Fries's rather elaborate account, as well as the species with which he compared Thelephora flocculenta, also points in the direction of Corticium evolvens, and definitely not to Cyphella ampla. The one discrepancy may be the alleged colour of the fresh fruit-body, "... hymenio ... sanguinorufo e pruina cervino ... hymenio ... intense sanguineo, sed hic color tantum in humectata appareat; siccum enim, hymenium laeve subcervinum! ... Hymenium ... demum ... colore cinereocervino memorabile." Yet, I think it justified to accept Thelephora flocculenta as one of the several names under which Fries described Corticium evolvens. In any case there is no reason to retain the name for Auriculariopsis ampla.

I have thought of the possibility that Thelephora flocculenta might be Cyttidia salicina (Fr.) Burt. The latter fungus has been found on rare occasions on species of Populus, and "Ad truncus Populi" is the substratum indicated for T. flocculenta. However, the microscopical details of the hyphae from the type preclude the possibility of this synonymy.

The distinguishing features are in the thin, slender stalk, which is made villose from long patent hairs and which expands abruptly into the completely naked cup. Collected on rotten roots in a hollow trunk.

The striking difference in villosity between the stalk and the cup suggests that, contrary to the usual situation in the 'Cyphellaceae', the naked surface of the cup is of a radically different nature from that of the stalk, and this, in my opinion, indicates that the outer surface of the cup is covered by the hymenium. This assumption makes of Cyphella flos-albus an agaric species with upturned cap and smooth hymenophore at the nether (= outer) surface, comparable to—if not identical—with Peziza gibba A. & S., a species of Mycena sensu lato, which is discussed below.


If not considered a distinct species of Porotheleum, then it has often been included (recently, for instance, by W. B. Cooke, 1957: 684) in Porotheleum fimbriatum (Pers. per Fr.) Fr. = Stromatoscypha fimbriatum (Pers. per Fr.) Donk. Lloyd (1917: 740) took it to be based on the young, papillate condition. The original description does not support such a disposition and a portion of the type (K) shows this to be a resupinate species of Corticiaceae to which I intend to return on a future occasion.

fulvus. — Porotheleum fulvum Ell. & Ev. apud Langl., Cat. Fl. Basse-Louisiana 33. 1887 (nomen nudum; n.v.).

Fide Lentz (apud Cash, 1953: 327) = Hypothea citrina (Pers. per Fr.) Fr.

"H[elotium] um b o n a t u m A. S.\)": Fr., Summ. Veg. Scand. 2: 354. 1849 (error; as a synonym).

Descriptions & illustrations.—Patouillard, 1887, I.c.; Cejp in Atl. Champ. Eur. 4: 144 pl. 54 fs. 9–11. 1938 (Delicatula).\(^\text{13}\)

This fungus has been a puzzle since its publication, and it is often referred to the discomycetes as an insufficiently known species. Schroeter (I.c.) placed it in Cyphella, but apparently did so only by judging from the original account.

Patouillard's interpretation of the species as an agaric is doubtless correct, although the fungus he described may possibly be a closely related species, rather than the same one; the original account is sufficiently detailed and clear for us to accept Patouillard's fungus as conspecific. The 'cup' is the cap of an agaric, with smooth hymenophore covering the outside of the cup; the nipple at the bottom of the cup is the umbo on the cap, which turns inside out early in development.

My cena crispula (Quél.) Kühner sensu Kühner (1938: 642 f. 230) and Kühner & Romagnesi (1953: 117 f. 61) agrees in several respects. It has often a very pronounced nipple-like umbo; the gills may be strongly reduced or often completely lacking, rendering the hymenophore smooth; the cup has a pronounced tendency to turn up when the fruit-body matures; and the stalk is patently villose. This species may serve for the present as the link which attaches Peziza gibba to the agarics. Cyphella flos-albus Velen., q.v., is apparently another species from this group, if not conspecific with Peziza gibba.

The correct position of species like My cena crispula is not easy to determine. This is not the place to discuss extensively the generic position of such species, among which I would tentatively include Peziza gibba. Modern authors are far from unanimous on this point and place My cena crispula in My cena (A. H. Smith, 1947: 87), Delicatula Fayod (Kühner & Romagnesi, 1953: 117), Marasmi ellus Murrill\(^\text{14}\), and Omphalia (Fr.) Kummer = Omphalina Quél. (Josserand, 1937: 92). Wherever it

\(^{13}\) What Rea (1927: 217) described under the name Omphalia gibba may not be the same species and appears more typically 'mycenoid': he describes the cap as plane with a gibbous centre and borrows the qualification—"villose and soon becoming depressed" from Patouillard.

\(^{14}\) Singer (1951: 298) places My cena crispula as Marasmi ellus crispulus (Quél.) Sing. in Marasmi ellus sect. Candidi (Kühner) Sing. subsect. Hirsut i (Kühner) Sing. (name not validly published). I would recognize a section here:

My cena sect. Hirs utae (Kühner) ex Donk, nov. sect.


Affinis Mycenae sectioni Candidae Kühner, sed minuscula, pilo stipitique pilis distinctis longis patentibus dense villosa conspicua. Lamellae satis horizontales, saepe arcuato-concavae, deinde frequenter decurrentes, saepe angustae vel venas simulantes vel omnino absentes. Hymenium cystidiis destitutum.

Typus sectionis.—My cena mauretanica (Maire) Kühner.

Examples.—See Kühner, I.c. Additional species seem to be Helotium hirsutum Tode and Peziza gibba A. & S.
will go, it should be remembered that *Peziza gibba* may follow, and, if so, that the latter is the type of the earlier name *Perona* Pers. (1825).\footnote{Donk (1949: 325-326) concluded that *Perona* Pers. was illegitimate in view of an earlier homonym, *Peronia* [Delar. in] Red. 1812, and, therefore, withdrew an earlier proposal to conserve *Omphalina* Quél. [the 'correct' name for *Omphalia* (Fr.) Kummer] against *Perona* Pers. However, Rogers (1950: 28-29) thinks that there is no question of homonymy in this case. In view of another remark by Rogers, it may be pointed out that *Peziza gibba* was included in *Omphalia* by Patouillard and that it falls within *Omphalia* Sect. *Integrellae* (Fr.) Quél. if that genus is used in the Friesian sense. The correct name for *Perona* Pers. now appears to be *Helotium* Tode per Fr., but as I will discuss in a forthcoming note, that name, as one given to a basidiomycetous genus, is better rejected in favour of the name of a discomycetous genus *Helotium*. This would bring *Perona* Pers. into prominence once more, if it is to be held legitimate.}

Quélet (1886: 216) listed *Cyphella abieticola* P. Karst. as a synonym of *Cyphella infundibuliformis*. This is evidently an error. Under *Peziza tubaeformis* Wallr. its author (Wallroth, 1833: 492) cited *Helotium gibbum* as a synonym (with a note of interrogation). The two fungi seem to be widely different; *P. tubaeformis* may belong to *Calyptella*.

glaucus. — For *Leptotus glaucus* (Batsch per Fr.) Maire, see under *Leptoglossum* (p. 42).


The type appears to represent an inoperculate discomycete and Dennis & Reid (l.c.) have referred it to the genus *Dasyscyphus* S. F. Gray.


This was listed as a synonym (variant) of *Peziza villosa* Pers. by Sprengel (1827-505). For a description and discussion of this inoperculate discomycete, see Dennis (l.c.).

hydnoideus. — *Porotheleum hydnoideum* Berk. in Grevillea 1: 70. 1872.

The description reads rather like one of *Odontia sudans* (A. & S. per Fr.) Bres. = *Dacryobolus sudans* (A. & S. per Fr.) Fr. See also discussion under *Dabryobolus* Fr. (p. 41).

infundibuliformis. — For *Cyphella infundibuliformis* Fr., see *Peziza gibba* A. & S.

Not known to modern authors. The original account calls to mind *Leptoglossum bryophilum* (Pers. per Fr.) Ricken as recently described by Kühner (apud Kühner & Romagnesi, 1954: 77 f. 1), but it differs in being smaller, in growing on rotten wood (instead of on living mosses), and in having, presumably, more constant and better developed gills. I would rather exclude it from the ‘Cyphellaceae’ as an agaric species.


This is in any case not a *Porotheleum = Stromatoscypha*. The very short description suggests some species of the Corticiaceae, perhaps a papillose form of *Corticium lividum* (Pers. per Fr.) Fr. = *Phlebia livida* (Pers. per Fr.) Bres.


*Thelephora laxa* has been cited as a synonym of *Corticium amorphum* (Pers. per Purt.) Fr. = *Aleurodiscus amorphus* (Pers. per Purt.) J. Schroet. by Fries (1874: 648; with a point of interrogation) and Saccardo (1888: 606). The description suggests this species, but examination of the type leads to a different conclusion.

The original description (Persoon, 1822: 143) indicated the type locality as, “Hab. in summitatibus montium Vogesiorum.” The specimen indicated above as type agrees very closely with the original description and was found by Mougeot, which means, in the Vosges. Looking at the specimen with a low-power lens, one can easily understand why Persoon stated, “Affinitatem habere videtur cum Peziza amora.” However, microscopical examination showed it to belong to *Corticium evolvens* (Fr. per F.) Fr. = *C. laeve* (Pers. per Fr.) Fr. Bresadola (apud Saccardo & Bresadola, 1900: 427) had already come to that conclusion when he referred *Thelephora laxa* as “status juvenilis” to “*Corticium leve* Pers. non. Fr.”

Another specimen (L 910.267–608) also sent in by Mougeot was annotated by Persoon himself as “[*Thelephora*] laxa? an fungus bene evolutus?” It shows *Peniophora polygonia* (Pers. per Fr.) Bourd. & G. = *Cryptochaete polygonia* (Pers. per Fr.) P. Karst. A third specimen (L 910.267–65) annotated in Persoon’s handwriting, “Prope Párisios. / *Thelephora? laxa*” does not now yield anything he could have had in mind.


Keissler listed these names as synonyms of *Chlorocyphella aeruginascens* (P. Karst.) Keissl. See also under *Chlorocyphella* (p. 40).


For this species, see under *Leptoglossum* (p. 42).

An imperfectly known species. The fungus that Sommerfelt named *Merulius muscorum* was referred to *Cyphella galeata* (Schum. *per* Fr.) Fr. by Fries (1838: 568). Velenovsky's interpretation is not accessible to me because of the Czech description. The original fungus was described as "gelatinosus" and might be a discomycete; I am unable to make a more precise suggestion.


Fries (I.c.) referred this to *Peziza alboviolascens* A. & S. = *Lachnellia alboviolascens* (A. & S. *per* Pers.) Fr., but neither Schumacher's original description nor his figure published much later by Hornemann support such a disposition. Evidently we are dealing here with some discomycete; the name has not been taken up or listed as a synonym in authoritative modern literature.


This was listed by Sprengel (1827: 505) as a synonym (variety) of *Peziza villosa* Pers. For a redescription of this inoperculate discomycete, see Boudier (I.c.).


Lloyd (1917: 740) attributed this to *Porotheleum fimbriatum* (Pers. *per* Fr.) Fr. = *Stromatocytha fimbriatum* (Pers. *per* Fr.) Donk as its young papillate condition (whatever that may mean). However, Peck's description (Saccardo, 1888: 422) contains, "... tenuissimum, ... subceraceum ..., margine subindeterminato; verrucis minutis, subdistantibus, ... globulo hyalino umbrito coronatis." Hence it would seem that this is again *Odontia sudans* (A. & S. *per* Fr.) Bres. = *Dacryobolus sudans* (A. & S. *per* Fr.) Fr., a species repeatedly confused with *Porotheleum*; see also discussion under *Dacryobolus* Fr. (p. 41). W. B. Cooke (1957: 684, 685) indicates that he saw the type and lists Peck's species under *Porotheleum fimbriatum* without explaining why such big discrepancies exist between the original description and the type material. As long as this has not been done, it would seem advisable again to dissociate *P. papillatum* from *P. fimbriatum*. 
patens. — Cyphella patens A. L. Sm. in J. Linn. Soc., Lond. (Bot.) 35: 10 pl. 1 fs. 6–8. 1891.

There are gills present ("... lamellis paucis angustis lamelliformis instructis..."). The spores are given as 'minute asperulis'. The fruit-body is spathulate and laterally produced from a stalk-like base. Apparently an agaric species, but I am unable to make a suggestion regarding the genus.


Except for the 'disc', which may have been either destroyed or not attentively studied ("... discum profunde excavatum laevem pallentem cingens"), the original description gives a sufficiently clear picture of the species that has been called Sphaeria pocula Torrey ex Fr. = Polyporus pocula (Torrey ex Fr.) Berk. & C. and the correct name of which would appear to be Porodiscus pendulus (Fr.) Murrill (Polyporaceae).

pteridophilus. — For Cyphella pteridophila Sacc., see Cyphella fili(ci)cola Cooke.

pteridophyta. — See 'pteridophilus'.


Fries (1828: 184) thought this variety to be a form of Thelephora flocculenta Fr., which in my opinion (see above) is in its turn a mere form of Corticium evolvens (Fr. per F.) Fr. The original description is sufficiently detailed for us to reject this identification, but I am unable to suggest an alternative, although I would exclude it in any case from the 'Cyphellaceae' as currently understood.


Referred to, and redescribed as a species of, Marasmius Fr. by Dennis & Reid (1957: 290 fs. 4–6).


This species was referred to *Cyphella* by the Tulasne brothers (op. cit., p. 173/159): “... *Peziza pulveracea* Alb. & Schw. ... is by no means an ascomycete, but a hymenomycete and a true *Cyphella*, as we have determined after examining the specimens met with in the Ardennes by Montagne, and now contained in Desmazières’ herbarium, and also the exactly similar specimens which the master of Lille himself published in his Fl. Crypt. France, ed. 1, fasc. XIII, 1833, no. 605 (under the name *Peziza*).”—Grove’s translation.

However, modern mycology thinks that the original fungus is a discomycete most recently described by Dennis (I.e.) von Hohnel (op. cit. p. 338) studied Desmazieres’s distribution cited by the Tulasnes and found it to represent a discomycete which he identified with *Peziza pulveracea* A. & S.

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See under ‘sarcoides’.

**rugosus.** — *Porotheleum rugosum* Berk. in Hook. J. Bot. 3: 237 pl. 9 f. 2. 1856.

According to Lloyd (1917: 740) the species Berkeley described as “*Porotheleum rugosum* and *Porotheleum variabile* [originally described as *Polyergus variabilis* Berk.!] from Brazil are *Polyergus* with pustular pore mouths, closer to *Polyergus lucidus* than to *Porotheleum*.” Similar or identical conclusions had previously been published. Patouillard (1894: 75) transferred both species to *Ganoderma* P. Karst. (giving *Porotheleum rugosum* the new name *Ganoderma sprucei* Pat. because the combination *Ganoderma rugosum* already existed), while Wakefield (1934: 243) referred *Polyergus variabile* to *Amauroderma* Murrill. Recently W. B. Cooke (1957: 686) has retained *Porotheleum rugosum* as a true *Porotheleum* (subgen. *Porotheleum!*); he indicates that he has seen [a portion of] the type and describes the spores as “hyaline to yellow, globose, apiculate, minutely verrucose, 7-10.5 μ diameter”, and the fructifications as “pileate, sessile, ... surface with a crust ...”. If he had taken the trouble to look up the original publication, which he cites, he would have found the description and figure of a laterally stalked polypore with a stem as much as 6.5 cm long and a cap about 7.8 cm across. Hardly a typical *Stromatoscypha* one would conclude.


A common species around Tjibodas and elsewhere in West Java (Indonesia) with centrally and ventrally stalked cap; it drifted into the genus *Cyphella* through
a complete misunderstanding of its characters. It belongs to *Van-Romburghia* Holterm., a remarkable agaric genus with smooth or somewhat veined hymenophore. For a description of the species, see Boedijn (l.c.).

*sanguineus.* — For *Thelephora cruenta* var. *sanguinea* A. & S., see under *Thelephora cruenta*.


Misapplication.—*Thelephora cruenta* Pers. per Fr. sensu Fr., Syst. mycol. 1: 444. 1821.

Type.—Sweden, Femsjö (hb. Fr.-UPS).

*Corticium sarcoides* had dropped out of circulation when W. B. Cooke (1951: 204) revived it in an application for which he does not present any foundation. The elaborate original account points in the direction of *Corticium evolvens* (Fr. per Fr.) Fr. = *C. laeve* (Pers. per Fr.) Fr. In this connection attention may be drawn to Fries's closing remark, "Varietas tota effusa resupinata subimmarginata difficilius agnoscitur, sed certe huc pertinet." In Uppsala there are two collections of which one ("*Corticium sarcoides* Fr. / Femsjö") is considered type and one was communicated by Blytt; both were studied by Bresadola. According to Egeland (1912: 374) there are also a number of specimens in the herbarium at Oslo named *Corticium sarcoides* by Fries; 'most of the specimens (if not all)' belong to *Corticium evolvens*. This conclusion agrees with Bresadola's about the specimens at Uppsala. All in all there is sufficient evidence to dispose of *Corticium sarcoides* as a synonym of *Corticium evolvens*. It is in any case extremely improbable that it would be a species of *Cytidia* in the sense used by Cooke, or the species he describes under the name of *Cytidia sarcoides*.

Fide Fries (1828: 185) *Thelephora cruenta* var. *roseo-rubra* A. & S. ("var. β. A. S. p. 277.") is *Thelephora sarcoides*; this may or may not be correct.


Fries (1838: 503) referred this fungus to *Porotheleum fimbriatum* (Pers. per Fr.) Fr. = *Stromatoscypha fimbriatum* (Pers. per Fr.) Donk, as a primordial, sterile state, that is, as a state in which the stroma has not yet developed any cups. No doubt Sowerby described some sterile mycelium, but hardly of the present species. I have never seen a specimen of *Stromatoscypha fimbriatum* of the size depicted by Sowerby that had remained completely devoid of cups.


The original description and the more extensive account by Stevenson (l.c.)
apply well to *Odontia sudans* (A. & S. per Fr.) Bres. = *Dacryobolus sudans* (A. & S. per Fr.) Fr., and Lloyd (1917: 741), Wakefield (*apud* Rea, 1922: 645), and Reid (1957: 134) have referred this fungus to that species. See also under *Dacryobolus* Fr. (p. 41).


von Höhnel (l.c.) assumed that Hennings had described the spores erroneously as subglobose, 3–4 μ and he redescribed the species on examination of additional material. He concluded that the species evidently formed a link with “*Laschia*”. A portion of the type collection (Ule 570, BRSL) which yielded no spores represents the genus *Favolaschia* (see p. 42). It seems to come close to (but is not identical with) *Favolaschia saccharina* Pat. and some other species, like *F. varariotecta* Sing, and *F. singeriana* Dennis (for descriptions, see Singer, 1945: 203, and Dennis, 1952: 328). The name *Favolaschia subceracea* (P. Henn.) Donk, *comb. nov.* is proposed. A few microscopical notes on the type follow:

Externally, the fruit-body bears two elements: (i) appressed, elongate, coloured bodies apparently the hardened, often broken, and corrugated contents of gloecystidia, —250 × 9.5–14 μ, which cause a minute, spaced striolation on the outside; and (ii) variable cells, ovoid, ellipsoid, pear-shaped, clavate, and the like, perpendicular to the surface, wholly covered by short, hair-like projections, about 12–46(–65) × 9–14 μ, and especially copious and crowded on young fruit-bodies. Hymenium not yielding spore-producing basidia, containing gloecystidia which are very variable in shape, enclosed or protruding, often present in large numbers. Spores not observed.

**subcyaneus.** — *Cyphella subcyanea* Ell. & Ev. in *J. Mycol.* 2: 37. 1886.

Farlow (*apud* Burt, 1914: 381) identified this with *Heterothecium augustinii* Tuckerm. (Lichenes). Fide Santesson (1952: 50, 537) = *Pyrenotrichum splitgerberi* Mont. See also under *Chlorocyphella* (p. 40).

**subtilis.** — *Boletus subtilis* Schrad., *Spic. Fl. germ.* 173 pl. 3 f. 2. 1794 (devalidated name). — *Polyporus subtilis* (Schrad.) Fr., *Obs. mycol.* 1: 129. 1815 (devalidated name). — *Polyporus (Porotheleum) subtilis* (Schrad.) *per* Fr., *Syst. mycol.* 1: 506. 1821. — *Porotheleum subtile* (Schrad. *per* Fr.), *Syst. mycol.* 3 (Ind.): 150. 1832; *Epicr.* 504. 1838. — *Poria subtilis* (Schrad. *per* Fr.) *Bres. in* *Atti Accad. Agiati* III 3: 88. 1897.

Fries (ll.c.c.) referred this species to *Porotheleum*, but there is little in Schrader's original account to support this interpretation. Bresadola (l.c.) identified it with the species that is now often known as *Poria candidissima* (Schw.) Cooke = *Cristella candidissima* (Schw.) Donk *apud* W. B. Cooke, which is a far more likely disposition.

18 Singer calls similar cells 'dendrophyses' (cf. 1945: *text-pl.* 3 f. 9) which is somewhat confusing.
subtropicus. — For Chlorocyphella subtropica Speg., see under Chlorocyphella Speg. (p. 40).


Peziza sulphurea Batsch was based on a single fruit-body depicted by its author. The figures, showing a disk-shaped (rather than a bell-shaped) cup on a relatively long stalk which becomes wider towards the cup, are reminiscent not of a species of Calypella, but rather of some kind of discomycete. Dr. J. A. Nannfeldt kindly stated as his opinion (personal communication) that, "Peziza sulphurea Batsch (n. CXLVI) is clearly an inoperculate discomycete, perhaps Helotium ex aff. herbarum or Belonioscypha Campanula."

When Fries (l.c.) restored Batsch's name as Cyphella sulphurea, he used it as the correct name for what he had previously called Peziza campanula C. Nees, reducing the latter name to a synonym. Nees's species has been variously interpreted, usually as a species of Belonioscypha Rehm, an inoperculate discomycette, but also as a species referable to Calypella; see page 48. Later authors have applied the name Cyphella sulphurea to yellow forms of, or resembling, Calypella capula (Holmskj. per Pers.) Qué., thus to forms that more closely agree with Nees's figure than with Batsch's. The uses of Batsch's name for them are evidently misapplications, and the various forms called Cyphella sulphurea will have to be treated in a different way. A discussion on this subject is reserved for a further occasion.


This species has dropped out from modern floras and monographs. Several features indicated in the original description, like "... consistence ... fragile, un peu gélatineuse; ... couleur noire en dessus, et un peu moins obscure en dessous; ... diamètre ... d'un centimètre environ; ... marqué en dessous de veins proéminentes inégales, qui rayonnent du centre ... sur les vieilles planches pourries ...", strongly suggest some species of Resupinatus (C. Nees) per S. F. Gray, and I would exclude it from the 'Cyphellaceae' in any case as being evidently agaric. It would seem that Fries (1828: 56) reached a somewhat similar conclusion, "[Cantharellus tenellus] et C. cupularis sunt potius Agarici macilenti, ab A[garico] striatulo haud longe distantes."
tremulus. — *Leptotus tremulus* (Schaeff. per Fr.) Sing. in Lilloa 22: 735. “1949” [1951]. For this species, see under *Leptoglossum* (p. 42).


This was incorrectly referred by Secretan (1833: 164) to *Polyergus fimbriatus supinus* Secr. = *Porotheleum fimbriatum* (Pers. per Fr.) Fr. = *Stromatoscypha fimbriatum* (Pers. per Fr.) Donk. As far as can be judged from the too short original description this is a species of *Poria* Pers. per S. F. Gray *sensu lato*, but it is difficult to be more precise. Fries (1821: 381) referred the fungus to *Polyergus vulgaris*.

umbonatus. — For “H[elotium] umbonatum A. S.”, see under *Peziza gibba* A. & S.


The original description (accompanying a figure) merely runs, “sessilis, urceolata cinerea, extus pilosiuscula”; the habitat is stated to be “In segmentis ligneis, putridis.” The whole account, inclusive of the figure, is in my opinion insufficient to settle the identity of the fungus that Vahl described.

As interpreted by Fries on examination of a (preserved) specimen received from Wallroth, the fungus would be a species congeneric with *Solenia poriaeformis* (Pers. per Merat) Fuck., but differing, *inter alia*, in having its fruit-bodies scattered. Later Wallroth named his fungus *Peziza aleuritica* Wallr. Since I consider *Peziza urceolata* in its original sense as indeterminate, I will take up Wallroth’s name for *Solenia urceolata* sensu Fries.

vaillantii. — *Boletus vaillantii* DC., Fl. franç. 5: 38. 1815 (devalidated name).


The transfer of this species to *Porotheleum* by Quélet (l.c.) is certainly due to an erroneous conception either of the species or of the generic character of *Porotheleum* since the species is undoubtedly a resupinate polypore belonging to the artificial genus *Poria* Pers. per S. F. Gray *sensu lato*.

W. B. Cooke (1957: 684) still includes *Porotheleum vaillantii* (DC. per Fr.) Quél. as a synonym of *Porotheleum fimbriatum* (Pers. per Fr.) Fr. = *Stromatoscypha fimbriatum* (Pers. per Fr.) Donk. From Quélet’s fuller description (1888: 427) I would conclude
that he was describing young fruit-bodies of *Poria vaillantii*: "Membraneux, tenu, translucide... et muni de cordonnets rhizomorphes tres longs... Sur le bois, les briques, la terre." Quélet merely referred the fungus to the wrong genus when he placed it in *Porotheleum*.

*variabilis.* — For *Chaetocypha variabilis* Corda, see under *Chaetocypha* Corda (p. 40).

*variabilis.* — *Porotheleum variabile* (Berk.) Lloyd, Mycol. Notes 5: 740. 1917 (not definitely accepted by publishing author). For this species of polypores, see page 60.

*villosus.* — For *Trabecularia villosa* Bon., see under *Trabecularia* Bon. (p. 45).

### 4.—The Aleurodiscoid Species

It is not my intention to discuss *Aleurodiscus* here from another point of view but its cyphelloid members; all resupinate species will be kept out of consideration. To limit the subject still more, attention will be paid only to the type species of *Aleurodiscus* and to those species that are not yet unanimously admitted to the genus.\(^{17}\) The species I have in mind are:

(i) *Cyphella digitalis* (A. & S.) per Fr., type species of the name *Cyphella*.

(ii) *Cyphella vitellina* (Lév.) Pat., type species of the name *Gloeosoma*.

(iii) *Cytidia hakgallae* (Berk. & Br.) G. W. Mart., type species of the name *Gloeocystis*; it is currently identified with *Cytidia cornea* Lloyd.

(iv) *Cytidia magnispora* (Burt) Welden.

The main issue in connection with these species is, whether *Aleurodiscus* should be broadly conceived or be broken up into a long series of small genera. If one attributes generic significance to variations in shape and in consistency of the fruit-body, the number of genera could be much increased, and if one emphasizes, in addition, the various types of sterile hymenial elements, the multiplication of genera could be made really spectacular. It would seem that in delimitating *Aleurodiscus* other standards ought to be accepted than those employed elsewhere in the resupinate and cyphelloid groups. The solution of this problem cannot be given by taking into account only the above species: full consideration of the whole range of species of *Aleurodiscus* will be necessary, which leads to the confession that the generic limits of *Aleurodiscus* against several resupinate genera have not yet been sufficiently cleared. In short, the solution of the problem has to wait and in the meantime a simple disposition of the above mentioned cyphelloid species is wanted; this, in my opinion, means, inclusion in *Aleurodiscus*.

To me a corticioid or cyphelloid species of hymenomycetes that has enormous, globular spores, with amyloid walls is a good species of *Aleurodiscus*. This provides

\(^{17}\) Two other species originally described as belonging to *Cyphella* but now referred to *Aleurodiscus* will be mentioned at the end of this chapter.
for the transfer of species (ii). The case of (i) and (iii) is less clear: they have the enormous spores and some other sporal characters required for a typical species of *Aleurodiscus*, but on the other hand the spore wall is not amyloid and, moreover, notable sterile elements between the basidia are absent in (i). Yet basidia and spores are so clearly 'aleurodiscoid' that I have decided to include them with the other species. It may be remembered that also among the non-cyphelloid species of *Aleurodiscus* one or two species with non-amyloid spores are included.

If one accepts the conclusion that the type species of *Cyphella* (*C. digitalis*) is so closely related to the type species of *Aleurodiscus* that they are congeneric, then it should be remembered that it has been decided to conserve *Aleurodiscus* against *Cyphella*.

**ALEURODISCUS** Rab. ex J. Schroet. 18, 19


18 The Code (1956: 209) credits "Cooke, Grevillea 3: 136. 1875" with the valid publication of this name which is an error still to be corrected (cf. Donk, 1951: 206). Other uses of the generic name *Aleurodiscus* before Cooke's first use and Schroeter's are by Cooke (1875: 172) and Saccardo, Mycoth. veneta No. 727. 1876 (n.v.; cf. Saccardo, 1877: 101), in specific combinations, again without an accompanying generic description.

19 The following synonymy is related only to the type and the cyphelloid species to be discussed below.
DESCRIPTION.—Patouillard, Essai taxon. Hym. 52. 1900.


ALEURODISCUS AMORPHUS (Pers. per Purt.: Fr.) J. Schroet.


The specimen indicated above as type (L 910.267–343) is labelled in Persoon’s own handwriting, “Thelephora amorpha Fries El. 183 / Peziza Pers. Syn. p. 657.” Another specimen in Persoon’s herbarium is labelled, “Peziza amorpha. Pers. Syn. 657. Natura aut substantia Theleph., forma Pezizae. / in cortice abietis / Thelephora amorpha Fr. El. fung. p. 183”, all in Persoon’s handwriting except the words “Peziza . . . in cortice abietis”, which were written by Mougeot. Both specimens represent the fungus now universally associated with the name Peziza amorpha and its isonyms. The species was distributed by Mougeot & Nestler, Stirpes Crypt. vogeso-rhenanae, Fasc. 4: No. 398. 1813 as Peziza amorpha (n.v.), evidently after Persoon had so named the specimen Mougeot had sent him. Fries got acquainted with the species through material he received from the ‘Alps’ from Mougeot.

For Thelephora laxa Pers., see page 57.

ALEURODISCUS DIGITALIS (A. & S. per Pers.: Fr.) Donk


**Type Locality.—Germany, Oberlausitz.


The alternative disposition to placing this species in *Aleurodiscus* is keeping it apart in a small genus of its own, which would be characterized by its thimble-shaped, short-stalked, membranous and non-gelatinous fruit-body, the big basidia which form a hymenium lacking noticeable sterile elements, and the voluminous, smooth, non-amyloid spores, a combination of features that would differentiate it from *Gloeosoma (Aleurodiscus vitellinus)* and *Aleurocystis (Aleurodiscus hakgallae)*. Both have gelatinous fruit-bodies and characteristic sterile elements between the basidia (lamprocystidia, or 'metuloids', in *Aleurocystis*).

**Aleurodiscus magnisporus** (Burt) Donk, *comb. nov.*


**Description & Illustration.—**Welden in Mycologia 50: 305 f. 2. 1958 (*Cytidia*).


**Specimen Examined.—**Portion of type (hb. Bourd., as *Cytidia magnispora*).

**Aleurodiscus hakgallae** (Berk. & Br.) Donk, *comb. nov.*


Donk: Cyphellaceae—I

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Specimen examined.—Type of Cyttidia cornea, comm. Lloyd 154, hb. Bourd. 18.242.

Aleoaeurus vitellinus (Lév.) Pat.


Specimens examined.—Type; Chile (PC).

Cyphella australiensis Cooke

Cyphella australiensis Cooke in Grevillea 20: 9. 1891.

Type (only original specimen).—Australia, Melbourne (S. Berggren 378).

Cunningham (1953a: 277) reports that the type is a specimen of an immature Aleurodiscus. He gives no further information. Compare also page 108.

Aleurodiscus australiensis (Cooke & Phill. apud Cooke) G. Cunn.


**DESCRIPTION.**—Cunningham in Trans. roy. Soc. New Zealand 84: 254 f. 7. 1956 (*Aleurodiscus*).

**TYPE** (only original specimen).—New Zealand, Otago, Winton (S. Berggren 230, K).

5. **Cytidia** Quël.


*Corticium* [sect.?] *Marginata* Fr., Monogr. Hym. 2: 262. 1863 (nomem nudum). — Lectotype: *Corticium salicinum* (Fr.) Fr.


Fruit-body cup-shaped at first, becoming expanded and more or less appressed to substratum with margin upturned when dry, often becoming irregular in outline, often confluent, rather large (−15 mm in diameter); outside somewhat silky, becoming naked; inside blood-red, with low blunt warts towards centre, drying somewhat wrinkled; substance rather thick-membranous, tough-gelatinous, monomitic. Hyphae with strongly gelatinized wall; clamp-connections present. Basidial region (hyphal hymenium) consisting of simple or branched hyphal terminations and basidia; the latter originating deep in this region, at first vesicular, than considerably elongating, finally projecting, long-clavate, flexuous, relatively slender; sterigmata 2−4, strongly curved. Spores cylindrical, curved, rather long (10−18 μ), colourless, with smooth, non-amyloid wall (in the type species).

On branches. Temperate Europe and North America.

**MONOTYPE.**—*Cytidia rutilans* Pers. litt. ad Mougeot” ex Quël. = *Corticium salicinum* (Fr.) Fr. = *Cytidia salicina* (Fr.) Burt.

**EXAMPLES.**—Personally I know one species (*C. salicina*) that belongs here. Other species that seem to answer the above generic description are *Cytidia patelliformis* (Burt) Welden in Mycologa 50: 304 f. 1. 1958 and, perhaps, *Cytidia sarcoïdes* (Fr.) Herter sensu W. B. Cooke (spores ovoid) and *Cytidia stereoides* W. B. Cooke (spores cylindric, 18−22 μ long).

*Cytidia* is among the finest examples of genera with a hyphal hymenium (cf. Donk, 1957b: 4), viz. with a hymenial region composed of sterile, more or less modified hyphal elements (hyphidia) and basidia of deep origin. The hyphidia are in this case more or less branched and may perhaps be termed dendrohyphidia. The basidia-initials develop in the deeper portions of the hymenial region and have to elongate considerably to reach, and project beyond, the surface and to produce their spores.
This situation clearly distinguishes Cytidia from Auriculariopsis Maire (p. 76). It also suggests that the genus may be related with other genera characterized by hyphidial hymenia, or in which such hymenia may be encountered, like Vuilleminia Maire (fruit-body strictly resupinate) and Aleurodiscus. I can see no reason widely to separate Cytidia from these two genera and believe that it should tentatively be classed with these at least in the same family, viz. Corticiaceae.

W. B. Cooke's generic description (1951: 201) of Cytidia runs: —

"Receptacles coriaceous to fleshy-gelatinous, cup-shaped, sessile, attached at a central point, scattered or crowded, often confluent; hymenium even at first, becoming somewhat wrinkled or veined in some cases; basidia simple; spores hyaline to yellowish, amyloid in Melzer's reagent."

This definition invites some comments. First, in most species referred here by Cooke, the fresh or re-soaked fruit-bodies are disk-shaped, flat, completely appressed to the substratum (rather than cup-shaped): it is often only after drying that they become more or less disk- to cup-shaped. Secondly, the introduction of the word 'coriaceous' is a deviation from the current conception: compare Bourdot & Galzin (1928: 145), "charnus céracés subgelatineux". In an artificial genus like Cooke's Cytidia, not insisting upon 'fleshy-gelatinous' would open the door for many other species. In fact, one wonders why Cooke has not entered the species with more or less cuculate fruit-bodies that are still retained in Corticium Fr. Thirdly, the spores are amyloid perhaps in only one or two species of Cooke's conception; for instance Corticium hakgallae and such European species as Cytidia salicina and Cyphella ampla positively have non-amyloid spores! Finally, there is nothing in Cooke's diagnosis that would exclude the disk- or cup-shaped species of Aleurodiscus; in fact, it fits those species well. Under these circumstances it is not surprising that Cooke lists Gloeosoma as a synonym of Cytidia, however, without any mention of its only species, which is close to, if not congeneric with, Aleurodiscus.

To get a more natural genus than Cooke's it will be necessary to exclude such taxa as are obviously aleurodiscoid, like Gloeosoma, and Corticium hakgallae and Stereum magnisporum Burt. These species have big to exceptionally big basidia (very broad in their apical portion) and voluminous, often amyloid spores and, hence, are considered to belong to Aleurodiscus in this paper (p. 66). Moreover, all species with euhymentia (superficial basidia-initials) should apparently also be removed: see Auriculariopsis (p. 76). This does not mean that Cytidia would become a homogeneous group; further studies will have to decide in this matter.

All and all together, with my actual knowledge of this group only a few typical species remain; of these I have studied only Cytidia salicina.

Historical.—A small series of species has been bothering mycologists for a long time as to the systematic position of its members: are these to be assigned to Corticium Fr. and related genera or are they to be placed near Cyphella (originally Peziza L.), or in current terms, are they Corticiaceae or Cyphellaceae?

The group I have in mind is the one Fries (1821: 441) first called Thelephora trib.
Resupinatus A. R[esupinati] spurii group * (that is, species 1–3). Its contents: Thelephora evolvens Fr. per Fr., T. salicina Fr., T. quercina Pers. per Fr. Some years afterwards (Fries, 1828: 169, 180) the group was called Thelephora trib. Apus C. Auricularia †† Cartilagineae (“Subcartilagineae ceraceaeve” on page 180) group *Ceraceae, molles, extus villosae pallidiores. Notable additions to the contents: Peziza amorpha Pers. (included with misgivings), Thelephora flocculenta Fr., T. sarcoides Fr. Still later the group reappears as Corticium trib. Apus ** E cupulari expansa (Fries, 1838: 558), which Fries eventually called Corticium I. Lomatia Fr. It finally included (Fries, 1874: 646; European species only), in the order given, the following species:

(i) Corticium evolvens (Fr. per Fr.) Fr., a species which had evolved from “junior subrotunda clausa, dein evolvens subcupulaeformis” (Fries. 1818: 154) to “resupinatum, marginatum I. effuso-reflexum” (Fries, 1874: 646). This name Fries reserved for the not completely resupinate specimens of the fungus that is now often called Corticium evolvens, or Corticium laeve (Pers. per Fr.) Fr. (as described by Bourdot & Galzin, 1928: 183).

(ii) Corticium boltonii Fr., which will not be taken into further consideration here.

(iii) Corticium salicinum (Fr.) Fr., a well-known species which has also been called Cytidia rutilans (Pers.) ex Quél.

(iv) Corticium sarcoides (Fr.) Fr., which is separately discussed at some length elsewhere in this paper (p. 61).

(v) Corticium flocculentum (Fr.) Fr. This species has also been completely misunderstood: it seems referable to Corticium evolvens (see p. 53), rather than to Cyphella ampla.

(vi) Corticium versiforme (Fr.) Fr. This species has never been referred to the ‘Cyphellaceae’.

(vii) Corticium amorphum (Pers. per Purt.) Fr. This is the well-known species that currently is called Aleurodiscus amorphus (Pers. per Purt.) J. Schroet. (see p. 67).

(viii) Corticium juniperinum (Weinm. ex Fr.) Fr. This species has never been included in the ‘Cyphellaceae’.

(ix) Corticium populimum (Sommerf.) Fr. This is according to Bresadola (apud Egeland, 1912: 374) again Corticium laeve “Pers. non Fr.” (= Corticium evolvens. It has never been referred to the ‘Cyphellaceae’.

Corticium I. Lomatia was subsequently raised to generic rank by Karsten (I.c., 1889) as Lomatia (Fr.) P. Karst. of which he described only one Finnish species, viz. Corticium salicinum. It soon appeared that the name was preoccupied and it was changed into Lomatina P. Karst. As type species of Lomatia and its isonym Lomatina, as well as of the string of names preceding these two and mentioned above, Donk (1951: 215) selected Corticium salicinum.

From the above survey it appears that Fries included in Corticium I. Lomatia two species that have been referred to the ‘Cyphellaceae’ by a number of authors, viz. Corticium salicinum and C. amorphum. The first is type species of Lomatia = Lomatina, the second, of Aleurodiscus.

In the meantime Quélet (1888: 25) had based a genus Cytidia QuéL. on Cytidia
“rutilans Pers. litt. ad Moug.”, a name he took up to replace *Corticium salicinum* (which he cited as a synonym). His generic description includes “Spore sphérique”, and his specific one, “Spore sphérique (commo08)”, which, if correct, would make *Cytidia rutilans* a quite different species from *Corticium salicinum*. No doubt he committed an error: the indication, 'spores cylindrical, curved, 12–18 µ long' would have been correct. It is now currently agreed upon that *Cytidia* (1888) is an earlier available name for *Lomatina* (1892).

*Cytidia* has been taken up for a genus of gradually increasing contents. When von Höhnel & Litschauer (1908: 57, 61) added to the genus *Corticium flocculentum* (Fr.) Fr. (as conceived by them, that is, as identical with *Cyphella ampla* Lév.) it became heterogeneous. Later additions did not improve this situation.

Fries’s conception of the group he would afterwards call ‘Lomatia’ (1849: 336) shows that he did not consider it related to *Cyphella*: “Ab [Cyphella] clare different *Corticia* cupularia, hymenio ceraceo nec definite terram spectante.” Patouillard (1900: 54) was of a different opinion; he included *Cytidia* in his “Cyphellés”. He was followed, for instance by Pilát (1925c: 64). On the other hand, Killermann (1928: 142) referred the genus to the Thelephoraceae as a genus of the tribus Aleurodiscae.

**Cytidia salicina** (Fr.) Burt


*Type.* — Not known to be in existence.

*Specimens examined.* — “*Corticium salicinum* Fr. / Petrop.” (UPS, presumably sent by Weinmann, labelled in Fries’s own handwriting; cf. Fries, 1828: 186); also some specimens collected in Sweden, in Fries’s own herbarium labelled “*Corticium salicinum* Fr.” and apparently approved by him. In Persoon’s herbarium is a specimen labelled “*Thelephora salicina* Fr.” perhaps in Sommerfeldt’s handwriting.
Further about 80 collections (mainly UPS) from Sweden, Norway, Finland, Canada, and U.S.A.

The identity of Cytidia rutilans (Pers.) ex Quél. has already been discussed (p. 72-73).

Exidia cinnabarina Berk. & C. is apparently only a herbarium name given to a collection from the U.S.A. (New York, leg. Sartwell, M. A. Curtis 3464). A portion of it is at Uppsala and was annotated by Fries, “cfr. Corticium salicinum Fr.” This disposition has been adopted by Berkeley as cited above in the synonymy.

A wide-spread confusion of the species with Thelephora cruenta has occurred. This question will be found discussed in the present paper on page 49, where it is concluded that the type of Thelephora cruenta is identical with Hymenochaete mougeotii (Fr.) Cooke. Thelephora cruenta was first misapplied to the present species by von Albertini & von Schweinitz. They gave the first good description of Cytidia salicina, which they identified with Thelephora cruenta, typical form (“a. sanguinea”). This is rather a ‘northern’ species in Europe and North America. It is less frequent in Central Europe. No doubt it also occurs throughout Siberia. Most specimens I have seen were collected in the north of Sweden and Norway. Out of the about 80 collections examined only one collection was marked as found on Alnus sp., and one on Populus sp. In all other cases where the substratum was indicated, this appeared to be various species of Salix. W. B. Cooke also reports it from Prunus serotina. The species has also been found in New Zealand from where Cunningham (1956: 232) reports it from Populus, Salix, and Pyrus malus.

**Species of doubtful systematic position**

**Cyphella stictoides** Spec.

_Cyphella stictoides_ Spec. in An. Soc. cient. argentina 17: 80. 1884.


**Description.**—Spegazzini, l.c. (Saccardo, Syll. Fung. 6: 680. 1888). Almost mature basidia clavate, 42–60 × 8.5–11 μ; sterigmata not seen. Spores ellipsoid, with a slight tendency to be widest in basal half, somewhat flattened adaxially, colourless, smooth. A few irregular, somewhat club-shaped cells from outside seen; these are thin-walled, granular-incrusted. Context presumably rather gelatinous.

**Type-distribution.**—Paraguay, forest of Caá-guazu (Balansa 3506). Copies examined, PC, K.

The scanty notes given above were taken long ago from the copy at Paris (PC). No completely mature basidia were seen, but the rather broad apical portion of the nearly mature ones would seem to exclude a species of the Dacrymycetaceae. The few basidia as drawn in my manuscript-note also suggest that they formed part of a typical (and not a hyphidial) hymenium.

I suspect that _Cytidia wettsteinii_ Bres. is synonymous. It came from southern
Brazil, that is, from an adjacent region, and also grew on bamboo. There seems no basis for referring it to *Cytidia pezizoides* (Pat.) Pat. as was done by W. B. Cooke (1951: 207).

**Cytidia pezizoides** (Pat.) Pat.


**ILLUSTRATION.**—Patouillard, l.c., 1891 (*Corticium*) & l.c. 1900 (*Cytidia*).

Fruit-body —500 (or more) μ thick, round, more or less confluent, 1–4 mm in diam., closely appressed, margin darker (brownish), free, slightly recurved. Hyphae rather distinctly radially-parallel, at one side deflecting towards hymenium, with strongly gelatinous walls. Basidia arranged into a typical hymenium, when young (?) with strongly granular contents and resembling gloeocystidia, 45–60(-68) × 5.5–8.5 μ; sterigmata 2–4, 5–8 μ long. Spores ovoid-subellipsoid, adaxially flattened, colourless, smooth (6–)8–10 × 5–6 μ.


**Cytidia tremellosa** has been reduced to a synonym of *Cytidia pezizoides* (Pat.) Pat. (see above), described from Tonkin, by Martin (1942: 162, as a suggestion) and by W. B. Cooke (1951: 207). A careful re-examination of the types seems necessary: judging from my very incomplete notes I would not be surprised if the structure were more different than one would suspect from published descriptions.

**Cytidia simulans** Lloyd

In many ways a remarkable species (two kinds of basidiospores) collected once
in South Africa. From Talbot's description one would conclude that this species
has a typical hymenium (small, slender basidia), like Auriculariopsis. It is difficult
to see why it should be considered congeneric with Cytidia salicina.

Other species referred to Cytidia but not discussed in the present paper: —

6.—Auriculariopsis Maire


Fruit-body at first thimble- to cup-shaped, sessile, remaining so or usually
becoming rather flattened and often irregular in outline, up to rather large (~15 mm
in diameter); outside tomentose, whitish; inside flesh-coloured, becoming brown,
often radially veined. Substance rather thick-membranous, tough-gelatinous. Hyphae
densely arranged parallel to hymenium, with more or less gelatinized wall, forming
a dense layer below tomentum which is formed of loose, flexuous hyphae; clamp-
connections present. Basidia densely packed, clavate, forming a regular, somewhat
thickening palissade hymenium, about 30–35 × 4–5 μ, chiastic, 4-spored. Spores
cylindrical, slightly curved, medium-sized (8–12 μ long), colourless ("légèrement
tintées d'isabelle en masse"), in the type species according to Bourdot & Galzin);
wall smooth, non-amyloid.

On branches. Temperate Northern regions.

Monotype.—Cyphella ampla Lév.

Only species.—Auriculariopsis ampla (Lév.) Maire.

Auriculariopsis was introduced for a single species, viz. Cyphella ampla Lév., which
has an interesting history. Its subgelatinous tissue made it a troublesome species
to place. It was for some time referred to Auricularia Bull. Thus Fuckel called it
Auricularia syringae Fuck. Soon Quélet followed, with this difference that he recognized
it as Cyphella ampla and renamed it Auricularia leveillei Quél. on the transfer. Suggest-
ion soon played its tricks: Hennings (1896: 4–5) asserted of 'undisputable material'
of Auricularia leveillei that it "gehört zweifellos zur Gattung Auricularia; sie besitzt
die typischen geteilten und verzweigten Basidien, wie mir dies auch von Dr. A.
Möller, dem ich Exemplare ... zur Untersuchung mittelte, bestätigt worden ist!'"
This is an error: the basidia are undivided with apical sterigmata as was already
known to Léveillé ("basides tétraspores") and afterwards reported by Maire and
Bresadola (1903: 111, "basidia clavata, apice 4-sterigmatica"). Moreover, the
basidia are chiastic (apical and transversal mitoses) according to Maire (1902: 102
pl. 3 f. 22).20

When Maire studied Cyphella ampla he founded a special genus for it, Auriculariopsis
Maire, stating that the species "diffère de Cyphella par sa texture gelatineuse qui

20 Maire (1900: 123) originally stated that the spindle was directed along the length axis
of the basidium.
le fait ressembler à s'y méprendre aux Auricularia; comme ces derniers, il se racornit par la sécheresse et se gonfle par l'humidité." He did not compare it with Cytidia Quél. The inclusion in Lomatina = Cytidia was performed by von Höhnel & Litschauer, who thus fused two elements that mainly agreed in gross characters such as habit and context of the fruit-body.

There is no doubt, in my opinion, that the types of Cytidia (Corticium salicinum) and of Auriculariopsis do not belong in the same genus: the two species have an entirely different structure of the hymenium as has already been explained under Cytidia (p. 71). The relations of Auriculariopsis ampla are apparently also with the Corticiaceae, and with a quite different group, more in particular with Merulius Fr. sensu stricto and I have been tempted for a long time simply to merge Auriculariopsis into that genus, and am not yet quite convinced that keeping the two apart is preferable. In any case A. ampla may be distinguished from Merulius by its centrally attached fruit-bodies, free all around, and by its hymenophore which becomes radially veined rather than merulioid (with reticulately connected veins when dry). Several species of Merulius (like M. tremellosus Schrad. per Fr.) have about the same structure and consistency.

Other species which like A. ampla possess typical euhymenia have been placed in Cytidia. As far as I know them they are not congeneric, although they might have been appended here rather than in Cytidia until their taxonomic position be better understood.

AURICULARIOPSIS AMPLA (Lév.) Maire


Misapplications.—Corticium flocculimentum (Fr.) Fr. sensu J. Schroet. in Krypt.-Fl. Schles. 3


TYPE.—According to original account, France, near Paris (comm. E. Germain, PC); Neuilly (K).

The favourite hosts of Auriculariopsis ampla are various species of Populus on which it is found throughout Europe, temperate North America, and occasionally in New Zealand (where it has probably been introduced). In the Netherlands it is rather common in the dunes from Oost-Voorne to north of Haarlem. The species also occurs occasionally on other substrata, as Rubus (the Netherlands); Cunningham (1956: 233) reports it from New Zealand from Populus sp., Pyrus malus, and Salix babylonica, one collection on each of these hosts.

The above synonymy is on the whole well established. Of Cyphella ampla I have seen the type material. Of Cantharellus coemansii Rab. and Auricularia syringa Fuck. one or more copies of the type-distributions could be studied.

The type of Cyphella cyclas Cooke & Phill. (K) is an unmistakable specimen of the present species. The following note is taken from a letter by W. Phillips accompanying the specimen and contains some information omitted from the original description.

"...The exterior is coated with long white hairs rather matted. The hymenium is pale brown: there is an abundance of narrowly elliptic spores often curved, but I was not able to see any of these in situ. I concluded however these are the spores. The general outline [of the fruit-body] reminds one of the half of a bivalve shell laid flat on the wood . . . ."

7.—STROMATOSCYPHA Donk


Stromatoscypha Donk in Reinwardtia 1: 218. 1951 = Polyopus subgen. Porothelium (Fr.) per Fr.

Fruit-body consisting of numerous cups densely crowded on a common stroma. Cups globose, appearing closed then opening by an apical pore and becoming disk-to-cup-shaped, at first distinct from each other (as can be seen near margin of stroma in not too mature fruit-bodies) then coalescing and becoming irregular by mutual
pressure and further growth and together finally strongly simulating the hymenophore of some species of *Poriz;* outside of individual cups silky (by undifferentiated matted hyphal ends), white; hymenium smooth, even, yellowish; context rather floccose, not gelatinized, white. Stroma resupinate, membranous, rather tough, easily separable from substratum; margins more or less strongly byssoid to lacerate. Hyphae of stroma narrow, thick-walled, colourless, with clamp-connections; hyphae of cups parallel, thick-walled at outside and gradually thinner-walled towards hymenium; the outer hyphae not differentiated. Basidia short-clavate, rather small (15–25 μ long), 2–4 spored; sterigmata thin. Cystidia absent. Spores ellipsoid flattened at adaxial side, small (4–6 μ long); walls smooth, colourless, non-amyloid.

On rotten wood. Apparently of world-wide distribution.


*Example.*—*Stromatoscypha fimbriatum* (Pers. per Fr.) Donk.

As to the correct name for *Porotheleum* (Fr. per Fr.) Fr. (1825), it must be decided whether it is to be considered an (orthographically different) homonym of *Porotheleum* Eschw. (1824; *Lichenes*) or not. Donk (1951: 218) concluded that the Friesian name is indeed to be treated merely as an orthographical variant of the earlier lichen name, and is hence illegitimate as a later homonym. He replaced it by *Stromatoscypha* Donk. This conclusion was refuted by W. B. Cooke (1957: 682), who thought the two names to be “different” and hence considered *Stromatoscypha* superfluous. There is no doubt, first, that the two names differ (in one letter), and, secondly, that they were given to widely different genera. On the other hand, they seem not to fall among the examples of names not likely to be confused with different termination (Code 1956: Art. 75): the difference is hardly one of termination as in both cases the last syllable is —um. It still is my considered opinion that *Porotheleum* and *Porotheleum* fall within the category of names to be treated as orthographic variants, like *Astrostemma* and *Asterostemma,* *Pleuropetalum* and *Pleuropetalum,* *Columella* and *Columellia,* *Eschweilera* and *Eschweilera,* *Skytanthus* and *Scydanthus,* all examples added to Art. 75, the very same article invoked by Cooke (Code 1952: Art. 82).

In addition, it may be pointed out that from 1828, and in Fries’s own work from 1836, onwards until I discussed the question, the name has been spelt *Porotheleum,* with -i-, thus precisely the same as the lichen genus. This was done deliberately even by authors who knew the original spelling; for instance, Murrill (1916: 56) wrote “*Porotheleaceae*” but added, “The name of the genus on which this family is based was originally written *Porotheleum . . . , but was soon afterwards changed to the form now in current use.” This was apparently done because that form was considered the more correct one from an orthographic point of view. I am confident that I act in strict agreement with the Code when I take the fungus name *Porotheleum* as illegitimate and value it as a later, though orthographically slightly different, homonym.

*Stromatoscypha* is a very clear-cut and, as far as my knowledge goes, a monotypic
genus. It has been repeatedly enriched with species, but few of the additions can stand a really critical examination. Some essential characters for distinguishing the genus are: Fruit-body consisting of a membranous, resupinate 'stroma' bearing originally globular cups, the hymenium lining the inside of the cups; walls of cups not gelatinous; spores smooth, colourless.

The cups become very crowded towards the centre of a stroma and then simulate the tube-layer of *Poria* Pers. per S. F. Gray (*sensu lato*), but merely to dump the genus into *Poria* is an over-simplification that is not defensible by the mere argument that it is certain to be classed as *Poria* by collectors. A better solution is to tell the collector that after all he did not collect a species of *Poria*.

From some remarks scattered through the literature one might get the impression that the cup in *Stromatoscypha* is an originally closed (but hollow) globule which soon opens by an apical pore. Such a development would stamp the genus as a very remarkable one, destined to play an important rôle in phylogenetical speculations. However, I am convinced that the cups are open at the top from the start, although they pass through a stage in which the pore is hardly perceptible. The same phenomenon has been reported for the tubes of *Fistulina* (Lohwag & Follner, 1936).

It really is a bizarre procession of fungi that have found a place in the present genus. Several so-called species of *Porotheleum* represent the resupinate hydnaceous fungus *Odontia sudans* (A. & S. per Fr.) Bres. = *Dacryobolus sudans* (A. & S. per Fr.) Fr.: see under *Dacryobolus* Fr. (p. 41). The inclusion of a stalked species of polypores as a typical species of the present genus is discussed on page 60. There is more of this kind. The best policy seems to be to exclude all species previously attributed to the genus except *Stromatoscypha fimbriatum*, and to admit additional species only after they have stood a critical test.

A recent development is the introduction of *Solenia poriaeformis* (Pers. per Mérat) Fuck. by W. B. Cooke (1957: 688): it also has a 'stroma' on (or, rather, in) which numerous cups are seated. It must be emphasized from the start that Cooke's conception of this species is too inclusive: several of the synonyms he lists represent easily distinguishable species. One of the synonyms is *Stigmatolemma inanum* Kalchbr. This South African species as described by Talbot (1956: 479 f. 21) seems to come close to *Pezziza conspersa* Pers. (*Solenia grisella* Quél.) of Europe: it has similar, ellipsoid spores, quite different from the globose spores of *Solenia poriaeformis*. If *Stigmatolemma inanum* proves to have a gelatinous context like the other species mentioned, it should serve as the type species of a well-defined genus, *Stigmatolemma* Kalchbr. This genus would not only contain species with cups crowded on a common stroma (and which Cooke refers to *Porotheleum*), but also others with scattered cups not connected by any stroma (and which Cooke does not refer to *Porotheleum*). *Stigmatolemma* will be treated more fully on a future occasion. The genus clearly demonstrates not only

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21 I am not able to state an opinion about the new species recently described by W. B. Cooke (1957). — Collections from Java are hardly specifically different, but I have not yet gone into this matter carefully.
that a 'stroma' by it self is not sufficient to define a genus in the 'Cyphellaceae',
but also that the structure of the stroma should be taken into account.

**Stromatoscypha fimbriatum** (Pers. per Fr.) Donk


*Porotheleum lacerum* Fr., Obs. mycol. 2: 273. 1818 (devalidated name). — *Porotheleum lacerum* Fr. per Fr., Elench. 1: 125. 1828 & Syst. mycol. 5 (Ind.): 150. 1832 (nom. nudum?); Epicr. 503. 1838. — Type locality: Sweden.


22 For a photograph of the biggest portion of the type from Persoon's herbarium, see Lloyd (1917: f. 1108 on p. 740).
Persoon's original description of *Poria fimbriata* (1794) is too short for certain recognition of the species, but when supplemented with his subsequent one (1801) and the specimens is his herbarium (including the type, cited above), there is no doubt possible as to the fungus he had in mind. Although not common, the species is wide-spread throughout West Europe and easy to define by its well-developed stroma with strongly developed fibrillose-laciniate margin, and bearing cups of separate origin but soon crowded and then collectively very similar to the hymenophore of a species of *Poria*. There is only one species of this kind in Europe, which facilitates the pigeon-holing of synonyms. Persoon (1801: 546) very clearly emphasized the most characteristic features: "Membranam siccam exhibit. Margo laciniatus: laciniae teres. Pori superficialis, in fungi margine liberi s. inter se subdistant."

*Boletus byssinus* Schrad. has been variously interpreted. Persoon, at first as a suggestion (1801: 548) and later on positively (1825: 108), and Fries (1821: 506) identified it with the present species. In my opinion, this is the best disposition at hand and apparently the correct one: the original account and figure are very suggestive: "...explanatus membranaceus niveus: margine fimbriato ... Membrana byssacea, late aliquando supra truncos expansa, nivea ... poris subrotundis obtusis ... brevissimis, minutis ..." The figure suggests that a small stroma in young condition was selected for the artist; the scattered 'pores' had not yet become a crowded mass at the centre. In any case the original account does not at all suggest a tender species with true pores. In later years Fries (1832: 149) referred the fungus to *Peziza porioides* A. & S., which, I think, is another synonym of *Stromatocypha fimbriatum*, as will presently be discussed. A detailed discussion of the misinterpretations of *Boletus byssinus* as species of *Poria* Pers. per S. F. Gray (artificial sense) is reserved for a forthcoming paper.

I believe that *Peziza porioides* A. & S. is another synonym. The rather detailed original description as well as the figure leave hardly any room for a different interpretation. As in the preceding case a small, young stroma was depicted, presumably to avoid too many technical difficulties on the copper plate. To underline this conclusion it is pointed out that *Peziza porioides* is "tota nivea" and that the margin of the stroma is 'byssinum passim fibrilloso-fimbriatum'. In the Leiden copy of the "Conspectus" the white colour of the hand-painted plates have everywhere turned grey. Such a colour deviation in connection with the small colonies depicted might suggest a different species (like *Solenia grisella* Qué. l.) if the original text is only superficially consulted. Another reason for misunderstanding is that von Albertini & von Schweinitz considered their fungus different from *Poria byssina*, discussed above. Perhaps the substratum ("... in cortibus lignisque abiegnis ") is somewhat exceptional, but *Porotheleum fimbriatum* is not selective and has been found on fallen branches of pine. It is surprising to find that only Persoon (1822: 275) has thought of *Porotheleum*, more in particular of *P. lacerum* Fr., in connection with it. Evidently following this lead some later authors (Wallroth, 1833: 480; Rehm) placed *P. lacerum* as a (dubious) synonym under *Peziza porioides*. Merely
judging from the original account Rehm (l.c.) suspected it to be a species of Eriopeziza Sacc. — This paragraph had already been written when I came across a specimen in Persoon's herbarium sent by the authors. The original label reads, "Peziza porioides". To this Persoon added, "Consp. fung. p." and "Ex Lusatia superiore." The substratum impresses me as the bark of a coniferous branch and the fungus on it is a portion of a young fruit-body, with rather poorly developed stroma and rather spaced cups; it is evidently Stromatoscypha and in my opinion represents S. fimbriatum.

Peziza porioides has been misinterpreted by Fuckel (l.c.). He, and, under his influence, other mycologists have used the names Solenia porioides or Cyphella porioides for a species which has also been called Peziza conspersa Pers. and Solenia grisella Quél. The latter species is very different from Stromatoscypha fimbriatum: its 'stroma' is a thin, closely adherent felt (rather than a membrane) not forming laciniae at the margin, and the colonies as a rule are small greyish patches on fallen branches of conifers. Neither is this fungus to be identified with Solenia poriaeforis (Pers. per Mérat) Fuck. as W. B. Cooke (1957: 688) does. Peziza conspersa seems to belong to Stigmatolemma Kalchbr. if the type of the latter species has been correctly interpreted by W. B. Cooke.

Porothelium lacerum was one of the two original species of Porothelium (1818), the other being P. fimbriatum. As late as 1874 Fries (p. 595) stated to have found it only once. Some years after its publication Fries (1821) suppressed it altogether (not even mentioning it in synonymy), but restored it as a good species after having received Boletus pezizoides from von Schweinitz, which fungus he thought exactly the same (1838). He differentiated it from P. fimbriatum by the margin of the stroma: "ambitu floccoso-byssino", in the former, and "ambitu laciniis teretibus fimbriato", in the other species; the cups are "... demumque abeuntibus in tubulos cylindricos distortos". According to Lloyd (1917: 740), "Porothelium lacerum as named by Fries in Europe is the same as Porothelium fimbriatum. Fries did not recognize the old (Poria) state." This disposition is now the one accepted by the few authors who mention Porothelium lacerum at all.

American authors now also accept Boletus pezizoides as a synonym; following Lloyd (1917: 740), who stated "Porothelium pezizoides as named by Schweinitz ... [is] ... based on the young, papillate condition." Fries thought it to be the same as his Porothelium lacerum. Berkeley & Curtis (1856: 214) concluded that "this species differs from P[orothelium] fimbriatum only in the absence of the marginal threadlike processes. There is a [specimen] in Hook. Herb. from Schweinitz marked Boletus obliteratus."

Several other synonyms have been listed in connection with Stromatoscypha fimbriatum: Fimbriarilla stellata Sow., Porothelium friesii Mont., P. vaillantii (DC. per Fr.) Quél., Boletus tunicatus Schum. These are discussed in a preceding chapter, section "Excluded species".

W. B. Cooke (1957: 684) lists also Polyporus fatiscens Berk. & Rav. apud Berk. as another synonym of Porothelium fimbriatum. However, recently Lowe (1959: 103)
reports *Poria fatisceps* (Berk. & Rav. apud Berk.) Cooke as a true species of *Poria* (*sensu lato*, but exclusive of *Poroleum*) which is widely distributed in North America.


Receptaculum plus minusve cupuliforme, basi rotundatum vel substipitiformi-attenuatum, extus album et subconspice tomentosum, pilis patentibus basi fibulatis, inseptatis, filiformibus, capitatis, tenuiter usque firmule tunicatis indutum, margine in sicco baud involutum; hymenium subceraceum, laeve vel rugulosum saepiusque obscure radiato-plicatum; contextus monomiticus. Hyphae tenuiter tunicatae, fibulatae. Basidia clavata, sterigmatibus 2–4. Sporae ellipsoideae, plus minus claviformes, mediocres vel satis longae, hyalinae; paries laevis, haud amylloideus. — Typus: *Cyphella sp.* = *C. Bas 1519* (L 958.140–484).

Fruit-body more or less cup-shaped, erect to pendulous, small (0.5–3 mm), sessile with rounded cup to spurrily short-stalked, white outside and rather conspicuously tomentose; margin not becoming inrolled; outside clothed with patent hairs with clamp-connections at the base, undivided, narrow, cylindrical, capitate, thin- to somewhat firm-walled; hymenium rather waxy, smooth to wrinkled and often even with folds radiating towards margin; context monomitic, of thin-walled, hyphae with clamp-connections. Basidia clavate, with 2–4 apical sterigmata. Spores ellipsoid and more or less club-shaped, medium-sized to rather long (10–18 μ long), colourless; wall smooth, non-amyloid.

On dead stalks, culms, twigs, bark.

Type species.—*Cyphella goldbachii* Weinm. (in the sense indicated below). Generic type specimen: *C. Bas 1519* (L 958.140–484).

A very distinct and monotypic genus easily recognizable by the quite typical, capitate hairs at the outside of the cups. Its affinity is still doubtful, but I would rather suggest that it is mycenoid. Romagnesi (1950), who calls this fungus *Cyphella lactea*, likens the spores to those of *Omphalia* (Fr.) Kummer (restricted sense) and the hairs to those of *O. cephalotricha* Josserand [= *Mycena cephalotricha* (Joss.) Kühner], a species classed by Kühner in *Mycena* sect. *Lactae* Konr. & Maubl. = *Mycena* sect. *Candidae* Kühner = *Marasmiellus* sect. *Candidi* (Kühner) Sing. These ‘pilo-cystidia’, as described by Josserand (1937: 86–87), are deflected ends of the hyphae of the flesh of the cap; they are very numerous, slender, very sinuous, 20–60 × 3 μ, capitate by a well-defined, often somewhat flattened head of 5–6 μ in diameter. It may be that the likeness is only superficial. Clamp-connections are not mentioned in the description and are lacking at the base of the hairs drawn in the figure. *Omphalia cephalotricha* is a typical agaric in appearance: the fruit-body consists of a stalked cap with typical gills.

*Calyptella* lacks the coating of hairs (at least of such hairs that are sharply set off at their base), has a more waxy to tough-gelatinous context, a more typically trumpet-shaped fruit-body, and a distinct, constant stalk.

23 An anagram of the name *Cyphella.*
Donk: Cyphellaceae—I

Cellypha goldbachii (Weinm.) Donk, comb. nov.


— Type locality: Germany, Rheinland, near Eberbach.


This species is well characterized by its usually sessile fruit-bodies generally connected by a white, fibrillose mycelium, clothed at the white outside with slender, capitate hairs, and by its long, more or less clavate spores. The latter vary considerably in length: usually they measure from 10–15 µ in length, but in one collection (France, Puy-de-Dôme, leg. Brevière) they reach as much as 14–18 µ.

Reid (1955: 397) describes the outside of the fruit-body thus: “From the outermost hyphae of the context, there arise others which are branched, septate, and clamped,
forming a loose tangled web. These give rise to certain branches that grow out to form characteristic clavate hairs, up to 39 \( \mu \) long, and 2 \( \mu \) wide, with swollen heads 3-6 \( \mu \) in diameter, which may or may not be septate, but if so these septa lack clamps, and are therefore secondary.

The following description is from the notes by Mr. C. Bas accompanying the specimen indicated above as ultimate type of the generic name (translated and adapted): Fruit-body crucible- to cup-shaped, originally disk-shaped, sessile, \(-1.5\) mm in diameter, \(-1\) mm high, white throughout, outside pubescent (capitate ends of the individual hairs visible at 32 \( \times \)); margin at first incurved but even very young stages already with aperture. Spores 12.4-13.5 \( \times \) 3.4-3.6 \( \mu \) (inclusive of apiculus), slender, clavate with slightly curved base, non-amyloid. Basidia 4-spored, 2.9-35 \( \times \) 7.2-7.9 \( \mu \), with basal clamp; sterigmata curved, \(-5.5\) \( \mu \) long. Hairs 23-58 \( \mu \) long, hypha-like, sinuous, occasionally somewhat granular-incrusted at the middle portion, colourless, with basal clamp, somewhat tapering up to the capitate end, 3.0-3.6 \( \mu \) in diameter at the base, 2.2-2.5 \( \mu \) in diameter halfway up; capitate end 3.6-6.1 \( \mu \) in diameter. Hyphae of context 2.5-4 \( \mu \) wide, rather thin-walled, colourless, with clamp connections. No positive reactions with Melzer's solution.

**Type Locality.** — Russia.

**Specimens Examined.** — Germany, Oestricher Wald am Bachweg, on bark of *Lonicera xylosteum*, spring (Fuck., Fung. rhenani Exs. No. 2393, as *Cyphella griseopallida*; hb. Oud.-GRO); Leipzig, June, on culms and leaves of *Dactylis* (Auerswald, hb. J. Schroet.-BRSL, as *Cyphella goldbachii*); Niederwald near Rastatt, June (J. Schroet., hb. J. Schroet.-BRSL, as *Cyphella rubi*). Czechoslovakia, Zwanovice, August, on twigs of *Rubus suberectus* (Pilát, as *Cyphella lactea* var. *rubi*, hb. Donk). Belgium, Malmöy, winter (Libert, Rel. Libert. II No. 458; distributed by Roum., Fung. gall. exs. No. 1410, as *Cyphella eruciformis*, BP). France, Arlanc, Puy-de-Dôme, October, on *Baldingeria arundinacea (= Phalaris arundinacea*) (L. Brevière, det. Patouillard as *Cyphella malbranchei*, PC); Beziers, March, on *Juncus maritimus* (A. de Crozals, hb. Boud.-PC, as *Cyphella malbranchei*). Netherlands, Zuid-Holland, Leiden, Leidse Hut, on dead culms of *Holcus lanatus* (C. Bas 1519, L 958.140-484); Zeeland, Onrustpolder (W. G. Beefink, L 958.339-093). Great Britain, Norfolk, Horsey, on leaves of *Carex riparia* (Denniss, K, L 958.004-093). Sweden, Upland, Bondkyrka parish, on dead culms of *Gyeeria alissima* and *Carex hudonii* (Lundell, Lund. & Nannf., Fungi exs. succ. No. 1026), Halland, Onsala parish (L. Holm 194, Lund. & Nannf., Fungi exs. succ. No. 1423).

*Cellypha goldbachii* is noteworthy by the diversity of substrates on which it is found. Dead bramble twigs are a favourite host, but so are culms and leaves of several grasses, *Carex* spp., and so on; it may even be found on twigs and bark. This lack of preference is one of the reasons that it was repeatedly described as new, because Fries classified the species of *Cyphella* according to habitat.

Easily recognizable as it is, this species offers considerable difficulties in establishing its correct name.

Perhaps the first name given to the present fungus is *Peziza cuticulosa* Dicks., but all in all it should be concluded, I think, that Dickson's name is to be rejected as a nomen dubium. The original description is very brief, "acaulis cyathiformis membranacea alba, margine acuto". The accompanying figure depicts a species with fruit-bodies remarkably variable in shape, from cup-shaped with rounded base to truncate-clavate. The substratum is decayed grass. Berkeley & Broome (1854: 405)
rejected the name as the correct one for their *Cyphella goldbachii* because Dickson did not mention the existence of any indument, and we still have no indication of its existence.

The next two, simultaneously published, names to be seriously considered are *Cyphella goldbachii* and *C. griseopallida*. Both have been interpreted as representing the present species, but they have both also been applied to quite different fungi. Two of the species brought into connection with these names are:

(i) The present fungus: cups milk-white, externally villose with conspicuously capitate hairs; spores rather clavate, long (10–18 \( \mu \)).

(ii) Cups pale grey (or white in var. *alba*) finely pubescent; spores obovate, 5–7 \( \times \) 4–5 (or 5–7.5 \( \times \) 5.5–6 \( \mu \) in var. *alba*). (I rely on Bourdot & Galzin, 1928: 158, as *C. griseopallida*, for details.)

If the fruit-bodies of these two species were described in the concise Friesian manner (and leaving out microscopical data), the resulting characterizations would become closely alike. The colour of the fruit-body and the nature of the indument would have to furnish the differentiating words.

Because the colour of *C. griseopallida* was originally described as “tota griseo-pallida”, and as “albida, intus pallida” in *C. goldbachii*, the former may be regarded as different from species (i) and as correctly interpreted by Bourdot & Galzin (l.c.), who so called species (ii). However, the name *C. griseopallida* has been applied by some authors to species (i) (Fuckel, 1871: 291), or used in an inclusive sense to comprise also species (i) (Quélet, 1886: 215).

*Cyphella goldbachii* was described as “extus villosa” against “extus floccosa” in *C. griseo-pallida*. I think that Berkely (Berkeley & Broome 1854: 405; Berkeley, 1860: 278) applied the former name correctly to species (i), but the evidence is slight (“villous coat”)24; by a note of exclamation Berkeley & Broome presumably indicated they had seen material sent by the originator of the name (Weinmann). Granting that the original diagnosis is poor and also that it takes a lot of goodwill to consider Berkely’s interpretation as covering species (i), I yet venture to apply this name to the latter.

*Cyphella goldbachii* has been also differently interpreted: compare Patouillard (1883: 19 f. 33) and Quélet (1888: 26, as *Calyptella*). Pilát (1925a: 158) thus calls a sterile fungus of which he states, “Haare zylindrisch, dicht mit Stäbchen von Kalziumoxalat inkrustiert, farblos, dünnwandig, einzellig, 4–5 \( \mu \) dick, 100–150 \( \mu \) lang.”

Fries (1838: 569) placed *Chaetocypha variabilis* Corda as a synonym under *Cyphella goldbachii*. Corda’s fungus is certainly quite unlike any of the species that have been called *C. goldbachii* and it is doubtful whether it is a basidiomycete at all (cf. Donk 1951: 208; see p. 40).

If one rejected the name *Cyphella goldbachii* as too uncertain for application, the next

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24 Berkeley & Broome remarked: “This is very near *C. cuticulosa*, from which it differs in its villous coat . . . almost visible to the naked eye.”
one to be taken into consideration is *C. ochroleuca*: “A pretty little species allied to *C. Goldbachii*.”—Berkeley & Broome. The substratum (“dead leaves of *Aira caespitosa*” in *C. goldbachii*) seems to have been the decisive factor for separation. The original description (which lacks microscopical data) and the substratum (“decayed bramble twigs”) agree well and I have little doubt that the fungus is the same as *C. goldbachii* as here interpreted. There is one complication to smooth out. Massee (1892: 143), who may be credited with studying the type, recorded the spores as “very pale ochraceous, elliptical, $6 \times 4 \mu$”, the reason why the species was transferred to *Phaeocyphella* by Rea (l.c.). However, it seems likely that Massee took the swollen tips of the hairs at the outside of the fruit-body as spores. The dimensions and shape agree and these swollen portions appear slightly yellowish under the microscope by their plasmatic contents. Recently Reid (1958: 439) re-examined the type and concluded that *Cyphella ochroleuca* is the correct name for *Cyphella lactea*.

A substratum on which this omnivorous species is often found is bramble twigs. Besides *Cyphella ochroleuca*, *C. rubi* is based on a collection growing on bramble twigs. The description leaves no doubt (“nivca, extus villosus, . . . sporidiis obovato-clavatis”).

When on another occasion Fückel (1871: 291) collected this fungus “in den Rissen, alter, dünner Rinde von *Lonicera Xylosteum*”, he determined and distributed it as *Cyphella griseopallida*. He described the characteristic hairs (erroneously stating that he found them at the inner side) and the equally characteristic spores (ovoid-club-shaped, 10–12 × 4–6 μ). A sample of the distribution was studied and confirmed this conclusion.

It looks as if the present species is much rarer in North America than in Europe. American authors have not recorded it under any of the several European names. However, that it does occur there seems proven by the publication of *Cyphella caricina* Peck. Burt (1914: 366), when redescribing it, gave the spores as “lanceolate or subclavate, pointed at base, 8–13 × 4 μ”. He also depicted them (op. cit., pl. 19 f. 8) and remarked that “the spores of the type are noteworthy by their tapering base”. The very evident hairs (if I am correct in attributing this fungus to *C. goldbachii*) escaped him.

The description leaves no doubt that *Cyphella dumetorum* is another synonym; compare “Spores . . . obtuses au sommet, subaiguës à l’autre extrémité, 12–15 [×] 3.5.” It was found on “des sarment de ronce [*Rubus*] et des tiges desséchées d’*Urtica dioica*, sous des buissons épais”.

Bresadola called the present species *Cyphella lactea*. His account (including the spores) and his picture remove all doubt about the identity. This name is the one at present most commonly used. Pilát (1925a: 149) made *C. rubi* a variety of *C. lactea*, stating that it is up to four times as large and has a strongly folded hymenium. A part of the one collection on which Pilát based his description could be examined and shows nothing unusual. Bresadola (1887: 104) defended his species a few years later by remarking that it differed from *C. Goldbachii* by the differently shaped
(clavate) and twice larger spores. I have been unable to locate a description by Bresadola to find out what precisely he understood by *C. goldbachii*.

At the same time Bresadola referred *Cyphella malbranchei* Pat. to his *C. lactea*. In this case, too, the published original account is quite sufficient to accept this conclusion. Moreover, a specimen named by Patouillard himself could be studied and proved to be the present species.

The last contribution to the list of synonyms seems one by Pilát: *Cyphella velenovskyi*. The original description speaks of a stalked fruit-body (rather an unusual condition in *C. goldbachii*25) and of spores 10–12 × 2–3 μ, "longe cylindraceis, saepe subcurvulis, apice paulum attenuatis, postice breviter plus minus contractis." Afterwards the author (Pilát, 1927: 117) also recorded sessile fruit-bodies from an additional collection and remarked about the spores that they were "immer sehr charakteristisch. Sie sind zylindrisch und 9–12 × 2.5–3.2 μ gross", moreover emphasizing that the fruit-bodies are "fast kahl und nicht wie bei *Cyphella lactea* Bres. mit charakteristischen Haaren bekleidet. Nach meiner Meinung ist *Cyphella Velenovskyi* Pil. eine ziemlich gute Art, ob zwar sie mit *Cyphella lactea* Bres. sehr nahe verwandt ist." Again some years later he wrote to me that he then regarded it as a synonym of *C. lactea*: "Ist nur eine Form von *C. lactea* Bres. mit engeren Sporen." If this be true, I assume that the hairs were present after all, for otherwise the identity would be highly questionable.

9.—*Pellidiscus* Donk, gen. nov.26


Fruit-body disk-shaped (when fresh or re-soaked), small (0.5–2 mm), loosely attached to substratum except for elevated margins, white outside; margin even or becoming crisped and lobed, the outside clothed with thin-walled, not encrusted, simple (rarely sparingly branched) hairs; hymenium lining the 'disk', pellicular and somewhat waxy, smooth to wrinkled (when fresh), becoming pale ochraceous; context poorly developed, floccose, monomitic. Hyphae thin-walled, without clamps. Basidia club-shaped, with 2–4 apical sterigmata. Spores ovoid-ellipsoid, medium-sized (about 7 μ long), appearing pale honey-coloured under the microscope; wall minutely warty (use high magnification), non-amyloid.

Epixylos, or on dead herbs and leaves.

Type species.—*Cyphella pallida* Berk. & Br.

The only species included in this genus originally impressed me as having fruit-bodies very much like those of *Athelia* Pers. (for instance *A. epiphylla* Pers.; cf. Donk, 1957b: 12) except that they were not indeterminate but clearly marginate, in short,

25 Pilát (1924: pl. 1 f. 9) figures both sessile and substipitate fruit-bodies for *Cyphella lactea*.
26 From Lat. pellis, thin skin, an allusion to *Corticium* sect. *Pellicularia* Bourd. & G.; and Lat. discus, quoit.
as a discoid species of that genus. More careful and repeated examination brought
to light a series of features quite inconsistent with the first impression. It was found
not only that the spores were faintly (but undeniably) coloured, but also that their
surface was punctate and their shape of a peculiar variability. The combination
of these features is very suggestive and I now incline to the view that Pellidiscus
is perhaps a genus with 'reduced' fruit-bodies very close to Crepidotus (Fr.) Staude.

Romagnesi (1950) had the present genus in mind when he mentioned as examples
of "Agarics cyphelloides" two species as follows: "C[yphe]lla Bloxami et albina: spore
verruculeuse, jaune une fois collâpse, hyphes sans bouches, poils subulés cf. Pleurotellus
pubescens." It may be that 'albina' is an error for 'pallida'. His more elaborate account
runs thus:

"[Chez le] groupe de Cyphella Bloxami Pilât (= C. ciliata Fr. sensu Bourdot-Galzin), une
autre affinité se révèle: la spore de cette espèce, et d'une forme lignicole très voisine, un peu
plus grande, receuille par nous sur l'écorce de Salix sp., se montre finement verruqueuse;
lorsqu'elle se collapse et se vide de son contenu, elle prend une couleur jaune d'or, et rappelle
de façon frappante celle d'une petite Pleurotacée, Dochmiopus [= Crepidotus] pubescens ss.
Schröter; cette parenté est confirmée par l'absence de boucles aux cloisons des hyphes, et surtout
par la quasi insensibilité de leur paroi au Bleu de Cresyl . . ."—Romagnesi (1953: 409).

The 'hairs' from the marginal region (as described for the species) look very much
like sterile bunches of basidia of which each 'basidium' develops an apical hyphal
outgrowth. I would assume that by continued marginal growth of the fruit-body
these hairs become displaced towards the sterile side of the fruit-body: this would
imply that that side is covered by a trichoderm or, if one wishes to call it so, a
hymenoderm, depending on the stress one lays on the swollen basal portions of
the hairs. The very young fruit-bodies are attached by a point, but gradually, when
the cup-shaped fruit-body turns into a more disk-shaped one, they become more
broadly and loosely attached to the substratum. The question now arises if it could
not be the hairs that grow out and loosely connects the outside of the fruit-body
with the substratum.

Cyphella fraxinicola Berk. & Br. should be carefully compared with Pellidiscus.
It has also brownish spores and small, white, disk-shaped fruit-bodies; but it differs
in several points. It has recently been well described by Reid (1958: 439). I intend
to return to it in a subsequent part of the present series.

**Pellidiscus pallidus** (Berk. & Br.) Donk, comb. nov.


Chaetocypha bloxami (Berk. & Br.) O.K., Rev. Gen. Pl. 2: 847. 1891. — Type: Great Britain,
Twycross (A. Bloxam, K).

Cyphella disciformis Pilât in Ann. mycol., Berl. 22: 212 pl. 1f. 18. 1924; not Cyphella disciformis
Fac. Sci. Univ. Charles No. 29: 34. 1925. — Type locality: Central Bohemia, Mnichovice.

Charles No. 29: 34 f. 7 b. 1925. — Type locality: Bohemia.

DONK: *Cyphellaceae—*I


Fruit-body initially cup-shaped, soon disk-shaped with upturned margin, orbicular, often becoming crenulate to lobed and crisped at margin, usually about 1–2 mm in diameter, sometimes bigger, scattered or somewhat crowded, rarely a few imperfectly confluent, evenly thin throughout except the slightly thicker margin; inside even, smooth to wrinkled, from snow-white soon becoming pale yellowish-brown, of somewhat waxy appearance; outside white, minutely tomentose; texture comparable with that in *Athelia* Pers. Hyphae hyaline, not encrusted, thin-walled, rather loosely interwoven towards outside, 2.5–4 μ in diameter, without clamp-connections. Marginal hairs (close to marginal basidia) in clumps, with swollen bases and long drawn-out thinner portions which may be branched; tips obtuse; not encrusted. Hymenium non-thickening. Basidia short-clavate, plump, 12–19 × 4.5–6 μ, with (2–)4 sterigmata. Spores ellipsoid, rather elongate, often slightly amygdaliform, 6.5–9 × 3.5–5.5 μ, faintly yellowish; walls minutely but distinctly roughened by punctations, non-amyloid.

On rotten bark and wood, old woody stems and fallen branches, dead herbaceous stalks, and also on rotten leaves of frondose trees. Apparently the whole year through. Europe; ? North America.

Type distribution.—Rab., Fung. europ. exs. No. 1415.


This is a very easily recognizable fungus on account of its flattened, broadly but loosely adnate fruit-bodies, with only the margin upturned and incurved (when dry). Vigorously growing fruit-bodies may become attractively crisped-lobed by proliferation along their margin. The microscopical features seem not very variable, although this would not appear from literature. The spores appear very pale coloured under the microscope and minutely but unmistakably roughened.

*Cyphella pallida* may be recognized from the authentic material distributed by Rabenhorst.

The description of *Cyphella bloxami* is sufficient to justify the conclusion that it is identical with *C. pallida*. The same applies to Pilát's interpretation of *C. bloxami*. It is true that that author indicated the spores as 3 × 5 μ, which is too small. However, some error crept in on this occasion, for, according to the accompanying figure, the spores still attached to the basidia measure about 9 μ and the separately drawn spores about 6.5–7 μ, when one computes them after the magnification indicated. When Pilát (1927: 117) concluded that the two were conspecific (after the study of the type of *C. pallida*), he incorrectly continued to apply the latter synonym as the correct name.37

There seems also little room left for doubt that *Cyphella disciformis* is this species. Its

37 Due, it would seem, to the number (No. 1894) of the species in Berkeley & Broome "Notes" being taken for the date.
author regarded it as close to *C. bloxami*, but smaller, subarachnoid, and with the margin neither lobate nor crisped. Like *C. involuta* this can hardly be anything else but a not very vigorously developed growth from. The crenulation of the margins often—but not invariably—occurs in mature specimens and it seems unnecessary to keep *C. disciformis* distinct even as a variety on account of the even margin, as was done by Pilát (under *C. bloxami*).

From Pilát's description I cannot see any differences between *Cyphella involuta* and *C. pallida* either. In his French key Pilát (1925c: 82) emphasized "Les réceptacles régulièrement ronds [thus, as in *C. disciformis*]. Le bord incurvé dedans." to differentiate it from *C. bloxami*. This is precisely what one finds in certain conditions of *C. pallida* and in Pilát's *C. disciformis* as well. Compare Pilát (1924: 212) for *C. disciformis*: "... margine solum involuto," and for *C. involuta* itself (1925a: 151) "... margine primo involuto, dein fere plano".

The very good description as well as the specimens in Bourdot's herbarium which I had the opportunity to study, show that Bourdot & Galzin's interpretation of *Cyphella ciliata* Saut. covers a small, regular form growing on fallen frondose leaves.

*Corticium pezizoideum* Ell. & Ev., 28 described from the U.S.A., I know only from the original description which strongly suggests the present species except for the spores (globular, 2 µ in diameter, according to Saccardo, 1891: 230). Rogers & Jackson (1943: 286) cite it as a synonym of 'Corticium centrifugum (Lév.) Bres.' (= *Athelia epiphylla* Pers.). They indicate they had studied the type collection, but give no details. This warrants the conclusion that the spores were incorrectly described in the original description and resemble those of one of the numerous forms which they include in 'Corticium centrifugum'. Since *Pellidiscus pallidus* suggests orbicular fruit-bodies of *Athelia epiphylla* I wonder if *Corticium pezizoideum* might not be the present species.

I would not be surprised if *Cyphella sarothamni* Pilát (1925a: 149 f. 4 A–D) and *C. lloydiana* Pilát (1925a: 150 f. 4 E–H) were further synonyms.

The occurrence of such different substrata as are indicated above for *Pellidiscus pallidus* perhaps indicate that more than one species is involved. Romagnesi’s quoted remark suggests the same. However, the available material is insufficient to decide the question but it certainly does not readily support such an assumption.

10. **Chromocyphella** De Toni & Levi

*Cymbella* Pat. *apud* Doass. & Pat. in Rev. mycol. 8: 27. 1886; not *Cymbella* C. Agardh (1830; Cymbellaceae, Bacillariophyceae). — Monotype: *Cymbella crouani* Pat. & Doass.

*Phaeocarpus* Pat., Hym. Eur. 154. 1887; not *Phaeocarpus* Mart. & Zucc. (1824; Sapindaceae);

≡ *Cymbella* Pat. *apud* Pat. & Doass.


Fruit-body solitary, cup- to disk-shaped (~3 mm in diameter), abruptly contracted into a stalk-like base, or sessile; outside white to pale, minutely silky-pubescent (from rather undifferentiated hyphae); margin straight, not typically incurved when dry; inside even to wrinkled, white, becoming dusted cinnamon- to reddish brown by the spores. Hyphae radially arranged, looser towards outside, compactly arranged towards inside, thin-walled; clamp-connections present. Basidia when young elongated ovoid or pear-shaped, when mature cylindrical-club-shaped with stalk-like base, medium-sized (20–25 μ long); stergi1 mata 4, conical, curved, rather stout (~10 μ long). Spores globose (at first broad-ellipsoid, often somewhat irregular in outline), medium-sized (7–10 μ in diameter), reddish brown; wall coloured, asperolate to minutely spiny, non-amyloid.

On mosses on bark. Temperate northern regions; perhaps also elsewhere (South America, Java).

Monotype.—Cymbella crouani Pat. & Doass. apud Pat.

Examples.—Chromocyphella muscicola (Fr.) Donk, Phaeocarpus floccosus Maire, Phaeocyphella sphaerospora Spedg.

The muscicolous fruit-body and the distinctly coloured and at the same time roughened and nearly globular spores sharply characterize this genus. Perhaps the basidia offer an additional feature of importance in being ovoid-ellipsoid to pear-shaped when young and notably elongating when reaching maturity in the one species studied. The outside of the fruit-body does not bear typical ‘hairs’.

By the characters of the spores, Chromocyphella is easily distinguished from another muscicolous genus, Leptotus P. Karst. sensu stricto = Leptoglossum P. Karst. in part. In the latter genus the spores (wall or oil-drop) may be faintly tinged yellowish or brownish, but their colour is much less pronounced (spore-powder not distinctly coloured) and their surface smooth. Moreover the basidia in Leptotus show nothing unusual and are club-shaped when young, retaining their shape upon further development. I do not have the impression that the two genera are closely related.

Chromocyphella (Phaeocyphella) has become a receptacle for species of ‘Cyphellaceae’ with coloured spores, without regard to other features. Patouillard (1900: 57) set the example in this respect. Others transferred additional species to the genus, even if the colour of the spores was very faint. The components that in this way drifted into the genus formed a very heterogeneous collection. Some of these are congeneric with Cyphella endophila Ces., and if in its turn this species is congeneric with Phaeosolenia platensis Spedg. (as I suspect from the description) then this group may be set apart under the generic name Phaeosolenia Spedg. Such a genus would differ from Chromocyphella in a restricted sense by its characteristic hairs at the outside (patent, rather short, heavily encrusted by easily detersile crystals of lime-oxalate) and the more elongate, smooth, somewhat thick-walled spores. Still other species are referable to Leptotus (Leptoglossum), Pellidiscus Donk (see p. 89), or have no suitable described genus to receive them (Cyphella fraxincola Berk. & Br.).
The colour of the spores, which appears an important generic feature in both Chromocyphella and Phaeocarpus (in the above sense), does not mean much in some other genera of the 'Cyphellaceae'. This is particularly true for Cyphellopsis [type species, Solenia anomal (Pers. per Fr.) Fuck.]. In that genus all shades are represented between rather distinctly brown-coloured to strictly colourless spores. Some species of the Leptotus complex have just sufficiently coloured spores to account for their transfer to Chromocyphella. Emphasis on the colour of the spores alone has proven to be conducive to artificial genera in the 'Cyphellaceae'.

Romagnesi (1950) compared the spores of this genus with those of Galerina Earle [Galera (Fr.) Kummer pro parte]: "périspore, verrues, plage hilaire limitée, couleur rouille par ammoniaque".

In the more elaborate paper on the same subject the following remarks appear: —

"... Nous n'avons malheureusement recueilli vivante aucune espèce [du genre Phaeocyphella], mais les exemplaires qui figurent dans l'Herbier Bourdot sous le nom de Phaeocyphella muscicola (Fr.) sensu Rea (det. C. Cool, leg. Schweers) et Ph. muscigena Fr., nous ont montré des spores fort semblables à celles des Galerina par leur couleur jaune un peu rouillée (surtout dans l'ammoniaque, mais la réaction n'est pas aussi nette que chez les dernières), leur périspore membraneuse recouvrant des verrues obtuses probablement épisporiques, leur plage supra-hilaire nettement limitée et nue, ou moins ornée, leur endospore très nettement colorée. Or, ces caractères, ou plus précisément leur conjonction, sont particuliers aux Agaricales, et ne se retrouvent chez aucune Aphyllorphorale, du moins à notre connaissance; ils sont au contraire courants chez de nombreuses Naucoriacées, et permettent donc d'envisager certains rapports entre Phaeocyphella et Agaries chromosporés. En outre, l'habitat muscicole de Ph. muscigena se retrouve chez un nombre important de Galerina." —Romagnesi (1953: 409-410).

This is a very interesting suggestion indeed which seems also supported by the shape of the basidia as indicated above and by the association with mosses. If Romagnesi's suggestion proves to be acceptable, one will hardly be able to imagine two more dissimilar but related genera than Galerina and Chromocyphella. It would also be in line with my contention that Leptotus is widely different, it being related to another series of agarics.

The genus was founded for a single species which is still its best known member, viz. for Cyphella abieticola Crouan = Cymbella crouani Pat. & Doass. = Cyphella muscicola Fr. as I interpret that species (see below). The original name Cymbella appeared to be pre-empted and it was therefore changed by Patouillard into Phaeocarpus (also preoccupied) and Phaeocyphella. The latter name is the one now in use but it is incorrect because of an earlier synonym, Chromocyphella (cf. Donk, 1951: 209). For some time the nomenclatorial Rules forced Maire (1917: 154) to consider Phaeocarpus Pat. as the correct name because its earlier homonym was considered a synonym.

As found in spores that have remained on the disk rather than in spore-prints.

In a collection from Java which I consider to belong to Chromocyphella, but in which the fruit-bodies do not yield any distinct basidia (although there are copious spores), I found that in quite a number of the spores an indistinct germ-pore was present (of the kind also seen in many species of Galerina).
Chromocyphella muscicola (Fr.) Donk, comb. nov.


Misapplications.—Cantharellus galeatus (Schum.) per Fr. sensu Fr., Epicr. 567. 1838 (Cyphella); Quéhl, Fl. mycol. France 33. 1888 (Arrhemia); Bourd. & G. in Bull. Soc. mycol. France 26: 227. 1910 (Phaeocyphella).


Type Locality.—Sweden.

Cyphella muscicola Fr. has been diversely interpreted. However, the original description is (except for the lack of microscopic details) ample for its time and quite sufficient, I believe, to conclude that the name covers the fungus now often called Cyphella galeata (Schum. per Fr.) Fr. and Cymbella crouani. (For the latter species the generic name Cymbella, ≡ Chromocyphella, was introduced.) Especially the words, "Intus e sporidii brunneis, leviter pruinosa. Nascitur ad muscos vivos supra arborum truncos vetustos" appear decisive. They indicate, for instance, that Cyphella muscicola is q u i t e d i s t i n c t l y brown-spored, and that the species is associated in the first place with bark-inhabiting mosses. They exclude convincingly the species of Leptotus to which the name Cyphella muscicola has sometimes been applied, for instance, by Fries himself in 1838: the spores of these species, which, moreover, prefer bigger and terrestrial mosses, are too faintly coloured for Fries to have been able to see with a hand lens as a brown powder.

This conclusion excludes, inter alia, the following species of Leptoglossum (Leptotus) to which the name Cyphella muscicola has been misapplied. They are smooth-spored.

18-20: 131. 1931 (Cyphella), with almost globular, rather small spores (4.5-6 × 4-5 μ).
(ii) Sensu Pilát in Ann. mycol., Berl. 23: 163 f. 16. 1925 (Phaeocyphella), with more definitely ovoid and bigger spores (8-9 × 5.5-6 μ).
(iii) Leptoglossum (Leptotus) retigum (Bull. per Fr.) P. Karst.
The specific delimitations between these three fungi have not yet been satisfactorily worked out.
The description of Cantharellus tenuissimus suggests the present species rather than one of these species of Leptoglossum with only faintly coloured spores: "... intus brunnescens ... innen zuerst grau, dann braun." The other details bear out this assumption, but Sauter’s account is too poor to be decisive. There is no type preserved (cf. von Keissler, 1917: 107).
Cyphella abieticola Crouan is readily recognizable from the original account. The name was changed by Patouillard into Cymbella crouani because of the existence of a homonym—of later date. The description of C. abieticola is rather good for its time and states, inter alia, "... hymenium ochrace formé par des basides claviformes, stérigmatiques longs, spores rondes ochracles granuleuses ..." Patouillard’s description and figure, too, leave no doubt about the identity of the fungus he had in mind, a conclusion that has been verified by a study of his specimens, of which he wrote, "spores sphériques (7-9 × 6) finement échinulées, ocracées-rousses".
Another name that may be listed as a synonym, on the basis of the original description, is Cyphella fuscospora: "sporulis fuscis, subglobosis vel subellipticis, punctulatis vel granulato-echinulatis (8-10 μ long.)." Yet, it should be pointed out that the fruit-bodies are very small in this case, 0.20-0.25 mm, thus of about the same dimensions as indicated for Cyphella chromospora Pat. (which I do not know).
Phaeocyphella musicola (Fr.) Rea sensu Rea, Brit. Bas. 704. 1922 offers some difficulties. The description of the outer features corresponds closely to Fries’s description, which may have been adapted and then amplified with, "Hymenium white then grey . . . Spores pinkish, or pale brown, subglobose, 8-10 μ." It is possible that Rea described another species of Chromocyphella but it may also be that the microscopical details added were taken from a young fruit-body in which the spores were not yet plentiful and not completely matured, the colour being paler and the walls probably still smooth.
In this connection it should be pointed out that Romagnesi (1950) distinguishes between two species, viz. (i) "Phaeocyphella musicola ss. Rea: spore de Galerina (périspore, verrues, plage hilaire limitée, couleur rouille par ammoniaque)" and "Phaeocyphella galeata: même spore, mais ronde." One would conclude that the first of these has more or less ellipsoid spores, which, however, hardly agrees with Rea’s description. I have studied several collections of the present genus from Europe but invariably found the spores not exactly globular but varying from globular to short-ellipsoid on the same fruit-body.
For other species that might or might not be different from Chromocyphella musicola, see below.
Chromocyphella muscicola has often been identified with Cyphella galeata (Schum. per Fr.) Fr. (Cantharellus galeatus Schum.) In the absence of type material this fungus must be interpreted only from its original description and later published corresponding figure. From the description it emerges as a somewhat smaller fungus than fully developed Leptoglossum (Leptotus) retirugum, with the hymenial surface obsoletely veined radially and presumably without cross-veins. The picture that represents the type (Flora danica, pl. 2027 f. 1; reproduced by Burt, 1914: pl. 19 f. 2) strongly supports the thesis that it belongs to Leptoglossum (Leptotus). What the correct application of the name may be will not now be discussed, but one conclusion is certain, in my opinion: Cyphella galeata does not belong to Chromocyphella. Confusion with the latter genus started when Fries (1838: 567) thought he had found the species himself and ascribed to it a hymenium which turns brown. This has been interpreted as indicative of brown spores and resulted in the identification with Chromocyphella muscicola by certain authors (Quélet, Bresadola, Bourdot & Galzin, Burt, and others).

Other species of Chromocyphella

Chromocyphella muscicola is the only more generally known species of the genus. Yet it seems that there may be a few more: they are recognizable from their descriptions as apparently closely related, and may be conspecific.


The original description suggests a species related to, but distinct from, Chromocyphella muscicola, of smaller size (0.3-0.8 mm in diameter); with smaller basidia (14-17 X 5-5.5 μ); and spores, "ellipsoidales-pruniformes, subapiculees a la base, couleur de miel sous le microscope, verruqueuses, 6-7 X 3-5 μ", thus of different shape and size.


The rather ample description agrees on the whole with Chromocyphella muscicola; however, the hairs at the outside are stated to be minute, 25-75 X 5 μ, and the sterigmata, to be short.

LACHNELLA Fr. emend.


Lachnium Clem. in Univ. Stud. Nebraska 3 (1): 73. 1902 (nomen nudum); not Lachnium Retz. per P. Karst. 1871 (Hyaloscyphaceae, Ascomycetes); = Lachnella Fr.

Fruit-bodies scattered, often gregarious but not crowded over considerable areas, sessile (slightly contracted at base), centrally attached, -1–2 mm in diameter; cup-shaped, when dry globular to pear-shaped, not or hardly longer than wide; margin inrolled and mouth (nearly) closed when dry; inside even, cream- or brightly coloured; outside silky by a coating of appressed hairs, white. Substance thin-membranous, thickest at centre (disk from concave to almost flattened), tough, somewhat fleshy at inside (which may dry hard). Hairs appressed, cylindrical, with blunt tip, asperulate, not septe, colourless, rather thick-walled; in KOH solution becoming very thick-walled with narrow lumen at least below, often deformed over short to considerable stretches (swollen, very transparent, surface smooth because of fading asperulation, lumen thread-like or disappearing); somewhat pseudo-amyloid. Spindle-shaped 'basidioles' may be present. Basidia rather large (40–75 μ long), in one species (L. tiliae) at centre of fruit-body even very long-drawn towards base (-175 μ long); sterigmata 2–4, conical, curved, rather stout (about 10 × 3–4.5 μ). Spores obovate, ellipsoid, swollen below middle (usually somewhat triangular in outline), adaxially flattened, rather large (10–20 μ long), colourless; wall smooth, non-amyloid.

On branches and herbs. Northern & southern temperate zones, apparently rare in the tropics.


Examples.—Lachnella alboviolascens (A. & S. per Pers.) Fr., L. villosa (Pers. per Fr.) Gillet, L. tiliae (Peck) Donk apud Sing.

The hairs have a roughened surface by some kind of innate incrustation (rather than by detersile lime-oxalate crystals) and become more or less notably altered in KOH solution: the walls become thicker, often leaving only a capillary lumen, and at irregular places excessively swollen. In these strongly deformed parts, the surface asperulation has disappeared and the lumen has become either a mere thread or has vanished completely. This type of deformation I did not come across in any other group of 'Cyphellaceae', except to a much slighter degree in Cyphella jucundissima (Desm.) Höhn., which I believe to form an independent genus.

In the above circumscription Lachnella is a clear-cut genus easily recognized among the 'Cyphellaceae' by the combination of the following characters: hairs appressed, with innate asperulation, more or less thick-walled, colourless and remaining colourless in KOH solution in which the walls become thicker and considerable portions become swollen and deformed; hymenial elements big, spores 10–20 μ long; spores more or less typically widest below middle. Cyphellopsis [type species, Solenia anomala (Pers. per Fr.) Fuck.] agrees in many respects. At first (and before being aware of the correct application of the name Lachnella), I combined the Solenia anomala group and the Cyphella alboviolascens group into the single genus Cyphellopsis, but soon concluded that Cyphellopsis may be kept apart generically because of the colour of the hairs (brown and somewhat darkening in KOH solution) and the fact that these hairs undergo neither any considerable transformation nor deformation in KOH solution. There is one species of Cyphellopsis that shares with Lachnella the big basidia and spores. For the present I still believe the two genera as closely related.

When I told Dr. R. Singer in 1946 that I was thinking of a close relation between Lachnella and Chaetocalathus Sing. and Crinipellis Pat., he at once convinced himself
that the hairs in Lachnella were also pseudo-amyloid as in the two other genera, a condition he had described on a previous occasion as follows:

"...the hairs ... are colorable with iodine (Melzer's reagent), where they turn dark rufous-bay, or sometimes almost violet (the latter reaction being very close to 'amyloid'). It is very important for a satisfactorily effect to treat the preparations previously with ammonia. The pseudoamyloid hairs are found only in Crinipellis and Chaetocalathus. Beside, those hairs are mostly very long without any septa, and even if they are septate they are not or only exceptionally constricted at the septa."—Singer (1942: 444).

The same conclusion was reached by Romagnesi:

"Chez Cyphella villosa ... les poils extérieurs de la cupule ... sont puissamment métachromatiques, et il suffit d'une infime quantité de Bleu de Cresyl dissous dans l'eau pour les voir devenir d'un rouge intense et franc (à la lumière du jour): la coloration prise est si vive qu'elle résiste même très longtemps à l'action de l'ammoniaque! En outre, après lavage à l'ammoniaque, ils se montrent faiblement, mais incontestablement pseudo-amyloïde, et, par ces deux caractères, ils se rapprochent donc beaucoup de ceux des Chaetocalathus (surtout C. Craterellus). ..."—Romagnesi (1953: 408).

The similarity between Chaetocalathus and Lachnella is in many respects striking indeed. The former genus was separated from Crinipellis because of the sessile and dorsally attached caps (stalked in Crinipellis) which often become globular when drying. "It is obvious", Singer (1951: 344) remarks, "that Lachnella is closest to Chaetocalathus which differs in the well developed hymenophore and smooth epicuticular hairs; also in the presence of pseudoamyloid cystidia or spores. A similar type of echinulate hairs [as is found in Lachnella] is not found in the whole Marasmiinae-series but can be recognized in the cortical hairs of such Mycenas as Mycena osmundicola." (In my opinion the 'echinulation' in Lachnella is of a different type from that in the Mycenas mentioned.)

Further, the occurrence of spindle-shaped basidioles (occurring abundantly at least in one species) of the type depicted for Marasmius rotula (Scop. per Fr.) Fr. and M. androsaceus (L. per Fr.) Fr. by Kühner (1933: 65 f. 1, pl. 7 fs. 1, 4, 5) should not pass unnoticed. Such basidioles of the "Collybia-Marasmius-type" (Singer 1951: 344) are not only found in many species of Marasmius Fr. but are also found in Crinipellis, where they seem of general occurrence (Singer, 1942: 447).

Locquin (1952: 165-166) even goes a step further and proposes to combine the two genera under the name Lachnella:

"...si les filaments cuticulaires sont lisses dans l'un et échinulés dans l'autre, il ne s'agit pas de vraies échinulations, mais d'un précipité de microcristaux de sulfate de calcium plus ou moins empâtés dans la membrane. Ceci explique leur achromatisme dans tout colorant et spécialement vis à vis des réactifs iodés. Cet empâtement de cristaux se retrouve dans la paroi des cystides de la section Holocystis Singer de Chaetocalathus."

Moreover, Locquin (1952: 169) expresses his doubt about the practical value of the pseudoamyloid reaction, especially on the generic level. Without entering
into a discussion on the latter question and only briefly remarking that the nature of the surface of the hairs in Lachnella seems not adequately explained by Locquín, I would remark that there are quite an imposing number of differences between the two genera, which are sufficient to keep them separate: lamellate hymenophore in Chaetocalathus, different behaviour of the hairs in KOH solution, different surface of the hairs, bigger basidia and spores as well as a characteristic shape of the spores in Lachnella.

Locquín not only combines Chaetocalathus and Lachnella, he also throws in Merismodes (cf. Singer, 1951: 345). I am again unable to follow Locquín but a discussion will be reserved to a future occasion after Merismodes has been treated in the present series of notes.

It might well be that Lachnella is related to a species that has been described under the name of Kordyna cyphelloides Viégas (1945: 253 textpl. 1). This species certainly does not belong to Kordyna Racib. (Exobasidiaceae), but seems rather the type of a new genus. From the appearance of its fruit-body under low magnification it resembles Wiesnerina (see p. 45), but the hairs form a kind of calyx-like peridium around the disk and thus are evidently not homologous with the cystidia arising throughout the disk in Wiesnerina. These hairs are thick-walled, hyaline, and asperulate; the basidia and spores are rather big (28–42 × 10–12 μ and 14–16 × 7–8 μ); and the spores are somewhat triangular, broadest below the middle. However, the hairs rather gradually taper upwards and the fruit-body breaks through the epidermis of living leaves, a situation not matched by any form of Lachnella.

According to Maire (1902: 101, Cyphella villosa has chiastic basidia.

The reintroduction of the name Lachnella, previously universally in use for variously circumscribed groups of Discomycetes, became necessary by the lack of support for a generally acceptable proposal for conservation of a discomycetous genus of that name. Donk (1951: 212) explained its present use for a genus of basidiomycetes which has already been accepted by Singer (1951: 343).

**Lachnella alboviolascens** (A. & S. per Pers.; Fr.) Fr.


Cyphellaceae


[Peziza alboviolascens f. alba Fr., Elench. 2: 9. 1828 ('alba' not an epithet but a one-word


Hairs very much as in Lachnella villoso, about 200 × 5–6 μ. Basidia 60–75 × 12–16 μ, with 2–4 sterigmata of about 10 μ long, 4–4.5 μ wide at base. ‘Basidioles’ absent or at least not a conspicuous hymenial element. Spores broad-inversed-ovoid, adaxially somewhat flattened, 13.5–15.25 × 9–12 μ with distinct, blunt, excentric apiculus; contents granular.

Type Locality.—Germany, Oberlausitz. Type: "Peziza albo-violascens nobis" (L 910.261–8; Persoon added, "Alb. et Sweinitz").

Some Specimens examined.—Type, cited above, and several collections mentioned below in the discussion and other ones, inclusive of the types or portions of the types of Peziza fallax Pers., P. velutina Desm. (Peziza alboviolascens var. alba Desm., Cyphella alboviolascens f. minuscula Roum.), Ascobolus vitis Wallr., Corticium dubium Quéll., Cyphella stappea Berk. & Br.; and one or more copies of the type-distributions of Cyphella curreyi Berk. & Br., Cyphella villoso var. lutescens Roum., Lachnella alboviolascens f. caraganae P. Karst., Cyphella pezizoides Zopf, Cyphella villoso f. solani P. Syd., Cyphella villoso f. sambuci P. Syd.; &c.

For differences from Lachnella villoso, see that species.

It would seem that the colour of the disk is variable. In most cases it becomes dark at least when drying and in the herbarium the disk is seen as a dark ring shining through the hairy covering in flattened and pressed fruit-bodies. However, more or less luxurious and proliferous fruit-bodies may lack any indication of the purplish colour and the disk may remain pallid, yellowish (Peziza fallax Pers.).

The identity of Peziza alboviolascens A. & S. has never been seriously questioned. Its current application is supported by a specimen sent to Persoon by the authors of the species (as cited above as type). It still shows a very few fruit-bodies typical of the present species. (I did not examine any microscopically.) The specimen should be considered type as long as other ‘authentic’ material has not been located. There is also a specimen marked in Persoon’s handwriting "Peziza albo-violascens, Alb. et Sweinitz" (L 910.261–6) which may also have been sent by the authors of the name but was kept separately because it grew on a different substratum. The fruit-bodies in this case have become covered by glue when the piece of bark was pasted to the sheet; nevertheless these fruit-bodies are also recognizable as P. alboviolascens. (Not examined microscopically.)
Persoon introduced the name *Peziza fallax* for the present species apparently because he thought the name *P. alboviolascens* not completely appropriate for the species as a whole. For him typical specimens were "intus pallescens" and of *P. alboviolascens* he made a variety (♀), "intus caesia vel violascens". As is explained above such a difference is irrelevant. A fine set of specimens in Persoon's herbarium fixes the identity of *P. fallax* (L 910.261-953, 910.261-959, 910.261-946 & -947). An exception is L 910.261-952, "*Peziza fallax. Myc." (written by Persoon), which I would refer to *Lachnella villosa*. The substratum of this specimen seems to be an umbrelliferous stalk. I have chosen L 910.261-947 as type; it is labelled in Persoon's handwriting, "*Peziza fallax, Mycol. Europ." Moreover, there is a specimen in the Herbarium at Kew which was named *P. fallax* by Persoon.

*Peziza sessilis* Sow. has usually been listed as a synonym of *Lachnella villosa* in agreement with Fries (1822: 114), but in my opinion its identity with *L. alboviolascens* is much more likely.

Study of a portion of the type of *Peziza velutina* Desm. showed that Fries was correct in referring this name as a synonym to *Peziza alboviolascens*. He was also correct when he referred the herbarium name *Ascobolus vitis* Wallr. as a synonym to the latter species, as could be verified from the specimen he received.

*Peziza syringea* Wallr. is referred here on the basis of its description; its author compared it with *P. alboviolascens*.

*Myciophorum vitis* Bon. is referable here with certainty on the basis of the original account. Bonorden clearly drew basidia and also caught well the characteristic outline of the spore; he wrote, "mit grünlich-schimmerndem Hymenium", which I regard as a trivial discrepancy. The vine seems a favourite host of *Lachnella alboviolascens* and one wonders if *Peziza vitis* Schw. is not still another synonym. Seaver (1951: 281) reports that the "type examined May, 1931 shows only lichen apothecia." The original description strongly points into the direction of *Lachnella alboviolascens*.

Moreover, I have been able to study types or portions of types of *Cyphella curreyi* Berk. & Br., *Lachnella alboviolascens* f. caraganae P. Karst., *Corticium dubium* Quél., *Cyphella stuppea* Berk. & Br., *C. pezizoides* Zopf, and *Cyphella villosa* f. sambuci P. Syd.; all are further synonyms of *Lachnella alboviolascens*. The reason for the introduction of the name *Cyphella curreyi* is discussed on page 31.

For *Peziza nigrocaesia* Schum., see page 58.

The Tulasne brothers (1851: 134) concluded that *Cyphella taxi* Lév. was conspecific with *C. alboviolascens*. This is not the case: the type (!) of *Cyphella taxi* shows a quite different species identical with, or very close to, *Cyphella cupulaeformis* Berk. & Rav. apud Berk. The material they cited from *Rhamnus* is true *Lachnella alboviolascens* (specimen seen!) while the material from *Eryngium* they mention undoubtedly belongs to *Lachnella villosa*.

It is not known now, I think, what *Sphaeria tomentosa* Relh. precisely stands for, but the collection Purton discussed in an observation to this treatment of the species represents *Lachnella alboviolascens*: the collection is preserved at Kew.
LACHNELLA VILLOSA (Pers. per Schw.: Fr.) Gillet

_Sclerotium villosum_ Tode, Fungi mecklenb. i: 6. 1790 (devalidated name). — Type locality: Germany, Mecklenburg.

_Sclerotium villosum_ var. (a) _album_ Tode, Fungi mecklenb. i: 6. 1790 (devalidated name) ≡ _Sclerotium villosum_ Tode.

_Peziza sclerotium_ Pers., Obs. mycol. 2: 84, 1799 (devalidated name).


Hairs in KOH solution about 150–200 × 4.75–6 μ, colourless, with asperulated surface, the full-grown ones with very thick walls and capillary lumen (lumen somewhat widening in the tip), many with deformed portions which are much swollen and very transparant (asperulation has disappeared) and have a thread-like or vanished lumen. Basidia 40–48–60 × 9–11 μ, with 2–4 conical, curved sterigmata of about 10 × 3 μ. Basidioles numerous, originally subcylindrical with tapering top, then becoming inflated at middle and spindle-shaped, finally like the basidia but with apical nipple. Spores broad inversed-conical, 10–15 × 7–10 μ, adaxially faintly flattened, with distinct, blunt, excentric apiculus.
Type locality.—Germany. Type of *Peziza sclerotium* Pers. ≡ *P. villosa* Pers.: “[prope] Gottingae lecta / Peziza villosa” (written by Persoon; L 910.256–1317; devoid of fruit-bodies).

Some specimens examined.—Type, cited above, and several collections mentioned below in the discussion.

The fruit-body is on an average much smaller and more tender than in *Lachnella alboviolascens*, and closes less perfectly to a globular body. The latter species has a more fleshy disk which almost invariably (at least in not too proliferous fruit-bodies) turns dark. The presence of numerous ‘basidioles’ may be another important difference. Finally, *L. villosa* prefers herbaceous or only slightly woody substrata, while *L. alboviolascens* grows almost invariably on woody substrata (though these may be very thin branches).

A few words may be said about a specimen collected on *Pteris aquilina* (in herb. J. Schroeter, BRSL, Silesia, Trebnitz, Obernick). It differs in its spores which show a constriction below the top so that it seems as if the latter is surmounted by a broad and relatively large nipple. Some of the spores are almost ‘normal’, some of them resemble the figures of the spores of *Cyphella turbinata* G. Cunn. (see p. 107).

When Persoon thought he had found the fungus that Tode called *Sclerotium villosum* (more in particular, *S. villosum* var. *album*) he recognized it as as cup-fungus and named it, first, *Peziza sclerotium* Pers., and afterwards, *P. villosa*. Both epithets are presumably inspired by Tode’s name and one could defend the thesis that both names Persoon published are mere isonyms of *Sclerotium villosum*, which would mean that the type of *Cyphella villosa* ‘(Tode) Pers.’ is the same as of *Sclerotium villosum*. The correct authors’ citation for the name here adopted then would become ‘(Tode per [Schw.]: Fr.) Gillet. In view of the fact that Persoon never listed *Sclerotium villosum* as a synonym without some indication of uncertainty, I have here followed current practice and treat the name *Peziza sclerotium* as a metonym, based on a different type—one of Persoon’s own specimens.

Tode (l.c.) evidently misinterpreted the fungus which he seems to have studied only in the dried condition, when the walls are strongly curved inwards and the fruit-body resembles a globule without any visible mouth or pore. However, the section depicted by Tode shows that he found a hollow inside that communicated with the outside. Although Tode stated “magnitudine arenulae modicae” he depicted the “fungi aggregati, magnitudine naturali” (fig. 10a) too big for the present species. He thought the hollow opened downwards (presumably towards the substratum; fig. 10c) and he also rendered the hairs as radiating from an outer wall (fig. 10c). He indicated the substratum as, “In caulibus *Solani tuberosi* semiputridis.” I am not quite convinced that Tode’s fungus really is *Lachnella villosa*; it still might be *L. alboviolascens*, which has occasionally been found on the substratum indicated by Tode for his *Sclerotium villosum* var. *album*.

About *Peziza villosa* Pers. we are informed by material kept in his herbarium at Leiden, although some important specimens no longer bear fruit-bodies. One of
these (L 910.256–1317) is labelled in his handwriting, “Peziza villosoa. / [prope] Göttingae lecta”; this must be taken as type. Another specimen (L 910.261–557), too, is devoid of fruit-bodies; it is labelled, “Peziza sclerotium Obs. mycol. [Syn. fung.’ being crossed out] —— villosoa —— Syn. fung. / Sclerotium villosum’ Tode videtur” (written by Persoon). In both cases the substratum is not a woody one, but may well be umbelliferous stalks; in any case the substratum is ‘herbaceous’. A third specimen (L 910.261–812) is still determinable with certainly as Peziza villosoa; it was sent to Persoon with the label, “in caulibus Solani tuberosi”, and Persoon named it “Peziza villosoa. Syn. fung. p. 267.”

Persoon published two more names for the present fungus; first, in conjunction with Peziza villosoa, he introduced Peziza incarnata Pers.; and, afterwards, P. granuliformis Pers. Already when he published P. incarnata the author had his misgivings about its specificity and stated, “Uti et antecedens [P. villosoa], cujus forte varietas . . . .” He soon reduced it formally to the rank of a variety of P. villosoa. The differences between the two, as stated by Persoon, are that the latter species had white fruit-bodies and P. incarnata, pinkish ones. Persoon’s and Fries’s reduction of P. incarnata to P. villosoa is now generally accepted and seems correct. In both the substratum is big herbaceous stalks.

It is less clear why P. granuliformis was published. Its author (Persoon, 1822: 267) afterwards recognized it himself as conspecific with both Peziza villosoa and P. incarnata, which he appended as varieties (β and γ respectively) to P. granuliformis. There are three sheets of P. granuliformis preserved. Two of these (L 910.261–665 & 910.261–651) may have formed a single collection. The one which I select as type (L 910.261–665) is labelled in Persoon’s handwriting, “Peziza granuliformis Syn. fung. p. 6 [51] / —— villosoa Eusd. p. 655.” It shows that finally he considered the two as completely identical, a conclusion also reached by Fries, and to which I subscribe. A third (L 910.256–1204, “circa Parisios”) is also Lachnella villosoa, while the same applies to a fourth (L 910.261–661; with a “?”).

As to Cyphella villosoa as described by Patouillard (1884: 115 f. 257), Pilat (1924: 208) remarks about it: “Patouillard schreibt unrichtig [Sporen] 4 × 7 µ. Er hat wahrscheinlich Cyphella stenospora Bourt. et Galz. zur Hand und vielleicht die wirkliche Cyphella villosoa Karst. überhaupt nicht gekannt.” It would appear that Pilat took these spore measurements from Saccardo. If one computes them from Patouillard’s figure, one gets 9–10.5 × 4 µ. If one takes into consideration that Patouillard on several occasions in his “Tabulæ” gave spore sizes too small and that he clearly depicted spindle-shaped basidioles as well as somewhat triangular spores, then one may conclude that his determination of the depicted fungus was correct.

**Lachnella tiliae (Peck)** Donk apud Sing.


Fruit-body turbinate, the disk rather flattened, the dried fruit-body with a hard core which resists crushing under the cover-glass for a considerable time. Hairs in KOH solution 250 µ long (or longer), 5–7.5 µ wide, with lumen capillary only at base and gradually widening upwards, asperulate, locally swollen-deformed as in L. villosa. Basidia (especially those at centre of disk) very gradually narrowing downwards, 78–125 × 10.5–14 µ, with 2 (–3–4) horn-shaped sterigmata, 7–11 × 3–4 µ long. Spores slender-trigonal ellipsoid, 16–19.5 × 5.75–7 µ, broadest near base, many slightly constricted just above middle, adaxially flattened or even slightly depressed, with almost lateral apiculus; contents granular.

Nearly always on branches of Tilia.


SPECIMENS EXAMINED.—U.S.A., Type (K); Vermont, Middlebury (Burt, hb. Bourd. 16.101); Missouri, Emma (Demetrio; Rab., Wint., & Pazschke, Fungi europ. & extraeur. No. 3942). CANADA, London (Dearness, in Ell. & Ev., N. Amer. Fungi II No. 2316a, as Cyphella pezizoides).

Easily distinguishable from the two other species by its more slender and longer spores, the longer basidia, and by the substratum which is nearly always Tilia. It is not known from outside the North American continent.

Other species of Lachnella

Cyphella cheesmanni Mass.


I suspect that this may belong to Lachnella, perhaps L. alboviolascens (“sporis ovoideis, ... hyalinis, 12–15 × 7–8 µ”; “in ramis decorticatis”). The indication that the spores are finely asperulate would in that case be an error.

Cyphella pyriformis G. Cunn.


This would differ from Lachnella alboviolascens in the shape of its spores, “pyriform, flask-shaped, or tear-shaped, base rounded, apex long-acuminate”.

Cyphella turbinata G. Cunn.


Another species that seems very close to Lachnella alboviolascens, but has “turbinate” spores. The accompanying figure depicts them as pear-shaped (with the narrow end apically); the spores of Cyphella pyriformis (see above) are not as typically pear-shaped. Compare a note under L. villosa in the present paper on an ‘abnormal’ European collection, on Pteris aquilina.
Cyphella australiensis Cooke (see also p. 69) is based on a specimen that, according to Cunningham (1953a: 277) is a specimen of an immature Aleurodiscus. I have only seen the later collection referred by Cooke to C. australiensis (Australia, New South Wales, Centennial Park, leg. E. Cheel 21, K, on dead branches of Jasmine). This collection Cunningham refers to Cyphella villosa, but to me it looks more like typical Lachnella alboviolacea, because of the size of the cups (1–1.5 mm in diam.) and the substratum ("on bark"); I did not examine it microscopically.

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