

The Identity of *Xylobotryum caespitosum* (PHILLIPS) A. L. SMITH

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Summary. This rare fungus, only collected twice in a century, has been completely misinterpreted. It is not a Pyrenomycete but a member of the Caliciaceae and is here referred to *Embolidium*.

At the 1874 Fungus Meeting of the Woolhope Club at Hereford the veteran mycologist William PHILLIPS was given a collection of a densely caespitose, horny, black, pinheaded fungus, said to have been growing on a polypore, which he described the following year (PHILLIPS 1875) as: "*Sphinctrina caespitosa* n. sp. Apothecia globose, subglobose or deformed, stipitate, densely caespitose; stipes (from $\frac{1}{4}$ — $1\frac{1}{2}$ lines long) horny, often branched; sporidia oblong, rounded at the ends, uniseriate, fuscous, $.0005 \times .00015$ in. On decayed fungus probably *Polyporus*, Hereford, Mr. Griffith MORRIS."

It forms a dense layer covering several inches; the stem is black, shining and of a horny texture, frequently branched; the head in aged specimens becomes dusty from the breaking up of the hymenium. I have not been able to see the asci, but from the arrangement of the sporidia, as seen in thin section, under the microscope, no doubt can remain in the mind that they exist."

The ascospore size given by PHILLIPS in inches is equivalent to $13 \times 4 \mu\text{m}$. He published good figures, both of the gross appearance of the apothecia, natural size and enlarged, and of the ascospores, but this apparently conspicuous fungus seems to have been overlooked by all subsequent collectors. The reported association with a polypore is not now apparent in the material, which went with the rest of his herbarium first to the British Museum and thence to the Royal Botanic Gardens, Kew.

Sphinctrina, to which PHILLIPS referred the species, is a genus of the Caliciaceae and typical species have a thin but distinct lichenized thallus from which short-stalked ascocarps arise singly. These are cup-shaped with a hymenium of thin-walled, cylindrical, short-stalked asci, containing eight, uniseriate, globose, brown, nonseptate ascospores, interspersed with cylindrical obtuse paraphyses. The asci break down to liberate a mass of loose powdery spores in a mazaedium.

PHILLIP's fungus, with no trace of a lichenized thallus but densely crowded convex ascocarps and 1-septate ascospores, is clearly not a

Sphinctrina in this limited sense and the well known British lichenologist A. L. SMITH justly excluded it from the genus on these grounds, stating it had no true mazaedium. Seeking a more appropriate place for it, however, she made the extraordinary suggestion that it belonged in the South American genus *Xylobotryum* PAT. and that the Hereford collection was an accidental introduction which had proved "unable to survive in our cold climate" SMITH (1912). *Xylobotryum* was based on *X. andinum* PAT., in which a black much branched stroma bears completely immersed perithecia singly in the tips of the branches. For MÜLLER & VON ARX (1962) it is a genus of Diatrypaceae and the only feature it has in common with *S. caespitosa* is the 1-septate brown ascospore.

In compiling the check list of British Pyrenomycetes, therefore, BISBY & MASON (1940) justly excluded *Xylobotryum caespitosum* (PHILL.) A. L. SMITH, commenting: "The figure represents a Discomycete." In spite of this the species was ignored by RAMSBOTTOM & BALFOUR-BROWNE (1951) and thus finds no place in the current check lists of British fungi. With his usual perspicacity, however, KEISSLER (1938: 726) in revising the Caliciaceae, guided by PHILLIP's published figure alone, recognised his fungus as being a *Calicium* and suggested comparison with *C. polyporaenum* NYL. It would seem, however, to differ from this and most other species of *Calicium* in the convex hymenium and in having such densely caespitose ascocarps, with their stipes sometimes branched; perhaps also in ascospore size for those of *C. polyporaenum* measure $10-15 \times 3-4 \mu\text{m}$ according to NYLANDER, rather large for our fungus in which I find them $9-12 \times 3 \mu\text{m}$.

A recently described fungus which bears a remarkable resemblance to *S. caespitosa* in habit is *Mycocalicium sequoiae* BONAR. This is strictly nonlichenized and was successfully grown to maturity in pure culture on sterilized blocks of *Sequoiadendron giganteum* wood. Its natural habitat is on exudate from the wood of living trunks of that tree and *S. sempervirens* and it differs from the British fungus mainly in having nonseptate ascospores $6-8 \times 4-5 \mu\text{m}$. (BONAR 1971).

Now, after just a century, PHILLIP's fungus has been collected again in the West of England, by Mrs. M. C. CLARK, this time on an old trunk of *Taxus baccata* at Westonbirt arboretum, Gloucestershire, 4th October 1975. Her ample material shows that some ascocarps bear sparse granules of a lemon-yellow pruina over the hymenial surface, a character on which much stress is laid in keys to the Caliciaceae. The stipes are smooth, horny, reddishbrown to black; only a minority are branched and this often appears to have arisen with the production of a second crop of ascocarps from an old stipe. There is no indication of an association with any polypore and certainly no trace of lichenization.

It has thus become desirable once again to attempt a more satisfactory disposition of the species. If it is to be referred to any of the existing genera it appears, as Keissler saw, that this must be *Calicium* or a segregate from it. The question arises, however, whether the absence of a lichenized thallus, the occasional branching of the stipe and densely crowded habit, so unlike a typical *Calicium*, with the convex disc and reported absence of a mazaedium justify erection of a separate genus for it. On a basis of their remarkable similarity in habit and gross morphology one may feel *Mycocalicium sequoiae* and

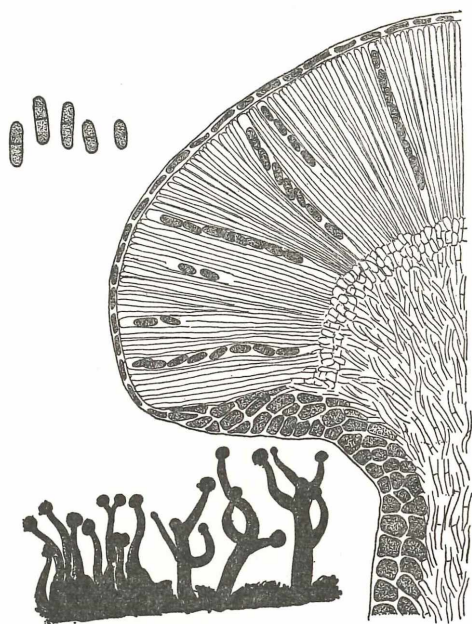


Fig. 1. Section through an ascocarp from the type collection of *Sphinctrina caespitosa* $\times 500$, free ascospores $\times 660$, habit sketch of the Westonbirt collection $\times 15$

Sphinctrina caespitosa have more in common than either has with *Calicium* or any other existing genus of Caliciaceae and that they should be treated as congeneric. To do so, however, would run counter to the current generic concept in the family, which lays stress on ascospore septation and I feel such a step should only be taken, if at all, when the entire family is critically revised.

The type species of *Mycocalicium* VAINIO (1890) was *M. parietinum* (ACH.) VAIN., which VAINIO (1927) later treated as a variety of *M. subtile* (ACH.) VAIN.; this has nonseptate brown ascospores $5-10 \times 2-4 \mu\text{m}$. For species of *Calicium* with 1-septate brown ascospores and

no lichenized thallus he adopted the name *Embolidium* SACC., proposed in Michelia 1; 418, 1879 and based on *Embolidium italicum* SACC. & SPEG. In Sylloge Fungorum 8: 835 (1889) this was reduced to synonymy under *Calicium pusillum* FLÖRK. but VAINIO did not accept this and retained *E. italicum* as a good species.

Sections of the type collection of *Sphinctrina caespitosa* (Fig. 1) show the stipe of the ascocarp to have a solid core of slightly undulating, highly agglutinated, hyaline hyphae, covered by an outer zone of short-celled hyphae with dark brown contents. The convex hymenium of tightly agglutinated asci and paraphyses is covered at first by a sheath one hypha thick, continuous with the outer layer of the stipe. The type species of *Embolidium*, as represented by SACCARDO Mycotheca Veneta 1389 ("in ligno fagineo indurato, Aug. 1878") has an identical structure, with an equally convex hymenium, and there is no trace of a thallus or loose algal cells around the base of the stipe. Smith was apparently mistaken in stating that *S. caespitosa* did not have a mazaedium and unless the caespitose habit and occasional branching are taken to afford a generic distinction it seems the species can for the present be accommodated in *Embolidium*, to which I formally transfer it as *Embolidium caespitosum* (PHILLIPS) DENNIS comb. nov. For those who do not recognise lichenization as a generic character a combination in *Calicium* will be necessary, unless some older forgotten synonym can be discovered in the literature.

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