PERSOONIA
Published by the Rijksherbarium, Leiden
Volume 3, Part 1, pp. 193–198 (1964)

MELANCONIUM LINK EX FRIES

B. C. SUTTON
Commonwealth Mycological Institute, Kew, Surrey, G.B.

(With one Text-figure and one Plate)

Melanconium atrum Link ex Schlechtendal, monotype species of *Melanconium* Link ex Fries, is described and illustrated from a collection in Persoon's herbarium, herein designated as the lectotype.

INTRODUCTION

As a result of the examination of type and authenticated collections of microfungi in European herbaria, Hughes (*1958*) adopted the name *Melanconium* Link (*1809*) for imperfect fungi with brown dictyospores developing in basipetal succession from the more or less undifferentiated hyphae of semi-immersed stromata. These fungi had previously been referred to the somewhat ill-defined hyphomycete genera *Trimmatostroma* Corda and *Coniothecium* Corda. In Hughes' revision, *Trimmatostroma* Corda *(1837)* was treated as a facultative synonym of *Melanconium*.

The accepted concept of *Melanconium* for the last 150 years has been unambiguous, the name having been employed for acervular fungi with elliptical brown unicellular conidia. It has been deduced and generally accepted, though not formally designated, that *Melanconium* is the type genus of the family Melanconiaceae Corda (*1842*) in the order Melanconiales Berkeley (*1860*; as "Melanconiei" [1]). Thus Hughes' interpretation of the genus as a Hyphomycete and the redisposition of one of its well-known species, *M. bicolor* Nees ex Schlecht. as "Coelomycetes Genus 2, mihi ignotum", has presented some taxonomic and nomenclatural problems. If Hughes is correct, they are problems which of necessity revolve around the fate of species which had formerly been assigned to *Melanconium*.

Before the obligatory rearrangement of names implied by Hughes' reassessment of genera, it was felt that the re-examination of Link's material was absolutely necessary. Therefore an account of observations and subsequent conclusions is presented below.

HISTORY OF MELANCONIUM AND ITS TYPE SPECIES

Link (*1809*) erected the genus *Melanconium* with a single species *M. atrum*, the only host specifically stated by name being *Fagus*. The generic character runs as follows:

"Stroma globosum subepidermide plantarum mortuarum latens. Sporidia superne effusa, subglobosa, non septata, nuda, libera."

[1] As an "order" of "Fam. III.—Coniomycetes."

The single species was well illustrated for that period and briefly described as follows:

"Unica species nondum descripta *M. atrum*, stromate globoso subtus sulco notato, sporidiis per epidermidem acervatim procumbentibus nigris. In ramulis fagineis alliisque mortuis et exsiccatis frequens. ..."

Nees (*1816*) added a second species, *M. bicolor:* the host was not named. von Martius (*1817*) however described this fungus from dead branches of *Quercus*. According to the "International Code of Botanical Nomenclature", 1961, Art. 13, the starting point for 'Fungi caeteri' is 1 Jan. 1821 (Fries, "Systema Mycologicum" 1). In this publication Fries (*1821*, p. xl) included *Melanconium* Link as Genus 1 in Subordo II, Stilbosporei. However no species were listed and no descriptions given. Despite this, Fries, by giving the authority for the genus as Link, is automatically adopted as the post starting point authority for the name which therefore becomes *Melanconium* Link ex Fries.

The first authors after Fries (*1821*) to take up the genus appear to have been Ficinus & Schubert (*1823*) who gave descriptions for three species—"*M. betulinum* Kz.", "*M. discolor* Kz.", and "*M. juglandinum* Kz. msc." No reference was made to the earlier described species, except by the author's citations.

Schlechtendal (*1824*) is taken as the validating authority for *M. atrum* since he appears to be the earliest of the few authors to have considered this first species to be distinct after the starting point date. Steudel, later in *1824*, listed five species which included *M. atrum*; he excluded *M. arundinis* Pers. The latter name was a nomen novum for *Stilbospora sphaerosperma* Pers. published by Persoon (*1818*, p. 134).

When Link (*1825*) enlarged his genus with several newly described species, he reduced *M. atrum* and *Stilbospora microsperma* Link to synonymy with *M. conglomeratum* (Link ex Steud.) Link (basionym, *Stilbospora conglomerata* Link). Most later authors including Chevallier (*1826*), Duby (*1830*) and more notably Fries (*1829*) accepted Link's synonymy. Since attempts to obtain material of *S. conglomerata* have been quite unsuccessful, it seems the preferable course to reject Link's synonymy which had subsequently been taken up by Fries, and adopt the name *M. atrum* Link ex Schlechtendal. This is at least affixed to a firm lectotype (see later). Sprengel (*1827*) was the exception among later authors in that he enumerated five species and maintained *M. atrum* on its own. No descriptions were given and no reference to Link's synonymy was made.

Several authors used the genus in its original sense and by 1837 at least 23 names had been referred to *Melanconium*. Following Link's reduction of *M. atrum* to synnonymy the name quickly dropped out of use and has rarely appeared, it at all, in the rather infrequent subsequent accounts of the genus. The most recent treatment is that of Wehmeyer (*1941*) who dealt more specifically with the correlated perfect states of *Melanconium* and *Coryneum* Nees ex Fries.

Corda (*1837*) included *Melanconium* in the Caeomataceae (as "Caeomaceae") but later (*1842*) he referred it to the newly proposed family Melanconiaceae, the name obviously being derived from *Melanconium*. Later, Berkeley (*1860*) proposed

the order Melanconiales (as "Melanconiei") for ten genera of acervular fungi in which the "Perithecium [is] obsolete, or altogether wanting." The Melanconiales now includes at least 100 accepted genera and together with the Sphaeropsidales with 600 accepted genera has been incorporated into the class Coelomycetes Grove (*1919*).

TYPIFICATION OF MELANCONIUM ATRUM

Material disposed in Persoon's Herbarium (in Herb. L) as *Melanconium atrum* Link is composed of three separate sheets, the collections on each consisting of two small fragments of wood and bark. The sheets bear the Herb. L loan number L.2445 No. 1 (accession numbers L 910.258–835), L.2445 No. 2 (L 910.258–844). L.2445 No. 3 (L 910.258–833) respectively.

Dr. C. R. Metcalfe of the Jodrell Laboratory, Royal Botanic Gardens, Kew, has determined the identity of the host plants in the three collections and reports as follows: —

L.2445 No. 1: Beech (*Fagus sylvatica*)
L.2445 No. 2: Willow (*Salix* sp.)
L.2445 No. 3: Willow (*Salix* sp.)
The bark structure of No. 1 agreed very well with that of Beech in one of our reference slides.
Luckily No. 3 still had a small piece of wood attached, and we could identify this as Willow without any difficulty, No. 2 would have been difficult if we had not been able to identify No. 3 but the bark structure in No. 2 is identical with that in No. 3.

In addition to the mounted material, the three sheets also bear labels showing various kinds of aged handwriting. Dr. M. A. Donk has kindly commented upon the nature of these annotations as follows: —

L.2445 No. 1 (L 910.258–835), '*Melanconium atrum*' I would ascribe to Link, but am not quite sure, but I think Link is correct.
L.2445 No. 2 (L 910.258–844), '*Melanconium atrum*': no suggestion; 'Dd. Link' was written by Persoon.
L.2445 No. 3 (L 910.258–833), '*Melancoium atrum*' was undoubtedly written by Link; 'ab ipso Linkio' was added by Persoon.

A composite deduction from this information suggests that the three collections in Persoon's Herbarium were sent from Link. Collection L.910.258–835 also bears the note "Link in hb. Pers". Although the writing may not belong to Link it indicates that the specimen again originated from him. Furthermore, since the substrate has been identified as *Fagus sylvatica* and the fungus agrees both with Link's description and his illustration, it is proposed to, designate L 910.258–835 as the lectotype collection of *M. atrum*. Justification for rejecting L 910.258–844 and L 910.258–833 as possible lectotypes or even paratypes is that (i) the fungi present on these two collections do not correspond with Link's figure, and (ii) the hosts have been determined

as *Salix* spp. It must be mentioned however that there is difficulty in equating Link's material with his rather brief and by modern standards vague description. The illustration however leaves no doubt in one's mind as to what he meant by *Melanconium*. The collections L 910.258–844 and L 910.258–833 may well be the specimens referred to by Link as 'other dead or dry branches'. The fungi present on them

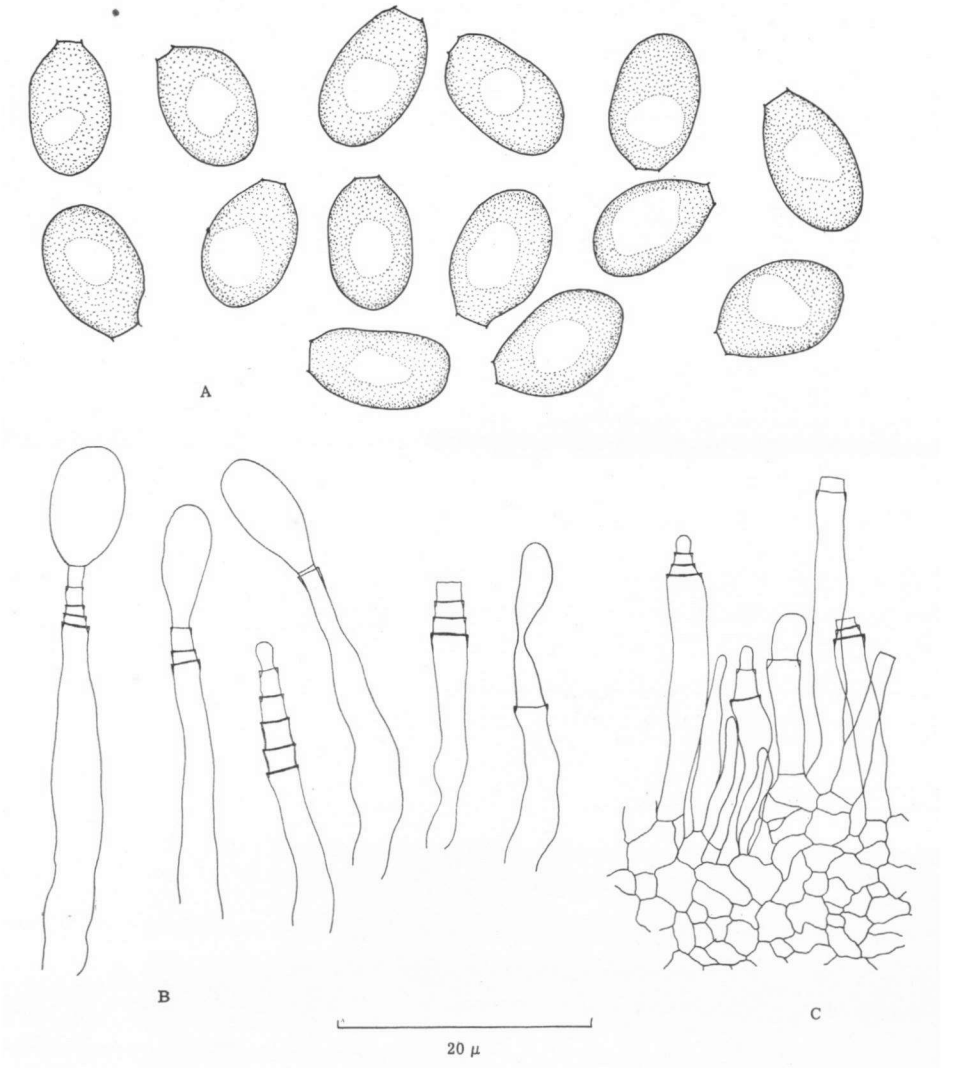

Fig. 1. — *Melanconium atrum*. A. Conidia. B. Separated annellophores. C. Vertical section of conidiophore bearing stroma.

may be placed in the '*Coniothecium–Trimmatostroma* complex'. It is highly probable that they are the specimens which Hughes examined and upon which he based his interpretation of *Melanconium*.

MELANCONIUM Link *ex* Fries, Systema Mycologicum **1**: xl. 1821.

Melanconium Link *in* Magaz. Ges. naturf. Freunde, Berlin **3**: 9. 1809

Fungi Imperfecti (Deuteromycetes), Melanconiales, Melanconiaceae.

Acervuli immersed, composed of hyaline to subhyaline, septate, branched hyphae restricted to the basal region of the fructification; spore mass irregularly erumpent; no well-defined ostiole.

Conidiophores hyaline to subhyaline, unbranched, 0–multiseptate, with several terminal annellations. Paraphyses absent.

Conidia formed as single blastospores at the apex of each conidiophore which after liberation of the first conidium proliferates through the ruptured apex to form additional conidia at successively higher levels, unicellular, brown.

Monotype species: *M. atrum*.

MELANCONIUM ATRUM Link *ex* Schlechtendal, Flora berolinensis **2**, Cryptogamia: 136. 1824.

Melanconium atrum Link *in* Magaz. Ges. naturf. Freunde, Berlin **3**: 9. 1809.

Acervuli abundant, immersed, scattered, at first lenticular and completely covered by the bark, later erumpent by a central ragged papillate opening, becoming wider and splitting irregularly, 0.5–1.5 mm diam.; immersed hyphae subcortical, hyaline to subhyaline, thin-walled, septate, branched, loosely aggregated to form a pseudoparenchymatic stroma which is restricted to the basal region of the fructification. *Conidiophores* formed from the upper stromatic cells, erect, subhyaline, cylindrical, aseptate, with 1–5 terminal annellations, 10–30 × 2.5–4 μ. *Conidia* formed singly at the apex of each conidiophore which after liberation of the first conidium proliferates through the ruptured apex to form additional conidia at a higher level, elliptical, smooth-walled, unicellular, mid-brown, often with a central olivaceous guttule, base truncate with a marginal frill, 10–12 × 6.5 –7.5 μ.

Specimen examined: On bark of *Fagus sylvatica* (Herb. L 910.258–835). Lectotype of *Melanconium atrum*. (IMI 102914).

The presence of subhyaline to pale brown annellophores in *M. atrum* corresponds with a similar report by Hughes (*1953*) that the *Melanconium* states of *Melanconis juglandis* (Ell. & Ev.) Graves and *M. stilbostroma* (Fr.) Tul. bear annellate sporogenous cells. Far from being restricted to *Melanconium*, this phenomenon is evident in a number of other Coelomycete genera including *Cryptomela* Sacc., *Anaphysmene* Bubák, *Stilbospora* spp., *Hendersonia* (auctt.) spp., and *Septogloeum* spp.

It is a pleasure to acknowledge the invaluable assistance of Dr. C. R. Metcalfe in determining the substrata of *M. atrum*. Thanks are also due to Dr. M. B. Ellis and Mr. F. C. Deighton for their guidance and advice, and to Dr. M. A. Donk who kindly made available collections in his keeping and provided helpful comments on the 'scripsits'.

REFERENCES

BERKELEY, M. J. (1860). Outlines of British fungology. London.
CHEVALLIER, F. F. (1826). Flore général des environs de Paris, selon la méthode naturelle **1**. Paris.
CORDA, A. C. J. (1837). Icones Fungorum hucusque cognitorum **1**. Prague.
—— (1842). Icones Fungorum hucusque cognitorum **2**. Prague.
DUBY, J. E. (1830). Aug. Pyrami de Candolle Botanicon gallicum seu Synopsis plantarum in flora gallica descriptarum, Ed. 2, **2**. Paris.
FICINUS, H. D. A. & C. SCHUBERT (1823). Flora der Gegend um Dresden. Zweite Abtheilung: Kryptogamie. Dresden.
FRIES, E. M. (1829). Systema mycologicum **3** (1). Gryphiswaldae.
GROVE, W. B. (1919). Mycological notes.—IV. *In* J. Bot., Lond. **57**: 206–210.
HUGHES, S. J. (1953). Conidiophores, conidia and classification. *In* Canad. J. Bot. **31**: 577–659.
—— (1958). Revisiones Hyphomycetum aliquot cum appendice de nominibus rejiciendis. *In* Canad. J. Bot. **36**: 727–836.
LINK, H. F. (1809). Observationes in ordines plantarum naturales. Dissertatio I^ma^. *In* Magaz. Ges. naturf. Freunde Berlin **3**: 3–42.
—— (1825). Gymnomycetes. *In* C. Linn. Sp. Plant., Ed. 4 (olim cur. Willdenow), **6** (2). Berolini.
MARTIUS, C. F. P. VON (1817). Flora cryptogamica erlangensis sistens vegetabilia e classe ultima Linn. in agro erlangensi hucusque detecta. Norimbergae.
NEES VON ESENBECK, C. G. D. (1816). Das System der Pilze und Schwämme. Würzburg.
PERSOON, C. H. (1818). Traité sur les Champignons comestibles. Paris.
SCHLECHTENDAL, D. F. L. VON (1824). Flora berolinensis **2**, Cryptogamia. Berolini.
SPRENGEL, K. P. J. (1827). Caroli Linnaei Systema Vegatabilium, Ed. 16, **6** (1). Gottingae.
STEUDEL, E. G. (1824). Nomenclator botanicus. Stuttgardtiae & Tubingae.
WEHMEYER, L. E. (1941). A revision of *Melanconis*, *Pseudovalsa*, *Prosthecium*, and *Titania*. *In* Univ. Mich. Stud. (Sci. Ser.) **15**: 1–161.

EXPLANATION OF PLATE 3

Fig. 1. — *Melanconium atrum*. Vertical section of young acervulus showing formation of conidia beneath the bark of the host.

Fig. 2. — *Melanconium atrum*. Vertical section of a mature acervulus showing basal conidiophore-bearing region and irregular rupture of host tissue.

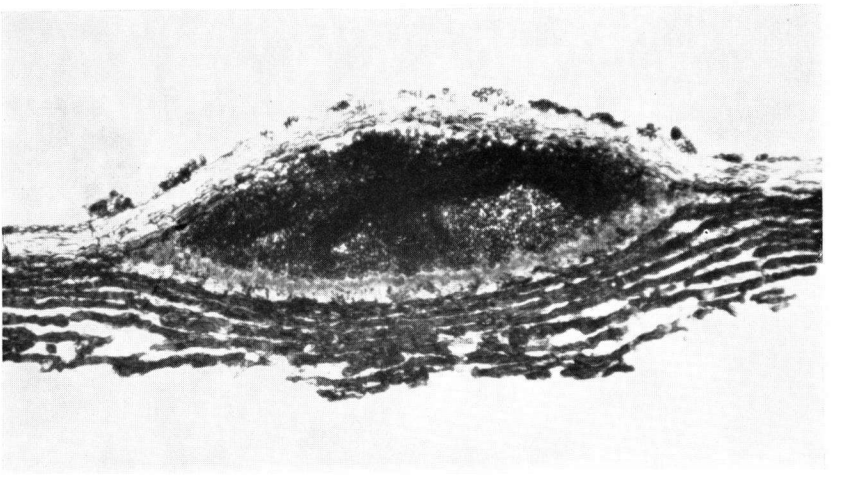

Fig. 1

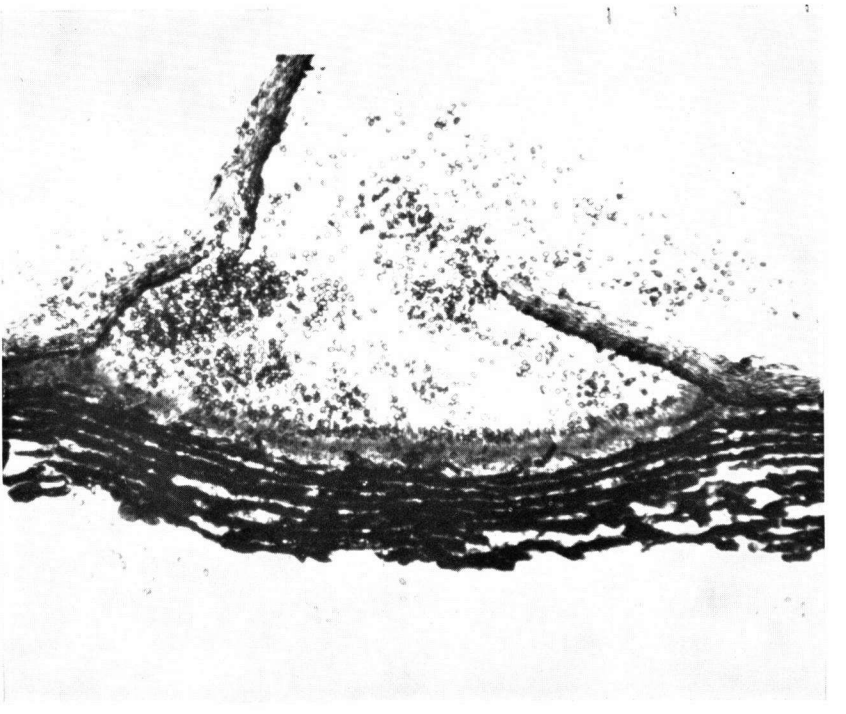

Fig. 2