

***Pyropyxis rubra* (Peck) Egger 1984 – AEB 749 (= PDD 76456)**

Collected: 19 July 2001

Substrate: moist burnt ground in a conifer-hardwood forest; **Collection site:** Moist portion of a fire area E. of Griddle Lake (47.991101, -91.464237) on the W. shore of Snowbank Lake (Lake County, Minnesota), site of a control burn in the Fall, 2000. The same location yielded an abundance of *Geopyxis carbonaria* and *Morchella conica*.

Collectors & Identifiers: Dan Mahoney and Ann Bell; **Voucher materials:** dried herbarium specimen accompanied by 2 Shear's mounting fluid (SMF) +1% aqueous Congo red slides; in-situ field photos from mid-June 2001 & microscopic views of apothecia that emphasize thin sections that show the hymenial layer, ectal & medullary excipulum and close-ups of paraphyses, asci and ascospores; Dan's comments.

References consulted for *Pyropyxis rubra*:

1) Egger K.N. 1984. *Pyropyxis*, a new pyrophilous operculate discomycete with a *Dichobotrys* anamorph. Canadian Journal of Botany 62(4): 705–708. Portions of this article with its teleomorph description and illustrations are reproduced on the following page of this pdf.

2) Filippova N., Bulyonkova T. & Lindemann U. 2016. New records of two pyrophilous ascomycetes from Siberia: *Pyropyxis rubra* and *Rhodotarzetta rosea*. Ascomycete.org 8(4), 119–126. With good descriptions & illustrations as well as a discussion of the differences between the similar-appearing *P. rubra* and *R. rosea*.

Brief description: The largest **apothecia** were approx. 1 cm high and 1 cm across consisting of a reasonably deep cup without any special hairs, borders or other distinguishing features. **Hymenium** lining the entire inner portion of the cups with only the uppermost rim of the cup being sterile. Cup color ranged from a pale orange to reddish with the hymenium and ectal excipulum being nearly concolorous. **Ectal excipulum** consisting of a textura globosa-angularis, quite compact but appearing even more compact in SMF or mounts other than water where the cells collapse together and appear more angular. **Medullary excipulum** quite distinct from the ectal excipulum, consisting of a textura intricata where the interwoven elements were reasonably robust and hyphal swellings fairly common. Ectal excipulum separated from the medullary excipulum by a cell layer or two (in the ectal excipulum) of distinctly darker staining cells in aniline blue lactic acid or in SMF containing 1% aqueous Congo red. No cells of the excipulum or the hymenium stained positive (blue) with Melzer's although a slight dextrinoid (reddish) reaction appeared in the lower medullary excipulum near its border with the ectal excipulum. 1% aqueous Congo red was the stain of choice. Semi-permanent mounts were made using SMF with some of the Congo red added. **Paraphyses** numerous, smooth, thread-like (mostly 3–3.5 µm in width) with the apices not capitate and only very slightly wider than the rest of the thread, which was quite uniformly wide. Paraphyses appearing simple but often branching one or more times near the base, septate with the lower portions being more frequently septate than the upper portions. Hymenial pigment results from pigment granules in the paraphyses. **Asci** phototropic, cylindrical with 8 uniseriately arranged ascospores. Mature asci that broke free from the hymenium (in hymenial squashes) could be measured accurately. These measured 175–210 × 12–13 µm (n=15). Opercula were observed on the broadly rounded apices and ascus bases were usually bifurcate with all stages of crozier formation and ascus development beautifully visible in the Congo red mounts. **Ascospores** one-celled, smooth, ellipsoidal, hyaline with a faint nucleus apparent in the cell center and with a group of small guttules at each pole in mature spores. Immature spores had a single guttule (occasionally 2 or more, or none) at each pole; these became more numerous and smaller, but still polar, as the spores matured. The polar guttules looked similar regardless of mounting medium. Ascospores measured 14–16 × 7–9.5 µm (n=30).

Description

Pyropyxis gen. nov.

ANAMORPHOSUS: *Dichobotrys* Hennebert, Persoonia, 7: 193.1973.

TYPUS: *Peziza rubra* Peck.

Apothecia deeply cupulate, pink to reddish orange. Ectal excipulum composed of thick-walled *textura angularis* tissue with the outer layer of cells giving rise to short, hyaline moniliform hairs. Medullary excipulum composed of septate, hyaline hyphae forming a *textura intricata* tissue. Asci cylindrical with a furcate base, operculate, octosporous, J–. Paraphyses filiform, mostly hyaline, but some are filled with orange, crystalline pigments. Ascospores smooth, hyaline, eguttulate at maturity but biguttulate when immature.

ANAMORPH: *Dichobotrys* Hennebert, Persoonia, 7: 193. 1973.

TYPE SPECIES: *Peziza rubra* Peck.

ETYMOLOGY: Greek, *pyros* = fire; Latin, *pyxis*, referring to the segregation of this genus from *Geopyxis*.

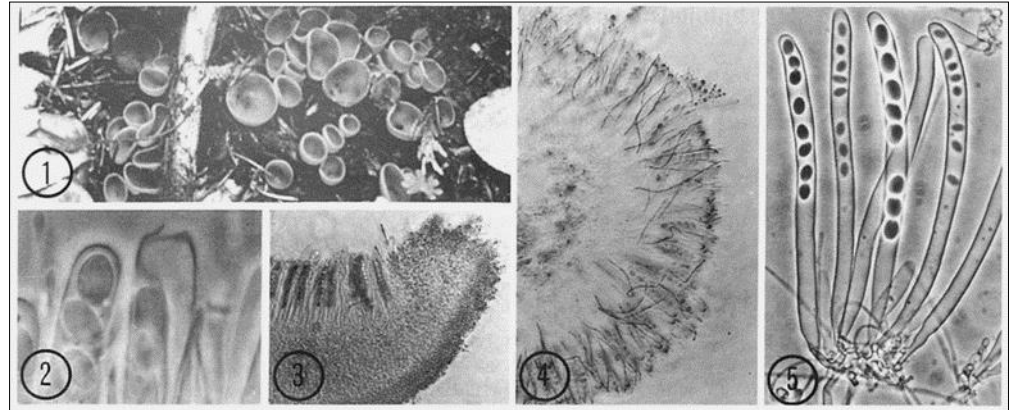
Pyropyxis rubra (Peck) Egger, comb. nov. Figs. 1–10

BASIONYM: *Peziza rubra* Peck, Annu. Rep. N. Y. State Mus. 24: 95. 1872.

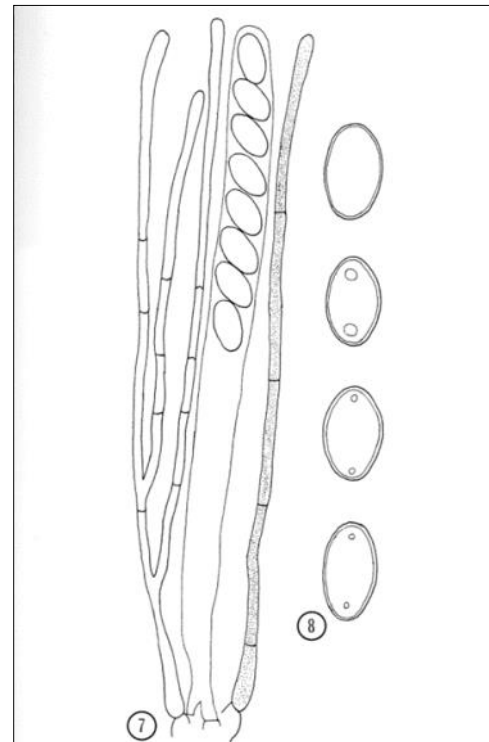
Apothecia solitary to gregarious, deeply cupulate, sessile, 5–20 mm in diameter; hymenium at first yellowish pink turning reddish orange to brownish orange with age; receptacle yellowish pink to orange turning brownish orange, paler than the hymenium. Ectal excipulum composed of hyaline, thick-walled cells 8–14 µm in diameter forming a *textura angularis* tissue, the outer cells occasionally giving rise to short, hyaline, simple or branched, moniliform hairs 34–76 x 5–13 µm. Medullary excipulum composed of hyaline, septate, thin-walled, branched hyphae 4.5–8.5 µm wide forming a *textura intricata* tissue. Asci cylindrical with a furcate base, 180–225 x 10–14 µm, operculate, octosporous, not blueing in iodine. Paraphyses filiform, 2.4–3 µm wide with the apex slightly swollen up to 5 µm wide. Most paraphyses hyaline, but some filled with orange, crystalline pigments (see Fig. 4). Ascospores smooth, hyaline, elliptical, (12.5–)13.5–16 x 7.5–9.5 µm, eguttulate when mature but containing two small polar guttules when immature.

SUBSTRATE AND HABITAT: Scattered to caespitose on charred litter in recently burned mixed coniferous and deciduous forest.

DISTRIBUTION: CANADA: Ontario, British Columbia. U. S. A. : New York.



FIGS. 1-5. *Pyropyxis rubra* (Peck) Egger. Fig. 1. Apothecia. x0.5. Fig. 2. Ascus apex showing operculum. X 700. Fig. 3. Section of apothecium. x65. Fig. 4. Squash mount of hymenium showing pigmented paraphyses. x65. Fig. 5. Asci and ascospores. x265.



FIGS. 7,8. *Pyropyxis rubra* teleomorph. Fig. 7. Unpigmented paraphyses, ascus with ascospores, pigmented paraphysis. X700. Fig. 8. Ascospores: one mature and three immature with guttules. x1400.



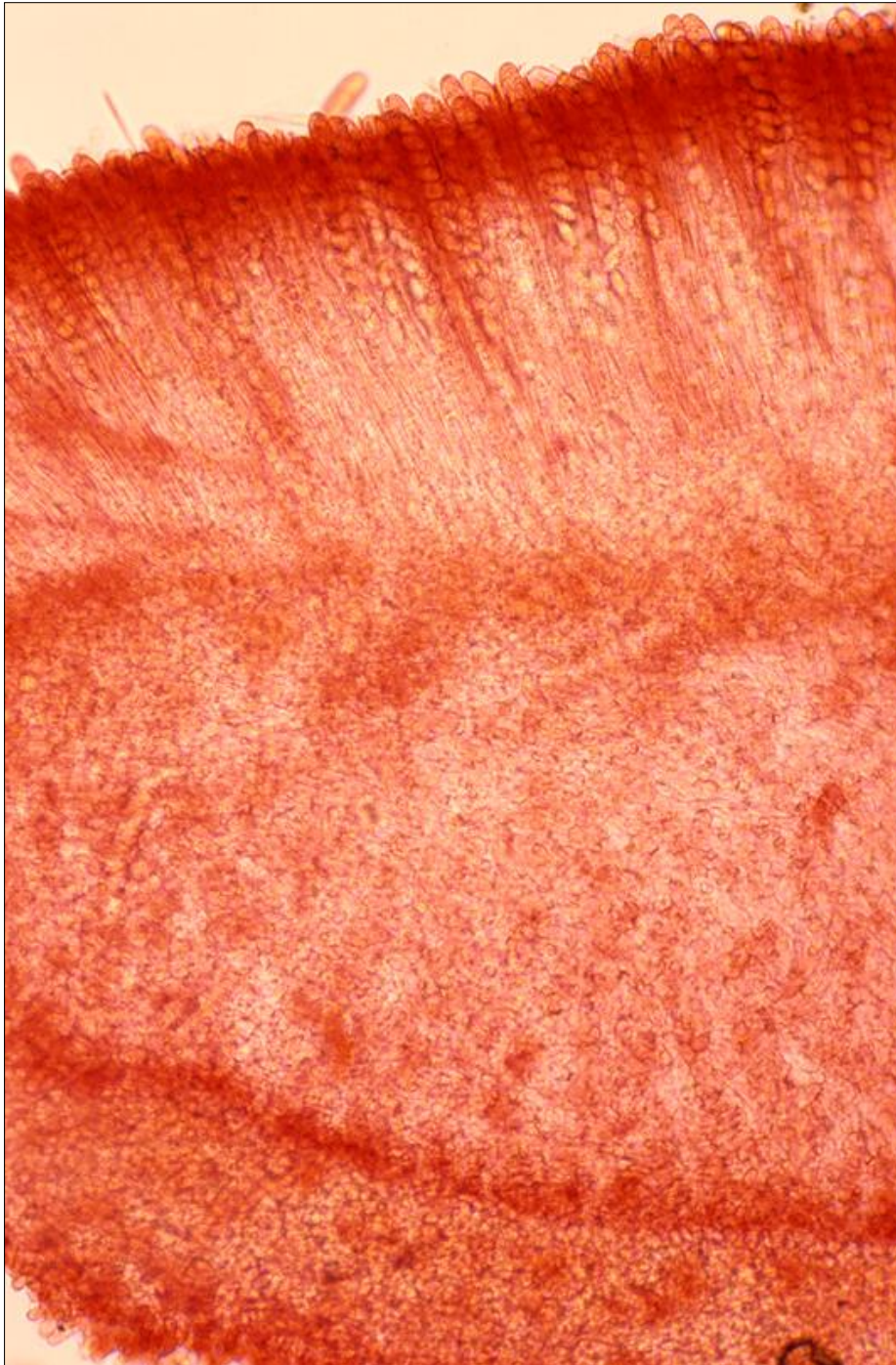
AEB 749. A burnt patch of fresh in-situ apothecia removed from the burn & resting on an unburned grassy area.



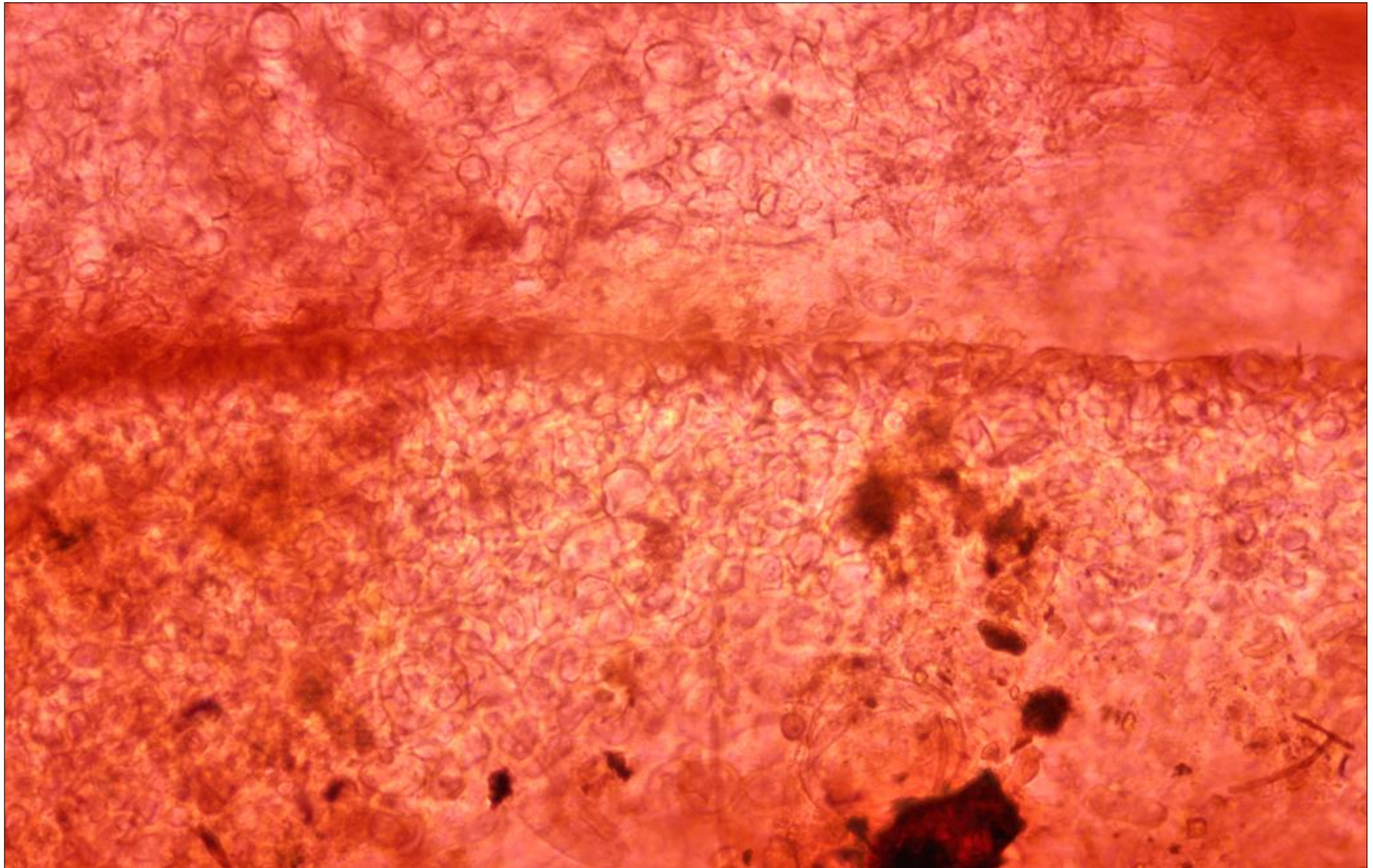
AEB 749. A burnt patch of fresh in-situ apothecia removed from the burn & resting on Ann Bell's hand.



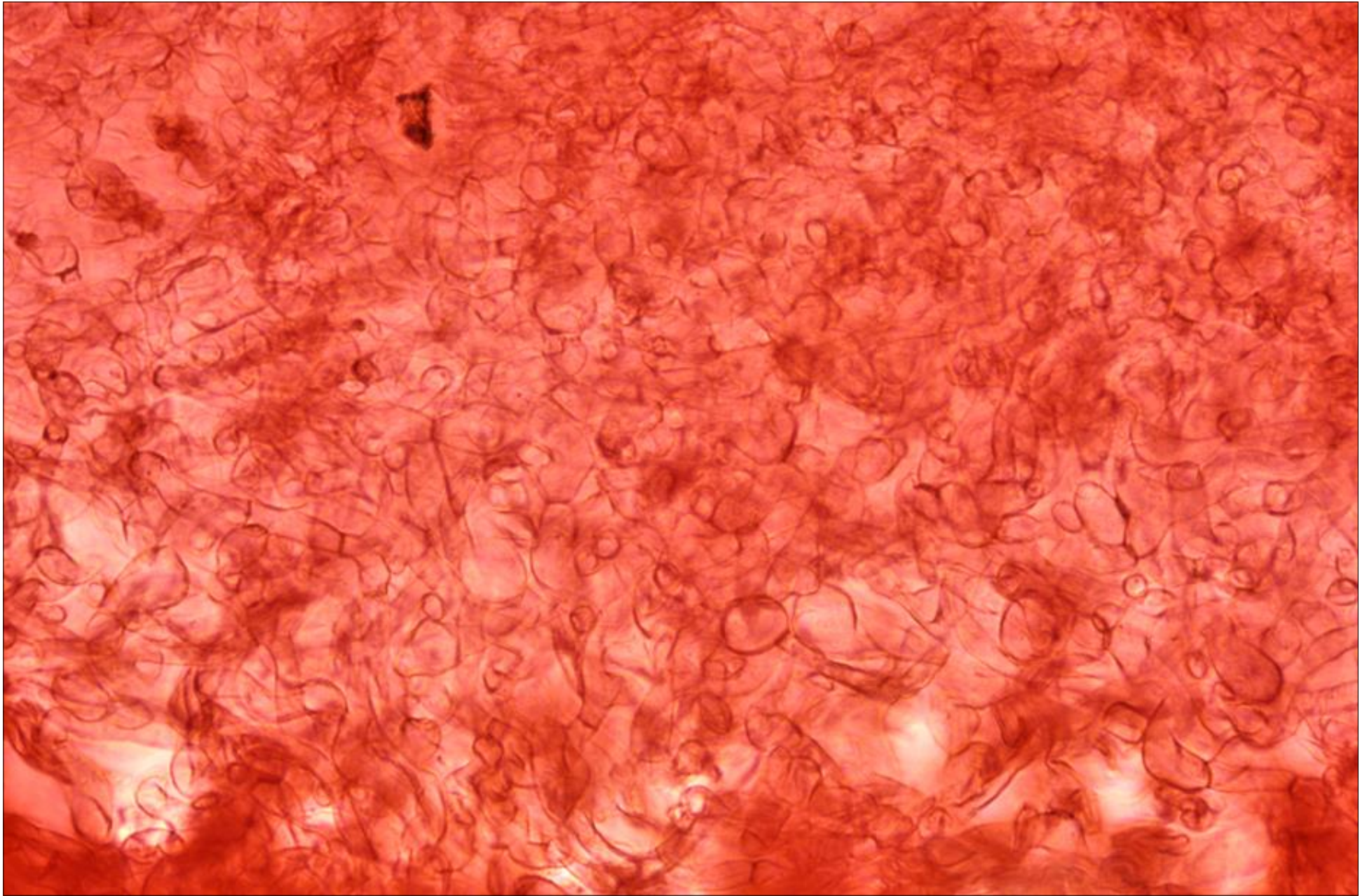
AEB 749. A free-hand section through an apothecium showing the hymenium (upper layer), medullary excipulum (middle layer) and ectal excipulum (lower layer). From a SMF + 1% aqueous Congo red semi-permanent slide.



A close-up view from the left side of the free-hand apothecial section shown on the previous page.



AEB 749. Free-hand section through an apothecium showing the medullary excipulum (upper layer with textura intricata tissue) and ectal excipulum (lower layer with textura globosa-angularis to angularis tissue). From a SMF + 1% aqueous Congo red semi-permanent slide.



AEB 749. Close-up of a free-hand section through an apothecium showing the medullary excipulum with textura intricata tissue. From a SMF + 1% aqueous Congo red semi-permanent slide mount.



AEB 749. Paraphyses, asci and ascospores. Note the various stages of spore development, especially early stages. Spores with single bipolar guttules (arrowed) are similar to those in Egger 1984 FIG. 8 (p. 2 of this pdf). Look for central nuclei also, in these and other spores. A more detailed close-up view is shown on the next page.



AEB 749. Paraphyses, asci and ascospores. Note the various stages of spore development. As the spores mature, bipolar single guttules become less distinct and appear more like bipolar 'clouds' of smaller guttules before disappearing altogether. The far right photo using phase microscopy shows a whole ascus with its bifurcate base.