

A New Cellulose decomposing Fungus.

By L. M. Ames*).

With plate IV.

The fungus described in this article was isolated in 1932 from deteriorating material obtained from Barro Colorado, Canal Zone. A second isolate was gratefully received in 1948 from Dr. H. L. Barnett, of Morgantown, W. Virginia. The two isolates appear to be identical, the species being distinguished by their long necks and the large asci, each of which contain 512 ascospores. The organism grows well on potato agar, normally producing slender, long hairs on the perithecium, but if a strip of cloth or paper is added to the culture medium the fungus responds by producing a much denser growth of perithecial hairs. Loss of strength of cloth samples indicates the ability of this species to utilize cellulose in its metabolic processes. During the early months of cultivation the light-sensitive necks were ornamented with long, coarse, agglutinated hairs, as illustrated. During this early period, too, the ascospores were ejected with great force, reaching a distance of 2.5 to 3 inches with a trajectory of no more than one half inch. As the years passed the fungus gradually lost its power to forcibly eject the spores, and the agglutinated hairs gradually ceased to grow. Now, after more than eighteen years in culture, the necks rarely produce the long agglutinated hairs and the ascospores either escape through ruptured portions of the perithecium or remain as if entombed within the unbroken perithecial cavity. The mature asci with their contained ascospores are easily seen through the thin semi-translucent perithecial wall. The number of ascospores per ascus was determined by photographing, in a single plane, the spores of one ascus. A 10×12 inch print was made and each spore numbered. In this way a dependable count was made. Although there are normally 512 uni-nucleate ascospores per ascus there are, occasionally, a few abnormally large spores formed containing two to several nuclei, which accounts for the slight fluctuation in spore numbers. A search of the literature discloses no other species belonging to this genus having 512 spores per ascus or with the ascospores supplied only with primary appendages. This is there-

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fore described as new under a specific epithet referring to the long perithecial necks.

Schizothecium longicolle sp. nov.

Peritheciis sparsis vel gregariis, superficialibus vel raro semimmersis, ovato-piriformibus, 700—1200 \approx 350—550 μ , tenuibus, membranaceis, pallide olivaceo-brunneis, semitranslucidis vel nigris, ad substratum rhizoideis pallidis affixis, supra pilis pallidis, gracilibus, flexuosis, numerosis instructis. Ostiolo nigro, elongato, nudo vel interdum pilis longis avellaneis induto, ad 600 μ longo. Ascis circa 512-sporis, clavatis vel saccatis. Ascosporis polystichis, ellipsoideis, interdum inaequilateralibus, 16—24 \approx 12—16 μ , initio hyalinis, olivaceis dein atrobrunneis, apice rotundatis, basi truncatis ibique appendice primaria, hyalina, clavata, circa 12—15 μ longa, maturitate evanescente instructis.

Schizothecium longicolle sp. nov.

Perithecia scattered or gregarious, superficial, rarely partly immersed, ovate pearshaped, 700—1200 \approx 350—550 μ , thin, membranous, light olive-brown, semitranslucent to black, attached to the substratum with delicate rhizoids, excepting the neck, covered with delicate light colored hairs similar to the rhizoids; neck black, naked or occasionally with tufts of long black hairs to 600 μ in length. Asci about 512-spored, clavate to sac-shaped. Ascospores multiseriate, ellipsoid, sometimes inequilateral, 16—24 \approx 12—16 μ , at first hyaline, becoming olivaceous and dark brown at maturity, the apex is generally rounded, somewhat truncate at the base with a hyaline primary appendage attached which is somewhat clavate in shape 12—15 μ in length and at maturity dissolving.

Generic nomenclature.

Although the present paper is concerned with the description of a fungus belonging to the coprophilous *Sphaeriales*, a short discussion of the generic name used is necessary at this time. The earliest generic name and description and figures of this genus is without doubt Corda's name *Schizothecium*, established in 1835. Corda's description is clear and his illustrations leave no room to confuse this with other closely related genera. Because Fries believed that Ehrenberg's *Schizotheca* invalidated Corda's name he provided the name *Pleurage* in 1849. However Fries was in error in thinking that *Schizothecium* was invalidated by *Schizotheca*. The current rules of nomenclature read in this regard: "When the difference between two names, especially generic names, lies in the termination, these names are to be regarded as distinct even though differing by one

letter only." Thus, the name *Schizothecium* Corda, is not invalidated by Ehrenberg's *Schizotheca*, which was applied to an entirely different plant, one of the Monocotyledonous family *Hydrocharitaceae*. Several writers have, in addition, held that Corda's *Schizothecium* was invalidated because of Fenzl's *Schizotechium* which was mistakenly spelled *Schizothecium* in several publications. Obviously Fenzl's name does not invalidate Corda's *Schizothecium* because the two names are quite different in spelling as well as in meaning.

In 1863 Cesati and De Notaris split off the new genus *Sordaria* from the old genus *Sphaeria*, which contained species of *Pyrenomycetes* with ostiolate perithecia as well as *Sphaeropsidales* with ostiolate pycnidia. They included in their new genus a number of species, some fimicolous and some on wood, etc. Among these was a *Sordaria* which was the same as the old *Sphaeria sordaria* Fr. One of the rules for selection of a type species of a genus split off from an old genus is the following: "The application to a (new) genus of a former specific name to one of the included species designates the type. Therefore the type of the new genus *Sordaria* is *Sphaeria sordaria*, which on further examination turns out to be *Rosellinia sordaria* (Fr.) Rehm. Thus the type species of *Sordaria* is not the same genus as the fungus we now call *Fimetaria*. For this reason Griffiths and Seaver looked for a name for these fungi and finding none they proposed the name *Fimetaria*.

Much of the difficulty concerning names of the family comes from the fact that some mycologists group together in one genus species whose ascospores are without primary appendages but are surrounded by a gelatinous sheath and forms whose spores have a primary appendage and in most cases secondary appendages. Since a study of the development of the spores shows that the primary appendage is really a second cell that is non-functional, it is clear that the two kinds of spores should be kept in distinct genera. If they are united the name *Schizothecium* has priority and the name *Sordaria* as well as *Fimetaria* must be abandoned in its favor. If kept distinct then *Schizothecium* would include those species having primary appendages, as originally described and illustrated by Corda. Those species without primary appendages but surrounded wholly or in part by a gelatinous sheath should be collected under the generic name of *Fimetaria* as proposed by Griffiths and Seaver. The writer favors the latter arrangement.

The writer is deeply grateful to Dr. E. A. Bessey for helpful suggestions concerning the generic name of the fungus described in this paper.

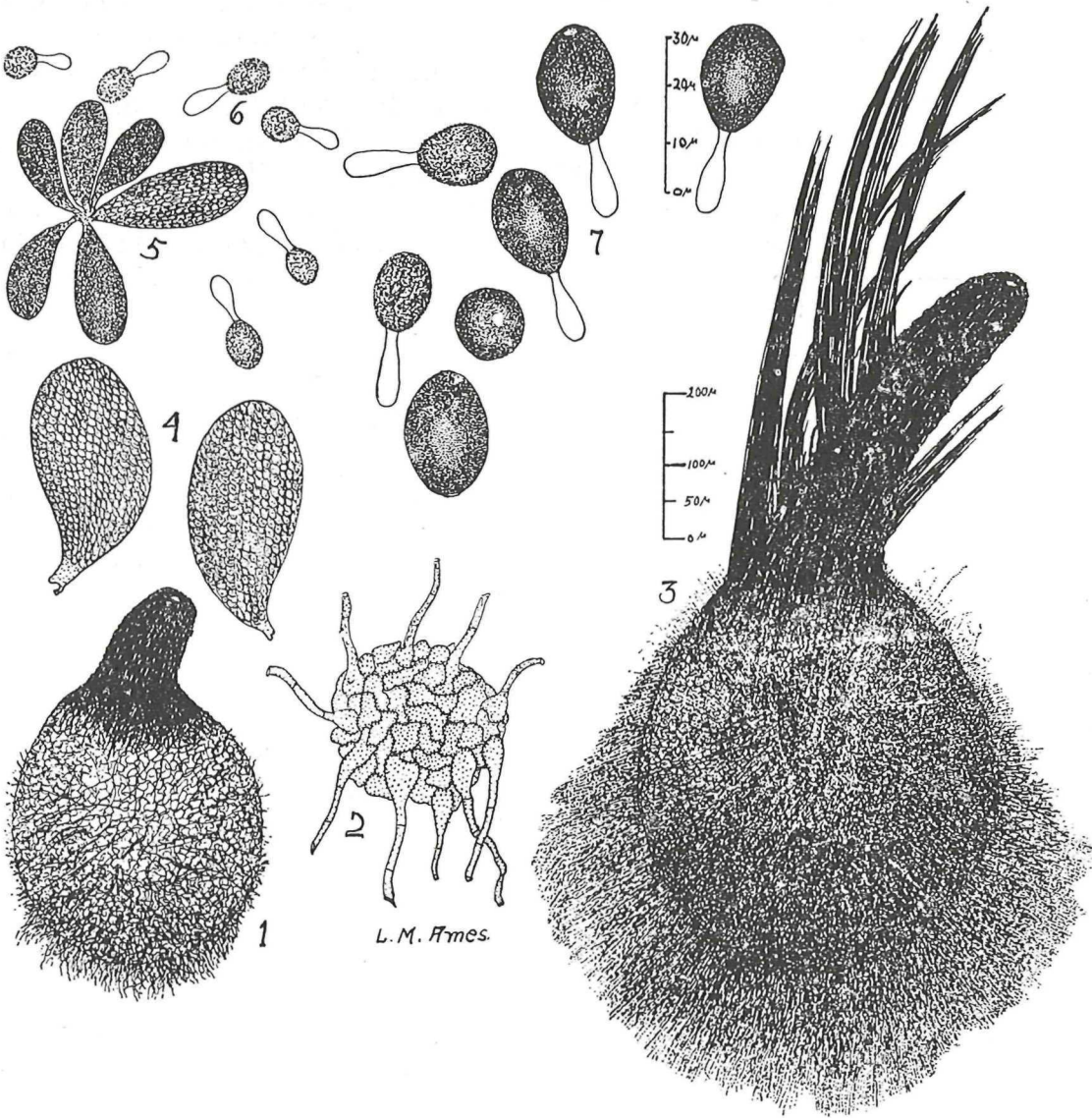


Plate IV.

Schizothecium longicolle. Fig. 1, immature perithecium; Fig. 2, perithecial primordium; Fig. 3, mature perithecium, showing abundant, delicate hairs as developed in agar substratum; Fig. 4, two mature asci with contained ascospores; Fig. 5, cluster of asci in various stages of development; Fig. 6, immature ascospores; Fig. 7, mature ascospores which eventually lose the primary appendage.

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