

Protoparmelia oleagina

Mark Powell, May 2018

This interesting species causes considerable uncertainty for many field recorders. LGBI2 reuses the description given in the 1992 Flora:

“Like *P. ochrococca*, but with a dull olivaceous brown, scurfy granular, ± isidiate thallus and apothecial margin; disc also olivaceous.”

While that description is not incorrect, it begins by comparing with a supposed look-alike which is similar but not really a very close match. The description gives a vague impression of the appearance of the thallus but a species with such a subtle appearance really requires more nuance. All reactions are reported to be negative. There is however, a useful K+ oily reaction exhibited by a microscope preparation which is not mentioned. Only lignum is given as a substratum.

Alan Silverside’s website gives:

Thallus of subglobose, olive to dark brown granules, sparsely isidiate; apothecia rare, with thalline margins and olive-brown to blackish-brown, oily-lustrous discs. On acidic wood, including old fence rails, especially of Scots Pine (*Pinus sylvestris*) but also Oak (*Quercus*), very local and mainly in the Scottish Highlands.

Both sources report a dominant shade of brown (albeit olivaceous) whereas fresh material is olivaceous grey-green in colour. Perhaps the formal descriptions were made from herbarium material (though specimens in my herbarium from 2012 and 2013 still show a dominantly grey-green colour). In a standard list of colours (https://en.wikipedia.org/wiki/List_of_RAL_colors) the nearest matches are in the grey or green tables (and no close resemblance in the brown table). RAL 6003 ‘olive green’ is a good match.



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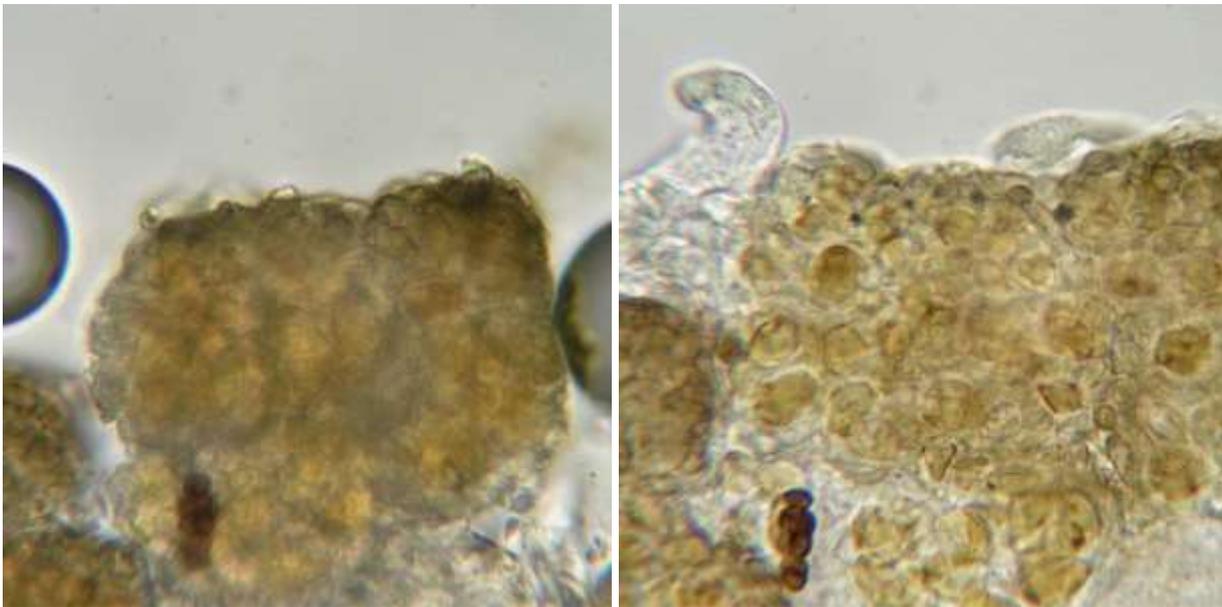


Specimen in Herb. Powell collected in 2013

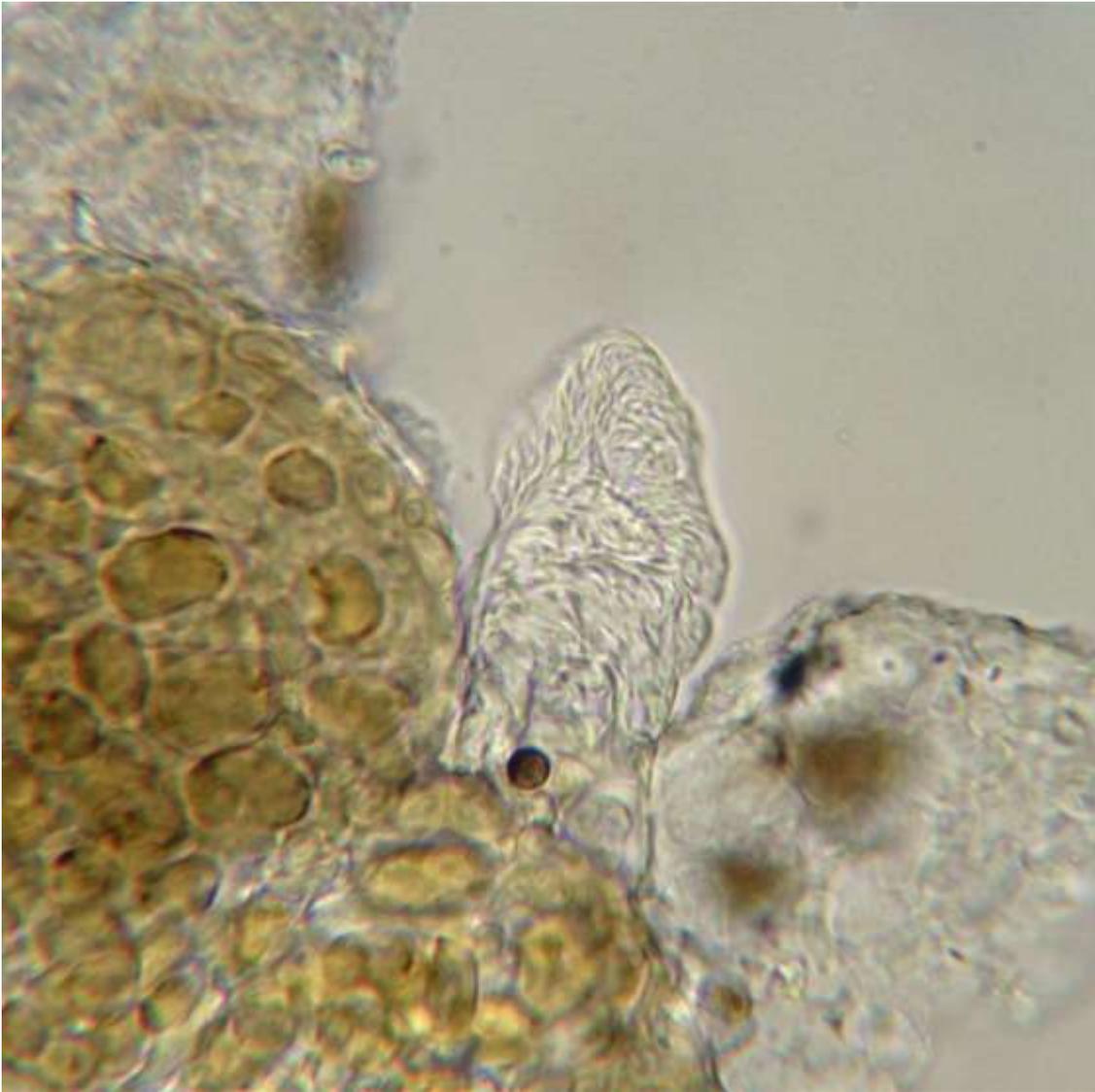
My investigations show that the thallus consists almost entirely of irregular granules which vary in size from (50-)80-150(-200) μm . The granules are not neatly globose and are usually loosely aggregated with their neighbours. The way the granules develop is like the production of blastidia with upper granules forming by budding from granules/thallus beneath. The published literature hesitantly describes the presence of isidia, but I consider that the term isidium may conjure up too much of a discrete, peg-like image in most people's minds. There is a dull translucence to the granules giving a waxy appearance. Hence the appearance of this lichen might be likened to that which would result if a spray of molten olivaceous wax had solidified on the surface.

Etymology:

Brian Coppins (pers. comm.) informs me that the specific epithet relates to the type specimen which was collected from an olive tree (*Olea europea*). By coincidence there are at least two other reasons why '*oleagina*' might have been applied to this lichen. As quoted above, Alan Silverside describes the apothecial discs as 'oily-lustrous'. Also, an interesting microscopic character of the thallus is the 'K+ oily' reaction.



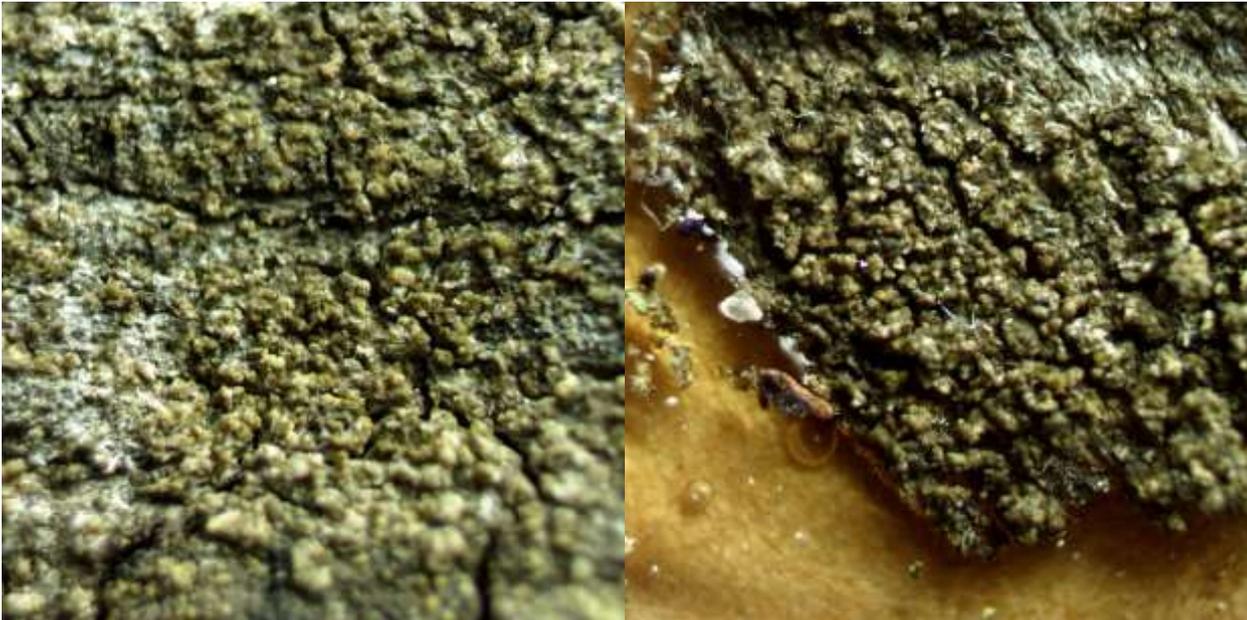
A granule of *P. oleagina* in water (left) and after adding K (right). Note the K+ oily reaction.



The 'K+ oily' reaction of *P. oleagina*, showing an oily 'lava flow' which consists of almost colourless oily secretion which appears rapidly on addition of K.

Habitat

LGBI2 mentions only 'wood' (lignum) as a substratum for *P. oleagina*. At the Moccas Park meeting in May 2018 a fertile colony was found on the bark of an old *Quercus* trunk. *P. oleagina* is also an occasional saxicolous species, growing on the vertical faces of old sandstone headstones in the South Midlands and Home Counties. With the loss of quality lignum from the modern landscape, sandstone memorials may be an important refuge for *P. oleagina* in southern England. When well-weathered, wooden bench seats become a good habitat for this species. Several occurrences on bench seats were found during churchyard surveys in Hertfordshire in the 2010s, including a fertile colony on a dilapidated seat at Reed.



The irregularly granular, dull, waxy, grey-green thallus of *P. oleagina*.

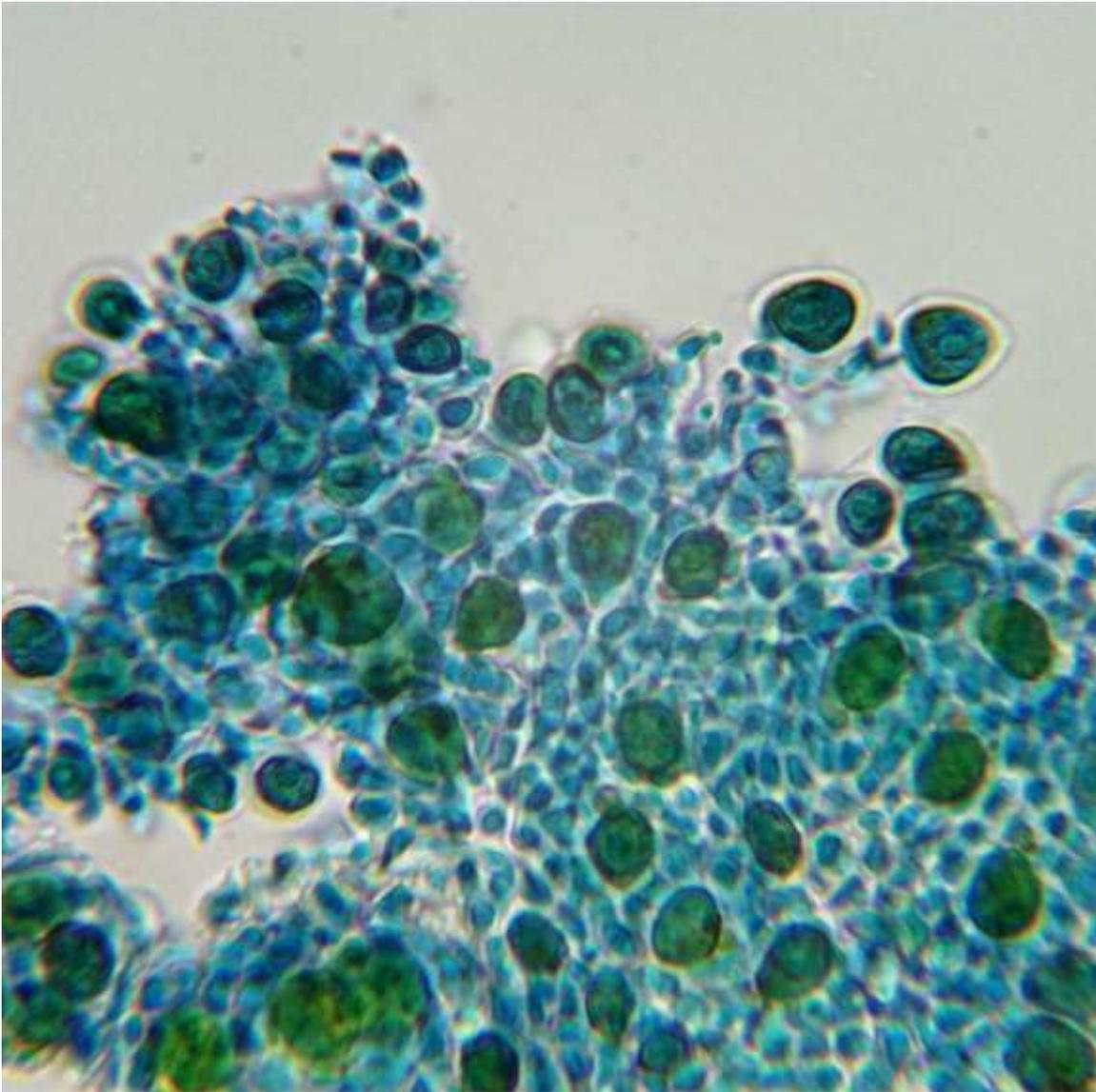
When *P. oleagina* was found on the bark of an oak trunk at Moccas Park, speculation was raised about the possibility of its identity being the corticolous *P. hypotremella* (not yet known in Britain). Aptroot *et al.* (1997) give the following discussion in their description of *P. hypotremella*:

“The new species resembles *Prototarmelia oleagina* with which it shares the internal structure, the alga, the characteristic, dull to slightly glossy surface and the presence of lobaric acid. However, the thallus of *P. oleagina* is continuous and its isidia-like structures are only outgrowths of it. The thallus is therefore more delimited. The isidia are consistently smaller (c. 0.1 mm diam.) and the thallus colour is much darker (grey to olivaceous brown or black), without paler margins to the granules.” Aptroot *et al.* state that *P. hypotremella* “could be mistaken for *Hypocenomyce caradocensis* with which it shares the microsquamules, but not the gnarled isidia-like structures.” They also state that the grey isidia-like granules (of *P. hypotremella*) are reminiscent of sterile specimens of *Bacidia rubella*, which differ in the fairly uniform, pale grey to greenish grey colour...”

Lobaric acid is not reported for *P. oleagina* in LGBI2. Aptroot *et al.* (1997) reported that lobaric acid was found to be present in *P. oleagina* as well as being the major compound of *P. hypotremella*. They state: “This represents the first report of lobaric acid in the latter species [*P. oleagina*], for which only some unknown substances were reported before (Coppins 1992). Lobaric acid is common in the genus. *Prototarmelia oleagina* does not show the positive UV-reaction of *P. hypotremella*. In microscopical preparations a K⁺ oily substance reaction can be observed in *P. oleagina* and *P. montagnei* (Fr.) Poelt & Nimis, but not in *P. hypotremella*.”

I conducted careful KC reactions on confirmed British material (e.g. Powell 2950) but could not produce any KC⁺ pink reaction which is typical of lobaric acid.

Sections of thalline granules of *P. oleagina* reveal photobiont cells surrounded by abundant, short-celled fungal hyphae.



Stained micrograph of thalline granules of *P. oleagina*. The algal cells are surrounded by a large bulk of more-or-less isodiametric fungal hyphal cells. The photobiont cells appear to often have a single conspicuous haustorium, a feature that requires further investigation.

Reference

Aptroot, A., Diederich, P., Van Herk, C.M., Spier, L. & Wirth, V. (1997). *Protoparmelia hypotremella*, a new sterile corticolous species from Europe, and its lichenicolous fungi. *Lichenologist* 29: 415-424.