

***PRONECTRIA XANTHORIAE* AND *P. TERRESTRIS*, TWO NEW
LICHENICOLOUS FUNGI (HYPOCREALES)**

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Pronectria Clements in Clements and Shear (1931) (Ascomycetes, Hypocreales, Hypocreaceae) based on *P. lichenicola* Ces., a later synonym of *Nectriella robergei* Mont. & Desmaz. was erected for lichenicolous species of *Nectriella* Nitschke in Fuckel ("1869," 1870) [non *Nectriella* Saccardo]. *Nectriella*, revised by Weese (1914) included two lichenicolous species. Approximately 20 lichenicolous species are now known. *Pronectria* is separated from *Nectriella* by its lichen hosts, immersed, typically non-erumpent habit, complex perithecial apical wall structure which often mingles with tissues of the host, slow-growing cultures, and potential toward parasitism.

Pronectria is poorly collected. Because only the tip of the papilla is visible, finding material is difficult. Fresh collections are often undescribed species and many of these fungi are known only from the type collection.

Pronectria xanthoriae was found by Prof. David Hawksworth in 1985, immersed mostly in the apothecia and also in the thallus of *Xanthoria parietina* (L.) Th. Fr. on a wall in England. Subsequent examination of the lichen in similar habitats by Prof. Hawksworth and many collections of *Xanthoria parietina* by the senior author failed to locate more material of the new species. In 1987, the junior author collected the same species on *Populus* in Luxembourg in conjunction with his studies of lichenicolous fungi of Luxembourg.

Pronectria terrestris was found by the junior author in the city of Luxembourg on the ground between railroad tracks.

Pronectria xanthoriae Lowen & Diederich, *sp. nov.* FIG. 1A–F

Ascomata obpyriformia, 150–300 μm alta et 140–250 μm diam, in apotheciis vel interdum in thallo *Xanthoriae parietinae* immersa, dispersa vel gregaria; papilla truncata, 60–70 μm alta, aurantiaca; paries 15–20 μm crassus, e ca. 6 cellularum oblongarum 9–12 \times 2–4 μm stratis compositus; guttae aurantiacae e cellulis in sectione emergentes. Asci clavati, (50–)64–80 \times 6–13 μm , 8-spori, unitunicati, apice truncati, apicis anulo non-amyloideo. Sporae uniseriatae, sed in medio asco biseriatae, ellipsoideae vel fusiformes, 17–24 \times 4–5 μm , 1-septatae, hyalinae, verruculosae, cellulis 1–3-guttulatis. Paraphyses in maturitate desunt.

HOLOTYPE: ENGLAND. Derbyshire: Bakewell, Over Haddon, 43/2?6, in apothecia and thallus of *Xanthoria parietina* on limestone wall, 13 Apr 1985, D. L. Hawksworth 5513 (IMI 294074).

ETYMOLOGY: The specific epithet is based on the host lichen, *Xanthoria*.

ANAMORPH: Not known.

HABITAT: On saxicolous and corticolous *Xanthoria parietina*.

DISTRIBUTION: Europe: UK; Luxembourg.

Ascomata obpyriform, 150–300(–400) μm high \times 140–250(–400) μm wide, immersed in the apothecia and sometimes the thallus of the lichen, scattered or in groups of up to six; papilla truncate, 60–120 μm high \times 200 μm wide, raising the surface of the apothecia in rounded mounds or as cylindrical projections with a translucent dark orange center, bright orange, not changing color in KOH; hyphae 1.4–2.0 μm wide extending from the top and sides of papilla up to 60 μm into the lichen. Perithecial surface textura angularis to textura epidermoidea, cells ca. 8 \times 4–8 μm . Perithecial wall 15–20 μm wide, composed typically of 6 layers of thin-walled long

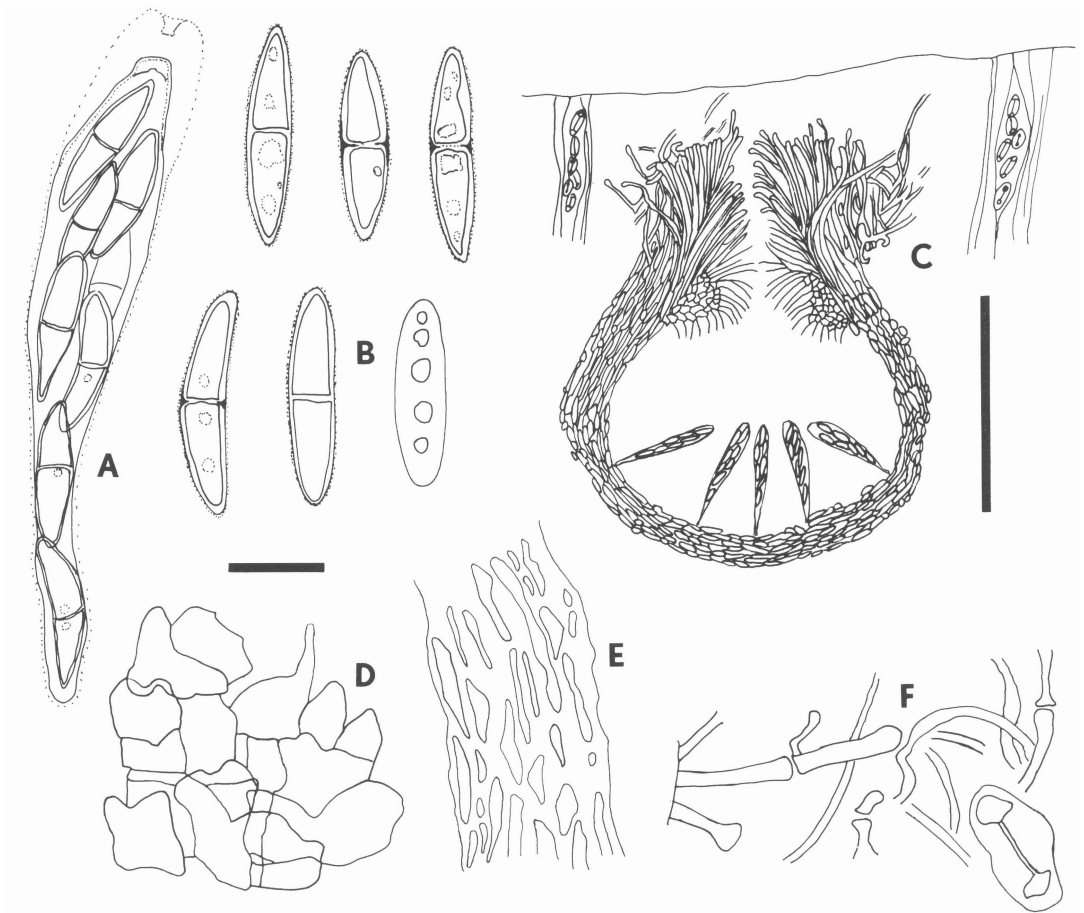


FIG. 1. *Pronectria xanthoriae*. A. Ascus. B. Ascospores. C. Mid section of ascoma. Note asci and ascospores of the lichen. D. Surface of ascoma. E. Wall of ascoma. F. Enlargement of hyphae of ascoma penetrating lichen. Bar = 8 μm (A, B, D-F); 100 μm (C). All in LCB except multiguttulate ascospore (B) which is in water.

rectangular cells 9–12 \times 2–4 μm ; periphyses 1–1.5 μm wide; perithecial apex formed of rows of vertically elongated cells continuous with the inner region of the perithecial wall, cells becoming increasingly narrow and merging with the periphyses toward the centrum; orange oily drops emerging from squashed or sectioned perithecial wall cells and from centrum. Asci clavate, (50–) 64–80 \times 6–13 μm , 8-spored, unitunicate, apex truncate, containing an inconspicuous non-amyloid apical ring, sometimes enclosed in a sheath, ascospores biseriate in the middle, uniseriate above and below, filling the ascus. Ascospores ellipsoid-fusiform, 17–24 \times 4–5 μm , 1-septate, hyaline, verruculose, one to three guttules per cell, L/W 4.5. Paraphyses not seen.

ADDITIONAL SPECIMEN EXAMINED: LUXEMBOURG. NE Bergem, Schéierboesch (M8.44.12), on *Xanthoria parietina* on *Populus*, 26. VIII.87, P. Diederich 8511 (Herb. Diederich; NY).

The apothecia of the *Xanthoria* appear to be a brighter color orange when infected by *P. xanthoriae*. Pycnidia of *Xanthoria parietina* are often present in the thallus but may be distinguished from perithecia of *Pronectria xanthoriae* by their orange color producing diffuse spots as distinguished from the translucent dark orange projections of the perithecial papillae.

Nectriella specimens on *Xanthoria parietina* have also been reported from Czechoslovakia as *N. coccinea* (Vězda, 1970, p. 224) and from Denmark (Keissler, 1930, p. 286 as *N. tinctoria*) and

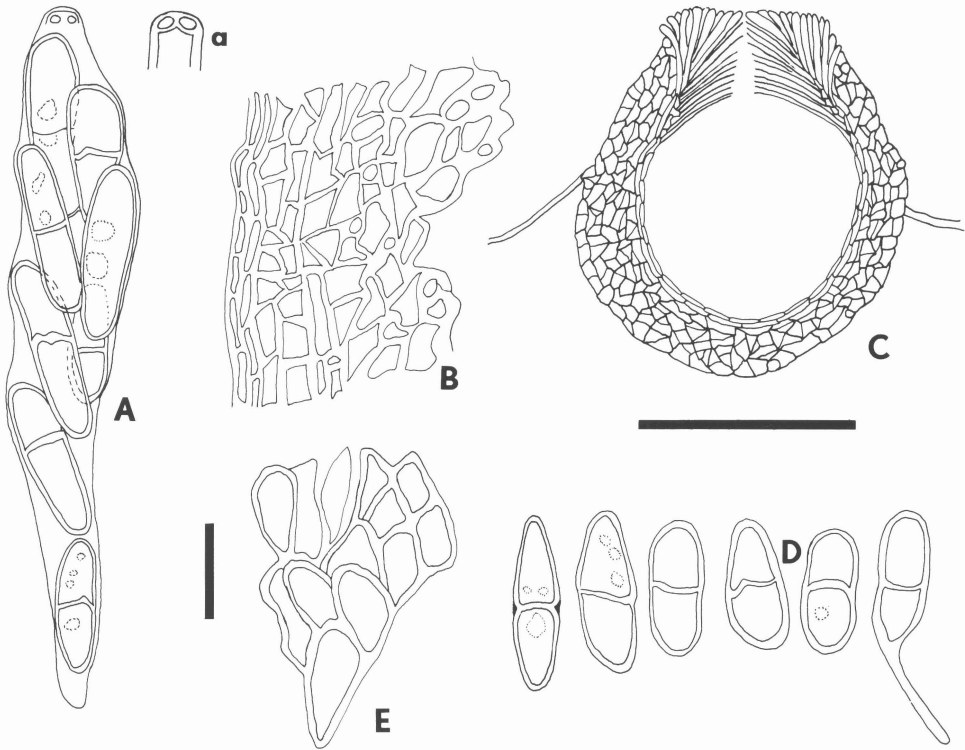


FIG. 2. *Pronectria terrestris*. A. Ascus. a. Detail of ascus apex. B. Wall of ascoma. C. Mid section of ascoma. D. Ascospores. E. Surface of ascoma. Bar = 8 μm (A, B, D, E); 100 μm (C). All in LCB.

(Ferdinandson and Winge, 1909: 316; Lind, 1913, p. 171, in Rostrup herbarium n. 655 as *Nectria fuckelii*). These collections (not examined) are likely to be *Pronectria xanthoriae* and would extend the known distribution.

Pronectria xanthoriae is distinguished from other species of *Pronectria* by its bright orange color, long, ornamented ascospores and substrate of *Xanthoria parietina*.

***Pronectria terrestris* Lowen & Diederich, sp. nov.** FIG. 2A–D

Ascomata globosa vel obpyriformia, 210–260 μm diam, in thallo *Thrombii* immersa, dispersa vel gregaria; papilla truncata, 60 μm lata, rosea vel luteola; paries 20 μm crassus, cellularis oblongaris 10–15 \times 2–4 μm constans. Asci clavati, 60–70 \times 8–10 μm , 8-sporei, unitunicati, apice truncati, apicis annulo non-amyloideo. Sporae uniseriatae, sed in medio asco biseriatae, ellipsoideae vel fusiformes, 12–17 \times 5.5–7.0 μm , 1-septatae, hyalinae, laeves, cellulisi 1–2-guttulatis, guttis aurantiacis emergentibus. Paraphyses in maturitate desunt.

HOLOTYPE: LUXEMBOURG. City of Luxembourg, W Zwickau (M8.25.42), between railroad tracks,

soil covered with algae, bryophytes, and lichens, on *Thrombium epigaeum* (Pers.) Wallr., 5 Aug 1987, P. Diederich 8362 & G. Marson (NY; ISOTYPE Herb. Diederich).

ETYMOLOGY: The specific epithet refers to the terrestrial location of the host lichen *Thrombium*.

ANAMORPH: not known.

HABITAT: *Thrombium*, on soil.

DISTRIBUTION: Luxembourg; known only from the type.

Ascomata globose to obpyriform, 210–260 μm diam, immersed, scattered or in groups 3–5, non-stromatic, papilla truncate to slightly rounded, 60 μm wide, very pale red to yellowish, not changing color in KOH; collapse not observed. Surface of perithecial wall of indistinct angular cells, 10 μm diam. Perithecial wall 20 μm wide, delicate, of one region: cells elongate to angular, 10–15 \times 2–4 μm near the centrum, becoming rounder, 6–10 μm diam toward the outside. Perithecial apex formed of rows of vertically elongated cells continuous with the inner region of the perithecial wall, cells becoming increasingly narrow and merging with the paraphyses. Asci clavate, 60–

70 × 8–10 μm, 8-spored, unitunicate, apex truncate, containing a non-amyloid apical ring, ascospores biseriata in the middle, uniseriate above and below, filling the ascus. Ascospores ellipsoid to ovoid, 12–17 × 5.5–7.0 μm, 1-septate, septa often appearing angular, colorless, smooth, often 1–2 orange guttules per cell, sometimes germinating in the centrum, L/W 2.3. Centrum contents appearing slightly brown, orange oily drops emitted from crushed perithecia. Paraphyses not seen.

Pronectria terrestris is easily seen as reddish spots when moist, but becomes extremely difficult to find when it is dry. This is the only *Pronectria* found on *Thrombium*. *Pronectria terrestris* has a globose fruitbody similarly structured to *Nectriella anisospora* from which it may be distinguished by its pale color, perithecia which lack hairs and the smooth, equally celled, ellipsoid to ovoid ascospores.

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Key Words: Hypocreales, lichenicolous, *Nectriella*, *Pronectria*, *Thrombium*, *Xanthoria*.

LITERATURE CITED

- Clements, F. E., and C. L. Shear. 1931. *The Genera of Fungi*. H. W. Wilson Co., New York. 496 p.
- Ferdinandsen, C. C. F., and Ø. Winge. 1909. Mycological notes II. *Bot. Tidsskr.* 29: 305–319.
- Fuckel, K. W. G. L. ("1869") 1870. *Jahrb. Nassauischen Vereins Naturk.* 23–24: 1–459.
- Keissler, K. von. 1930. Die Flechtenparasiten. Rabenh., In: Rabenhorst, L. *Krypt.-Fl. von Deutschland, Oesterreich und der Schweiz.* 8(2): i–ix, 1–712.
- Lind, J. 1913. *Danish Fungi*. Copenhagen. 648 p.
- Vězda, A. 1970. Příspěvek k poznání lichenikolních hub v Československu III. *Česká Mykol.* 24: 220–229.
- Weese, J. 1914. Beiträge zur Kenntnis der Gattung *Nectriella* Nitschke. *Ann. Mycol.* 12: 128–157.