

***Trichia botrytis* (G.F. Gmel.) Pers. SM68 (= PDD 110441) – a good match. Sporangia in the collection were covered with white simple capitate synnemata of *Polycephalomyces tomentosus* (also known as *Blistum tomentosum*)**

Collection site: Rimutaka Forest Park

Collection date: 27 September 2010

Substrate: dead, wet branch, ca 4 cm diameter

Collector: Ann Bell; **Identifier:** Dan Mahoney

Voucher materials: dried herbarium material (SM68 = PDD 110441) accompanied by 4 semi-permanent Shear's mounting fluid (SMF) slides (these include 2 of *Polycephalomyces tomentosus* only); a number of dissecting scope in-situ projection slides of the freshly-collected fruiting bodies (the best of these scanned) and a number of compound scope digital photos from water, water + aniline blue lactic acid & SMF slide mounts; Dan's comments below.

Stephenson's description annotated with Dan's comments:

Description from pp. 89-90 in Stephenson's *Myxomycetes of New Zealand*. His description below (with my comments in parentheses) matches our specimen quite well – although he makes no mention of *Polycephalomyces tomentosus*. An earlier collection SM63 (= PDD 110436) was also from Rimutaka Forest Park (Feb. 2010) but it had no *P. tomentosus* associated with it.

“Fruiting body a stalked sporangium..., often clustered on united stalks (most of the fruiting structures in this collection were clustered on united stalks), 1–4 mm tall. Sporotheca turbinate or pyriform (sporangia in the SM63 collection were pyriform but these are mostly globular), dull purplish brown, 0.6–0.8 mm (ours were this and perhaps a bit more). Stalk cylindrical (with deep irregular longitudinal wrinkles), dark reddish brown (the stalks were distinctly reddish as was the extended hypothallus – especially as first observed when the sporangia still showed no lines of dehiscence), opaque, filled with amorphous material. **Continued on the next page:**

Hypothallus usually contiguous for a group of sporangia. Peridium consisting of two layers (perhaps 3), the inner layer membranous (without pigment) and the outer (pigmented); dehiscence areolate with the outer layer shrinking and splitting above the lighter inner layer to form large dark patches separated by lighter lines of the inner layer. Capillitium dull yellow to dingy ochraceous brown in mass, elaters simple, bearing 3–5 smooth spirals (I could only see 2 of these clearly), up to 4–5 µm (I measured some at 6 µm) in diameter at the center and tapering gradually to long, slender acuminate tips. Spores (globose) dull yellow to dingy ochraceous brown in mass, pale by transmitted light, minutely warted, 9–11 µm in diameter (mostly 10–11).”

Dan’s brief description and comments on *Polycephalomyces tomentosus*:

***Polycephalomyces tomentosus* (Schrad.) Seifert (1985) – synonym = *Blistum tomentosum* (Schrad.) B. Sutton (1973). The rarely seen teleomorph is *Byssostilbe stilbigera* (Berk. & Broome) Petch (1912). *Berkelella stilbigera* (Berk. & Broome) Sacc. (1891) is now treated under Species Fungorum as a synonym of *Byssostilbe stilbigera* (Berk. & Broome) Petch (1912). In fact, according to Cybernome, the genus *Byssostilbe* is placed in the Clavicipitaceae while the genus *Berkelella* is placed in the Herpotrichiellaceae.**

Current Name:

[Byssostilbe stilbigera \(Berk. & Broome\) Petch \[as 'stilbiger'\]](#), *Ann. R. bot. Gdns Peradeniya* **5**: 296 (1912)

Synonymy:

[Hypomyces stilbiger Berk. & Broome](#), (1873)

[Berkelella stilbigera \(Berk. & Broome\) Sacc.](#), *Syll. fung. (Abellini)* **9**: 989 (1891)

[Hypolyssus stilbiger \(Berk. & Broome\) Kuntze](#), *Revis. gen. pl. (Leipzig)* **3**: 488 (1898)

[Stilbum tomentosum var. ovalisporum A.L. Sm.](#), (1903)

[Blistum ovalisporum \(A.L. Sm.\) B. Sutton](#), *Mycol. Pap.* **132**: 17 (1973)

[Stilbella tomentosa var. ovalispora \(A.L. Sm.\) Rogerson](#), in Samuels, *Mycologia* **65**(2): 409 (1973)

[Stilbella ovalispora \(A.L. Sm.\) Ing](#), *Bull. Br. mycol. Soc.* **8**(1): 27 (1974)

Position in classification:

Clavicipitaceae, Hypocreales, Hypocreomycetidae, Sordariomycetes, Ascomycota, Fungi

Synonymy Contributor(s):

IMI (2004)

Continued on the next page:

Polycephalomyces tomentosus is associated with slime molds of the Trichiaceae – in this case *Trichia botrytis* (G.F. Gmel.) Pers. Sporangia in the collection were covered with the white simple capitate synnemata of *P. tomentosus*.

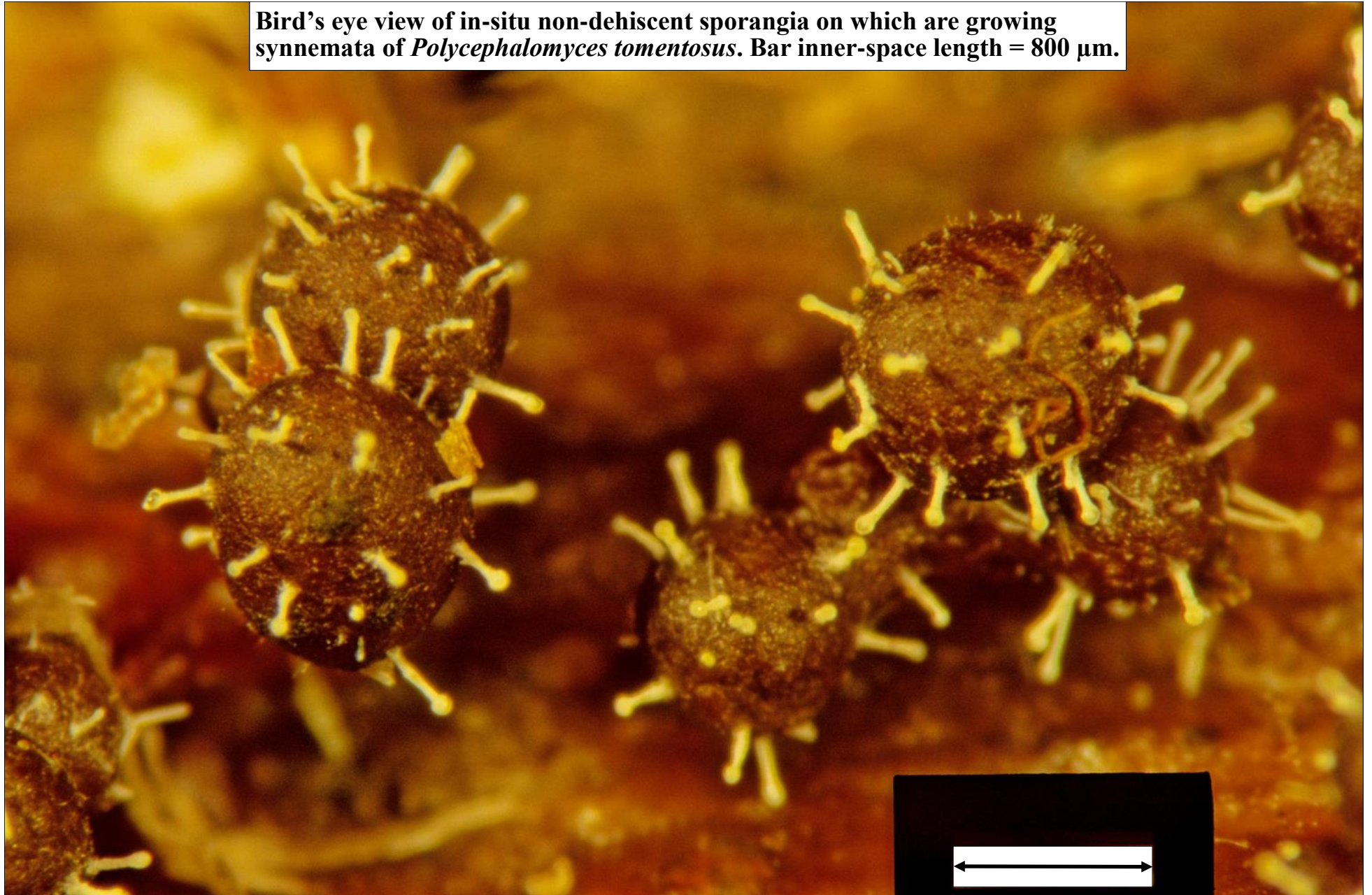
Brief description: This paraphrases, in part, Seifert's description – p. 176 from his Studies in Mycology 27 (1985):

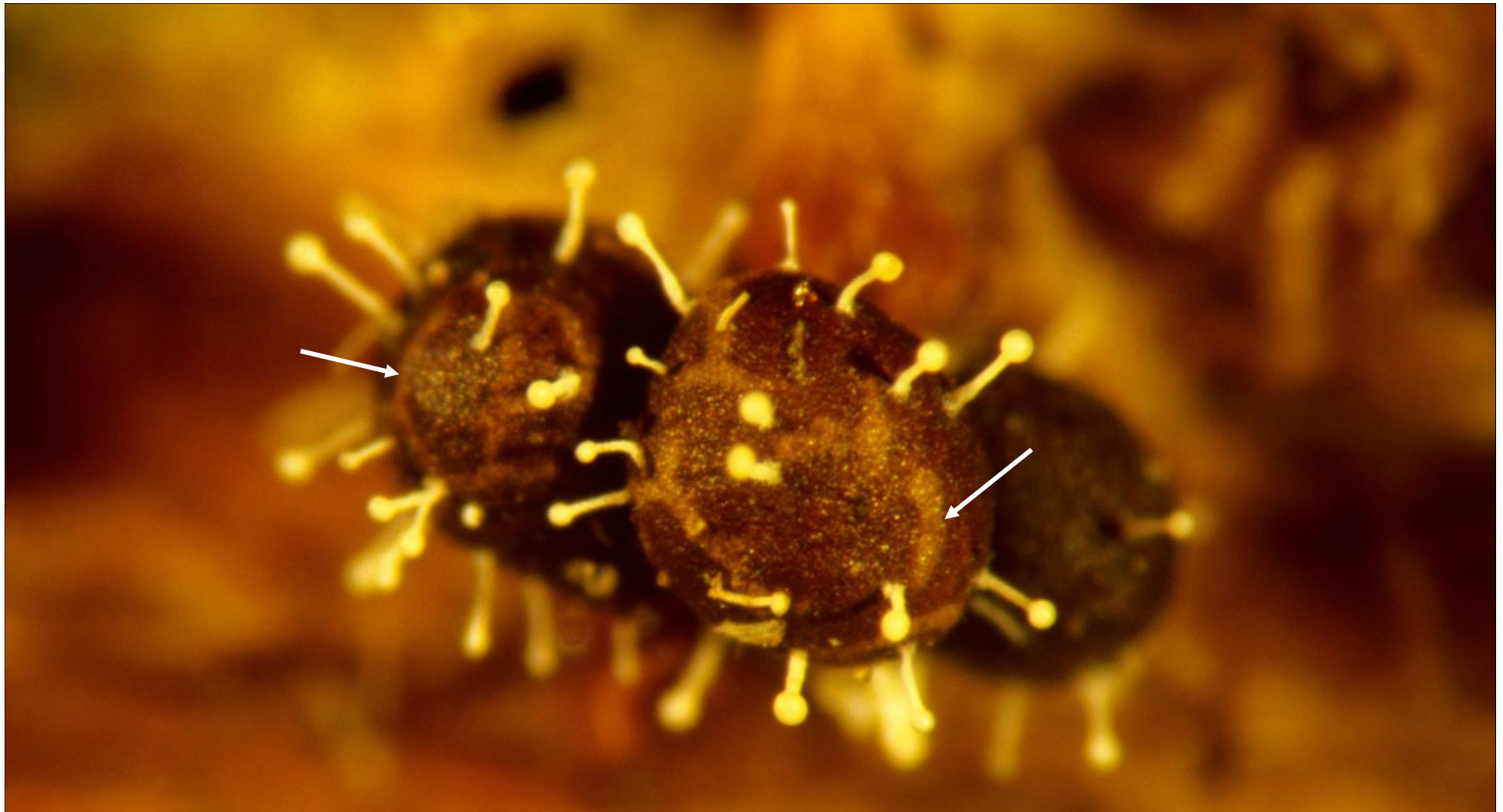
(*Polycephalomyces tomentosus*) hyphae on & within the peridium (of *Trichia botrytis* sporangia) - these producing short & longer chains of terminal & intercalary, smooth, hyaline, 1-celled, globular to subglobular chlamydo-spores. At first, I wasn't sure whether other more numerous, tiny, thread-like 'veins' on the peridial layers were associated with the peridial layers themselves or were also related to *P. tomentosus*. Now, however, I believe they are only smaller hyphae of *P. tomentosus*. No descriptions, I'm acquainted with, describe them on the peridium of *T. botrytis* in the absence of *P. tomentosus*. **Synnemata** scattered or gregarious on the *T. botrytis* sporangia, cylindrical-capitate (the sporogenous head clavate in slide mounts), straight, unbranched, smooth to minutely granulose (from the stalk 'blisters'), white, 195–265 μm tall (n=5), the cylindrical stalk ca 50 μm wide and the sporogenous head 70–125 μm wide. Hyphae of stalk parallel. Ornamenting cells, 3–5 X 3–7 μm , scattered over the entire stalk – these hyaline, globular to very broadly obovoid, mostly sessile and verrucose (especially on their broadly rounded distal portion). **Phialides** acropleurogenous, awl-shaped with faint collarettes. **Conidial mass** wet, white to faintly yellow, individual conidia numerous, hyaline, smooth, 1-celled, variable in shape (obovoid to elongate or narrowly ellipsoid – rounded apically and narrowing basally) and in size [2–3(–6) X 1.5–2 μm].



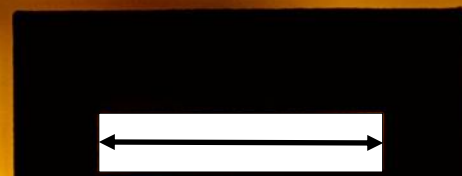
Two side views of different in-situ fruiting bodies, each with synnemata of *Polycephalomyces tomentosus* on their non-dehiscent sporangia. Both fruiting bodies have 2 sporangial heads on united stalks and their bar inner-space lengths = 625 μm .

Bird's eye view of in-situ non-dehiscent sporangia on which are growing synnemata of *Polycephalomyces tomentosus*. Bar inner-space length = 800 μm .





Bird's eye view of in-situ early-dehiscent sporangia on which are growing synnemata of *Polycephalomyces tomentosus*. Note peridial markings (arrowed) where the dark outer layer has separated from the lighter inner layer. Bar inner-space length = 500 μm .

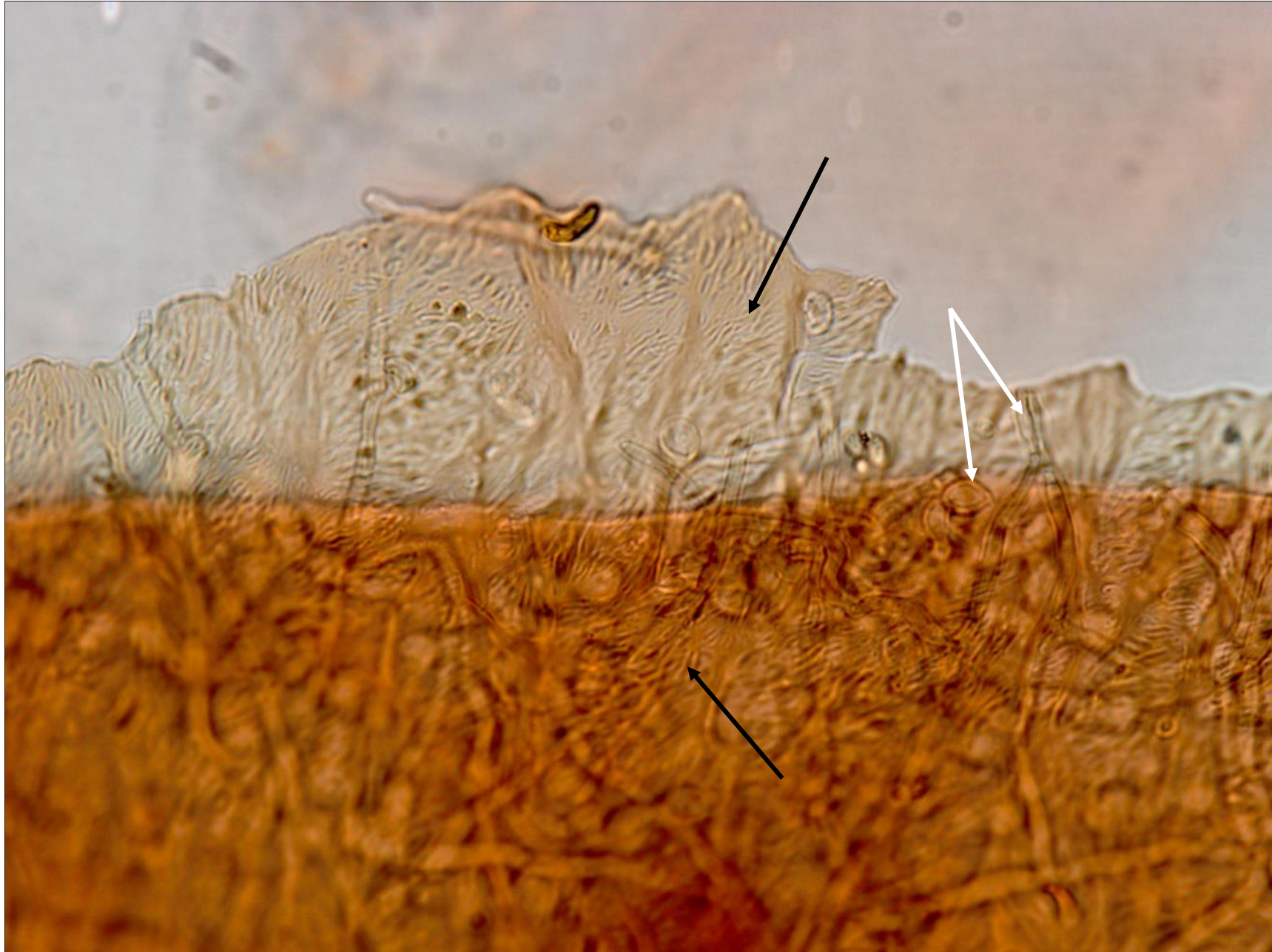




Elaters with long tapering ends & smooth spiral ornamentation, ca 6 μ m wide in mid section. Water mount.



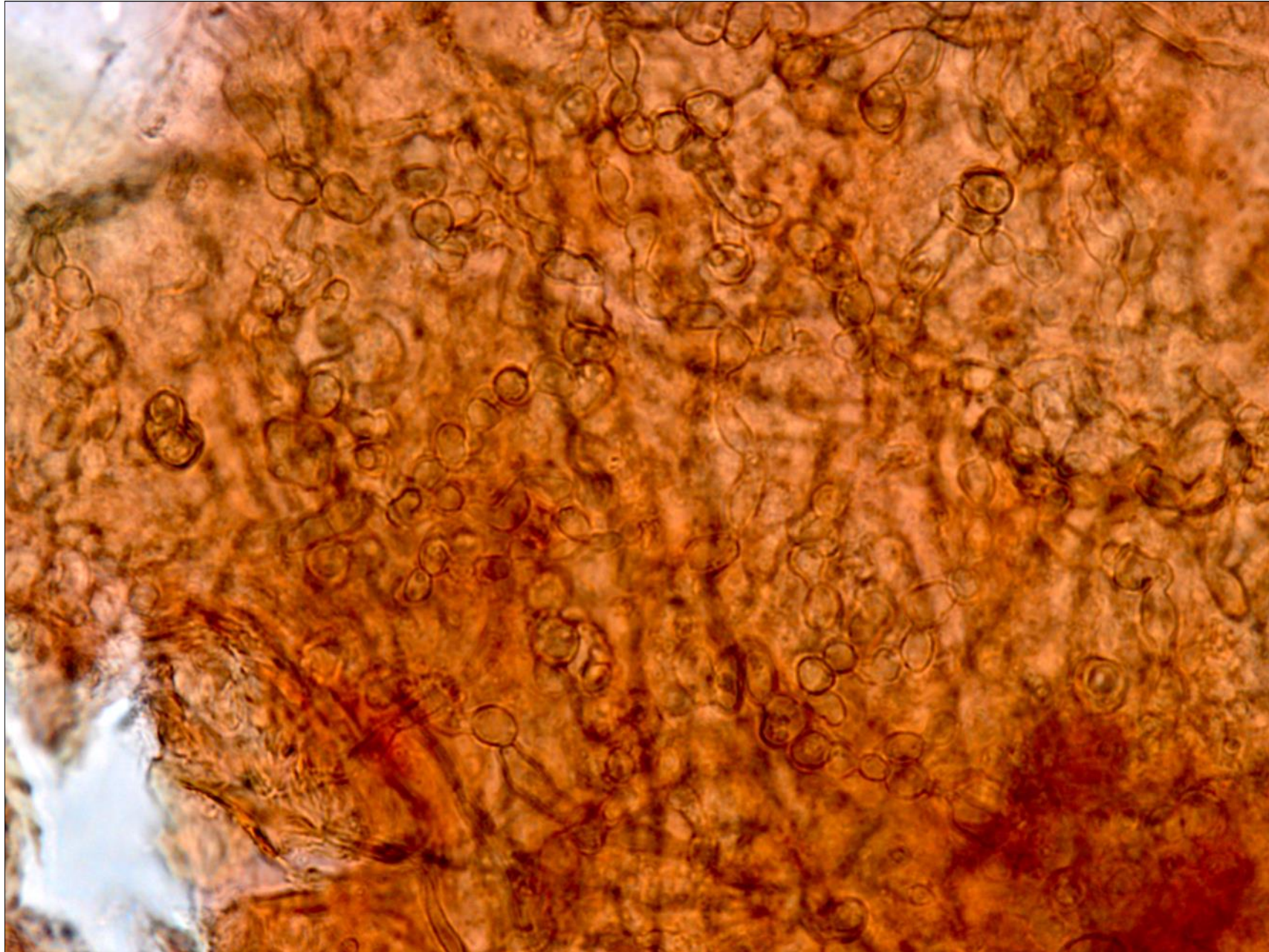
Elater & spores.
Spores warted, 9–11 μm in diameter (mostly 10–11). Shear's mounting fluid, heated.



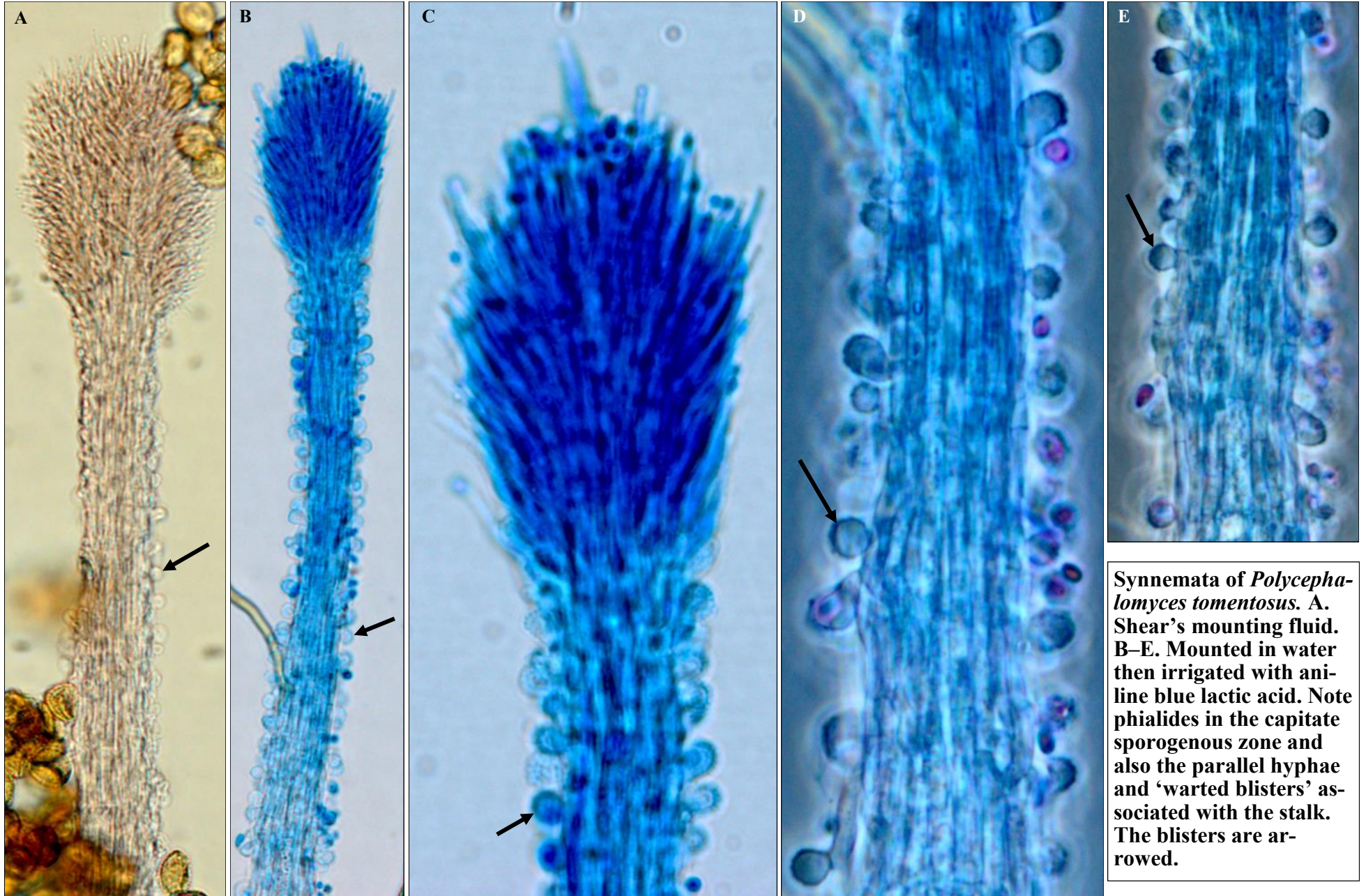
Peridial layers: outer pigmented & inner hyaline. Tiny thread-like hyphae (black arrows) are associated with *Polycephalomyces tomentosus*. The white arrows are larger hyphae & chlamydospores of *P. tomentosus*. Water mount.



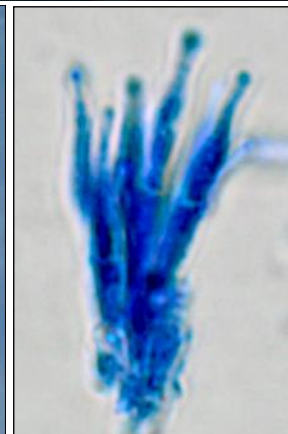
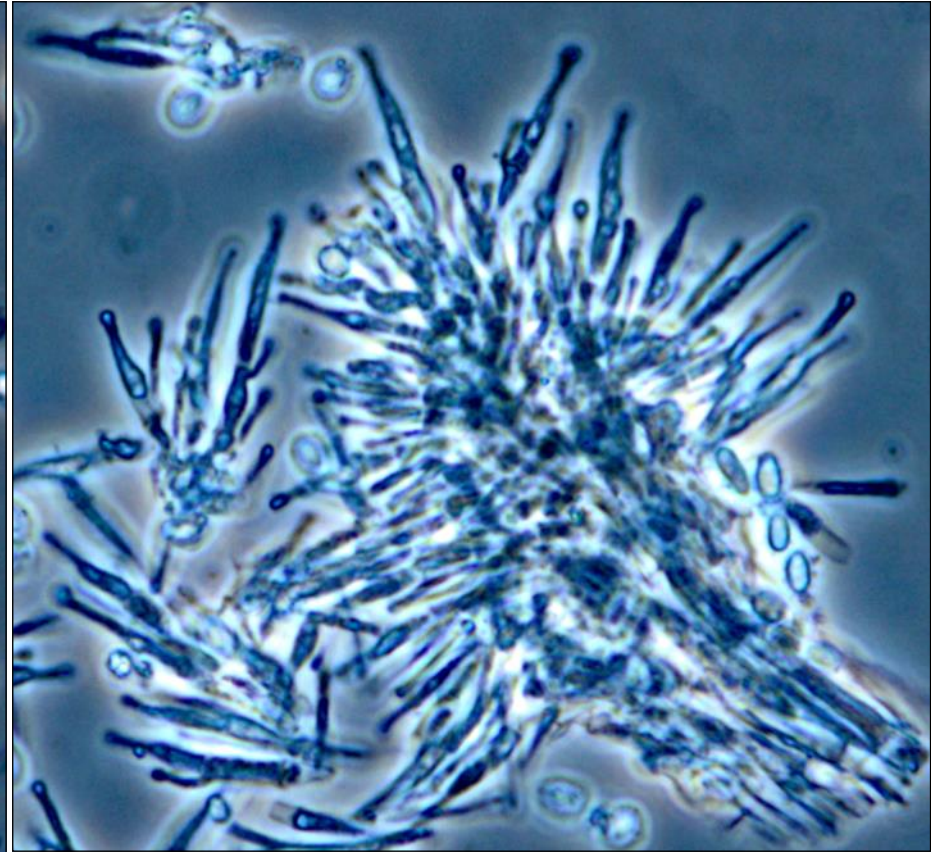
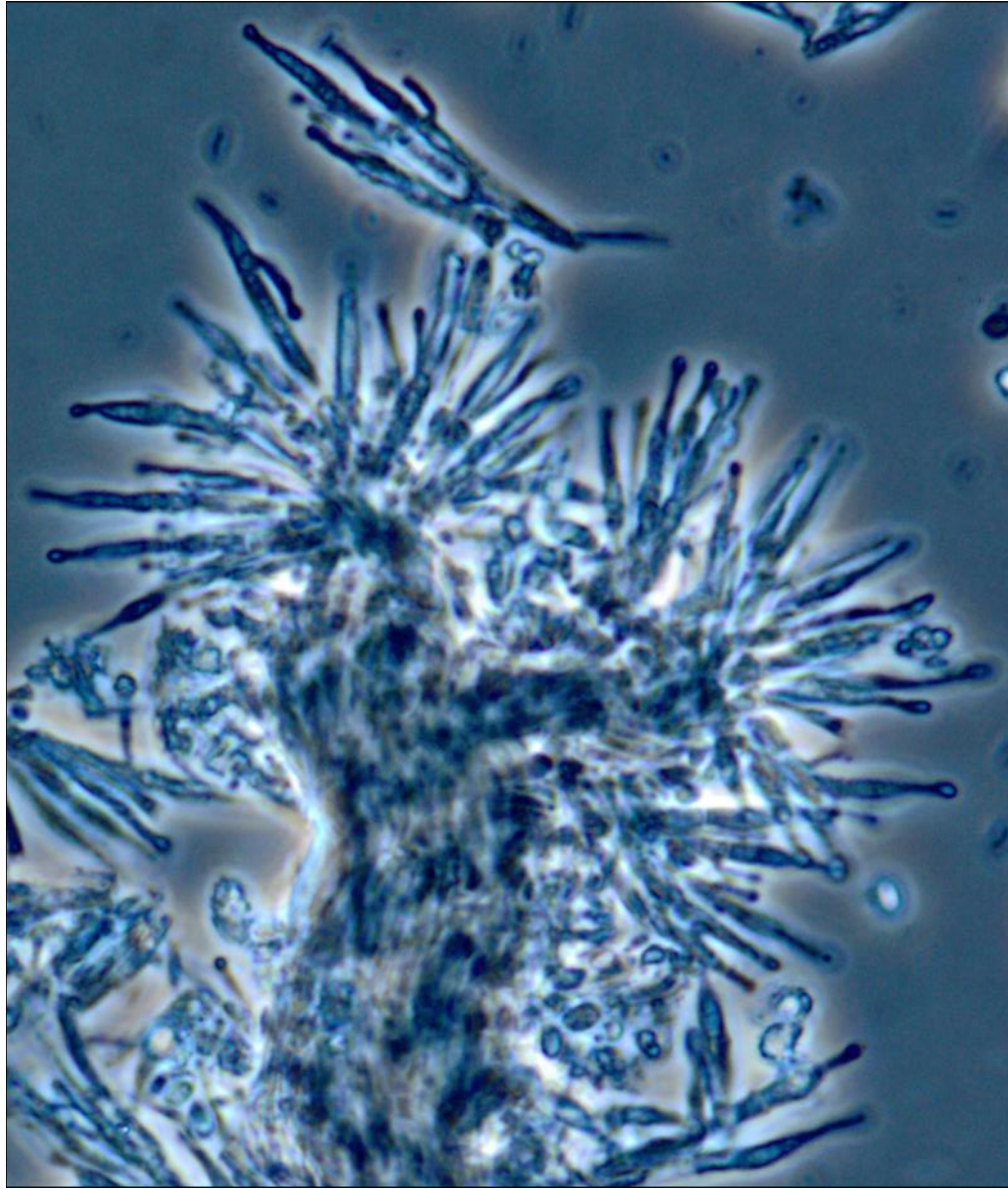
Peridial layers:
(suggestive of 3 layers)
outermost most darkly pigmented, middle intermediate & innermost hyaline. Tiny thread-like hyphae (black arrows) are associated with *Polycephalomyces tomentosus*. The white arrows are larger hyphae & chlamydospores of *P. tomentosus*. Water mount.



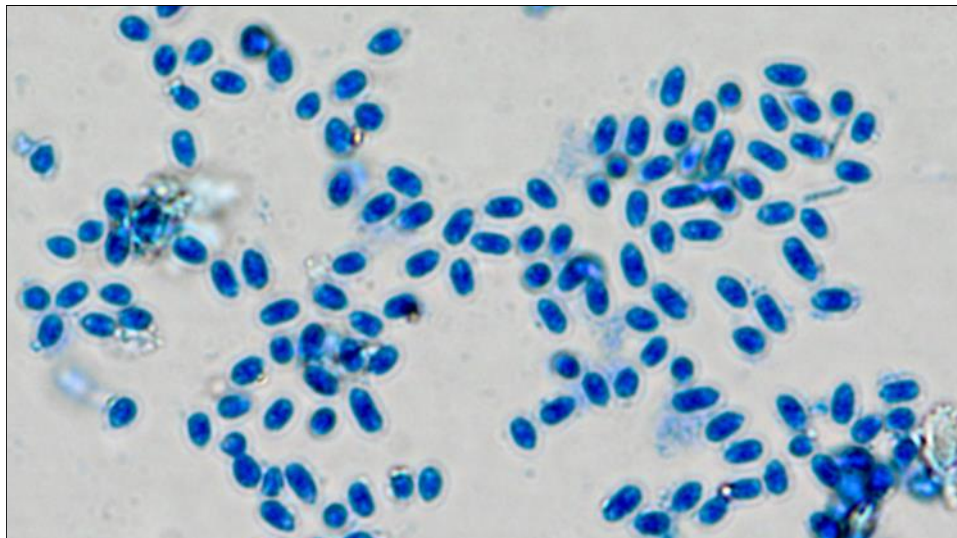
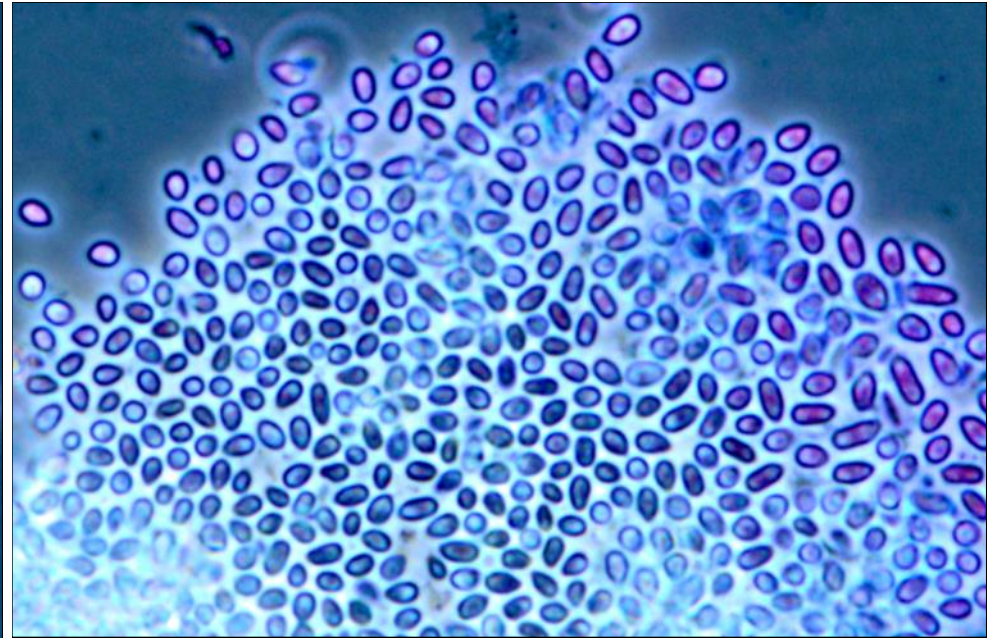
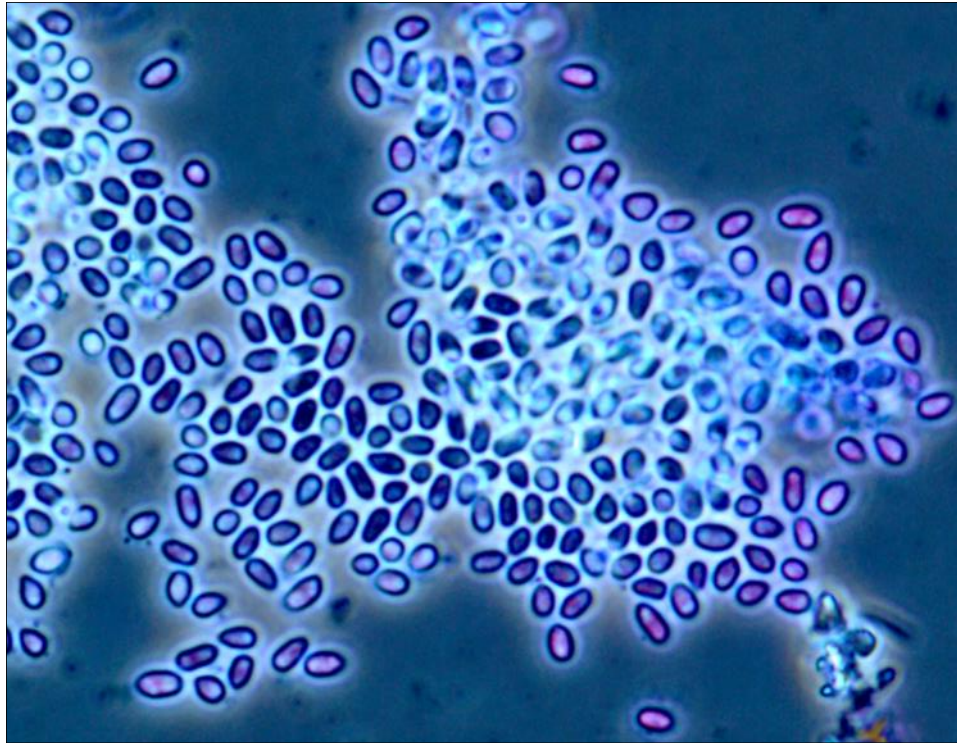
Outer pigmented periderial layer of *Trichia botrytis* with hyphae & intercalary chlamydo-spores of *Polyccephalomyces tomentosus*. Water mount.



Synnemata of *Polycephalomyces tomentosus*. A. Shear's mounting fluid. B-E. Mounted in water then irrigated with aniline blue lactic acid. Note phialides in the capitulate sporogenous zone and also the parallel hyphae and 'warted blisters' associated with the stalk. The blisters are arrowed.



Phialides of *Polycephalomyces tomentosus*. Top 2 photos showing squashed sporogenous heads to show the phialides. Other 2 showing small clusters of phialides. All in water mounts & seen under phase contrast except lower right photo which was photographed under bright-field and mounted in water then irrigated with aniline blue lactic acid.



Conidia of *Polycephalomyces tomentosus*. Hyaline, smooth, 1-celled, variable in shape (obovoid to elongate or narrowly ellipsoid – rounded apically and narrowing basally) and variable in size $2-3(-6) \times 1.5-2 \mu\text{m}$. All mounted in water then irrigated with aniline blue lactic acid. Top photos taken under phase contrast, bottom photo under brightfield.