

NOTES AND BRIEF ARTICLES

ASCOBOLUS XYLOPHILUS REDESCRIBED FROM FRANCE WITH  
REMARKS ON ITS TAXONOMIC POSITION

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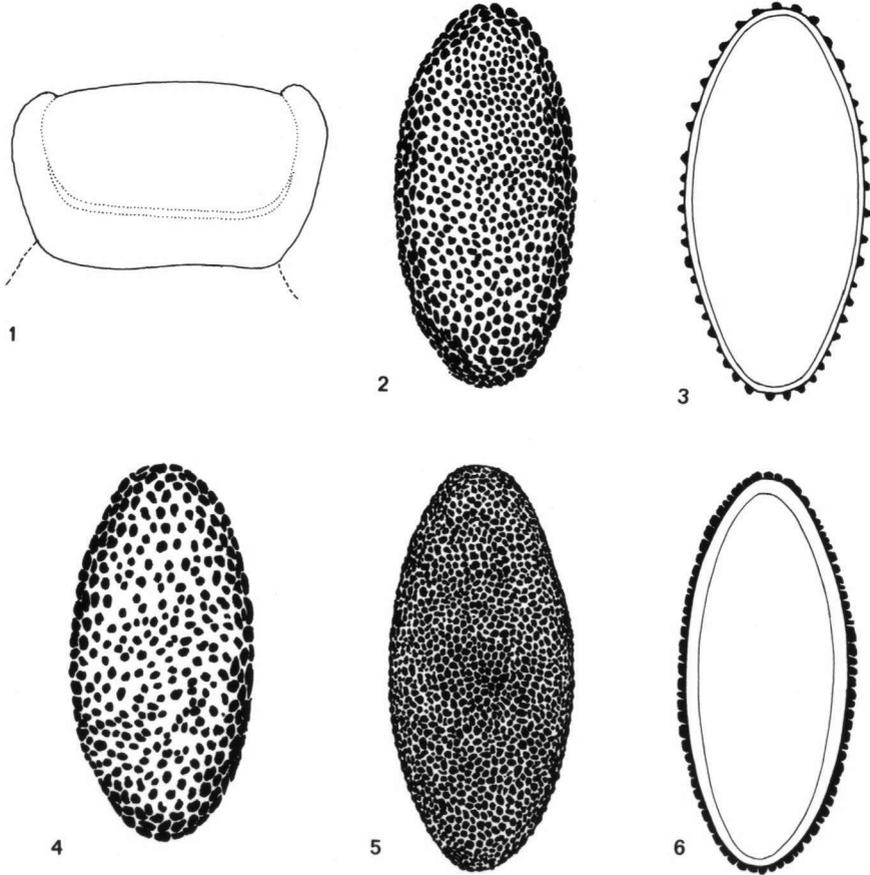
During a collecting trip in the High Pyrenees (France) the second author has collected several fruit bodies of *Ascobolus xylophilus* Seaver on a log of rotten coniferous wood in a mountain stream. Till then this fungus was only known from the original specimens, collected by Prof. E. Bethel & Dr. F. J. Seaver, September 1910 in the Geneva Creek Canyon, Colorado, U.S.A. (van Brummelen, 1967: 153). As the material of the type specimen is rather scarce and consists of a few very old fruit bodies, from which it was difficult to make a complete description, the species has been redescribed and pictured from the newly collected European material.

ASCOBOLUS XYLOPHILUS Seaver—Figs. 1-7

*Ascobolus xylophilus* Seaver in *Mycologia* 3: 61. 1911; Seaver, North Am. Cup-fungi (Operculates) 90. 1928.

Apothecia scattered, superficial, sessile, 0.5-2.0 mm diameter, about 0.5 mm high. Receptacle at first subglobular, then expanding and becoming lenticular to discoid, finally scutellate, purplish brown; surface smooth; margin scarcely differentiated, slightly elevated on drying. Disc at first concave, then flat, roughened by the protruding tips of ripe asci, becoming purplish with maturity. Hymenium about 250  $\mu\text{m}$  thick. Hypothecium not very compact (30-40-75  $\mu\text{m}$  thick, consisting of groups of isodiametric to oblong thin-walled cells 7-15  $\times$  5-8  $\mu\text{m}$ , the contents of which intensively stain with methyl blue. Flesh not clearly differentiated from the excipulum, of subparallel or somewhat intertwined colourless thin-walled hyphae 2-5  $\mu\text{m}$  wide. Excipulum at the margin 35-50  $\mu\text{m}$  wide, pale purplish violet, consisting of thin-walled septate subparallel hyphae 2.5-5  $\mu\text{m}$  thick (textura porrecta) and of rather strongly intricated hyphae (textura intricata) in the outer layers especially near the base. Asci cylindrical-clavate to clavate with a stem-like base, rounded above, 210-240  $\times$  25-28  $\mu\text{m}$ , 8-spored; the wall deep blue in Melzer's reagent. Ascospores at first uniseriate, finally irregularly biseriate, ellipsoid or more rarely slightly asymmetrical (length/breadth ratio 1.8-2.2, average 1.98), at first hyaline, then purplish violet, purplish brown at maturity, 28.0-33.5  $\times$  13.0-16.3  $\mu\text{m}$  (without ornamentation), with homogeneous contents, ornamented with rather densely placed warts or punctate. Paraphyses abundant, septate, slender filiform, simple, hyaline, about 2  $\mu\text{m}$  thick, not or scarcely enlarged (up to 3.5  $\mu\text{m}$ ) at the tip.

HABITAT.—On a fallen trunk of *Abies* in the water of a small mountain stream, accompanied by fruit bodies of *Pachyella babingtonii* (Berk.) Boud.



Figs. 1–6. *Ascobolus xylophilus*. — 1. Diagrammatic section of fruit body  $\times 50$ . — 2, 4, 5. Ascospores  $\times 1600$ . — 3, 6. Ascospores in optical section  $\times 1600$ . (1–4, from Candoussau, 2.X.1972; 5, 6, from 'cotype' of *A. xylophilus*, BPI.)

**SPECIMEN EXAMINED.**—France. Payolle near Bagnères de Bigorre, Hautes Pyrénées, 2.X.1972, *F. Candoussau* (L).

The gross and microscopic characters of the French material agree well with the descriptions of the American type specimen (Seaver, 1911, 1928; van Brummelen, 1967).

Both specimens were found growing on rotten coniferous wood at high altitudes.

The large ascospores with finely warty sculpturing are especially a characteristic feature of this species, and provide a valuable aid to its identification.

Macroscopically the fruit bodies in this species resemble somewhat eroded fruit bodies of *Ascobolus carbonarius* P. Karst., while the ascospores in both species show a similar warty ornamentation. Consequently, in absence of knowledge about the development of the fruit

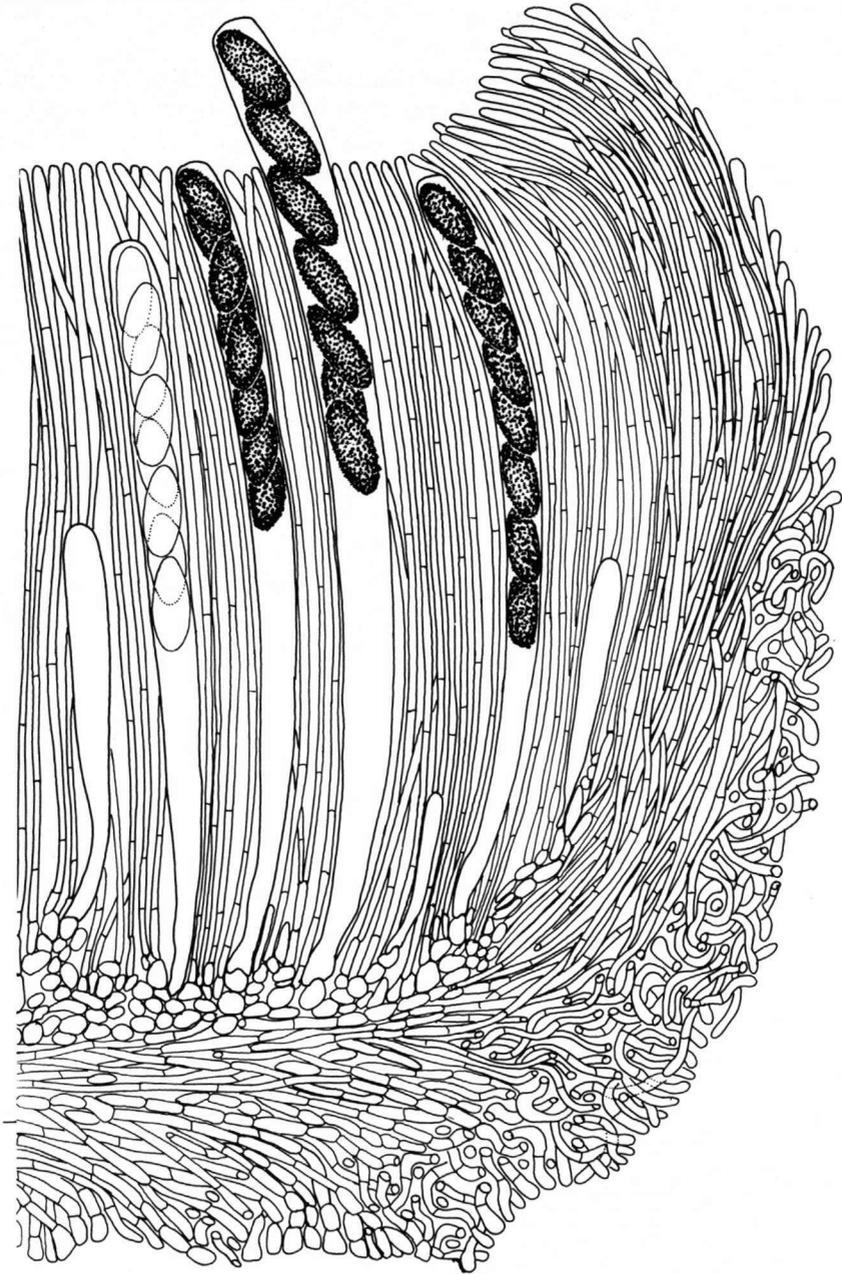


Fig. 7. *Ascobolus xylophilus* (from Candoussau, 2.X.1972), median section of margin of fruit body  $\times 400$ .

bodies, *Ascobolus xylophilus* was placed 'with doubt' in *Ascobolus* sect. *Ascobolus* (van Brummelen, l.c.).

From the better French material, the developmental type of the ascomata could be established. *Ascobolus xylophilus* showed eugymnohymenial ascomata with a well-developed excipulum, in which the hymenium is exposed from the first until the maturity of the asci (cf. van Brummelen, 1967, 1972). Such a type of development is characteristic of *Ascobolus* sect. *Gymnascobolus* Brumm. of which *Ascobolus scatigenus* (Berk.) Brumm. is the type and the best-known representative.

Both *A. xylophilus* and *A. scatigenus* show a structure of the excipular layer which is rare in the genus *Ascobolus*, viz. a tissue of fine intertwined or subparallel thin-walled hyphae with *textura intricata* or *porrecta*.

From our observations it is not yet clear if there is an active submarginal growing zone as found in other representatives of *Ascobolus* sect. *Gymnascobolus* (*A. scatigenus* and *A. castaneus* Teng.). Such a zone gives rise at the adaxial side to branches forming the paraphyses and at the abaxial side to branches which differentiate into the elements of flesh and excipulum. Structurally, such a zone is also present in *A. xylophilus* (see Fig. 7), but its activity could not be proven. The maximum size of the ascomata in *A. xylophilus* is considerably smaller than in the two other species mentioned. So its development could also be explained by activities of the more common interstitial and intercalary growth.

#### REFERENCES

- BRUMMELEN, J. VAN (1967). A world-monograph of the genera *Ascobolus* and *Saccobolus* (Ascomycetes, Pezizales). In *Persoonia*, Suppl. 1.
- (1972). Ascocarp ontogeny and a natural classification of the Ascobolaceae. In *Persoonia* 6: 389–394.
- SEEVER, F. J. (1911). Studies in Colorado fungi—I. Discomycetes. In *Mycologia* 3: 57–66.
- (1928). The North American Cup-fungi (Operculates). New York.