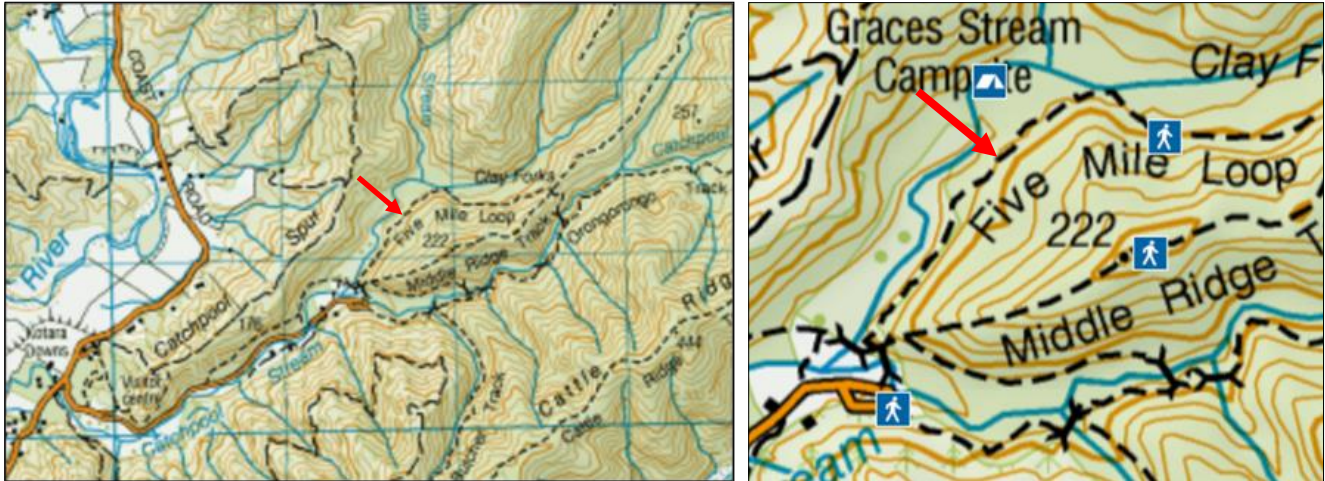


***Vermiculariopsiella immersa* (Desm.) Bender & *Rosellinia communis* L.E. Petrini — AEB 1335 (= PDD 117241).** Both species matching their respective descriptions/illustrations [Nawawi, A. & Kuthubutheen, A.J. 1990. New species and combinations in *Vermiculariopsiella* (Hyphomycetes). Mycotaxon 37: 173–182 and Petrini, L.E. 2003. *Rosellinia* and related genera in New Zealand. New Zealand Journal of Botany 41: 71–138]

Collection date: 20 May 2020

Collection site: Near Wainuiomata – Remutaka Forest Park, lower Five-Mile loop track through beech forest before reaching the turnoff to Grace’s Stream Campground (see red arrows below for approx. location)



Substrate: both species closely associated on the same piece of very wet, dead, bark/wood of an unidentified fallen branch

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

Voucher material: dried herbarium specimen AEB 1335 (= PDD 117241) accompanied by 2 lacto-Fuchsin semi-permanent slide mounts of *V. immersa* and by 1 Shear’s mounting fluid (SMF), 1 Melzer’s reagent/SMF & 1 lacto-Fuchsin semi-permanent slide mounts of *R. communis* (the lacto-Fuchsin slide of the *Geniculosporium* anamorph); Dan’s in-situ Zeiss dissecting scope Portra 160, 35 mm photos (digitized) and his Olympus BX51 compound scope with DP25 camera digital photos of microscopic detail; Dan’s comments.

Dan’s comments on *Vermiculariopsiella immersa*: This collection is the first species recorded in New Zealand from the genus *Vermiculariopsiella*. Its published description and illustrations by Nawawi & Kuthubutheen (1990) are reproduced on the next page. It is the type species of the genus and one of the mostly frequently collected. Keys to species are provided in Marques et al. 2008. Revista Brasil. Bot. 31(4): 659–665 (12 species) and in Dubey & Moonambeth. 2014. International Journal of Scientific Research 3(6): 35–36 (15 species). 29 species and varieties are presently listed on Index Fungorum. Key morphological features of *V. immersa* include 1) the long, dark, unbranched, multiseptate setae 2) the phialidic, subcylindrical to lageniform conidiogenous cells with a narrowing recurved cylindrical neck ending in a distinct flared collarette and 3) hyaline, aseptate, smooth, straight conidia with apex slightly curved and pointed and base obtuse to rounded with a pointed to subacute protuberance on one side. For further details on AEB 1335, see illustrations on the following pages.

Vermiculariopsiella immersa (Desm.) Bender, *Mycologia* 24: 412 (1932) Fig. 2, E - H

Excipula immersa Desm., *Bull. Soc. Bot. Fr.* 4: 911 (1857).

Dinemasporium immersum (Desm.) Sacc., *Syll. fung.* 10: 439 (1892).

Vermiculariopsis immersa (Desm.) Hohn., *Ber. dtsh Bot. Ges.* 36: 317 (1918); *Mitt. Bot. Inst. Techn. Hochsch. Wien* 6: 32 (1929).

Oramasia hirsuta Urries, *An. Inst. bot. A. J. Cavanilles* 14: 168 (1956).

Dinemasporium adeanum Petrak, *Bot. Jahrb. Syst. Beiblatt* 62: 150 (1929), fide Nag Raj & Kendrick (1986).

Superficial mycelium inconspicuous. **Conidiomata** sporodochial, scattered, solitary, discrete, superficial, setose, 245 — 1105 μm diam, black with an overlying white mass of conidia, sporodochia often surrounded or demarcated by a dark thin line. **Stroma** consisting of a basal brown **textura angularis** from which the setae arise, becoming paler above and merging into the conidiogenous region. **Setae** numerous, 8 — 21 per sporodochium, dark brown, thick-walled, rigid, erect, straight to slightly curved, tapering gradually to the apices, smooth, 5 — 10 septate, 570 — 1325 μm long, inflated at the base, 8.5 — 12 μm wide at the 1st septum, narrowing to 4 — 6 μm at the subobtuse to acute apices. **Conidiophores** compacted in the sporodochium, sparingly branched, short, pale brown, cylindrical. **Conidiogenous** cells arranged in compact columns, monophialidic, subcylindrical to lageniform, hyaline to subhyaline, thin-walled, smooth, 11 — 15 μm long, 2 — 3 μm wide, narrowing to a recurved cylindrical neck and ending in a distinct flared collarette and channel 0.5 — 1 μm wide. **Conidia** produced in a white agglutinate mass, hyaline, smooth, normally aseptate, sparsely guttulate, straight, cylindrical, apex slightly curved and pointed, base obtuse to rounded with a pointed to subacute protuberance on one side indicating the point of attachment, 13 — 23 μm long, 1.5 — 2.5 μm wide.

Of the three species found in Malaysia, *V. immersa* appears to be the most common, occurring on decaying leaves and twigs. The sporodochia are variable in size but are generally large with many setae and are often demarcated by a thin black line, clearly visible when they occur on leaves. In most collections, the setae are rigid with subacute apices. In some collections, however, the setae tend to be thinner, lighter in colour and their tips drawn to a fine, hair-like structure. The conidia are within the range 13 — 27 μm long, 2 — 2.5 μm wide and sparsely guttulate. Conidia are generally non-septate, but in two collections some conidia were observed to develop 1 — 3 septa.

Specimens examined: On decaying leaves, Pusah Forest Reserve, N. Sembilan, A. Nawawi, April 1987; on decaying leaves, Lepar Forest Reserve, Pahang, A. J. Kuthubutheen, July 1986; on submerged decaying leaves, Bukit Rengit Pahang, A. Nawawi, 11 Nov. 1987; on submerged decaying twigs, Gunung Jerai, Kedah, A. Nawawi, 25 Feb. 1988; on submerged decaying leaves, Brunei, A. Nawawi, 23 Aug. 1988, IMI 328843.

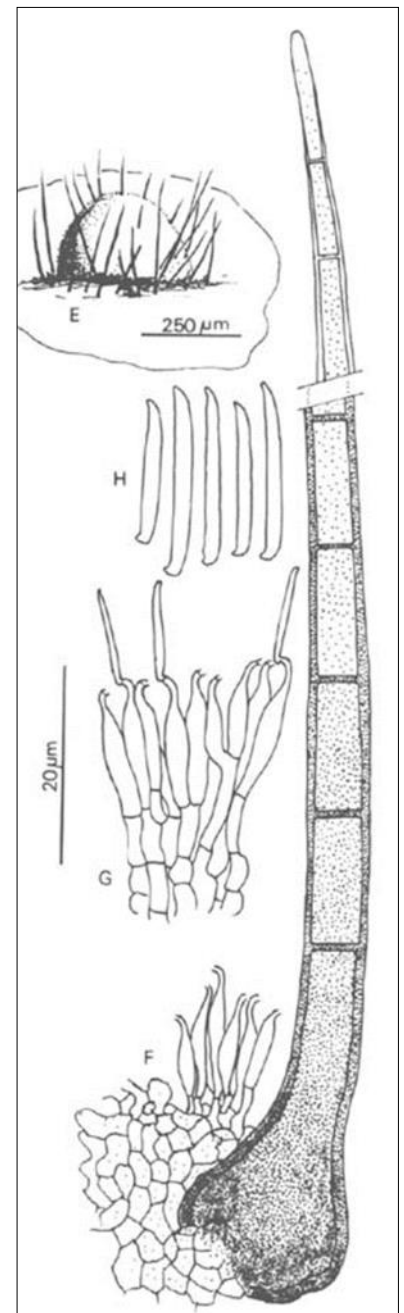
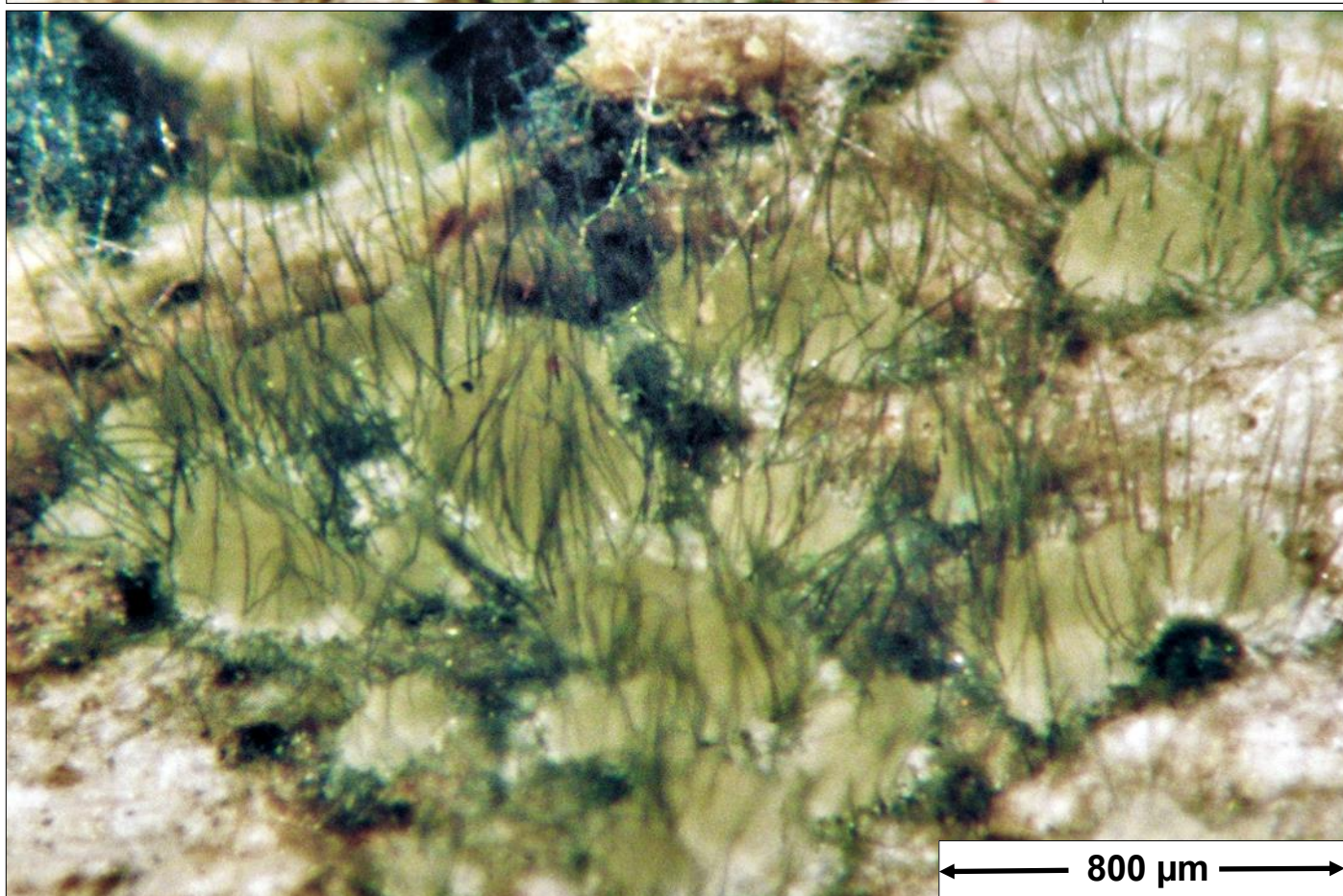
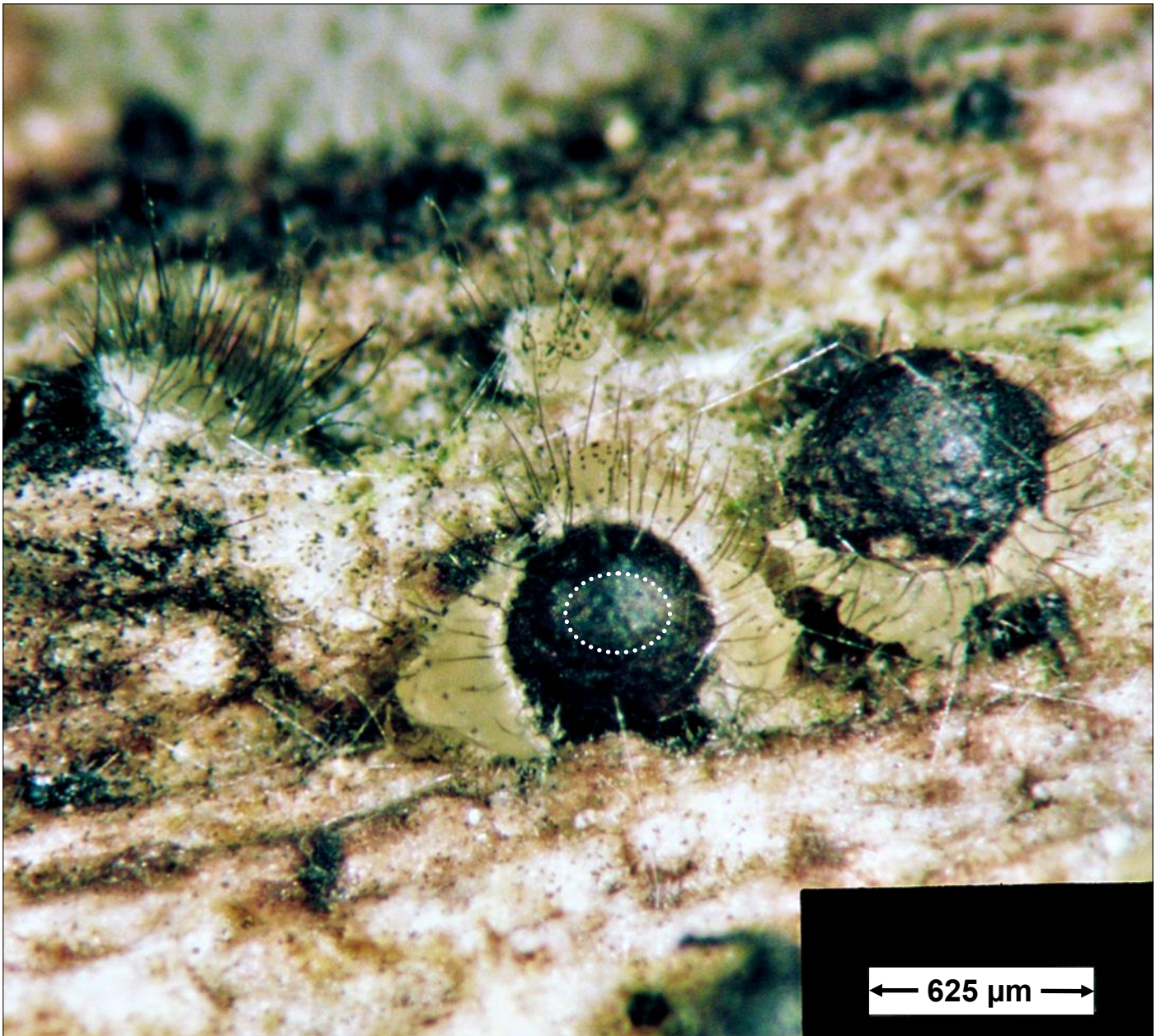


Fig. 2. E–H. E. habit sketch. F. part of a seta and basal stroma with conidiophores. G. conidiogenous cells with recurved apices and flared collarettes. H. mature conidia.



AEB 1335. In-situ sporodochia of *Vermiculariopsiella immersa* & black cone-shaped stromata of *Rosellinia communis*. Bottom photo cropped from the upper photo and enlarged. Note the pale yellow-green of the slightly emergent sporodochial conidial masses. The thin blackish underlining stromata can be seen ringing each sporodochium. Obvious also are the dark setae arising within each spore mass but especially at their periphery.



AEB 1335. In-situ sporodochia of *Vermiculariopsiella immersa*. Here seen closely associated with two *Rosellinia communis* stromata (probably only a spacial relationship?). Note that the sporodochial black stromatic edges have overgrown the lower-center *Rosellinia communis* cone (See the white border that I've added to bring attention to that extension. I've purposely placed the white-dotted ellipsoidal border inside the sporodochial black stroma extension so that its edge can be seen.).

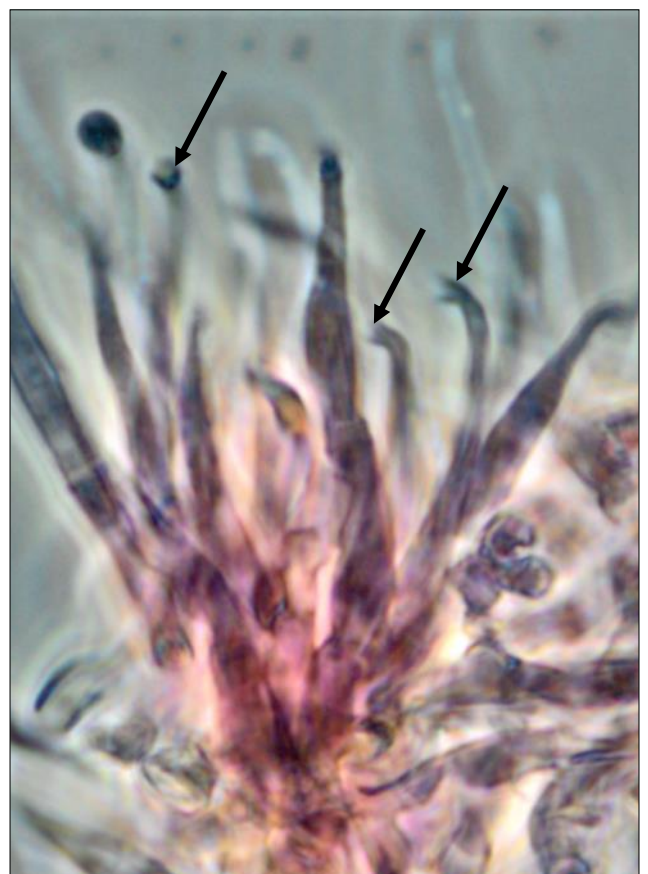
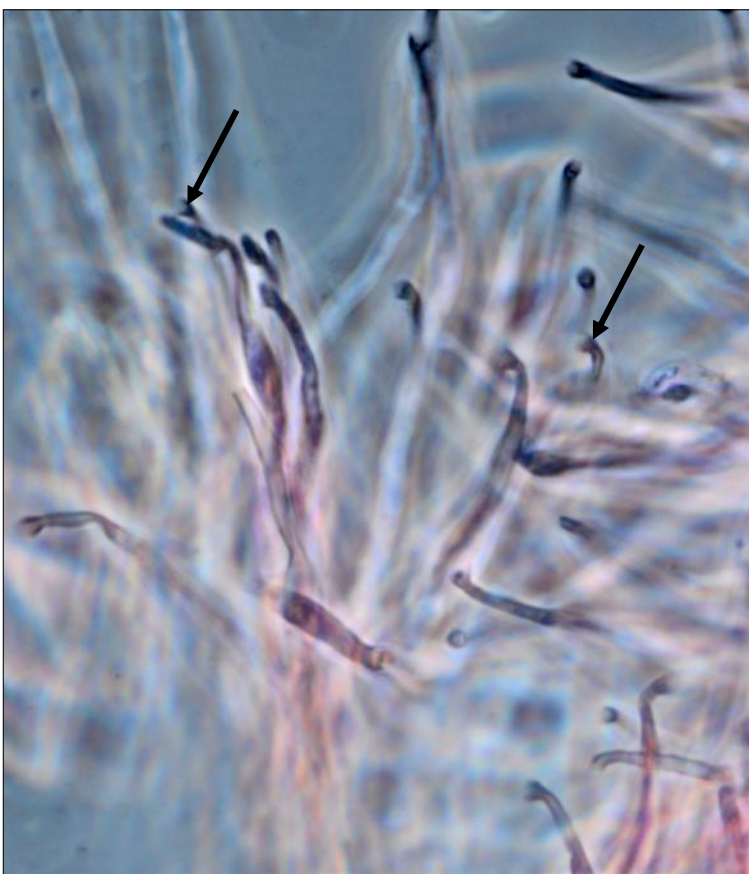
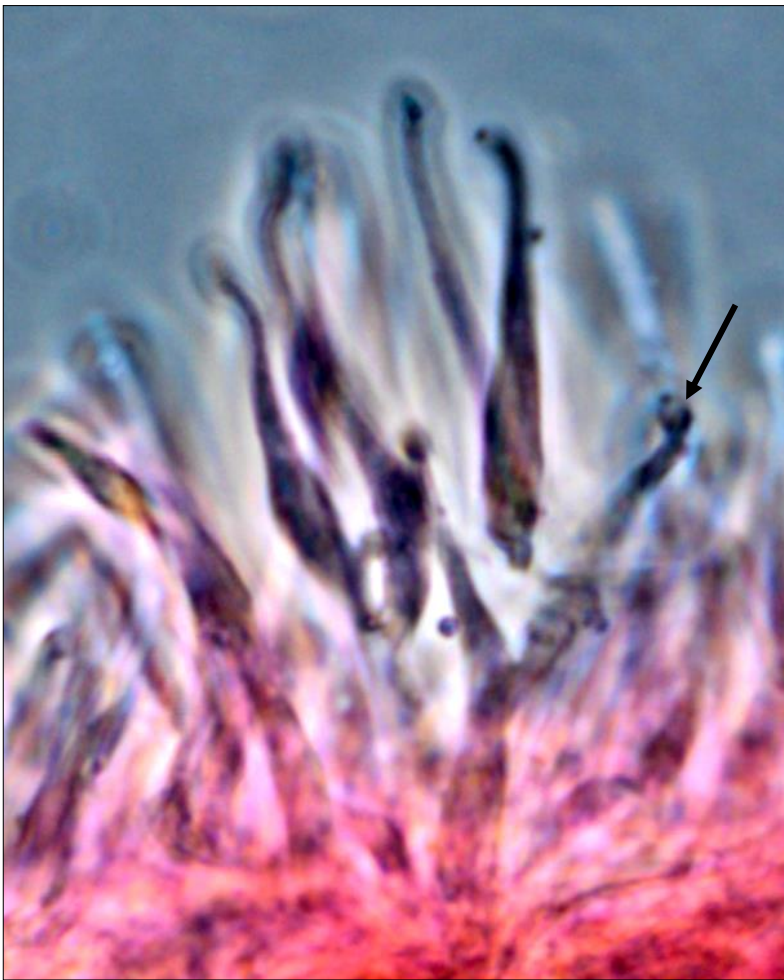


AEB 1335. Sporodochium-squash fragment. Lacto-Fuchsin mount, X20 objective. Note the numerous, long, dark, unbranched, multiseptate setae – lighter & somewhat tapered apically, darkest and broadest at their swollen bases. Conidiophores, conidiogenous cells and scattered background conidia have taken up the stain.

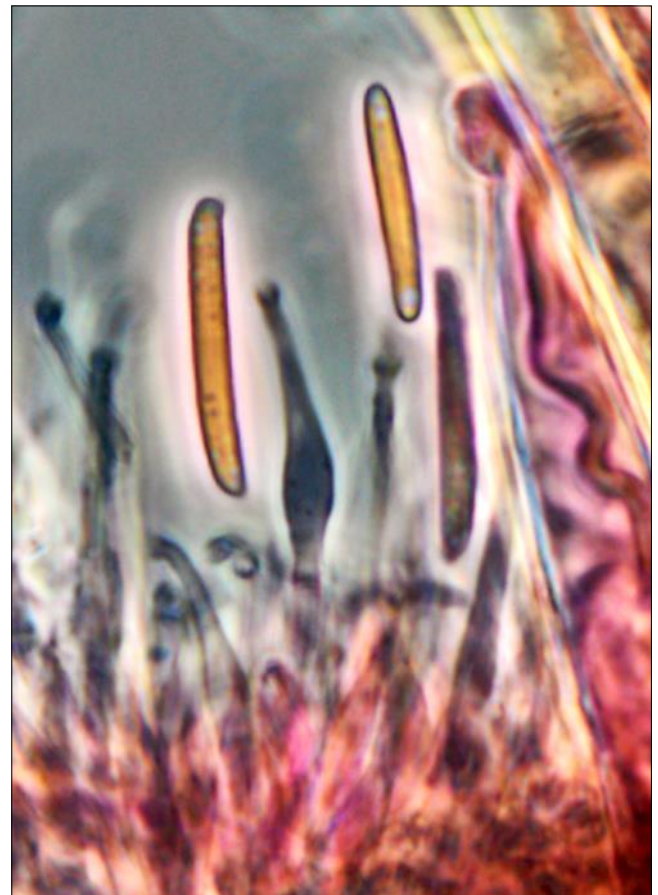
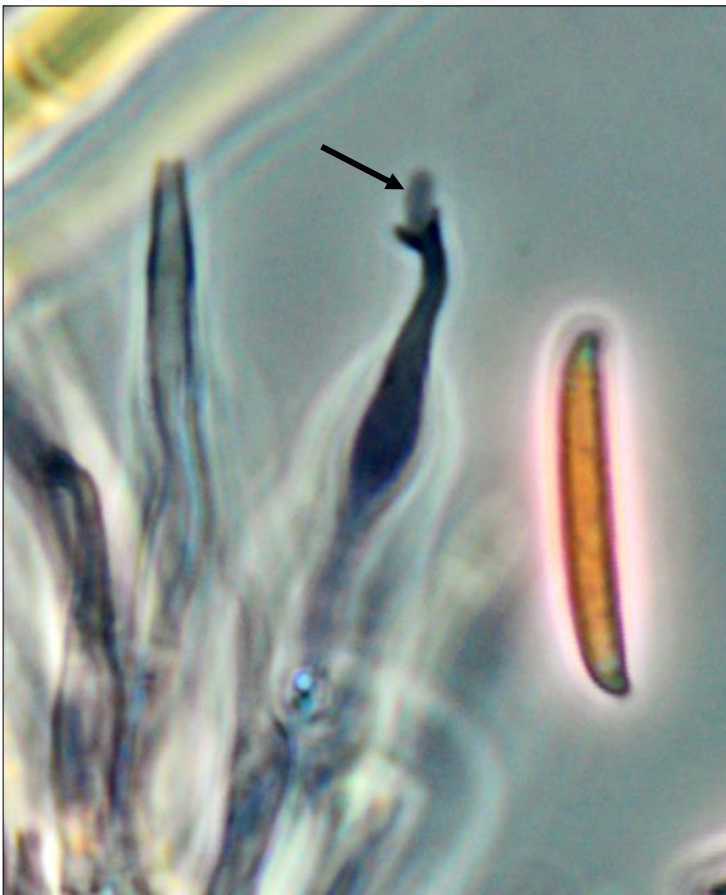
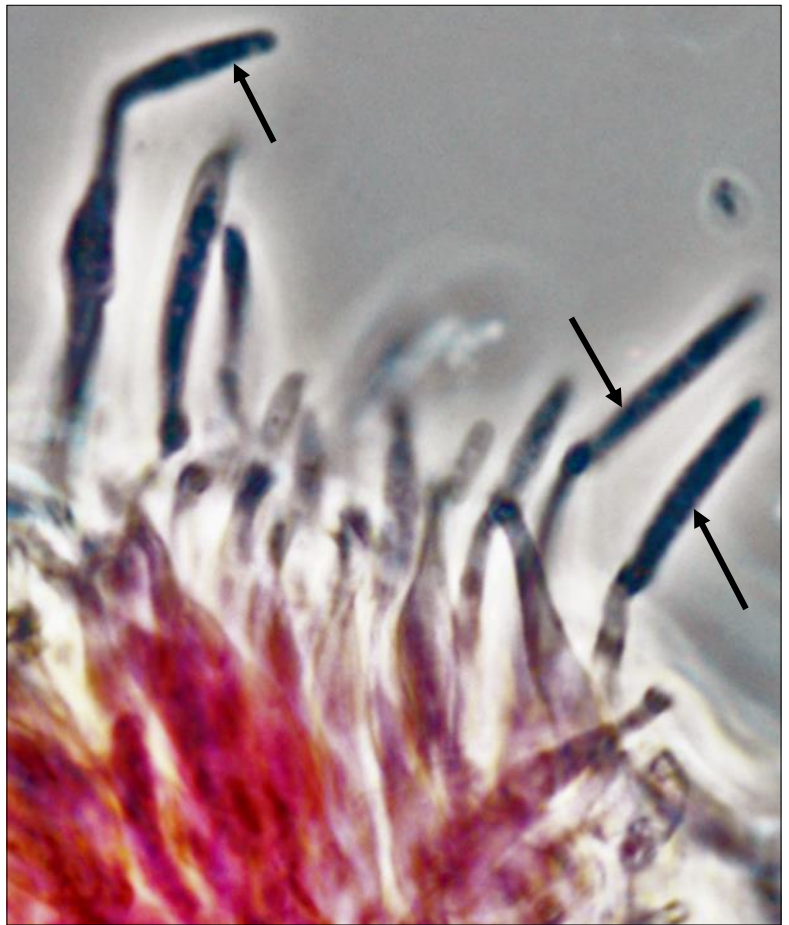
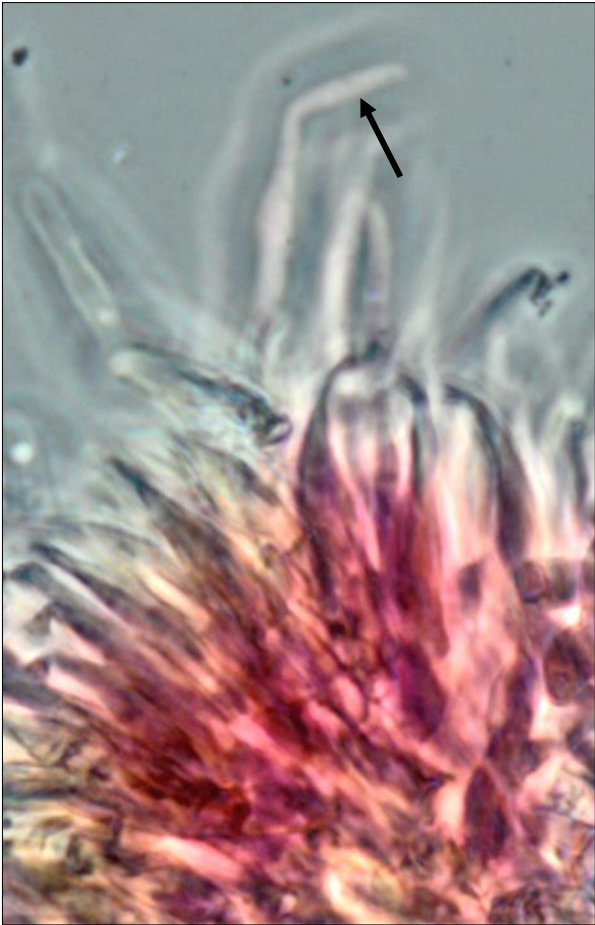


AEB 1335. Sporodochium-squash fragment. Lacto-Fuchsin mount, upper photo X10 objective and lower X20, both brightfield microscopy. The longest seta in this cluster was 630 μm but lengths to 900 μm were recorded. Setae widths were 8–11 μm at the lowest septum and markedly uniform throughout until slightly tapering at the apex.

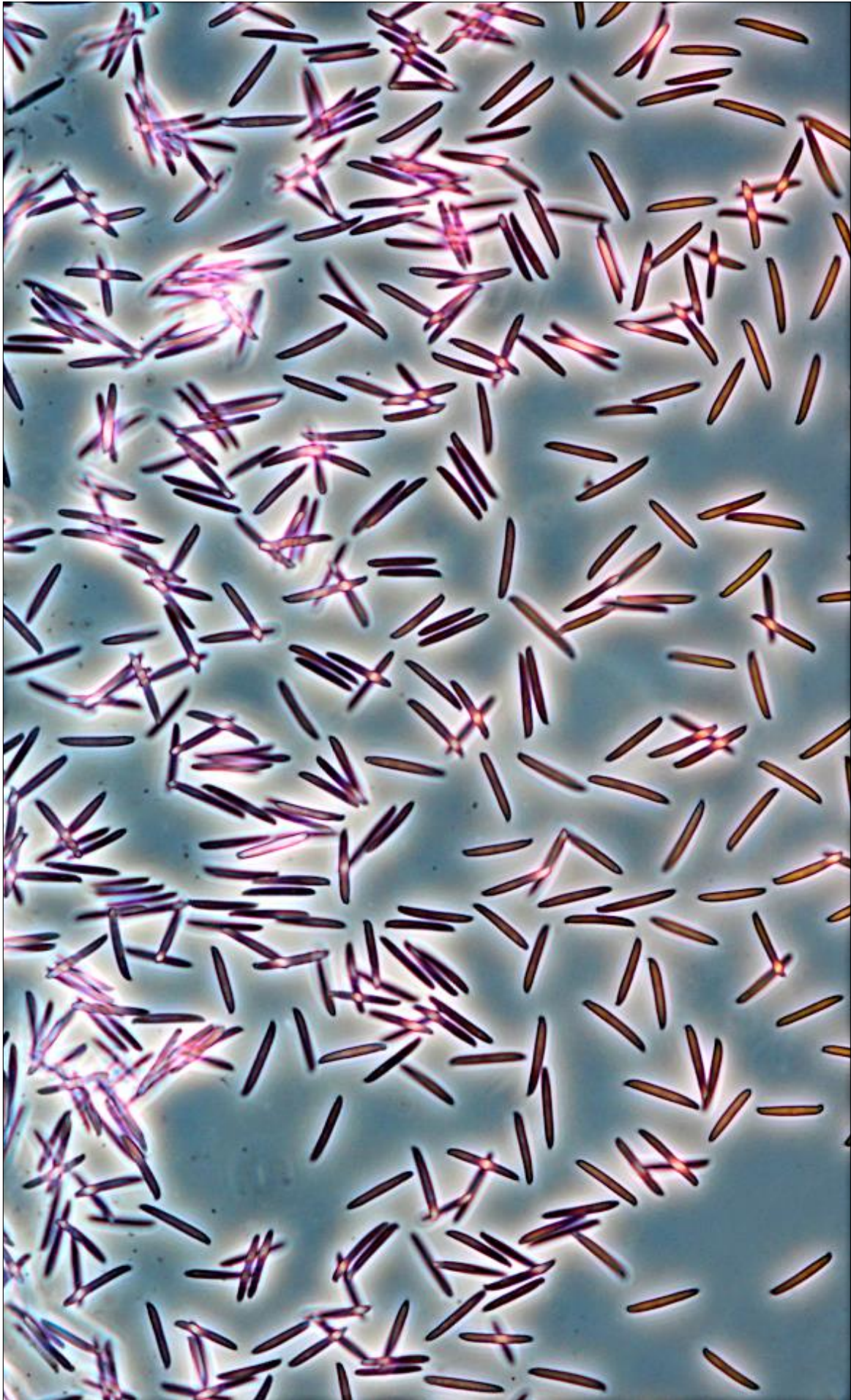




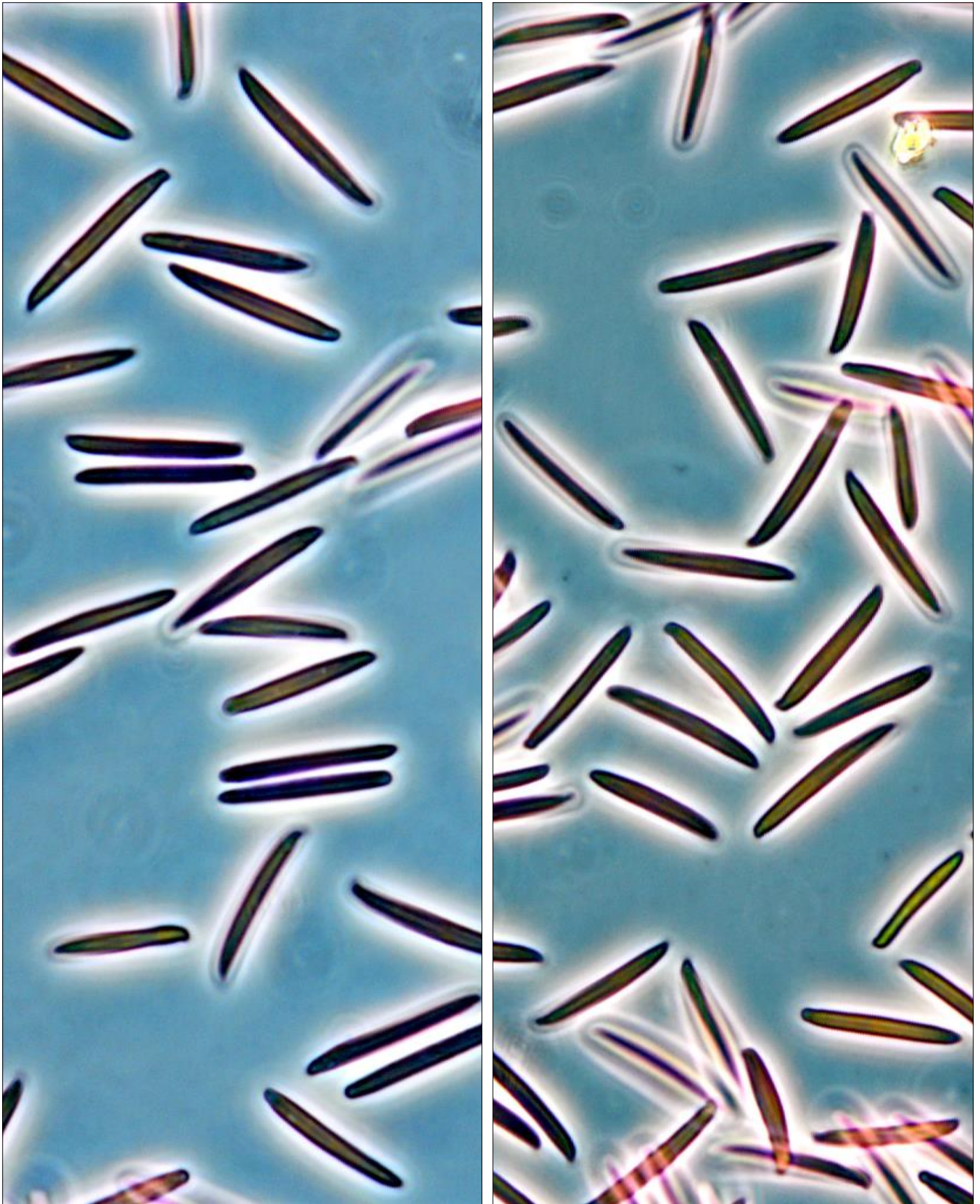
AEB 1335. Sporodochium-squash fragment with views of the sporogenous region just above the basal stroma. Emphasis on the subcylindrical to lageniform phialides and the more obscure branching conidiophores. Note especially the phialides recurved cylindrical neck ending in a distinct flared collarette (arrowed). Lacto-Fuchsin mount, X100 objective, phase microscopy.



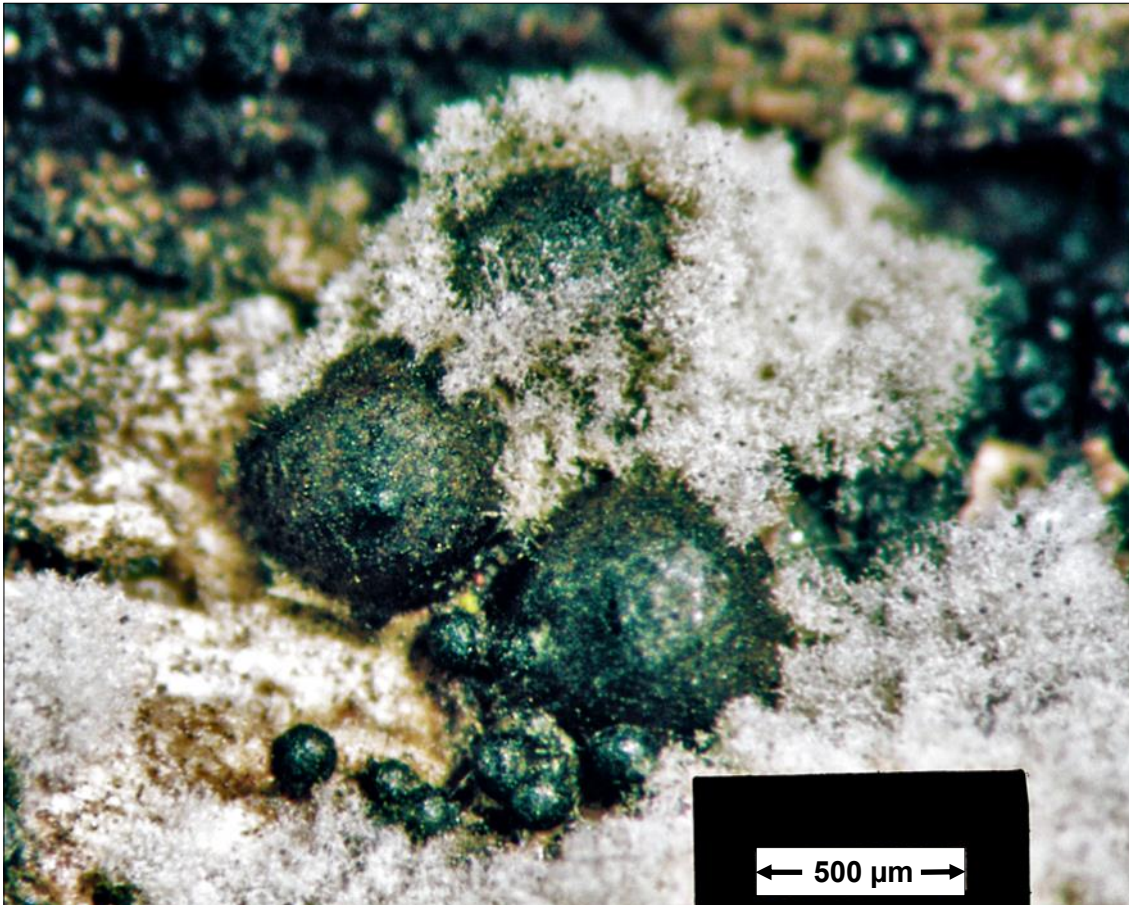
AEB 1335. Another view of sporodochium-squash fragments with views of the sporogenous region. Here emphasizing phialide conidiogenesis. The upper two photos represent the same field of view which features (like the lower left photo), stages of conidiogenesis – arrowed. Although phialide measurements were difficult, mature conidia in the lower 2 photos (measuring 14–17 × 1.5–2 μm) provide a reference point for determining the size of the nearby phialides.



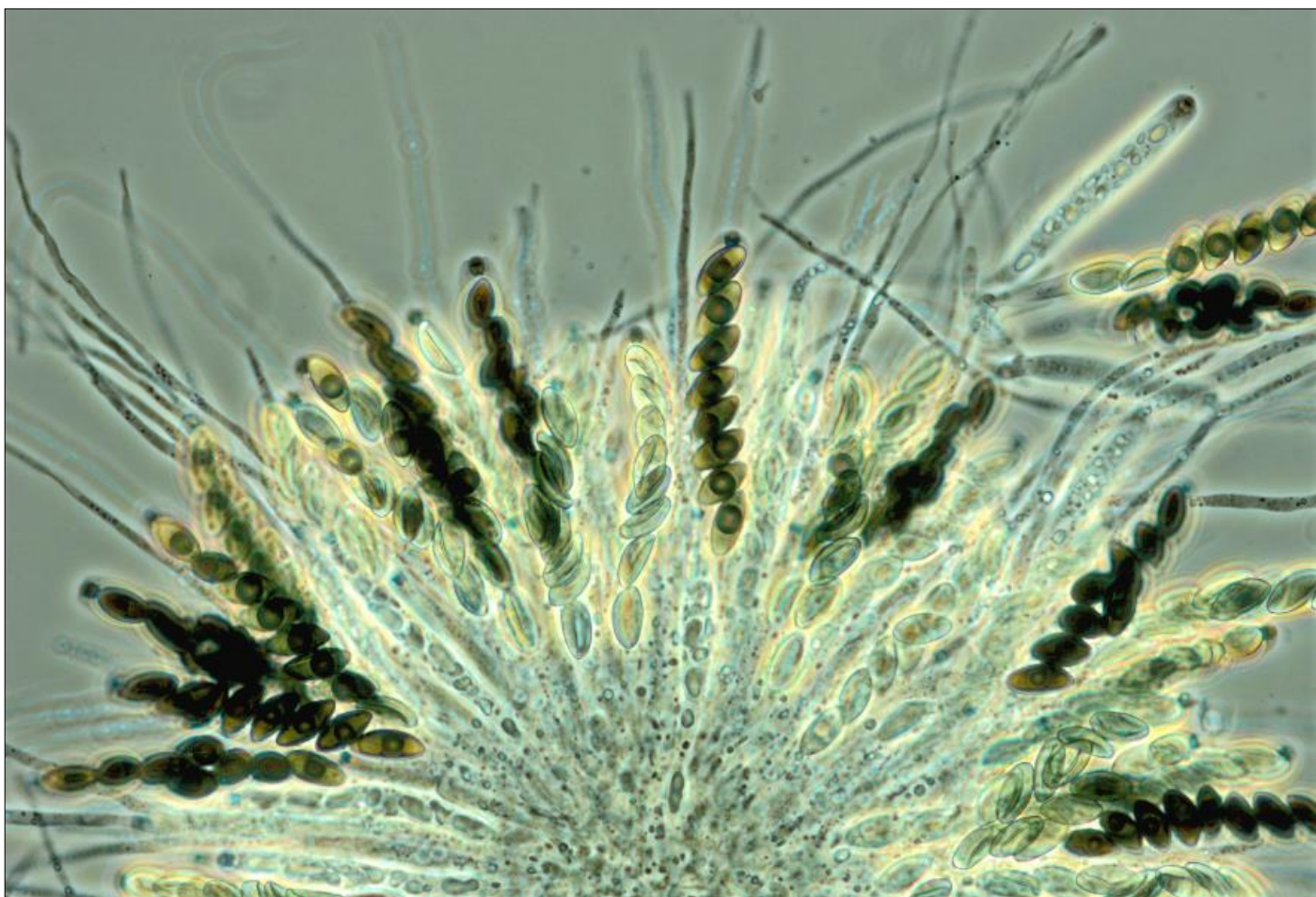
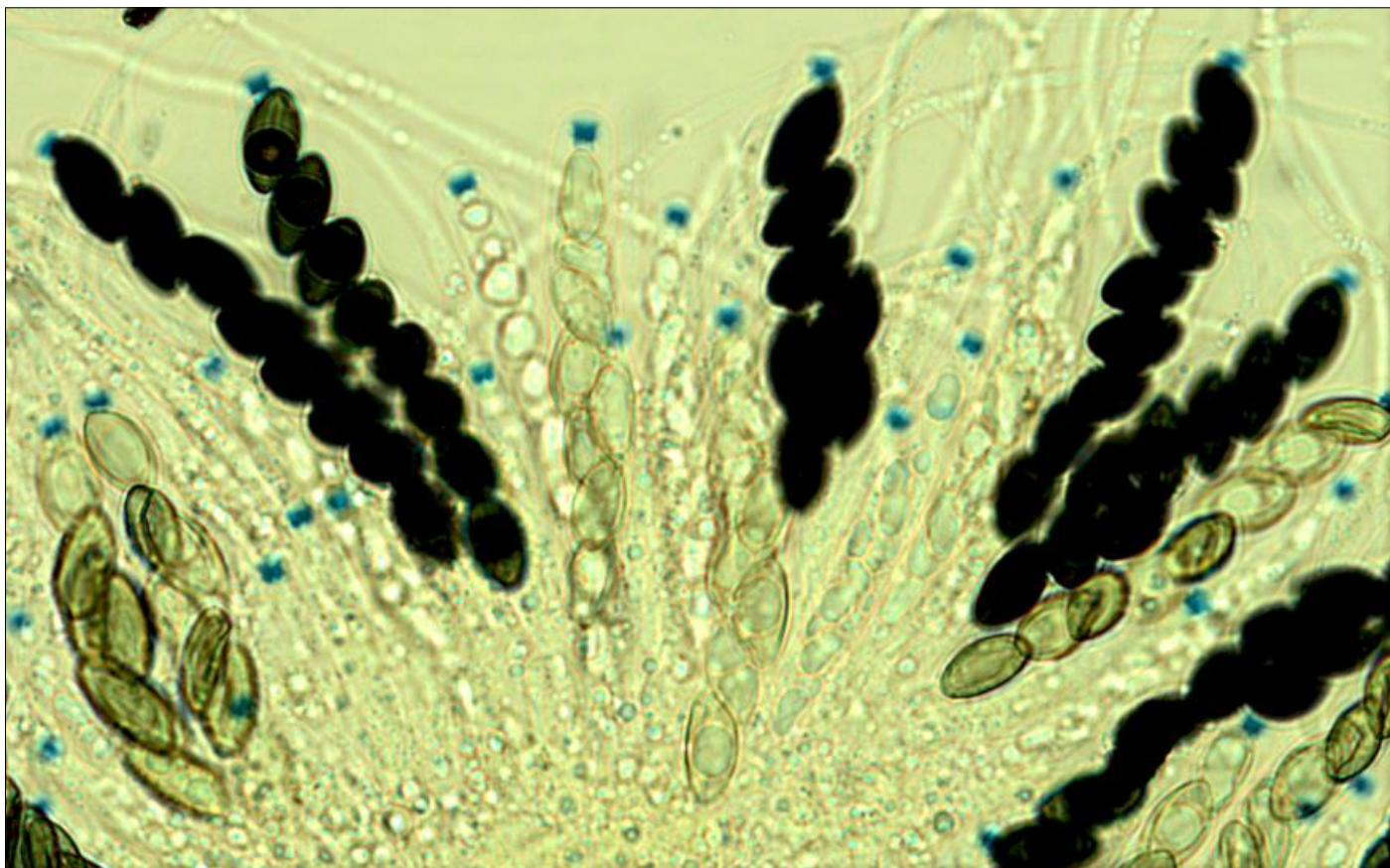
AEB 1335. A few of the literally millions of conidia from one sporodochium, observed in a lacto-Fuchsin slide mount (X40 objective, phase microscopy).



AEB 1335. X100 objective view of conidia from the previous page. Note that conidial apices are slightly curved and pointed while the bases are obtuse to rounded with a pointed to subacute protuberance on one side indicating the point of attachment.



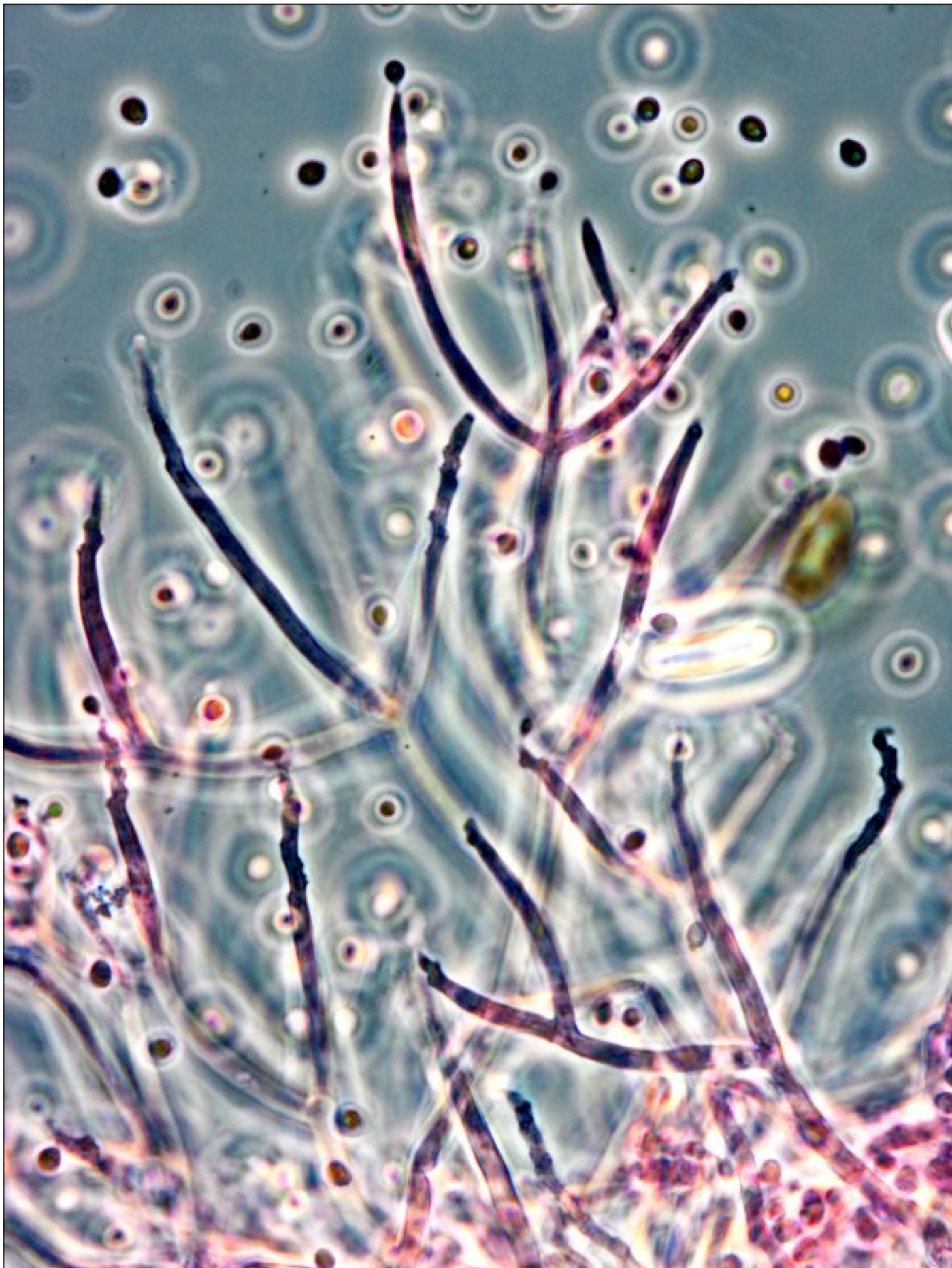
AEB 1335. In-situ *Rosellinia communis* stromata surrounded by a copious fruiting of its *Geniculosporium* anamorph. Upper photo from a Zeiss dissecting scope; lower photo using a Samsung Galaxy 70 smartphone through the Zeiss eyepiece.



AEB 1335. Hymenial squashes. Both in Melzer's reagent mounts and under the X40 objective. Top photo brightfield microscopy emphasizing ascus apical bluing, bottom photo phase microscopy emphasizing paraphyses and more ascospore detail.



AEB 1335. Hymenial squash in Melzer's reagent mount under the X40 objective, brightfield . Cropped from a differently focused photo of the same field of view seen in the bottom photo on the previous page. Note the apical bluing of asci and the ascospore shapes and straight whole-length germ slits (the latter arrowed). These features and the ascospore sizes [those seen here mostly $17.5 \times (8-8.5-9.5(-10) \mu\text{m})$] are representative of *Rosellinia communis*.



AEB 1335. The *Geniculosporium* anamorph of *Rosellinia communis* mounted in lacto-Fuchsin and photographed under the X100 objective using phase microscopy.



AEB 1335. Conidia of the *Geniculosporium* anamorph mounted in lacto-Fuchsin and photographed under the X100 objective using phase microscopy. The conidia mostly $3 \times 2-2+ \mu\text{m}$. Note the flat basal abscission scar bearing a minute frill (arrowed).