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A MONOGRAPHIC REVISION OF THE GENUS SCLEROTINIA

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SUMMARY

The genus *Sclerotinia* (Inoperculate Discomycetes) is redefined to include only those species producing tuberoid sclerotia not incorporating host tissue within the sclerotial medulla, developing an apothecial ectal excipulum composed of globose cells, and not producing a disseminative conidial state. Keys to the sclerotial-forming genera of the Sclerotiniaceae and to the species of *Sclerotinia* are provided. Three species are retained in the genus: *S. sclerotiorum, S. minor, S. trifoliorum.*

The taxonomy and nomenclature of 259 epithets previously referred to *Sclerotinia* are reviewed with 21 placed in synomymy under the 3 accepted species and 25 included as imperfectly known; 210 epithets are excluded and either assigned to other genera or accepted in other genera where they have been referred by other authors. Two new genera are erected: *Elliottinia,* to accommodate *S. kerneri,* and *Dumontinia,* to which *S. tuberosa* is transferred. *S. camelliae* Hansen & Thomas, a nomen nudum, is provided with a Latin diagnosis and placed in *Ciborinia.*

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INTRODUCTION

In most of the larger genera of phytopathogenic fungi the necessity of naming and of recognizing variation has long been at odds with the need for simple systems of identification and diagnosis. Despite continued study by phytopathologists and taxonomists, the taxonomic delimitation and relationships of the plant pathogenic species of *Sclerotinia* have never been resolved. Over the years, using traditional morphological and host preference characters, over 250 taxa of diverse relationships, both pathogenic and nonpathogenic, have been assigned to *Sclerotinia*, with consequent controversy and confusion over generic and specific limits. In an effort to simplify identification, previous workers reevaluated several traditional characters and discarded them as being too variable; one result is that for the past twenty-five years several important plant pathogenic species were synonymized under the name *Sclerotinia sclerotiorum*. More recently, with increased information about the biology and epidemiology of these species and with reexamination in the light of microanatomical and cultural characters employed by contemporary discomycete taxonomists, it has become apparent that under this broad definition of *S. sclerotiorum* several taxa have been submerged under one species.

The redelimitation based on morphological and cultural characters of three closely related species provided in this paper should serve both as a framework for comparative study and as a useful system for identification. The emended generic concept is comparable to those delimiting other genera in the Sclerotiniaceae. A large group of species are either placed in synonymy or referred to other genera.

MATERIALS AND METHODS

Microscopic investigations in these studies were of both fresh collections where available and dried herbarium specimens, which were rehydrated in distilled water. Apothecia and sclerotia were sectioned on a freezing microtome at 15-20 µm and 5 µm respectively.

Observations were made in three mountants: Melzer's Reagent, methyl blue in lactic acid, and KOH-phloxine-glycerine, the formulations of which follow:

i. Melzer's Reagent: 0.5 gm iodine, 1.5 gm KI, 20 gm chloral hydrate, 20 ml distilled water.

ii. Methyl blue: 0.05 gm Williams 'Revector' stain, soluble blue 706, 30 gm lactic acid.
iii. KOH-phloxine-glycerine: Section placed in drop of 2% aq KOH; section transferred to a drop of 1% aq phloxine; section transferred to a drop of 50% slightly acidified aq glycerine; section transferred and mounted in 96% glycerine.

Measurements were made in Melzer's Reagent and methyl blue in lactic acid.

Studies of nuclei were made using the Giemsa staining technique outlined by Commonwealth Mycological Institute (1968).

Cultures were grown and maintained on DIFCO Potato Dextrose Agar. For information on the handling of cultures and the technique used to produce apothecia *in vitro* see Kohn (1979).

Photomicrographs were taken with a camera mounted on a Zeiss WL microscope. Drawings were made with the aid of a Wild drawing tube.

Microanatomical terms are those of Starbäck (1895), revised and defined by Korf (1952, 1973).

Herbarium abbreviations are those of Holmgren and Keuken (1974). Abbreviations of literature citations are from *Botanico-Periodicum-Huntianum* (Lawrence, et al. 1968) or are based on the style of abbreviation therein.

The sign (!!) indicates that holotype or isotype material has been examined; the sign (!), that syntype, paratype, or other authentic material has been examined.

In the synonymies of excluded taxa, names I am prepared to accept are in *ITALIC CAPITALS*.

Typical hosts, where indicated, are as reported in original descriptions; author citations are those of the describing author and where not indicated by the author, have not been included in this paper.

Several new combinations cited in this paper are formally made in another paper (Kohn, 1979, *Phytopathology*, *in press*). To avoid confusion in nomenclatural dating in the event that this paper is published first, use of these combinations in this paper is to be considered provisional pending formal publication in *Phytopathology*.

MORPHOLOGY

STROMA. The stroma is a food storage and survival organ composed of a hyaline hyphal medulla surrounded by a rind of cells with melanized walls. Whetzel (1945) recognized two types of stroma: the *substratal stroma*, an indeterminate stroma with a medulla of host tissue permeated by hyphae and with a thin black rind covering at least a portion of the stromatal surface, and the *sclerotial stroma*, a determinate stroma either developing within host tissues and incorporating remnants of these tissues within the medulla, or developing free from host tissues. The species of *Sclerotinia* possess a sclerotial stroma developing free from host tissues, not incorporating host tissues within the medulla, and often collected in the absence of identifiable host organ remnants.

The sclerotial medulla in *Sclerotinia* is composed of hyaline textura oblita with heavily gelatinized walls, 2-3 μm thick. The sclerotial rind is composed of the apices of these medullary cells which turn out perpendicularly to the sclerotial surface and become textura prismatica, with cells inflating to become globose and often somewhat disarticulated. Brown pigmentation of these rind cells occurs in the walls of a two- to six-deep layer of the outermost cells (Figs. 3e, 9f).

Sclerotia of *Sclerotinia* species develop abundantly in culture although the ability to produce sclerotia may be lost in old isolates. Under the conditions of these studies, sclerotia developed superficially above the surface of the agar on aerial mycelium.

MICROCONIDIA. As in the other genera of the Sclerotiniaceae, globose, hyaline microconidia are produced from flask-shaped phialidic conidiophores borne laterally on hyphae either singly or grouped in sporodochia (Fig. 9e). In *Sclerotinia* microconidia are produced superficially on aerial mycelium in culture, on the hymenial surface of apothecia (from germinating ascospores), and on the surface of sclerotia. Since the species of *Sclerotinia* are homothallic (Keay, 1939), the role of microconidia as functional spermatia is dubious. Evidence has been given for microconidia serving as germinable spores after overwintering in *Botrytis fabae* (Harrison & Hargreaves, 1977) but as yet no such role has been proven for species in *Sclerotinia*.

ASCOCARP. The apothecia are stipitate, cupulate and are produced from a sclerotium (Figs. 2, 6, 8b). Stipe primordia originate within the medulla of the sclerotium and eventually rupture the rind (Saito, 1977). Apothecia are 2-10 mm in diameter, cinnamon to umber and usually concolorous, though mottling and darkening at the margin are common. Some mealiness due to tomentum hyphae may be present on the surface of the receptacle and stipe.

The 8-spored asci are produced from vertically oriented repeating croziers (Figs. 3c, 7b). The asci are cylindrical, tapering down to the attachment to the crozier. The ascus walls are thin, 1 μm thick, and the apex is slightly thickened, 1-2 μm thick (Figs. 3a, 7d, 9c). Species in *Sclerotinia* show a bluing reaction of the ascus pore channel wall in Melzer's Reagent, termed J+. In one species this reaction is very weak but is enhanced with pretreatment in 2% KOH following the procedure of Kohn & Korf (1975).

The ascospores are hyaline and ellipsoid to somewhat flattened on one surface (Figs. 3b, 7c, 9b). In one species dimorphism in spore size has been observed, generally with a 4:4 segregation of small and large ascospores within the ascus (Fig. 8a). This phenomenon has been observed and illustrated by Woronin (1888) and Buchwald (1956) in *Monilinia* and by Sawada (1919) in *Ciborinia allii*. Ascospores are uniseriate in the ascus (Figs. 3d, 7a, 9d). Germination of ascospores may be bipolar or unipolar, with germination often occurring from the middle of the ascospore (Fig. 9a). In culture, ascospores often germinate while still within the ascus. Ascospores are biguttulate at maturity. Nuclear number within ascospores varies from 2-4 according to species as reported by Wong & Willetts (1979) and verified by my observations.

The paraphyses are filiform, sparsely septate and occasionally branched (Figs. 3d, 7a, 9d).

The subhymenium is a compact layer, usually bound in gel, of pale brown-walled textura intricata. This layer often blues in Melzer's Reagent. The medullary excipulum is composed of loosely interwoven textura intricata, usually hyaline and often incorporating rhomboidal crystals. The meduallary excipulum of the stipe may be of textura intricata or textura porrecta, sometimes bound in gel and often including rhomboidal crystals.

The ectal excipulum of the apothecium and stipe is composed of textura prismatica oriented perpendicularly to the apothecial surface, with the hyaline to pale brown-walled cells becoming inflated to globose and disarticulating somewhat. In one species, the margin of the apothecium is composed completely of globose cells (Fig. 5). In the other species, the margin is composed of textura porrecta parallel to the asci; further down the ectal excipulum, toward the flanks, the textura porrecta develops shorter cells oriented perpendicularly to the apothecial surface (Fig. 4). Gel may be present or absent in this layer (see Kohn, 1979) and bluing in Melzer's Reagent occurs occasionally in the presence of gel.

Tomentum hyphae, one to two cells in length, are often present as processes from the globose cells of the ectal excipulum of the apothecium, stipe, and sclerotium. These are usually hyaline to pale brown-walled on the apothecium and darker brown and often grouped in fascicles on the stipe. The presence or absence of tomentum appears to be rather variable (Kohn, 1979) but is of some use as a taxonomic character of the sclerotial rind (Fig. 9f).

HISTORY AND DELIMITATION: TAXONOMY AND NOMENCLATURE

The genus *Sclerotinia* was erected by Fuckel to accomodate *Sclerotinia candolleana*, *S. fuckeliana*, *S. libertiana* (an obligate synonym of *S. sclerotiorum* erected by Fuckel to avoid a supposed tautonym), *S. tuberosa*, and *S. baccata*. *S. baccata* was found to be an operculate discomycete and was synonymized by Rehm with *Sarcoscypha protracta* (Fr.) Sacc. Nannfeldt (1932) accepted *Sclerotinia* in the broad sense of Fuckel and synonymized *Stromatinia*, further expanding the generic concept.

In 1945 Whetzel redelimited the genus in a much more restricted sense to include only those species producing a true sclerotium not including host tissue, not producing a conidial state, and with hyaline spores. He transferred *S. fuckeliana* to his new genus *Botryotinia*, erected to accomodate those species producing a *Botrytis* conidial state, and transferred *S. candolleana* to *Ciborinia*, also a new genus, erected to include species in which remnants of host tissue are incorporated in the sclerotial medulla. Whetzel also accepted *Stromatinia* on the basis of the mantling sclerotium compared to the tuberoid sclerotium of *Sclerotinia*. In 1947 Buchwald segregated a group of species previously assigned to *Sclerotinia* developing sclerotia and *Myrioconium* microconidial states within the culms of species in the Juncaceae and Cyperaceae in a new genus, *Myriosclerotinia*. Many phytopathologists and some taxonomists (Dennis, 1956, 1978) accept *Sclerotinia* in the broad sense of Fuckel to include a large and diverse group of species. Some phytopathologists as yet choose to include *Monilinia* in their concept of the genus.

In addition to the development of a tuberoid sclerotium not incorporating host tissue, absence of a disseminative conidial state, and production of hyaline ascospores, I delim- the genus *Sclerotinia* in a yet more restricted sense to include only those species in which the ectal excipulum is composed of globose cells oriented perpendicularly (as textura prismatica with inflated cells) to the apothecial surface. *S. tuberosa*, considered congeneric with *S. sclerotiorum* by Korf & Dumont (1972), has an ectal excipulum composed of textura porrecta, usually embedded in a thick layer of gel, oriented parallel to the apothecial surface, and must, therefore, be transferred to a new genus, *Dumontinia*. I accept the genus *Myriosclerotinia* in the sense of Buchwald with the additional observation that species included in this genus usually possess a covering layer of textura porrecta over the ectal excipulum and have granularly roughened medullary hyphae, in addition to internal development within the host of sclerotia and the *Myrioconium* microconidial state.

This restricted generic concept of *Sclerotinia* has necessitated the exclusion or placement in synonymy of many epithets. While not a problem in species retained in the genus, the application of Article 59 of the International Code of Botanical Nomenclature concerning fungi with pleomorphic life cycles to some epithets previously assigned to *Sclerotinia* requires clarification. An epithet based on an anamorph (Hennebert & Weresub, 1977) and assigned to a teleomorphic genus indicates poor taxonomic judgment but is not invalid and preoccupies the combination even if someone later describes the teleomorph and applies the same name. When the teleomorph is discovered, it requires a new epithet if placed in the same teleomorphic genus; the same epithet may be used, with a new author's citation, in a different teleomorphic genus.

The typification of *Sclerotinia* has been a source of confusion for many years. In 1928 the genus was lectotypified by Honey with *S. candolleana*. Whetzel transferred *S. candolleana* to *Ciborinia* in 1945, and ignoring Honey's lectotypification, retypified his redelimited genus *Sclerotinia* with *S. sclerotiorum*. If one accepts Whetzel's restricted circumscription of genera in the Sclerotiniaceae, a taxonomic decision, then *Sclerotinia*, lectotypified by *S. candolleana*, becomes the oldest available name for *Ciborinia*. This was the position taken by Korf & Dumont (1972) in erecting *Whetzelinia*, typified by *S. sclerotiorum*. Because many workers, especially plant pathologists, accept both Whetzel's circumscription and his typification of *Sclerotinia* with *S. sclerotiorum*, a proposal to conserve *S. sclerotiorum* as the lectotype of *Sclerotinia* has been presented (Buchwald & Neergaard, 1976) and accepted by the Special Committee for Fungi and Lichens of the International Association of Plant Taxonomists (Peterson, 1978). It has received approval by the IAPT General Committee and only final action by the International Botanical Congress in 1981 is still pending.

HABITAT

For a review of the ecology of *Sclerotinia* species see Adams (1979). The history, geographical distribution, host range, economic importance and general symptomology have been recently reviewed by Purdy (1979).

The species of *Sclerotinia* are world-wide in distribution and are pathogenic on all parts of a wide range of herbaceous plants. Diseases caused by these species are of considerable economic importance. *S. sclerotiorum* has a reported host range of over 350 species in 60 families (Schwartz, 1974) including plants occurring as weeds. *S. minor* has a somewhat narrower host range including several families of economically important plants. While the two preceding species attack a broad range of plants, including forage legumes, the host range of *S. trifoliorum* is virtually limited to forage legumes. Though Keay (1939) recognized *S. trifoliorum* var. *fabae* on broad bean, recent electrophoretic studies of Wong & Willetts (1975) suggest that this is actually *S. sclerotiorum*. Since type or authentic material was not available I have been unable to corroborate their observations with morphological studies. It must be pointed out that because of confusion over species delimitation in this group, especially in the years since Purdy (1955) placed *S. minor* and *S. trifoliorum* in synonymy under *S. sclerotiorum*, the use of these names in the literature has been inconsistent and confused; reports of host range and distribution of these species must be approache with caution.

As suggested by cultural studies (Sproston & Pease, 1957; Saito, 1977), production of apothecia in nature is dependent upon appropriate light, temperature, and moisture conditions. When collected in nature, apothecia are found in cool weather, arising from moist sclerotia which have developed on decayed plant parts on or in wet to moist soil. While the stipe and sclerotium may be buried in soil, the receptacle is exposed on the soil surface. In temperate regions apothecia are produced in the spring, summer, and fall, with differences in fruiting seasons among species. In tropical regions apothecial production corresponds with seasonal rainfall.

COMPARATIVE STUDIES IN CYTOLOGY, ELECTROPHORETIC ASSAYS, SCLEROTIAL ONTOGENY, AND MYCELIAL INTERACTIONS

In recent years several techniques previously not applied to comparative studies of the economically important species of *Sclerotinia* have been explored in an effort to supplement morphological data and shed light on the delimitation of biological species in this group. These techniques include comparative studies of cytology, electrophoretic assays, sclerotial ontogeny, and mycelial interactions.

Björling (1942, 1951) reported the nuclear number for ascospores of *S. sclerotiorum* and *S. trifoliorum* as 2 and 4 respectively, with the haploid chromosome number for both species of 6. Frandsen (1946) reported that the haploid chromosome number of both species was 8. Recently, Wong & Willetts (1979) have reported for *S. minor* and *S. trifoliorum* 4 nuclei per ascospore while *S. sclerotiorum* has 2 nuclei per ascospore. They also report a haploid chromosome number for hyphal tips and germinating ascospores of 4 for *S. minor* and 8 for *S. sclerotiorum* and *S. trifoliorum*. I have confirmed their findings on nuclear numbers in studies of freshly produced apothecia. While Berthet (1964) reported the nuclear number in ascospores of *S. tuberosa* to be 2 to 6, I observed 2 to 4 nuclei per ascospore. I have not attempted to count chromosomes in these studies.

On the basis of electrophoretic patterns for soluble proteins, arylesterase, acid phosphatase, tetrazolium oxidase, glucose-6-phosphate dehydrogenase (NADP-linked) and reduced nicotinamide adenine dinucleotide phosphate dehydrogenase of forty-seven isolates of *Sclerotinia* species collected from a variety of crops in Australia, New Zealand, North America and Europe, Wong & Willetts (1975) recognized four subgroups among their isolates: Group 1, small sclerotial isolates from a wide variety of host plants; Group 2, large sclerotial isolates from forage legumes; Group 3, large sclerotial isolates from a wide variety of host plants including forage and crop legumes; Group 4, one isolate from *Anemone*. Wong and Willetts interpreted these groups as representing *S. minor*, *S. trifoliorum*, *S. sclerotiorum* and *S. tuberosa* respectively, and concluded that these were four distinct species with *S. tuberosa* "characteristically different" from the other three species. It is interesting to note that on the basis of morphological characters I have also recognized these species, retaining the first three in *Sclerotinia* and transferring *S. tuberosa* to a new genus, *Dumontinia*.

Studies by Willetts & Wong on sclerotial ontogeny (1971) and on mycelial interactions (Wong & Willetts, 1975) lend further support to this delineation of species. The studies on sclerotial ontogeny and their relationship to the circumscription of species based on morphological characters are discussed in Kohn (1979).

CULTURAL STUDIES

Since the species of *Sclerotinia* are most frequently observed under field conditions as the causal agents of plant diseases, and since apothecia of these species have been rather infrequently collected, many attempts have been made over the years to delimit species on the basis of cultural characters of the anamorphs. Studies of this type have usually led to what now seem like excessively broad or narrow species concepts in the light of recent biological, epidemiological, and morphological information about these organisms. While Chivers (1929) found differences in the effect of temperature on the size of sclerotia between *S. intermedia* and *S. minor*, on the basis of other characters I have synonymized them. In one of the few applications of numerical classification to the taxonomy of higher fungi, Morall, Duczek and Sheard (1972) studied 114 isolates, which, except for two isolates identified as *S. trifoliorum*, were initially identified only as *S. sclerotiorum*, for variation and correlation within and between morphology, pathogenicity, and pectolytic enzyme activity. Using agglomerative classification, they found no lines of demarcation between "species" within the group of isolates tested and concluded that their results supported the broad concept of *S. sclerotiorum* put forth by Purdy in 1955 (see Kohn, 1979, for a discussion of Purdy's species concept). In addition to using fewer than the optimum number of characters for numerical classification, and using evenly weighted non-independent characters, as the authors acknowledge, no attempt was made initially to identify the isolates used to assure representation of any variation other than host. It seems probable that 112 isolates of *S. sclerotiorum* were subjected by them to a barrage of numerical analysis (the authors note that the isolates identified as *S. trifoliorum* were "somewhat distinctive"). The use of cultural characters by Willetts and Wong (1971, 1975) in studies of sclerotial ontogeny and mycelial interactions has, on the other hand, provided additional taxonomic characters for the delimitation of species within this group, using isolates initially identified on the basis of morphological characteristics.

The purpose of my cultural studies was not strictly to observe mycelial and sclerotial variation but, more importantly, to explore both the conditions required to produce apothecia and variation in the microanatomical characters of the apothecium currently in use among discomycete taxonomists. Species of *Sclerotinia* are well suited to this type of study; most other discomycetes will not produce apothecia in culture. Since the publication in 1932 of Nannfeldt's *Studien über die Morphologie und Systematik der nicht-lichenisierten inoperculaten Discomyceten*, microanatomical characters of the sterile tissues of the apothecium have been incorporated into descriptions and delineation of taxa, where previously these descriptions were limited to microscopic observations of such characters as size, shape and color of ascospores, asci and paraphyses.

Working with a collection of approximately 65 isolates of species of *Sclerotinia*, *Ciborinia*, *Myriosclerotinia*, and *Botryotinia* from Europe, Australia and New Zealand, Asia and North America, I have observed cultural characteristics and, for 26% of these isolates, apothecial production (see Tables I and II). Apothecia produced *in vitro* were obtained only for isolates finally identified as *S. sclerotiorum*, *S. minor*, and *S. trifoliorum*. Most isolates were derived from diseased tissue, although some were made from single or mass ascospores. Cultures, grown and maintained on DIFCO Potato Dextrose Agar, were transferred to PDA in 9 cm glass petri plates, incubated for 3-4 days at room temperature, then transferred with a 5 mm cork borer from the growing margin of the colony to 500 ml Erlenmeyer flasks containing autoclaved carrot discs and 25 ml distilled water. The flasks were incubated for 4 wk without

TABLE I: *SCLEROTINIA* ISOLATES EXAMINED

Isolates are grouped following final identification. All numbers are those of the Cornell University Plant Pathology Herbarium (CUP).

Isolate	Host	Origin	Source
Sclerotinia sclerotiorum:			
58235*	bean	U.S.A.	Lumsden
58293	bean	U.S.A.	Abawi
58294	bean	U.S.A.	Abawi
59801	bean	U.S.A.	Lumsden
59815*	bean	U.S.A.	Bateman
58298	bean	Australia	Merriman
58243*	bean	Switzerland	Schmidt
58299	lupine	Australia	Merriman
58236*	Alsike clover	Canada	Stelfox
58242*	red clover	Canada	Stelfox
58239	lettuce	U.S.A.	Lorbeer
59802	lettuce	U.S.A.	Lorbeer
59803*	lettuce	U.S.A.	Lorbeer
58297	lettuce	Australia	Merriman
59806	sunflower	Canada	Dueck
58295	star-thistle	Canada	Elliott
58238*	rape	Canada	Stelfox
59804	rape seed	Canada	Dueck
59807	rape seed	Canada	Dueck
59805	rhubarb	Canada	Dueck
58296	tobacco	Switzerland	Schmidt
58240*	?	U.S.A.	Lorbeer
Sclerotinia minor:			
58241*	bean	U.S.A.	Lumsden
58288	bean	Australia	Hawthorne
58233*	white clover	New Zealand	Waters
58290	clover	Australia	Hawthorne
58237*	peanut	U.S.A.	Porter
58232*	lettuce	U.S.A.	Grogan (Abawi)
58286	lettuce	U.S.A.	Lorbeer
59817	lettuce	U.S.A.	Abawi
58234*	cabbage	New Zealand	Waters
58292	cauliflower	Australia	Merriman
58287	tomato	Australia	Hawthorne
58289	potato	Australia	Hawthorne
58285	carrot	Canada	Stelfox
58291*	parsley	Australia	Hawthorne
58284	?	U.S.A.	Lorbeer
Sclerotinia trifoliorum:			
58244*†	red clover	Switzerland	Matheis
58277*	red clover	Switzerland	Schmidt
58278*	red clover	Switzerland	Schmidt
58279	red clover	Switzerland	Schmidt
58254†	possibly clover	Switzerland	Matheis
58282	?	England	Dixon
58283	?	Northern Ireland	Malone

* Apothecia produced *in vitro* from this isolate; photographs and dried apothecia are in deposit in CUP under this number.

† Field-collected apothecia, from which the isolate was made, are on deposit in CUP under this number.

TABLE II: OTHER ISOLATES EXAMINED

Isolates are listed under names based on identifications of field collections of apothecia from which isolates were made. All numbers are those of CUP. Generic name abbreviations: *B.* = *Botryotinia; C.* = *Ciborinia; D.* = *Dumontinia; M.* = *Myriosclerotinia.*

Isolate	Species	Host	Origin	Source
54929†	*B. ranunculi*	*Ranunculus aconitifolius*	Switzerland	Matheis
59814†	*C. allii*	*Allium cepa*	Japan	Matsuo
58248†	*C. camelliae*	*Camellia japonica*	U.S.A.	Stoner
59810	*C. erythronii*	*Erythronium americanum*	Canada	Elliott
59809	*C. pseudobifrons*	*Populus deltoides*	Canada	Elliott
59811	*C. pseudobifrons*	*Carex* sp.	Canada	Elliott
54733†	*D. tuberosa*	*Anemone nemorosa*	Germany	Matheis
54734†	*D. tuberosa*	*Anemone nemorosa*	Germany	Matheis
58253†	*D. tuberosa*	*Anemone nemorosa*	Belgium	Hennebert
59808	*D. tuberosa*	*Sanguinaria canadensis*	Canada	Elliott
59812	*M. borealis*	*Secale cereale*	Canada	Dueck
59813	*M. borealis*	*Triticum* sp.	Canada	Dueck
56064†	*M. dennisii*	*Eriophorum vaginatum*	Germany	Matheis
54912†	*M. sulcata*	*Carex paradoxa*	Switzerland	Matheis

† Field-collected apothecia, from which isolates were made, are on deposit in CUP under this number; for CUP 59814, apothecia produced in culture are on deposit as CUP 53255 and apothecia collected in the field are deposited under CUP 53252.

light at 15 C. Sclerotia were harvested, rinsed in distilled water, and transferred to sterile preparation dishes containing glass wool saturated with distilled water. The sclerotia were then "cold conditioned" for 4 wk at 0 C. The dishes were removed to a growth chamber set at 15 C, with flourescent and incandescent light at approximately 21,520 lx and a 14 hr photoperiod. Apothecial initials appeared 4-12 wk after introduction to the growth chamber. The subject of apothecial initiation has been studied by many workers; for a review see Saito (1977).

Although the results of my cultural studies are discussed in detail in Kohn (1979), some of the major points have interesting implications in considering species delimitation and phylogenetic relationships in *Sclerotinia*.

In comparing three generations of apothecia produced in culture and in some cases comparing apothecia produced in culture with apothecia of the same isolate produced in nature, I found that tissue types were stable, varying only in the number of cells present in a zone and in compactness, which is often determined by the presence or absence of gel. This agrees with the findings of Christiansen (1966) in studies of several species of *Ciborinia*, *Ciboria*, *Lambertella*, and *Rutstroemia*.

Although apothecia of *S. sclerotiorum* usually develop in

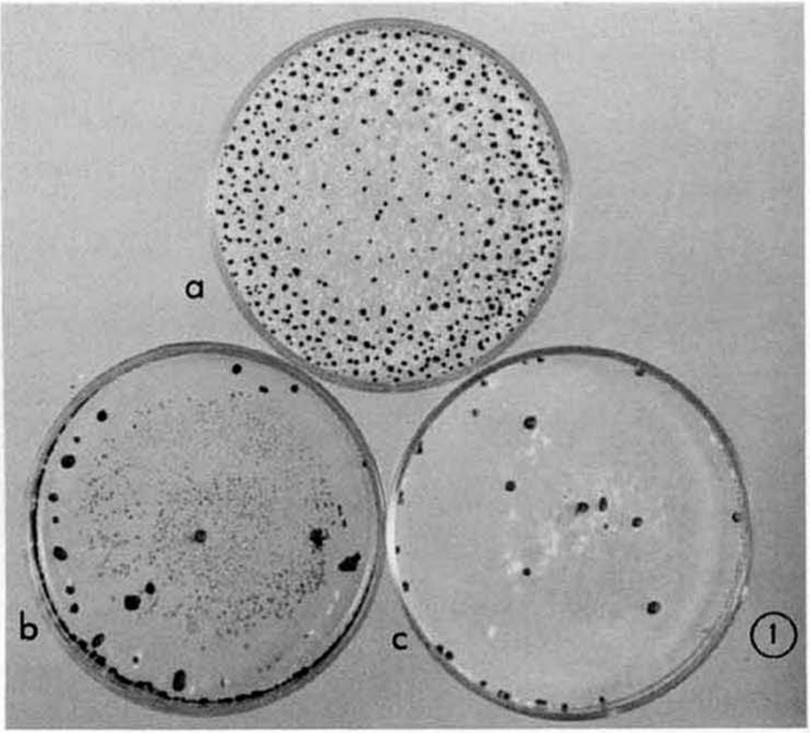


FIG. 1. Patterns of sclerotial formation in *Sclerotinia;* cultures grown for two weeks on PDA in 9 cm glass petri dishes. a. *Sclerotinia minor*, CUP 59817. b. *S. trifoliorum*, CUP 58254; pigmented haptera have formed on the underside of the agar in contact with glass. c. *S. sclerotiorum*, CUP 59818.

spring and early summer, apothecia of *S. trifoliorum* in late summer through autumn, and those of *S. minor* reportedly (Keay, 1939) from June to December, all three species produce apothecia simultaneously under identical conditions *in vitro*. The closely related *Dumontinia tuberosa* was never induced to produce apothecia under these conditions, nor were any other species in other genera of the Sclerotiniaceae tested in these studies. This is another indication that these three species are probably closely related.

Isolates uniformly fell into one of two classes of sclerotial development when grown on PDA at 15-20 C: either small sclerotia scattered abundantly throughout the colony (Fig. 1a), or large sclerotia arranged radially at the periphery of the growing margin of the colony, often forming concentric circles, radiating lines, and similar patterns (Figs. 1b, 1c). According to Willetts and Wong (1971), the small sclerotial form (*S. minor*) develops many small sclerotia laterally on hyphae throughout the colony, while the large sclerotial forms (*S. sclerotiorum*, and *S. trifoliorum*) develop fewer, larger sclerotia at the growing tips of hyphae, at the periphery of the colony. For comparative screening under uniform conditons, this should be a more useful method of distinguishing *S. minor* than the use of sclerotial size alone (see Purdy, 1955).

GENERIC DIAGNOSIS

SCLEROTINIA Fuckel, Jahrb. Nassauischen Vereins Naturk. 23-24: 330. 1870.
(Lectotype: *S. sclerotiorum* (Lib.) de Bary, *typus conserv. propositum*.)
≡ *Ciboria* subg. *Sclerotinia* (Fuckel) Boud., Bull. Soc. Myc. France 1: 115. 1885.
≡ *Whetzelinia* Korf & Dumont, Mycologia 64: 250. 1972 (*nom. rejiciendum prop.*).

Apothecia 2-10 mm wide, stipitate, produced from a sclerotium; receptacle cupulate to convex. Sclerotium produced free from host tissues, not incorporating host tissues within the sclerotial medulla. Asci 8-spored, J+, thin-walled, thickened at the apex. Ascospores uniseriate, smooth-walled, shape predominantly ellipsoid, biguttulate. Subhymenium well developed, of light brown-walled textura intricata, usually bound in gel. Medullary excipulum of hyaline, loosely woven textura intricata. Ectal excipulum of hyaline to light brown-walled textura prismatica oriented perpendicularly to the apothecial surface with cells inflated to globose, tomentum hyphae often present. Microconidia produced superficially on cultures and on surface of hymenium, hyaline, globose, produced from single phialides borne laterally on hyphae, or grouped in sporodochia.

Differing from other genera in the Sclerotiniaceae by: the presence of a tuberoid sclerotium which does not incorporate host tissue and is borne superficially on aerial mycelium; absence of a disseminative conidial state; production of hyaline ascospores; superficial production of microconidia.

KEY TO THE SCLEROTIUM-FORMING GENERA OF THE SCLEROTINIACEAE

1. Apothecia cupulate or verpoid, stipitate, on a distinct sclerotium with a well-differentiated rind and medulla; conidia produced........................<u>not</u> *Sclerotinia* (cfr. *Phaeosclerotinia, Monilinia, Pycnopeziza, Scleromitrula, Botryotinia, Gloeotinia, Septotinia*, etc.)
1. Apothecia cupulate or verpoid, stipitate, on a distinct sclerotium with a well-differentiated rind and medulla; conidia absent except for phialidic microconidia (*Myrioconium*).................................2

  2. Ascospores brown...................*Martininia*
  2. Ascospores hyaline..................3

3. Sclerotial medulla enveloping suscept tissues or, in culture, sclerotia at least partially immersed in the agar 4
3. Sclerotial medulla free of suscept tissues or, in culture, sclerotia formed above the agar surface...............7

  4. Ectal excipulum of apothecium composed of prosenchymatous cells........................*Elliottinia*
  4. Ectal excipulum of apothecium composed of globose cells 5

5. Sclerotia and microconidia produced within the stems of gramineous, juncaceous, and cyperaceous hosts..*Myriosclerotinia*
5. Sclerotia and microconidia produced within the stems of other monocot and dicot families......6
    6. Apothecia verpoid..................*Verpatinia*
    6. Apothecia cupulate.................*Ciborinia*
7. Stroma consisting of a mantling stroma of indefinate dimensions, and smaller sclerotia (sclerotules) formed on aerial mycelium above the mantle; apothecia occurring on the mantling stroma only.................*Stromatinia*
7. Not as above...........................8
    8. Apothecia verpoid..................*Mitrula sclerotiorum* (a presumed parasite on sclerotia of *Sclerotinia* spp.)
    8. Apothecia cupulate.................9
9. Outer layer of apothecial ectal excipulum composed of prosenchymatous cells usually embedded in gel...*Dumontinia*
9. Outer layer of apothecial ectal excipulum composed of globose cells.........................*Sclerotinia*

KEY TO THE SPECIES OF SCLEROTINIA

1. Ascospores dimorphic in size, showing segregation in ascus, tetranucleate, length/width ratio of ascospores ≤ 2.0; ectal excipulum at margin of apothecium composed of prosenchyma "turning out" perpendicularly to the apothecial surface; sclerotia produced at growing margins of colony only, forming concentric rings, radial lines and other patterns, individual sclerotia 2-20 mm long.......................................*Sclerotinia trifoliorum*
1. Ascospores uniform in size, no segregation in ascus.......2
    2. Ectal excipulum at margin of apothecium composed of globose cells; ascospores tetranucleate, length/width ratio of ascospores $<$ or $>$ 2.0; sclerotia formed abundantly throughout the colony, sometimes adhering to form an aggregate crust in culture, individual sclerotia 0.5-2 mm long............*Sclerotinia minor*
    2. Ectal excipulum at margin of apothecium composed of prosenchyma "turning out" perpendicularly to the apothecial surface; length/width ratio of ascospores >2.0, ascospores binucleate; sclerotia produced at the growing margins of colony only, forming concentric rings, radial lines and other patterns, individual sclerotia 2-20 mm long..................*Sclerotinia sclerotiorum*

ACCEPTED SPECIES

1. *Sclerotinia sclerotiorum* (Lib.) de Bary, Vergl. Morph. Biol. der Pilze, Mycet. Bact., p. 22, c. ic. 1884.
    ≡ *Peziza sclerotiorum* Lib., Plant. crypt. Ard. *326*. 1837. (!!)
    ≡ *Helotium sclerotiorum* (Lib.) Fuckel, Fung. rhen. exsicc. suppl. IV. *1861*. 1866. (!!)

≡ *Sclerotinia libertiana* Fuckel, Jahrb. Nassauischen Vereins Naturk. 23-24: 331. 1870 (name change).

≡ *Phialea sclerotiorum* (Lib.) Gillet, Champ. France discomyc. p. 98, c. ic.-73(1). 1881.

≡ *Hymenoscypha sclerotiorum* (Lib.) Phillips, Man. Brit. discomyc., p. 115. 1887.

≡ *Whetzelinia sclerotiorum* (Lib.) Korf & Dumont, Mycologia 64: 250. 1972; [*Whetzeliana sclerotiorum* Wellman, Dictionary of Tropical American Crops and Their Diseases, p. 10. 1977 (*lapsus calami*)]; [*Sclerotinia whetzeliana* Wellman, Dictionary of Tropical Plant Crops and Their Diseases, p. 395. 1977 (*lapsus calami*).]

= [*Peziza sclerotii* Fuckel, Bot. Zeit. (Berlin) 35: 249, c. ic.-X(a-d). 1861 (*nomen nudum*).]

= *Peziza kauffmanniana* Tichomirow, Bull. Soc. Imp. Naturalistes Moscou 4: 295, c. ic.-IV-VII. 1868.

= *Rutstroemia homocarpa* Karst., Bidrag. Kännedom Finlands Natur Folk 19: 107. 1871. (!!)

= *Sclerotinia postuma* Berk. & Wilson, Gard. Chron. 20: 333, c. ic. 1883.

= *Sclerotinia ficariae* Rehm *in* Rabenh., Krypt.-Fl. Deutschl. II, 1(3): 815. 1893. (!!)

= *Sclerotinia opuntiarum* Speg., Anales Soc. Ci. Argent. 50: 37. July, 1900. (!!)

  ≡ *Sclerotinia sclerotiorum* (Lib.) de Bary var. *opuntiarum* (Speg.) Alippi, Revista Fac. Agron. Univ. Nac. La Plata 36: 149. 1960.

= *Sclerotinia moelleriana* P. Henn., Hedwigia 41: 27. 1902.(!!)

= *Sclerotinia wisconsinensis* Rehm, Ann. Mycol. 6: 317. 1908. (!!)

= *Sclerotinia matthiolae* Lendn., Bull. Soc. Bot. Genève 9: 21, c. ic.-1-3, 1917; Bull. Soc. Bot. Genève 9: 221. 1918.

= *Sclerotinia henningsiana* Kirschst., Verh. Bot. Prov. Brandenburg 40: XXVII. 1918. (!)

= *Sclerotinia riograndensis* Rick, Brotéria, Sér. Bot. 25: 99. 1931. (!)

= *Sclerotinia galeopsidis* Velen., Monogr. discomyc. Bohem. 1: 227. 1934. (!!)

= *Sclerotinia caudata* Velen., Novitates Mycol. Novissimae p. 129. 1947. (!!)

= *Sclerotinia sclerotiorum* (Lib.) de Bary forma *orobanches* Narasimhan & Thirumalachar, Phytopath. Z. 22: 426, c. ic. 1954.

= *Sclerotinia xanthorrhoeae* Beaton & Weste, Trans. Brit. Mycol. Soc. 68: 73, c. ic. 1977. (!!)

FIGURES 1c, 2, 3, 4.

Sclerotia borne superficially, usually on dense, white mycelium, globose to cylindrical but quite variable in shape, (2-)5-15(-30) x 2-8(-15) mm, with black outer rind and white inner context; in culture developing at the growing margins of

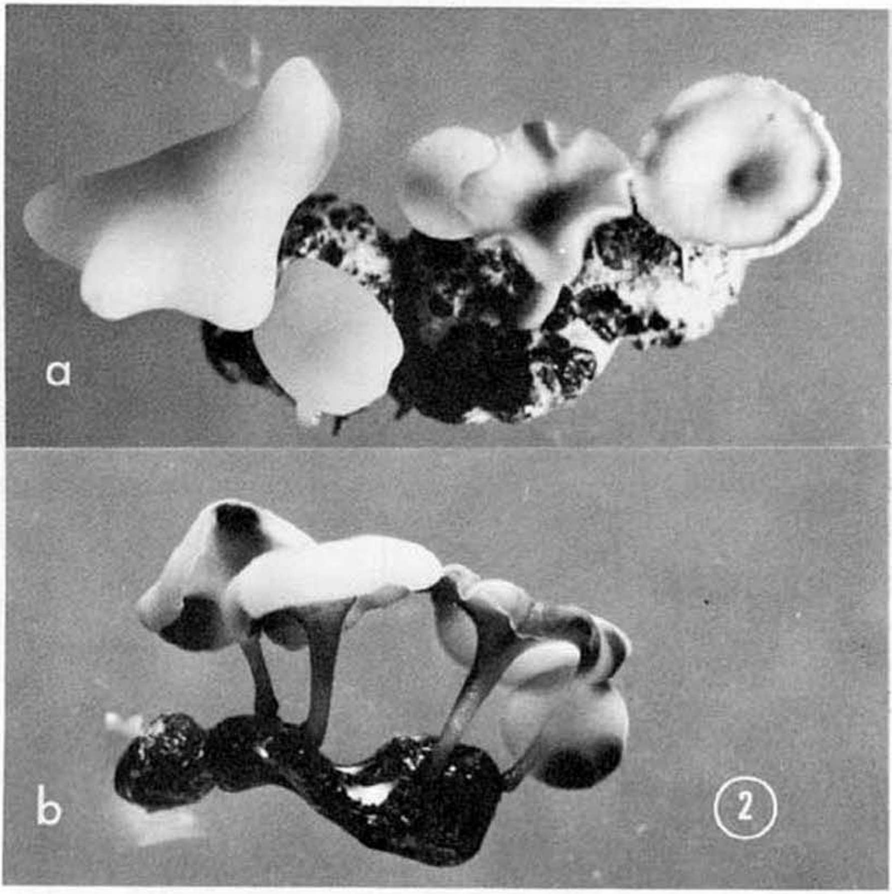


FIG. 2. *Sclerotinia sclerotiorum*, apothecia developed in growth chamber, × 3. a. CUP 58243. b. CUP 58235.

the colony, often forming in concentric rings, radiating lines and other patterns. *Sclerotial medulla* of tightly interwoven, hyaline textura oblita, cells 5-10 µm wide with heavily gelatinized walls 2-3 µm thick. *Sclerotial rind* a 2-6 cell deep layer of textura prismatica originating from medullary cells turning out perpendicularly to the surface, becoming brown-walled, inflated to globose, 5-15 µm in diameter. *Apothecia* arising one to several from a sclerotium, ochraceous (-cinnamon) to umber, often darker at the base of the stipe; receptacle 2-8(-10) mm broad, applanate to slightly concave when young, at maturity applanate to convex, often with a central depression, frequently with an undulate margin, tapering to form a stipe 3-20(-30) mm long, 1-2 mm wide. *Ectal excipulum* 35-140 µm broad, thin-walled, hyaline to pale brown textura prismatica with cells inflated to globose, 5-30 µm wide, sometimes bound in gel, oriented perpendicularly to the apothecial surface, at the margin a brown-walled textura porrecta with inflated apices; outermost excipular cells sometimes giving rise to 1-2-celled tomentum hyphae; ectal excipulum of stipe composed of light brown-walled textura porrecta with one-

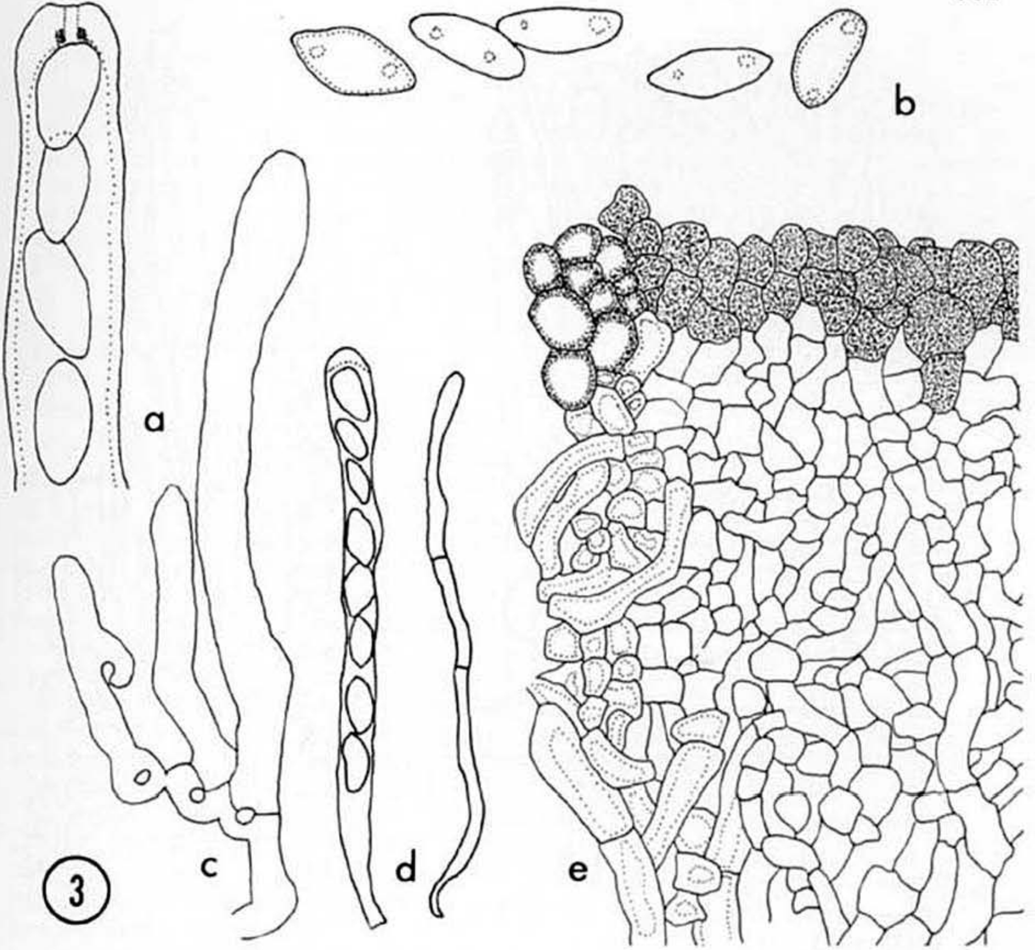
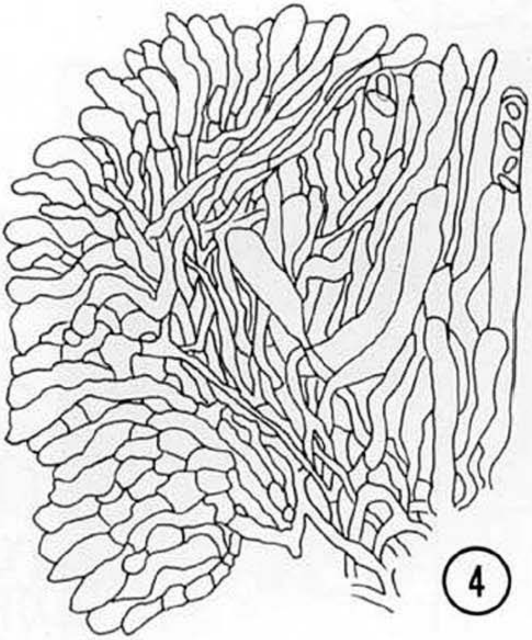
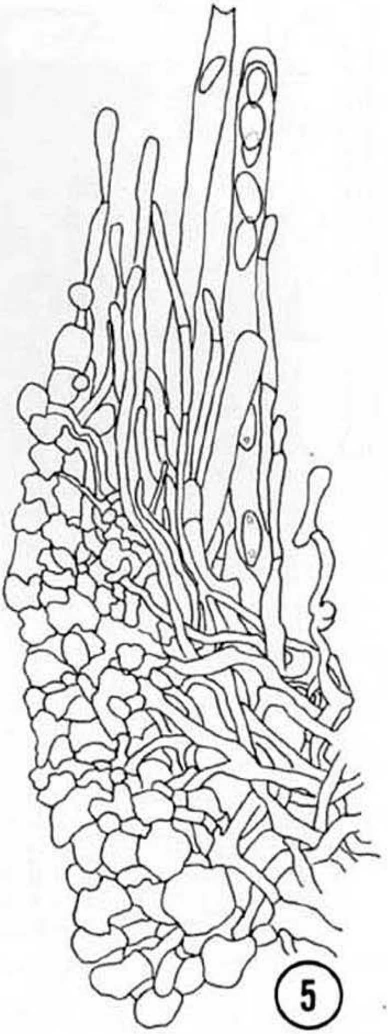


FIG. 3. *Sclerotinia sclerotiorum*, CUP 58252. a. Ascus with J+ pore channel wall, × 1500. b. Ascospores, × 1500. c. Young asci arising from croziers, × 1500. d. Ascus and paraphysis, × 500. e. Cross section of sclerotial rind and medulla; medulla composed of hyaline textura oblita with thick, gelatinized walls; rind composed of textura prismatica with cells becoming inflated to globose and brown-walled, × 500.

celled, inflated tomentum hyphae arising from the outermost cells and turning out perpendicularly from the stipe axis. *Medullary excipulum* of loosely woven, thin-walled, hyaline textura intricata, hyphae 5-15 µm wide, occasionally bluing in Melzer's Reagent, sometimes in two layers, an outer layer of textura porrecta parallel to the apothecial surface, and an inner layer of textura intricata; medullary excipulum of stipe composed of textura porrecta, or of textura oblita with walls 1-2 µm thick; rhomboidal crystals often abundant in receptacle and/or stipe. *Subhymenium* of compact or loosely woven light brown-walled textura intricata, sometimes bluing in Melzer's Reagent and probably bound in gel, hyphae 2-3 µm wide. *Asci* arising from croziers, 8-spored, cylindrical, (110-)130-150 (-160) x 6-10 µm, with a thickened apex, pore channel wall J+. *Ascospores* uniseriate, hyaline, ellipsoid, biguttulate,





FIGS. 4, 5. Cross sections of the margin of the apothecium, × 500. 4. *Sclerotinia sclerotiorum*, CUP 58252; the ectal excipulum at the margin is composed of prosenchyma "turning out" perpendicularly to the apothecial surface. 5. *S. minor*, CUP 58232; the ectal excipulum at the margin is composed of globose cells.

binucleate, (9-)10-14 x 4-5(-6) µm, length/width ratio usually greater than 2.0. *Paraphyses* hyaline, filiform, 2 µm wide, septate, simple or sparsely branched. *Microconidial state* (*Myrioconium*) with microconidia globose, hyaline, 2-4 µm in diameter, produced from phialides in sporodochia or on phialides borne laterally on hyphae, superficial on hymenium surface or culture.

Habitat: Pathogenic on over 350 spp. of herbaceous plants in 60 families (Schwartz, 1974), including the Leguminosae, Cruciferae, and Umbelliferae. Host of type collection not indicated.

Type locality: The Ardennes region, Belgium.

Type specimen: Libert, ad *Sclerotium tectum*, Aestate, Crypt. Ard. *326* [BR: LIBERT, CRYPT. ARD. *326*, LECTOTYPE of *S. sclerotiorum*].

TYPICAL HOST OF BASIONYM: On *Sclerotium tectum*.

TYPICAL HOSTS OF SYNONYMS: On stems of hemp (*Peziza kauffmanniana*); on soil (*Rutstroemia homocarpa*); from sclerotia in stems of potato (*Sclerotinia postuma*); among *Ranunculus ficaria* (*S. ficariae*); on soil (*S. opuntiarum*); on cat feces (*S. moelleriana*); in moist woods (*S. wisconsinensis*); on stems of cultivayed *Matthiola vallesiaca* (*S. matthiolae*); on rhizomes of *Poa pratensis* L. (*S. henningsiana*); on Myrtaceous fruits (*S. riograndensis*); on rotted trunk of *Galeopsis versicolor* (*S. galeopsidis*); on soil (*S. caudata*); flowering scape of *Orobanche cernua* (*S. sclerotiorum* f. *orobanches*); on dried flower spikes of *Xanthorrhoea australis* R. Br. (*S. xanthorrhoeae*).

EXSICCATI SPECIMENS EXAMINED: (All were issued as *Sclerotinia sclerotiorum* except as indicated.) *Austria:* Rick, Mai 1898, ad terram inter *Ranunculos Ficarias*, Tyrol: prope Feldkirch [FH: RABENFORST-PAZSCHKE, FUNGI EUROPAEI ET EXTRAEUROPAEI *4742* (as *S. ficariae*)]; Rick, 4.1898, in Wurzeln von *Ranunculus Ficaria*, Feldkirch in Vorarlberg [FH: REHM, ASCOMYCETEN *1204* (as *S. ficariae*)]; Zurhausen, 5/1899, in einem *Paeonia*..., Feldkirch in Vorarlberg [FH: REHM, ASCOMYCETEN *1306*].

Bermuda: Whetzel, Jan. 19, 1922, lettuce beds, Agricultural Station, Paget [CUP: WHETZEL, BERMUDA FUNGI *134*].

France: Roumeguère, août-septembre 1886, obtenu par la culture du *Sclerotium compactum* D.C. developpé...de l'*Helianthus annuus*, Jardin de Toulouse [CUP-Durand: ROUMEGUÈRE, FUNGI SELECTI GALLIAEI *3928* (as *Peziza (Sclerotinia) libertiana*)].

Germany: Kirschstein, (date not indicated), on *Poa*-Rhizomen, Rathenow a/H [S, FH: REHM, ASCOMYCETEN *1272* (as *Sclerotinia henningsiana*)].

Italy: Grassi, estate 1892, Da Mantova [FH: BRIOSI E CAVARA, I FUNGHI PARASSITI DELLE PIANTE CULTIVATE OD UTILI *217* (sclerotia only; includes description; issued as *S. libertiana*)]; Pollacci, (date not indicated), ad terram, Horto botanico ticinesi [FH: POLLACCI, FUNGI LONGOBARDIAE EXSICCATI *316* (issued as *S. libertiana* but is actually *Dumontinia tuberosa*)].

Norway: Brunchorst, 18/10 87, in caulibus *Solani tuberosi* ad Sandnaes, Stavanger [FH: ERIKSSON, FUNGI PARASITICI SCANDINAVICI *287* (sclerotia only)].

Poland: Raciborski, Dublany IX. 1905, *Nicotiana tabacum*, (location not indicated) [FH: RACIBORSKI, MYCOTHECA POLONICA *85* (sclerotia only)].

Sweden: Åberg, 21.V.1938 & 29.V.1939, on *Ficaria verna*, Upland: Funbo parish, Hofgården [BPI: LUNDELL & NANNFELDT, FUNGI EXSICCATI SUECICI *994* (as *Sclerotinia ficariae*)]; Ridelius, 14-31. VII 1938, withering *Petroselium sativum*, Dalarna: Norrbärke parish, Smedjebacken, in the garden of the parsonage [BPI: LUNDELL & NANNFELDT, FUNGI EXSICCATI SUECICI *995*]; Lagerberg & Sylvén, Maio 1905, on soil among *Ficariam vernam*, Upland, Linnés Hammarby [FH: VESTERGREN, MICROMYCETES RARIORES SELECTI *994* (as *S. ficariae*)].

Europe (country unknown): (collector not indicated), Autumno, hoc tuberculo excavato (sclerotii spec.?) insidiens, in dumetis alneis, (location not indicated) [FH: FUCKEL, FUNGI RHENANI EXSICCATI SUPPL. IV. *1861* (issued as *Helotium sclerotiorum*; specimen examined detritus only)].

OTHER SPECIMENS EXAMINED, WITH APOTHECIA: *Argentina:* Speggazini, V.1900, S/tierra, La Plata [LPS 28138, HOLOTYPE of *Sclerotinia opuntiarum*)].

Australia: K. & G. Beaton, 6.IX.1964, *Xanthorrhoea australis*, Victoria [MELU 153, HOLOTYPE of *Sclerotinia xanthorroeae*].

Brasil: Müller, 12.1892, auf Sclerotien in Katzenkoth, St. Cather. bei Blumenau [S-Herb. Sydow, HOLOTYPE of *Sclerotinia moelleriana*]; Rick, Sept. 1912, S. Leopoldo [PACA-Fungi Rickiani 14840, AUTHENTIC material of *Sclerotinia riograndensis*].

Canada: Stelfox, (date unknown), *Trifolium hybridum*, Alberta, CUP 58236 = CF 77-5; Stelfox, (date unknown), roots of *Brassica napus*, Alberta, CUP 58238; Stelfox, (date unknown), *Trifolium pratense*, Alberta, CUP 58242 = CF 77-6.

Czechoslovakia: Velenovský, V.1925, in truncis putridis *Galeopsidis versicoloris* in silva frondosa, Roblín [PRM-Flora bohemica 148363, HOLOTYPE of *Sclerotinia galeopsidis*]; Velenovský, 11.VI.1941, sub *Prunus spinosa* in verrimentis, Hrusice [PRM-Flora bohemica 152961, HOLOTYPE of *Sclerotinia caudata*].

Finland: Karsten, Julio, Tavastia australis, Tammela Mustalia [H-Herb. Karsten 905 and 906, PRESUMED SYNTYPES of *Rutstroemia homocarpa*].

Germany: Magnus, 4/67, *Ranunculus ficaria*, Berlin [S-Herb. Rehm, HOLOTYPE of *Sclerotinia ficariae*].

Switzerland: (collector unknown), 1975, "green bean", Changins/Nyon, CUP 58243 = Changins 762.

UNITED STATES: Arizona: Lorbeer, 23.V.1977, *Lactuca sativa*, CUP 59803.

New York: (collector unknown), (date unknown), "bean", CUP 59815 = Bateman 656, Korf 4214; Lorbeer, (date unknown), "bean", CUP 58240; Abawi, 18. IX.1974, "bean", CUP 58252 = Abawi SS-3.

North Carolina: Lumsden, 1968, "bean", CUP 58235 = ATCC 18684.

Wisconsin: Arzberger, 5.V.1908, vegetable mould, Madison [S-Herb. Rehm, HOLOTYPE of *Sclerotinia wisconsinensis*].

OTHER SPECIMENS EXAMINED, WITHOUT APOTHECIA: *Australia:* Merriman, 8.VIII.1973, *Lactuca sativa*, Mildura, CUP 58297 = Victorian Plant Institute 59; Merriman, 7.V.1974, *Phaseolus vulgaris*, Bairnsdale, CUP 58298 = Victorian Plant Institute 61; Merriman, 23.II.1976, *Lactuca sativa*, Mockinya, CUP 58299 = Victorian Plant Institute 63.

Canada: Watson, summer, 1971, *Centaurea diffusa*, Vernon, B.C., CUP 58295 = DAOM 138593; Dueck, Nov. 1977, seed of *Brassica napus*, "Melfort", CUP 59804; Dueck, Nov. 1977, *Rheum* sp., Saskatoon, Saskatchewan, CUP 59805; Dueck, Nov. 1977, *Helianthus annuus*, Saskatoon, Saskatchewan, CUP 59806; Dueck, Nov. 1977, seed of *Brassica napus*, "Melfort", CUP 59807.

Switzerland: (collector unkown), 1972, *Nicotiana* sp., Rhone plain, CUP 58296 = Changins 721.

UNITED STATES: New York: Abawi, (date unknown), "bean", CUP 58293 = Abawi SS-1; Abawi, (date unknown), "bean", CUP 58294 = Abawi SS-18; Lorbeer, 25.VII.1977, *Lactuca sativa*, CUP 59802.

NOTES: I have selected S-Rehm, Ascomyceten *1272* as LECTOTYPE of *Sclerotinia henningsiana*. *Peziza kauffmanniana*, *Sclerotinia postuma*, *S. matthiolae*, and *S. sclerotiorum* forma *orobanches* are synonymized here on the basis of diagnoses only. I have been advised by Dr. S. P. Wasser of the Bot. Akad. Sci. Inst. of Ukranian SSR (*pers. comm.*) that the type specimen of *Peziza kauffmanniana* has not been preserved. Material of *S. postuma* and *S. matthiolae* does not appear to exist at K and G respectively. My requests for material of *S. sclerotiorum* forma *orobanches* were never answered by Dr. Thirumalachar, so I do not know whether such material exists or where it may be deposited.

2. *Sclerotinia minor* Jagger, J. Agric. Res. 20: 333, c. ic. 15.XI.1920.

= *Sclerotinia intermedia* Ramsey, Phytopathology 14: 324, c. ic. 1924. (!!)

= *Sclerotinia sativa* Drayton & Groves, Mycologia 35: 526. 1943. (!!)

FIGURES 1a, 5, 6, 7.

Sclerotia borne superficially, irregularly shaped, 0.5-2(-5) mm in diameter, with black outer rind and white inner context; in culture forming abundantly throughout the colony, sometimes adhering to form an aggregate crust of indefinite dimensions. *Sclerotial medulla* of tightly interwoven, hyaline textura oblita, cells 5-10 µm wide with heavily gelatinized walls 2-3 µm thick. *Sclerotial rind* a 2-6-deep layer of textura prismatica originating from medullary cells turning out perpendicularly to the surface, becoming brown-walled, inflated to globose, 5-15 µm in diameter. *Apothecia* arising singly from a sclerotium, cinnamon to umber, sometimes darker at base of stipe; receptacle 2-9 mm broad, cupulate to applanate when young, at maturity applanate with a central depression, margin undulate or somewhat incurved, tapering to form a stipe 1-4 (-12) mm long and 1-2 mm wide that is often broader at the apex than at the base. *Ectal excipulum* 40-100 µm broad, of thin-walled, hyaline to pale brown textura prismatica with cells inflated to globose, 5-35 µm in diameter, sometimes bound in gel, more often only cells at margin bound in gel, oriented perpendicularly to the apothecial surface; outermost excipular cells often giving rise to 1-2-celled tomentum hyphae; ectal excipulum of stipe composed of light brown, thin-walled textura prismatica turning out perpendicularly to the stipe axis, cells 5-35 µm in diameter, giving rise to 1-2-celled tomentum hyphae which are sometimes grouped in fascicles. *Medullary excipulum* of loosely woven, thin-walled, hyaline textura intricata, hyphae 5-20 µm wide; medullary excipulum of stipe composed of textura porrecta parallel to the stipe axis; rhomboidal crystals, often in clusters, usually abundant, especially in medulla of stipe. *Subhymenium* a compact zone, 15-40 µm broad, of pale brown-walled textura intricata, usually bound in gel, often turning blue in Melzer's Reagent, hyphae 2-3 µm wide. *Asci* arising from croziers, cylindrical, 8-spored, (110-)125-180 x 7-11 µm with a thickened apex, without pretreatment in 2% KOH pore channel wall weakly J+ or J-, with KOH pretreatment pore channel wall strongly J+. *Ascospores* uniseriate, hyaline, ellipsoid, biguttulate, tetranucleate, 8-17(-20) x (4-)5-7(-9) µm, length/width ratio greater or less than 2.0. *Paraphyses* hyaline, filiform, 2 µm broad, widening slightly to 3 µm at apices, septate, simple to sparsely branched. *Microconidial state* (*Myrioconium*) with microconidia globose, hyaline, (2-)3-4 µm in diameter, produced from phialides in sporodochia or on phialides borne laterally on hyphae, superficial on hymenium surface or culture.

Habitat: Pathogenic on a wide range of herbaceous plants in several families including the Leguminosae, Compositae, and Cruciferae.

Type Locality: Massachusetts, New York, Pennsylvania, and Florida. NEOTYPE locality: Southampton County, Virginia.

Type specimen: Since no original material appears to exist, a Neotype is designated here: Porter, 1.IX.1974, on *Arachis* *hypogaea*, Southampton Co., Virginia, CUP 58237.

TYPICAL HOSTS OF BASIONYM: Jagger described this species on *Lactuca sativa* and *Apium graveolens*. The host of the Neotype is *Arachis hypogaea*.

TYPICAL HOSTS OF SYNONYMS: *Tragopogon porrifolius* (*Sclerotinia intermedia*); *Tulipa* and *Melilotus* (*Sclerotinia sativa*).

EXSICATTI SPECIMENS EXAMINED: I know of no exsiccati specimens issued under this name or issued under other names.

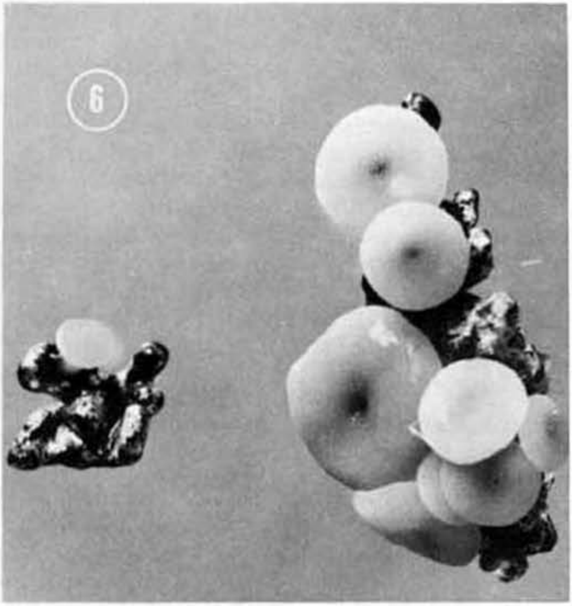


FIG. 6. *Sclerotinia minor*, CUP 58237; apothecia developed in growth chamber, × 3.

OTHER SPECIMENS EXAMINED, WITH APOTHECIA: *Canada:* Drayton & Groves, Mar., Apr. 1940, *Tulipa* and *Melilotus*, CUP 32664 = DAOM 9015, ISOTYPE of *Sclerotinia sativa*.

Japan: Nakata, VI.1924, *Chrysanthemum cinerariifolium*, Okayama, CUP 15520.

New Zealand: Waters, 23.V.1974, *Trifolium repens*, Levin, CUP 58233 = LEV 8374; Waters, 15.XI.1975, *Brassica oleracea* var. *capitata*, Levin, CUP 58234 = LEV 9768; Hawthorne, (date unknown), *Petroselinum crispum*, CUP 58291 = Hawthorne 71.

UNITED STATES: California: Grogan, (date unknown), *Lactuca sativa*, Salinas Valley, CUP 58232 = Abawi SS-6.

Illinois: Ramsey, 12.V.1921, *Tragopogon porrifolius*, Chicago Markets, CUP 15508, HOLOTYPE of *Sclerotinia intermedia*.

Maryland: Lumsden, 1968, "bean," CUP 58241 = ATCC 18687.

Virginia: Beute, spring, 1975, *Arachis hypogaea*, Virginia-North Carolina border, CUP 58249.

OTHER SPECIMENS EXAMINED, WITHOUT APOTHECIA: *Canada:* Jackson, winter, 1925, *Helianthus annuus*, Northern Ontario, CUP 15518; Baribeau, 31.I.1927, *Solanum tuberosum*, Quebec, CUP 16205; Stelfox, 22.II.1974, *Daucus carota* var. *sativa*, Alberta, CUP 58285.

New Zealand: Hawthorne, (date unknown), *Lycopersicum esculentum*, CUP 58287 = Hawthorne 36; Hawthorne, (date unknown), "bean", CUP 58288 = Hawthorne 41; Hawthorne, (date unknown), *Solanum tuberosum*, CUP 58289 = Hawthorne 59; Hawthorne, (date unknown), *Trifolium* sp., CUP 58290 = Hawthorne 67.

UNITED STATES: New York: Whetzel, 17.IX.1919, *Helianthus annuus*, Ithaca, CUP 4056; Jagger, 17.XI.1914, *Lactuca sativa*, Irondequoit, CUP 15517; Jagger, I.1915, *Lactuca sativa*, South Lima, CUP 16204; Lorbeer, (date unknown), (host unknown), CUP 58284; Lorbeer, 3.VII.1977, *Lactuca sativa*, CUP 58286.

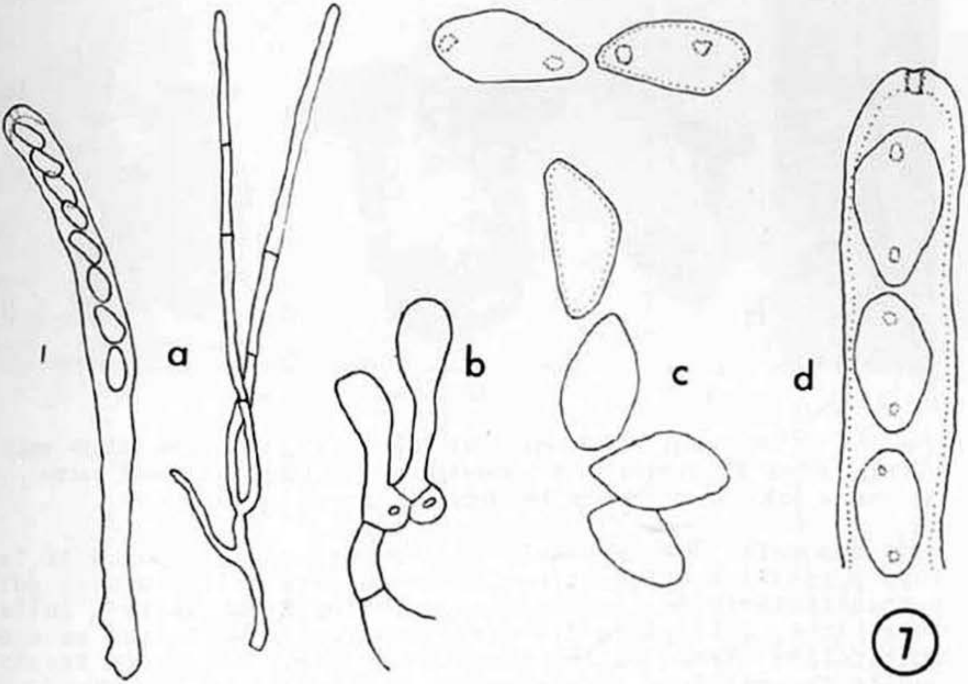


FIG. 7. *Sclerotinia minor*, CUP 58232, a. Ascus and paraphysis, × 500. b. Young asci arising from croziers, × 1500; c. Ascospores, × 1500. d. Ascus with J+ pore channel wall, × 1500.

3. *Sclerotinia trifoliorum* Erikss., Landtbruks-Akad. Handl. Tidskr. 19: 28. 1880. (!!)
= *Peziza ciborioides* Hoffm. *non* Fr. *in* Rabenh., F. europ. exsicc. *619*. 1864 (later homonym of *P. ciborioides* Fr. *ex* Fr., Syst. mycol. 2(1): 117. 1822). (!!)
= *Sclerotinia bryophila* Kirschst., Ann. Mycol. 36: 381. 1938. (!!)
= [*Sclerotinia trifolii* Biffen, J. Roy. Agr. Soc. England 97: 482. 1936 (*lapsus calami*).]

MISAPPLICATIONS:

Peziza ciborioides Fr. *ex* Fr., by Hoffman, Icones Anal. Fung. III, p. 65. 1861; by E. Rehm, J. Landw. 20: 151-178, c. ic. - 1,2. 1872; by H. Rehm, Ascomyceten *107*. 1872.

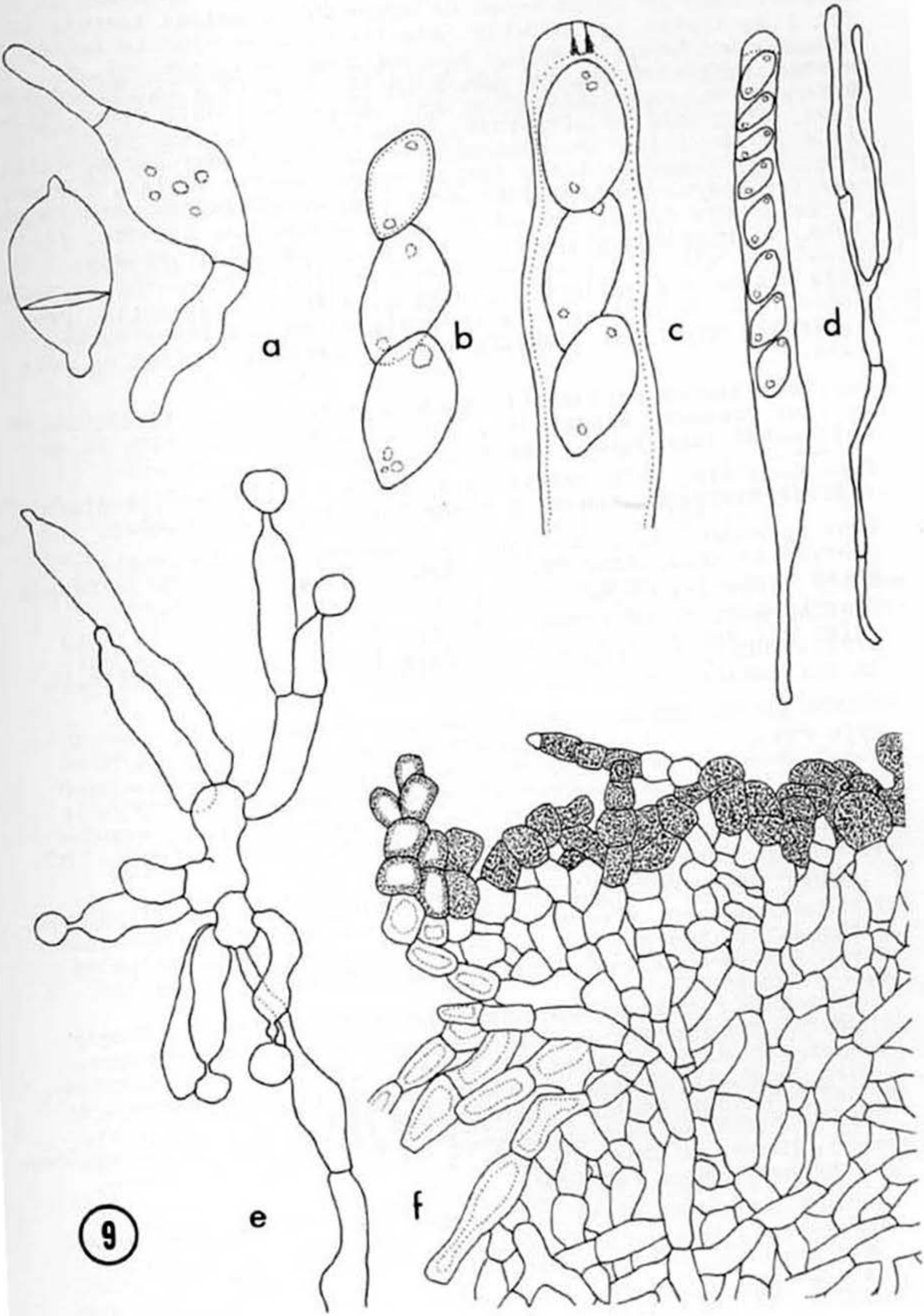
FIGURES 1b, 8, 9.

Sclerotia borne superficially, globose to cylindrical, 2-12(-20) × 2-8 mm, with black outer rind and white inner context; in culture developing at the growing margins of the colony, often forming in concentric rings, radiating lines and other patterns. *Sclerotial medulla* of tightly interwoven, hyaline textura oblita, cells 5-10 µm wide with heavily gel-

FIG. 8. *Sclerotinia trifoliorum*, CUP 58244. a. Ascospores within asci showing spore dimorphism in 4:4 segregation of large and small ascospores, × 465. b. Apothecia developed in growth chamber, × 3.

atinized walls 2-3 µm thick. *Sclerotial rind* composed of textura prismatica originating from medullary cells turning out perpendicularly to the surface, becoming brown-walled, inflated to globose, 5-15 µm in diameter, continuing past rind as erect, multicelled, brown-walled tomentum hyphae. *Apothecia* arising one to several from a sclerotium, greyish sepia to umber, concolorous though margin and base of stipe may be darker; receptacle 3-7(-10) mm, applanate to slightly concave when young, at maturity cupulate with a central depression, often with an undulate margin, tapering to form a stipe 3-15(-28) mm long and 1-2 mm wide that is often broader at the apex than at the base. *Ectal excipulum* 50-125 µm broad, thin-walled, hyaline to pale brown-walled textura prismatica with cells becoming inflated to globose, 5-20 µm in diameter, oriented perpendicularly to the apothecial surface, at the margin a brown-walled textura porrecta with inflated apices; outermost excipular cells often giving rise to 1-2-celled tomentum hyphae; ectal excipulum of stipe composed of light brown-walled textura prismatica parallel to the stipe axis with one-celled inflated tomentum hyphae arising from the outermost excipular cells and turning out perpendicularly to the stipe axis. *Medullary excipulum* of loosely woven, hyaline, thin-walled textura intricata, hyphae 5-10 µm wide; outer zone often bound in gel, often bluing weakly in Melzer's Reagent; medullary excipulum of stipe composed of hya-

FIG. 9. *Sclerotinia trifoliorum*. a. Germinating ascospores, × 1500. b. Ascospores, × 1500. c. Ascus with J+ pore channel wall, × 1500. d. Ascus and paraphysis, × 500. e. *Myrioconium* microconidial state, young conidiophores in a developing sporodochium produced on aerial hyphae in culture, × 1500. f. Cross section of sclerotial rind and medulla; medulla composed of textura oblita with thick, gelatinized walls; rind composed of textura prismatica with cells becoming inflated to globose and brown-walled; note tomentum hyphae arising from rind cells; × 500. All from CUP 58244 except e, from CUP 58254.


a
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9

line textura porrecta parallel to stipe axis. *Subhymenium* a compact zone 15-20 µm broad of light brown-walled textura intricata, hyphae 2-3 µm wide, usually turning blue in Melzer's Reagent and bound in gel. *Asci* arising from croziers, 8-spored, cylindrical, 140-200 x 10-12 µm, with a thickened apex, pore channel wall distinctly J+. *Ascospores* uniseriate, hyaline, ellipsoid to allantoid, biguttulate, tetranucleate, 10-20 x (4-)6-9(-11) µm, dimorphic in size and segregating within the ascus (usually 4:4), larger spores mostly 13-18 x 7-9 µm, smaller spores mostly 10-13 x 6-7 µm, length/width ratio usually less than 2.0, 2-celled in age. *Paraphyses* hyaline, filiform, with apices slightly inflated, 3 µm wide, septate, simple or sparsely branched. *Microconidial state* (*Myrioconium*) with microconidia globose, hyaline, 2-3 µm in diameter, produced from phialides in sporodochia or on phialides borne laterally on hyphae, superficial on hymenial surface or culture.

Habitat: Almost exclusively on forage legumes where it causes serious economic damage as a pathogen, also occurring on uncultivated leguminous plants.

Type Locality: "Klöferåksar vid Landbr. Akad. Experimentafält" (clover fields at the Agr. Experimental field), Sweden.

Type specimen: Since no holotype specimen was designated, a neotype is designated here: Jakob Eriksson, IX.1878 [S-Svensk Svamp Herb. *1a*, NEOTYPE of *Sclerotinia trifoliorum*].

TYPICAL HOST OF BASIONYM: "clover."

TYPICAL HOSTS OF SYNONYMS: In soil (*P. ciborioides* Hoffm.); in soil among mosses (*S. bryophila*).

EXSICATTI SPECIMENS EXAMINED: *Germany:* H. Hoffman, Oct. 1863, in agris argillaceis, Giessen [S-RABENHORST, FUNGI EUROP. *619*, ISOTYPE of *Peziza ciborioides* Hoffman *non* Fr.]; E. Rehm, 11/1872 com., parasitisch auf *Trifolium sativum*, Beberbeck in Hessen [NY-REHM, ASCOMYCETEN *107*]; (collector not indicated), 7/1906, Kleeacker in Buchsbergtal, Oberschlesien [S-REHM, ASCOMYCETEN *107b*]; Magnus, 10/1906, Versuchsfeld kais. biol. vers-Anstalt [S-REHM, ASCOMYCETEN *107c*].

OTHER SPECIMENS EXAMINED, WITH APOTHECIA: *Germany:* Kirschstein, 12.XI.1938, im Boden zwischen Moosen, Rodelberg, Berlin-Niederschönhausen [B-Kirschstein (Isotype of *S. bryophila*); Winterhoff, 6.XI, 1977, from sclerotia embedded in moss, Nahetal near Bad Münster, Rotenfels, CUP 58254 = Matheis 793.

Switzerland: (collector unknown), 1960, *Trifolium pratense*, Changins, CUP 58277 = Changins 389; (collector unknown), 1960, *Trifolium pratense*, Changins, CUP 58278 = Changins 397; Matheis, 9.XI.1975, *Trifolium repens*, "Lomiser Wald", Kt. Thurgan, CUP 54721; Kohn, 28.III.1978, apothecia of CUP 54721 (isolate) produced in culture, CUP 58244.

UNITED STATES: New York: Sproston, 29.XI.1939, *Trifolium pratense*, Grass Nursery, Ithaca, CUP 28896; Sproston, 22.XI.1939, *Lotus corniculatus*, Grass Nursery, Ithaca, CUP 28897.

OTHER SPECIMENS EXAMINED, WITHOUT APOTHECIA: *England:* Dixon, (date unknown), (host unknown), Sparsholt, CUP 58282.

Northern Ireland: Malone, (date unknown), (host unknown), CUP 58283.

Switzerland: (collector unknown), 1973, *Trifolium pratense*, Changins, CUP 58279 = Changins 702.

NOTES: This species has been confused with *Sclerotinia sclerotiorum* which also occurs on forage legumes in addition to a wide range of other host plants.

TAXA IMPERFECTLY KNOWN

Unless otherwise noted, type and/or authentic specimens were unavailable for the following taxa, The diagnoses are insufficient to determine the species, or in some cases the appropriate generic position.

4. *Sclerotinia bresadolae* Rick, Oesterr. Bot. Z. 50: 121. IV. 1900.

TYPICAL HOST: On rotting insect galls on *Quercus*.

5. *Sclerotinia brevipes* (van den Bosch) Boud., Hist. classific. discomyc. Europe, p. 107. 1907.
≡ *Peziza brevipes* van den Bosch, Prodr. fl. bat. 2(3): 398. 1858.

TYPICAL HOST: On *Alnus* trunk.

6. *Sclerotinia bulborum* (Wakker *in* Oudemans) Sacc., Syll. fung. 8: 197. 1889.
≡ *Peziza bulborum* Wakker *in* Oudemans, Ned. Kruidk. Ark., ser. 2, 4: 260, c. ic. - VII(11). 1885.

TYPICAL HOST: Bulbs of *Hyacinthus*.

NOTES: Diagnoses in Rehm (1893), Saccardo (1889), and Dennis (1956) all appear to be taken from the original description by Wakker. Dennis suggests that Wakker was the only person to have seen apothecia.

7. *Sclerotinia capillipes* (Quél.) Sacc., Syll. fung. 8: 198. 1889.
≡ *Phialea capillipes* Quél., Bull. Soc. Bot. France 23: 331, c. ic-III(16). 1876.

TYPICAL HOST: Among twigs in an aquatic situation.

NOTES: With fusiform sclerotia and lanceolate to fusiform ascospores, this species may belong in *Myriosclerotinia*, especially considering its aquatic habitat.

8. *Sclerotinia caricina* Velen., Monogr. discomyc. Bohem. 1: 224; 2: pl. XXII(40). 1934. (!!)

TYPICAL HOST: Roots of *Carex muricata* among *Juncus*.

SPECIMEN EXAMINED: Velenovsky 4.V.1929 [PRM-Flora bohemica 152957 (Holotype)].

NOTES: The type specimen did not include apothecia, but did include sclerotia with microanatomical characteristics agreeing with those of *S. sclerotiorum*.

9. *Sclerotinia carlinae* Velen., Monogr. discomyc. Bohem. 1: 227; 2: XXX(22). 1934.

TYPICAL HOST: On scales (pappus?) of *Carlina acaulis*.

10. *Sclerotinia carpini* Klika, Čas. Nár. Mus. Odd. Přir. 97 (2/3) pt. 2: 98. 1923.

TYPICAL HOST: Fruits of *Carpinus*.

11. *Sclerotinia dubia* McAlp., Agric. Gaz. New South Wales 7: 86, c. ic. 1896.

TYPICAL HOST: On rich soil on sea shore.

NOTES: The type specimen has not been seen, but the description suggests this is a later synomym of *S. sclerotiorum* or *S. trifoliorum*.

12. *Sclerotinia fagopyri* Hori, J. Pl. Protect. 3: 171, c. ic. 1916.

TYPICAL HOST: Sclerotia form within the seeds of *Fagopyrum esculentum* Moench.

NOTES: An English description is published in Mycologia 9: 172. 1917.

13. *Sclerotinia filipes* (Phill.) Sacc., Syll. fung. 8: 198. 1889.
≡ *Hymenoscyphus filipes* Phill. (ut "*Hymenoscypha*"), Brit. discomyc., p. 116. 1887.

TYPICAL HOST: Amongst vegetable fragments in a damp situation.

14. *Sclerotinia fuckeliana* (de Bary) Fuckel var. *jeanperti* Boud., Hist. classific. discomyc. Europe, p. 107. 1907.

TYPICAL HOST: Not indicated, in a marsh.

15. *Sclerotinia helvelloidea* P. Henn., Hedwigia 41: 27. 1902. (!!)

TYPICAL HOST: Not indicated.

SPECIMEN EXAMINED: A. Möller, X. 1892 [S-Sydow (Holotype)].

NOTES: Although apothecial characters suggest that this may be a *Sclerotinia*, the sclerotium is unknown for this species and a conclusive determination is not possible. The stipe is deeply buried in soil according to the diagnosis.

16. *Sclerotinia johanssonii* Starb., Bih. Kongl. Svenska Vetensk.-Akad. Handl. [3]21(5): 37, c. ic. 1895. (!!) (!)

TYPICAL HOST: Withered leaves of *Arabis alpina* L.

SPECIMENS EXAMINED: C.J. Johansson, Hort. bot. Upsal., apothecia and sclerotia in spirits [UPS, no date, no number (presumed Holotype)]; Johansson & Starbäck, Maj 1887 [S, no number (part of presumed Holotype, sclerotia only)]; Starbäck, Majo sclerotia, Augusto apoth. [S, no number (Authentic)].

NOTES: Only the UPS collection contained apothecia, which have been preserved in liquid and are in very poor condition. On the basis of sclerotial characters, the original description and illustrations, this is probably a synonym of *S. sclerotiorum*, but a conclusive determination is impossible due to the paucity and poor quality of type and authentic material. I treat Vestergren's (Bot. Not. 1899: 164. 1899) use of '*S. johanssoni* f. *sclerotifera*,' without description, as merely the indication of the sclerotial anamorph, and not as a new forma.

17. *Sclerotinia kirschsteiniana* P. Henn., Verh. Bot. Vereins Prov. Brandenburg 41(2): ix. 23.I.1900.

TYPICAL HOST: In peat moss.

18. *Sclerotinia kitajimana* Ito & Hosaka, Bull. Gov. Forest Exp. Station 51: 17, c. ic. 1951.

TYPICAL HOST: Dead leaves of *Cryptomeria japonica*.

19. *Sclerotinia miyabeana* Hanzawa, Miyabe-Festschrift, or a Collection of Botanical Papers, p. 218. 1911.

TYPICAL HOST: Stems of *Arachis hypogaea* L.

20. *Sclerotinia nicotianae* Oud. & Koning, Verslag Gewone Vergaderingen Afd. Wis. Natuurk., Kon. Akad. Wetensch. 12(1): 58, c. ic. f. 1-11. XII.1903.

TYPICAL HOST: *Nicotiana tabacum* L.

21. *Sclerotinia nigromarginata* Velen., Novit. mycol., p. 189. 1939. (!!)

TYPICAL HOST: Among herbs.

SPECIMEN EXAMINED: Velenovský, IX.1939 [PRM-Flora bohemica 152960 (Holotype)].

NOTES: According to the description, no sclerotia were collected with the type collection. The apothecial anatomy agrees with that of *S. sclerotiorum*, however.

22. *Sclerotinia pirolae* Grosse, Ann. Mycol. 10: 388. 1912.
≡ *Stromatinia pirolae* (Grosse) Naumov *in* Kursanov [ut "Grosse"], Keys lower pl. 3: 379. 1954.

TYPICAL HOST: Capsules of *Pirola rotundifolia*, *P. minor*, *P. chlorantha*, *P. uniflora*, and *P. media*.

NOTES: The sclerotia are 2 to 5 on a capsule. It seems doubtful that this could be a *Stromatinia*.

23. *Sclerotinia pocula* (Swartz *in* Pers. *ex* Pers.) Boud., Hist. classific. discomyc. Europe, p. 107. 1907.
≡ [*Peziza pocula* Swartz *in* Pers., Syn. meth. fung., p. 659. 1801.]
≡ *Peziza pocula* Swartz *in* Pers. *ex* Pers., Mycol. eur. 1: 277. 1822.
≡ *Geopyxis pocula* (Swartz *in* Pers. *ex* Pers.) Sacc., Syll. fung. 8: 67. 1889.

TYPICAL HOST: Not indicated.

NOTES: No mention is made of a sclerotium in Swartz, Persoon, or Saccardo.

24. *Sclerotinia rubi* Carm., Introduction of Pathogenic Microbes (Yunyā Shokubutsu Byōkin), p. 10. [date?]; *in* J.A. Stevenson, U.S.D.A., Foreign Plant Diseases, p. 159. 1926 (listing).

TYPICAL HOST: *Rubus fruticosus.*

NOTES: I have been unable to trace this reference, taken from Hara (1954), which also appeared in Stevenson's list. Dr. Yoshio Otani, of the National Science Museum, Tokyo (*pers. comm.*), has suggested that the name appeared in a list of imported plant pathogens which was published by the Plant Quarantine Office and that the fungus was never collected in Japan.

25. *Sclerotinia sclerotiacea* (Ces. *in* Rabenh.) Rehm *in* Sacc. & Sacc. *in* Sacc., Syll. fung. 18: 44. 1906.

≡ *Peziza sclerotiacea* Ces. *in* Rabenh., Herb. Myc. I, *1532*. 1851. (!!)

TYPICAL HOST: In a field of *Triticum.*

SPECIMEN EXAMINED: Cesati, Maji 1850 [BR- and FH-Rabenh. Herb. Myc. I, *1532* (Isotype)].

NOTES: The meager specimens in poor condition allow no conclusive determination.

26. *Sclerotinia trifoliorum* Erikss. var. *fabae* Keay, Ann. Appl. Biol. 26: 244. V.1939.

TYPICAL HOST: *Vicia faba* L.

NOTES: No type or authentic specimens appear to exist and Dr. Keay was unable to offer further information on their possible location. I do not know whether this is actually a variety of *S. trifoliorum* or, as Wong and Willetts (1975) have suggested, is *S. sclerotiorum.*

27. *Sclerotinia tuba* (Batsch *ex* Pers.) Sacc., Syll. fung. 8: 201. 1889.

≡ [*Peziza tuba* Batsch, Elench. fung., p. 122. 1783.]

≡ *Peziza tuba* Batsch *ex* Pers., Mycol. eur. 1: 235. 1822 [*non P. tuba* Bolt. *ex* Pers., Mycol. eur. 1: 278. 1822 : Fr., Syst. mycol. 3(index): 138. 1832], devalidated, ICBN Art. 13.1(f).

≡ *Peziza tubaeformis* Fr., Syst. mycol. 3(index): 138. 1832 [*non P. tubaeformis* Gray, 1821, devalidated by Art. 13.1(f)].

TYPICAL HOST: Not indicated.

NOTES: Boudier (1907) thought this species "probably" synonymous with *S. tuberosa.*

28. *Sclerotinia vesicaria* Giesenh., Ber. Bayer. Bot. Ges. 11: 169. 1907.

TYPICAL HOST: Between utricles of dead *Carex vesicaria* L. in peat.

EXCLUDED TAXA AND SYNONYMS

29. *Sclerotinia aconitincola* Rehm, Ber. Bayer. Bot. Ges. 15: 242. 1915. (!!)

TYPICAL HOST: On dry flower stalks of *Aconitum napellus*.

SPECIMEN EXAMINED: Rehm, 9/[1]905 [S-Rehm (Holotype)].

NOTES: I concur with G. Hennebert, who has annotated the specimen as "surely a *Botryotinia* species.... I presume it is an [otherwise] undescribed species." Transfer of the species is deferred until cultural studies of fresh material are performed.

30. *Sclerotinia acutispora* Velen., Nov. mycol. p. 208. 1939. (!!)

TYPICAL HOST: In moist soil among various herbaceous plants under *Carpinus*.

SPECIMEN EXAMINED: J. Velenovský, 16.V.1940 [PRM-Flora bohemica 152964 (Holotype)].

NOTES: Although no apothecia were found in the type specimen, much host tissue was found incorporated in the sclerotial medulla. Tissue structure of the sclerotium suggests that this may be a species of *Ciborinia*.

31. *Sclerotinia adusta* (Karst.) Sacc. (ut "Karst."), Syll. fung. 8: 197. 1889.
    ≡ *Rutstroemia adusta* Karst., Not. Sällsk. Fauna Fl. Fenn. Förh. 13 (n.s. 10): 448. 1874.

TYPICAL HOST: On dead, withered leaves of *Betula*.

NOTES: The type specimen of this species was not available from Helsinki. The description explicitly indicates that the sclerotia are innately attached to leaves of *Betula*, suggesting that this is probably a species of *Ciborinia*.

32. [*Sclerotinia adjusta* anon., Mycologia Index volumes 1-58, p. 423. 1968, *lapsus calami* for *S. adusta*.]

33. *Sclerotinia aestivalis* Pollock, Annual Rep. Michigan Acad. Sci. 11: 53. 1909.
    ≡ *CIBORIA AESTIVALIS* (Pollock) Whetzel *in* Harrison, Mycologia 27: 317. 1935.

TYPICAL HOST: Mummified fruits of *Malus*.

34. *Sclerotinia allii* Sawada, Descriptive catalogue of Formosan Fungi: Part I. Agricultural Experiment Station, Government of Formosa, Special Bull. 19: 206. 1919.
    ≡ *Botryotinia allii* (Sawada) Yamamoto *in* Yamamoto, Oyasu & Iwasaki, Sci. Rep. Hyogo Univ. Agric., Biol. Ser. 2: 20. 1956.
    ≡ *CIBORINIA ALLII* (Sawada) Kohn, Phytopathology (in press). 1979.

TYPICAL HOSTS: Parasitic on the leaves and stalks of *Allium fistulosum* and *A. cepa.*

SPECIMENS EXAMINED: CUP-SA 636, R.P. Korf, K.P. Dumont, H. J. Su & C.C. Chien, on sclerotia in leaves of *Allium fistulosum* L., exp. plots adjacent to Taiwan Agr. Res. Inst., Taipei, Taiwan, 30.III.1966 (Topotype and NEOTYPE, designated here); CUP-SA 633, K. Sawada, I.29.1913 (Syntype: sclerotia only); CUP-SA 634, Y. Ishihara, 5.23.1913 (Syntype: sclerotia only); CUP 58247, W.S. Wu, 28.III.1978.

NOTES: In the absence of any of the original teleomorphic material, the apothecial material collected in the type locality by Korf et al. has been designated the Neotype.

35. [*Sclerotinia alni* Nawashin, Ber. Deutsch. Bot. Ges. 12: 118. 1894, *nom. nud.*]

36. *Sclerotinia alni* Maul, Hedwigia 33: 215. 1894.
≡ *Ciboria alni* (Maul) Whetzel, Mycologia 37: 675. 1945.

TYPICAL HOST: Fruits of *Betula alnus* var. *glutinosa* L.

NOTES: This epithet is based upon anamorphic states; see notes under *S. alni* O. Rostr.

37. *Sclerotinia alni* O. Rostr., Z. Pflanzenkrankh. 7: 258. 1897 (later homonym).
≡ *Ciboria alni* (O. Rostr.) Buchw., Friesia 3: 257. 1947 (later homonym).

TYPICAL HOST: *Alnus incana.*

NOTES: According to Buchwald (1947), *S. alni* Maul and *C. alni* (Maul) Whetzel, based on anamorphic states, are taxonomic synonyms of Rostrup's fungus. There appears to be no valid name for this teleomorphic fungus.

38. *Sclerotinia amelanchieris* Reade, Ann. Mycol. 6: 114. 1908.
≡ *MONILINIA AMELANCHIERIS* Honey [ut "(Reade)"], Mycologia 34: 575. 1942.

TYPICAL HOST: fruits of *Amelanchier canadensis* (L.) Medic.

NOTES: Reade's epithet is based upon the anamorph, while that of Honey is based upon the teleomorph.

39. [*Sclerotinia americana* (Wormald) Norton & Ezek., Phytopathology 14: 31. 1924 (not validly published).]
≡ [*Monilia cinerea* f. *americana* Wormald, Ann. Bot. 34: 168. 1920 (nomen provisiorum).]
≡ [*Sclerotinia cinerea* f. *americana* (Wormald) Norton & Ezek. (ut "Wormald"), Phytopathology 14: 31. 1924 (not validly published).]

TYPICAL HOST: Stone and sometimes pome fruits.

NOTES: Since Wormald published the name *Monilia cinerea* Bon. f. *americana*, based on anamorphs, the combinations in *Sclerotinia* are also based on anamorphs, and, moreover, on a provisional name. Seaver (1951) considered this species to be a taxonomic synonym of *Monilinia fructicola* (Wint.) Honey.

40. *Sclerotinia angustior* Reade, Ann. Mycol. 6: 113. 1908.

TYPICAL HOST: Twigs, leaves and fruit of *Prunus virginiana* L.

NOTES: Whetzel (1945) considered this species to be a taxonomic synonym of *Monilinia padi* (Woron.) Honey.

41. *Sclerotinia arachidis* Hanzawa, Miyabe-Festschrift, or a Collection of Botanical Papers, p. 215, c.ic. - pl. 20. 1911.
   ≡ *BOTRYOTINIA ARACHIDIS* (Hanzawa) Yamamoto, Trans. Mycol. Soc. Japan 2(2): 4. 1959.

TYPICAL HOST: Leaves and stems of *Arachis hypogaea* L.

42. *Sclerotinia arctica* Elliott, Canad. J. Bot. 42: 1068. VIII.1964. (!!)

TYPICAL HOST: severely decayed buried culm bases of *Carex aquatilis* Wahlenb. var. *stans* (Drej.) Boott.

SPECIMENS EXAMINED: D.B.O. Savile, 4 July 1962 [DAOM 89983 (Holotype)]; D.B.O. Savile, C.T. Watts & J.R. Vockeroth, July 21, 1950 [DAOM 34444]; S. Stephens, June 26, 1962 [DAOM 91035].

NOTES: This species belongs in *Myriosclerotinia*, and despite the host, *Carex*, spore size and shape suggest that this is a synonym of *M. vahliana* (Rostr.) Buchw.

43. *Sclerotinia ariae* Schell., Centralbl. Bakteriol., 2 Abth. 12: 735. 3.IX.1904.
   ≡ *MONILINIA ARIAE* (Schell.) Whetzel, Mycologia 37: 672. 1945.

TYPICAL HOST: *Sorbus aria* Crantz.

44. *Sclerotinia aschersoniana* Henn. & Plött., Verh. Bot. Vereins Prov. Brandenburg 41: 9. 23.I.1900.
   ≡ *CIBORIA ASCHERSONIANA* (Henn. & Plött.) Whetzel, Mycologia 37: 676. 1945.

TYPICAL HOST: Fruits of *Carex stricta* Good.

45. *Sclerotinia aucupariae* Ludwig [Ber. Deutsch. Bot. Ges. 8: (208). 1890 (nomen nudum)] *in* Woronin, Mém. Acad. Imp. Sci. Saint Pétersbourg, sér. VIII, 2(1): 15, c.ic. - V. 1895.
   ≡ *MONILINIA AUCUPARIAE* (Ludwig *in* Woronin) Whetzel [ut "(Ludwig)"], Mycologia 37: 672. 1945.

TYPICAL HOST: Mummified fruits of *Sorbus aucuparia* L.

46. *Sclerotinia azaleae* (Weiss) Dennis, Mycol. Pap. 62: 159. 1956.
   ≡ *OVULINIA AZALEAE* Weiss, Phytopathology 30: 243. 1940.

TYPICAL HOST: *Rhododendron* spp., flowers of cultivated azaleas and rhododendrons, *Kalmia*, and *Vaccinium*.

47. *Sclerotinia baccarum* (Schroet.) Rehm, Hedwigia 24: 9. 1885.
   ≡ *Rutstroemia baccarum* Schroet., Hedwigia 18: 180. 1879.
   ≡ *MONILINIA BACCARUM* (Schroet.) Whetzel, Mycologia 37: 672. 1945.

TYPICAL HOST: Berries of *Vaccinium myrtillus*.

48. *Sclerotinia baccata* Fuckel, Jahrb. Nassausichen Vereins Naturk. 23-24: 331, c.ic. - IV(38). 1870.

TYPICAL HOST: On wet soil under *Fagus*.

NOTES: This is a taxonomic synonym of *Microstoma protracta* (Fr.) Kanouse, Mycologia 40: 486. 1949.

49. *Sclerotinia batschiana* Zopf *in* Zopf & Sydow, Mycoth. march. *50*. 1879.
   ≡ *CIBORIA BATSCHIANA* (Zopf *in* Zopf & Sydow) Buchw., Friesia 3: 255. 1947.

TYPICAL HOST: On acorns of *Quercus pedunculata*.

50. *Sclerotinia betulae* Woron. *in* Nawashin, Trudy Imp. S.-Peterburgsk. Obšč. Estestvoisp., Vyp. 3, Otd. Bot. 23: 131. 1893.
   ≡ *CIBORIA BETULAE* (Woron. *in* Nawashin) White [ut "(Nawashin)"], Lloydia 4: 171. 1941.

TYPICAL HOST: On fallen aments of *Betula*.

51. *Sclerotinia bifrons* Seaver & Shope, Mycologia 22: 1. 1930.
   ≡ *Sclerotinia confundens* Whetzel, Mycologia 32: 126. 1940 (superfluous name change), q.v.
   ≡ *CIBORINIA SEAVERI* Groves & Bowerman, Canad. J. Bot. 33: 581. 1955 (a name change).

TYPICAL HOST: Leaves of the Rocky Mountain form of *Populus tremuloides*.

52. *Sclerotinia bifrons* Whetzel, Mycologia 32: 126. 1940 (later homonym).
   ≡ *Ciborinia bifrons* (Whetzel) Whetzel, Mycologia 37: 668. 1945.
   ≡ *Sclerotinia whetzelii* Seaver, Mycologia 32: 127. 1940 (a name change), q.v., No. 257 of this list.

TYPICAL HOST: Diseased leaves of *Populus tremuloides*.

53. *Sclerotinia borealis* Bub. & Vleugel *in* Vleugel, Svensk Bot. Tidskr. 11: 308. 1917. (!!)
   ≡ *MYRIOSCLEROTINIA BOREALIS* (Bub. & Vleug. *in* Vleug.) Kohn, Phytopathology (in press). 1979.

TYPICAL HOST: In culms of cultivated *Dactylis glomerata*.

SPECIMENS EXAMINED: F. Bubák, X.1914 [BPI (Holotype)]; J. Dueck, isolate from fall rye, Saskatoon, Saskatchewan, Canada, IV.1974 (CUP 59812); J. Dueck, isolate from winter wheat, Saskatoon, Saskatchewan, Canada (CUP 59813).

54. [*Sclerotinia brunneo-carpa* Ramsbottom & Balfour-Browne, Trans. Brit. Mycol. Soc. 34: 79. 1951, *lapsus calami* for *S. homoeocarpa.*]

55. *Sclerotinia bryophila* Kirschst., see *S. trifoliorum*, No. 3 of this list.

56. [*Sclerotinia calthae* Whetzel *in* Buchwald, Aarskr. Kgl. Veterinaer- og Landbohøjskoles 32: 134. 1949 *(nomen nudum)*.]
= *BOTRYOTINIA CALTHAE* Hennebert & Elliott *in* Hennebert & Groves, Canad. J. Bot. 41: 343. 1963.

TYPICAL HOST: Petioles of *Caltha palustris* L.

NOTES: Buchwald was apparently unaware that Whetzel knew of two fungi on *Caltha palustris*, one *Verpatinia calthicola* Whetz., the other this fungus.

57. *Sclerotinia camelliae* Hara, Dainippon Saurin Kaiho (Bull.) 436: 31. 15.III.1919. (!!)

TYPICAL HOST: Fallen flower bud, calyx, flowers, etc. of *Camellia*.

SPECIMEN EXAMINED: K. Hara, 1913-V [TNS-Hara 209284 (Holotype)].

NOTES: This is either a species of *Moellerodiscus* or of an as yet unnamed genus in the Sclerotiniaceae. The stroma is substratal with a poorly differentiated rind of textura epidermoidea. There are no globose cells in the ectal excipulum of the apothecium but rather prosenchyma turning out perpendicularly to the apothecial surface, with somewhat inflated cells.

58. [*Sclerotinia camelliae* Hansen & Thomas, Phytopathology 30: 170. 1940 (not validly published, no Latin diagnosis).]
≡ *CIBORINIA CAMELLIAE* Kohn, see below. (!!)

TYPICAL HOST: Flowers of *Camellia japonica* L.

SPECIMEN EXAMINED: M. Stoner, Pomona, Calif., III.1977 [CUP 58248 (Holotype)].

NOTES: To the best of my knowledge the original material is either non-existant or unavailable; there was no mention of type or authentic specimens in the original description. The sclerotial medulla incorporates much host tissue. Since the epithet was published after 1935 without a Latin diagnosis, the following is provided:

Ciborinia CAMELLIAE Kohn, *sp. nov.*

Apothecia singularia vel aggregata, bubalino-olivacea, maturitate atrantia, parce pubescentia, discus cyathiformis demum discoideus, 5-20 mm in diam., stipes 3-40 mm longus, 2-3 mm in diam. infra discum decrescens ad 0.5-1.0 mm ad basim. Asci cylindracei 4.3-5.8 × 100-125 μm. Ascosporae 8, uniseriatae, ellipsoideae, continuae, hyalinae, 2.5-3.5 × 5.3-7.0 μm. Paraphyses filiformes, septatae, 1.2-2.5 × 110-130 μm, apicibus parum incrassatis. Sclerotia atrobrunnea vel nigra, plerumque composita, substantiam petalorum infestantia et cingentia, in ambitu valde variabilia, usque ad 12 × 30 mm magnitudine, plerumque lamellata et dispositionem imbricatam petalorum quorundam florum simulantia. Conidia nulla. Microconidia globosa vel pyriformia 2.5-3.5 µm, catenata, hyalina sub magnificatione majore, nigra in conglomeratione, elata in sporodochio composito ex fasciculis numerosis conidiophororum terminantium in cellulas elongatas gradatim angustatas in quibus efferuntur catenae longae microconidiorum. Holotypus: M. Stoner, Pomona, Calif., III.1977, CUP 58248.

Transfers of cultures derived from ascospores from the type collection are being deposited in the American Type Culture Collection and in the Centraalbureau voor Schimmelcultures, Baarn.

59. *Sclerotinia candolleana* (Lév.) Fuckel, Jahrb. Nassauischen Vereins Naturk. 23-24: 330. 1870.
   ≡ *Peziza candolleana* Lév., Ann. Sci. Nat. Bot., Sér. 2, 20: 233. 1843.
   ≡ *CIBORINIA CANDOLLEANA* (Lév.) Whetzel, Mycologia 37: 668. 1945.

TYPICAL HOST: Leaves of *Castanea*.

60. *Sclerotinia caricis-ampullaceae* Nyberg, Meddeland. Soc. Fauna Fl. Fenn. 10: 22. 1933. (!!)
   ≡ *MYRIOSCLEROTINIA CARICIS-AMPULLACEAE* (Nyberg) Buchw., Friesia 3: 301. 1947.

TYPICAL HOST: *Carex ampullacea*.

SPECIMEN EXAMINED: W. Nyberg, VI.1931 [CUP 28912 (Isotype)].

61. *Sclerotinia carnea* Velen., Monogr. discomyc. Bohem. 1: 409. 1934. (!!)

TYPICAL HOST: Unknown: "in palude pratensi e limo excedens."

SPECIMEN EXAMINED: J. Velenovský, VI.1934 [PRM-Flora Bohemica 152975 (Holotype)].

NOTES: According to the diagnosis no sclerotia were collected attached to apothecia and the type specimen does not include sclerotia. The ectal excipulum of the apothecium is composed of clavate cells perpendicular to the apothecial surface; this is not a *Sclerotinia* sensu Kohn. Some stromatic cells at the base of the stipe suggest that this species may be Sclerotiniaceous, however.

62. *Sclerotinia caruncuLoides* Siegler & Jenkins, Science 55: 353. 1922. (!!) (!)
   ≡ *CIBORIA CARUNCULOIDES* (Siegler & Jenkins) Whetzel *in* Whetzel & Wolf, Mycologia 37: 484. 1945.

TYPICAL HOST: On fruits of cultivated *Morus alba* L.

SPECIMENS EXAMINED: Collector unknown, Mar.-Apr. 1924, fruits of *Morus alba* L., Washington, D.C. from sclerotia collected at Scranton, S.C. (CUP 34072); A.E. Jenkins, 3/27/23, seeds of *Morus alba* L., Scranton, S.C. [CUP 33598 (Authentic)]; Siegler, 4.1922, on *Morus alba* L., Scranton, S.C. [CUP 11810 (Holotype)].

NOTES: Korf *(pers. comm.)* agrees that his suggested assignment of this species to *Lanzia* (Korf, 1973) was premature and that *Ciboria* is the most appropriate generic disposition.

63. *Sclerotinia cassiopes* Rostr., Meddel. Grønland 18: 56. 1894. (!!)

TYPICAL HOST: On stromatized fruits of *Cassiope tetragona*.

SPECIMEN EXAMINED: N. Hartz, VI.1892 [C-Plantae groenlandicae 298, 299, 300 (Holotype)].

NOTES: The entire capsule is stromatized with much host tissue among the broad prosenchyma cells composing the stromal medulla. This is probably a *Monilinia* and should be compared with *Monilinia ledi* (Nawashin) Whetzel, also on Ericaceous fruits.

64. *Sclerotinia castaneae* Peyronel, Atti Reale Accad. Lincei, Rendiconti Cl. Sci. Fis., ser. 5, 29: 326. 21.XI.1920.

TYPICAL HOST: *Castanea*.

NOTES: Viennot-Bourgin (Les champignons parasites des plantes cultivées 1: 705. 1949) placed an anamorph of this species, *Rhacodiella castaneae* Peyronel, in synonymy under *Ciboria pseudotuberosa*. *Rhacodiella* is a synonym of *Myrioconium* and I am interpreting Viennot-Bourgin's transfer as indication that the teleomorph is also *C. pseudotuberosa*.

65. *Sclerotinia caudata* Velen., see *S. sclerotiorum* (No. 1 of this list).

66. *Sclerotinia cerasi* Woron., Mém. Acad. Imp. Sci. St. Pétersbourg, sér. 7, 36: 39. 1888.

TYPICAL HOST: Mummified fruits of *Prunus cerasus* L.

NOTES: This epithet is based on an anamorph. Whetzel (1945) considered this species to be a taxonomic synonym of *Monilinia laxa* (Aderh. & Ruhl.) Honey.

67. *Sclerotinia chaenomelis* Fischer, Schweiz. Obst-u. Gartenb.-Z. 13: 217. 1930.

TYPICAL HOST: *Cydonia japonica*.

NOTES: This epithet is based on an anamorph, *Monilia*.

68. *Sclerotinia ciborioides* (Fr. *ex* Fr.) Rehm, Ascomyceten *107*. 1872.
   - ≡ [*Peziza ciborioides* Fr., Observ. mycol. 2: 307. 1818 (pre-starting point).]
   - ≡ *Peziza ciborioides* Fr. *ex* Fr., Syst. mycol. 2(2): 117. 1822.
   - ≡ *Peziza friesii* Pers., Mycol. eur. 1: 277. 1822 (a name change).

≡ *Ciboria ciborioides* (Fr. *ex* Fr.) Karst. [ut "*Rutstroemia ciborioides* (Fr.) Karst."], Hedwigia 27: 124. 1887.
≡ [*Rutstroemia ciborioides* (Fr. *ex* Fr.) Karst. [ut "(Fr.) Karst."], Hedwigia 27: 124. 1887, (*lapsus calami*).]
≡ *Ciboria friesii* (Pers.) Sacc. (ut "Pers."), Syll. fung. 8: 207. 1889.
≡ *Sclerotinia friesii* (Pers.) Boud., Hist. classific. discomyc. Europe p. 107. 1907.

TYPICAL HOST: Culms in a marsh.

NOTES: No clear concept of this species exists, and it may be "lost." Rehm misapplied it to *S. trifoliorum* when he issued it in 1872. The original description, "ad culmos in uliginosus," suggests that this may be a *Myriosclerotinia*. When Karsten (Hedwigia 27: 124. 1887) erected a new forma (f. *tenella*) of this species, he simultaneously transferred it to *Rutstroemia*, an egregious, unintentional error as can be seen by examining the footnote referring specifically to the generic name, where Karsten writes: "A *Ciboria* Fuck. sporis continuis, a *Sclerotinia* Fuck. sclerotio deficiente diversa." It is *Ciboria* that has continuous spores, and *Rutstroemia* that has septate spores, and by some abberration Karsten reversed the two. Since he clearly intended to refer this species and his new form to the non-septate-spored genus, I treat the combinations in *Rutstroemia* as errors that can be corrected. Holm (Trans. Brit. Mycol. Soc. 67: 334. 1976) did not recognize this as an abberration, and instead held that the footnote was "meant as an emendation of *Rutstroemia*," a position I cannot accept; it would equally have been an emendation of *Ciboria*.

69. *Sclerotinia cinerea* (Bon.) Schroet. *in* Cohn, Krypt.-Fl. Schlesien 3(2): 67. 1893.
≡ *MONILIA CINEREA* Bonorden, Handb. Mykol. p. 76, c.ic. - 78. 1851.

TYPICAL HOST: On fruits of *Prunus spinosa* and *P. domestica*.

NOTES: This epithet is based on an anamorph. Whetzel (1945) considered this species to be a synonym of *Monilinia laxa* (Aderh. & Ruhl.) Honey.

70. *Sclerotinia cinerea* Aderh. & Ruhl. [ut "(Bon.) Schroet."] Arbeiten Biol. Abt. Land- Forstwirtsch. Kaiserl. Gesundheitsamte 4: 435. 1905 (later homonym).

TYPICAL HOST: Decaying fruits of *Prunus cerasus*, *P. dulcis*, *P. persicus (?)*, *P. domestica*.

NOTES: The teleomorph was first described here.

71. *Sclerotinia cinerea* Wormald [ut "(Bon.) Schroet."], Ann. Bot. 35: 134, c.ic. - pl. 6, 7. 1921 (later homonym).

TYPICAL HOST: Mummified fruits of "plum."

NOTES: Wormald described the teleomorph and considered *S. laxa* as a taxonomic synonym, as did Dennis (1956).

72. [*Sclerotinia cinerea* forma *avium* Harrison, J. Proc. R. Soc. N.S.W. 67: 156. 1933 *(nomen nudum)*.]

73. [*Sclerotinia cinerea* forma *cerasi* Harrison, J. Proc. R. Soc. N.S.W. 67: 156. 1933 *(nomen nudum)*.]

74. *Sclerotinia cinerea* forma *mali* (Wormald) Harrison, J. Proc. R. Soc. N.S.W. 67: 156. 1933.
≡ *MONILIA CINEREA* f. *MALI* Wormald, Ann. Bot. 34: 167. 1920.
≡ *Sclerotinia laxa* Aderh. & Ruhl. f. *mali* (Wormald) Harrison, J. Proc. R. Soc. N.S.W. 67: 172. 1933.

NOTES: Based on anamorphs.

75. *Sclerotinia cinerea* forma *pruni* (Wormald) Harrison, J. Proc. R. Soc. N.S.W. 67: 156. 1933.
≡ *MONILIA CINEREA* f. *PRUNI* Wormald, Ann. Bot. 34: 167. 1920.

NOTES: Based on anamorphs. Whetzel (1945) considered this to be a taxonomic synonym of *Monilinia laxa* (Aderh. & Ruhl.) Honey.

76. *Sclerotinia coloradensis* Cash & Davidson *in* Davidson & Cash, Mycologia 25: 268. 1933. (!!)

TYPICAL HOST: *Pedicularis groenlandica* Retz.

SPECIMEN EXAMINED: R.W. Davidson, July 7, 1930 [BPI-Davidson 525 (Holotype)].

NOTES: The sclerotia of this species are firmly attached to the host, old stems of *Pedicularis groenlandica*. The authors note that while incubating sclerotia a *Botrytis* anamorph was produced, but until conclusive cultural studies have been performed, assignment of this species to *Botryotinia* is premature.

77. *Sclerotinia confundens* Whetzel, Mycologia 32: 126. 1940 (a name change: illegitimate superfluous name).
≡ *Sclerotinia bifrons* Seaver & Shope, Mycologia 22: 1. 1930.
≡ *Ciborinia confundens* (Whetz.) Whetz., Mycologia 37: 668. 1945.
≡ *Ciborinia bifrons* (Seaver & Shope) Seaver [ut "(Ellis & Everh.) Seaver"), North Amer. Cup-Fungi (Inop.) p. 71. 1951 (later homonym).
≡ *CIBORINIA SEAVERI* Groves & Bowerman, Canad. J. Bot. 33: 581. 1955 (a name change).

TYPICAL HOST: On ground from free lying sclerotia entangled in leaf debris under trees of the Rocky Mountain form of *Populis tremuloides*.

NOTES: Groves and Bowerman (1955) point out that the name *S. confundens* Whetzel is illegitimate because it is an obligate synonym of *S. bifrons* Seaver & Shope and was nomenclaturally superfluous when proposed. *Ciborinia bifrons* (Ellis & Everh.) Seaver is an incorrect citation since the basionym is based on an anamorph, and is an illegitimate name because the combination in *Ciborinia* is preoccupied by *C. bifrons*

Whetzel (1945).

78. *Sclerotinia convoluta* Drayton, Mycologia 29: 314. 1937.
 ≡ *BOTRYOTINIA CONVOLUTA* (Drayton) Whetzel, Mycologia 37: 679. 1945.

TYPICAL HOST: Rhizomes of cultivated *Iris*.

79. *Sclerotinia corni* Reade, Ann. Mycol. 6: 113. 1908.
 ≡ *Monilinia corni* (Reade) Honey, Amer. J. Bot. 23: 105. 1936.

TYPICAL HOST: *Cornus circinata* L'Her.

NOTES: Reade's epithet is based upon an anamorph. I find no mention of apothecia in Honey's paper either.

80. *Sclerotinia corni* Vaček, Stud. Bot. Čech. 11: 72. 1950 (later homonym). (!!)

TYPICAL HOST: On seeds of *Cornus mas*.

SPECIMEN EXAMINED: V. Vaček, 25/IX.1949 [PRM-Flora bohemica 173830 (Holotype)].

NOTES: The stroma, on seeds of *Cornus mas*, is composed of a loose weft of brown-walled prosenchyma, poorly differentiated into rind and medulla and appears to mantle only the surface of the seed with little penetration. This species may be referable to *Lanzia* or *Lambertella*.

81. *Sclerotinia coryli* Schell. Ber. Deutsch. Bot. Ges. 24: 505, c.ic. - XXI. 1906.
 ≡ *CIBORIA CORYLI* (Schell.) Buchw., Tidsskr. Planteavl 47: 537. 1943.

TYPICAL HOST: On fruits of *Corylus avellana*.

82. *Sclerotinia crategi* Magnus, Ber. Deutsch. Bot. Ges. 23: 197, c.ic. - V. 1905.

TYPICAL HOST: Stromatized fruits of *Crataegus*.

NOTES: Whetzel (1945) considered this species to be a taxonomic synonym of *Monilinia johnsonii* (Ell. & Everh.) Honey.

83. [*Sclerotinia culmifida* Jørstad, Rev. Appl. Mycol. 4: 17. 1925; Rev. Appl. Mycol. Index to Vol. 1-40 (1922-1961): 748. 1968, *lapsus calami* for *Septoria culmifida*.]

84. *Sclerotinia curreyana* (Berk. *in* Currey) Karsten, Acta Soc. Fauna Fl. Fenn. 2(6): 123. 1885.
 ≡ *Peziza curreyana* Berk. *in* Currey, J. Linn. Soc., Bot. 1: 147. 1857.
 ≡ [*Peziza curreyi* Berk., Outl. Brit. fungol. p. 370. 1860 (*lapsus calami*).]
 ≡ *MYRIOSCLEROTINIA CURREYANA* (Berk. *in* Currey) Buchw., Friesia 3: 291. 1947.

TYPICAL HOST: On previous year's stems of *Juncus conglomeratus*.

85. *Sclerotinia cydoniae* Schell. [Ber. Deutsch. Bot. Ges. 6: 207. 1899 (nomen nudum)] Centralbl. Bakteriol., 2 Abth., 17: 189. 1907 (illegitimate: superfluous name).
  ≡ *Ciboria linhartiana* Prill. & Delacr., Bull. Soc. Mycol. Fr. 9: 198. 1893 [ut "*Ciboria (Stromatinia) Linhartiana,*" pp. 198, 199; ut "*Peziza (Stromatinia Linhartiana)*" p. 198 *(lapsus calami)*; ut "*Stromatinia Linhartiana*" p. xi (index) *(lapsus calami)*].
  ≡ *Monilinia cydoniae* (Schell.) Whetzel, Mycologia 37: 672. 1945.
  ≡ *MONILINIA LINHARTIANA* (Prill. & Delacr.) Buchw., Aarskr. Kgl. Veterinaer- of Landbohøjskoles 32: 168. 1949.

TYPICAL HOST: Mummified fruits of *Cydonia vulgaris* Pers.

NOTES: Schellenberg (Ber. Deutsch. Bot. Ges. 6: 207. 1899) reasoned that since *Monilia linhartiana* Sacc. occurs on cherries, and not quince, Prilleaux and Delacroix's name was inapplicable to the species on quince, and proposed a new (superfluous) name for it.

86. *Sclerotinia cylindrica* Velen., Monogr. discomyc. Bohem. 1: 224; 2: XXII(39). 1934. (!!)

TYPICAL HOST: Near grass.

SPECIMEN EXAMINED: J. Velenovský, V.1927 [PRM-Flora bohemica 154021 (Holotype)].

NOTES: This is probably a species of *Ciborinia;* the sclerotial medulla is full of host tissue. Host data is unfortunately vague ("ad gramino").

87. [*Sclerotinia demissa* Dana, Phytopathology 11: 228. 1921 (*nomen nudum*).]
  ≡ [*Monilinia demissa* (Dana) Honey, Amer. J. Bot. 23: 105. 1936 (*nomen nudum*).]

TYPICAL HOST: Leaves, twigs and mummified fruits of *Prunus demissa.*

88. *Sclerotinia dennisii* Svrček, Česká Mykol. 15: 37. I.1961.
  ≡ *MYRIOSCLEROTINIA DENNISII* (Svrček) Schwegler, Schweiz. Z. Pilzk. 56: 53. 1978.

TYPICAL HOST: In dead, partially immersed culms of *Eriophorum vaginatum.*

89. *Sclerotinia douglasii* (Tubeuf) Massee, Textbook of plant diseases p. 382. 1899.
  ≡ *BOTRYTIS DOUGLASII* Tubeuf, Beitr. z. Baumkr. p. 4, c.ic. - I. 1888.

TYPICAL HOST: On living leaves and youngest internodes of seedling *Abies douglasii* and *Sequoia gigantea.*

NOTES: This epithet is based on an anamorph.

90. *Sclerotinia draytonii* Buddin & Wakefield (ut "*draytoni*"), Trans. Brit. Mycol. Soc. 29: 150. 1946.
  ≡ *BOTRYOTINIA DRAYTONII* (Buddin & Wakefield) Seaver (ut "*draytoni*"), North Amer. Cup-Fungi (Inop.) p. 62. 1951.

TYPICAL HOST: Stems of a cultivated *Gladiolus*.

91. *Sclerotinia duriaeana* (Tul. & Tul.) Rehm [forma *duriaeana*] Hedwigia 21: 66. 1882.
  - ≡ *Peziza duriaeana* Tul. & Tul., Sel. fung. carp. 1: 103. 1861.
  - ≡ *Sclerotinia duriaeana* f. *ambiens* (Desm.) Whetzel, Mycologia 21: 6. 1929 (illegitimate: based on *Epidochium ambiens* Desm., Ann. Sci. Nat. sér. 3, 20: 231. 1853, but superfluous, included the type of *Peziza duriaeana*).
  - ≡ *MYRIOSCLEROTINIA DURIAEANA* (Tul. & Tul.) Buchw., Friesia 3: 299. 1947.

TYPICAL HOST: *Carex arenaria*.

92. *Sclerotinia duriaeana* (Tul. & Tul.) Rehm forma *affine* (Desm.) Whetzel, Mycologia 21: 6. 1929.
  - ≡ *Epidochium affine* Desm., Ann. Sci. Nat. sér. 3, 20: 232. 1853.

TYPICAL HOST: *Carex* (? *hudsonii* Bennett fide Whetzel).

NOTES: This is based on anamorphs. According to Whetzel (1946) this is a taxonomic synonym of *S. sulcata*.

93. *Sclerotinia duriaeana* (Tul. & Tul.) Rehm forma *ambiens* (Desm.) Whetzel, see *S. duriaeana* f. *duriaeana*, No. 91 of this list.

NOTES: According to Whetzel (1946) this is "what Tulasne had in hand" for *S. duriaeana*.

94. *Sclerotinia echinophila* (Bull. *ex* Fr.) Rehm *in* Rabenh., Krypt.-Fl. Deutschl. II, 1(3): 813. 1893.
  - ≡ [*Peziza echinophila* Bull., Hist. champ. France p. 235, c.ic. - 500(1). 1791 (pre-starting point).]
  - ≡ *Peziza echinophila* Bull. *ex* Fr., Syst. mycol. 2(1): 118. 1822.
  - ≡ *Rutstroemia echinophila* (Bull. *ex* Fr.) Höhnel, Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl., Abt. I, 126: 340. 1917.

TYPICAL HOST: Involucres of *Castanea vesca*.

NOTES: According to Korf *(pers. comm.)* this is a species of *Lanzia*.

95. *Sclerotinia eleocharidis* Henderson, Notes Roy. Bot. Gard. Edinburgh 30: 204. 4.VI.1970. (!!)

TYPICAL HOST: Dead culms of *Eleocharis palustris*.

SPECIMEN EXAMINED: Henderson, 1 VI 69 [E-Henderson 9408 (Holotype)].

NOTES: This is definitely a *Myriosclerotinia* and despite the host, *Eleocharis palustris*, may be a synonym of "*M. sulcata*," No. 236 of this list.

96. *Sclerotinia empetri* Lagerh. *in* Vestergr. (ut "*empetri* f. *sclerotifera*"), Bot. Not. 1899: 163. 1899.

≡ *MONILINIA EMPETRI* (Lagerh. *in* Vestergr.) B. Erikss., Symb. Bot. Upsal. 19: 46. 1970.

TYPICAL HOST: Mummified berries of *Empetrum nigrum.*

NOTES: Lagerheim's description was published in the listings of Vestergren's exsiccatum. While Lagerheim apparently saw immature apothecia, which were described, the specimens issued in the exsiccatum probably included only anamorphic material, as indicated by the "f. *sclerotifera*" of the original description. B. Eriksson *(loc. cit.)* noted that the UPS material of Vestergren, Micr. rar. sel. *56* includes only sclerotia but that Lagerheim saw very young apothecia. She provided a description of mature apothecia. The conidial state is unknown for this species.

97. [*Sclerotinia eriophori* Whetzel *in* Buchw., Friesia 3: 303. 1947, *nom. nud.*]

98. *Sclerotinia erythronii* Whetzel, Mycologia 18: 232. 1926.
≡ *CIBORINIA ERYTHRONII* (Whetzel) Whetzel, Mycologia 37: 668. 1945.

TYPICAL HOST: *Erythronium americanum* Ker.

99. *Sclerotinia fallax* Cash & Davidson *in* Davidson & Cash [ut "(Sacc.?) Cash & Davidson"], Mycologia 25: 270. 1933. (!!)

TYPICAL HOST: *Potentilla* sp.

SPECIMEN EXAMINED: R.W. Davidson, July 1, 1930 [BPI-Davidson 476 (Holotype)].

NOTES: Cash and Davidson *(loc. cit.)* considered *Sclerotium fallax* Sacc. to be a probable synonym of their species since both occurred on *Potentilla*, but they could not obtain type or authentic material of Saccardo's so that the citation of Saccardo's epithet carried a question mark. Their citation is incorrect in any case becaused the questioned basionym is based on an anamorph. The type specimen of *Sclerotinia fallax* contains subpackets with the actual type specimen probably the subpacket containing apothecia with 4-spored asci, as described in the diagnosis, and not the subpacket containing apothecia with 8-spored asci, which are not mentioned in the diagnosis. Both types of apothecia appear to be conspecific based on other characters. The sclerotia are attached to host tissue; this is either a *Botryotinia* or a *Ciborinia.*

100. *Sclerotinia festucae* Velen., Monogr. discomyc. Bohem. 1: 224; 2: XXIII(42). 1934. (!!)

TYPICAL HOST: In leaves of *Festuca gigantea* Vill.

SPECIMEN EXAMINED: J. Velenovský, 27.V.1931 [PRM-Flora bohemica 154020 (Holotype)].

NOTES: This is a *Myriosclerotinia,* with sclerotia developing within the culms of a gramineous host. The ascospores are smaller than those of *M. borealis* (Bub. & Vleug. *in* Vleug.) Kohn.

101. [*Sclerotinia ficariacearum* Whetzel *in* Buchw., Aarskr. Kgl. Veterinaer- og Landbohøjskoles 32: 134. 1949, *nom. nud.*]
   = *BOTRYOTINIA FICARIARUM* Hennebert *in* Hennebert & Groves, Canad. J. Bot. 41: 355. 1963.

TYPICAL HOST: *Ficaria verna.*

102. *Sclerotinia ficariae* Rehm *in* Rabenhorst, see *S. sclerotiorum*, No. 1 of this list.

103. *Sclerotinia foliicola* Cash & Davidson *in* Davidson & Cash, Mycologia 25: 269. 1933.
   ≡ *CIBORINIA FOLIICOLA* (Cash & Davidson *in* Davidson & Cash) Whetzel, Mycologia 37: 668. 1945.

TYPICAL HOST: *Salix* sp.

104. *Sclerotinia fredericae* Svrček, Česká Mykol. 20: 16. 15.I. 1966. (!!)

TYPICAL HOST: Within leaves of *Carlina acaulis.*

SPECIMEN EXAMINED: Bedřiška Hřebíková, 6.X.1958 [PRM-Flora slovaca 731952 (Holotype)].

NOTES: This is probably a species of *Poculum*. The stroma developing within the leaves of *Carlina acaulis* is composed of a medulla of interwoven prosenchyma with a poorly developed rind. The ectal excipulum of the apothecium is of hyaline textura oblita with abundant brown-walled tomentum hyphae. The fusoid to allantoid ascospores are hyaline.

105. *Sclerotinia friesii* (Pers.) Boud., see *S. ciborioides*, No. 68 of this list.

106. *Sclerotinia fructicola* (Winter) Rehm *in* Sacc., Syll. fung. 18: 41. 1906.
   ≡ *Ciboria fructicola* Winter, Hedwigia 22: 131. 1883.
   ≡ *MONILINIA FRUCTICOLA* (Winter) Honey, Mycologia 20: 153. 1928.

TYPICAL HOST: Rotting fruits of *Persica vulgaris (Prunus persica).*

107. *Sclerotinia fructigena* (Pers. *ex* Pers.) Schroet. *in* Cohn, Krypt.-Fl. Schlesien 3(2): 67. 1893.
   ≡ [*Torula fructigena* Pers., Ann. Bot. (Usteri) 15: 26. 1795 (pre-starting point).]
   ≡ [*Monilia fructigena* (Pers.) Pers., Syn. meth. fung. p. 693. 1801 (pre-starting point).]
   ≡ *Acrosporium fructigenum* (Pers.) *ex* Pers., Mycol. eur. 1: 24. 1822 (before 28.III.1822).
   ≡ *MONILIA FRUCTIGENA* (Pers. *ex* Pers.) Eaton, Man. bot., Ed. 3, p. 357. 1822 (23.III - 23.IV.1822).

TYPICAL HOST: Rotting fruits of *Pyrus communis*, *Prunus* spp.

NOTES: This epithet is based on an anamorph. The epithet "*fructigena*" has been applied to various teleomorphic fungi (see next three entries), but is preoccupied in *Sclerotinia* by the Schroeter combination. It can be used in *Monilinia*, however (see No. 108, below).

108. *Sclerotinia fructigena* Aderh. *ex* Sacc. & Sacc. *in* Sacc., Syll. fung. 18: 41. 1906 (later homonym).
  ?= [*Monilinia fructigena* Honey, Amer. J. Bot. 23: 102. 1936 *(nom. nud.)*.]
  ≡ *MONILINIA FRUCTIGENA* Honey *in* Whetzel [ut "(Aderh. & Ruhl.) Honey"], Mycologia 37: 672. 1945.

TYPICAL HOST: Fruits of *Pyrus malus* and *P. communis*.

NOTES: This is a later homonym of *S. fructigena* (Pers.) Schroet., and is based on the description of apothecia by Aderhold (1904). Most recent authors cite the name as *S. fructigena* Aderh. & Ruhl., based on the later paper by Aderhold and Ruhland (1905). In both papers, however, the authors used "(Pers.) Schroet." as the authorities, and Saccardo was apparently the first to attempt to treat the teleomorphic material with Aderhold's name as authority. The epithet "*fructigena*" took on new life in *Monilinia* when Honey's name was provided with a reference to a previously and validly published Latin diagnosis of the teleomorph [as *Sclerotinia fructigena* (Pers.) Schroet.]. There is no valid name for the species in the genus *Sclerotinia*, however.

109. *Sclerotinia fructigena* Norton *ex* Sacc. & Sacc. *in* Sacc. [ut "(Schr.?) Norton"], Syll. fung. 18: 40. 1906 (later homonym).

TYPICAL HOST: Fruits of *Amygdalis* and *Prunus*.

NOTES: This is another intentional homonym created by Saccardo and Saccardo, based on American apothecial material and therefore differing from "*S. fructigena* Aderh. *ex* Sacc. & Sacc.," and from "*S. fructigena* (Woron.) Norton *ex* Sacc. & Sacc.," both apparently based on European material.

110. *Sclerotinia fructigena* (Woron.) Norton *ex* Sacc. & Sacc. *in* Sacc., Syll. fung. 18: 41. 1906..

TYPICAL HOST: Pomaceous fruits.

NOTES: This is another intentional later homonym created by Saccardo and Saccardo, purporting to be a name for the pomaceous brown rot fungus described by Woronin (from conidia), which thus differs from "*S. fructigena* Norton *ex* Sacc. & Sacc." on stone fruits in America and from "*S. fructigena* Aderh. *ex* Sacc. & Sacc.," an apparently different European species on stone fruits.

111. *Sclerotinia fuckeliana* (de Bary) Fuckel, Jahrb. Nassauischen Vereins Naturk. 23-24: 330. 1870.
  ≡ *Peziza fuckeliana* de Bary, Morphol. Phys. Pilze p. 30. 1866.
  ≡ *BOTRYOTINIA FUCKELIANA* (de Bary) Whetzel, Mycologia 37: 679. 1945.

TYPICAL HOST: Fallen leaves and rarely fruits of *Vitis vinifera*.

112. *Sclerotinia galanthi* Ludw., Lehrb. d. nied. Krypt. p. 355. 1892.

TYPICAL HOST: Snowdrop (*Galanthus* sp.).

NOTES: This epithet is based on anamorphs. A *Botrytis* anamorph is mentioned in the description and Buchwald (1949) suggests that the species observed by Ludwig is identical with *Botrytis galanthina* (Berk. & Br.) Sacc. Buchwald incorrectly (under today's International Code of Botanical Nomenclature) considered Ludwig's name to be a *nomen nudum*.

113. *Sclerotinia galanthi* Keissler (ut "Ludw."), Zeit. Gärungsphysiol. 6: 24. 1917 (later homonym).

TYPICAL HOST: Snowdrop (*Galanthus* sp.).

NOTES: Keissler described the apothecial teleomorph of *S. galanthi* Ludw. Buchwald (1949) cites Keissler as the author, but Ludwig's name, based on anamorphs, has priority in *Sclerotinia*.

114. *Sclerotinia galeopsidis* Velen., see *S. sclerotiorum*, No. 1 of this list.

115. *Sclerotinia geranii* Seaver & Horne, Mem. Torrey Bot. Club 17: 205. 1918.
≡ *SEAVERINIA GERANII* (Seaver & Horne) Whetzel, Mycologia 37: 705. 1945.

TYPICAL HOST: Rhizomes of *Geranium maculatum* L.

NOTES: The anamorph is *Verrucobotrys geranii* (Seaver) Hennebert (Hennebert, 1973).

116. *Sclerotinia gladioli* Drayton [ut "(Massey) Drayton"], Phytopathology 24: 400. 1934.
≡ *STROMATINIA GLADIOLI* (Drayton) Whetzel, Mycologia 37: 674. 1945.

TYPICAL HOST: On *Gladiolus* sp.

NOTES: Since *Sclerotium gladioli* Massee is based on an anamorph, the epithet dates from 1934 for the teleomorph.

117. *Sclerotinia glandicola* Velen., Nov. mycol. p. 129. 1947. (!!)

TYPICAL HOST: Unknown, "near rotting acorns."

SPECIMEN EXAMINED: V. Vaček, IX.1941 [PRM-Flora moravici 154019 (Holotype)].

NOTES: This is a *Ciborinia*.

118. *Sclerotinia globispora* Velen., Monogr. discomyc. Bohem. 1: 227; 2: XXX(29-31). 1934. (!!)

TYPICAL HOST: In a garden among clumps of *Campanula carpatica* Jacq.

SPECIMEN EXAMINED: J. Velenovský, 6.IV.1932 [PRM-Flora bohemica 152950 (Holotype)].

NOTES: No sclerotia were present in the poorly preserved type specimen and there is no mention of the location of sclerotia in the diagnosis. The ectal excipulum of the apothecium is composed of brick-shaped cells oriented with the long axis parallel to the apothecial surface. This may belong in *Lambertella* or *Lanzia*.

119. *Sclerotinia globosa* (Buchw.) Webster, Trans. Brit. Mycol. Soc. 37: 168. 1954.
≡ *BOTRYOTINIA GLOBOSA* Buchw., Phytopath. Z. 20: 250. 1953.

TYPICAL HOST: *Allium ursinum*.

120. *Sclerotinia gracilipes* (Cooke) Sacc., Syll. fung. 8: 200. 1889.
≡ *Peziza gracilipes* Cooke, Hedwigia 14: 82. 1875; Bull. Buffalo Soc. Nat. Sci. 1: 294. 1875.
≡ *CIBORINIA GRACILIPES* (Cooke) Seaver, North Amer. Cup-Fungi (Inop.) p. 72. 1951.

TYPICAL HOST: On petioles of *Magnolia glauca*.

121. *Sclerotinia gracilis* Clements *in* Bessey, Contrib. Bot. Dept. Univ. Nebr. n.s. 3: 47. 1892.
≡ *CIBORINIA GRACILIS* (Clements *in* Bessey) Whetzel, Mycologia 37: 668. 1945.

TYPICAL HOST: Possibly associated with *Erythronium albidum*.

122. *Sclerotinia graminearum* Elenev. *ex* Solkina, Zašč. Rast. 18: 107. 1938.

TYPICAL HOST: *Triticum vulgare* Vill. and *Secale cereale* L.

NOTES: On the basis of the diagnosis I consider this species to be a taxonomic synonym of *Myriosclerotinia borealis* (Bub. & Vleug. *in* Vleug.) Kohn, No. 53 of this list. I have been advised by Dr. S. P. Wasser of the Bot. Akad. Sci. Inst. of Ukranian S.S.R. that the type specimen has not been preserved.

123. *Sclerotinia granigena* (Quél.) Sacc., Syll. fung. 8: 198. 1889.
≡ *Phialea granigena* Quél., C.R. Ass. franç. Av. Sci. (La Rochelle, 1882) 11: 407, c.ic. - XII(7). 1883.
≡ *GLOEOTINIA GRANIGENA* (Quél.) Schum., Mycotaxon 8: 125. 1979.

TYPICAL HOST: Stromatized seeds of *Bromus erectus*.

NOTES: This is a *Gloeotinia* and, as Schumacher (1979) has shown, provides the correct epithet for *G. temulenta*.

124. [*Sclerotinia gregaria* Dana, Phytopathology 11: 106. 1921 (*nomen nudum*).]
≡ [*Monilinia gregaria* (Dana) Honey, Amer. J. Bot. 23: 105. 1939 (*nomen nudum*).]

TYPICAL HOST: *Amelanchier cusickii*.

125. *Sclerotinia gregoriana* J.T. Palmer, Acta Mycol. 4: 231. 1968. (!!)

TYPICAL HOST: Culms of *Scirpus caespitosus* L.

SPECIMEN EXAMINED: J.T. Palmer, 19.VI.1966 [CUP 48892 *ex* J.T. Palmer Herb. 3010 (Isotype)].

NOTES: This is a *Myriosclerotinia*, perhaps a synonym of *M. scirpicola* (Rehm *in* Rabenh.) Buchw. The sclerotium is produced within the culms of *Scirpus*, the developing sclerotium is pink, the allantoid spores are slightly narrower than those of *M. scirpicola*, and there is a covering layer of prosenchyma over the ectal excipulum of the apothecium.

126. *Sclerotinia hartii* (Berk.) Boud., Hist. classific. discomyc. Europe p. 108. 1907.
≡ *Urnula hartii* Berk., J. Linn. Soc. 17: 13. 31.VII.1878. (!!)

TYPICAL HOST: On moss.

SPECIMEN EXAMINED: H.C. Hart, July, 1875 [K (Holotype)].

NOTES: Since no stromatal tissue was included with the portion of the type specimen loaned and all zones of the apothecium are composed of parallel, prosenchymatous cells, this is not a *Sclerotinia* but I cannot determine whether or not it is referrable to the Sclerotiniaceae. Boudier included this species in *Sclerotinia* as a doubtful species.

127. *Sclerotinia henningsiana* Kirschst., see *S. sclerotiorum*, No. 1 of this list.

128. *Sclerotinia herbiseda* Velen., Novit. mycol. p. 189. 1939. (!!)

TYPICAL HOST: Withered leaves of *Cirsium*.

SPECIMEN EXAMINED: J. Velenovský, VII.1938 [PRM-Flora bohemica 152962 (Holotype)].

NOTES: This is a *Lambertella*, close to *L. viburni*, but with granularly roughened tomentum hyphae.

129. [*Sclerotinia heterocarpa* Whetzel, Farlowia 2: 436. 1946, *lapsus calami* for *S. homoeocarpa*.]

130. [*Sclerotinia heteroeca* Woronin & Nawaschin *in* Rehm, Ber. Bayer. Bot. Ges. 15: 237, 1915, *lapsus calami* for *S. heteroica*.]

131. *Sclerotinia heteroica* Woronin & Nawaschin, Ber. Deutsch. Bot. Ges. 12: 187. 1894.

TYPICAL HOST: *Ledum palustre*.

NOTES: This epithet is based on anamorphs. Whetzel (1945) considered it to be a synonym of *Monilinia ledi* (Nawaschin) Whetzel.

132. *Sclerotinia hiemalis* (Bernst.) Fuckel [ut "*hyemalis* (Milde) Fuckel"], Jahrb. Nassauischen Vereins Naturk. 27-28:

65. 1873.
≡ *Microstoma hiemalis* Bernst., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 23: 649. 1852.

TYPICAL HOST: In soil.

NOTES: This is a synonym of *Microstoma protracta* (Fr.) Kanouse. The confusion over whether to cite Bernstein, Nees & Bernstein, or Milde as the authority for *M. hiemalis* has been cleared up by Kanouse (1948). It occurs on buried sticks and roots, but the connection to these was not seen by Bernstein *(loc. cit.)* nor by Fuckel *(loc. cit.)*. Fuckel assumed a sclerotium would be found both in 1873 when he synonymized this with *S. baccata* (No. 48 of this list) and when he originally described that species (Fuckel, 1870).

133. *Sclerotinia hirtella* Boud., Hist. classific. discomyc. Europe p. 107. 1907.
≡ *Sclerotinia candolleana* var. *hirtella* (Boud.) Rehm (ut "*hirtellum* Boud."), Ber. Bayer. Bot. Ges. 15: 241. 1915.
≡ *CIBORINIA HIRTELLA* (Boud.) Batra & Korf, Amer. J. Bot. 46: 448. 1959.

TYPICAL HOST: Leaves and branches of *Castanea*.

134. *Sclerotinia homoeocarpa* Bennett, Ann. Appl. Biol. 24: 255. V.1937.

TYPICAL HOST: Causing "dollarspot" disease in fine turf on *Festuca, Agrostis, Poa.*

NOTES: This name has no existing type specimen. The epithet has been applied to species identified by Korf *(pers. comm.)* as belonging to *Lanzia* and to *Moellerodiscus*.

135. *Sclerotinia hordei* Schell., Centralbl. Bakteriol. 2 Abth. 12: 735. 3.IX.1904.

TYPICAL HOST: Foot and stem base of *Hordeum*.

NOTES: This is probably a *Botryotinia* since Schellenberg described a *Botrytis* anamorph.

136. *Sclerotinia hyemalis* (Milde) Fuckel, see *S. hiemalis*, No. 132 of this list.

137. *Sclerotinia incondita* (Ellis) Sacc., Syll. fung. 8: 200. 1889.
≡ *Peziza incondita* Ellis, Bull. Torrey Bot. Club 8: 73. VII.1881. (!!)

TYPICAL HOST: Among moss.

SPECIMEN EXAMINED: Ellis, North Amer. Fungi *391* [CUP-Durand 102-54 (Isotype)].

NOTES: This is probably a *Ciborinia*. The asci are tetrasporous.

138. *Sclerotinia infundibuliformis* Peck, see *Dumontinia tuberosa*, No. 244 of this list.

139. *Sclerotinia intermedia* Ramsey, see *S. minor*, No. 2 of this list.

140. *Sclerotinia johnsonii* (Ellis & Everh.) Rehm, Ann. Mycol. 4: 338. 1906.
   ≡ *Ciboria johnsonii* Ellis & Everh., Proc. Acad. Nat. Sci. Philadelphia 46: 348. 11.XII.1894.
   ≡ *MONILINIA JOHNSONII* (Ellis & Everh.) Honey, Amer. J. Bot. 23. 105. 1936.

TYPICAL HOST: On decaying thorn apples *(Crataegus)* lying on the ground.

141. *Sclerotinia juglandis* (Preuss) Rehm *in* Rabenh., Krypt.-Fl. Deutschl. II 1(3): 810. 1893.
   ≡ *Peziza juglandis* Preuss, Linnaea 24: 146. 1851.
   ≡ *Ciboria juglandis* (Preuss) Sacc., Syll. fung. 8: 201. 1889.

TYPICAL HOST: Fallen cotyledons of *Juglans*.

NOTES: From the description, this species produces a substratal stroma.

142. *Sclerotinia juncifida* (Nyl.) J.T. Palmer, Irish Naturalists' J. 16: 263. I.1970.
   ≡ *Peziza juncifida* Nyl., Not. Sällsk. Fauna Fl. Fenn. Förh. 10: 39. 1869.
   ≡ *MYRIOSCLEROTINIA JUNCIFIDA* (Nyl.) J.T. Palmer, Friesia 9: 199. 1969.

TYPICAL HOST: On culms of *Juncus (? compressus* L.).

NOTES: I refer this epithet to *Myriosclerotinia*. Palmer apparently revised his concept of *Sclerotinia* to include *Myriosclerotinia*.

143. *Sclerotinia juncigena* (Ellis & Everh.) Whetzel, Farlowia 2: 432. 1946.
   ≡ *Ciboria juncigena* Ellis & Everh., Proc. Acad. Nat. Sci. Philadelphia 46: 348. 11.XII.1894. (!!)

TYPICAL HOST: On dead stems of *Juncus*.

SPECIMEN EXAMINED: W.N. Suksdorf, 31.V.1883 [CUP-Durand 78-49, Suksdorf *371* (Isotype)].

NOTES: I concur with J.T. Palmer who annotated this specimen as *Myriosclerotinia curreyana* (Berk. *in* Currey) Buchw. Whetzel (1946) writes of this species, "It is unquestionably very closely related to *S. curreyana* and may indeed be more properly regarded as an American form or variety of that species."

144. [*Sclerotinia kenjiana* Miura, Bull. Agr. Exp. Sta. South Manchuria Railway Company (Minamimanshu Tetsudokabushiki Kaisha Noji-Shiken-Jo Iho) 18: 77. 1925, *nom. provis.*]

145. *Sclerotinia kerneri* (Wettst.) Sacc. (ut "Wettst."), Syll. fung. 8: 197. 1889.
   ≡ *Peziza (Sclerotinia) kerneri* Wettst., Sitzungsb. Kaiserl. Akad. Wiss., Math.-Naturwiss. Cl., Abt. 1, 94: 72, c.ic. - II. 1887. (!)

TYPICAL HOST: Male flowers of *Abies (? pectinata)*.

SPECIMENS EXAMINED: Wettstein, Austria infer!, Sparbach [S-Sydow (Topotype, possibly Isotype)]; Wettstein, Austria inferior, *Abies alba* Mill., Flora Exsicc. Austro-Hungarica *3175* (Topotype, possibly Isotype) CUP, FH, W; L.H. Wright and R. Cauchon, 22. Oct-30 Nov. 1971, New Richmond, Quebec (DAOM 149538).

NOTES: The paraphyses are inflated at the apices and immersed in gel to form a pseudoepithecium. The ascus pore channel wall is J-, as noted by Elliott (1976), but with KOH pretreatment (see Kohn & Korf, 1975) becomes strongly J+. The inner zone of the ectal excipulum which Elliott describes as "closely compacted" is bound in gel and turns blue in Melzer's Reagent. The roughening of the ectal excipular cells in both the apothecium and stipe is in bands, unlike that observed in other species of sclerotium-forming Sclerotiniaceae. The ectal excipulum of the apothecium is of textura porrecta oriented parallel to the apothecial surface. The sclerotial rind is composed of a layer of inflated to globose cells, 2-3 cells deep, with the outer walls of the outermost cells thicker and more heavily melanized than the other walls. The sclerotial medulla includes host tissue and the sclerotium is firmly attached to the host.

These features, especially the morphology both of the ectal excipulum of the apothecium and of the sclerotium, preclude assignment to any described genus in the Sclerotiniaceae. I therefore accommodate this species in a new genus.

ELLIOTTINIA Kohn, *gen. nov.*

Sclerotia ad hospitem firme affixa, medulla substantiam hospitis includente, praecipue prope situm ubi ad hospitem affixa. Apothecia stipitata, cupulata, sclerotiis portata. Excipulum ectale ex textura porrecta formatum, ad superficiem apothecialem parallelum. A *Sclerotinia* et *Ciborinia* differens in absentia cellularum globosarum ab excipulo ectali apothecii et a generibus Sclerotiniacearum aliis in absentia status conidialis et in formatione sclerotiorum verorum. Species typica: *Peziza (Sclerotinia) kerneri* Wettst.

Sclerotia firmly attached to the host, medulla incorporating host tissue, especially near the site of attachment to the host. *Apothecia* stipitate, cupulate, borne on sclerotia. Ectal excipulum of textura porrecta, parallel to the apothecial surface. Differing from *Sclerotinia* and *Ciborinia* in the absence of globose cells in the ectal excipulum of the apothecium, and from other genera in the Sclerotiniaceae in the absence of a conidial state and the formation of true sclerotia. Holotype species: ELLIOTTINIA KERNERI (Wettst.) Kohn, *comb. nov.* [basionym: *Peziza (Sclerotinia) kerneri* Wettst., Sitzungsb. Kaiserl. Akad. Wiss. Wien, Math.-Naturwiss. Cl., Abt. 1, 94: 72. 1887.

Etymology: Named for the late Mary E. Elliott, a diligent and helpful colleague in studies in the Sclerotiniaceae.

146. *Sclerotinia kusanoi* P. Henn. *ex* Takahashi, Miyabe-Festschrift or a Collection of Botanical Papers p. 142. 1911.
   ≡ *MONILINIA KUSANOI* (P. Henn. *ex* Takahashi) Yamamoto [ut "(P. Henn.)"], Trans. Mycol. Soc. Japan 2(2): 3. 1959.

TYPICAL HOST: Mummified fruits of *Prunus pseudocerasus*.

NOTES: The anamorph is *Monilia kusanoi* P. Henn., Bot. Jahrb. 32: 45. 1903. Takahashi credited the teleomorph, for which he provided the description, to Hennings.

147. *Sclerotinia laxa* Aderh. & Ruhl. [ut "(Ehrenb.) Aderh. & Ruhl."], Arbeit. Biol. Abt. Land- und Forstwirtsch. Kaiserl. Gesundheitsamte 4: 435, c.ic. - pl. 7. 1905.
≡ [*Monilinia laxa* Honey, Amer. J. Bot. 23: 102. 1936, *nom. nud.*]
≡ *MONILINIA LAXA* (Aderh. & Ruhl.) Honey *in* Whetzel, Mycologia 37: 672. 1945.

TYPICAL HOST: Rotted fruits of *Prunus armeniaceae* L.

NOTES: Although Aderhold & Ruhland described the teleomorph, they transferred the anamorphic name, *Oidium laxum* Ehrenb. *ex* Fr.

148. *Sclerotinia laxa* forma *mali* (Wormald) Harrison, see *S. cinerea* f. *mali*, No. 74 of this list.

149. *Sclerotinia ledi* Nawaschin, Ber. Deutsch. Bot. Ges. 12: 117. 1894.
≡ *MONILINIA LEDI* (Nawaschin) Whetzel, Mycologia 37: 673. 1945.

TYPICAL HOST: Anamorph on *Vaccinium*, teleomorph produced on *Ledum*.

150. *Sclerotinia lentiformis* Velen., České Houby, Dil. IV-V, p. 852. 1922. (!!)

TYPICAL HOST: Lens-shaped galls on leaves of *Quercus* and *Fagus*.

SPECIMEN EXAMINED: J. Šimr, III.1921 [PRM-Flora bohemica 149721 (Holotype)].

NOTES: This is probably a *Ciboria;* the apothecia of the type collection are very badly preserved.

151. [*Sclerotinia levi* Nawaschin *in* Rehm, Ber. Bayer. Bot. Ges. 15: 237. 1915, *lapsus calami* for *S. ledi*.]

152. *Sclerotinia libertiana* Fuckel, see *S. sclerotiorum*, No. 1 of this list.

153. *Sclerotinia lindaviana* Kirschst. *in* Rehm, Ascom. Exsicc. *1604*. 1905; Verh. Bot. Vereins Prov. Brandenburg 48: 42. 1906.
≡ *Rutstroemia lindaviana* (Kirschst.) Dennis, British cup fungi p. 65. 1960.

TYPICAL HOST: Wet, decayed leaves of *Phragmites communis*.

NOTES: The substratal stroma clearly excludes the species from *Sclerotinia*.

154. *Sclerotinia longisclerotialis* Whetzel, Mycologia 21: 24. 1929. (!!)

≡ *MYRIOSCLEROTINIA LONGISCLEROTIALIS* (Whetzel) Buchw., Kgl. Veterin.- og Landbohøjskoles Aarsskr. 32: 156. 1949.

TYPICAL HOST: *Carex prairea* Dewey.

SPECIMEN EXAMINED: H.H. Whetzel et al., May 16, 1918 [CUP 10544 (Holotype)].

155. *Sclerotinia luzulae* Whetzel, Farlowia 2: 434. 1946.

TYPICAL HOST: In culms of *Luzula pilosa* Willd.

NOTES: This epithet is based on an anamorph, *(Sclerotium)*.

156. *Sclerotinia mali* Takahashi, Bot. Mag. (Tokyo) 29: (222). 1915.
≡ *MONILINIA MALI* (Takahashi) Whetzel, Mycologia 37: 673. 1945.

TYPICAL HOST: On mummified young fruits of *Malus*.

157. *Sclerotinia malicola* Miura, Ringo no Byoki [Apple Diseases] p. 71, c.ic. 1917.

TYPICAL HOST: *Malus*.

NOTES: According to Dr. Yoshio Otani *(pers. comm.)*, this is probably a synonym of *Monilinia mali* (Takahashi) Whetzel. No type specimen is known.

158. *Sclerotinia matthiolae* Lendner, see *S. sclerotiorum*, No. 1 of this list.

159. *Sclerotinia megalospora* Woron., Mém. Acad. Imp. Sci. St. Pétersbourg VII, 36(6): 35. 1888.
≡ *MONILINIA MEGALOSPORA* (Woron.) Whetzel, Mycologia 37: 673. 1945.

TYPICAL HOST: Mummified fruits of *Vaccinium uliginosum* L.

160. *Sclerotinia menieri* Boud., Hist. classific. discomyc. Europe p. 108. 1907.

TYPICAL HOST: Leaves of *Phalaris arundinacea* L.

NOTES: Unfortunately Boudier's specimens are not available on loan at the present time. From the description alone, this is probably a *Myriosclerotinia*.

161. *Sclerotinia mespili* Woron. *in* Rehm *in* Rabenh., Krypt.-Fl. Deutschl. II, 1(3): 809. 1893.

TYPICAL HOST: Leaves of *Mespilus*.

NOTES: This epithet is based on an anamorph, *(Ovularia)*.

162. *Sclerotinia mespili* Schell., Centralbl. Bakteriol. 2 Abt., 17: 188, c.ic. - I,II. 1907 (later homonym).
≡ *MONILINIA MESPILI* Whetzel [ut "(Schell.) Whetzel"], Mycologia 37: 672. 1945.

TYPICAL HOST: Leaves of *Mespilus germanica* L.

NOTES: Though preoccupied in *Sclerotinia,* the epithet took on new life on transfer to *Monilinia* (International Code of Botanical Nomenclature, Art. 72.1 Note 1).

163. *Sclerotinia microspora* Velen., Monogr. discomyc. Bohem. 1: 226; 2: XXI(7). 1934. (!!)

TYPICAL HOST: On the nerves of the leaves of (?) *Rumex.*

SPECIMEN EXAMINED: J. Velenovský, 26.VI.1930 [PRM-Flora bohemica 152953 (Holotype)].

NOTES: The type specimen consists of detritus only. The diagnosis and illustration indicate that apothecia occur on the mid-vein of a leaf, possibly *Rumex,* and a discrete sclerotium is neither described nor illustrated. This is probably not a *Sclerotinia,* but may belong in *Lanzia, Poculum,* or *Lambertella.*

164. *Sclerotinia moelleriana* P. Henn., see *S. sclerotiorum,* No. 1 of this list.

165. [*Sclerotinia monieri* Sydow (ut "Boud."), Just's Bot. Jahresber. 35(1): 255. 1907, *lapsus calami* for *S. menieri.*]

166. *Sclerotinia moricola* Hino, Bull. Miyazaki Coll. Agric. 1(1): 77. 1930.
≡ *Botryotinia moricola* (Hino) Yamamoto, Trans. Mycol. Soc. Japan 2(2): 5. 1959.

TYPICAL HOST: *Morus alba.*

NOTES: This epithet is based on anamorphs.

167. *Sclerotinia mume* Hara, Agric. & Hort. 1: 24. 1926.
= *MONILINIA MUME* Yamamoto [ut "(Hara) Yamamoto"], Trans. Mycol. Soc. Japan 2(2): 3. 1959.

TYPICAL HOST: Fruits of *Prunus mume.*

NOTES: Yamamoto provided a description of the teleomorph. Hara's name is based on an anamorph.

168. *Sclerotinia muscorum* A.L. Smith & Ramsbottom, Trans. Brit. Mycol. Soc. 4: 168. 1913. (!!)

TYPICAL HOST: On leaves of *Campylopus atrovirens.*

SPECIMEN EXAMINED: Gwynne-Vaughan, April 1912 [K (Holotype)].

NOTES: No apothecia were found in the portion of the type specimen loaned. An ascocarp fitting the authors' description of an unexpanded, immature apothecium is referable to the Clavicipitales. The sclerotium, unconnected to any fruiting structure, is not that of a *Sclerotinia* sensu Kohn.

169. *Sclerotinia mycetophila* (Fayod) Sacc., Syll. fung. 10: 6. 1892.
≡ *Peziza mycetophila* Fayod, Ann. Sci. Nat., Bot., sér. 7, 2: 36, c.ic. - 2(13-18), 3(1-8). 1885.

TYPICAL HOST: *Agaricus vellereus* Fr.

NOTES: This fungus is described as producing an anamorph, *Monilia albo-lutea,* and therefore cannot be accommodated in *Sclerotinia.* While the Fayod herbarium is at G, including exsiccata, water color drawings, and notes, nothing under this epithet could be traced. The original description indicates that only one apothecium was observed, perhaps accounting for the absence of a type specimen.

170. *Sclerotinia myrtaceae* Rick (ut "*mystaceae*"), Egatea 13: 439. 1928. (!!)

TYPICAL HOST: Fruits of Myrtaceae.

SPECIMEN EXAMINED: Rick, Sept. 1905 [PACA-Rick 14841 (Holotype)].

NOTES: Much host tissue is incorporated in the sclerotial medulla and rind. This is probably a *Ciboria* but the apothecia are badly preserved and a conclusive determination is not possible.

171. [*Sclerotinia mystaceae* Rick, see *S. myrtaceae,* No. 170 of this list.]

172. [*Sclerotinia narcissi* Whitehouse, Biol. Rev. Cambridge Philos. Soc. 24: 432. 1949 (*nomen nudum*).]
= *STROMATINIA NARCISSI* Drayton & Groves, Mycologia 44: 126. 1952.

TYPICAL HOST: Bulb scales of *Narcissus* and *Zephyranthus.*

173. *Sclerotinia narcissicola* Gregory, Trans. Brit. Mycol. Soc. 25: 37. 1941.
≡ *BOTRYOTINIA NARCISSICOLA* (Gregory) Buchw., Kgl. Vet.- og Landbohøjskoles Aarsskr. 32: 148. 1949.

TYPICAL HOST: Leaves of *Narcissus pseudonarcissus.*

174. *Sclerotinia nervisequa* Schroet. *in* Cohn, Krypt.-Fl. Schlesien 3(2): 65. 1893.
≡ *Rutstroemia nervisequa* (Schroet. *in* Cohn) White, Lloydia 4: 223. 1941.

TYPICAL HOST: Midrib of leaf of *Alnus glutinosa.*

NOTES: The substratal stroma excludes this species from *Sclerotinia*

175. *Sclerotinia nervisequa* var. *bambusacea* Rehm, Leafl. Philipp. Bot. 8: 2930. 29.XII.1915.

TYPICAL HOST: Decayed leaves of *Bambusa vulgaris.*

NOTES: The substratal stroma excludes this taxon from *Sclerotinia.* The host on which it occurs is sufficiently different from that of *S. nervisequa* to suggest elevation to species rank, contingent upon type studies.

176. [*Sclerotinia nigricans* Whetzel (ut "Sacc."), Mycologia 36: 428. 1944, *pro synon., lapsus calami* for *Sclerotium nigricans* Sacc.]

177. [*Sclerotinia niponica* Lin, Cornell Univ. Thesis Abst. 1942: 341. 1942, *lapsus calami* for *Phaeosclerotinia nipponica* Hori *in* Sasaki; see No. 194 of this list.]

178. [*Sclerotinia nortoniana* Rehm (ut "Sacc."), Ber. Bayer. Bot. Ges. 15: 236. 1915, *lapsus calami* for *S. fructigena* Norton *ex* Sacc. & Sacc. *in* Sacc.]

179. *Sclerotinia nyssaegena* (Ellis) Rehm, Ann. Mycol. 4: 338. 1906.
   ≡ *Peziza nyssaegena* Ellis, Bull. Torrey Bot. Club 8: 73. VIII.1881.
   ≡ *CIBORIA NYSSAEGENA* (Ellis) Sacc. (ut "*nyssogena*"), Syll. fung. 8: 207. 1889.

TYPICAL HOST: On old drupes of *Nyssa multiflora*, buried under decaying leaves in muddy places.

180. *Sclerotinia ocymi* Vogl., Ann. R. Accad. Agric. Torino 52: 284. 1910.

TYPICAL HOST: *Ocymum basilicum*.

NOTES: On the basis of diagnosis only, which describes an anamorph determined by Voglino to be *Botrytis cinerea* f. *ocymi*, this species is probably a *Botryotinia*.

181. *Sclerotinia opuntiarum* Speg., see *S. sclerotiorum*, No. 1 of this list.

182. *Sclerotinia oreophila* Sacc., Atti Soc. Veneto-Trentina Sci. Nat. 4: 135. X.1875. (!!)

TYPICAL HOST: On leaves of *Vaccinium vitis-idaea*.

SPECIMEN EXAMINED: S. Venzo, 1873 [PAD-Saccardo 1822 (Holotype)].

NOTES: The stromatized bodies in the type specimen are not referable to *Sclerotinia*; they are poorly preserved and may be effete perithecia.

183. *Sclerotinia oxycocci* Woron., Mém. Acad. Imp. Sci. Saint Pétersbourg, sér. VII, 36: 28, c.ic. - VII. 1888.
   ≡ *MONILINIA OXYCOCCI* (Woron.) Honey, Amer. J. Botany 23: 105. 1936.

TYPICAL HOST: On decaying berries of *Vaccinium oxycoccus* L.

184. *Sclerotinia padi* Woron., Mém. Acad. Imp. Sci. St. Pétersbourg, sér. VIII, 2: 3, c.ic. - I-IV. 1895.
   ≡ *MONILINIA PADI* (Woron.) Honey, Amer. J. Bot. 23: 105. 1936.

TYPICAL HOST: Fruits of *Prunus padus*.

185. *Sclerotinia paeoniae* (Oud.) Massee, Textbook of pl. dis., p. 383. 1899.
   ≡ *BOTRYTIS PAEONIAE* Oud., Verslagen Meded. Kon. Akad. Wetensch., Amsterdam 5: 464. 1897. (n.v.)

TYPICAL HOST: On the stems of cultivated peonies.

NOTES: This epithet is based upon anamorphs. Massee made the transfer without having seen the teleomorph.

186. *Sclerotinia pallida* Velen., Monogr. discomyc. Bohem. 1: 224; 2: XXII(41). 1934. (!!)

TYPICAL HOST: Among grasses.

SPECIMEN EXAMINED: J. Velenovský, 11.VI.1931 [PRM-Flora bohemica 152951 (Holotype)].

NOTES: Svrček has annotated this specimen as *S. filipes* (Phill.) Sacc. (see No. 13 of this list under Taxa Imperfectly Known), the type specimen of which was not not available from K for comparison. The sclerotium, though not attached to host tissue, incorporates much host tissue within the medulla. Host data is vague ("among grasses") but tissue structure of the apothecium and sclerotium suggests that, barring the existence of a conidial anamorph, this may be a *Ciborinia*.

187. *Sclerotinia paludosa* Cash & Davidson *in* Davidson & Cash, Mycologia 25: 271. 1933.
≡ *Rutstroemia paludosa* (Cash & Davids. *in* Davids. & Cash) Groves & Elliott, Canad. J. Bot. 39: 225. 1961.

TYPICAL HOST: On overwintered leaves of *Carex exsiccata* Butler.

NOTES: As noted by Groves and Elliott *(loc. cit.)*, the sclerotia are those of a *Typhula*, and this species produces a substratal stroma.

188. *Sclerotinia panacis* Rankin, Phytopathology 2: 30. 23.II. 1912. (!!)
≡ *STROMATINIA PANACIS* (Rankin) Kohn, Phytopathology (in press). 1979.

TYPICAL HOST: "Black-rotted" tubers of cultivated ginseng, *Panax quinquefolium* L.

SPECIMEN EXAMINED: Whetzel, Reddick, Rankin, 5-7-[19]10 [CUP 5230 (Holotype)].

189. *Sclerotinia parasitica* (Cav.) Massee, Textbook of pl. dis. p. 383. 1899.
≡ *BOTRYTIS PARASITICA* Cav., Atti Ist. Bot. Univ. Pavia, ser. 2, 1: 432, c.ic. - VI(1-4). 1888.

TYPICAL HOST: On leaves, stems and flowers of cultivated tulips; sclerotia more especially on the bulbs.

NOTES: This epithet is based on anamorphs. Massee made the transfer without having seen a teleomorph, as pointed out by Hopkins (1921), who placed Cavara's species in synonymy with *Botrytis tulipae* (Lib.) Hopkins, an intra-anamorph "transfer" from *Sclerotium tulipae* Lib. Cavara's epithet appears to be the correct one to use in *Botrytis*.

190. [*Sclerotinia paridis* (Boud.) anon., Mycologia Index, Volumes 1-58, p. 424. 1968, *lapsus calami* for *Stromatinia paridis* Boud.]

191. [*Sclerotinia pelargonii* P. Sydow (ut "Scalia"), Just's Bot. Jahresb. 32(1): 235. 1905 ('1904'), *lapsus calami* for *Sclerotiopsis pelargonii* Scalia.]

192. *Sclerotinia pelargonii* (Rød) Rød *in* Jørstad, Nytt Mag. Bot. 6: 140. 1958.
≡ *BOTRYOTINIA PELARGONII* Rød, Blyttia 7: 77. 1949.

TYPICAL HOST: Leaves of *Pelargonium*.

NOTES: Rød no longer places *Botryotinia* at generic rank, but rather considers it a subgenus under *Sclerotinia*.

193. *Sclerotinia perplexa* Lawrence, Wash. Agric. Expt. Sta. Bull. 107: 10. 1912.
≡ *OVULINIA PERPLEXA* (Lawrence) Seaver, North Amer. cup-fungi (inoperc.) p. 65. 1951.

TYPICAL HOST: Roots and stems of *Helianthus tuberosus* L. and other species of *Helianthus*, *Brassica*, *Allium*, etc.

194. *Sclerotinia phaeospora* Hori, Engei no Tomo 8: 953. 1912.
≡ *Phaeosclerotinia nipponica* Hori *in* Sasaki (ut "*Phaeoscherotinia*"), Nippon Engei Zasshi 25: 38. 15.III. 1913; (ut "*Phaeosclerotinia*") Engei no Tomo 9: 351. 5.IV.1913, (a superfluous name change).
≡ *PHAEOSCLEROTINIA PHAEOSPORA* (Hori) Korf, Phytologia 21: 205. 1971.

TYPICAL HOST: Mummified fruits of *Pyrus malus*.

195. [*Sclerotinia phormi* P. Sydow (ut "d'Almeida & da Camara"), Just's Bot. Jahresb. 32(1): 235. 1905 ('1904'), *lapsus calami* for *Sclerotiopsis phormi* d'Almeida & da Camara.]

196. *Sclerotinia ploettneriana* Kirschst. *in* Rehm (ut "*plöttneriana*"), Ascom. Exs. *1603*. 1905; Verh. Bot. Vereins Brandenburg 48: 43. 1906.
≡ *CIBORIA PLOETTNERIANA* (Kirschst. *in* Rehm) Buchw., (ut "*plöttneriana*"), Kgl. Vet.- og Landbohøjskoles Aarsskr. 32: 165. 1949.

TYPICAL HOST: Stromatized seeds of *Veronica hederifolia*.

197. [*Sclerotinia podophyllina* (Whetzel *ex* Groves & Elliott) von Arx, Genera of fungi sporul. pure cult. p. 78. 1970 (not validly published: basionym not cited, Art. 33.2).]
≡ [*Septotinia podophyllina* Whetzel, Mycologia 29: 128. 1937 (not validly published: no Latin diagnosis, Art. 36.1).]
≡ *SEPTOTINIA PODOPHYLLINA* Whetzel *ex* Groves & Elliott, Can. J. Bot. 39: 227. 1961.

TYPICAL HOST: On *Podophyllum peltatum*.

198. *Sclerotinia polyblastis* Gregory, Trans. Brit. Mycol. Soc. 22: 202. 1938.
≡ *BOTRYOTINIA POLYBLASTIS* (Gregory) Buchw., Kgl. Vet.- og Landbohøjskoles Aarsskr. 32: 148. 1949.

TYPICAL HOST: Overwintered leaves of *Narcissus tazetta* 'Soleil d'Or.'

199. *Sclerotinia polycodii* Reade, Ann. Mycol. 6: 110. 1908.
 ≡ [*Monilinia polycodii* Honey, Amer. J. Bot. 23: 101. 1936 *(nomen nudum)*.]
 ≡ *MONILINIA POLYCODII* (Reade) Honey *in* Whetzel, Mycologia 37: 673. 1945.

TYPICAL HOST: On twigs and fruits of *Polycodium stramineum* (L.) Greene, in moist woods.

NOTES: This is based on the teleomorph; an anamorph, *Monilia polycodii* Reade, is also formed.

200. *Sclerotinia polygoni* Rehm, Ber. Bayer. Bot. Ges. 15: 238. 1915.
 ≡ *CIBORIA POLYGONI* (Rehm) Buchw., Kgl. Vet.- og Landbohøjskoles Aarsskr. 32: 165. 1949.

TYPICAL HOST: On fallen fruits of *Polygonum aviculare*.

201. *Sclerotinia porri* van Beyma, Meded. Phytopathol. Lab. "Willie Commelin Scholten" 10: 46. II.1927.
 ≡ *BOTRYOTINIA PORRI* (van Beyma) Whetzel, Mycologia 37: 680. 1945.

TYPICAL HOST: Seeds of *Allium porri*.

202. *Sclerotinia postuma* Berk. & Wilson, see *S. sclerotiorum*, No. 1 of this list.

203. *Sclerotinia pruni* Speg. & Roum., see *S. spinosae*, No. 231 of this list.

204. *Sclerotinia pruni-spinosae* (Lib.) Speg. & Roum., see *S. spinosae*, No. 231 of this list.

205. *Sclerotinia pseudotuberosa* (Rehm *ex* Rehm) Rehm *in* Rabenh., Krypt.-Fl. Deutschl. II 1(3): 809. 1893.
 ≡ [*Ciboria pseudotuberosa* Rehm, Ascom. Exsicc. *106*. 1872 (1873?) *(nomen nudum)*.]
 ≡ [*Peziza pseudotuberosa* (Rehm) Cooke, Grevillea 4: 132, c.ic. - 65(288). 1876 *(nomen nudum ?)*.]
 ≡ *Ciboria pseudotuberosa* Rehm *ex* Rehm, Ber. Naturhist. Vereins Augsburg 26: 28. 1881.

TYPICAL HOST: Fallen, rotting fruits of *Quercus*.

NOTES: The highly involved synonymy is discussed at length by Buchwald (1954). If it is held that Cooke's *(loc. cit.)* sketch of an ascus, ascospores and paraphysis qualify under Art. 44.1 of the International Code of Botanical Nomenclature as "an illustration with analysis showing essential characters," Rehm's name would date from 1876. In that event, the correct name for the fungus would be *Ciboria pseudotuberosa* (Rehm *ex* Cooke) Rehm 1881. I prefer to treat it as a nomen nudum until 1881, in which event *Ciboria batschiana* (Zopf *in* Zopf & Sydow) Buchw. becomes the correct name (see No. 49 of this list).

206. [*Sclerotinia pustula* Oudemans γ *castaneae* Oudemans (ut "*pustula* DC. γ *castaneae* DC."), Enum. syst. fung. 2:

662. 1920, *lapsus calami* for *Sclerotium pustula* DC. γ *castaneae* DC.]

207. [*Sclerotinia ranunculi* Whetzel *in* Buchw., Kgl. Vet.- og Landbohøjskoles Aarsskr. 32: 134. 1949 *(nomen nudum)*.]
= *BOTRYOTINIA RANUNCULI* Hennebert & Groves, Canad. J. Bot. 41: 348. 1963.

TYPICAL HOST: *Ranunculus septentrionalis* Poir.

208. *Sclerotinia rapulum* (Bull. *ex* Mérat) Rehm (ut "*rapula*") *in* Rabenh., Krypt.-Fl. Deutschl. II 1(3): 823. 1893.
≡ [*Peziza rapulum* Bull., Champ. franç. p. 265, c.ic. - 485 (3). 1791.]
≡ *Peziza rapulum* (Bull.) *ex* Mérat, Nouv. fl. envir. Paris, ed. 2, 1: 24. 1821.
≡ *STROMATINIA RAPULUM* (Bull. *ex* Mérat) Boud., Hist. classific. discom. Europe p. 108. 1907.

TYPICAL HOST: In rich soil.

209. *Sclerotinia rathenowiana* Kirschst., Verh. Bot. Vereins Prov. Brandenburg 48: 43. 1906; Rehm, Ascom. Exsicc. *1649*. 1906. (!!)

TYPICAL HOST: Stromatized branchlets, twigs and petioles of *Salix* spp.

SPECIMEN EXAMINED: Kirschstein, 5/1905 [S-Rehm, Ascom. Exsicc. *1649* (Isotype)].

NOTES: The published exsiccata list (Ann. Mycol. 4: 70. 1906) mentions the production of a *Botrytis* anamorph. This is probably a *Botryotinia* or, barring the production of a conidial anamorph, a *Ciborinia*.

210. *Sclerotinia rehmiana* Rick, Oesterr. Bot. Z. 48: 342. VIII. 1898. (!)

TYPICAL HOST: Dead stems of *Impatiens noli-tangere*.

SPECIMEN EXAMINED: Rick, 5/98 [S-Rehm (Authentic)].

NOTES: This is probably a *Ciborinia*. Although free from the host, the sclerotium incorporates much host tissue within the medulla.

211. *Sclerotinia rhododendri* Fischer, [Mitt. Naturf. Ges. Bern 1265-1278: XVII. 1892, *(nomen provis.)*]; Ber. Schweiz. Bot. Ges. 4: 1. 1894.
≡ *MONILINIA RHODODENDRI* (Fischer) Whetzel, Mycologia 37: 673. 1945.

TYPICAL HOST: Conidial anamorph on *Vaccinium;* apothecial teleomorph produced on fruits of *Rhododendron*.

212. *Sclerotinia richteriana* P. Henn. & Staritz, Hedwigia 42: (18). 1903. (!)

TYPICAL HOST: On rhizomes of *Polygonatum multiflorum*.

SPECIMEN EXAMINED: Staritz, 4.1908 [CUP-Durand 102-88 ex Staritz (Authentic)].

NOTES: This is a later synonym of *Stromatinia rapulum* (Bull. *ex* Mérat) Boud.

213. *Sclerotinia ricini* Godfrey, Phytopathology 9: 565. 1919.
≡ *BOTRYOTINIA RICINI* (Godfrey) Whetzel, Mycologia 37: 680. 1945.

TYPICAL HOST: Inflorescences, stems and leaves of *Ricinus communis*.

NOTES: The conidial anamorph is sufficiently unlike a typical *Botrytis* that Hennebert (1973) erected a new genus for it, where it becomes *Amphobotrys ricini* (Buchw.) Hennebert.

214. *Sclerotinia riograndensis* Rick, see *S. sclerotiorum*, No. 1 of this list.

215. [*Sclerotinia rolfsii* Burnett, Fundam. mycol., ed. 2, pp. 126, 606. 1976, *lapsus calami* for *Sclerotium rolfsii* Sacc.]

216. *Sclerotinia salicina* Velen., Monogr. discomyc. Bohem. 1: 226. 1934.

TYPICAL HOST: On branchlets of *Salix*.

NOTES: The type specimen was not included with the loan of Velenovský specimens from PRM and having received no reply to my inquiry I assume that it is unavailable or nonexistent. On the basis of diagnosis alone, this species, occurring on the branchlets of *Salix*, is not a *Sclerotinia* and should be compared with *S. rathenowiana*, No. 209 of this list.

217. *Sclerotinia sativa* Drayton & Groves, see *S. minor*, No. 2 of this list.

218. *Sclerotinia schoenicola* Whetzel, Farlowia 2: 425. 1946.

TYPICAL HOST: Culms of *Schoenus nigricans* L.

NOTES: This epithet is based on an anamorph *(Sclerotium)*.

219. *Sclerotinia scirpicola* Rehm *in* Rabenh., Krypt. Fl. Deutschl. II 1(3): 822. 1893.
≡ *MYRIOSCLEROTINIA SCIRPICOLA* (Rehm *in* Rabenh.) Buchw., Friesia 3: 296. 1947.

TYPICAL HOST: Rottings stalks of *Scirpus lacustris*.

220. *Sclerotinia sclerotiorum* var. *opuntiarum* (Speg.) Alippi, see *S. sclerotiorum*, No. 1 of this list.

221. *Sclerotinia sclerotiorum* forma *orobanches* Narasimhan & Thirumalachar, see *S. sclerotiorum*, No. 1 of this list.

222. *Sclerotinia seaveri* Rehm, Ann. Mycol. 3: 519. 1905.
≡ *MONILINIA SEAVERI* (Rehm) Honey, Amer. J. Bot. 23: 105. 1936.

TYPICAL HOST: On stones of drupes of *Prunus serotinus*.

223. *Sclerotinia secalincola* Rehm, Hedwigia 39: (192). 1900.

TYPICAL HOST: On rotting caryopses of *Secale cerealis*.

NOTES: This is a taxonomic synonym of *Gloeotinia granigena* (Quél.) Schum., No. 123 of this list, as noted by Schumacher (1979). Buchwald (1947) also noted it as a synonym of *Ciboria temulenta* (Prill. & Delacr.) Prill. & Delacr., No. 238 of this list, which in turn is a synonym of *G. granigena*.

224. *Sclerotinia seminis* (Cooke & Phill.) Rehm *in* Rabenh., Krypt.-Fl. Deutschl. II 1(3): 818. 1893.
≡ *Peziza seminis* Cooke & Phill., Grevillea 10: 104. III. 1881. (!!)

TYPICAL HOST: Growing on *Sclerotium semen* Tode *ex* Mérat.

SPECIMEN EXAMINED: On *Sclerotium semen*, autumn [K-Reliq. Libertianae 894 (Holotype)].

NOTES: This is not referable to the Sclerotiniaceae. There is no evidence that the apothecia are genetically related to the sclerotia on which they have developed. The anatomy of the sclerotium is reminiscent of that of a *Typhula*.

225. *Sclerotinia serica* Keay, J. Bot. 75: 132. 1937. (!!) (!)
≡ *STROMATINIA SERICA* (Keay) Kohn, Phytopathology (in press). 1979.

TYPICAL HOST: Parasitic on *Gypsophila elegans*.

SPECIMENS EXAMINED: Keay, Aug. 4, 1938 [CUP 28053 (Authentic)]; Keay, "dried 23.4.1935" [K (Holotype)].

226. *Sclerotinia shiraiana* P. Henn. *in* Engler, Bot. Jahrb. Syst. 28: 278. 1900.
≡ *Scleromitrula shiraiana* (P. Henn. *in* Engler) Imai, J. Fac. Agr. Hokkaido Imp. Univ. 45: 177, c.ic. - VI(17). 1941.
≡ *Ciboria shiraiana* (P. Henn. *in* Engler) Whetzel, Mycologia 37: 489. 1945.

TYPICAL HOST: On fruits of *Morus alba*.

NOTES: It is possible that *Scleromitrula* may provide the acceptable generic name for this species. Korf (1973) accepted that genus. There is an apparently unnamed anamorph with dry conidia.

227. *Sclerotinia smilacinae* Durand, Bull. Torrey Bot. Club 29: 462. 1902.
≡ *Stromatinia smilacinae* (Durand) Whetzel, Mycologia 37: 674. 1945.

TYPICAL HOST: Dead rhizomes of *Smilacina racemosa* buried in rich humus [but, according to Korf & Gruff (1978), the host was misidentified, and is instead *Polygonatum*].

NOTES: According to Korf & Gruff (1978) this is a taxonomic synonym of *Stromatinia rapulum*, No. 208 of this list.

228. *Sclerotinia solani* Vaňha, Wiener landwirtschaftlichen Zeitung 60: 966. 1910.

TYPICAL HOST: *Solanum tuberosum* L.

NOTES: This epithet is based upon anamorphs.

229. *Sclerotinia spermophila* Noble, Trans. Brit. Mycol. Soc. 30: 90. 1948.

TYPICAL HOST: Seeds of *Trifolium repens* L.

NOTES: According to G.L. Hennebert *(pers. comm.)* this epithet is referable to *Botryotinia* or to an unnamed new genus.

230. *Sclerotinia sphaerosperma* Gregory, Trans. Brit. Mycol. Soc. 25: 37. 1941.
≡ *BOTRYOTINIA SPHAEROSPERMA* (Gregory) Buchw., Kgl. Vet.- og Landbohøjskoles Aarsskr. 32: 148. 1949.

TYPICAL HOST: On leaves of *Allium triquetrum*.

231. *Sclerotinia spinosae* (Lib. *in* Cooke) Velen., Monogr. discomyc. Bohem. 1: 226. 1934.
≡ *Peziza spinosae* Lib. *in* Cooke, Grevillea 8: 84. III.1880.
≡ *Sclerotinia pruni-spinosae* Speg. & Roum. [ut "(Lib.) Speg. & Roum."], Fungi sel. gall. exsicc. *642*. 1880 (a superfluous name change).
≡ [*Sclerotinia pruni* Speg. & Roum. *ex* Thuemen, Mycoth. univ. *1613*. 1880 *(lapsus calami* for *S. pruni-spinosae)*.]
≡ *Rutstroemia pruni-spinosae* (Speg. & Roum.) Whetzel & White *in* White [ut "(Lib.) Whetzel & White"], Lloydia 4: 219. 1941.

TYPICAL HOST: On fallen leaves of *Prunus spinosa*.

NOTES: Though Libert's herbarium labels had the epithet as "pruni-spinosae," Cooke intentionally changed it to *Peziza spinosae* at the time of publication; many later authors have seen fit to restore the original epithet. The substratal stroma clearly excludes this species from *Sclerotinia*.

232. *Sclerotinia spinosae* var. *minor* Velen., Novit. mycol. noviss. p. 129. 1947.

TYPICAL HOST: On leaves of *Ligustrum*.

NOTES: Based on the extremely brief description and on Velenovský's concept of the species, this is not referable to *Sclerotinia*.

233. [*Sclerotinia spinosae* var. *pallida* Velen., Monogr. discomyc. Bohem. 2: pl. XXVII(22). 1934 *(nomen nudum)*.]

NOTES: By a circuitous connection a description may exist on p. 208 of Velenovský's Novitates mycologicae 1939, where some brief descriptive comments are made regarding an unnamed variety of this species ommitted by error from his Monographia discomycetum bohemicae on p. 226. On that page is a reference to the figure cited above, the legend of which uses the name "var. *pallida*." Since the description is minimal, and the connection to the epithet "pallida" tenuous, I treat this as a *nomen nudum*.

234. *Sclerotinia squamosa* (Viennot-Bourgin) Dennis, Mycol. Pap. 62: 157. 1956.
  ≡ *BOTRYOTINIA SQUAMOSA* Viennot-Bourgin, Ann. Épiphyt. sér. C, 4: 38. 1953.

TYPICAL HOST: On leaves of *Allium cepa*.

235. *Sclerotinia subularis* (Bull. *ex* Mérat) Rehm *in* Rabenh., Krypt.-Fl. Deutschl. II 1(3): 818. 1893.
  ≡ [*Peziza subularis* Bull., Champ. franç., p. 235, c.ic. - 500(2). 1791 (pre-starting point).]
  ≡ *Peziza subularis* Bull. *ex* Mérat, Nouv. fl. envir. Paris, ed. 2, 1: 23. 1821.
  ≡ *Ciboria subularis* (Bull. *ex* Mérat) Sacc., Syll. fung. 8: 203. 1889.

TYPICAL HOST: Fallen fruits of *Helianthus annuus*.

NOTES: From the diagnosis alone, this species may be referable to *Ciboria*, *Lanzia*, or *Poculum*.

236. *Sclerotinia sulcata* (Roberge *in* Desm.) Whetzel [ut "(Desm.)"], Mycologia 37: 666. 1945; Farlowia 2: 397. 1946.
  ≡ *SCLEROTIUM SULCATUM* Roberge *in* Desm., Ann. Sci. Nat., sér. 3, 16: 329. 1851.
  ≡ [*Sclerotinia sulcata* (Roberge *in* Desm.) Whetzel [ut "(Desm.)"], Mycologia 21: 15. 1929 *(nomen provis.)*.]
  ≡ [*Myriosclerotinia sulcata* (Whetzel) Buchw. [ut "non ... (Desm.) Whetz."], Friesia 3: 301. 1947.]

TYPICAL HOST: In culms of *Carex stricta* Lam.

NOTES: In 1929 Whetzel only provisionally transferred the epithet "sulcata" to *Sclerotinia*. In 1945 he adopted the name, a transfer of the original anamorphic *Sclerotium sulcatum*. Even though Whetzel described the teleomorph in 1946, no Latin diagnosis was provided there; the name in *Sclerotinia* is preoccupied by the anamorph. Buchwald then attempted to transfer the teleomorph, which he credited to Whetzel, but the combination in *Myriosclerotinia* is also not validly published since the basionym is not validly published. The teleomorph lacks a valid name.

237. [*Sclerotinia taxa* anon., Mycologia Index, volumes 1-58, p. 425. 1968, *lapsus calami* for *S. laxa*.]

238. *Sclerotinia temulenta* (Prill. & Delacr.) Rehm *in* Höhn., Ann. Mycol. 1: 406. 1903.
  ≡ *Phialea temulenta* Prill. & Delacr., Bull. Soc. Mycol. France 8: 23. 1892.
  ≡ *Peziza (Phialea) temulenta* (Prill. & Delacr.) Prill. (ut "Prill. & Delacr."), Bull. Soc. Bot. France 39: 169. 1.IX.1892.
  ≡ *Gloeotinia temulenta* (Prill. & Delacr.) Wilson, Noble & Gray, Trans. Brit. Mycol. Soc. 37: 31. 1954.

TYPICAL HOST: On fruits of *Secale cereale* L.

NOTES: Schumacher (1979) finds *Gloeotinia granigena*, No. 123 of this list, to be the correct name.

239. *Sclerotinia tenella* (Karst.) Boud., Hist. classific. discomyc. Europe p. 107. 1907.
   ≡ *Ciboria ciborioides* (Fr. *ex* Fr.) Karst. forma *tenella* Karst. (ut "*Rutstroemia ciborioides* f. *tenella*"), Hedwigia 26: 124. 1887.
   ≡ [*Rutstroemia ciborioides* (Fr. *ex* Fr.) Karst. forma *tenella* Karst., Hedwigia 26: 124. 1887 *(lapsus calami)*.]
   ≡ *Ciboria tenella* (Karst.) Sacc., Syll. fung. 8: 208. 1889.
   ≡ [*Ciboria friesii* subsp. *tenella* (Karst.) Sacc., Syll. fung. 8: 208. 1889, *pro synon.*]

TYPICAL HOST: Rotting culms of *Carex*.

NOTES: This appears to have a substratal stroma and thus cannot be a *Sclerotinia*. For comments on Karsten's inadvertant error in placing this forma under *Rutstroemia*, see notes under *S. ciborioides*, No. 68 of this list.

240. *Sclerotinia tenuispora* Velen., Monogr. discomyc. bohem. 1: 226; 2: XXI(26). 1934. (!!)

TYPICAL HOST: In marshy meadow.

SPECIMEN EXAMINED: J. Velenovský, 3.VIII.1929 [PRM-Flora bohemica 152958 (Holotype)].

NOTES: This is certainly a *Ciborinia*. The sclerotium has enveloped an entire vascular bundle of a herbaceous stem (unidentified) and the apothecial microanatomy agrees with that of *Ciborinia*, with an ectal excipulum of globose cells.

241. *Sclerotinia tiliae* Reade, Ann. Mycol. 6: 114. 1908.
   ≡ *CIBORIA TILIAE* (Reade) Buchw., Kgl. Vet.- og Landbohøjskoles Aarsskr. 32: 165. 1949.

TYPICAL HOST: Sclerotia in seeds of *Tilia americana* L. lying on the ground.

242. *Sclerotinia trifolii* Biffen, see *S. trifoliorum*, No. 3 of this list.

243. [*Sclerotinia trifoliorum* var. *minor* Alcock, Trans. Bot. Soc. Edinburgh 30: 334. 1931 *(nomen nudum)*.]

244. *Sclerotinia tuberosa* Fuckel [ut "(Hedw.)"], Jahrb. Nassauischen Vereins Naturk. 23-24: 331. 1870 (a new name [ICBN, Art. 72.1 Note 1]).
   ≡ [*Octospora tuberosa* Hedw., Musci frond. 2: 33, c.ic. - X(B). 1789 (pre-starting point: not validly published [ICBN, Art. 13.1(f)]).]
   ≡ [*Peziza tuberosa* (Hedw.) Dickson, Fasc. pl. crypt. brit. 2: 25. 1790 (pre-starting point: not validly published [ICBN, Art. 13.1(f)]).]
   ≡ *Peziza tuberosa* (Hedw.) Dickson *ex* Ficinus & Schubert (ut "Diks."), Flora Dresden Ed. 2, 2: 456. 1823 (validly published later homonym: illegitimate), not *P. tuberosa* Bull. *ex* Mérat 1821.

≡ *Phialea tuberosa* Gillet (ut "Hedw."), Champ. France discomyc. p. 97. 1881 (1882?) (a name name [ICBN, Art. 72.1 Note 1]).

= [*Peziza tuberosa* Bull., Hist. champ. France p. 266, c.ic. 485(2-3). 1791 (pre-starting point: not validly published [ICBN, Art. 13.1(f)]).]

≡ *Peziza tuberosa* Bull. *ex* Mérat, Nouv. fl. envir. Paris Ed. 2, 1: 24. 1821 (*sanctioned* [ICBN, Art. 13.1(f)] by Fries, Syst. mycol. 2(1): 58. 1822, 2(2): 612. 1823).

≡ *Macroscyphus tuberosus* (Bull. *ex* Mérat) S.F. Gray (ut "Dickson, Sowerby, Persoon"), Nat. arr. Brit. pl. 1: 672. 1821.

≡ *Rutstroemia tuberosa* (Bull. *ex* Mérat) Karst., Bidrag Kännedom Finlands Natur Folk 19: 105. 1871.

≡ *Hymenoscyphus tuberosus* (Bull. *ex* Mérat) Phill. (ut "*Hymenoscypha tuberosa*"), Man. Brit. discomyc. p. 113. 1887.

≡ *Whetzelinia tuberosa* (Bull. *ex* Mérat) Korf & Dumont [ut "(Hedw. *ex* Mérat)"], Mycologia 64: 250. 1972.

≡ *DUMONTINIA TUBEROSA* (Bull. *ex* Mérat) Kohn, Mycotaxon 9: 432. 1979.

?= *Peziza tuberosa* α *nigra* Grognot, Pl. crypt. Saône-et-Loire p. 206. 1863.

= *Sclerotinia infundibuliformis* Peck, Bull. Torrey Bot. Club 23: 420. X.1896. (!)

?= *Sclerotinia tuberosa* forma *pallida* P. Henn., Verh. Bot. Vereins Prov. Brandenburg 40: XXVII. 1899.

= *Sclerotinia ulmariae* Velen., Monogr. discomyc. Bohem. 1: 223. 1934. (!!)

TYPICAL HOST OF BASIONYM: Deeply immersed in soil.

TYPICAL HOSTS OF SYNONYMS: Dead roots of *Anemone nemorosa (Octospora tuberosa)*; in the woods *(Peziza tuberosa* α *nigra)*; wet woods *(Sclerotinia infundibuliformis)*; *Anemone nemorosa* L. and *A. ranunculoides* L. *(S. tuberosa* f. *pallida)*; rhizomes of *Spiraea ulmaria (Sclerotinia ulmariae)*.

EXSICCATI SPECIMENS EXAMINED: (All were issued under the generic name *Sclerotinia* except as indicated.) *Austria:* Rick, (date not indicated), ad terram, Voralberg, Feldkirch [FH: RABENHORST-PAZSCHKE, FUNGI EUROPAEI ET EXTRAEUROPAEI *4472*].

Belgium: Dumont, (date not indicated0, sur la terre, dans les bois humides et ombragés des environs de Mons [NY: WESTENDORP & WALLAYS, HERBIER CRYPTOGAMIC *990 (Peziza)*].

Czechoslovakia: L. Kavina & D.K. Kavina, IV.1935, in rhizomatibus *Anemone nemorosae*, in pratis montis Zvičina, Bohemia orientalis [NY: LAVINA & HILITZER, CRYPTOGAMAE ČECHOSLOVENICAE *221*]; (collector not indicated), vere 1856, in pratis subhumidis sylvaticis, Schluckenau [NY: RABENHORST, HERB. MYCOLOGICUM, ED. II *308 (Peziza)*].

England: (no collection data) [BPI: BERKELEY, BRITISH FUNGI *153 (Peziza)*]; Plowright, (date and substrate not indicated), King's Lynn [NY: COOKE, FUNGI BRITANNICI *558 (Peziza)*]; Plowright, (date, substrate and locality not indicated) [CUP-Durand: PHILLIPS, ELVELLACEI BRITANNICI *7 (Peziza)*]; Phillips, (date and substrate not indicated), Shrewsbury [NY: VIZE, MICRO-FUNGI BRITANNICI *358 (Peziza)*].

France: (collector and date not indicated), profondément implanté en terre, dans les bois humides, dans les pâturages monteux des Vosges [NY: DESMAZIÈRES, PLANTES CRYPTOGAMES DE FRANCE *1739 (Peziza)*]; (collector not indicated) Aprili, in pascuis montosis (locality not indicated) [NY; CUP-Durand, MOUGEOT & NESTLER, STIRPES CRYPTOGAMAE VOGESO-RHENANAE *397 (Peziza)*]; (collector not indicated), Aprili, In pascuis montosis, (locality not indicated) [CUP-Durand: ROUMEGUÈRE, FUNGI SELECTI GALLIAEI *161 (Peziza)*]; Sarrazin, 23 mars 1884, (substrate not indicated), Forêt de Hallate (Oise), Canton de Rigolet, près la route de Creil [CUP-Durand: ROUMEGUÈRE, FUNGI SELECTI GALLIAEI *2945 (Rutstroemia)*]; Sarrazin, mars 1885, au voisinage de l'*Anemone ranunculoides*, les boid des environs de Senlis (Seine-et-Oise) [CUP-Durand: ROUMEGUÈRE, FUNGI SELECTI GALLIAEI *3337 (Peziza)*].

Germany: Krieger, 29. April, 2. Mai 1896, auf abgestorbenen Rhizomen von *Anemone nemorosa* L., in einem Thale zwischen Waltersdorf und Prossen, Sächs. Schweiz [NY: KRIEGER, FUNGI SAXONICI *1175*]; Thomas, 20. April 1901, auf *Anemone nemorosa* L., Garten der Herrn Prof. Thomas in Ohrdruf in Thüringen [FH: KRIEGER, SCHÄDLICHE PILZE UNSERER KULTURGEWÄCHSE *134*]; Zimmermann, 4.1910, auf *Anemone ranunculoides*, Eisgrub in Mähren:Park [FH: PETRAK, FLORA BOHEMIAE ET MORAVIAE *282*]; Hruby, 4.1913, auf *Anemone nemorosa*, Weidenau in Öst-Schlesien [FH: PETRAK, FLORA BOHEMIAE ET MORAVIAE *282b*]; Ludwig, VI.1924, *Anemone nemorosa*, Westfalen; Kr. Siegen: Burgholdinghausen [FH: PETRAK, MYCOTHECA GENERALIS *145*]; Magnus, 12/4.1874, unter *Anemone nemorosa*, Berlin [FH: REHM, ASCOMYCETEN *202*]; Staritz, 5/1883, (substrate not indicated), Schlossgarten von Tulsnitz in Sachsen [FH: CUP-Durand: REHM, ASCOMYCETEN *202b*]; Britzelmayr, 6/1905, Wiese bei Ritzmais, bayerischen Wald [CUP-Durand: REHM, ASCOMYCETEN *202c*]; Rupprecht, 18.4.1922, auf Rhizomen von *Anemone tuberosa*, Westfalen: am Spechtsbach in Kölnischen Wald bei Bottrop [FH: SYDOW, MYCOTHECA GERMANICA *1940*]; Henkel, 6.4.1923, Auf Rhizomen von *Anemone nemorosa*, Thüringen: bei Pfiffelbach [FH: SYDOW, MYCOTHECA GERMANICA *2167*]; Sydow, Mai 1879, auf *Anemone nemorosa*, Charlottenburger Schlofsgarten [FH: CUP-Durand: ZOPF & SYDOW, MYCOTHECA MARCHICA *76*].

Italy: Pollacci, (date not indicated), ad terram, Horto botanico ticinensi [FH: POLLACCI, FUNGI LONGOBARDIAE EXSICCATI *316* (issued as *Sclerotinia libertiana*)]; Saccardo, May 1880, in umbrosis Horti botanici, Padova [NY: SACCARDO, MYCOTHECA VENETA *1517*]; Saccardo, March 1901, in horto botanico - ad terram umbrosam, Padova [NY: SACCARDO, MYCOTHECA ITALICA *667*].

Poland: Fedorowicz, 6.IV.1919, (substrate and locality in Polish) [FH: RACIBORSKI, MYCOTHECA POLONICA *84*].

Sweden: Lundell, 4.V.1933, Sclerotia in the rhizomes of *Anemone nemorosa*, Upland: Danmark parish, Pustnäs (near Upsala) [BPI: LUNDELL & NANNFELDT, FUNGI EXSICCATI SUECICI *90*]; Hylander, 11.V.1945, Sclerotia in the rhizomes of cultivated *Anemone nemorosa × ranunculoides*, Upland: Upsala, Botanic Garden [BPI: LUNDELL & NANNFELDT, FUNGI EXSICCATI SUECICI *2400*].

Soviet Union: Raitviir, IV.1959, Ad rhizomata *Anemones nemorosae* in piceeto caeso, Distr. Tartu, Vasula [FH: BPI: PARMASTO, MYCOTHECA ESTONICA *55*].

OTHER SPECIMENS EXAMINED: *Canada:* Malloch, 7.V.1978, in soil under *Crataegus* sp., Mississauga, Ontario, CUP 58245; Elliott, 6.V.1975, isolated from apothecium on sclerotium under *Sanguinaria canadensis*, Carleton Co., Ontario, CUP 59808 (no apothecia) = DAOM 150668; Waghorne, 13.VI.1896, Newfoundland [CUP-Durand 102-57, AUTHENTIC material of *Sclerotinia infundibuliformis*].

Czechoslovakia: Velenovský, IV.1934, infra klohočna ad rhiz. *Ulmariae* [PRM-Flora bohemica 152949, HOLOTYPE of *Sclerotinia ulmariae*].

Germany: Matheis *634*, 10.IV.1976, on *Anemone nemorosa*, Würzburg, CUP 54734; Matheis *633*, 10.IV.1976, on *Anemone nemorosa*, Würzburg, CUP 54733;

Matheis *635*, 10.IV.1976, on *Anemone nemorosa*, Würzburg, CUP 54735.

Switzerland: Matheis & Korf families, 15.IV.1973, Güttingen, on *Anemone nemorosa*, CUP 52881 [isolate from ascospores from this collection deposited as CUP 58253 = Hennebert 19091 = MUCL 19091].

UNITED STATES: Iowa: Martin, April 26, 1927, soil, Iowa City, CUP 15586.

New York: Korf, Noviello & Hennebert, 15.V.1961, (substrate not indicated), Danby, CUP 45392; Seaver, Apr. 20, 1915, New York City, [NY-Seaver]; Whetzel & Miss Rice, 5/1/38, *Asarum canadense*, McLean, CUP 27320.

North Dakota: Barnett, May 12, 1932, ground among fallen leaves, woods N. Fargo, [NY].

Virginia: Artschwager, 4/6/28, soil among early spring flowers, *Erythronium, Deautaria,* etc., Black Pond, Fairfax Co., along Potomac River, CUP 16314.

Wisconsin: Honey, 5/21/44, (substrate not indicated), Antigo Tp., Langeade Co., CUP 33941.

NOTES: An examination of the above synonymy reveals several problems engended by the later starting point provisions of the ICBN. A discussion of these will be presented in a separate paper (Korf and Kohn, *in prep.*). The ectal excipulum of the apothecium is composed of textura porrecta, with no globose cells, excluding this species from my emended circumscription of *Sclerotinia*. Also, the rind of the sclerotium is composed of clavate cells with the outermost wall of the outer layer of cells very heavily melanized. These characters, in addition to the lack of a conidial state and a true tuberoid sclerotium developing free from host tissue, preclude assignment to any known genus in the Sclerotiniaceae. I therefore erect the following new genus to accommodate this species.

DUMONTINIA Kohn, *gen. nov.*

Sclerotia tuberoidea, substantiam hospitis non includentia. Cortex sclerotialis texturae prismaticae strato exteriore cellularum clavatarum praeditus, harum muris extimis valde denigratis, crustam formantibus. Apothecia stipitata, cupulata, sclerotiis portata. Excipulum ectale ex textura porrecta intertexta et plerumque in strato gelatinoso contenta formatum. A *Sclerotinia* et *Ciborinia* differens in absentia cellularum globosarum ab excipulo ectali apothecii et a generibus Sclerotiniacearum alliis in absentia status conidialis et in formatione sclerotiorum verorum. A *Elliottinia* differens in absentia substantiae hospitis in medulla sclerotiali. Species typica: *Peziza tuberosa* Bull. *ex* Mérat.

Sclerotia tuberoid, not incorporating host tissues; sclerotial rind of textura prismatica with outer layer of cells clavate, outermost walls of these cells heavily melanized, forming a dense crust. *Apothecia* stipitate, cupulate, borne on sclerotia. Ectal excipulum of textuta porrecta, interwoven and usually bound in a layer of gel. Differing from *Sclerotinia* and *Ciborinia* in the absence of globose cells in the ectal excipulum of the apothecium and from other genera in the Sclerotiniaceae in the absence of a conidial state and the formation of true sclerotia. Differing from *Elliottinia* in the absence of host tissue within the sclerotial medulla. Holotype species: DUMONTINIA TUBEROSA (Bull. *ex* Mérat) Kohn, *comb. nov.* (basionym: *Peziza tuberosa* Bull. *ex* Mérat, Nouv. fl. envir. Paris, Ed. 2, 1: 24. 1821).

Etymology: Named for Kent P. Dumont, colleage in studies in the Sclerotiniaceae.

DUMONTINIA TUBEROSA (Bull. *ex* Mérat) Kohn. FIG. 10.

Sclerotia borne superficially, usually on rhizomes which may be underground, irregularly shaped to globose, 10-40 × 5-30 mm, with black outer rind and white inner context; in culture, in tubes and petri plates, formed very sparsely, 1 to 4 per colony. *Sclerotial medulla* of tightly interwoven, hyaline textura oblita, cells 5-10 µm with heavily gelatinized walls 2-4 µm thick. *Sclerotial rind* a 2- to 4-cell deep layer of textura prismatica originating from medullary cells turning out perpendicularly to the surface, the outer layer of cells clavate to globose, developing carbonaceous, dark brown melanized walls, with the outermost layer more heavily melanized, forming a dense crust 4-5 µm thick. *Apothecia* arising one to several from a sclerotium, cinnamon to dark umber, usually dark at the base of the stipe; receptacle 1-3 cm broad, deeply cupulate to goblet-shaped, tapering to form a stipe 2-10 cm long × 1-2 mm thick, the lower part of which is usually covered with dark hairs in which soil particles may be trapped. *Ectal excipulum* (30-) 60-125 µm broad, of thin-walled, hyaline textura intricata, hyphae 5-15 µm wide, composed of two zones, an inner zone of textura intricata, hyphae 10-15 µm broad, and an outer zone of hyaline to light brown textura porrecta, hyphae 2-5 µm broad, parallel to the apothecial surface and giving rise to 1- to several-celled tomentum hyphae which turn out perpendicularly to the apothecial surface; tomentum hyphae on stipe dark brown-walled; both zones usually bound in gel. *Medullary excipulum* of loosely woven, thin-walled, occasionally granularly roughened, hyaline textura intricata, hyphae 2-10 µm wide; medullary excipulum of stipe with inner zone of hyaline textura porrecta parallel to the stipe axis and outer zone of granularly roughened, pale brown-walled textura intricata; sometimes bound in gel, occasionally bluing in Melzer's Reagent; often including rhomboidal crystals. *Subhymenium* 15-30 µm wide, either compact and bound in gel, or loosely interwoven, brown-walled textura intricata, hyphae 2-3 µm wide. *Asci* arising from croziers, 8-spored, cylindrical, 120-175 × 7-10 µm, with a thickened apex, pore channel wall strongly J+. *Ascospores* uniseriate, hyaline, ellipsoid, biguttulate, bi- to tetra-nucleate, 11-16(-18) × 5-8 µm. *Paraphyses* hyaline, filiform, 1.5-2 µm wide, occasionally slightly inflated at the apices, septate, simple or sparsely branched. *Microconidial state (Myrioconium)* with microconidia globose, hyaline, 2-3 (-4) µm in diameter, produced from phialides in sporodochia or solitary phialides borne laterally on hyphae, superficial on hymenium surface or culture.

Habitat: Pathogenic on rhizomes of *Anemone*, especially in Europe, but in many collections no host has been noted and the possibility exists that some strains may be saprophytic on a variety of herbaceous plants. Several collections by Whetzel and students taken near *Asarum* are filed in CUP under an unpublished epithet, "asari," but prove to be this species.

Type Locality: France.

Type Specimen: Bulliard, Hist. champ. France, tab. 485, fig. 2-3 (Iconotype). 1791.

Observations: CUP 54733 and 54734 are color variants possibly meriting recognition at infraspecific rank.

245. *Sclerotinia tuberosa* forma *pallida* P. Henn., see *Dumontinia tuberosa,* No. 244 of this list.

246. [*Sclerotinia tulipae* Boud. (ut "Lib."), Hist. classific. discomyc. Europe p. 107. 1907, *lapsus calami* for *Sclerotium tulipae* Lib.]

247. [*Sclerotinia tuliparum* P. Sydow (ut "Lendner"), Just's Bot. Jahresber. 11: 1236. 1913 ("1911"), *lapsus calami* for *Sclerotium tuliparum* Lendner.]

248. *Sclerotinia ulmariae* Velen., see *Dumontinia tuberosa,* No. 244 of this list.

249. *Sclerotinia urnula* (Weinm.) Rehm *in* Rabenh., Krypt.-Fl. Deutschl. II 1(3): 804. 1893.
≡ *Peziza urnula* Weinm., Flora 29: 455. 1832.
≡ *MONILINIA URNULA* (Weinm.) Whetzel, Mycologia 37: 673. 1945.

TYPICAL HOST: Decaying berries of *Vaccinium vitis-idaea* L.

250. *Sclerotinia utriculorum* Boud., Bull. Soc. Mycol. France 19: 196, c.ic. - 8(6). 1903.

TYPICAL HOST: Utricles of *Carex davalliana.*

NOTES: According to Dennis (1956) this is a taxonomic synonym of *Ciboria aschersoniana,* No. 44 of this list.

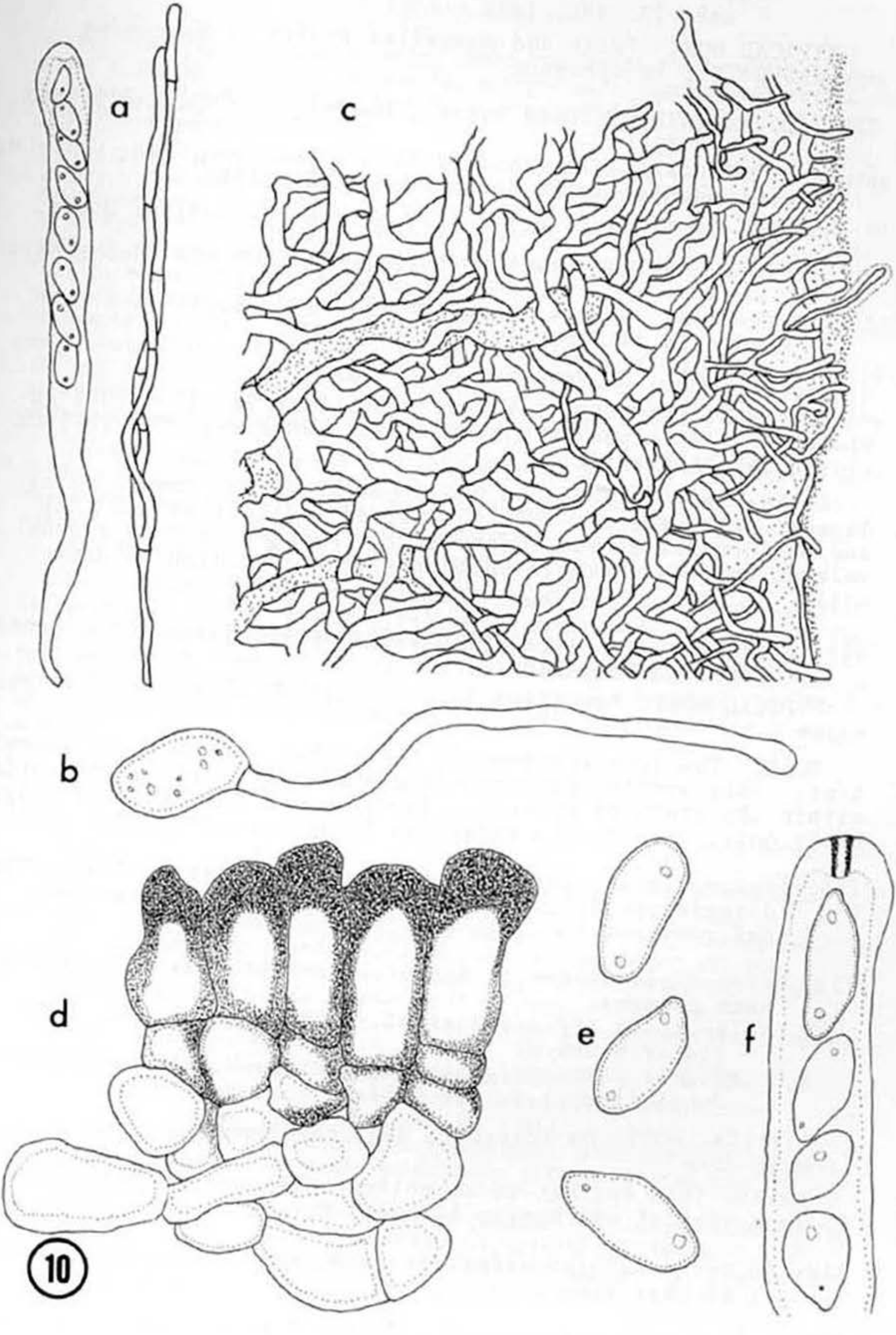
251. *Sclerotinia vaccinii* Woron., Mém. Acad. Imp. Sci. St. Pétersbourg sér. VII, 36: 3, c.ic. - I-IV. 1888.

TYPICAL HOST: Mummified berries of *Vaccinium* ("Whortleberry").

NOTES: According to Whetzel (1945) this is a taxonomic synonym of *Monilinia urnula,* No. 249 of this list.

252. *Sclerotinia vaccinii-corymbosi* Reade, Ann. Mycol. 6: 109. 1908.

FIG. 10. *Dumontinia tuberosa.* a. Ascus and paraphysis, × 500. b. Germinating ascospore, × 1500. c. Cross section through flank of apothecium showing ectal excipulum and part of medullary excipulum; medullary excipulum composed of textura intricata with occasionally granularly roughened hyphae; ectal excipulum composed of textura intricata bound in a thick layer of gel, × 500. d. Section through sclerotium showing hyaline medullary cells and rind with dense melanized outer crust composed of the walls of the outer cells, × 1500. e. Ascospores, × 1500. f. Ascus with J+ pore channel wall, × 1500. a-c, e, CUP 52881; d, Crypt. Čech. 221.



⑩

≡ *MONILINIA VACCINII-CORYMBOSI* (Reade) Honey, Amer. J. Bot. 23: 105. 1936.

TYPICAL HOST: Twigs and mummified fruits of *Vaccinium corymbosum* L., in sphagnum.

253. *Sclerotinia vahliana* Rostr., Meddel. on Grönland 3: 607. 1891. (!!)
≡ *MYRIOSCLEROTINIA VAHLIANA* (Rostr.) Buchw., Kgl. Vet.- og Landbohøjskoles Aarsskr. 32: 156. 1949.

TYPICAL HOST: In leaves of *Eriophorum scheuchzeri* Hoppe.

SPECIMEN EXAMINED: Vahl, 5/1829 [C-Rostrup *301* (Holotype)].

254. *Sclerotinia veratri* Cash & Davidson *in* Davidson & Cash, Mycologia 25: 267. 1933. (!!) (!)

TYPICAL HOST: On *Veratrum californicum*.

SPECIMENS EXAMINED: R.W. Davidson, June 20, 1930 [BPI-Davidson *390* (Holotype)]; R.W. Davidson, June 20, 1930 [BPI-Davidson *392* (Authentic)].

NOTES: This is probably a *Botryotinia*. The fusoid to ellipsoid sclerotia are firmly attached to the host and Cash and Davidson *(loc. cit.)* note that a species of *Botrytis* developed on the sclerotia when they were incubated on damp soil.

255. *Sclerotinia veselyi* Pilát & Svrček (ut "*veselýi*"), Česká Mykol. 1: 44. 1947.

TYPICAL HOST: Preceding year's dead stems of *Equisetum limosum* L.

NOTES: The type specimen is either not available or nonexistent. This species produces longitudinally striate sclerotia within the stems of *Equisetum limosum*. On the basis of diagnosis only, this may be referable to *Myriosclerotinia*.

256. [*Sclerotinia whetzeliaña* Wellman, Dict. trop. Amer. crops diseases p. 395. 1977, *lapsus calami* for *Whetzelinia sclerotiorum*.]

257. *Sclerotinia whetzelii* Seaver, Mycologia 32: 127. 1940 (a name change).
≡ *Sclerotinia bifrons* Whetzel, Mycologia 32: 126. 1940 (later homonym).
≡ *CIBORINIA WHETZELII* (Seaver) Seaver, North Amer. cup-fungi (inop.) p. 70. 1951.

TYPICAL HOST: On sclerotia dehisced from leaves of *Populus tremuloides*.

NOTES: This epithet is an obligate synonym of *Sclerotinia bifrons* Whetzel *non* Seaver & Shope, No. 52 of this list.

258. *Sclerotinia wisconsinensis* Rehm, see *S. sclerotiorum*, No. 1 of this list.

259. *Sclerotinia xanthorrhoeae* Beaton & Weste, see *S. sclerotiorum*, No. 1 of this list.

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INDEX TO GENERA, SPECIES, AND INFRASPECIFIC TAXA

New taxa are in CAPITALS, and the pages where they are published are in *italics*.

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HYPOGEOUS ASCOMYCETES IN ALBERTA, CANADA WITH TWO NEW NORTH AMERICAN RECORDS

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SUMMARY

Geopora clausa subsp. *clausa* f. *clausa* and *Elaphomyces leveillei* are reported for the first time from North America. Mycorrhizal associates and distribution of these two species and *G. cooperi* f. *gilkeyae*, *E. granulatus* var. *granulatus* and *E. muricatus* in Alberta are discussed.

The hypogeous ascomycetes are of special interest in that they are mycorrhizal associates of a variety of woody plants (Trappe, 1971). Difficulty in culturing this ecological group of fungi has largely precluded obtaining the classical experimental confirmation of mycorrhizal relationships but empirical evidence indicates that these fungi are important symbionts of forest trees. Precise data on distribution and occurrence should aid in the elucidation of the ecology and importance of hypogeous ascomycetes in forest ecosystems. This note reports on the distribution and host relationships of five species of hypogeous fungi found in north temperate forests. Representive collections of all taxa have been deposited at the Biosystematics Research Institute (DAOM), Ottawa, Canada. Color notations are either reported in general terms or according to Henderson *et al.* (1969). If the latter, it is indicated by an asterisk following the color name.

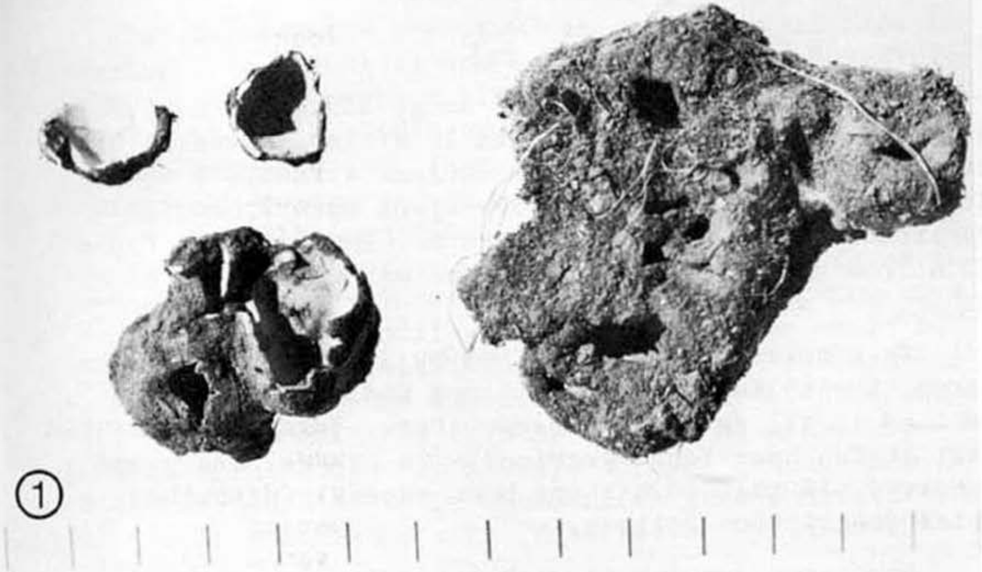
Geopora clausa (Tul. & Tul.) Burdsall subsp. *clausa* f. *clausa*

A single collection (RMD 1279) was found as the ascocarps bulged and cracked the soil in a newly planted lawn in the Pearce Estate area (51°2'30"N, 114°0'50"W) of Calgary, Alberta, September 14, 1973. The ascocarps were firmly bound to the soil by excipular hairs and were clustered tightly together (Fig. 1). The only possible mycorrhizal host was mature *Populus balsamifera* about 2 m distant.

Macroscopic and microscopic features generally agreed with the description given by Burdsall (1968) with two exceptions. The outer cells of the peridium of RMD 1279, had a maximum diameter of 20 µm whereas Burdsall described a range of 15-45 µm for *G. clausa* f. *clausa*. This cell size more closely resembles *G. clausa* spp. *californica*. The length of the spores of the two subspecies as described by Burdsall is similar but the width varies resulting in a difference in L/W ratios. Burdsall reported L/W ratios of 1.3 for *G. clausa* spp. *californica*, 1.4-1.5 for *G. clausa* f. *clausa* and 1.7-2.0 for *G. clausa* f. *ellipsospora*. Measurements of 30 spores of RMD 1279 gave a L/W ratio of 1.5-1.7 (2.1). The L/W ratio of RMD 1279 falls between *G. clausa* f. *clausa* and f. *ellipsospora* and is much greater than *G. clausa* spp. *californica*. The final decision to place the collection in *Geopora clausa* f. *clausa* was based on the consistant presence of one large oil drop in each spore in RMD 1279 which is in agreement with Burdsall's observation. *G. clausa* f. *ellipsospora* was described by Burdsall as biguttulate. Thus RMD 1279 was somewhat intermediate but the spores were consistantly narrower than *G. clausa* spp. *californica* [13-16(18) vs. 16-20(21) µm] and the uniguttulate condition separated it from *Geopora clausa* f. *ellipsospora*. Additional observations may reveal other intermediate forms.

Geopora cooperi Harkn. f. *gilkeyae* Burdsall

Four collections (RMD 2102 and others) were made in the vicinity of Bow Valley Provincial Park near Seebe in the central foothills region of Alberta. Collections were made between August 2 and 14 in 1976 and 1977 in or near excavations presumably made by red squirrels (*Tamiasciurus hudsonicus*). Three collections were made in mixed stands of *Picea glauca* and either *Populus tremuloides* or *Populus balsamifera* and the fourth in a *Pinus contorta* - *Pseudo-*



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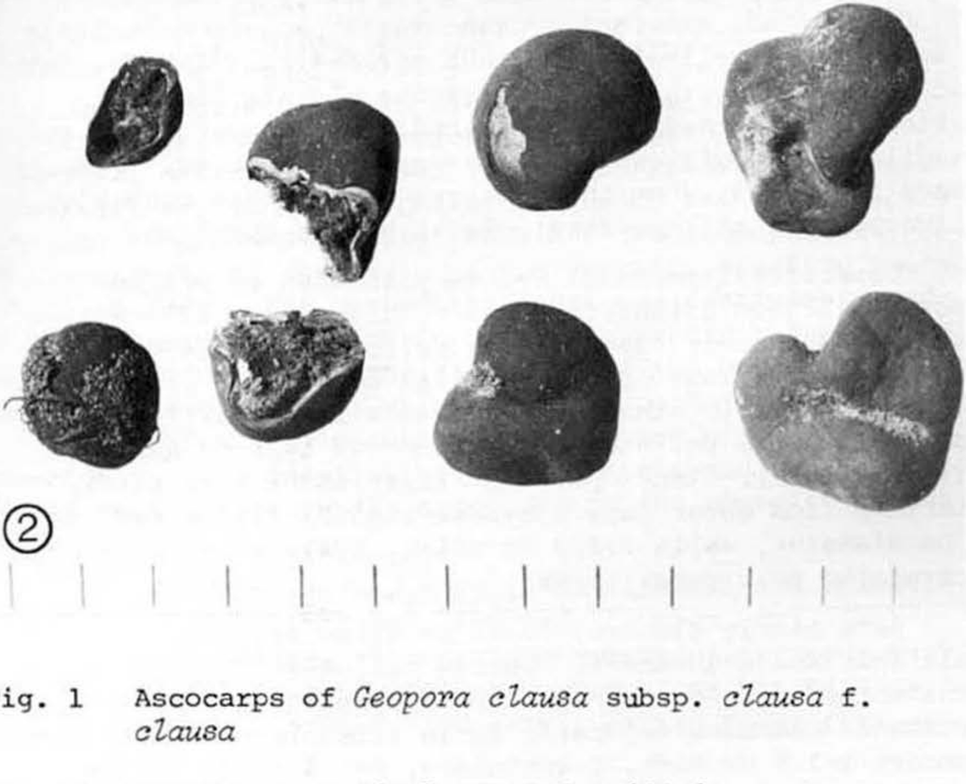

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Fig. 1 Ascocarps of *Geopora clausa* subsp. *clausa* f. *clausa*

Fig. 2 Ascocarps of *Elaphomyces leveillei*. Scale in centimeters *tsuga menziesii* stand. All specimens closely matched the description given by Burdsall (1968).

Elaphomyces leveillei Tul. & Tul.

Two collections were made about 30 km north of Fort McMurray, Alberta (56°57'N, 111°26'W) in sandy soil beneath the soil-forest floor interface. RMD 1477 occurred 2 m from a clump of *Betula papyrifera* with *Vaccinium myrtilloides* and *Cornus canadensis*. RMD 1478 was found 10 m from the first collection and was within 1 m of *B. papyrifera* and *Alnus crispa*.

This species was identified by J.M. Trappe who compared it with European collections and informed me it matched in all details. Trappe (Pers. comm.) also stated that it has been found previously in France, Italy and Hungary. In that it has not been recently described, a brief description follows.

Ascocarps subglobose with irregular depressions, 15-30 mm broad, external hyphae usually absent except for a small lemon yellow* to sulphur yellow* spot in a depressed area (Fig. 2). Peridium fuscous black*, finely warted, hard when dry, two-layered, outer layer black and readily flaked off exposing the gray inner layer. Fertile areas scattered, 2 mm in diameter; when mature contents olivaceous black*, powdery, glebal hyphae abundant.

Superficial peridial hyphae yellowish to yellow-brown, 3.5-5 µm diameter, septate, branched, walls 0.3-0.5 µm and loosely covered with yellow to yellow-brown amorphous material. Outer peridial wall 250-350 µm thick, elements fused together, brown, walls irregularily thickened to 1.5-2.5 µm, stellate-*Cenococcum* type of anatomy (Trappe, 1971). Inner peridial layer about 1 mm thick, distinct from outer layer, hyphae tightly interwoven, 5-6 µm diameter, walls 1-1.5 µm thick, hyaline becoming pale ochraceous near outer layer.

Asci nearly globose, 50-55 µm diameter, 8-spored, wall thin and evanescent. Spores (21)24-26.5 µm including ornamentation, globose, umber*, verruculose and patches of ornaments becoming separated in an irregular pattern, ornaments 1-1.5 µm high, 1-guttulate, nonamyloid. Glebal hyphae hyaline, 1.5-3.5 µm diameter, smooth, septate, walls slightly thickened to 0.5 µm.

Elaphomyces muricatus Fr. var. *muricatus*

Seven collections (RMD 1997 and others) were made between June 17 and June 21 and one collection on August 12 in sandy soils in northern Alberta near the Richardson Fire Tower, 57°53'N, 110°58'W. The soils ranged from moderately dry to moist. *Pinus banksiana* occurred near all collection points and *Betula papyrifera* near five. *Populus tremuloides* and *Alnus crispa* were close to points where *Betula* was absent. *E. muricatus* was never found in the drier, pure pine-lichen woodlands where *E. granulatus* was most common. The differences in occurrence could be due to a strict mycorrhizal association with hardwoods or a preference for moister and cooler soils by *E. muricatus*. Eckblad (1962) considered this species to be primarily associated with *Betula* in Norway. Trappe (Pers. comm.), however, has found it to be abundant in pure conifer stands, often associated with *Tsuga heterophylla* or *T. mertensiana*.

Elaphomyces granulatus Fr. var. *granulatus*

Seven collections in different areas (RMD 2002 and others) were made between June 18 and June 23, four on August 11 and one September 25 at the Richardson Fire Tower site. All of the collections were referable to the variety *E. granulatus* var. *granulatus sensu* Fogel and Trappe (1976) on the basis of the spores possessing spines 2-2.5 µm long. The ornamented layer was easily observed following treatment with 10 or 25% household bleach which removed the dark pigments and revealed the outer layer of radially oriented rods which coalesce to form the spines. Up to 16% of the spores turned dark green after the bleach treatment. The reaction was inconsistent and was not related to the size of the ascocarps or the severity of the treatment.

Pinus banksiana was associated with all the collections and most collections were made in open, dry, jack pine-lichen (*Cladina mitis*) stands where other woody plants were widely scattered. The only other possible mycorrhizal hosts were *Arctostaphylos uvi-ursi*, *Betula papyrifera* and *Populus tremuloides*.

Both *E. granulatus* and *E. muricatus* occurred only in mature stands and were never found in disturbed soils along roadsides where *Rhizopogon rubescens* Tul. was common. It may be that *Elaphomyces* species are very slow growing in nature and require a long period of time to develop a vegetative base sufficient for ascocarp production.

All the collections of *Elaphomyces* at the Richardson Fire Tower were located by digging where squirrels had been searching for hypogeous fungi. Digging by squirrels was common in June but relatively rare at the two latter dates. It is likely that the change in digging activity was due to the absence of fleshy agarics in June and their abundance later in the year when squirrels were observed feeding on the epigeous flora.

ACKNOWLEDGMENTS

The collections of *E. leveillei* were made on a project funded by Syncrude Canada Limited. Collection of the other species of *Elaphomyces* were made possible by funding from the Alberta Oil Sands Environmental Research Program. A special thanks to J.M. Trappe for identification of *E. leveillei* and *E. granulatus* and for confirming identification of the other species treated here.

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HYPOGEOUS FUNGI OF MINNESOTA: GENEA ANTHRACINA SP. NOV.

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The genus *Genea* Vitt. was differentiated from others in the Geneaceae (2) by the presence of a basal mycelial tuft, a single ascocarp opening, and ellipsoidal or subglobose ornamented spores. Gilkey (1) recognized a close phyletic line between *Genea*, *Myrmecocystis* Harkn. and *Genabea* Tul. These genera have roughly globose, hollow ascocarps with one or more openings (2). *Genea* spp. have a basal mycelial tuft; *Myrmecocystis* and *Genabea* do not. *Myrmecocystis* and *Genabea* were separated primarily on hymenial characters. The hymenial region of *Myrmecocystis* was held to be interrupted by sterile zones of paraphyses, while that of *Genabea* was interrupted by zones of pseudoparenchyma. Gilkey (3) predicted retention of all three genera might prove untenable as new data became available. Emphasizing ascocarp morphology Korf (5) accepted *Genea* in the broad sense including species formerly placed in *Myrmecocystis* and *Genabea*. Trappe (6) has retained *Genea*, placing *Myrmecocystis* in synonymy with *Genabea*. His conclusion has the virtue of eliminating a superfluous genus in *Myrmecocystis* while retaining *Genabea* which appears both taxonomically and phyletically defensible. Trappe (6) has summarized the means by which *Genea* and *Genabea* can be readily differentiated:

Genea: spores verrucose, uniseriate; asci cylindric; hymenia only occasionally interrupted by sterile zones of paraphyses.

Genabea: spores echinulate, uniseriate, biseriate or randomly arranged; asci clavate to ellipsoid; hymenia regularly separated into pockets by sterile zones of paraphyses or isodiametric cells.

While investigating mycorrhizal fungi of Northern Minnesota we recently collected a new *Genea* species.

Anatomical features were described from fresh and dried sections mounted in lactophenol, 5% KOH, Melzer's reagent, and cotton blue-lactic acid. Spore ornamentation was not described from 5% KOH mounts. Arithmetic means of ascospores are based on 50 observations. Tissue type terminology is that of Korf (4). Color names enclosed in quotation marks are those of Ridgway (5). Collections have been deposited in the Plant Pathology Mycological Herbarium, University of Minnesota (MPPD), and the Mycological Herbarium of Oregon State University (OSC).

Genea anthracina Heblack and Stewart sp. nov. Figs. 1-10

Fructificationes vivae 3-6 x 5-11 mm, anthracinae, subglobosae vel irregulares, verruculosae; raro hispidae; caespitulo basali myceliali. Excipulum externum texturae angularis 5-40 (-48) μm diam; excipulum internum texturae globosae - epidermoidae 4-15 (-33) μm diam; epithecium corticalis texturae angularis 5-40 μm diam. Asci cylindrici 150-225 x 22-32 μm, octospori. Sporae ellipsoideae 22-26 x 18-20 μm (sine ornamentis), 28-32 x 20-24 μm (ornamentis), papillis. Paraphyses 2-6 μm diam, septatae; hymenio continuo. Holotypus Stewart-3651 (MPPD).

ETYMOLOGY: Latin, *anthracina* (coal black) referring to fresh sporocarp color.

Fresh *sporocarps* 3-6 x 5-11 mm mostly hollow but a few chambered due to infolding of wall; apical orifice glabrous, concolorus with sporocarp surface; with a basal mass of "clay" colored mycelium; surface "black", moderately convoluted, subglobose to flattened-subglobose, verrucose, the verrucae rarely with short to elongate septate hairs 4-7 μm diam; interior a "black" verrucose epithecium; verrucae rarely with short to elongate septate hairs 4-7 μm diam. *Asci* in a continuous hymenium among paraphyses; asci 150-225 x 22-32 μm, 8-spored, cylindric, somewhat constricted between spores, abruptly tapering past the basal spore to a croziered base 3-6 μm broad; walls mostly 0.5 μm thick along entire length; bases deeply embedded in the subhymenium. *Paraphyses* (2-) 3-4 (-6) µm diam, hyaline, thin-walled, cylindric, if inflated at septa, then only slightly so. *Ascospores* excluding ornamentation 22-26 x 18-20 µm ($\bar{x}$: 24 x 19 µm), including ornamentation 28-32 x 20-24 µm ($\bar{x}$: 29 x 22 µm), ellipsoid, with crowded papillae. *Papillae* 0.5-3.8 (-9) µm diam, 0.5-4 µm high, hemispherical, occasionally irregularly subglobose in optical cross section, apical regions of major papillae mostly with accessory minute minor papillae; surface ornamentation strongly cyanophilic and dissolving in KOH. *Ectal excipulum* 65-200 µm thick, a textura angularis of cells 5-40 (-48) µm diam, exposed cells with "orange rufous" colored walls viewed singly, "black" in mass; walls up to 14 µm thick; inner cells nearly hyaline, walls 0.5-2 µm thick; *medullary excipulum* 50-125 µm thick, a textura globosa-epidermoidea of hyaline cells 4-15 (-33) µm diam; *epithecium* a secondary cortex of fused paraphyses 100-200 µm thick, a textura angularis of cells 5-40 µm diam, of exposed cells with walls up to 14 µm thick, and hyaline cells with walls 0.5-2 µm thick near the hymenium; color of epithecial cells that of ectal excipulum.

DISTRIBUTION: Known only from the holotype and paratype collections. Hypogeous, solitary to gregarious; in a predominantly *Pinus resinosa* Ait. forest, with *Betula papyrifera* Marsh., and *Corylus cornutus* Marsh. A probable mycorrhizal symbiont.

COLLECTIONS EXAMINED: Holotype: U.S.A., Minnesota, Hubbard Co., 47° 11' N., 95° 10' W., 472 m elev., in deer exclusion area about 300 m E. of Mary Lake, Itasca State Park; 12 Aug. 1978. Stewart #3651. Isotype: Stewart #3651 (OSC). Paratype: U.S.A., Minnesota, Hubbard Co., 47° 11' N., 95° 10' W., 472 m elev., same location as holotype; Stewart #3650 (MPPD).

OBSERVATIONS: *Genea anthracina* superficially resembles *Genea gardneri* Gilkey but differs by having an uninterrupted hymenium and a larger spore length-width ratio. Among those species with an uninterrupted hymenium *Genea thaxteri* Gilkey appears most like *G. anthracina* in spore size, but differs in several details as shown in the following summary.

	Genea anthracina	*Genea thaxteri*
ascocarp color	coal black	"Sudan brown"
spore size	28-32 x 20-24 µm	26-28 x 20-22 µm
spore ornamentation	Epispore, papillae mostly hemispherical, never pointed	Mostly rounded, or somewhat pyramidial

To our knowledge *G. anthracina* is the first *Genea* species reported from Minnesota.

ACKNOWLEDGEMENTS

The initial phase of this research was completed at the University of Minnesota Lake Itasca Forestry and Biology Station. We appreciate the assistance provided by Mary Palm in collecting Minnesota hypogeous macromycetes. The comments of Drs. H. Burdsall, A. Rossman and J. Trappe regarding the manuscript and new *Genea* species are appreciated. This research was supported in part by funds provided by USDA Forest Service, North Central Forest Experiment Station, RWU NC-2205, University of Minnesota Graduate School grant to the senior author and the Agricultural Experiment Station. Minnesota Agricultural Experiment Station, Scientific Journal Series, Paper No. 10,681.

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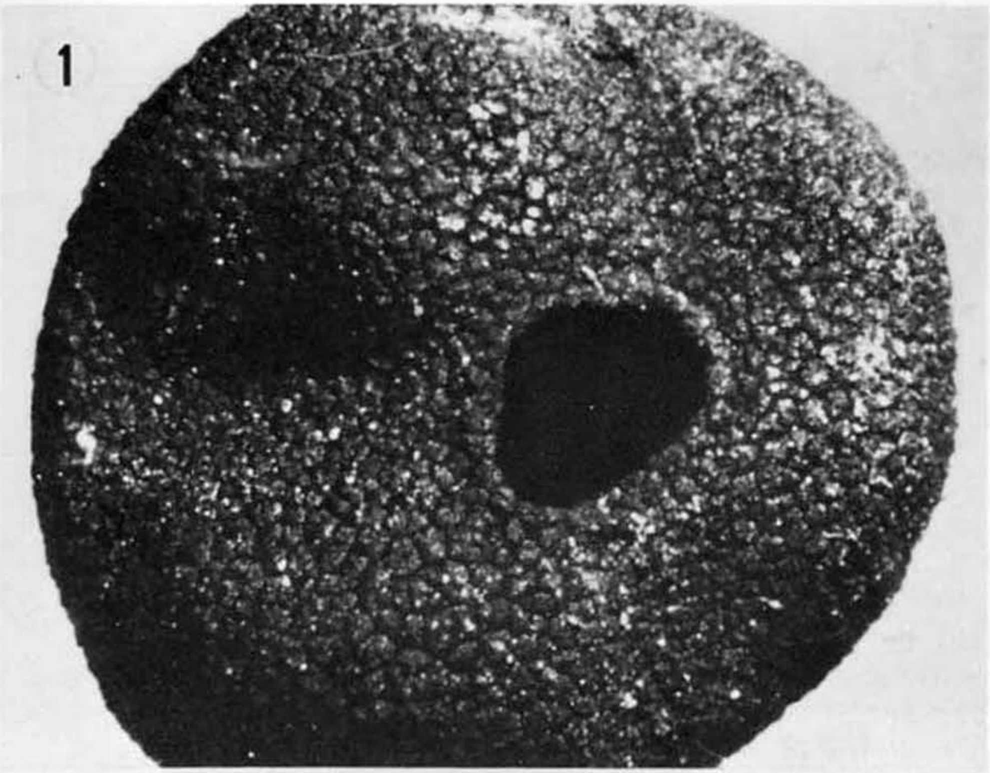

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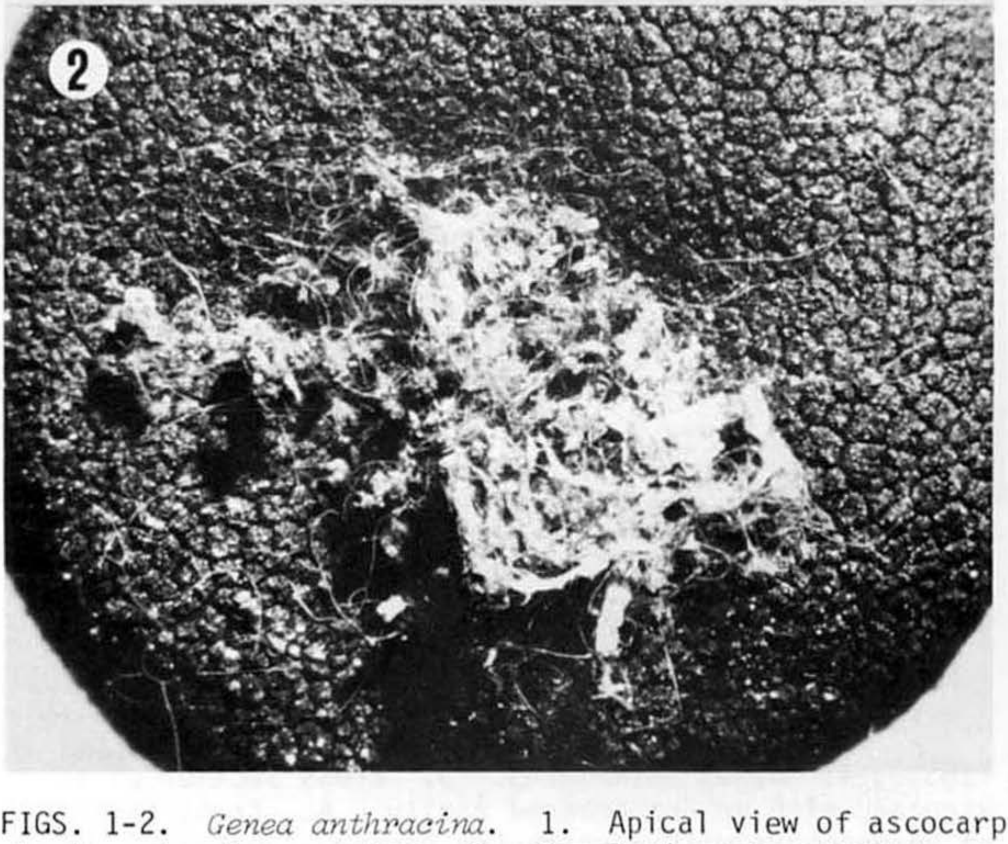
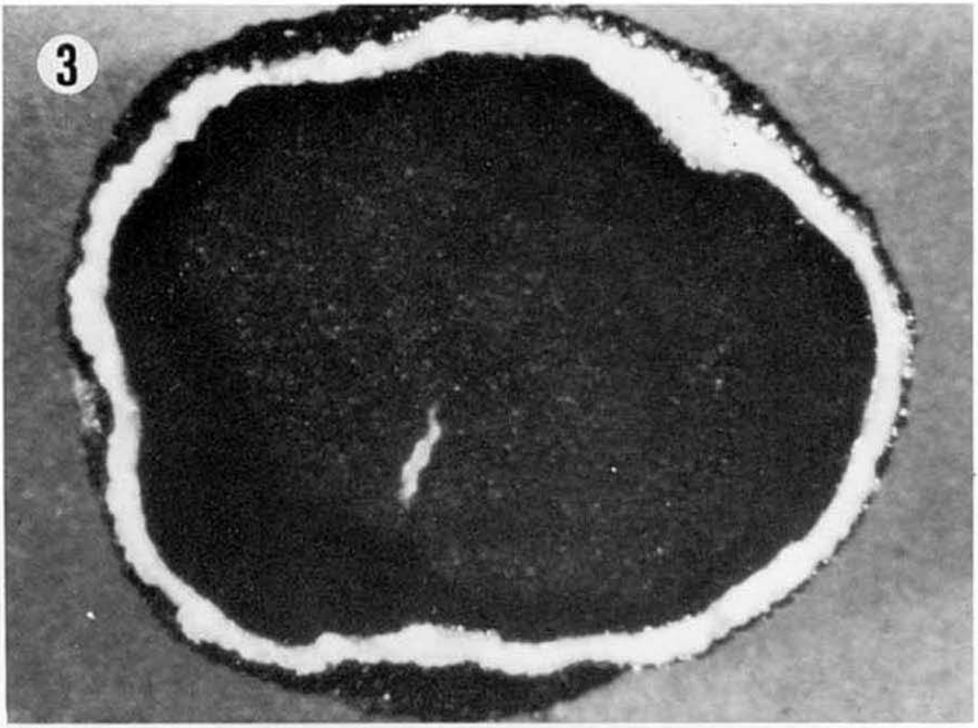
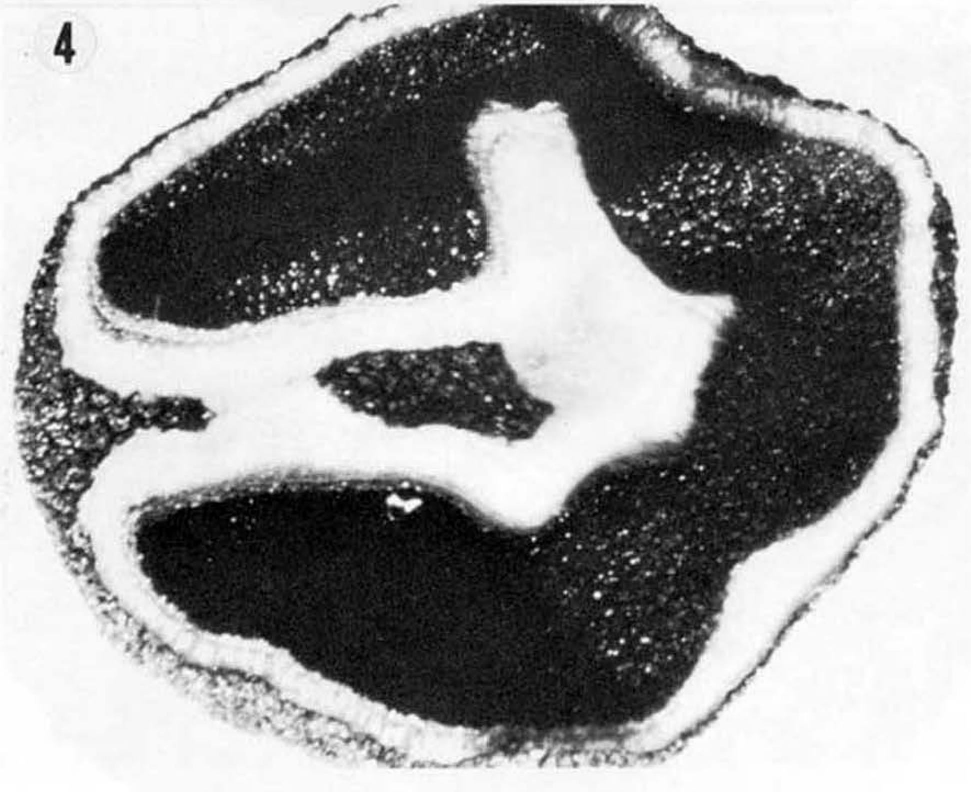
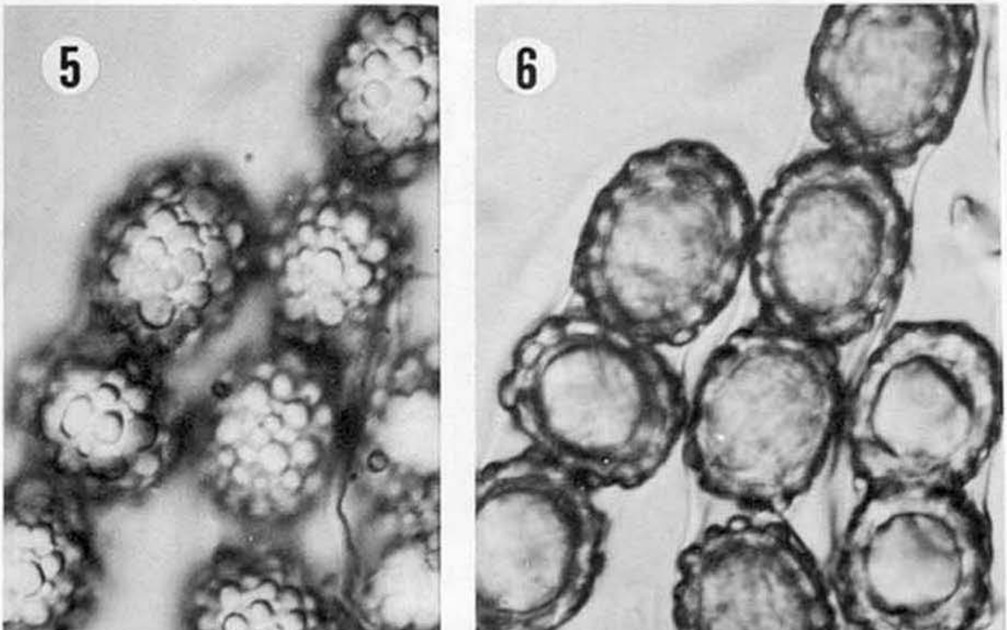


FIGS. 1-2. *Genea anthracina*. 1. Apical view of ascocarp showing circular opening. 2. Basal view of ascocarp showing mycelial tuft. Both X13.

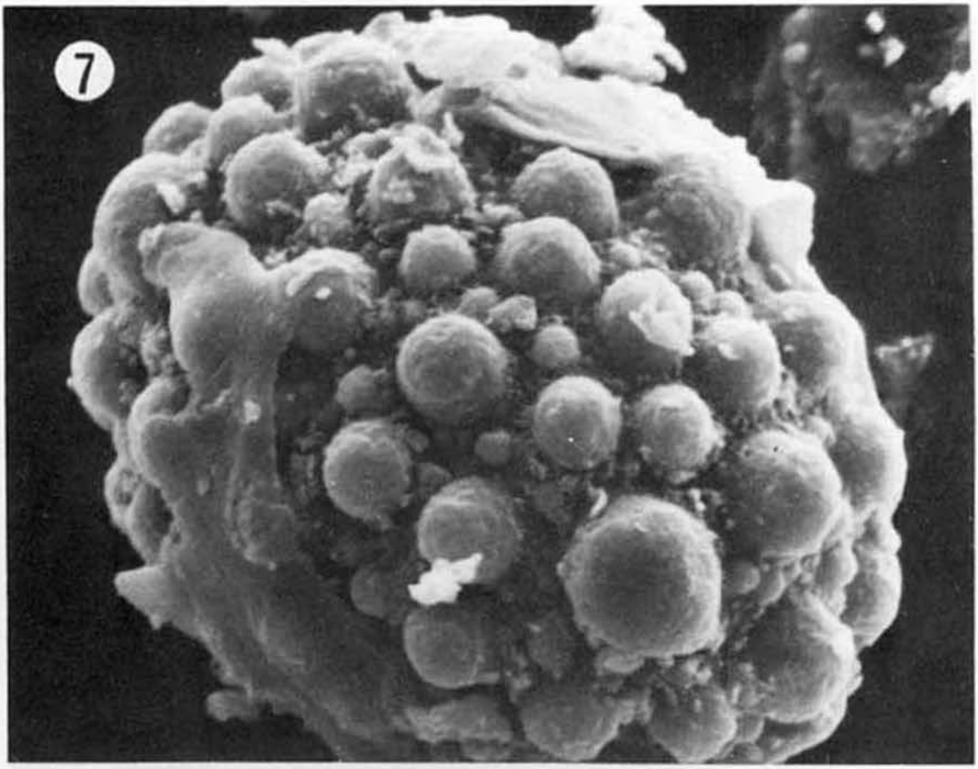


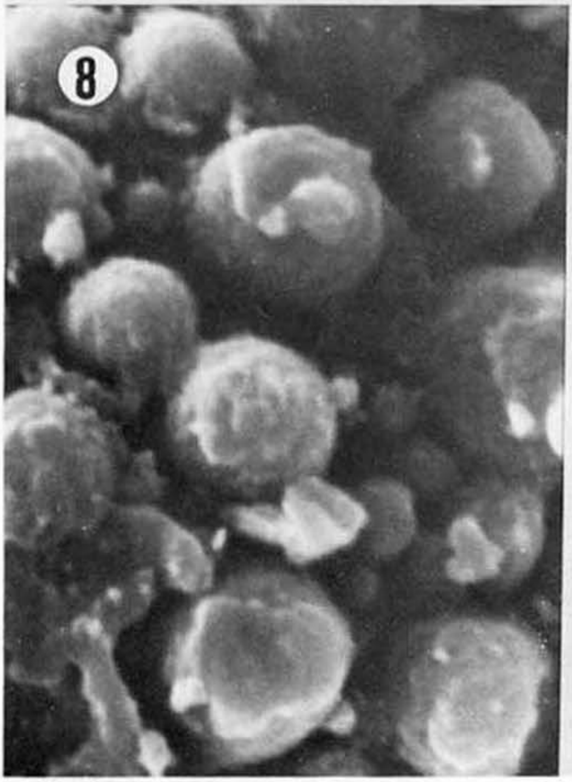


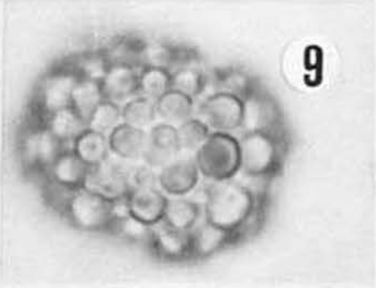
FIGS. 3-4. *Genea anthracina*. 3. Cross section of an ascocarp with an unchambered cavity. 4. Cross section of an ascocarp with a chambered cavity. Both X10.

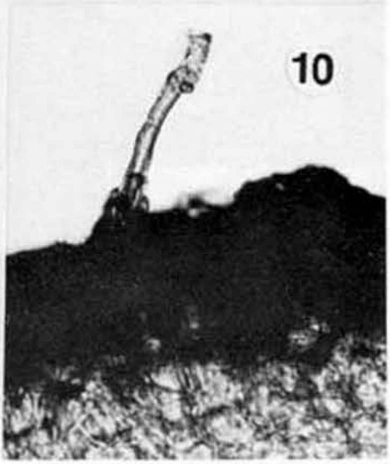


FIGS. 5-6. *Genea anthracina*. Optical cross-section of spores in Melzer's reagent. 6. Surface view of spores in Melzer's reagent. Both X750.









FIGS. 7-10. *Genea anthracina*. 7. Ascospore surface morphology X3350. 8,9. Ascospore surface showing papillae with accessory minute minor papillae. Fig. 8, Scanning electron micrograph X7000. Fig. 9, Interference phase contrast X1000. 10. Epithecium with a septate hair X500.

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NOTES ON MYCOLOGICAL HISTORY.

I. M.A. CURTIS VS. A NATIONAL HERBARIUM.

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For the first years of the National Herbarium (under the aegis of the Smithsonian Institution from its inception) the botanical specimens were "arranged" by Torrey and Gray, and resided at Columbia College (now Columbia University) in New York. After a few years, Torrey's age and his other pressing duties necessitated the return of the specimens to Washington, but Dr. Henry (Secretary of the Smithsonian) pushed for some other arrangement as the costs of maintaining the herbarium mounted (cf. Annual Reports of the Smithsonian for 1865, 1866, 1867). A fire in 1865, which destroyed some collections, gave further impetus to some change (the Institution library was joined to others to form the Library of Congress in 1866), and in 1868, the botanical collections were shifted to the Agriculture Department. English-born Charles Christopher Parry remained in charge of the collections throughout the shift.

In 1866, just in the midst of the controversy as to the fate of the Smithsonian collections, Isaac Newton, the (first) Commissioner of the Department of Agriculture, issued a circular apparently sent to individual botanists and other interested parties, announcing that the Department had received a "large collection of plants gathered in different states," and requesting specimens from other locations so as to build a more representative herbarium. The circular listed the plants in the newly acquired collection, including 72 fungi. Although not mentioned in the circular, the author of the "catalog" was F[erdie] Pech, who according to Farlow (Farlow & Trelease, 1886) was employed as botanist for the Department, and most of the collections originated in "Louisiana, Mo." The covering solicitation by Newton offered other donors an exchange of duplicates of many of the species on the list.

In those years, the Rev. Moses Ashley Curtis (1808-1872) was surely the most influential worker in the fungi, acting as a collector himself, but even more as a conduit of specimens sent him by other collectors, passed on by him to the

Rev. Miles Joseph Berkeley (1803-1889) in England. Pech's list, which may have been sent to Curtis directly, and in which Pech's name was given as sole authority for 33 fungus names, angered Curtis, who stormed in a letter to Berkeley:

> [25.iv.1867]
>
> "A German charlatan has imposed himself upon the Agricultural department at Washington; started an Herbarium in connexion with it, published a catalog of species on hand, inviting exhanges, &tc. His list of 71 Fungi was such a curious melange, that I was curious to see some of the specimens. Thirty species were given as <u>new</u> on the authority of one Pech. I succeeded in getting fourteen species [of which six are listed as synonymous with other names he knows]. The fellow does not seem to have even ever seen any later author than Persoon, & never to have heard of Schweinitz. His thirty new species are all probably old & common things, published 40 or 50 years ago. I have written to the Chief of Department exposing his ignorance and impudent presumptions. How it will end remains to be seen. What ought to be done with such imposters?"

But more than this, the idea of a national herbarium under the Agriculture Department was obviously involved in Curtis's thoughts, and he combined his rancor over Pech's list and establishment of such a herbarium in a protest document[1], as follows.

> "We have several protests to make upon this thing. We protest against the Ag. Dept. created & keeping in charge a National Herbarium. It is not worth the trouble nor the expense, while we have so many Scientific Associations & cabinets in which collections are more appropriately gathered & better preserved. Such collections in connection of our Dept. Agric. are utterly worthless. The Commissioner is not likely to be a Botanist, & so will be easily imposed upon by any passing pretender who knows a little more of Botany than himself, as the present incumbent has already been; a case which [hardly] will occur in such an Institution as the Smithsonian, our Academies of Nat. Sciences, or our Colleges. - The whole thing is a work of supererogation, useless, unnecessary, expensive, opening the door to an extensive . . . jobbing.

---

[1] A handwritten draft is in the Southern Historical Collection, University of North Carolina. I do not know if the document was eventually signed by others to conform to the plural of the document itself, or whether it was actually sent to authorities in the Agricultural Department.

"We protest also against an entire stranger to bot. literature being put in charge of a Nat. Herbarium, & allowed to put forth a Catalogue of species, in which he ignores the existence & the publication of Botanical writers for the past 25 or 30 years; a Catalogue which can only excite indignation among American adepts, & astonishment at our ignorance, or presumptions, or gullibility, abroad.

"We protest against the introduction into our nomenclat, such barb. words as 'quisqualis' & 'phloxii,' awk. neither Greek, Latin, French or German or English.

"We protest against the presumption by which a man ventures to publish as new what has been well known to science for scores of years; who does not know such standard Authors as Fries, Klotzsch, Link, Nees, Dezmas[ieres], Montagne, Berkeley, or others in Europe, or Muhlenberg, Schweinitz, Curtis & Ravenel, of the U.S. who have published thousands of species of Fungi of which the author of this Catalogue does not seem ever to have heard. - What would be said of an American who shd. make a collection of a few 100 of plants of Europe, & publish a list of them in Paris, Vienna, or Berlin, publishing as new species every Moss, Lichen, or Fungus, that is to be found in the writings of Linnaeus, unmindful or ignorant of . . . the succeeding Writers upon those Orders of Vegetation?

"We protest against the whole scheme as useless and expensive; & we protest most indignantly against . . . its first development as being calculated to bring dishonor on government and country.

"In the most numerous, tho' most obscure, Order of Plants, we have but a beggerly list of species, 71 in all. This number can be gathered in three hours in any acre of woods in the country. Nearly half of these the compiler of the Catalogue has given as new species, while we venture to say that not one of them is new, & many of them, as we can plainly see from the names, were described & published by Schweinitz as far back as 1820 in his "Synopsis Fungorum Carolina Superioris," & again in his "Synopsis Fungorum in America Boreale" wh: contains 3098 species.

"We protest against obsolete systems, exploded genera (such as Merisma & Fuligo, & anomalous combinations of Orders (such as Trichogast & Myxogast under Lycopodiaceae) being reproduced.

"P.S. Perhaps it may be well for me to state, in evidence of my qualifications to pass judgement on Mr. Pech, that the U.S. Government & the Smithsonian

> Institution have repeatedly entrusted to me collections of Fungi for determination. See in Wilkes' South Sea Expedition, & also Com. Rodgers Pacific Expedition, American Journal of Arts & Sciences, Journal of the Linnaean Society (London) &tc, &tc.
>
> "I have the largest collection of Fungi on this continent, & number among my correspondents the ablest Mycologists of Europe.
>
> "It is in the Love of Science, of Science in the U. States, & in respect for those honored names who have gone before us, (wholy ignored by a foreign pretender,) that I make this private exposure of humbuggery & impudent pretension. I have not yet decided whether a <u>public</u> exposure may not be useful & proper. Others are talking about it."

It must be assumed that Curtis directed his distaste specifically toward Pech because of Pech's apparent authority, for the circular was not signed. Farlow & Trelease (1886) mentioned the list in disparaging terms, and stated that the circular may well have been suppressed "in consequence of the very numerous errors it contains." I can find no other references to Pech.[2]

Not the least of the mysteries surrounding the list is its date. Although undated on its face (only "186 ."), Farlow's copy was dated in writing 1 Nov. 1866 (cf. Farlow & Trelease, 1886). Newton, the Commissioner, closed his covering letter to the list with these words: "By attending to this request [for specimens from outside donors] the Agricultural Department will, in a few years, have in its ublic Museum samples of reference from the mineral, vegeable, and animal kingdoms wherewith to promote scientific nd useful knowledge and advance the agricultural interests f our common country." The Department chief certainly was ointing policy toward the enlargement of the <u>Department's</u> ollection in direct competition with the Smithsonian nstitution, whose collections were far more numerous, more epresentative, and better arranged. Why this was the case do not know, but Curtis was in correspondence with Dr. enry of the Smithsonian, who was already urging Congress nd the Institution to provide more funds for the collecion's curation and/or to relieve the Institution of their are (and cost). Moreover, Curtis wished the Smithsonian nstitution to publish the fruits of his (and Berkeley's) abors, so it would have been politic to support Dr. Henry nd his position in this regard.

For a time I confused Pech with Charles Horton Peck ecause of Curtis's handwriting. Curtis apparently never hought badly of Peck, albeit with some impatience, but my istake led to some hours of fruitless investigation.

Curtis's documents were not characteristic of his demeanor, at least in writing, over the years of his botanical collecting. Although he was given to periods of impatience both toward his mentor, Berkeley, and toward his suppliers, he never resorted to the strong tactics and words used over the above issues. It might be remembered, however, that all this transpired not long after the Civil War, through which Curtis had suffered significant discomfort, and in a period when Curtis's health was oscillatory. Very shortly afterward, he began to complain of "an affection of the head" which left him drained, awkward of balance, and hardly able to think and write about botany. All this may help to account for his overt hostility in these matters.

Last, Pech's new names, without circumscriptions or direct references, must be considered invalid, albeit intriguing. They may return to the obscurity they have enjoyed all these years.

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[Pech, F.] Catalogue of the United States plants in the Department of Agriculture. U.S. Dept. Agric. unnumbered circular. 27 p. "1866."

Author's note. The extensive correspondence from Curtis to Berkeley is in the library of the British Museum of Natural History: the letters from Berkeley to Curtis are in the Southern Historical Collection, University of North Carolina, Chapel Hill. The staffs of these institutions are thanked for their cooperation. A more comprehensive paper on this correspondence is in preparation.

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A NEW COMBINATION IN THE GENUS FLAGELLOSCYPHA AND A CONTRIBUTION TO THE IDENTITY OF CYPHELLA PECKII

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Summary: In the genus *Flagelloscypha*, a new combination is proposed: *Flagelloscypha parasitica* (Berk. & Br.) Agerer. *Cyphella peckii* Sacc. is listed as a synonym of *Flagelloscypha faginea* (Lib.) W.B. Cooke.

During the last three years, further studies were made in the genus *Flagelloscypha* Donk emend. Agerer and in other cyphellaceous fungi by the author. Among other fungi studied by lightmicroscopy was the type of *Lachnella parasitica* (Berk. & Br.) W.B. Cooke from the genus *Lachnella* Fr.ss. W.B.Cooke (1961). It became apparent that this species is a typical *Flagelloscypha* - because of the typical surface hairs and spores (Agerer 1975) - but not identical to any known species of this genus. Therefore a new combination is proposed.

In 1975 the relation of *Cyphella peckii* Sacc. to the species' of *Flagelloscypha* was shown (Agerer 1975). Being aware of some differences between this species and *F. kavinae* (Pilát) W.B. Cooke, I have temporarily placed it near this species. It is now obvious, that *Cyphella peckii* is conspecific with *F. faginea*.

FLAGELLOSCYPHA PARASITICA (Berk. & Br.) Agerer comb.nov.

Basionym: *Cyphella parasitica* Berk. & Br., J. Linn. Soc. Lond. Bot. 14: 74. 1875.

≡ *Chaetocypha parasitica* (Berk. & Br.) O. K., Rev. Gen. 2: 847. 1891.

≡ *Lachnella parasitica* (Berk. & Br.) W.B. Cooke, Beih. Syd. Ann. Mycol. 4: 75. 1961.

Holotypus: Ceylon, Peradeniya, Dec. 1868 (K).

Figure 1

Fruitbody shallowly cupulate with appressed to patent hairs, white, hymenium slightly yellowish, up to 0.6 mm in diameter and 0.1 mm high, fruitbodies in groups on stromata of a Pyrenomycete. Surface hairs incrusted with acicular to rhombic crystals; crystals up to 4 µm long, in 10 % KOH slowly soluble, readily soluble in hydrochloric acid, acicular structures on the hyphal walls remaining; surface hairs 2 - 3 (- 3.5) µm in diameter, basally clamped, walls up to almost 1 µm thick, in 10 % KOH scarcely swelling, not distorting, only slightly dextrinoid, secondarily septate; whiplike ends up to 16 µm long, surface hairs basally thin-walled. Hyphae between basidia and surface hairs not distorted. Hyphae of the trama a little agglutinated, with clamps, 1 - 3 µm in diameter. Basidia 20 - 25 (- 28) x 6.5 - 7.5 µm (marginal

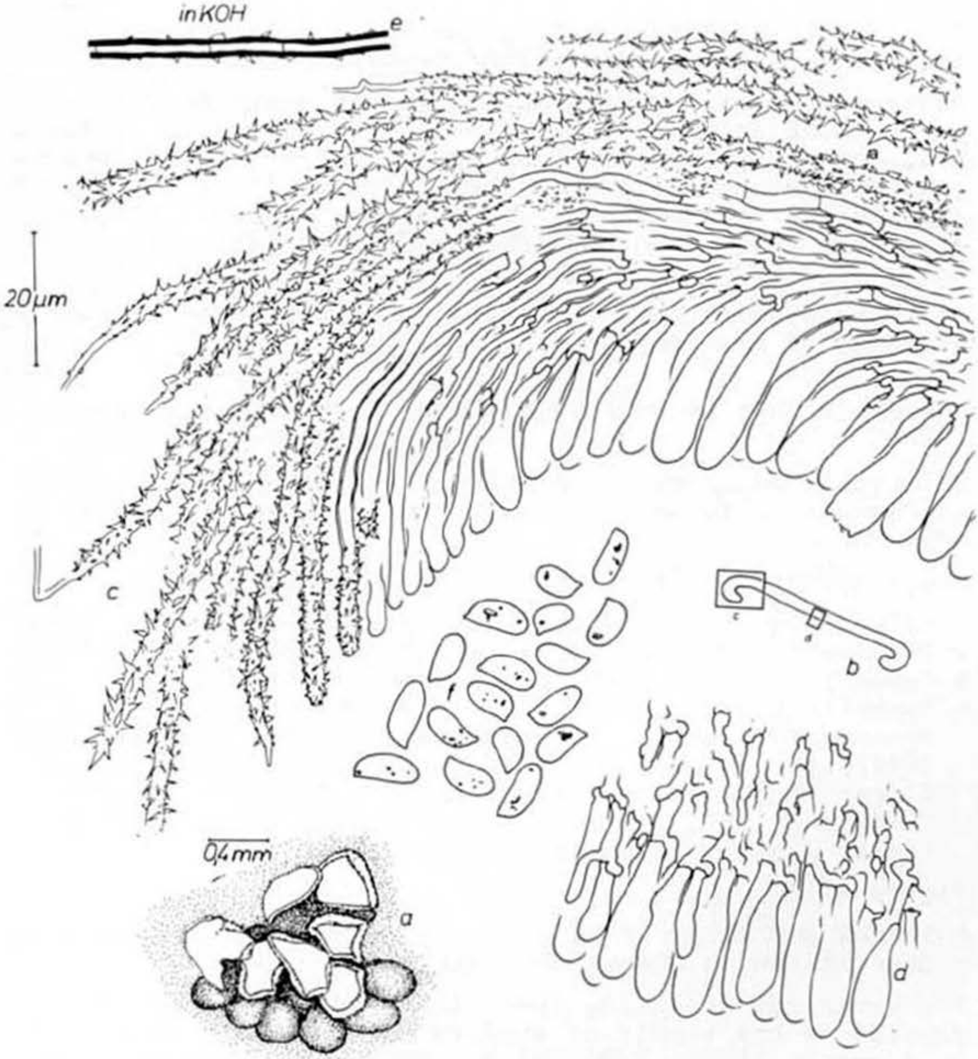

Fig. 1: *Flagelloscypha parasitica* : a) fruitbodies, habit, - b) section through a fruitbody, survey, - c) section through a fruitbody, detail of the edge, - d) section through a fruitbody, detail of the bottom, - e) surface hair in phase-contrast after submerging in 10 % KOH, - f) spores. - Holotypus (K).

up to 40 µm), slightly suburniform, 4-sterigmate, basally clamped. Spores hyaline, smooth, thin-walled, asymmetrically-elliptic to cylindric to almost allantoid, (6.5 -) 7 - 8.5 (-9.5) x 3.5 - 4.5 µm, averaging 7.5 µm long; sporefactor ca. 1.9; neither amyloid nor dextrinoid.

Discussion: The shape of the fruitbodies of *F. parasitica* resembles that of *F. virginea* Massee in W.B. Cooke (Agerer 1975: 250), but these species' are clearly distinguishable. *F. virginea* possesses basally thick-walled surface hairs, smaller and asymmetrically-elliptic to naviculate spores which are (5.5 -) 6 - 8 (-9)x 2 - 3 (-3.5) µm.

F. flagellata (Petch) W.B. Cooke has similar spores, but this species produces long, bell-shaped fruitbodies.

Another species formerly placed in the genus *Flagelloscypha* Donk ss. W.B. Cooke (1961), "*F. applanata* (Talbot) W.B. Cooke", is now the type species of the tremellaceous genus *Heteroscypha* (Agerer & Oberwinkler 1979). Its spores are similar to those of *F. parasitica*. However, they germinate by repetition and the basidia are partly longitudinally septate.

Of these species' only *F. parasitica* grows parasitically on stromata of Pyrenomycetes.

FLAGELLOSCYPHA FAGINEA (Lib.) W.B. Cooke, Beih. Sydowia Ann. Mycol. 4: 60. 1961.

Holotypus: Belgium, Pl. Arduenae, - Fasc. IV, 331, 1837, in fagetis ad folia dejecta, autumno (K, isotypi: BPI, HBG, PR, S).

Fig.: Agerer (1975) - Sydowia Ann. Mycol. 27: 215.

≡ *Calyptella faginea* (Lib.) Quél., Ench. fung. 216. 1886.
≡ *Chaetocypha faginea* (Lib.) O. K., Rev. Gen. 2: 847.1891.
≡ *Cyphella faginea* Lib., Cr. Arden.: 331. 1837.
= *Cyphella peckii* Sacc., Syll. Fung. 6: 684. 1888, ≡ *Cyphella candida* Peck, N. Y. State Mus. 27: 99. 1875 (f. Burt 1914), (non *Cyphella candida* Jungh., in: Praemissa in Floram cryptogamicam Javae insulae, Fasc. I, Batavia). Holotypus: USA, New York, Forestburgh, Peck (NYS); Fig.: Agerer (1975) - Sydowia Ann. Mycol. 27: 225.

Figure 2

A detailed description of *Flagelloscypha faginea* was given in an earlier publication (Agerer 1975: 214).

The basis for declaring *Cyphella peckii* a synonym of *F. faginea* is the result of studies of a specimen collected on ferns in the Bavarian Alps. The fungus (characterized and drawn in fig. 2) can be placed between typical *F. faginea* and *C. peckii*. The crystals of the surface hairs of this specimen are acicular as in typical *F. faginea* and in *C. peckii*, however, have an intermediary size. They are a little smaller than those of typical *F. faginea* and a little bigger than those of *C. peckii*. The structures between the surface hairs and the basidia are distorted in typical *F. faginea* as well as in the Bavarian specimen and in *C. peckii*. However, in *C. peckii* this distortion is not so apparent. The spores in all specimens discussed are similarly shaped, but those of *C. peckii* are somewhat smaller. In *C. peckii* as in *F. faginea* the surface hairs are flagellate and their bases are thin-walled. The basidia and the fruitbodies are alike in shape.

The above mentioned specimen from the Bavarian Alps seems to link the numerous well known specimens of typical *F.*

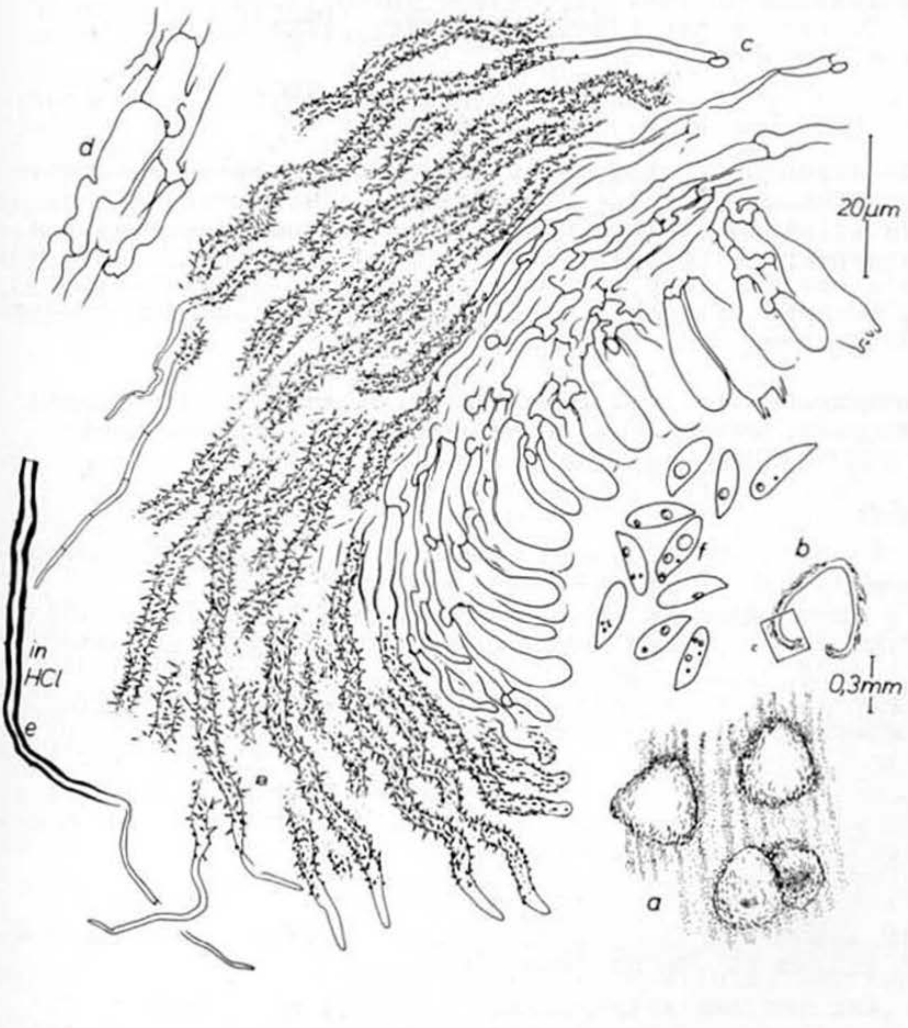

Fig. 2: *Flagelloscypha faginea* : a) fruitbodies, habit, - b) section through a fruitbody, survey, - c) section through a fruitbody, detail, - d) hyphae of the trama from the base of a fruitbody, - e) surface hair in phase-contrast after submerging in hydrochloric acid, - f) spores. - (Herb. R. Agerer 7911, Deutschland, Bayern, Garmisch-Partenkirchen bis zur Partnachklamm, an Athyrium filix-femina, Agerer, 16.10.1977).

faginea and the type-specimen of *C. peckii*.

The Bavarian specimen as well as the type-specimen of *C. peckii* were found on ferns. Cooke (1961) mentions in his list of habitats for *F. faginea* the ferns *Blechnum spicant* and *Pteridium aquilinum*. In the meantime, among species not known to grow on ferns, some new specimens were found which fruited on ferns, e.g. *F. punctiformis* (Fr.) Agerer. Therefore it would seem that growth on ferns is not necessarily an important characteristic.

Cooke (1961) placed *C. peckii* in synonymy with *Lachnella filicina* (Karst.) W.B. Cooke. However, *L. filicina* possesses surface hairs with rounded apices; the type-specimen of *C. peckii* has flagellate apices like the species of *Flagelloscypha*.

As *Cyphella peckii* (1888) is a newer synonym of *C. faginea* (1837), the name *F. faginea* is valid.

In 1838 Junghuhn (l.c.) described *Cyphella candida* Jungh. as "membranacea, candida, subcernua ..." . According to this description, this 'Cyphellaceae' is not identical to the fungus which Peck (l.c.) published under the name *Cyphella candida* Peck. Therefore, Saccardo (1888 l.c.) chose, instead of Peck's invalid name, the new name *Cyphella peckii* Sacc.

Acknowledgements: I am much obliged to the directors of the herbaria Royal Botanical Gardens, Kew, Surrey (K) and New York State Museum, Albany (NYS) for loaning the type-material.

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NOTES ON HYPHOMYCETES. XXXII.
FIVE NEW AQUATIC SPECIES

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ABSTRACT

Five new aquatic hyphomycetes, *Lemonniera alabamensis, Mycocentrospora varians, Pseudoanguillospora gracilis, Pyramidospora stellata* and *Tripospermum prolongatum* are described and illustrated from collections made in an Alabama stream.

INTRODUCTION

In a preceding publication in this series (Sinclair and Morgan-Jones, 1979) a new, monotypic genus of aquatic hyphomycetes, *Obstipispora* Sinclair and Morgan-Jones, was described from collections made in a stream traversing Chewacla State Park in east Alabama. Further studies of the lotic mycoflora at this locality have yielded records of forty two previously named species in addition to *Obstispora chewaclensis*, five taxa which we believe to be undescribed, and twenty four conidium types to which no name can at present be attached (Sinclair, 1979). The new taxa are assignable to known genera and are described and illustrated herein.

TAXONOMIC PART

Lemonniera alabamensis sp. nov. (Fig. 1).

Fungus aquaticus. Mycelium plerumque in substrato immersum, ex hyphis ramosis, septatis, hyalinis, laevibus 2 - 3.5μ crassis compositum. Conidiophora macronemata, mononemata, hyalina, cylindrica, erecta, recta vel flexuosa, ramosa, multiseptata, usque ad 250μ longa, 3 - 4μ crassa, ad apices 1 vel 3 phialides gerentia. Cellae conidiogenae (monophialides) terminales, discretae, laeves, clavatae. Conidia acrogena, solitaria, hyalina, laevia, cum parte centrali globosa, 5μ diam. cum phialide connexa, cum uno

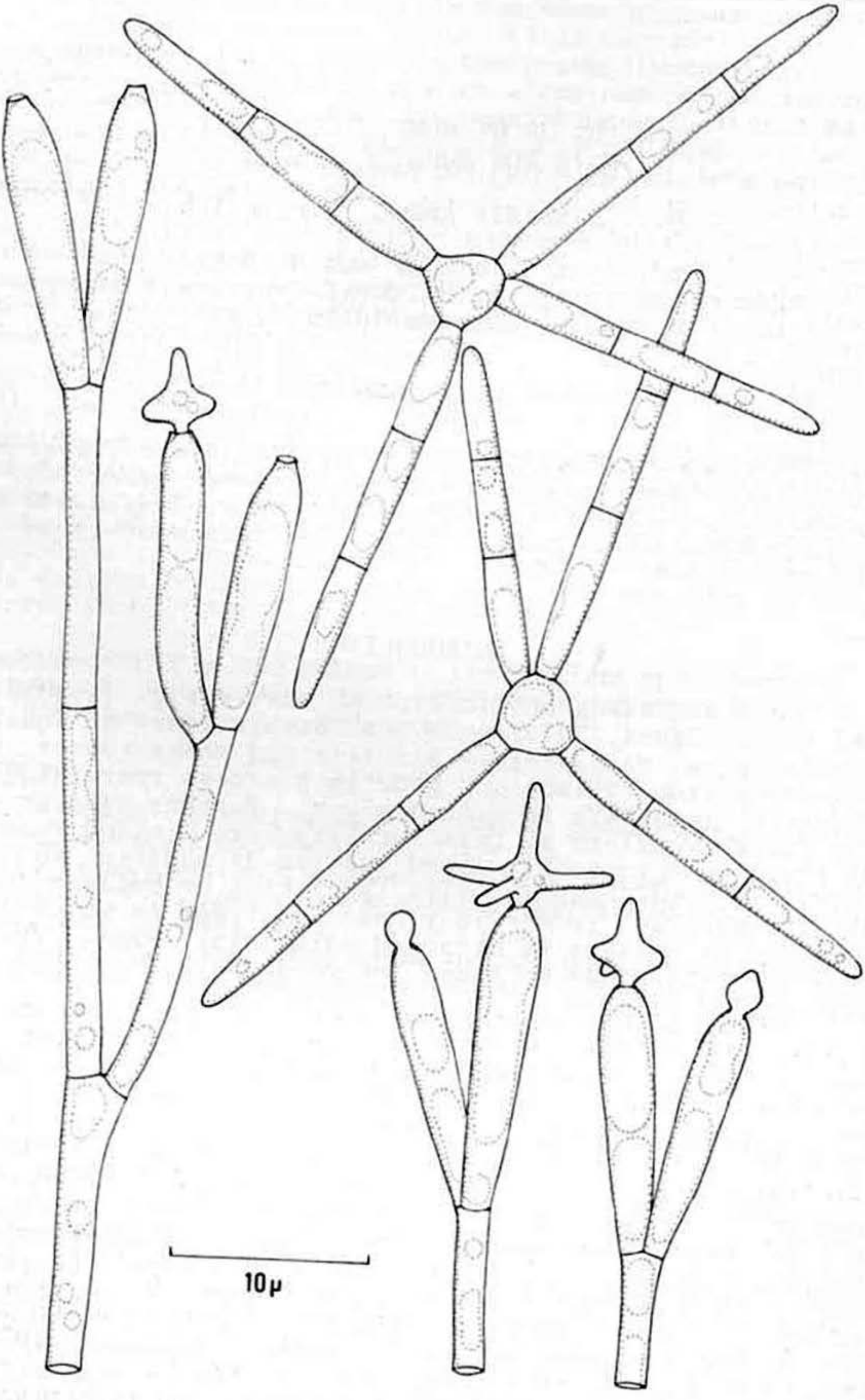

FIGURE 1. *Lemonniera alabamensis*

axe et 4 vel 5 ramis, divergentibus. Rami 30 - 35 X 2 - 3μ, 2 septati.

In corticis emortuis Betulae nigrae in flumine, Chewacla State Park, Lee County, Alabama, August 15, 1978, R.C. Sinclair, AUA, holotypus.

Aquatic fungus. Mycelium mostly immersed in the substratum, composed of branched, septate, hyaline, smooth, 2 - 3.5μ wide hyphae. Conidiophores macronematous, mononematous, hyaline, cylindrical, erect, straight or flexuous, branched, multiseptate, up to 250μ long, 3 - 4μ wide, bearing from one to three phialides at the apex of the main axis and of the branches. Conidiogenous cells monophialidic, terminal, discrete, smooth, clavate. Conidium initials at first spherical, then becoming tetrahedral with arm development. Conidia acrogenous, solitary, hyaline, smooth, with a central globose or subglobose body 5μ in diameter and 4, or rarely five radiating arms; arms equal in length or variable, 2-septate, obtuse at the apex, very slightly constricted at point of attachment to central body, 30 - 35 X 2 - 3μ.

On bark of *Betula nigra* L.; North America.

Collection examined: on *B. nigra* submerged in a stream, Chewacla State Park, Lee County, Alabama, August 15, 1978, R.C. Sinclair, AUA, type.

Several single spore cultures of this organism were obtained on 2% malt agar. Isolates incubated at 15°C grew slowly, attaining an average diameter of 3.5 - 4cm. after 14 days. The fungus forms compact, lanose to felted, dark olivaceous green colonies. Reverse of colonies olivaceous black. No sporulation occurred on agar plates. Strips of 14 day old cultures when submerged in actively aerated distilled water sporulated abundantly after 48 hours.

Descals, Webster and Dyko (1977) in the first of a series of taxonomic revisions of aquatic hyphomycete genera considered *Lemonniera* and accepted six species, one of which was described as new. The taxa are defined on conidium characteristics. Two species are distinguished from the others on the basis of the presence of a distinct central body. These are *L. centrosphaera* Marvanová and *L. pseudofloscula* Dyko. To these may not be added *L. alabamensis*. This taxon differs from *L. centrosphaera* in having a smaller central body (5μ as opposed to 6 - 9μ) and much shorter arms (30 - 35μ as opposed to 70 - 102μ). Marvanová (1968) reported conidium arm length of up to 142μ for *L. centrosphaera* but those reported by Miura (1971) and Descals, Webster and Dyko (1977) were shorter. In common with *L. centrosphaera* the arms in *L. alabamensis* lack a basal isthmus and by this characteristic they are easily distinguishable from *L. pseudofloscula*. *L.*

pseudofloscula also has longer arms than *L. alabamensis* 30 - 70μ) and are distinctly tapered.

Mycocentrospora varians sp. nov. (Fig. 2).

Fungus aquaticus. Mycelium plerumque in substrato immersum, ex hyphis ramosis, septatis, hyalinis vel pallide brunneis, laevibus, 1 - 3μ crassis compositum. Conidiophora semimacronemata vel macronemata, mononemata, ex hyphis repentibus oriunda, simplicia, hyalina, laevia, recta vel flexuosa, cylindrica, interdum inflatis, usque ad 35μ longa, 1.5 - 2.5μ crassa. Cellae conidiogenae monoblaticae vel polyblasticae, in conidiophoris incorporatae, terminales. Conidia acrogena, solitaria, hyalina, laevia, septata, cylindrica, recta vel leviter curvata, 25 - 88 X 1 - 1.5μ.

In foliis putrescentibus in flumine, Chewacla State Park, Lee County, Alabama, April 12, 1978, R.C. Sinclair, AUA, holotypus.

Aquatic fungus. Mycelium mostly immersed in the substratum, composed of branched, septate, hyaline or pale olivaceous brown hyphae; hyaline hyphae 1 - 2μ wide, colored hyphae 2 - 3μ wide and tending to aggregate in strands. Conidiophores semimacronematous or macronemetous, mononematous, formed laterally from repent hyphae, simple, hyaline, smooth, straight or flexuous, cylindrical but sometimes in part inflated, 9 - 35 X 1.5 - 2.5μ. Conidiogenous cells monoblastic or polyblastic, integrated, terminal. Conidia acrogenous, solitary, hyaline, smooth, 6 to 8-septate, cylindrical, straight or slightly curved, obtuse at the apex, truncate at the base.

On decaying leaves; North America.

Collection examined: on unidentified leaves submerged in a stream, Chewacla State Park, Lee County, Alabama, April 12, 1978, R.C. Sinclair, AUA, type.

Several single spore cultures of this organism were obtained on 2% malt agar. Isolates incubated at 15° grew slowly, attaining an average diameter of 4 - 5cm. after 14 days. The fungus forms compact, lanose, dense, dark olivaceous gray colonies. Colonies are often somewhat zonate with rings of whitish mycelium alternating with darker areas. Reverse of colonies olivaceous black. There is sparse sporulation on agar plates. Strips of 14 day old cultures when submerged in actively aerated distilled water sporulated abundantly after 48 hours.

The conidia of *M. varians* are variable in several respects. There is considerable difference in conidium length even in single colonies. Short conidia are usually more or less straight, long ones are usually slightly

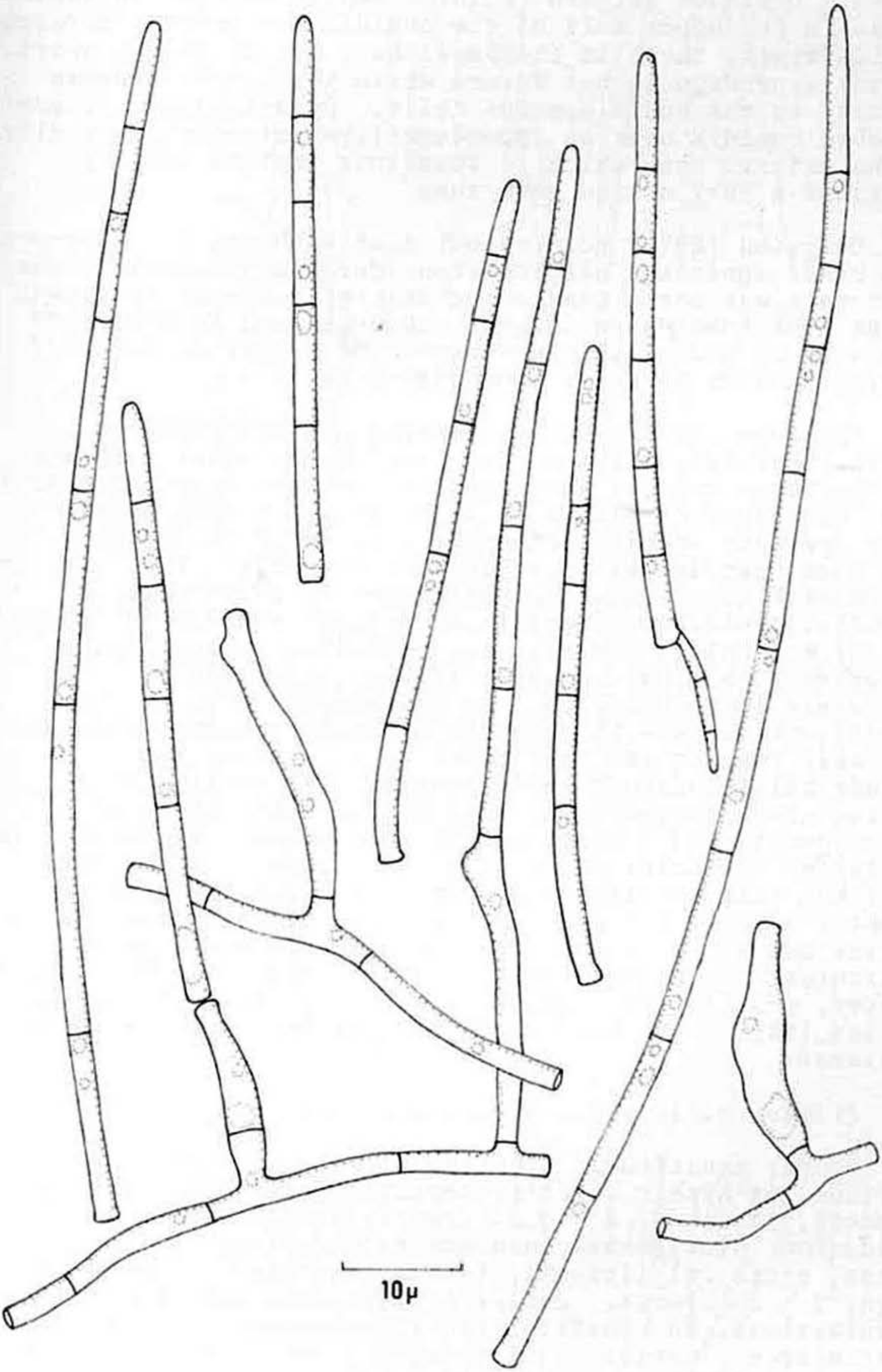

FIGURE 2. *Mycocentrospora varians*

curved. Distance between conidium septae is also variable. Septae in the upper half of the conidia are usually between 5 - 12μ apart, those in the basal half are up to 24μ apart. A basal appendage is not formed while the conidia remain attached to the conidiogenous cells. Occasionally, however, detached conidia bear an appendage-like extension laterally at the extreme base which is sometimes septate and may represent a very narrow germ tube.

Deighton (1971) pointed out that although the presence of a basal appendage has been considered a hallmark of the genus this was not a constant character and many specimens of the type species on natural substrata and in culture were without a conidial appendage. He described three others in which no basal appendage occurs.

The type species of *Mycocentrospora* Deighton, *M. acerina* (Hartig) Deighton, is a soil borne plant pathogen and the three species added to the genus by Deighton (1972) occur on leaves of plants in terrestrial circumstances. There are four species presently classified in the genus that have been described as aquatic in habit. They have in common with *M. acerina* the possession of polyblastic, sympodial conidiogenous cells as well as conidia of broadly similar morphology. *M. varians* resembles *M. angulata* (Petersen) Iqbal, *M. aquatica* (Iqbal) Iqbal and *M. filiformis* (Greathead) Iqbal in possessing long, narrow conidia but whereas the conidia of these species attenuate gradually towards the apex those of *M. varians* are cylindrical throughout their length. The conidia of *M. varians* are also generally much shorter than those of these species and a basal conidium appendage is absent. In the latter character *M. varians* is similar to *M. clavata* Iqbal but this species is distinct in having more or less clavate, broader conidia. *M. varians* somewhat resembles *M. acerina* and *M. clavata* in its conidiophore morphology particularly in being irregularly inflated. It does not, however, proliferate sympodially as abundantly as does *M. acerina*, this being another feature it has in common with *M. clavata*.

Pseudoanguillospora gracilis sp nov. (Fig. 3).

Fungus aquaticus. Mycelium plerumque in substrato immersum, ex hyphis ramosis, septatis, hyalinis vel pallide brunneis, laevibus, 2 - 3.5μ crassis compositum. Conidiophora micronemata, mononemata, hyalinis, filiformia, ramosa, recta vel flexuosa, leavia, septata, usque ad 230μ longa, 2 - 3μ crassa. Cellae conidiogenae monoblasticae vel polyblasticae, in conidiophoris incorporatae, terminales vel intercalares. Conidia solitaria, hyalina, laevia, septata, cylindrica, leviter curvata, 60 - 120 X 2μ.

In foliis putrescentibus Platani occidentalis in

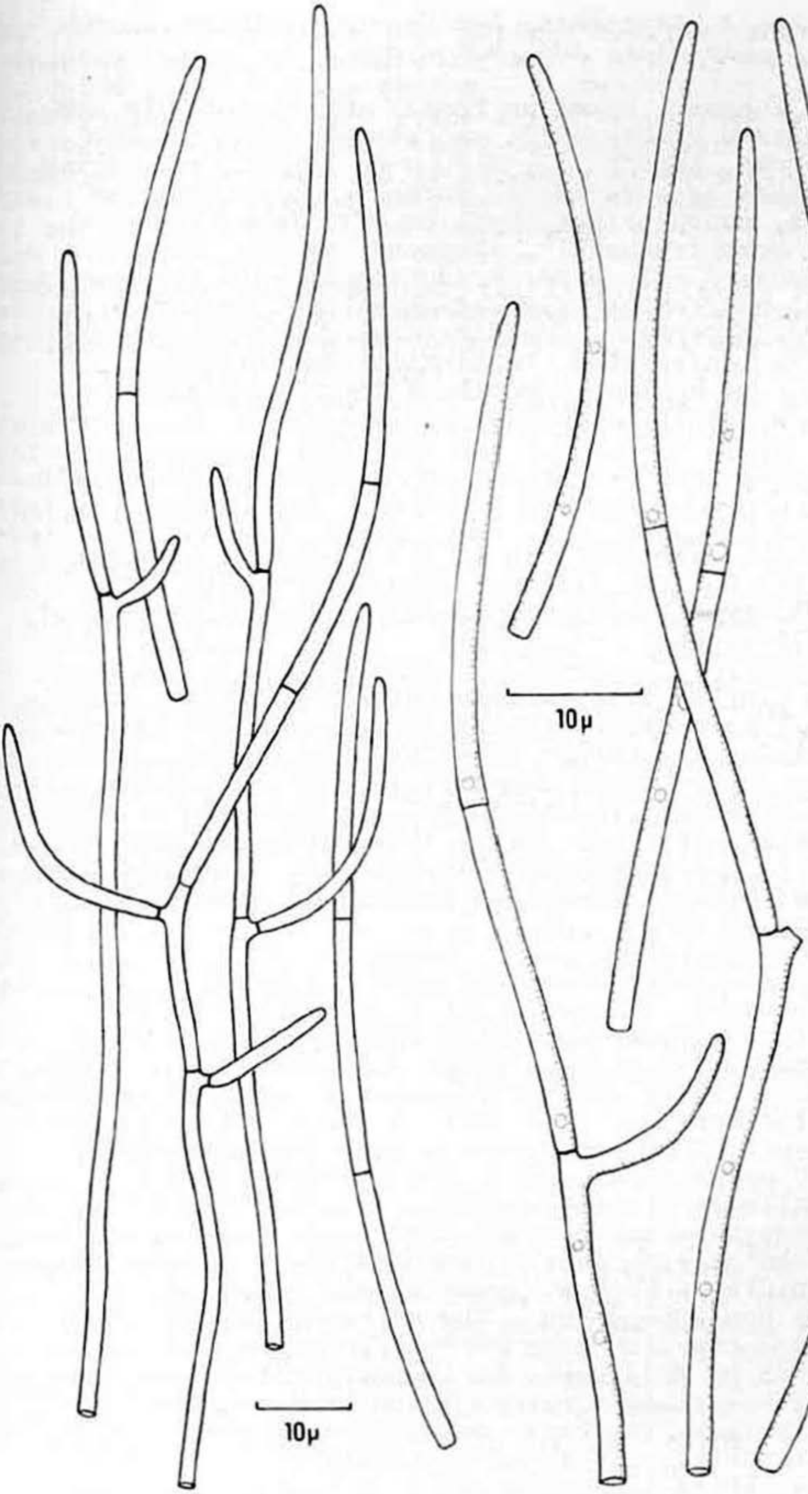

FIGURE 3. *Pseudoanguillospora gracilis*

flumine, Chewacla State Park, Lee County, Alabama, August 15, 1978, R.C. Sinclair, AUA, holotypus.

Aquatic fungus. Mycelium mostly immersed in the substratum, composed of branched, septate, hyaline to pale olivaceous brown, smooth, 2 - 3.5μ wide hyphae; pale brown hyphae sometimes aggregating in strands. Conidiophores micronematous, mononematous, hyaline, filiform, branched, straight or, more frequently, flexuous, smooth, septate, up to 230μ long, 2 - 3μ wide, producing conidia terminally or as lateral outgrowths originating at loci immediately below transverse septae. Conidiogenous cells monoblastic or polyblastic, integrated, terminal or intercalary. Conidia solitary, hyaline, smooth, 1 to 2-septate, cylindrical, slightly curved, 60 - 120 X 2μ

On decaying leaves of *Platanus occidentalis* L.; North America.

Collections examined: on *P. occidentalis,* Chewacla State Park, Lee County, Alabama, August 15, 1978, R.C. Sinclair, AUA, type; in foam (same locality and collector), October 16, 1978, AUA.

Several single spore cultures of this organism were obtained on 2% malt agar. Isolates incubated at 15° grew slowly, attaining an average diameter of 4 - 4.5cm. after 14 days. The fungus forms compact, lanose to somewhat felted, gray to olive gray colonies. Reverse of colonies dark olivaceous. There is sparse sporulation on agar plates. Strips of 14 day old cultures when submerged in actively aerated distilled water sporulated abundantly after 48 hours.

Iqbal (1974), when he established the genus *Pseudoanguillospora,* discussed its relationship to the similar genera *Mycocentrospora* and *Anguillospora*. He maintained that *Pseudoanguillospora* differed from *Mycocentrospora* by the absence of a basal conidium appendage and because the conidial scar left on the conidiophore is not conspicuous. The presence of a conidium appendage is not, however, as Deighton (1972) has pointed out, an invariable hallmark of *Mycocentrospora*. The presence of a basal appendage is not a fully satisfactory character by which to recognize even aquatic species of *Mycocentrospora* since the conidia of both *M. aquatica* and *M. varians* are predominantly non-appendaged. The matter of thickness of conidial scars can also be questioned. In an aquatic species such as *M. filiformis* it is difficult to discern any scar. If *Pseudoangillospora* is to be dinstinguished from *Mycocentrospora* the basis must be other characteristics of the conidiophores. Those of *Pseudoanguillospora* are micronematous, hypha-like, and there is no real sympodial proliferation. The terminal cell of the conidiophore forms but two conidia, one at the extreme apex and one in a subapical position immediately below the septum laid down to delimit the first conidium. In two species, *P. stricta* Iqbal, the type, and *P. gracilis* other conidia are formed retrogressively at intercalary loci immediately below conidiophore septae. As in the case of subapical conidia these arise as lateral outgrowths of the peripheral wall of the conidiophore. The conidiophores of *Mycocentrospora* are macronematous or, in the case of most of the aquatic species, semimacronematous, typically somewhat inflated, and exhibit sympodial proliferation where the youngest conidium at a given time is apical in position.

Pseudoanguillospora can be distinguished from *Anguillospora* in that the latter produces but one conidium per conidiophore, in a terminal position. While accepting *Pseudoanguillospora* as a useful entity it is recognized that this complex of genera is inevitably artificial and that each member is by no means easy to define without exceptions.

Pyramidospora stellata sp. nov. (Fig. 4).

Fungus aquaticus. Mycelium plerumque in substrato immersum, ex hyphis ramosis, septatis, hyalinis, laevibus, 1.5 - 2.5μ crassis compositum. Conidiophora micronemata, mononemata, hyalinis, filiformia, erecta, recta vel flexuosa, laevia, septata, usque ad 100μ longa, 1 - 2μ crassa. Cellae conidiogenae monoblasticae, in conidiophoris incorporatae, terminales. Conidia solitaria, hyalina, laevia, stellata; ex axi primario tricellularia, 15 - 25 X 3 - 5μ et 4 brachiis divergentibus composita; brachis usque ad 20μ longa, 4 - 5μ crassa ad basim, apicem versus 2 - 3μ crassa, 1 - 2-septata, attenuata, leviter constricta ad septa.

In foliis putrescentibus Aceris saccharini in flumine, Chewacla State Park, Lee County, Alabama, February 12, 1978, R.C. Sinclair, AUA, holotypus.

Aquatic fungus. Mycelium mostly immersed in the substratum, composed of branched, septate, hyaline, smooth, 1.5 - 2.5μ wide hyphae. Conidiophores micronematous, mononematous, hyaline, filiform, erect, straight or curved, smooth, septate, up to 100μ long, 1 - 2μ wide. Conidiogenous cells monoblastic, integrated, terminal. Conidia solitary, hyaline, smooth, star-shaped, with a three-celled primary axis, 15 - 25 X 3 - 4μ and four lateral divergent branches; branches up to 20μ long, 4 - 5μ wide at the base, 2 - 3μ wide at the apex, 1 to 2-septate, attenuated, somewhat constricted at the septa.

On decaying leaves of *Acer saccharinum* L., *Quercus alba* L., and *Salix* sp.; North America.

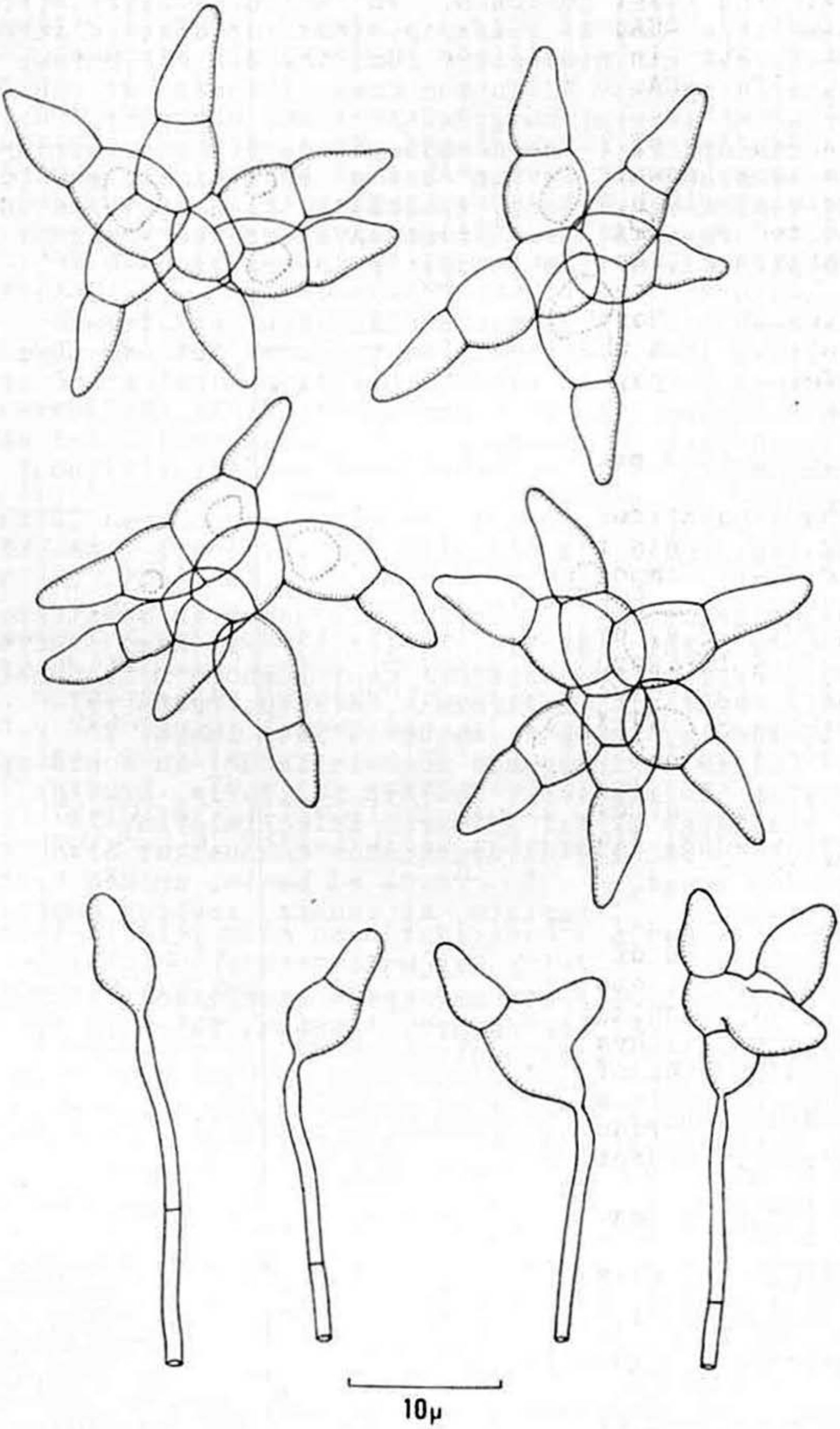

FIGURE 4. *Pyramidospora stellata*

Collections examined: on *A. saccharinum,* Chewacla State Park, Lee County, Alabama, February 12, 1978, R.C. Sinclair, AUA, holotype; on *Q. alba* (same locality, date and collector), AUA; on *Salix* sp. (same locality, date and collector), AUA; in foam (same locality and collector), June 12, 1978, AUA.

Six species of *Pyramidospora* Nilsson, other than *P. stellata,* are known. Five of these, *P. casuarinae* Nilsson, *P. constricta* Singh, *P. densa* Aladoadura, *P. fluminea* Miura and Kudo and *P. ramificata* Miura have been found at the same locality as the other fungi reported upon in this paper. These are the first records of the occurrence of these species in North America. *P. stellata* is readily distinguished from them and from the remaining species, *P. herculiformis* Singh, by the stellar configuration of its conidia.

Tripospermum prolongatum sp. nov. (Fig. 5).

Fungus aquaticus. Mycelium plerumque in substrato immersum, ex hyphis ramosis, septatis, hyalinis, laevibus, 2 - 3µ crassis compositum. Cellae conidiogenae monoblasticae, in hyphis incorporatae, intercalares. Conidia solitaria, hyalina, laevia, ramosa, ex dentibus hypharum vegetativarum oriunda; ex axe principalis flexa et 2 vel 3 ramis divergentibus composita; axe principalis 4-septatus, 39 - 44 X 1.5 - 3.5µ, rami 1 - 2-septati, 22 - 30 X 1.5 - 2µ.

In foliis putrescentibus in flumine, Chewacla State Park, Lee County, Alabama, April 12, 1978, R.C. Sinclair, AUA, holotypus.

Aquatic fungus. Mycelium mostly immersed in the substratum, composed of branched, septate, hyaline or pale olivaceous brown, smooth, 2 - 3µ wide hyphae. Conidiogenous cells monoblastic, integrated in hyphae, intercalary. Conidia solitary, hyaline, smooth, branched, produced as lateral outgrowths of the hyphae; consisting of a sharply bent principal axis and two or, predominantly, three divergent arms; principal axis 4-septate, 39 - 44 X 1.5 - 3.5µ, arms 1 - 2-septate, 22 - 30 X 1.5 - 2µ.

On decaying leaves; North America, (?) Europe.

Collections examined: on unidentified leaves submerged in a stream, Chewacla State Park, Lee County, Alabama, April 12, 1978, AUA, type; in foam (same locality and collector), August 15, 1978, AUA.

There is some evidence that this taxon has been encountered as conidia previously. Ingold, Dann and McDougal (1968) in their publication describing

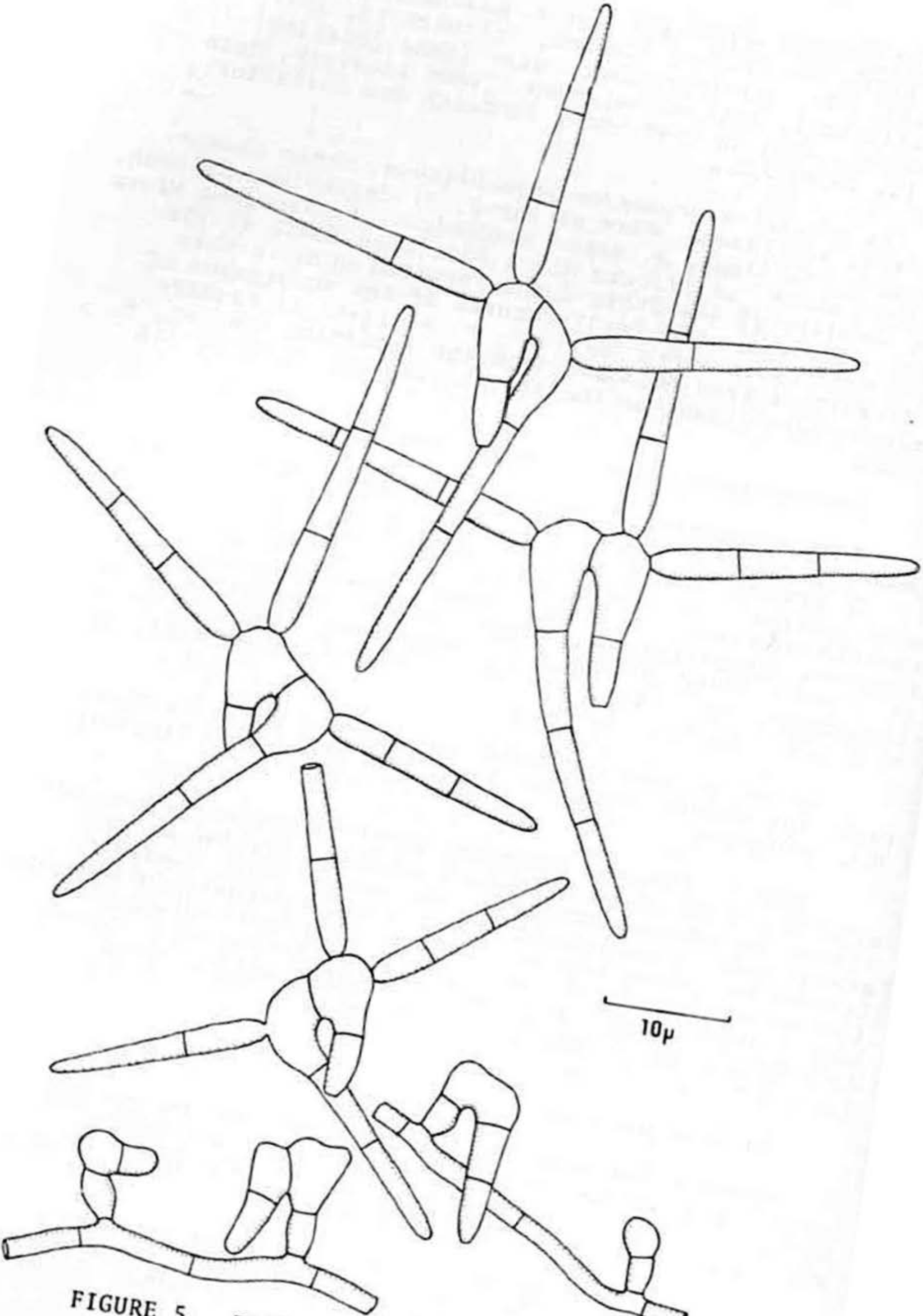

FIGURE 5. *Tripospermum prolongatum*

Tripospermum camelopardus illustrated conidia of an unnamed species. These seem very close to those of *T. prolongatum.*

Matsushima (1975) illustrated conidia of a similar fungus which he referred to as *Tripospermum* sp. MFC-1375 obtained on decaying leaves of *Pinus densiflora* in Japan. Several conidia identical to those of Matsushima's fungus have been found in foam during the present study. It seems likely that it represents a form of *T. myrti* (Lind) Hughes since that species is somewhat variable (Hughes, 1951).

ACKNOWLEDGMENT

We thank Dr. Richard T. Hanlin, University of Georgia, for reviewing this manuscript.

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UREDINALES NOUVELLES DE l'HIMALAYA

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RESUME

Description des nouvelles espèces suivantes : *Melampsora ribis* sur *Ribes takara, Coleoporium nepalense* sur *Thunbergia cf. lutea, Puccinia pilearum* sur *Pilea scripta* et *P. umbrosa, Puc. mallae* sur *Clematis barbellata, Puc. manangensis* sur *Clematis cf. orientalis, Puc. commelinae* sur *Commelina benghalensis, Puc. heracleinepalensis* sur *Heracleum nepalense, P. annapurnae* sur *Polygonum polystachyum.*

Les échantillons décrits ci-dessous ont été récoltés dans diverses régions montagneuses du Népal central au cours de missions réalisées dans le cadre de la Recherche Coopérative sur Programme n° 253 du C.N.R.S., (Ecologie et Géologie de l'Himalaya). Les exsiccata sont déposés dans l'herbier cryptogamique du laboratoire de botanique de l'Université PAUL SABATIER (TLA), pour certaines espèces un isotype est également déposé dans l'herbier du «Département of medicinal plants» à Kathmandu (KTH).

Melampsora ribis n. sp.

Sur *Ribes takara* HORA, crête sud du Machapuchare 3200 m (massif de l'Annapurna) 24 . 10 . 76 .

Ce parasite se développait sur des feuilles également parasitées par *Cronartium ribicola.*

Les Téliosores, hypophylles, forment des croutes atteignant 0,5 mm de côté, d'abord jaune orangée claire, elles brunissent ensuite.

Les Téliospores sont diposées en couche sous-épidermique, elles mesurent de 30 à 53 µm de haut et 8 à 16 µm de diamètre, elles sont arrondies à la partie supérieure. La paroi mince, 1µm environ ne présente pas d'épaississement apical.

Cette espèce est très certainement le dérivé microcyclique d'une forme hétéroxène accomplissant son cycle sur le couple d'hôtes *Ribes-Salix.* Etant donné la position sous-épidermique des Téliospores, la forme ancestrale pourrait être une rouille du groupe de *Melampsora ribesii-epitea* KLEB.

Telia hypophylla, crustacea, 0,5 cm lata, primum aurantiaco-flava dein adustiora. Teliosporae subepidermicae, 30-53X 8-16 µm, supra rotundatae ; épispora tenuis (ca. 1 µm) apice non incrassata.

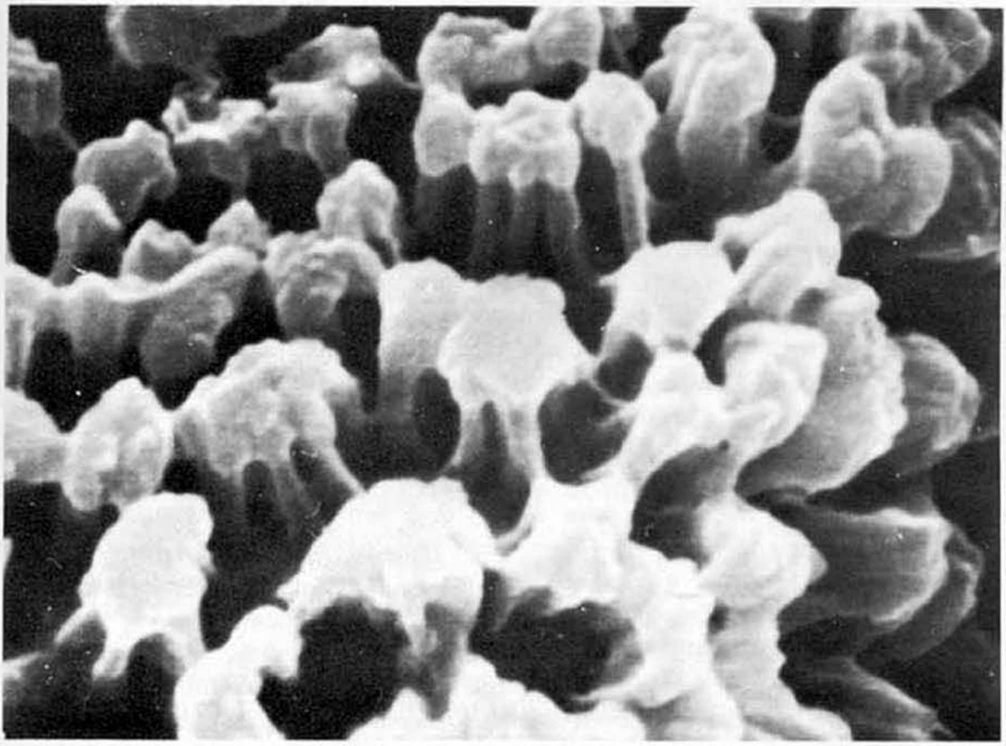


Figure 1 : Ornementation des urédospores de Coleosporium nepalense, X 17000 (M.E.B)

Il foliis vivis Ribis takarae, Nepalia : in australe cacumine montis «Machapuchare» 3200 m (DURRIEU). Typus TLA 76 440.

Coleosporium nepalense n. sp.

Sur *Thunbergia cf. lutea* T. ANDERS., vallée de la Trisuli entre Thare et Dunche (district de Rasuwa) 2000 m, 2 . 10 . 76 .

Les urédosores très peu nombreux sont dispersés à la face inférieure des feuilles, ils mesurent 0, 2–0, 5 mm de diamètre. Les urédospores de forme variable, le plus souvent ellipsoides ont de 15 à 30 µm de long et 12 à 15 µm de diamètre. Leur paroi est mince environ 1 µm et densément verruqueuse, la hauteur des verrues est de l'ordre de 1, 5 µm.

L'examen en microscopie électronique à balayage montre que cette ornementation (fig 1) rappelle celle observée chez un certain nombre d'autres *Coleosporium* comme *C. campanulae* LEV., *C. cacaliae* (DC) OTTH. (HIRATSUKA et KANEKO). Ce sont des éléments constitués d'une tête irrégulière, bosselée, portée par un pied qui parait résulter de l'agglomération de plusieurs racines. Toutefois les épaississements annulaires superposés présents sur les «racines» des espèces citées n'éxistent pas chez *Coleosporium nepalense.*

Les télies sont dispersées sur des plages de dimensions variables (jusqu'à 10 X 5 mm) elles sont très petites : 0, 1 à 0, 3 mm de diamètre et de couleur orangée tendant vers le brunâtre à maturité.

Les téliospores (ou plutôt basides) sont apparemment disposées en une seule couche sous-épidermique, elles mesurent de 26 à 50 µm de long et de 16 à 26 µm de diamètre, leur forme est donc relativement trapue, elles sont arrondies à l'extrémité supérieure et recouvertes d'une épaisse couche gélatineuse.

En 1935 H. SYDOW décrivait *Coleosporium miteri* sur une *Acanthacée* probablement *Barleria cristata*, en provenance de Naini Tal (Kumaon) il ne semble pas que l'on ait retrouvé cette Rouille depuis. La récolte ne contenait que des urédospores (et donc l'espèce n'est pas valablement publiée) qui mesuraient 20–24 X 16–20 µm, c'est-à-dire un diamètre nettement supérieur à celles décrites ici. *Coleosporium nepalense* est donc le premier *Coleosporium* décrit avec certitude sur une Acanthacée.

Uredia hypophylla, rara, 0, 2— 0, 5 mm diametro, aurantiaca. Uredosporae ellipsoideae 15–30 X 12–15 µm, dense verruculosae, epispora hyalina, ca 1 µm crassa. Telia hypophylla, in gregibus plus minusve dispersa, minutissima 0, 1–0, 3 mm auranticaco-ochracea. Teliosporae subepidermicae, oblongae, 26–50 X 16–26 µm, apice rotundatae, gelatinoso strato valde incrassatae.

In follis vivis Thunbergiae cf. luteae. T. ANDERS, Nepalia, in valle fluminis Trisuli, inter Thare et Dunche, 2000 m (DURRIEU). Typus TLA 76091.

Puccinia commelinae n. sp.

Sur *Commelina benghalensis* L., chaîne du Mahabarat, près du col de Symbanjyang (distr. de Makwanpur), 2300 à 2400 m, 16 . 10 . 76 .

Les urédosores sont hypophylles, peu nombreux, ils mesurent 0, 3 à 0, 5 mm de diamètre, leur couleur est brun canelle. Ils contiennent des urédospores ovoïdes, mesurant 22–28 X 16–21 µm, à paroi de 1, 5 à 2 µm d'épaisseur, échinulée et percée de 2 pores germinatifs équatoriaux.

Les téliosores hypophylles, nombreux, sont très petits : 0, 1 à 0, 3 mm de diamètre. Ils restent recouverts par l'épiderme. Les uns sont disposés en cercle autour des urédosores, les autres dispersés sur toute la surface inférieure des feuilles, soit isolés soit en groupes. Leur couleur est brun très sombre. Les téliospores fusoïdes, légèrement rétrécies au niveau de la cloison mesurent 30 à 50 µm de long et12 à 21 µm de diamètre (fig 2). Leur paroi est lisse, sauf à l'apex où elle est parfois légèrement granuleuse, elle est colorée en brun, son épaisseur, comprise entre 1 et 1, 5 µm, augmente fortement à l'apex où elle peut atteindre 8 µm. Le pédicelle est presque hyalin et mesure de 5 à 25 µm de long.

C'est à ma connaissance le premier *Puccinia* décrit sur une plante de la famille des Commelinaceae. Par contre sur le même hôte ainsi que quelques autres espèces de cette famille on connaît *Uromyces commelinae* CKE, largement répandu en de nombreuses régions tropicales ou subtropicales et particulièrement en Inde.

Uredia hypophylla, rara, 0, 3–0, 5 mm diametro, cinnamomea. Uredosporae ovoidae, 22–28 X 16–21 µm, épispora echinulata 1, 5–2 µm crassa, 2 poris equatorialis aperta.

Telia hypophylla, alia circa uredium cincta, alia in tota pagine inferiore dispersa aut aggregata, epidermide tecta, atra, 0, 1–0, 3 mm diametro. Teliosporae fusiformae, supra conico-attenuatae, medio leniter constrictae, 30–50 X 12–21 µm, epispora levis, apice interdum leniter granulosa, brunnea, 1–1, 5 µm crassa, apice usque 8 µm incrassata ; pedicellus subhyalinus, 5–25 µm longus.

In foliis vivis Commelinae benghalensis L., Nepalia : prope Symbanjyang furcas in Mahabarat jugo ; 2300–2400 m, (DURRIEU). Typus TLA 76322.

Puccinia mallae n. sp.

Sur Clematis barbellata EDGW., vallée de la Marsyandi entre Chame et Bagarchap (distr. de Manang) de 2400 à 2800 m, 4 . 10 . 77 .

Je dédie cette espèce au Dr S.B. MALLA Directeur du «Department of Medicinal Plants» à Kathmandu.

Les spermogonies apparaissent à la face supérieure des limbes sur de petites taches très légèrement déformantes. Leur nombre varie, sur chaque tache, de quelques unités jusqu'à une cinquantaine.

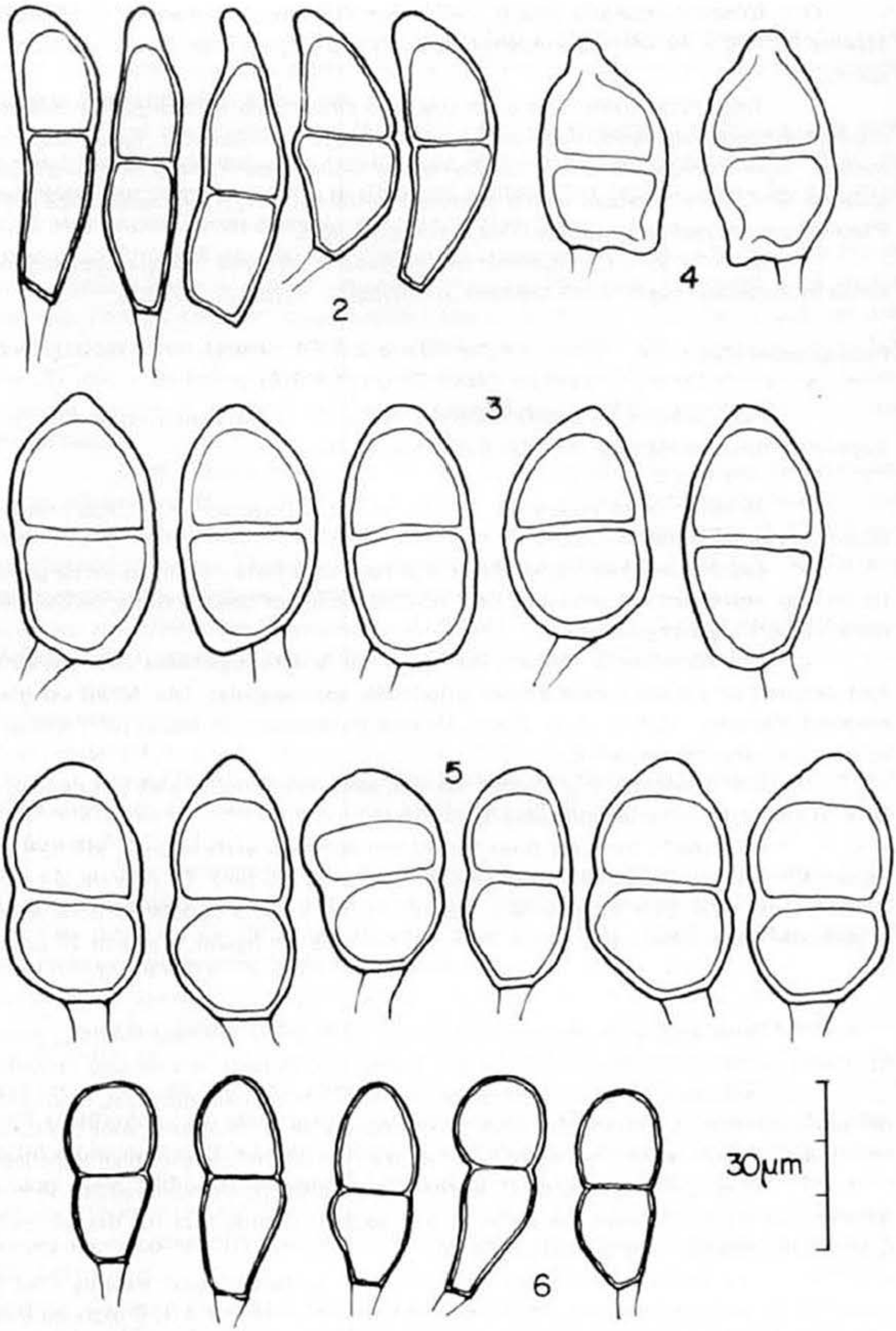
Les téliosores se forment également sur la face supérieure des feuilles, ils sont disposés en cercles concentriques autour des spermogonies, leur forme est généralement allongée : 0, 5–1 X 0, 2 mm. Ils sont pulvérulents, entourés par l'épiderme éclaté, de couleur brun sombre.

Les téliospores (fig 3) sont ovoïdes, elles mesurent 34 à 46 µm de long et 20 à 26 µm de diamètre (en moyenne 39 X 23).

Leur paroi, lisse, est brun foncé, son épaisseur varie entre 2, 5 à 3, 5 µm légèrement plus au niveau des pores germinatifs (jusqu'à 6 µm). Le pore de la cellule inférieure est situé près du pédicelle, parfois même au pôle opposé au pore apical, le pédicelle étant alors rejeté sur le côté. Ce pédicelle est hyalin, il atteint 70 µm de long.

Cette espèce est certainement proche de *Puccinia wattiana* BARCL, connu sur divers Clematis himalayens (et que j'ai même récolté dans le voisinage immédiat sur *Clematis connata).* La disposition des téliosores en cercles concentriques, la situation des pores germinatifs souvent aux deux pôles opposés de la téliospores sont des caractères que l'on retouve dans ces deux Rouilles. Mais les différences sont bien tranchées :

- Les spermogonies de *P. wattiana* sont bien moins nombreuses, on n'en observe souvent qu'une seule par tache, et plus souvent encore, le centre des cercles de spores est occupé par un gros téliosore.
- La forme générale des téliospores est nettement plus trappue chez *P. mallae* ou le rapport longueur sur largeur est voisin ou inférieur à 1, 6 alors qu'il est proche de 2 chez *P. wattiana* (fig 4). En outre si les pores germinatifs sont disposés de la même façon dans les deux espèces, ils sont surmontés d'une papille très proéminente chez *P. wattiana* qui ne se retrouve pas chez *P. mallae* : on observe un épaississement progressif et souvent peu marqué de la paroi qui s'inscrit dans le contour général de la



Figures 2–6 : Téliospores de Puccinia commelinae (2), Puc. mallae (3), Puc. wattiana (4) Puc. manangensis (5), Puc. pilearum (6).

spore, l'emplacement du pore est signalé par une zone plus claire. La paroi est nettement plus mince chez P. wattiana : 2 µm seulement.

Spermogonia epiphylla, minutas maculas leniter deformantes insidentia, plerumque numerosa (usque ad 50).

Telia epiphylla, circa spermogonia circulariter secus plures series disposita, minuta, oblonga 0, 5–1 X 0, 2 mm, pulverulenta, epidermide cincta, atra. Teliosporae ovoideae, medio non constrictae, 34–46 X 20–26 µm, epispora brunnea, levis, 2, 5–3, 5 µm crassa, usque 6 µm incrassata ad poros, porus cellulae inferioris basi positus, pedicellus hyalinus usque 70 µm longus.

In foliis vivis Clematidis barbellatae EDGW., Nepalia : in valle fluminis Marsyandi inter Chame et Bagarchap, 2400–2800 (DURRIEU)

Typus TLA 77329, isotypus in KTH.

Puccinia manangensis n. sp.

Sur *Clematis cf. orientalis* L., vallée de la Marsyandi entre Braga et Ghyaru, (district de Manang) 3400 m, 2 . 10 . 77.

Les téliosores se développent à la face inférieure des feuilles, parfois aussi sur les pétioles. Ils provoquent de légères déformations. Ils constituent des coussinets compacts, durs, rapidement dénudés sauf quelques lambeaux d'épiderme qui peuvent subsister, leur couleur est brun sombre, ils mesurent 2 à 4 mm de diamètre (parfois jusqu'à 6 mm) .

Les téliospores (fig 5) ont un contour largement ovale, légèrement resserré au niveau de la cloison, largement arrondi à l'apex et à la base. Elles mesurent 35 à 45 µm de long et 19 à 27 µm de diamètre (parfois jusqu'à 30 µm) . La paroi brun foncé, lisse, a une épaisseur de 1, 5 à 2 µm, elle s'épaissit considérablement vers l'apex où elle mesure de 5 à 11 µm. Le pore germinatif de la cellule inférieure, peu visible, est situé au contact de la cloison médiane. Le pédicelle est très légèrement coloré dans sa partie la plus proche de la spore, sa longueur varie entre 20 et 60 µm.

Je n'ai pu déceler la présence de spermogonies, on peut supposer toutefois, que comme les autres formes téliennes de *Puccinia* connues sur *Clematis* il s'agit d'une espèce autoxène microcyclique.

Deux autres espèces parasitant les *Clematis* ont également de gros sores compacts, ce sont *P. clavata* SYD en Nouvelle Zélande et *P. atragenicola* (BUB) SYD. en Europe, mais ils se distinguent par des téliospores de forme et de dimensions totalement différentes : 42–62 X 14–22 µm pour la première et 44–82 X 15–24 pour la seconde.

Puccinia manangensis ne se rapproche donc d'aucune des espèces déjà connues sur *Clematis.*

Telia saepius hypophylla, rarius petiolicola, leniter deformantia, pulvillulata 2–4 (6) mm, compacta, denudata, atra. Teliosporae late ellipsoideae, utrinque rotundatae, medio vix constrictae, 35–45 X 19–27 µm. Epispora levis, 1, 5–2 µm crassa, apice 5–11 µm incrassata, brunnea ; porus cellulae inferioris ad septam instructus. Pedicellus 20–60 µm longus, hyalinus, ad sporam pallide castaneus.

In foliis Clematidis cf. orientalis L., Nepalia, in valle fluminis Marsyandi inter Braga et Ghyaru (prope Manang) 3400 m (DURRIEU).

Typus TLA 77252 isotypus in KTH.

Puccinia pilearum n. sp.

Sur *Pilea umbrosa* WEDD., vallée de la Kali Gandaki, entre Ghasa et Lete (district de Mustang) 2200 m, 26 . 9 . 77 (type) ; Phulchauki Danda, (Kathmandu) 2000 à 2500 m, 31 . 10 . 76 .

Sur *Pilea scripta* WEDD., vallée de la Trisuli, près de Dunche (district de Rasuwa) 1600 m, 2 . 10 . 76 ; vallée de Lantang, 2000 m, 3 . 10 . 76 ; vallée de la Kali-Gandaki entre Tato Pani et Titre 1400 m et près de Ghasa, 1800 m (district de Mustang) 26 . 9 . 77 .

Les urédosores jaunes très pâles et blanchissant à la dessication s'observent sur les deux faces du limbe, ils sont petits : 0, 2 à 0, 7 mm et associés en faible nombre (1 à 4) sur des taches d'environ 2 mm de diamètre. Il y a transformation progressive en téliosores qui se présentent sous le même aspect. Du fait de la croissance mycélienne ils sont souvent disposés en cercles autour de taches, desséchées au centre, qui peuvent atteindre 3–4 mm de diamètre.

Les urédospores, ovoïdes, mesurent 22 à 30 µm de long et 14 à 20 µm de diamètre, leur paroi est mince (inférieure à 1 µm) hyaline et peu densément verruqueuse : les verrues ont moins de 1 µm de haut et sont distantes de 2 à 3 µm.

Les téliospores (fig 6) ont une forme souvent assez irrégulière, elles sont plus ou moins resserrées au niveau de la cloison transversale, en général arrondies à l'apex et atténuées à la base. Leur longueur varie entre 26 et 43 µm (35 µm en moyenne) leur diamètre est compris entre 13 et 21 µm. Le pédicelle hyalin peut atteindre 30 µm de long. La paroi est lisse, mince (1 µm) incolore. Les pores germinatifs ne sont pas visibles, mais comme ces téliospores leptosporiques germent dans le sore même, on constate que la baside supérieure sort par l'apex, tandis que l'inférieure germe au contact de la cloison transversale.

Il n'est pas possible de préciser le cycle de cette Rouille car je n'ai pu déceler, sur aucun échantillon, la présence de pycnides. Il serait également interressant de savoir si, plus tard en saison, ne se différencieraient pas des téliospores de conservation à paroi plus épaisse.

Il existe dans l'Himalaya *Puccinia urticae* BARCLAY (1889) qui est très différent de celui-ci : il ne possède pas d'urédospores et ses téliospores plus longues ont une paroi épaissie à l'apex et fortement colorée : il s'agit probablement d'une forme microcyclique dérivant du *Puccinia caricis* s. l. dont les écidies se développent sur divers *Urtica.*

Il serait par contre possible que ce champignon soit analogue à *Uredo pileae* BARCLAY (1891) découvert près de Simla et dont les urédospores jaune très pâle mesurent 20–25 X 14–20 µm. Je n'ai pu en obtenir du matériel pour comparaison, mais l'absence presque complète de pigmentation et les dimensions voisines sont des présomptions très importantes. Il parait en outre curieux que cette Rouille qui semble relativement fréquente n'ai jamais été observée auparavant. Il faut toutefois remarquer que sur plusieurs échantillons le développement très abondant d'un hyperparasite *(Gloeosporium sp ?)* masque presque totalement le *Puccinia.*

Uredia amphigena, in minutis maculis (2 mm diametro) pauca disposita, pallide flavida, in sicco expallescentia. Uredosporae ovoïdeae, 22–30 X 14–20 µm, epispora tenuis (1 µm), hyalina laxe verrucosa. Telia uredosoris conforma, saepe circa dessicatam maculam circulariter disposita. Teliosporae in teliis celeriter germinantes, ovoïdeae, apice rotundatae, basi attenuatae, medio leniter constrictae, 26–43 X 13–21 µm ; epispora levis, tenuis (1 µm), hyalina ; pedicellus usque ad 30 µm, longus.

In foliis vivis nonnullarum specierum Pileae, Nepalia inter 1400 et 2000 m altitudine. (DURRIEU).

Typus in Pilea umbrosa TLA 77148, isotypus KTH.

Puccinia heraclei-nepalensis n. sp.

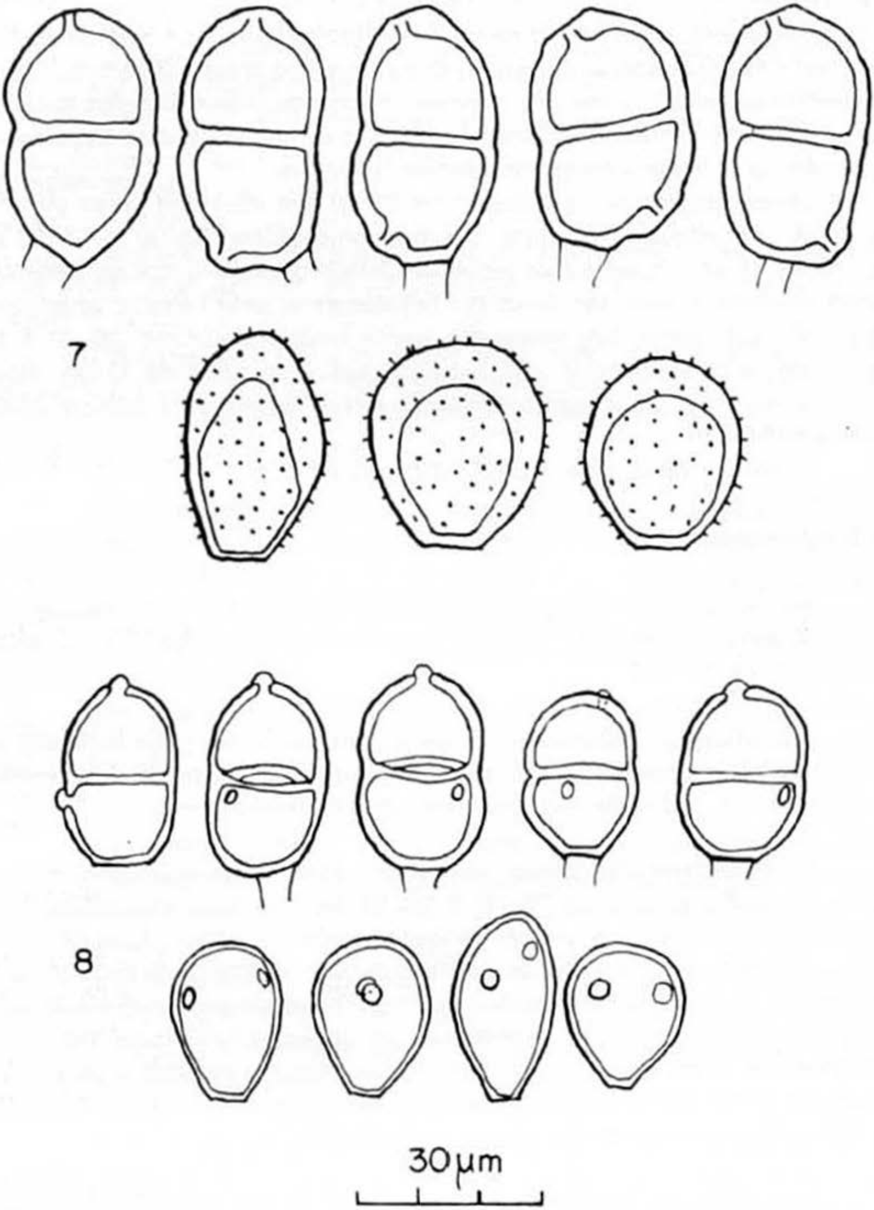
Sur *Heracleum nepalense* D. DON, vallée de Trisuli, entre Grang et Thare (district de Nawakot) 2000 m, 1 . 10 . 76 (Type). Entre Ulleri et Ghorepani (district de Parbat) 2100 m, 24 . 09 . 77 .

Les téliosores, dispersés sur les deux faces des feuilles, sont beaucoup plus abondants à la face supérieure. Ils sont petits : 0, 2–1 mm, nus, pulvérulents entourés par l'épiderme éclaté, leur couleur est brun très sombre, presque noire.

Quelques rares urédospores sont présentes mélées aux téliospores, elles sont sphériques ou ovoïdes et mesurent 28–36 X 26–30 µm. Leur paroi est couverte d'échinulations espacées de 3 à 4 µm, elle est fortement épaissie vers l'apex (jusqu'à 10 µm), et incolore comme le contenu. D'après les échantillons il est difficile de savoir s'il existe dans le cycle de ce champignon un stade urédo bien développé ou si les quelques spores observées et visiblement stériles ne représentent qu'un vestige de ce stade dans le cycle d'une microforme. Etant donné le grand nombre de téliosores de petite taille et dispersés, je penserai plutôt qu'ils résultent d'une multiplication passant par un stade urédo et que des observations plus précoces permettront de déceler.

Les téliospores (fig 7) sont de forme ellipsoide, très peu ou pas retrécies au niveau de la cloison transversale, arrondies aux deux extrémités. Elles mesurent 35–52 X 23–32 µm, le plus souvent 39–45 X 25–27 µm. L'épispore est lisse, sauf parfois autour des pores germinatifs où elle paraît très légèrement chagrinée. Elle est relativement épaisse : 2, 5–3 µm, un peu plus au niveau des pores : 4 µm. Le pore supérieur n'est pas toujours situé à l'apex, mais assez souvent déjeté latéralement, celui de la cellule inférieure est situé dans la moitié inférieure de cette cellule. Le pédicelle est très court, 5 µm environ.

Ce *Puccinia* ne correspond à aucune des espèces connues jusqu'à présent sur *Heracleum* : l'une d'entre elles a des téliospores à surface réticulée : *P. heraclei* GREV.



Figures 7–8 : Téliospores et urédospores de Puccinia heraclei-nepalensis (7), Puc. annapurnae (8).

forme à cycle complet, répandue en Europe et Asie. Dans la deuxième *P. heracleicola* CUM. (1943) du Cachemire les téliospores sont verruqueuses tandis que chez la troisième : *P. corteyi* RAN. endémique des Alpes du Dauphiné ces téliospores sont lisses, mais plus petites : 20–45 X 16–25 µm, de plus il s'agit d'une espèce microcyclique formant de gros sores atteignant 2 cm de diamètre.

Telia amphigena, sparsa, praecipue copiosissima in pagina superiore, parva : 0, 2–1 mm diametro, nuda, pulverulenta, epidermide rupta cincta, atra : Aliquot uredosporae teliosporis intermixtae ; sphaericae vel ovoïdeae, 28–36 X 26–30 µm ; epispora apice ad 10 µm incrassata echinulata, echinulae 3–4 µm intervallis dispositae. Teliosporae ellipsoideae, medio non vel vix constrictae, utrinque rotundatae, 35–52 saepius 39–45 µm longae, 23–32 saepius 25–27 µm diametro ; epispora levis, interdum circa poros subtiliter rugosa, 2, 5–3 µm crassa ad poros leniter incrassata (4 µm) , porus cellulae superioris apicalis aut lateralis, cellulae inferioris infero dimidio dispositus, pedicellus hyalinus deciduus.

In foliis vivis Heraclei nepalensis D. DON, in Emodi montibus Nepaliae centralis, typus TLA 76071 (DURRIEU)

Puccinia annapurnae n. sp.

Sur *Polygonum polystachyum* WALL., crête sud du Machapuchare (Massif des Annapurna), de 2900 à 3200 m, 24 . 10 . 76 .

Les urédosores sont dispersés sur les deux faces des feuilles, ils sont petits : leur diamètre est inférieur à 1 mm et de couleur brun canelle. Les Urédospores (fig 8) largement ellipsoides mesurent 20–27 X 18–21 µm, leur paroi mince : 1, 5 µm, percée de 2 pores germinatifs supraéquatoriaux est régulièrement échinulée : les épines sont distantes de 1 à 2 µm.

Les téliosores sont petits (inférieurs à 1 mm de diamètre) souvent très nombreux surtout à la face inférieure des feuilles, ils sont pulvérulents, brun assez foncé. Les Téliospores (fig 8) largement ellipsoides, arrondies aux deux extrémitées, légèrement rétrécies au milieu, mesurent 26 à 36 µm de long et 18 à 23 µm de diamètre, le plus souvent 28–32 X 19–22, leur paroi est mince, environ 1 µm, et lisse. Les pores germinatifs sont couverts d'une papille hyaline réduite (1 à 2 µm de haut), le pore de la cellule inférieure est toujours situé au contact de la cloison transversale. Le pédicelle est hyalin, en général entièrement caduc.

La forme de ces téliospores est voisine de celles de *P. nitidula* TRANZS, et de *P. sibirica* TRANZS. La première espèce se distingue par le pore de la cellule inférieure situé près de la base, la seconde par ses dimensions plus faible ; en moyenne 24 X 21 µm. Dans les deux cas les urédospores sont sphériques et possèdent 3–4 pores germinatifs équatoriaux, au lieu de deux supraéquatoriaux chez *P. annapurnae.*

Urédia amphigena, minuta, cinnamonea. Uredosporae late ellipsoideae, 20–27 X 18–21 µm, epispora tenuis : 1, 5 µm, echinulatis 2 poris supra equatoriis instructis.

Telia amphigena, pulverulenta, brunnea. Teliosporae late ellipsoideae, utrinque rotundatae, medio leniter constrictae, 26–36 X 18–23 µm saepius 28–32 X 19–22 µm, epispora levis, tenuis (1 µm) pori papilla minuta hyalina aucti, porus cellulae inferioris ad septum : pedicellus hyalinus deciduus.

In foliis vivis Polygoni polystachyi WALL, Nepalia, in cacumine australe montis Machapuchare (prope Annapurna) 2900–3200 m (DURRIEU)
Typus TLA 76453.

Je remercie tout particulièrement MM. F. BLASCO (Toulouse) J.F. DOBREMEZ (Grenoble) et P.R. SHAKYA (Kathmandu) qui m'ont fait profiter de leur compétance dans la détermination des hôtes ainsi que M. G. VIENNOT-BOURGIN (Paris) pour sa critique du manuscrit.

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WESTERN FUNGI: A NEW MEXICO PSATHYRELLA IN THE CYSTIDIOSAE OF SUBGENUS HOMOPHRON

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SUMMARY

Psathyrella aculeata, sp. nov., is described from the Jemez Mountains of New Mexico. Piloderma, cauloderma, and the transmogrification of Buller's term, pilocystidium, are commented upon.

In Smith's (1972) monumental summarization of his studies of the North American Psathyrellae, there are but eighteen taxa reported from the New Mexico/Arizona area of the southwest. This, is out of four hundred and fourteen species considered. The genus *Psathyrella*, as much as any, requires critical observations and notes on fresh-condition characteristics before specimens of a species are dried. Unfortunately, there have been few regular collectors of southwestern agarics who have provided critical notes on the Psathyrellae and other dark-spored mushrooms of that region. The second author of this article, however, has, and his notes on some of his excellently preserved collections make it possible now to report many previously unrecognized components of the New Mexico flora. The particular species described here is a *Psathyrella* found at high elevation in the Jemez Mountain Range some 45 kilometers west of Sante Fe.

MATERIALS AND TERMINOLOGY

Reagents employed for rehydration and hyphal analysis of dried material include a 2:1 chloral hydrate:water solution (CH), 3% KOH, and Melzer's reagent (MR). Slide mounts were moderately hot-plate heated (without boiling) for best revival. Spore width measurements are given in face view followed by profile or side view. Abbreviations, in addition to those for reagents, include $\bar{x}$ (mean or range of means), ± (more or less), L:W (ratio of spore length to face view width), w&c (wall and content), and nd (not distinctive). When nd, the wall is smooth, thin and colorless. Numbered color terms are from Kornerup & Wanscher (1967). Portions of the type collection are deposited in the University Herbarium (MICH) and the National Fungus Collections (BPI).

In describing microstructure, terms such as pilocystidia, caulocystidia, piloderma and cauloderma are used which have prefixes denoting location on the fruiting body. These four terms obviously refer to cystidia and surface layers of the pileus and stipe, and some have been used previously in studies on the genus *Coprinus* (Patrick, 1977). The latter two, piloderma and cauloderma, are derived directly from the former two which were instituted by Buller (1924). Buller coined locational or topographic terms for cystidia (including pleurocystidium and cheilocystidium) by combining Greek word elements. The unfortunate alteration of one of his original terms, pilocystidium, to "pileocystidium" is inappropriate and ought to be unacceptable to mycologists. Buller's term, as a compound word, is both orthographically correct (see Rec. 73G, Stafleu et al., 1978, and Nicolson & Brooks, 1974) and specifically definitive. One need only consider the common meaning for the Greek word *pilos*: a hat or cap. The prefix of Buller's compound was not qualitatively based upon the latin word *pilus* (a hair, for hair-like cystidia), and so there is no need to make the term locationally specific by changing the prefix to "pileo" (an incorrect compounding form anyway). Pilocystidium, spelled correctly and as a term, then, has literally and simply just the meaning Buller intended, a cystidium located on the cap.

DIAGNOSIS AND DESCRIPTION

Psathyrella aculeata Patrick & Barrows, sp. nov.

Discrepans a taxis affinibus ad zona transitionis inter sectionibus *Homophron* et *Pannucia* (*P. solitaria*, *P. stuntzii*, *P. carbonicola*) combinatione (inter alios characteres) habitus cespitosi, habitationis montani, substrati ecarbonacei, staturae parvae, coloris pallentis, veli exiqui, lamellarum latorum aliquantulo decurrentium, stipitis bulbosi, sporarum cylindricorum parvorum, cystidiorum hymeniorum partiete crasso pigmentifero incrustato, et caulocystidiorum interdum ramosorum collis longis flexuosis; holotypo (C. Barrows 1978-3) in herbario Universitatis Michiganis asservato.

Basidiocarps moderately small, cespitose to closely gregarious on soil, in montane habitat (ca. 2700 m) with *Pinus ponderosa* and *Pseudotsuga taxifolia*, July.

Pileus ca. 1.5-3.5 cm across, becoming broadly convex, warm buff with thin delicately fibrillose velar covering, the white veil evanescent except for slight remnants on margin; surface smooth and not otherwise distinctive.

Lamellae moderately broad, broadly adnate (often with slight decurrent tooth), close, grayish buff before becoming darker brown (in sicco dark purple-brown); edges entire, silvery with cystidia.

Stipe short but rather robust (at least in larger specimens), bulbous, ca. 1.5-4 cm by 2-7 mm, ± equal above base, hollow; surface minutely pruinose at apex, otherwise floccose-fibrillose to slightly scaly except on base where heavily white-mycelioid tomentose, lacking an annular zone (unless evanescent), almost white; rhizomorphs present as fine white threads, inconspicuous in soil balling around base.

Odor none. *Taste* mild.

Spores 7-9 × 3.7-4.2 × 3.7-4(4.2) µm ($\bar{x}$ 7.6-7.9 × 4.0 × 4.0), L:W 1.75-2.06 ($\bar{x}$ 1.94-1.95), in face view (fig. 1) subcylindric with rounded apex and base, in profile inequilaterally subcylindric to slightly allantoid, terete; germ pore apical but obscure (less than 0.5 µm diam); basal appendix minute but distinct, strongly adaxial; wall smooth, moderately thick (ca. 0.7 µm), transluscent and chocolate brown in KOH (near 6F5, Teak), not appreciably darkening (in CH dark brown with reddish cast, in MR dark red-brown); content multiguttulate or with 1-2 huge refractive globules.

Basidia tetrasporous, 15-18 × 7-8 µm, broadly subclavate (fig. 4), with short curved-acicular sterigmata (2-2.5 µm); w&c nd. *Basidioles* nd. *Lamella Trama* of subparallel, mostly inflated hyphae with moderate to frequent branching, in mass light brownish vinaceous (CH); cells narrowly cylindric to broadly elliptic, 3-30 µm diam; wall smooth, thin, ± colorless; content nd.

Pleurocystidia gregarious (most densely abundant toward margin), 30-46 × 9-13 µm, fusoid-ventricose to subfusoid (fig. 2), but broadest below and in most with long neck acutely tapering to sharp apex, infrequently furcate above; wall appearing weakly to moderately thickened in KOH, 0.5-1(1.5) µm, conspicuously pigmented brownish ochraceous except at and near apex where decidedly thinner and ± colorless, with surface often slightly incrusted by amorphous material (in CH with vinaceous brownish wall color, in MR golden ochraceous); content nd in all reagents. *Cheilocystidia* profusely abundant (margin ± sterile), dimorphic: 1) subfusoid-ventricose with long, straight or flexuous neck and an acute apex, 26-38 × 7-10(12) µm, the wall colorless to often thickened and pigmented as in pleurocystidia, with neck and apex often slightly ornamented with crystalline incrustment (KOH); 2) shorter, less numerous and mostly spheropedicellate, 12-21 × 5-12 µm, with wall occasionally becoming slightly thickened and brownish ochraceous overall; content nd in both forms.

Pilocystidia absent. *Piloderma* a well differentiated epithelium of approximately two cell layers depth, the lower of generally larger and more radially elongate elements; cells globose to broadly elliptic, usually large, 17-55 × 14-40 µm; wall smooth to slightly incrusted, colorless to brownish ochraceous (though distinctly less ornamented and pigmented than the subtending trama hyphae); content nd. *Pileus Trama* of ± radially oriented, narrow to moderately broad filaments with frequent branching, in mass reddish brown (KOH); cells cylindric to elongate elliptic, 3-20 µm diam; wall usually somewhat thickened and slightly to heavily incrusted with ochraceous brown material; content nd.

Caulocystidia present only at and near apex where abundant in great cespitose clusters, versiform but primarily subfusoid-ventricose (fig. 3), with long ± flexuous neck and acute apex (ca. 34-60 × 8-18 µm), also with

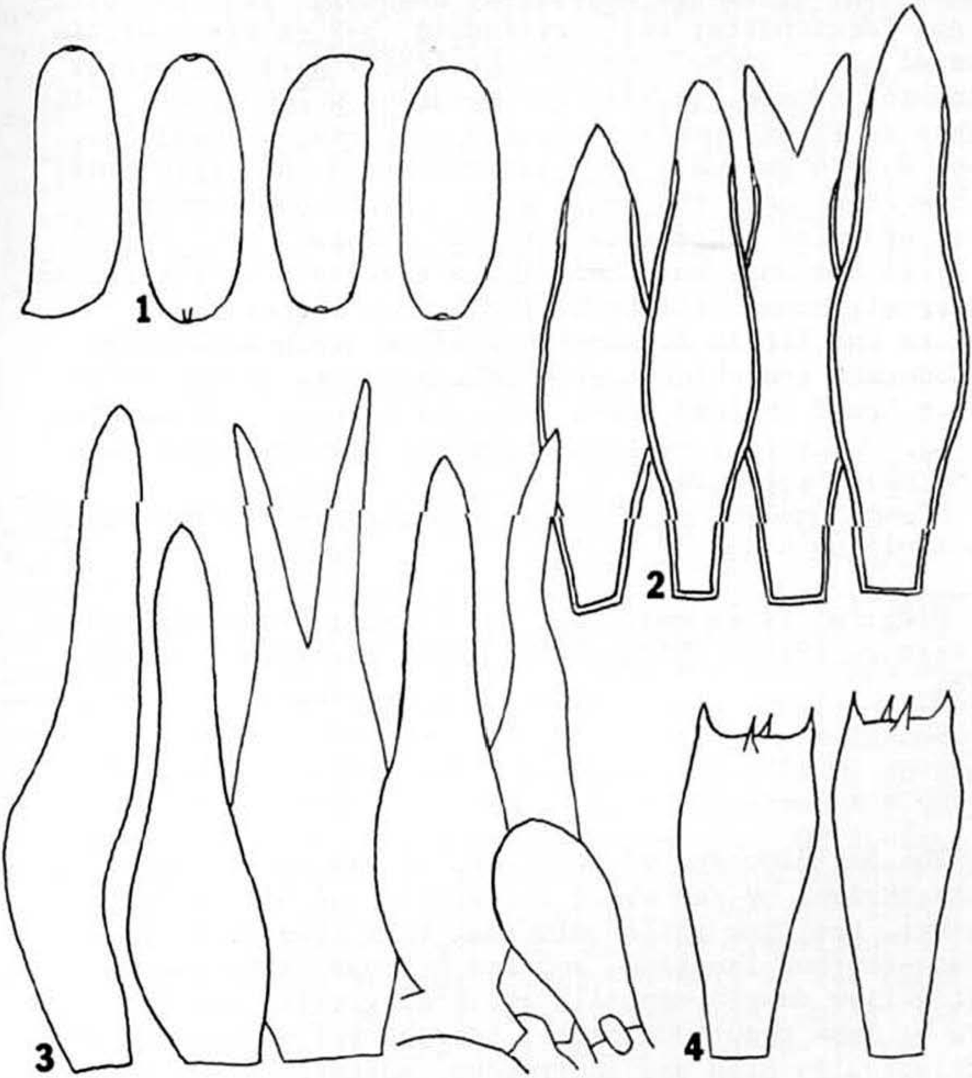

Fig. 1-4. Line drawings of microscopic structures. 1. Spores (×3500). 2. Pleurocystidia (×1600). 3. Caulocystidia (×1600). 4. Basidia (×2000).

smaller, ovoid to broadly clavate cells (ca. 12-18 × 8-13 µm); w&c nd. *Cauloderma* at mid-stipe level of narrow, infrequently branching hyphae, ± fasciculate or strand-forming (though loosely so), with fascicles or strands moderately interwoven among themselves; cells cylindric, 4-10 µm diam; wall nd except for inconsistent ornamentation by coarse, dingy yellowish, oxalatoid crystals; content nd. At stipe base, cauloderma a thick tomentum of loosely but intricately interwoven, fine, ± flexuous hyphae, the filaments moderately branching and essentially non-fasciculate; cells cylindric, 3-5 µm diam; w&c in general nd. *Stipe Trama* of vertically parallel rarely branching hyphae, in mass vinaceous brownish (KOH); cells rather short and mostly inflated (± barrel-shaped), ca. 28-60 × 4-26 µm; wall slightly thickened and often ornamented at or near the septa with conspicuously refractive, brownish ochraceous material; content nd.

Veil Remnants on pileus (pilocalyptra[1]) of interwoven moderately broad filaments, the hyphae rather close-septate and little to non-fasciculate, with occasional to moderate branching; cells cylindric, short and relatively broad to less often long and narrow, 3-13 µm diam; w&c nd. On stipe, caulocalyptra not distinquished (see stipe base cauloderma).

Clamp Connections abundant and conspicuous throughout the fruiting body.

Material examined. USA: New Mexico: Sandoval County: C. Barrows 1978-3 (MICH, BPI), Jemez Mountains, 13-vii-1978.

OBSERVATIONS

The basidiocarps of this species are macroscopically characterized by the short but sturdy and non-delicate stature, the fine white universal veil, the broadly adnate-toothed lamellae, and the bulbous stipe base. Distinctive developmentally and ecologically are the more or less cespitose habit, terrestrial substrate, and altitudinally high and coniferous habitat. Also, the

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[1] Etym: καλυπτρα (veil) on πιλοσ (cap).

light-colored pileus is noteworthy. Warm buff is not the yellowish colored "warm buff" of Ridgway (1912), but rather, according to the second author, "the buff of the artist obtained by tinting white with a bit of brown, producing a neutral color which, however, if it has a little more red in it, an artist would call 'warm'." The pileus in the fully dried herbarium specimens, however, is much darker brown (± between 5E6, Mustard Brown, and 6E7, Cognac).

Microscopically, the spore shape and obscurity of the germ pore is distinctive, as are the shapes, dimensions, wall thickening, ornamentation and pigmentation of certain of the cystidia. The incrustation of the pileus hyphae is also important, as is the coloration of the whole trama system when revived in standard chloral hydrate or potassium hydroxide. Structurally, the veil material may also be of taxonomic significance when veil structure has been characterized more widely in *Psathyrella*.

TAXONOMY

In the modern infrageneric classification for *Psathyrella, P. aculeata* is properly placed in Smith's (1972) section *Cystidiosae* of subgenus *Homophron*. However, as Smith (l.c.) has pointed out, the demarcation between certain taxa in the *Homophron* and certain within subgenus *Pannucia* is fine. *Pannucia* species in general are more heavily velate and have thinner-walled and unornamented cystidia. The position of *P. aculeata* is clearly at this *Homophron/Pannucia* boundary, and it could be considered about as closely related to *P. carbonicola* A.H.Sm. in the *Pannucia* (stirps *Minutisperma*) as to *P. stuntzii* A.H.Sm., or other *Cystidiosae*, in subgenus *Homophron*. Of course, *P. carbonicola* {a species incorrectly synonomized with the Friesian *P. pennata* (Dennis et al., 1960; see Smith, l.c. p. 224)} differs from *P. aculeata* by its differently shaped and slightly smaller spores, as well as its usually colorless and scarcely thickened cystidial walls, narrow and simply adnate lamellae, and non-bulbous stipe. *Psathyrella carbonicola* also has consistently been found on a carbonaceous substrate.

In subgenus *Homophron, P. solitaria* A.H.Sm. has pigmented and similarly thickened hymenial cystidia. However, that species differs from *P. aculeata* in habit, habitat, basidiocarp size, stature and color, and spore width and shape in face view. *Psathyrella stuntzii* seems closely related by habitat and by the fact that its pleurocystidia (except for their flexuousness) are very similar. However, its spores differ from those of *P. aculeata* both in the submitriform-ovate shape and in their larger size. And, the caulocystidia of *P. stuntzii* are not at all like those of *P. aculeata*.

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TYPE STUDIES IN THE GENUS PEZIZA. VIII - X. SPECIES DESCRIBED BY G. MASSEE, E. K. CASH, AND F. J. SEAVER.

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With the completion of number X of this series most type collections of North American material have been studied. Exceptions are those collections described by Phillips and Harkness from California, the Schweinitz collections and a few others.

Since methods used to study dried *Peziza* material have not been previously discussed, I have outlined below my general procedures.

Material was rehydrated in water or commercial ammonia solution and sectioned either by hand or using a freezing microtome. Some material was sectioned freehand before rehydration. Sections were mounted in water, or were stained in 0.2% cotton blue in lactic acid, in Melzer's reagent, or in 0.5-1% Congo Red in ammonia. The last solution proved to be the most useful in the study of apothecial anatomy. A major difficulty in studying *Peziza* species has been that, because of the large numbers of inflated globose cells in the excipulum, the excipular cells collapse and cannot be adequately studied. The ammonia solution inflates the cells well; the stain penetrates evenly and rarely overstains. But, even with this method, not all material rehydrates sufficiently to allow detailed study. The condition under which drying takes place is most critical. Rapid but gentle drying produces the best results.

For the present study material was lent by the following institutions which I wish to thank: The New York Botanical Gardens, The National Fungus Collection, and the Cornell University Plant Pathology Herbarium. Drs. R. P. Korf and H. J. Larsen, Jr. read the manuscript and helped to improve it.

VIII. Species described by G. Massee.

Peziza martialis Massee, Bull. misc. Inf. Kew. p. 175. 1899.
On the ground, Selangor, Straits Settlement, col. Ridley. NY.

The NY specimen, which agrees with that described by Massee, is a small species of *Phillipsia*. The ascospores are bilaterally asymetrical, biguttulate, and are very finely marked with longitudinal ridges. The species seems closest to *Phillipsia minor* (Wakef.) Rifai.

Peziza morgani Massee *in* Morgan, J. Mycol. *8*: 190. 1902.
= *Jafnea fusicarpa* (Gerard) Korf fide Korf, Nagaoa *7*: 5. 1960.

Peziza nana Massee *in* Morgan, J. Mycol. *8*: 190. 1902.
On the ground, Preston, Ohio. U.S.A., col. A. P. Morgan, no. 30. NY.

This is a small species which reaches a diameter of only 6 mm. The packet in NY contains only minute fragments of the fungus which do not allow study of anatomical features.

There is no indication of apothecial color either in the original description or on the packet and accompanying drawing. The asci are J+. The ascospores are ornamented with isolated warts and short crests, are 18 - 20 x 9 - 10 µm, and are generally biguttulate, the guttules being unequal in size. Because the apothecial anatomy is unknown and color information is lacking, it is difficult to, at present, place the species. The spore ornamentation is somewhat reminiscent of *Peziza saccardoiana* Cooke.

Peziza plicata Massee et Rodw., Bull. misc. Inf. Kew. p. 158. 1901.
On partly buried branches, Rodway, 663. Tasmania. NY.

Rifai (1968) studied the material at Kew and suggested that this species should be referred to either *Hymenoscyphus* or *Discinella*. Study of the NY specimen confirms that this fungus is an inoperculate discomycete.

Barlaea subaurantiaca Massee, J. Bot. London *34*: 147. 1896.
≡ *Peziza subaurantiaca* (Massee) Rifai, Verh. K. ned. Akad. Wet., II, *57*(3): 248. 1968.
On the ground, Hamilton, Victoria, Australia. NY.

Peziza tomentosa Massee, Bull. misc. Inf. Kew. p. 175. 1899, non *P. tomentosa* Schum. ex Fr. 1822 nec. *P. tomentosa* Schw., 1832.
≡ *Lachnea tomentosa* Massee ex Sacc. & Syd., Syll. fung. *16*: 719. 1902.
On the ground, Selangor, Ridley, no. 70. NY.

This is a small species of the genus *Phillipsia*. The type material at NY is composed of a single apothecium 1 cm in diam with a short eccentric stalk. When rehydrated, the apothecium is leathery. None of the ascospores seen were mature. It is unlikely that a proper identification in *Phillipsia* will be possible with this material.

IX. Species described by E. K. Cash.

Peziza alaskana Cash, J. Washington Acad. Sci. *44*: 44. 1954.
Crocker Sta. 1, Mendenhall Glacier area, Alaska, col. R. Sprague, July 11, 1952. BPI (holotype).

This species, like *Peziza retispora* Rifai, is closely related to *P. badia*. All are dark brown, black, or purplish, are on soil, and have completely or incompletely reticulate ascospores. They differ in their ascospore and ascus size and degree of ascospore ornamentation. In this species the ascospores are 22 - 24 x 9 - 10 µm and have a nearly complete reticulum. The asci are 275 - 300 x 15 - 18 µm. The ascospores are larger than in *P. badia* Pers. ex Mérat and have a complete reticulum. The asci of the two are within the same range. The ascospores are also larger than in *P. retispora* but the asci are shorter. *Peziza alaskana* has a large-celled subhymenial layer as in *P. retispora*. Cash's original description is quite complete though her comparison of the species to *P. brunneo-atra* Desm. seems misconceived.

Aleurina stipitata Cash, Stud. Nat. Hist. Iowa Univ. *17*: 219. 1937, non *Aleurina stipitata* Rodway, Pap. Roy. Soc. Tasmania p. 117. 1924.
On soil with mosses, Prov. Chiriquí, Valley of upper Rio Chiriquí Viegio (alt. 1600 - 1800 m.), June 29, 1935. col. G. W. Martin (2130). FH (isotype).

This true *Peziza* is closely related to *P. atrovinosa* Cooke and *P. retiderma* Cooke.

The apothecia are up to 1.5 cm in diam, and when dried are black or brownish. They have a very short stalk. The asci are J+ at the tip and on the lateral walls; there is no apical ring which becomes blue. Ascospores are 9.5 - 11 x 6 - 7 µm and are marked with dark warts and short ridges. The markings are up to 2 µm high, are more or less distinct, and rarely anastomoze. The ornamentation of the spores is most like *P. retiderma* as illustrated by Rifai (1968) and Le Gal (1953). Since I have not examined the holotype of *P. retiderma* it seems imprudent at this time to propose a valid, legitimate name for this, the illegitimate *Aleurina stipitata*.

Peziza thaxteri Cash, Sydowia, Beih. *1*: 291. 1957.
≡ *Nothojafnea thaxteri* (Cash) Gamundi, Boln Soc. Argent. Bot. *13*: 279. 1971.
On moist bank in woods. Concepción, Chile, R. Thaxter. Nov. 1905. BPI (holotype), FH (isotype).

Gamundi restudied the type when proposing the combination in *Nothojafnea*. She mentioned several other collections from South America. She concluded that *N. thaxteri* was very similar to *N. cryptotricha*, an opinion which I share based on my study of the type material.

X. Species described by F. J. Seaver.

Aleurina aquehongensis Seaver, Mycologia *6*: 278. 1914.
On ground in a damp place. Oakwood Heights, Staten Island, New York. Sept. 5, 1914, col. N. L. Britton and F. J. Seaver. NY (holotype).

This fungus was described as reaching a diam of 10 mm, as being colored entirely brownish-black with a slightly olive tinted hymenium. It was said to have an irregular stem-like base. Ascospores are 15 - 16 x 7 - 8 µm long, hyaline, and then pale smoky-brown, are ornamented with thin ridges which interconnect to form an incomplete reticulum. They are sometimes slightly apiculate. The ascospores are larger in size but are like ascospores of *P. ostracoderma* Korf in their ornamentation. Asci are J+. In section the flesh is brown due to pigmentation of the walls of the hyphae. The outer surface of the apothecium is pustulate, the pustules being composed of interwoven hyphae.

The type collection consists of five apothecia all of which are smaller than reported by Seaver in the original description of the taxon. To date, the species is known only from the type locality though one collection from Massachusetts (On moist gravelly bank at edge of spring, Canton, Mass., col. D. H. Linder, Aug. 1932, FH) is very similar. These are both very close to *P. badia* in all features except their smaller ascospores. Since there seems to be a complex of species involved, no recombination in *Peziza* is offered here.

Peziza concentrica Seaver, North American Cup-fungi (operculates). p. 228. 1928.
On the ground, Humbolt Co., Carlotta, California, col. Mrs. H. E. Wilder, Jan. 22, 1914. NY (holotype).

Asci are J+. Ascospores range from 18 - 20 x 9.5 - 10.5 µm. The species was said by Seaver to have concentric rings of elevations and depressions on the inside and outside of the disc. These are evident in the dried material in which the apothecia are pale brown inside and out. I have not seen other collections with this feature. It is somewhat similar to *P. vesiculosa* but is on soil. It is tentatively accepted in the genus *Peziza* with hesitation.

Peziza melaleucoides Seaver, North American Cup-fungi (operculates). p. 225. 1928.
On ground in conifer forest, col. L. O. Overholts. Tolland, Colorado. Alt. 9000 ft., June 19, 1914. (Holotype).

This name has apparently been used in several senses. Collectors of

Discomycetes in the western states have used this name for a true *Peziza* with amyloid asci. But the type material has J- asci. A new genus to accommodate this species will be described elsewhere. The J- asci, small ornamented, biguttulate ascospores, and distinctive apothecial anatomy distinguish it from *Peziza* and from other operculate Discomycetes. There is some justification for the confusion involving this species since one of the collections Seaver identified, as *P. melaleucoides*, is an immature *Peziza*.

In the original description Seaver stated that the species was collected in June 1914. In NY there are two identical collections made in June, one on the 14th and one on the 21st. The first of these was marked type by Seaver and is the collection listed above.

Peziza pseudoclypeata Seaver, The North American Cup-fungi (operculates), Suppl. p. 332. 1942.
= *Pachyella adnata* (Berk. & Curt.) Pfist. fide Pfister, Canad. J. Bot. *51*: 2009. 1973.

Peziza waltersii Seaver, The North American Cup-fungi (operculates), Suppl. p. 332. 1942.
On much rotted wood of sugar maple and beech in beech-maple-hemlock forest, Cleveland, Ohio. Early June. Maurice B. Walters. NY (holotype). CUP (authentic).

This is a true *Peziza*. The asci are J+; the blueing reaction involved the entire ascus wall, and is faint in the type collection. The original description and fieldnotes state that the species is yellow when fresh. Yellow hymenia are seldom reported in species of *Peziza*. Boudier described several but all of these were said to have smooth ascospores. In *P. waltersii* the spores are marked with prominent isolated warts and ridges.

This species should be sought. Other than the collections made by Walters in Ohio there are only two collections from Michigan (R. P. Korf 1252, 1263) which I have seen.

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NOTES ON CORTICIACEAE (BASIDIOMYCETES) IV.

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SUMMARY

Subulicium nov.gen. is described with Peniophora lauta as type and characterized by acute, smooth, and lateral cystidia and with simple septate hyphae. The combination Scopuloides (Mass.) Hjortst.& Ryv. is proposed and the genus is characterized by a dense hymenium, encrusted thick-walled cystidia and simple septate hyphae. Xenasmatella decipiens nov.spec. is described, based on collections from Spain and Poland. The following combinations are proposed: Hyphoderma involutum, Phlebia longicystidia, Scopuloides hydnoides, Subulicium lautum, Subulicystidium rallum, and Xenasmatella inopinata.

HYPHODERMA INVOLUTUM (Jacks. & Deard.) Hjortst. & Ryv. nov. comb.
Basionym: Peniophora involuta Jacks. & Deard. Mycologia 43:54-55, 1951.

Fruitbody resupinate, effuse, thin and whitish, under a lens having projecting cystidia bearing brownish agglomeration of resinous matter, dissolved in KHO and Melzer;

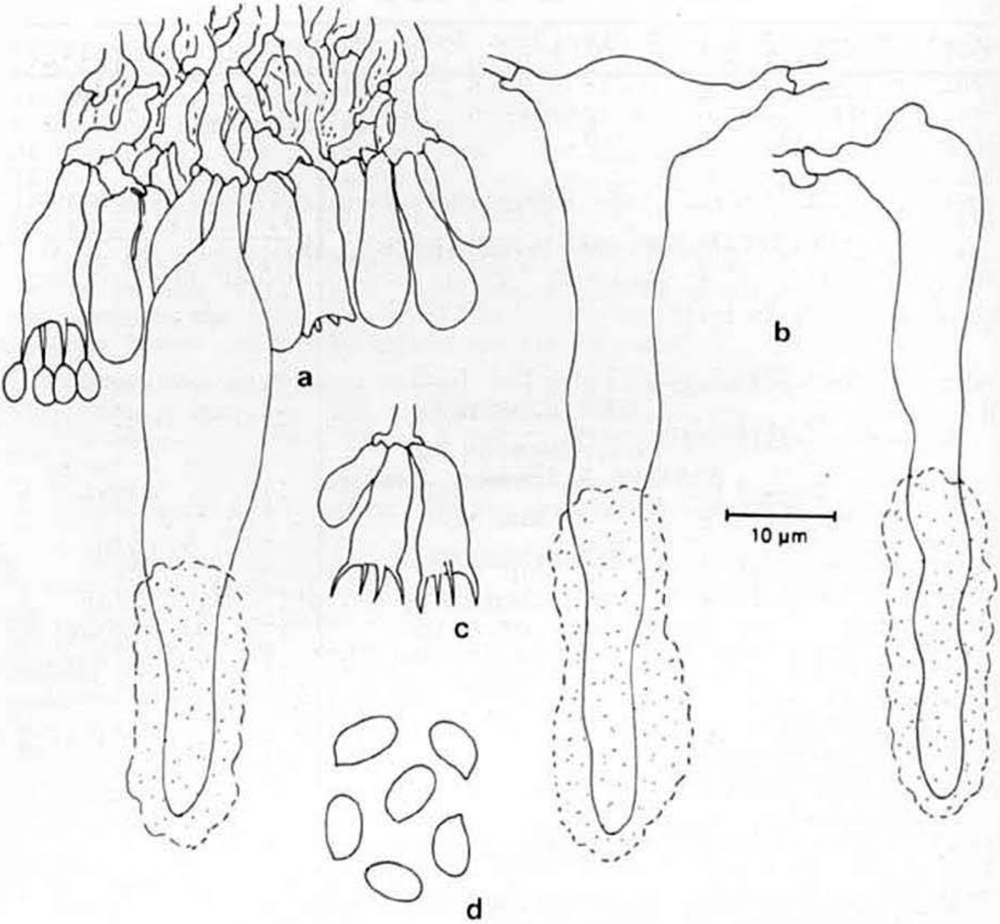

Fig. 1. Hyphoderma involutum a) part of the hymenium with cystidium partly covered with resinous matter b) cystidia c) basidia d) spores. Coll. Ryvarden 17325.

margin not differentiated. Hyphal system monomitic with hyphae somewhat indistinct,thin-walled and ab. 2.5 um wide, with clamps. Cystidia tubular, normally widened in the lower part, in some cases lateral, 60-70 um long and 10-12 um broad at the base. Basidia clavate, slightly constricted, 10-15 (-18-20) x 4-5 um, with four sterigmata. Spores ellipsoid, thin-walled, mostly 4.5-6 x 3-4 um, non-amyloid.

Habitat: Collected on Picea abies.

Specimens examined: U.S.A. Wyoming, South Brush Creek camp ground, Medicine Bow Nat. Forest, on rotting coniferous wood, July 25, 1942. S. M. Pady. Type. (TRTC).
Finland. Kuusamo, Sukkapuro, Oulaukajoki, on Picea abies. 1978-09-24.

Inger Johansen & Leif Ryvarden. Ryv. 17325. (O). Sweden. Västergötland. V. Tunhem par., Halleberg, Ovandalen, on Picea abies. 1978-09-02.K.H.Larsson.KHL 2051. Flo par., Hunneberg, Jonstorpsmossen, on Picea abies. 1978-10-15. K.H.Larsson. KHL 2497.

Remarks. Hyphoderma seems to be the most appropriate genus for this species and it may be related to H. argillaceum (Bres.) Donk. This species has larger spores and cystidia and generally also capitate hyphal ends between the basidia. Such hyphal ands are not seen in H. involutum.

PHLEBIA LONGICYSTIDIA (Litsch.) Hjortst. & Ryv. nov.comb.

Basionym: Peniophora longicystidia Litsch. Österr.Bot. Zeitsch. 77/2:131-132, 1928.

Fruitbody resupinate, effuse, adnate, when living somewhat gelatinous,when dried membranaceous to cartilaginous, hairy by projecting cystidia, in colour greyish; margin similar or slightly paler than the fertile part. Hyphal system monomitic with subicular hyphae distinctly differentiated, thick-walled and irregular, subhymenial hyphae thin-walled or slightly thickened, all hyphae about 4 um in diam., and with clamps. Cystidia cylindrical, with thickened walls, terminal and usually 90-120 x 8-9 um, sometimes up to 200 um or more and 10-12 um wide, non-amyloid, without sulfovanilline reaction. Basidia normally more than 20 um long, more or less clavate with tapering base, 4-sterigmated. Spores ellipsoid, slightly thick-walled, 7-8 x 4-5 um, variable in size, non-amyloid.

Habitat. Collections from Finland and Norway on decorticated or lumbered, coniferous wood.

Specimens examined. Austria. In monte Troppberg prope Purkersdorf, Austria inferioris, on coniferous wood. 1925-08-12. Keissler & Litschauer 223. Type (S).
Finland. Karelia, Miehikkälä, Muhikko, on lumber. 1976-08-11. Lars Fagerström, s.n. (GB, HSI).
Norway. Hedmark. Våler, Sortåa, coniferous wood. 1978-08-19. Högholen 704/78; Löten, Ö Rokoskogen, coniferous wood. 1978-09-07. Högholen 874/78 (both collections O).

Remarks. The only difference between the type and the three Scandinavian specimens seems to be that the type specimen shows thick-walled "cystidioles" (see also Weresub p. 1490, 1961) which are septate and somewhat amyloid. As the type presumably represents a somewhat undeveloped specimen, we do not believe that this difference is of taxonomical importance.

Phlebia, used in a wide sense, is no doubt heterogenous. We are at present, however, not able to find any better solution for its generic position.

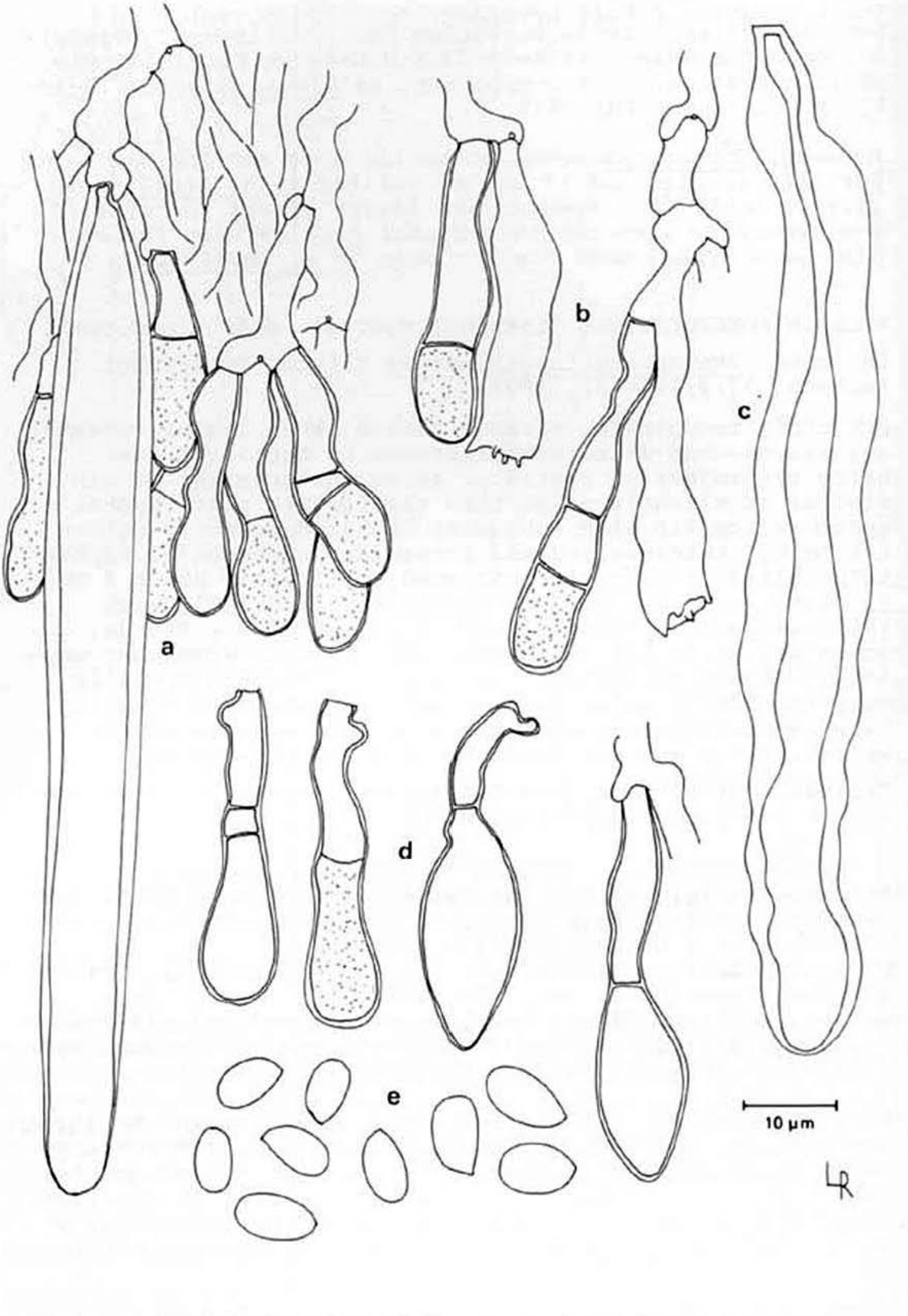

Fig. 2. Phlebia longicystidia a) part of hymenium with cystidium and "cystidiols" with thickened walls b) basidia and "cystidioles" c) cystidium d) "cystidioles" e) spores. From the type.

SCOPULOIDES (Massee) Hjortst. & Ryv. nov.comb.

Basionym: Peniophora subgen. Scopuloides Massee, Journ. Linn. Soc. 25: 154, 1890.

Typus generis: Peniophora hydnoides Cooke & Massee.

Höhnel and Litschauer (1908) used the name Scopuloides, but only provisionally:"Vertreter der Gattungen Aldrigea, Scopuloides (Massee als Sektion von Peniophora) and Hypochnella haben wir nicht gesehen und daher diese drei Gattungen nur provisorisch in die Tabelle aufgenommen". Thus, according to article 34 in the Botanical Code, the name is not validly published. As a generic name for Peniophora hydnoides is needed, it is herewith validated. The genus Scopuloides with the type species Peniophora hydnoides is delimited by its dense hymenium (reminding of Phlebia sensu lato) and thick-walled, strongly encrusted cystidia (metuloids). Besides, clamped hyphae are not found in this species. Metuloids occur in many other genera, and cannot therefore be used for generic separation. The same is true as to the lack of clamps. More important is the structure of the hymenium. This is in Scopuloides not composed of separable basidial bundles. The basidia are instead formed from a dense pseudoparenchymatic layer next to the basidial palisade.
A genus to consider in this discussion is Metulodontia Parm., typified by M.nivea (Karst.) Parm. This species has a quite firm fruitbody and encrusted cystidia, but has also small gloeocystidia with sulfovanilline reaction. We are of the opinion that this latter characteristic is rather important and prefer to keep Metulodontia as a monotypic genus for the time being even if Parmasto (1968) included some other species e.g. M.cremeo-alutacea Parm., M. queletii (Bourd. & Galz.) Parm., and M. roumegueri (Bres.) Parm.
Concerning further discussion about Metulodontia see Eriksson & Ryvarden (Vol. 4, p. 870, 1974).

SCOPULOIDES HYDNOIDES (Cooke & Massee in Cooke) Hjortst. & Ryv. nov.comb.

Basionym: Peniophora hydnoides Cooke & Massee in Cooke, Grevillea 16: 77, 1888.

Well-characterized species with a smooth to slightly hydnoid fruitbody, as young more or less pilose by projecting cystidia. Hyphal system monomitic with basal hyphae easily observed, thin-walled, without clamps, 3-4 um wide, subhymenial hyphae indistinct and forming a dense layer. Cystidia numerous, conical, thick-walled and strongly encrusted, sometimes lateral, especially in young fruitbodies, about 50-70 um long and 10 um broad at the base. In most specimens also obtuse, projecting hyphal ends as a rule septate, and strongly encrusted. Basidia small, about 8-12 x 3-5 um,

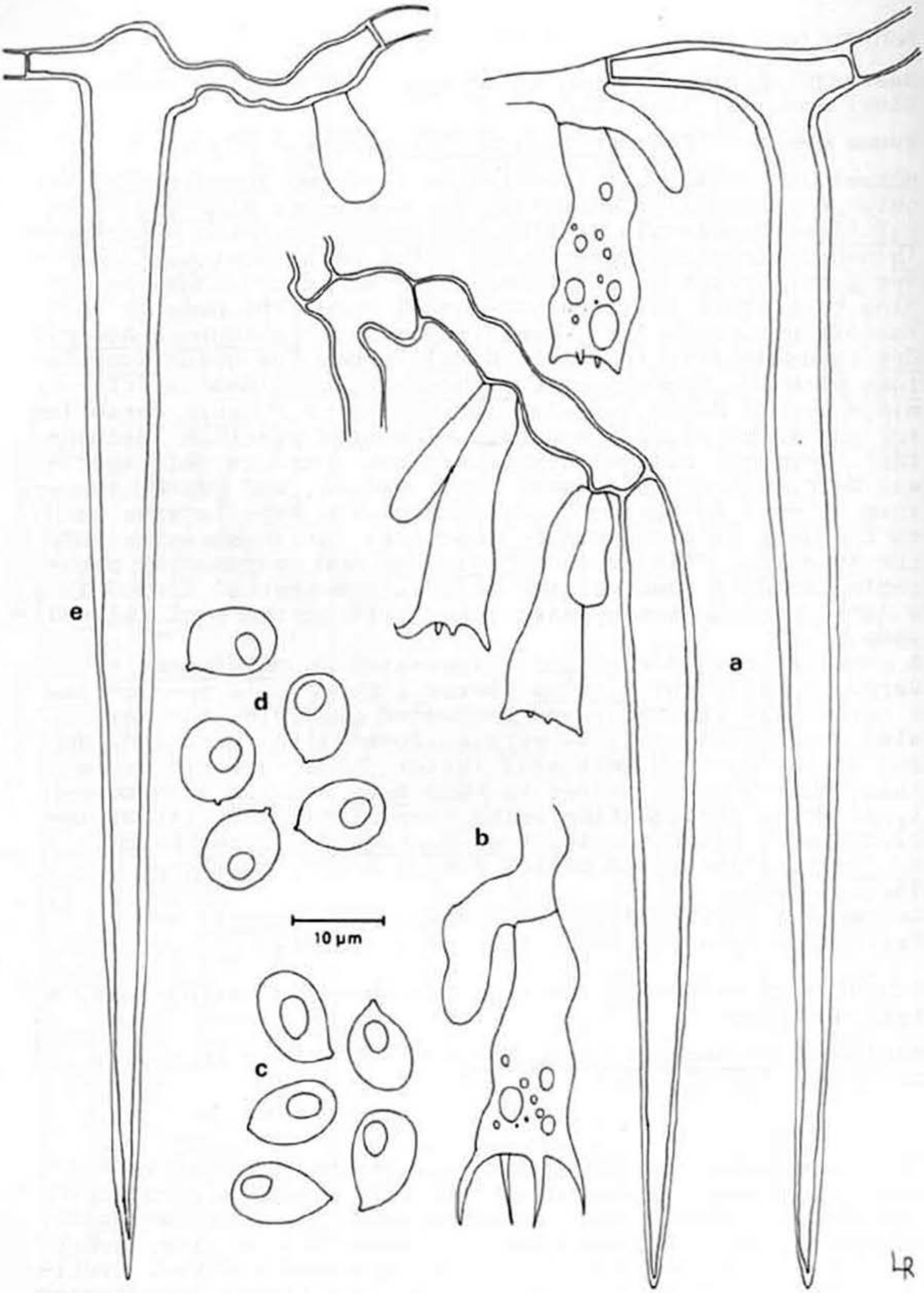

Fig. 3. <u>Subulicium lautum</u> a) cystidia b) basidium c-d) spores e) cystidium. - a-c from the type, d-e from Jackson 21120.

with four sterigmata. Spores generally suballantoid to short cylindrical, smooth and thin-walled, 4.5-5 x 2-2.5 um, non-amyloid.

Habitat. Usually on deciduous trees, rarely on coniferous wood. Both on corticated as well as on decorticated wood.

Distribution. In S. Scandinavia a very common species at least in favourable localities. According to Strid (1975) the species is commonly distributed in the northern inland, less common in coastal localities.

Living specimen examined. Norway, Akershus, Nannestad, N of Gardermoen, on deciduous wood. 1978-09-27. Hermansen & Hjortstam. Hjm 10149.

Remarks. Easily recognized species thanks to its dense hymenial layer, strongly encrusted cystidia, and small suballantoid spores.

SUBULICIUM Hjortst. & Ryv. nov. gen.

Fructificatio resupinata, effusa, adnata, aliquentum inconspicua, tenui, colore pro parte maxima albido; hymenio piloso; cystidiis projectis; margine indeterminato; systemate hyphali monomitico, hyphis distinctis, tenuitunicatis, hyalinis, passim vel numquam incrustatis, non fibulatis; cystidiis lateralis, bi-radicatis, projectis, plus minusve laevibus, crassitunicatis, non-amyloideis, interdum gloeocystidiis vel basidioliis praesentibus; basidiis clavatis vel subcylindraceis, leviter constrictis; sporis tenuitunicatis vel crassiusculis, non-amyloideis, infirme cyanophilis.

Typus generis: Peniophora lauta Jacks.

Fruitbody resupinate, effuse, adnate, usually thin, in colour whitish, hymenium pilose by projecting cystidia. Hyphal system monomitic, hyphae distinct and with thin to thickened walls, sometimes encrusted without clamps. Cystidia lateral, smooth or with encrustations, the wall rather thick, non-amyloid. Gloeocystidia or basidioles with negative reaction to sulfovanilline sometimes present. Basidia clavate or subcylindric, more or less constricted, with four sterigmata. Spores with thin to slightly thickened walls, non-amyloid, not or slightly cyanophilous.

Remarks. Subulicium is a new genus intended for species with thick-walled, non-amyloid, lateral cystidia. The hyphae are clampless and spores generally globose to subglobose or ellipsoid, with thin to somewhat thickened walls. The genus is close to Subulicystidium and the main difference is the lateral cystidia. S. lautum may remind also of Hyphoderma but in this genus the spores are characteristically oil-filled and the basidia are more or less suburniform. Even if in Hyphoderma there are species without

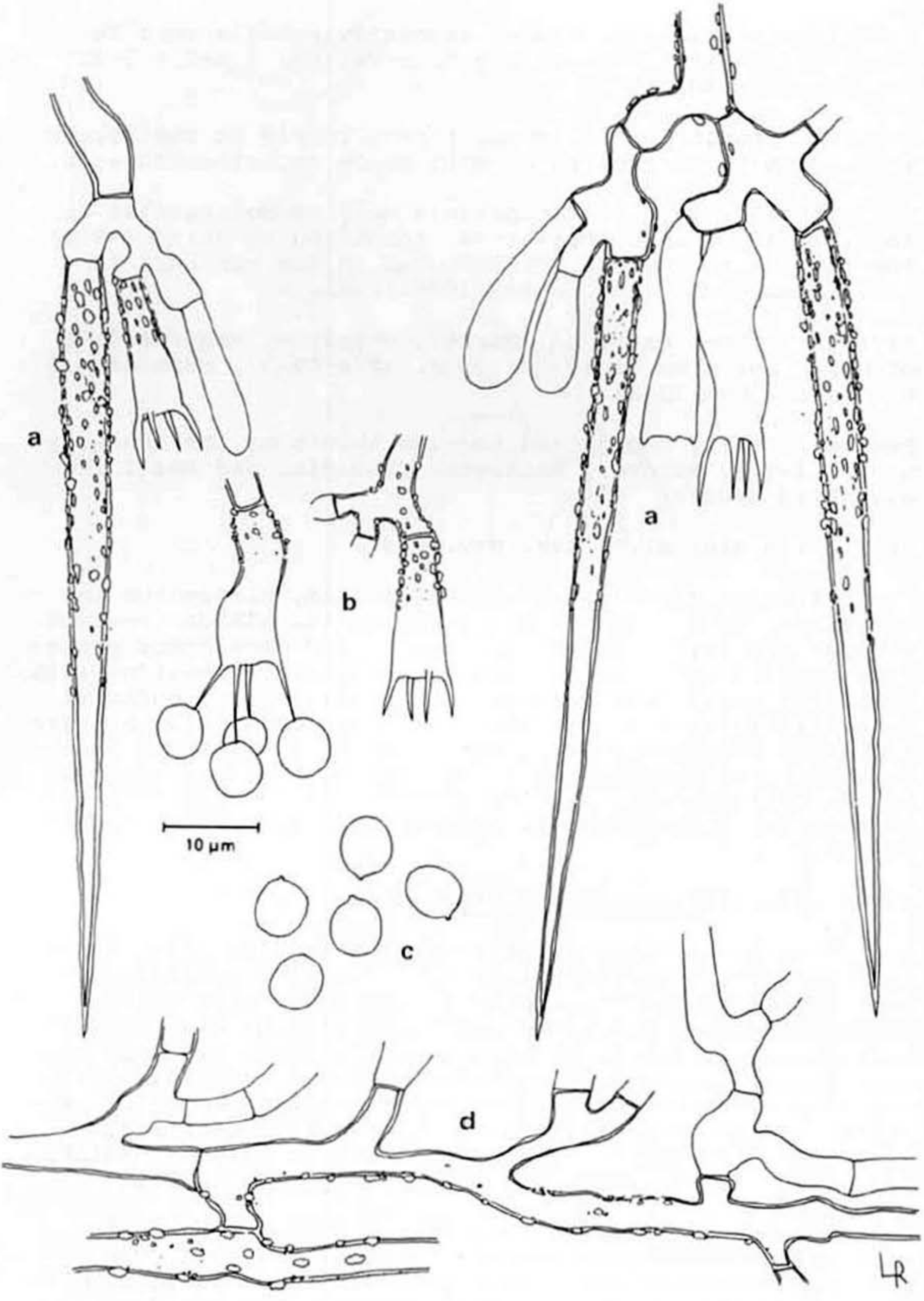

Fig. 4. Subulicystidium rallum a) parts of the hymenium with cystidia and basidia b) basidia c) spores d) hyphae from the subiculum. Coll. Jackson 10789.

clamps and also one species, *H. deserticola* Gilb. & Linds. (= *H. luridum* (Bourd. & Galz.) Erikss. & Hjortst.) in which lateral cystidia occur, we do not find it possible to include also *S. lautum* in it.

SUBULICIUM LAUTUM (Jacks.) Hjortst. & Ryv. nov. comb.

Basionym: *Peniophora lauta* Jacks. Can. Journ. Res. C, 26, 129-132, 1948.

Fruitbody resupinate, effuse, adnate, whitish, when young inconspicuous, with age much like species such as *Litschauerella*, *Tubulixenasma* and *Subulicystidium* ssp. through its pilose appearance by projecting cystidia; margin indeterminable. Hyphal system monomitic, hyphae distinct and not or very slightly encrusted, thin-walled, without clamps and about 3-3.5 (-4) um wide. Cystidia projecting and subulate with thickened walls, not or slightly encrusted, distinctly bi-rooted (laterocystidia), in some cases mucronate towards the apex, about 90-120 um long. Besides, but not always occurring, gloeocystidie-like organs also present. They seem to be most easily observed in well-developed specimens and are obtuse, thin-walled, constricted or sinuous, in most cases 30-60 x 5-6 um. Negative reaction in Melzer and in sulfovanilline. Basidia clavate to subcylindrical, thin-walled, constricted, with four sterigmata, about 25-30 x 6 um. Spores globose to subglobose or in some specimens ellipsoid, smooth, thin or becoming thick-walled, 6-7 um in diam., or 6-8 x 4.5-7 um, non-amyloid, with slight cyanophilous reaction.
Habitat. Both on coniferous and deciduous wood, also collected on lumber.

Specimens examined. Canada: Ontario, Don Valley near Sunnybrook Park, Toronto, York Co., on bark of *Thuja occidentalis*. 1942-09-17. Jackson 17581. Type (TRTC): N.E. of Maple York Co., on wood. 1943-10-09. Jackson 18837 (TRTC): do. on barks of *Tsuga canadensis*. 1945-07-15. Jackson 20120. Norway: Akershus, Nannestad, Tömte farm by Hurdal lake, on lumbered wood. 1978-09-18. Hjortstam 9754 (0); Eidsvoll, Mistberget northern slope by Tisjöen (on limestone), on wood in rivulet. 1978-09-26. Hjortstam & Larsson. Hjm 10054 (0). Nordland. Near the airport, Brönnöysund, on *Betula* ? 1976-09-06. Hauerslev 5208. Denmark: Korsör, Taarnborg Park. 1969-06-28. Hauerslev 3395. København, on *Fraxinus excelsior*. 1972-10-07. Hauerslev 4427. Poland: Nawojowa, Rez. Scisly Labowiec, on *Abies alba*, on a trunk lying ab. 20 cm over running water. 1973-09-11. Hallenberg, Hjortstam & Larsson 1982. (GB).

Remarks. Though very characteristic the species is variable, not only with regard to age and growth circumstances. It seems possible to divide it in two forms, judging from shape of spores and presence of "gloeocystidia".

S. lautum is somewhat similar to Subulicystidium rallum (see below) but the cystidia in the latter species are terminal and encrusted in a similar way to S. longisporum (Pat.) Parm. Moreover, the basidia and hyphae of this species have the same kind of encrustation. These differences make it necessary to place S. lautum and S. rallum in different genera.

SUBULICYSTIDIUM RALLUM (Jacks.) Hjortst. & Ryv. nov. comb.

Basionym: Peniophora ralla Jacks. Can. Journ. Res. C, 136-137, 1948.

Fruitbody resupinate effuse, adnate, whitish, inconspicuous but in some collections welldeveloped, under a lens with projecting cystidia, in outer appearance extremely similar to Subulicium lautum and also to e.g. Litschauerella clematitis (Bourd. & Galz.) Erikss. & Ryv.

Hyphal system monomitic with the hyphae distinct and thin-walled, heavily encrusted, about 4 um wide, without clamps. Cystidia terminal, subulate to acicular, encrusted, the encrustations both on basidia, cystidia as well on the hyphae dissolving in sulfovanilline, in the same way as in S. longisporum. The walls of the cystidia are generally thin but may become thick-walled, about 70 x 4-5 um, sometimes encrusted at the base, in some cases very elongated and up to 40-60 um long, slightly constricted, normally 15-25 x 4.5-6 um. Spores globose to ovoid, 5-6 um in diam., thin-walled, non-amyloid and without cyanophilous reaction.

Habitat. On decayed wood, preferably deciduous trees.

Specimens examined. Canada. Ontario, Lake Timagami, portage to Bull Lake, on Abies balsamea. 1936-09-09. R. Biggs 10790. (TRTC). Norway. Akershus, Baerum, Kjaglia, on Alnus 1977-10-02. Nakken 2186 and 2289. (0). Oppland, Berdöra, in rivulet, on deciduous wood. 1978-08-12. Hjortstam 9618. (0).

Remarks. It is with some uncertainty we place this species in Subulicystidium. The cystidia is very similar to those of S. longisporum but this species has clamps on the hyphae, while S. rallum is simple septate.

The septation of the hyphae is usually looked upon as an important characteristic and many genera are restricted to species with only one type of hyphal septation. However, in Corticiaceae there are several genera where both types occur, e.g. Hyphoderma, Hyphodontia, Aleurodiscus, Gloeocystidiellum, and Athelia, to mention a few. It is obvious that the character of different septation cannot be used for generic delimitation alone. It should be evaluated together with other characteristics.

Jülich (1969) reported that *Subulicystidium longisporum* have basidia with repetition. We have not been able to find any basidial repetition like those of e.g. *Repetobasidium* and *Galzinia*. However, it is usually very difficult to establish the internal basidial repetition, especially in species e.g. *Galzinia incrustans* (Höhn. & Litsch.) Parm., *Hyphodontia crustosa* (Fr.) John Erikss., and *H. pruni* (Lasch) Erikss. & Hjortst., whereas in *Repetobasidium* the repetition is easily recognized.

XENASMA Donk and XENASMATELLA Oberw.

The genus *Xenasma* was erected by Donk (1957:25) with the type species *X. rimicolum* (Karst.) Donk. He also incorporated *Peniophora praeterita* Jacks., *Corticium pruinosum* Pat., and *Corticium pulverulentum* Litsch. The first two species have well differentiated, large cystidia, and also spores which are echinulate (the spines usually dissolving in KOH).

Liberta (1960) made a careful and extensive study of the genus and accepted Donk's concept although he also introduced species with amyloid spores. Oberwinkler (1965) found the genus too widely circumscribed and erected *Xenasmatella* for the acystidiate species, with the type *Corticium flavido-griseum* Litsch. He mentioned besides that species in *Xenasma* had "zylindrisch-langlich (seltner kurz zylindrisch)" basidia while they in *Xenasmatella* were "immer kurz zylindrisch". The latter genus has since been abandoned by Oberwinkler (1977) and the type species was transferred to *Phlebiella* Karst., which is typified by *Phlebia vaga* Fr. The latter species has hitherto been placed in *Trechispora* by Liberta. Parmasto (1968) rejected Oberwinkler's arrangement from 1965 and accepted Donk's genus with the emendation made by Liberta.

As seen below we have also placed one cystidiate species in *Xenasmatella*. We prefer also to describe the new species in this genus even if we are convinced that some species now referred to *Xenasmatella* as well as species in *Phlebiella* and *Trechispora* have rather little in common with one another. Species in these genera need further studies before the generic position can be definitely settled.

XENASMATELLA DECIPIENS Hjortst. & Ryv. nov. spec.

Fructificatio resupinata, effusa, tenuis, sicco plus minusve dura; hymenio cremeo vel ravido, levi; margine sterili nusquam perspicuo; hyphis indistinctis, fibulatis, 2-3 um latis; cystidiis nullis; basidiis plerumque lateralibus, clavatis vel cylindriceis, circiter 20 x 8 um, 4 sterigmatibus; sporis globosis, crassitunicatis, verruculosis, circiter 5-6(-6.5) um diam., non amyloideis.

Holotypus: Spain. Huesca prov., Ordesa Nat. Park, ab. 1500 m, on *Fraxinus excelsior*. 1977-11-09. Ryvarden 14894 (O).

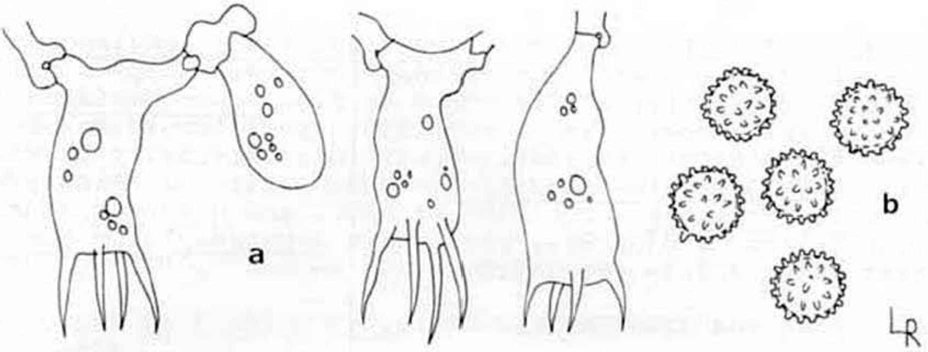

Fig. 5. Xenasmatella decipiens a) basidia b) spores. From the type.

Fruitbody resupinate, effuse, thin to moderately thick, when dry hard, hymenium cream to greyish, when old somewhat ochraceous, in outer appearance much like X. tulasnelloidea; margin indistinct. Hyphal system monomitic with basal hyphae indistinct, subhymenial hyphae about 2-3 um wide, all hyphae with clamps. Cystidia and gloeocystidia lacking. Basidia clavate to cylindrical, in most cases lateral, 20 x 8 um, with four sterigmata. Spores globose, thick-walled, distinctly warted or densely echinulate, 5-6 um in diam., non-amyloid, not dextrinoid.

Habitat. On decayed wood.

Remarks. This is a well distinguished species because of its globose, verruculose spores and lateral basidia. It is separated from X. inopinata in lacking gloeocystidia and by the spores, which in this species are densely echinulate and more reticulated with rounded protuberances. Further, the spores and basidia in X. decipiens are slightly smaller than those of X.inopinata.

Specimen examined. Poland. Bieszczady, at the rivulet Terebowiec 2 km east of Ustrzyki Gome. 1973/09/09. Hallenberg & Larsson 1899. (GB).

XENASMATELLA INOPINATA (Jacks.) Hjortst. & Ryv. nov. comb.

Basionym: Corticium inopinatum Jacks. Can. Journ. Res. C, 28, 718, 1950.

Fruitbody and hyphal system as in X. decipiens. Cystidia or gloeocystidielike organs, tubular or in some cases more or less subulate, sometimes with 1-3 apical protuberances, 40-60 x 6-10 um, without sulfovanilline reaction. Basidia with four sterigmata, in most cases lateral, rarely terminal,

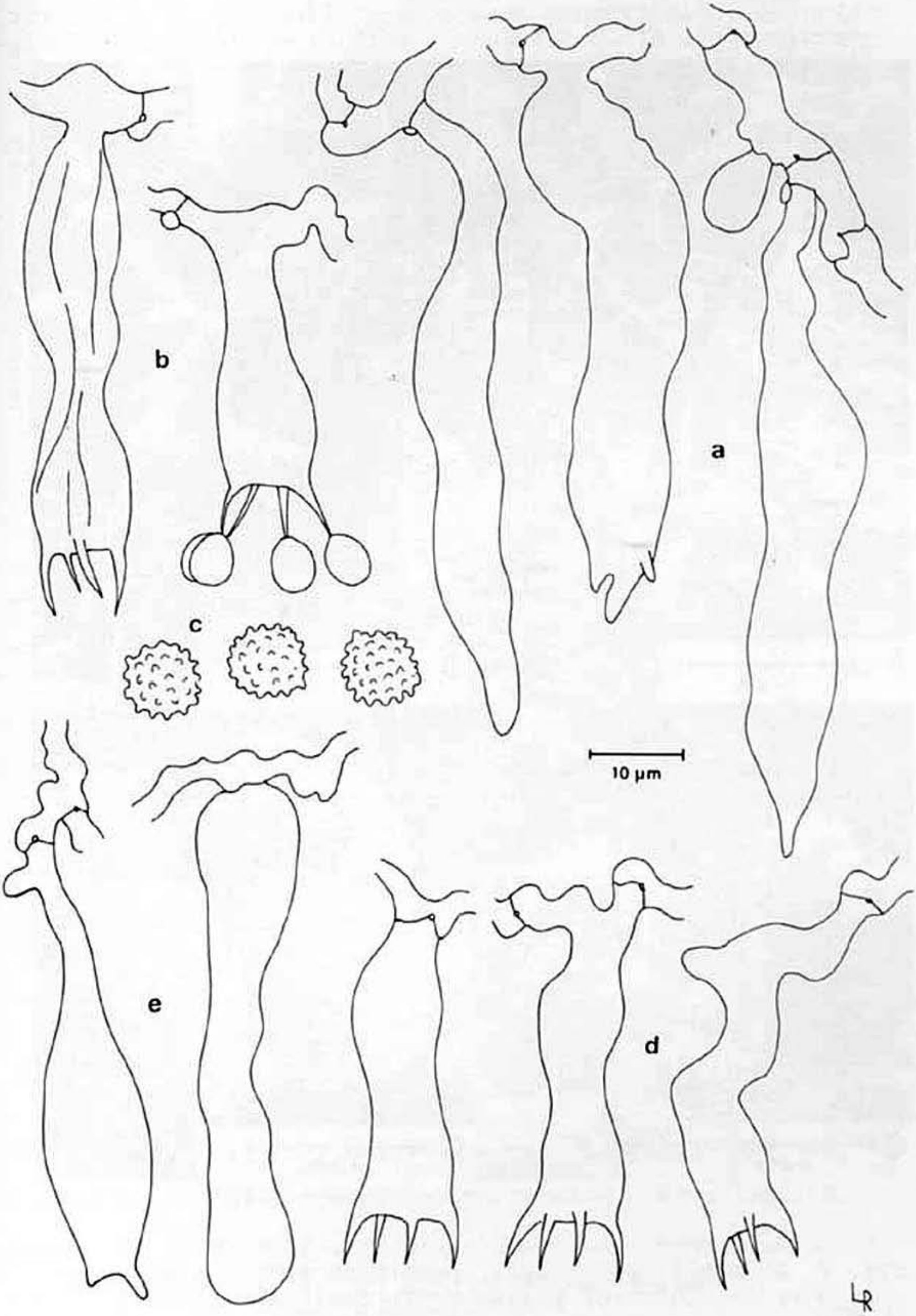

Fig. 6. Xenasmatella inopinata a,e) cystidia b,d) basidia c) spores, a-c, from the type, d-e Jackson 18712.

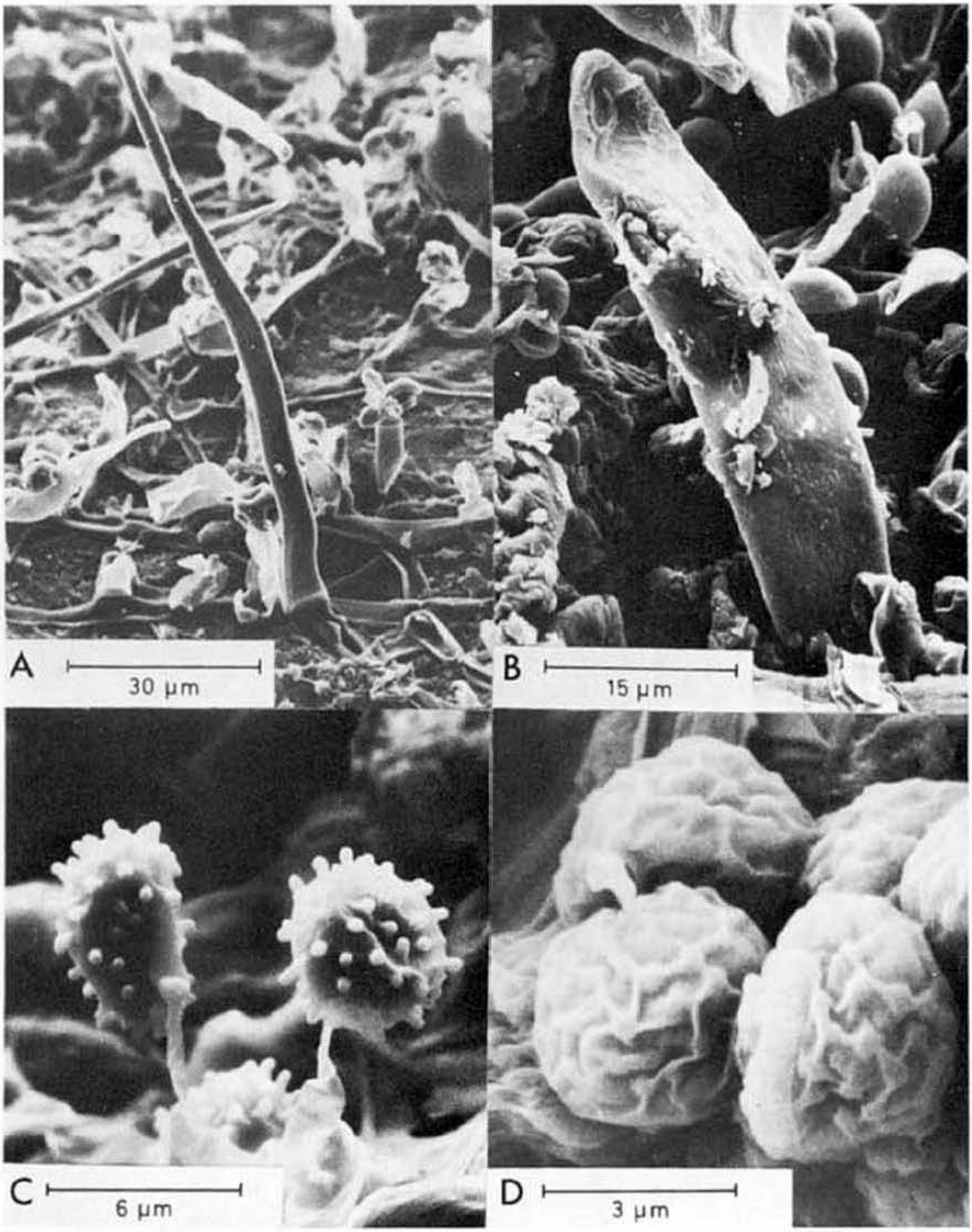

Fig. 7. A) *Subulicium lautum*, cystidium B) *Phlebia longicystidia*, cystidium C) *Xenasmatella decipiens*, spores D) *Xenasmatella inopinata*, spores.S.E.M. by Leif Ryvarden.

25-35 x 6-7 um, usually with a weak constriction. Spores globose, 5.5-7.5 um in diam., ornamented, in light microscope when observed in Melzer's and 5% KOH, having rounded warts.

Specimen examined. Canada. Ontario, North Toronto, Strathgowan woods, on wood and bark of Tsuga canadensis. 1943-09-17. Jackson 19904 Type (TRTC).

Remarks. During our search for a suitable name for X. decipiens we came across Peniophora inopinata Jacks. which undoubtedly is closely related to X. decipiens. The main differences are the cystidia, and the echinulate spores in X. inopinata while they are more verrucose to irregularly ornamented in X. decipiens . The species is hitherto not known from Europe.

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We are most grateful to Dr. Luella Weresub, Ottawa and Dr. John Eriksson, Göteborg, for valuable help and suggestions. Furthermore, the curators of the herbaria in Ottawa, Toronto, Stockholm, Kew and Helsinki are sincerely thanked for their assistance in sending us collections for examination.

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MYCOTAXON

Vol. IX, No. 2, p. 520 July-September 1979

NOTICE

MYCOLOGICAL NOMENCLATURE - FOSSIL FUNGI

The Nomenclature Secretariat of the International Mycological Association appoints subcommittees of interested persons to examine the problems in the application of the International Code of Botanical Nomenclature to fungi (including lichens). Several such subcommittees have already completed their deliberations and their reports are due to appear in TAXON shortly.

A proposal has been made to the Secretariat that the 'Nomenclature of fossil fungi' is urgently in need of review. The Secretariat is, therefore, prepared to create a subcommittee to this effect and requests all persons active in, or interested in, the fossil fungi to notify the Chairman of their willingness to serve on the subcommittee so that they may be appointed as members. As many interested persons as possible are urged to serve on this subcommittee to ensure that its deliberations may be as comprehensive and detailed as possible.

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LATER STARTING POINT BLUES. I. MONILIA FRUCTIGENA

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Many mycologists believe that we must "learn to live with" the provisions of later starting points for various groups of fungi. For the *fungi caeteri* the starting point date was set as 1.i.1821 by the 1950 International Botanical Congress at Stockholm.

Some of us who worked actively on the International Mycological Association's Nomenclature Subcommittee dealing with later starting points remain convinced that what later starting points primarily encourage is wasted hours trying to check wholly irrelevant references. Kohn's (1979) publication on *Sclerotinia* provides a fine example, which we borrow here.

Correct author citation for the conidial state (anamorph) of the European brown-rot fungus, *Monilinia fructigena* Honey, is the subject under review. Though it was early called *Monilia fructigena* (Pers.) Pers., that author citation is not acceptable under the International Code of Botanical Nomenclature, since both the basionym, *Torula fructigena* Pers., and the transfer to *Monilia* occurred before 1.i.1821. After endless days of library work, and with particular thanks to J. Leland Crane, the following partial synonymy has been evolved for the brown-rot anamorph:

[*Torula fructigena* Pers., Ann. Bot. (Usteri) 15: 26. 1795, pre-starting point, devalidated by ICBN Art. 13.1(f).]
≡ [*Monilia fructigena* (Pers.) Pers., Syn. meth. fung. p. 693. 1801, pre-starting point, devalidated by Art. 13.1(f).]
≡ [*Oidium fructigenum* (Pers.) Schm. *in* Kunze & Schmidt, Mykol. Hefte 1: 80. 1817, pre-starting point, devalidated by Art. 13.1(f).]
≡ [*Oidium fructigenum* (Pers.) *ex ?* Ehrenb., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 10: 193. 1820? 1821?, *probably* pre-starting point, and if so, devalidated by Art. 13.1(f).]
≡ *Acrosporium fructigenum* (Pers.) *ex* Pers., Mycol. eur. 1: 24. before 28.iii.1822.
≡ *MONILIA FRUCTIGENA* (Pers. *ex* Pers.) Eaton, Man. bot., ed. 3, p. 357. 23.iii-23.iv.1822 (misspelled "Monila").

Despite a voluminous current literature on *Monilia fructigena*, not a single mycologist or a single phytopathologist has ever cited the authorities for the species (correctly) this way, so far as we have been able to determine.

Though 29 years have elapsed since the starting point *date* was established in 1950, no mycologist or pathologist has been able to use our supposedly "precise and simple system of nomenclature" (ICBN, Preamble).

Petersen (1975-*ff*) attempted to catalogue the epithets used in the year 1821 alone, in a valiant effort to make the provisions of Art. 13.1(f) less arduous. Unfortunately, if we follow Petersen, we might cite the authors as "(Pers. *ex* Ehrenb.) Eaton," since Petersen (1975a) thought that Ehrenberg's opus was published in 1821. Later evidence from D. P. Rogers, credited by Petersen (1976a), almost certainly shows it to be pre-1821, though Petersen concluded "may be pre-1821." Though we are confident that most of Petersen's data can be accepted as correct, we do note that the page citation to *Oidium fructigenum* in Ehrenberg given by Petersen (1976a), "ENA: 195," is two pages off.

The dating of articles and books within 1822 is as much of a problem as it was for Petersen for 1821. Many years ago D. P. Rogers gave the senior author a most valuable listing of early books. It gives the date of Persoon's *Mycologia europaea* vol. 1 as "before 28.iii.1822." None of the scores of other journal articles and books that we have examined that appeared between 1.i.1821 and 28.iii.1822 take up the epithet "fructigenum" for the brown-rot anamorph, and Petersen (1976a) found none for 1821, except the Ehrenberg reference above. We thus *hope* we are correct in citing the name as "(Pers. *ex* Pers.)." According to Stafleu and Cowan (1976), the 3rd edition of Eaton's *A manual of Botany for the Northern States* appeared between 23.iii and 23.iv.1822, which would then probably be post-Persoon. Hence Eaton becomes the new combining author under the later starting point rules (21 years after Persoon made the same combination himself).

One can find the "sanctioning" (and of course a post-starting point) use of this epithet in Fries, *Systema mycologicum* 3(2): 430. 1832, where this species is treated as *Oidium fructigenum*. That name – in its post-starting point form – has intentionally *not* been entered into the above synonymy: without yet another diligent search through the literature between 1822 and 1832 we cannot confidently cite its authors correctly. That search we do not intend to make.

No, we cannot "learn to live with" later starting points if we are ever to get out of the dingy recesses of the library. The provisions *must* be changed.

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AUTHOR INDEX, VOLUME NINE

TRAPPE, JAMES M. The orders, families, and genera of hypogeous Ascomycotina (truffles and their relatives) 297-340

VAN DE BOGART, FRED. The sections of *Coprinus* present in the western United States 348-357

ERRATA, VOLUME SEVEN

Page 147, lines 15, 31, 34, 41: *for* TFMC *read* TFC
148, line 10: *for* TFMC *read* TFC
482, lines 25, 30: *for* TFMC *read* TFC
491, lines 6, 24: *for* TFMC *read* TFC

ERRATA, VOLUME EIGHT

Page 323, line 2: *for* ITALY *read* SWITZERLAND
327, line 37: for *Italy* read *Switzerland*
430, line 41: *for* defunked *read* defunct
503, line 5: *for* Italy *read* Switzerland
521, line 20: for *Calonectroa* read *Calonectria*
563, line 53: *for* No. 2: *read* No. 3:

ERRATA, VOLUME NINE

Page 482, line 7: for *Coleoporium* read *Coleosporium*
line 9: for *heracleinepalensis* read *heraclei-nepalensis*

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INDEX TO FUNGOUS AND LICHEN TAXA, VOLUME NINE

This index includes genera, infrageneric taxa, species, and infraspecific taxa. New taxa are in CAPITALS, and the pages where they are published are in *italics*. New suprageneric taxa are in *ITALIC CAPITALS*. The special "Stuntz Festschrift" number is separately indexed (pp. 358-364), as also is Kohn's monographic treatment of *Sclerotinia* (pp. 442-444); references to these indices are indicated by the notation "*see*."

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