Observations on *Jahnula* KIRSCHST., a remarkable aquatic pyrenomycete

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Introduction

In the course of a revision of the taxa referred to the genus *Microthelia* KÖRBER, an unavailable name (HAWKSWORTH & SHERWOOD, 1981), the monotypic *Jahnula* KIRSCHST. was investigated as it had been treated as a synonym of that genus by MÜLLER & von ARX (1962: 282). As this fungus proved to be isolated from the majority of taxa referred to *Microthelia* and is of especial interest because of its ascomatal structure it is discussed separately here. Treatments of two further genera formerly subsumed under *Microthelia* have already been prepared (HAWKSWORTH, 1981 a; 1981 b).

Descriptions of the Genus and Species

Jahnula KIRSCHST., Annls mycol. 34: 196 (1936).

Ascomata arising singly or in small groups, ± superficial or immersed at the base, unilocular, not stromatic but subiculum-like hyphae sometimes present, perithecioid, subglobose to obpyriform, black. — Peridium not carbonaceous, thick, composed of moderately thick-walled reddish brown subglobose to polyhedral pseudoparenchymatous cells (textura angularis), lumina of the cells exceptionally large, not forming an involucrellum, base of the ascomatal cavity similar to the sides and not markedly expanded or thickened. — Ostiole papilliform, scarcely projecting; periphyses absent. — Paraphyses (pseudoparaphyses) trabeculate, persistent, filiform, branched and anastomosing, remotely septate.

Asci arising from the base of the ascomatal cavity, cylindrical, stalked, bitunicate, with the internal apical beak often rectangular, perhaps with some non-amyloid annular apical apparatus, 8-spored. — Ascospores ± uniseriately arranged in the asci, elongate-ellipsoid to broadly fusiform, slightly tapering towards the apices, 1-septate, slightly or scarcely constricted at the septum, reddish brown, often guttulate, smooth-walled, without a gelatinous sheath when mature, without apical germpores.

Anamorph. — Unknown.

Type species. — *Jahnula aquatica* (PLÖTTNER & KIRSCHST.) KIRSCHST.

Number of species. — Monotypic.

Jahnula aquatica (PLÖTTNER & KIRSCHST.) KIRSCHST., Annls mycol. 34: 196 (1936). — Figs. 1—4

Bas.: *Amphisphaeria aquatica* PLÖTTNER & KIRSCHST., in KIRSCHSTEIN, Verh. bot. Ver. Prov. Brandenb. 48: 52 (1906).

Syn.: *Melanopsamma aquatica* (PLÖTTNER & KIRSCHST.) KIRSCHST., Krypt. Fl. Mark Brandenb. 7: 226 (1911).

Ascomata arising singly or in small groups, ± superificial, attached to the substratum by subiculum-like hyphae, subglobose to broadly obpyriform, the base often slightly immersed, mainly 250—400 (—500) µm diam, black. — Ostiole papilliform, scarcely projecting. — Peridium not carbonaceous, unchanged in potassium hydroxide, variable in thickness, mainly 30—80 µm thick, often thickest in the upper parts, composed of layers of reddish brown subglobose to polyhedral pseudoparenchymatous cells (textura angularis), cells moderately thick-walled, very variable in size, the outermost 20—30 µm diam with slightly verruculose walls, the inner becoming radially compressed, less deeply pigmented, and mainly 15—20 µm long and 4—8 µm wide; base of the peridium continuous, similar to the sides. — Periphyses absent. — Paraphyses (pseudoparaphyses) trabeculate, persistent, filiform, branched and anastomosing, rarely septate, 1.5—2.5 µm thick, centrum not reacting with iodine.

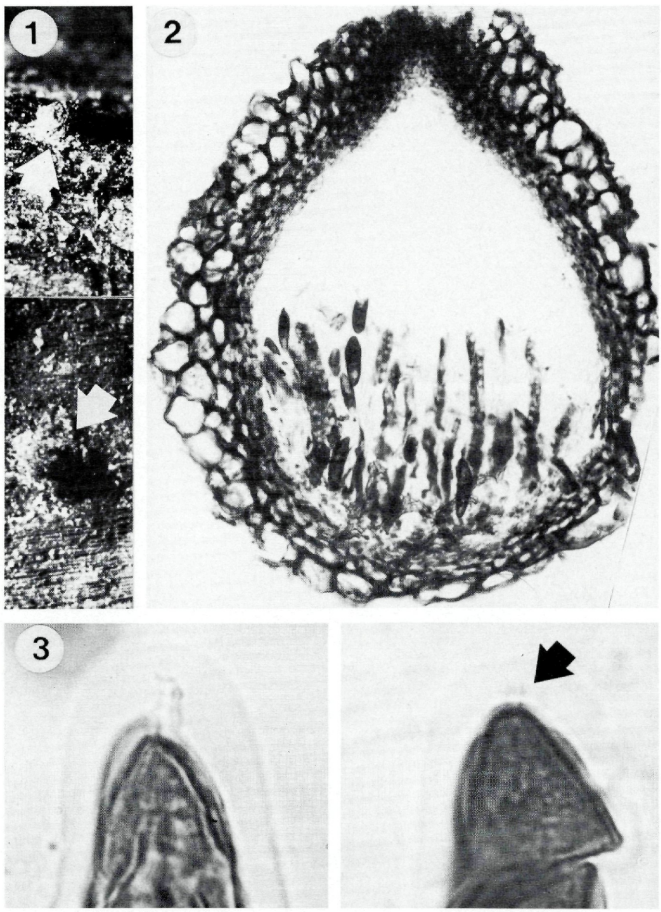
Asci arising from the base of the ascomatal cavity, cylindrical, stalked, bitunicate, with an internal apical cone when young, when mature with a short apical cylinder or broad rectangular indentation, possibly with some annular apical apparatus not reacting with iodine, 180—220 × 15—18 µm, 8-spored. — Ascospores ± uniseriately arranged in the asci, slightly overlapping, elongate-ellipsoid to very broadly fusiform, slightly tapering towards the apices, 1-septate, slightly constricted or scarcely constricted at the septum, reddish brown, moderately thick-walled, generally with numerous small guttules, smooth-walled, without a distinct gelatinous sheath when mature, (30—)32—38 (—41) × 11—16 µm.

Anamorph. — Unknown.

Host. — On *Salix* wood lying in water.

Distribution. — Germany.

Observations. — In the original description of this species two collections were cited, one made by PLÖTTNER and one by KIRSCHSTEIN. KIRSCHSTEIN's collection is selected as lectotype as that includes



Jahnula aquatica: Figs. 1—3 (B-lectotype): 1. Habit, ascomata on wood, x 20. — 2. Vertical section of ascomata showing the massive peridial cells, x 250. — 3. Ascus apices (ring in interference contrast arrowed), x 2500.

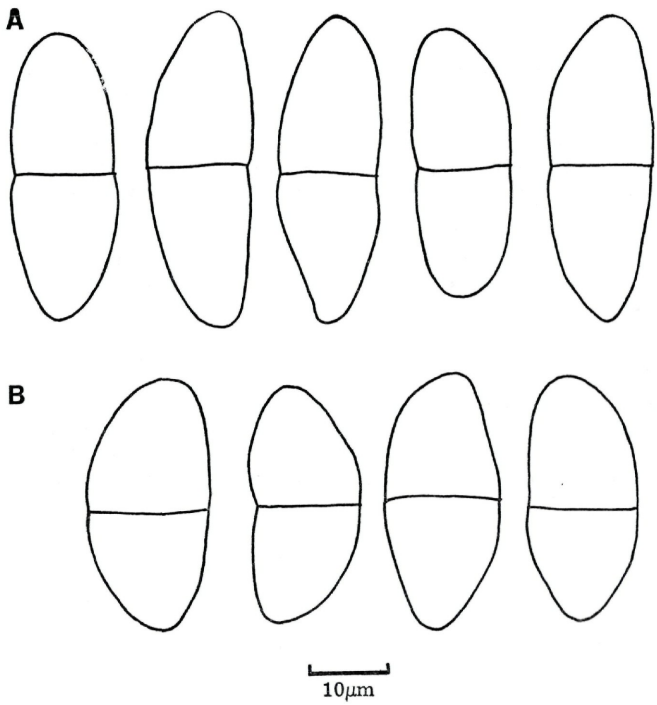


Fig. 4. *Jahnula aquatica:* ascospore outlines. A (KIRSCHSTEIN, 12 June 1904, B — lectotype); B (PLÖTTNER, May 1904, B).

notes mady by KIRSCHSTEIN, was evidently used in drawing up his description of the species, and is better developed. In PLÖTTNER's material the ascospores tend to be slightly shorter and broader (Fig. 4B) and the ascomata are somewhat more immersed in the wood at the base. It is possible that the latter collection is not conspecific, but with only scant material available it would be premature to describe it as distinct when so little is known of the variation of *J. aquatica.*

Specimens examined: GERMANY (East): Havelland, Hohennauerer See, on *Salix* wood in water in a ditch, 12 June 1904, W. KIRSCHSTEIN (B; lectotype of *Amphisphaeria aquatica*); Havelland, Rathenow, on *Salix* wood lying in water, May 1904, PLÖTTNER (B).

Discussion

The asci in *Jahnula aquatica* appear to be bitunicate, but in some ascus apices the impression of a differentiated non-amyloid annular cylinder was obtained when they were studied by interference contrast (Fig. 3), a feature not to be expected in such asci. Discharged asci would have yielded more detailed information but none were located.

The presence of trabeculate pseudoparaphyses indicates that the fungus would be referred to the Melanommatales in the system proposed by Barr (1979).

The most remarkable diagnostic character of *Jahnula* is, however, the structure of the ascomatal wall which consists of massive pseudoparenchymatous cells to 30 µm wide. No similar wall structure has been found amongst any of the other 188 taxa referred to *Microthelia* so far investigated. Large and thin-walled cells are satisfactory in environments where desiccation is not likely to occur, as in this instance, but would not be expected in fungi characteristically growing in permanently or periodically xeric situations.

An additional important feature of the genus is the ascospores which are smooth-walled, lack a germ slit (so precluding inclusion in *Delitschia* Auersw.), and have no gelatinous sheath or other mucilaginous appendages.

Jahnula aquatica has been almost entirely overlooked since its original description, but should be searched for by students of aquatic fungi in the course of floristic investigations. Fresh collections would enable it to be studied in much more detail than has been possible from the two fragmentary collections now available. It will then be possible to determine its position within the Ascomycotina more accurately than is currently possible.

Acknowledgements

I am grateful to Dr. B. Hein for the loan of the material on which this study was based from the Berlin herbarium (B). Miss C. Osborne is thanked for skilled assistance in sectioning the material, and Mr. D. Fry for the habit photographs.

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