

## Corrections to the Flora: Part 2

Last revised 4<sup>th</sup> April 2017

A list of 'Corrections' was started soon after the publication of the 2009 Flora. By 2015 a considerable list of typographic errors, suggested additions to the text and simple corrections based on published information had been compiled. These are in black text. Additions to this list from 2016 onwards are in blue text.

Members of the British Lichen Society also started to report instances where their own taxonomic and ecological observations differed from the Flora account. These notes are added in purple text; these are of considerable interest and importance but often rely on unpublished observations. The purple text should be considered as provisional, speculative and/or providing discussion of ways that a future version of the Flora might be improved.

Nomenclature is as used in the Flora. Species added to the British list since the publication of the Flora are not mentioned. Updating taxonomy is a separate project. For a few species notes on changes in distribution have been added but this does not represent a comprehensive update of distributional information.

### Inconsistencies that run through the 'Flora' (TLGB&I).

There are various inconsistencies in nomenclature which appear to have arisen due to the different sources and the different authors for the various generic accounts.

**Thallus:** Sources on the internet suggest that 'thallus' is the term given to undifferentiated vegetative tissue in diverse groups which were previously known as thallophytes (including algae, fungi and others). In TLGB&I the term thallus appears to have been used inconsistently, sometimes to imply lichenization and elsewhere in the wider sense to describe the presence of vegetative hyphae. The importance of specifying what is implied becomes clear when dealing with lichenicolous species and non-lichenized bark fungi. For *Arthonia punctiformis* the thallus is described as immersed [in the bark] (and hence presumably present). For *Arthonia phaeophysciae* [and most other lichenicolous species of *Arthonia*] the thallus is described as "absent". In both cases, vegetative hyphae are present and the authors seem to be using the term 'thallus' to imply 'not lichenicolous'. In *Stenocybe* we have a different situation where the thallus in these bark fungi is stated as 'absent'. Here we have authors who are using the term thallus to imply 'lichenized'. The authors of *Opegrapha* sidestep the issue by stating that the lichenicolous species are 'lichenicolous' without any reference to the presence or absence of a thallus. What may seem to be a pedantic issue becomes important in the interpretation of putative specimens of, for example, *Toninia subfuscae*. In this species, the thallus is described as "immersed in host tissue". There is some uncertainty about several specimens tentatively named *T. subfuscae* with the difficulty of knowing whether they are truly lichenicolous or just *T. aromatica* 'interacting' with *Lecanora campestris*. Most British specimens appear to be lichenized, if sometimes not very conspicuously so. It would be very useful to know whether *T. subfuscae* has a lichenized thallus or not.

### **Areoles/areolae**

Both forms of the plural given above are used in the Flora.

There are also more significant problems with the inconsistent usage of the terms 'areolate' and 'rimose'. This is not just the case in the Flora but in lichenological literature in general. As an example, see the descriptions of the thallus *Verrucaria nigrescens* and of *V. ochrostoma* (pg. 953).

*V. nigrescens*: "Thallus... regularly cracked into areoles 0.2-0.8 mm wide"

*V. ochrostoma*: "Thallus... of more or less convex and mostly crowded areoles, forming a crust which becomes secondarily cracked"

*V. nigrescens* produces tiny algal units on the hypothallus which are analogous to the areoles described in *V. ochrostoma*; these are less easily distinguished than in *V. ochrostoma*. The 'areoles' described for *V. nigrescens* are actually angular islands separated by rimose cracking and hence are analogous to the secondarily cracked units described for *V. ochrostoma*. See Powell (2016) in *Bull. Brit. Lichen Soc.* **118**: 21-23 for a fuller discussion.

**Septation of ascospores:** This seems like a simple matter but at least three different ways of describing septation is used in TLGB&I. Take for example *Diploschistes muscorum*, where the ascospores are said to have "5 transverse and 1-2 longitudinal septa". If a spore of *D. muscorum* is observed it will be clear that what is meant here by "1-2 longitudinal septa" is that each of the transverse cells can have one or two longitudinal septa. If we counted all of the longitudinal septa there would be considerably more than one or two. Compare this with the situation in, for example, *Thelidium incavatum* which is said to have "occasionally 1(-2) longitudinal septa". Here the author seems to be counting all of the longitudinal septa in the spore rather than the maximum number across one traverse of the spore. A third, and perhaps the least ambiguous description of septation is given for *Arthothelium*. If we take *A. orbelliferum* as an example we are given that the ascospores have "5-6 transverse septa, the 4 central cells with 2-3 longitudinal septa". It would be a useful service if all genera with muriform ascospores could have their septation described so unambiguously.

**Perispore/episporium:** These terms seem to be confused by some authors in TLGB&I. Ainsworth and Bisby's Dictionary of the Fungi (1995) state that the ascospore wall is multi-layered, "it consists of an outer perispore, an intermediary layer, the proper wall (episporium) and sometimes an internal endospore." Look for instance at the account of *Farnoldia* where the ascospores are stated as having a "thick, gelatinous perispore", and then, just over the next page, where distinguishing *Farnoldia* from other genera, one of the distinguishing characters is given as the "distinct episporium". If Ainsworth & Bisby are correct then surely all ascospores have a distinct episporium (proper wall) and in the *Farnoldia* account I presume we have a somewhat casual usage of 'episporium' to mean 'perispore'. PFC provided the following useful comments about spore wall terminology: "The terms perispore and episporium as defined in the Dictionary are derived from TEM of spore walls, are based on observations of limited numbers of species, and in some cases may be based on artefacts generated by the TEM preparation process. In some cases (e.g. *Pertusaria*) the spore wall is clearly multilayered, though it is not necessarily important to define each of these in minute detail. The term episporium is now used widely in

mycology to describe an outer layer of the spore wall that may become detached in some mounting media/preparations - and thus equivalent to the term perispore as defined in the Dictionary. In this case I believe that there is a strong argument for simplifying the terminology and adopting a modified definition.”

**Ascus tip terminology:** Arguably it would be preferable to use consistent terminology for the same structures throughout TLGB&I rather than the rather erratic mixture of terminology as used by different authors in the current account. Fig. 2 on pg. 22 could be annotated with preferred (and used) terminology (in bold) and alternative terminology (in ordinary font).

**Lichen hyphal tissue type:** some intermediate lichenologists expend considerable angst trying to find subtle differences between pseudoparenchyma and paraplectenchyma before eventually realising that these terms are synonymous. The Glossary has slightly different definitions of these terms and does nothing to point out that the terms are synonymous. The authors of different genera use either term at their whim.

## PART 2

**General Corrections:** Where not stated below all references to Laundon, J. Laundon, & J.R. Laundon, should be “J.R. Laundon” throughout. Lahm should be J. Lahm. B. de Lesd. should be de Lesd.

**P. v Acknowledgements:** paragraph 2, line 8, for change “supplement” to “supplemented”

**P. vi Contributors:** “Mrs A.O. Coppins” should read “Mrs A.M. Coppins”

**P. 6:** line 20, change the web address of UK lichens to [www.britishlichensociety.org.uk](http://www.britishlichensociety.org.uk) (altered)

**P 13:** paragraph 5, line 3, change “1.5” to “1.5g”

## Glossary

**P. 22:** add **adnate**, fused or adherent (e.g. thallus to the substratum)

**P. 22:** **biatorine** is currently defined as “(of apothecia), lacking a true exciple when mature...”. Presumably this was supposed to be “lacking a thalline exciple when mature...”.

**P. 22:** add **caespitose**, in groups or tufts.

**P. 24:** add **centrum**, centre part. (This is used in Key 3, 33. Perhaps a better definition is “the structures within an ascoma; when applied to a perithecium it denotes everything inside the exciple.”

**P. 24:** add **crateriform**, bowl-shaped.

**P. 29:** Fig. 11. Add end bracket: “*Acrocordia conoidea* (in Congo Red);”

**P. 30:** add **epihymenium**, epithecium, a distinct layer overlaying the hymenium. (‘Ainsworth & Bisby’s Dictionary’ gives a narrower definition: “a thin layer of interwoven hyphae on the surface of the hymenium.”

**P. 30:** add **efflorescent**, (used in *Mycoblastus*) bursting out of.

**P. 31:** add **eu**, a suffix used to indicate: thoroughly, completely, truly; as in e.g. “Ascospores ..., eumuriform” —(*Rhizocarpon reductum*)

**P. 34:** add **pectinate**, like the teeth of a comb. (This is used to describe the thalline exciple of *Nephroma helveticum*.)

**P. 36: pseudopodetium**, change description to the singular i.e., a solid, upright, stalk...”

**P. 36:** add **pulverulent**, powdery

**P.38:** add **refracted**, bent or curved back.

**P.38:** add **scleroplectenchymatous**, a plectenchyma (thick tissue in which the hyphae are often twisted and fused together) composed of very thick-walled conglutinate cells.

**P.38:** add **stipitate**, having a little stalk.

**P.38:** add **sympodial**, branching where the main axis is composed of many lateral branches, each arising from the one before and not from the original apex.

**P.39:** add **Xeric**, a dry environment.

### Generic Keys

**P. 48 Generic key 2b:** *Aspicilia (Acarospora) moenium* does not occur in this key despite being quite obviously squamulose and described as such in its description on pg. 187. *A. moenium* does appear in key 8d but would be usefully added to key 2b as well.

**P. 51 Generic key 3:** couplets 4 and 5 use the term “chlorococcoid cells” for the photobiont of *Pyrenocarpon thelostomum*. The description of *P. thelostomum* states that this species has chroococcoid photobiont.

**P. 52 Generic key 3:** a problem with couplet 12. Some *Porina* species have a carbonized ascoma wall (if this includes the involucrellum) but *Porina* can only be arrived at by choosing the first question of the couplet “ascoma wall not carbonized”.

**P. 61 Generic key 6a:** couplet 22, *Aspicilia* is keyed out in couplet 26 after choosing 22a. The generic description for *Aspicilia* states “**Hamathecium** of paraphyses, simple to sparingly branched, frequently anastomosed”. Hence *Aspicilia* may be better keyed out by following 22b?

**P. 63 Generic key 6a:** couplet 57a should read “(*Candelaria*- or *Lecanora*-types – Fig. 9e, n)”

**P. 67 Generic key 6c:** couplet 3b, “epithecium K- or rarely K+ purple” – *Megalaria pulverea* is K+ green intensifying.

**P. 69 Generic key 6c:** couplet 34(33) should read. 34a Ascospores with warted episore, 3-7(-9)-septate; apothecia often with greenish epithecium and purplish brown hypothecium; asci thick-walled (cf. *Lecidea hypnorum*).....**Bilimbia**

34b Ascospores with smooth episore [if episore warted then ascospores 1-3 septate, and apothecia colourless or with brown pigments].....35 (this needs further attention, *Bilimbia* has a warted perisore and I think this corrected couplet may be over-complicated)

**P. 74 Generic key 6e:** couplet 18 leads to *Pachyphiale* by choosing 18a (paraphyses richly branched-anastomosing). The generic description of *Pachyphiale* states that the paraphyses are “unbranched, thread-like, septate...”. This contradiction requires further investigation.

**P. 87 couplet 48a:** “(cf. also morphs of *C. citrina*)” should read “(cf. also morphs of *C. chlorina*)”

**P. 105 Sterile Crustose Key 8c:** couplet 14(8) b should read. Soralia KC- or yellowish.....19

### Species accounts

**P. 126 couplet 9b:** this should direct the user to couplet 10.

**P. 126 couplet 15b:** to agree with the main description this should read “Apothecia 0.3 – 0.5 mm diam., +/- elevated; disc plane roughened, on sandstone; very rare.”

**P. 143 Amandinea lecideina:** add colour of disc – “black”

**P. 151 *Aphanopsis coenosa*:** is compared with '*Leptogium byssinum*'. Change to *Epiphloea byssina*.

**P. 161 *Arthonia endlicheri*:** under its distribution and frequency change "frequent" to "very local."

**P. 165 *Arthonia ligniariella*** 'throughout British Isles' – actually not in Ireland

**P. 166 *Arthonia molendoi*:** the account states "epithecium black". This may cause uncertainty since the true colour is a dark olive green. In the descriptions of other *Arthonia* species the true colour is given, even when dark (e.g. *A. lignaria* "dark brown"). [Note that many specimens of *A. molendoi* may be of the recently described *A. parietinaria*]

**P. 176:** Under literature, for "Coppins & James (1979b)" read "Coppins and James (1979a)"

**P. 182:** Under literature, Brodo & Lutzoni (1995) does not appear in the References.

**P. 184: *Aspicilia contorta* subsp. *contorta*:** The description states "asci 4-spored". In fact all specimens that I have examined have more than four spores per ascus, most commonly six but sometimes seven (and eight has been reported by a reliable source). The size of the spores is given as "20 x 11 µm" whereas recent observations show that they are subglobose (e.g. 20 x 22).

**P. 185 *Aspicilia contorta* subsp. *hoffmaniana*:** the description states that it is "scabrid". The Glossary defines scabrid as follows: "rough with irregular, delicate projections". "I have not observed any projections on the surface of this taxon, nor on *A. c.* subsp. *contorta* or *A. calcarean*" (MP).

**P. 190 *Bacidia* key:** *Bacidia viridifarinoso* does not appear in the key.

**P. 191 couplet 22:** Several people have been known to tie themselves in knots here; could it be reworded or restructured. There is also the problem of *B. laurocerasi* which you can only arrive at if its fruits are pale. With *B. arceutina* provision is made for both pale and dark fruited specimens.

**P. 191 couplet 27:** For *B. arceutina* the implication is that the exciple edge and epithecium are K+ yellow-tinged. This reaction is sometimes seen in the upper hypothecium. It is often not obvious in any part of the apothecial section and the definite assertion that the exciple edge and epithecium are K+ yellow-tinged may lead to uncertainty.

**P. 194 *Bacidia adastrata*:** line 1 of the description, change "0.5 mm" to "0.5 m"

**P. 194 *Bacidia adastrata*:** This is stated as being "Common and widespread in lowland areas of the British Isles" but I suspect that many records may be mistakenly applied to algal crusts. "I have a particular interest in sorediate crusts on nutrient-enriched bark and I consider this species to be rare" (MP).

**P. 200 *Bacidia friesiana*:** Ascospore size given as "30-50(-65) x 3 µm". Being a 'true' *Bacidia* this species does have wider spores than *Bacidina* species. However, spores can be narrower than 3 µm and it would be desirable to give a range showing the narrower measurements (possibly in brackets) often found in this species.

**P. 202 *Bacidia neosquamulosa*:** There are various aspects of this account that require attention. The description is taken largely from the original description which was perhaps based on particularly distinctive material. The description states of the microsquamules "bearing globose, isidium-like granules... 50-100 µm diam." In fact the microsquamules are frequently poorly developed and the 'granules' are usually true soredia, and considerably smaller than 50 µm diam. These soredia are paler than the microsquamules and the soredia

often dominate. Apothecia are stated to be “usually present” whereas most occurrences are sterile. This species appears to be a very common background sorediate crust on nutrient-rich bark and often grows in close association with *Candelariella reflexa* (which has similarly sized soredia). The acronym SGC (Sterile Glaucous Crust) has sometimes been used for sterile occurrences. The exciple is described as follows “prosoplectenchymatous throughout, but with somewhat expanding lumina towards the periphery and in the lower parts; cells 6-12 x 4-8  $\mu\text{m}$ ”. Does the last part relate to the outside dimension of the cells, or to the lumina as observed after staining. For most other species of *Bacidia* the size of the lumina is given.

**P. 219 *Bilimbia sabuletorum*:** final paragraph line 3, change “*Biatoria tetramera*” to “*Mycobilimbia tetramera*”

**P. 226 *Bryoria fuscescens*:** line 9 to read “Throughout the British Isles, especially N. & W., Europe,”

**P. 232 *Buellia badia*:** “usually closely associated or parasitic on *Xanthoparmelia* species”. In fact many occurrences are found with no such association, and those on chemically treated lignum never occur with *Xanthoparmelia* species. Hence “sometimes closely associated...” seems more appropriate. “Ascospores... not constricted” whereas many spores in this species show a slight but definite constriction at the septum.

**P. 233 *Buellia excelsa*:** “epithecium brown” is repeated.

**P. 240 *Byssoloma marginatum*:** line 13 of the description, for *Fellhaneropsis myrticolla* read *F. myrtillicola*

**P. 248 Couplet 35b:** “Thalline margin absent” leads to *C. suaedae*, *C. asserigena* and *C. phlogina* (under *C. holocarpa* agg.) all of which have a thalline margin. This part of the couplet should perhaps be changed to “Thalline margin absent or inconspicuous”.

**P. 251 drawings of *Caloplaca* spores:** the drawing of *C. crenulatella* spores shows a ‘caricature’ with more acute apices than observed. The thickness of the septum however is shown quite realistically (at c. 1/7<sup>th</sup> or more of the spore length). This is more accurate than the statement in the description for this species which states that the septum is “under 1/8<sup>th</sup> of the length of the ascospore”. It is interesting to look back at the old 1992 Flora when *C. crenulatella* was known only from the type gathering in Cumbria. The septum was said to be “1.5 to 2.5  $\mu\text{m}$  wide, under ¼ of the length of the ascospore”. The 2009 Flora gives the same measurements for spore and septum but that the septum is under an eighth of the length of the spore; an assertion which, I think, exaggerates its narrowness. The septum of *Caloplaca* spores seem to swell in K (and N) and the illustrations of *Caloplaca* spores in TLGB&I are stated to be in 10% K but it is not stated in which medium measurement of the spore should be made. Does one measure the thinnest part in the middle or the thickest part at the edge? I was suspicious of my first encounters with *C. crenulatella* because I measured the septa in K and found that the septa were significantly wider than one eighth of the spore length.

P. 260 *Caloplaca crenulatella*: “Ascospores 18 x 8  $\mu\text{m}$ , ellipsoid, septum 1.5-2.5  $\mu\text{m}$  wide, under 1/8 of the length of the ascospore”. 2.5 multiplied by 8 = 20

**P. 253 *Caloplaca arcis*:** Delete “Mediterranean authors appear to call it *C. limonea*.”

**P. 254 *Caloplaca asserigena*:** Several characters in the description do not fit with observations made on British specimens. *Powell* 3914 (from Somerset, named by BJC) is typical of this. It has spores slightly larger than stated, e.g. 13 x 8  $\mu\text{m}$  and a septum rather wider ( $\geq$  ½ the spore



length). In addition, the epithecium gives an intense K+ purple reaction in section rather than “K+ slightly purple”.

**P. 257 *Caloplaca cerinelloides*:** line 4 correct “*Buddleja*” to “*Buddleia*.”

**P. 263 *Caloplaca flavovirescens*:** delete comma after the brackets denoting diameter of apothecia, to read .., smaller (up to 1.1mm diam.) darker apothecia,...

**P. 264 *C. holocarpa*:** final paragraph: line 2 delete “*C. holocarpa* auct. brit.” and replace with (moving from lines 4/5) “*C. lithophila* auct. brit., *C. polycarpa* auct. brit.”

Hence, in line 4, “*C. holocarpa* (Ach.) A.E. Wade (1965)” should not be followed by any synonymy.

Final paragraph: “(Arup 2009)” does not appear in References.

Also in final paragraph, line 7, note the corrected printing “ascospore septum”

**P. 268/9 *Caloplaca ochracea*:** the plural for ‘locule’ is given as “locules” and “loculi” within the same sentence.

**P. 269 *Caloplaca phlogina*:** “Thallus and soredia K-, apothecia K- purple”. Change to “All parts K+ purple, but thallus K- in some morphs”.

**P 271 *Caloplaca soralifera*:** This is not actually “like *C. chlorina*”. Blue Anchor (Somerset) material of *C. blastidifera* in ed. was sent to Jan Vondrak for his appraisal but were lost in the post. *C. blastidifera* does resemble *C. chlorina* whereas *C. soralifera* is closer to an exuberant *C. albolutescens*. Two putative collections (Herb Powell) of true *C. soralifera* have been made (Cambridgeshire and Northamptonshire).

**P. 272 *Caloplaca teicholyta*:** *Pyrenidium actinellum* appears to be a common lichenicolous fungus on this species.

**P. 277 *Candelariella superdistans*:** An important character of this species is not mentioned: the prosoplectenchymatous hyphae of the thalline margin which protrude in a distinctive manner. This helps separate *C. superdistans* from *C. aurella* (paraplectenchymatous margin without protruding hyphae). *C. aurella* is turning up on the smooth bark of *Populus tremula* twigs in Cambridgeshire and neighbouring counties in a community with abundant *Caloplaca pyracea*.

**P. 278 *Candelariella xanthostigma*:** last line read “British Isles”.

In the key to *Candelariella* the thallus granules of *C. xanthostigma* are given as “0.01-0.05 mm diam.” whereas in the description they are given as “0.07-0.1 mm diam.”

**P. 282 *Catillaria*:** “Photobiont chlorococcoid (e.g. *Dictyo chloropsis*, *Myrmecia*, *Trebouxia*).” Several species (e.g. *C. chalybeia*, *C. nigroclavata* and *C. fungoides*) have a similar haustorial arrangement as in *Halecania viridescens* (a single haustorial connection with each algal cell).

**P. 285 *Catillaria chalybeia* var. *chloropoliza*:** “has paler, grey- to dark brown apothecia, lacking green pigment in the hymenium”. It is not uncommon to find individuals of var. *chalybeia* which lack any green pigment in apothecial sections and there is a possibility that these might incorrectly be assumed to be var. *chloropoliza*.

**P. 294 *Cetraria islandica*:** The subsp. *islandica* is said to have a medulla that is Pd+ orange, no reaction is given for subsp. *crispiformis*. The key to *Cetraria* states that the medulla of subsp. *crispiformis* is Pd+ red. Should both subsp. be stated to be Pd+ red (fumarprotocetraric acid)?

**P. 295 *Cetraria muricata*:** line 2: for *Coelocaulon muricatum* (Ach.) Laundon (1984) read *Coelocaulon muricatum* (Ach.) J.R.Laundon (1984)

**P. 295 *Cetrariella*:** Change the author citation “Thell” to “A. Thell,” and similar changes in the *Literature*.

- P. 296 Cetrariella delisei:** Change the author citation “Thell” to “A. Thell”
- P. 298: Chaenotheca key, couplet 4b:** the photobiont (*Trentepohlia*) cells are said to have “red-green contents”. A better description would be “Photobiont cells containing orange oil bodies,...”.
- P. 299 Chaenotheca brachypoda:** add “ $\mu\text{m}$ ” to the ascospore measurement.
- P. 303 Chaenothecopsis:** “Hamathecium absent”. In fact paraphyses are present in abundance in some, if not all species and are certainly present in *C. nigra*.
- P. 313 squamosa** (not squamuosa)
- P. 316 Cladonia key, couplet 91a:** “usually Pd-, K+ yellow, occasionally red .. rangiformis” should presumably be “usually Pd-, occasionally red, K+ yellow”.
- P. 323 Cladonia cervicornis:** final paragraph, line 5, for “*C. symphycarpia*” read “*C. symphycarpia*.”
- P. 328 Cladonia furcata:** *C. furcata* is supposed to be “K $\pm$  yellow” and to contain “rarely traces of atranorin”. *C. rangiformis* (p. 335) is supposed to be “Pd- (in c. 70% of collections) or Pd+ red”. Considering the problems that many lichenologists seem to have with separating these two species using morphology, is it possible that the specimens with atypical reactions are actually misidentified?
- P. 335 Cladonia rangiformis:** in the comparison with *C. furcata* the latter is said to differ in being “K-”. The description of *C. furcata* states that it is “K $\pm$  yellow”.
- P. 341 Clauzadea monticola:** line 13: change “*Catillaria monticola*” to “*Catillaria modesta*.”
- P. 342 Cliostomum:** the ascus type is not stated.
- P. 347 Collema key, couplet 27a:** add ‘s’ to “apice”
- P. 355 Collema parvum:** change “plain” to ‘plane’.
- P. 356 Collema polycarpon:** change “caniculate” to ‘caniculate’.
- P. 356 Collema tenax:** The account states that 3 morphs can be distinguished, but 4 varieties are named. The way the account is structured seems to imply that vars. *ceranoides*, *corallinum* and *vulgare* are varieties of var. *tenax*.
- P. 357 Collema tenax var. vulgare:** change the author citation from “(Schreb.) Degel. (1954)” to “(Schaer.) Degel. (1954)”
- P. 369 Fig 31:** it is unfortunate that (b) is at the top and (a) below.
- P. 382 Diplotomma chlorophaeum:** complete brackets to author citation “(Hepp ex Leight)”
- P.384 Dirina massiliensis f. sorediata:** In the comparison with *Llimonaea sorediata* the soredia dimensions should be 25-35  $\mu$  not 0.25-0.35mm and the phrase “much larger sorediate granules” ignored. See van den Boom, P.P.G & Brand, A.M. (2007). *Llimonaea sorediata*, a new lichen (Ascomycota), widely distributed in western Europe. *Lichenologist* **39**: 309-314.
- P. 395 Epiphloea:** Add the following Literature reference, Schultz *et al.* (2015) in *Lichenologist* **47**: 369-378.
- P. 397 Evernia prunastri:** Only medullary reactions are given. Dobson (2011) simply states “K+ yellow” presumably referring to the spot reaction of the cortex. Cortex reactions should be added to the account.
- P. 398 Farnoldia:** the generic account states that the black exciple is “usually seperable” from the hypothecium. Presumably the word ‘distinguishable’ would be more appropriate, unless the account is implying that it is usually possible to physically separate the exciple from the hypothecium.



- P. 402 Flavocetraria:** change the author citation from “Thell” to “A. Thell”
- P. 403 Flavocetraria nivalis:** change the author citation from “Thell” to “A. Thell”
- P. 407 Fuscidea:** Change the name S.K. Skjoldahl as part author of the genus to L.H. Skjolddal.
- P. 407 Fuscidea:** the hamathecium is said to be of paraphyses which are “simple or sparsely branched”. This should be investigated further. The paraphyses in for example *F. austera* are rather richly branched.
- P. 409/410 Fuscidea gothobergensis, kochiana and mollis:** additional illustrations for these are in Fryday (2008).
- P. 410 Fuscidea lightfootii:** The distribution of this species within the British Isles should be updated to read “On ± horizontal boughs and twigs, commonest near boggy sites and overhanging streams and rivers but widespread on more exposed branches, also worked timber; locally abundant. N. & W. British Isles, spreading rapidly in the lowlands.” (Recorders in Gloucestershire, Bedfordshire and Hertfordshire have not noticed any particular association with boggy sites.)
- P. 412 Fuscopannaria mediterranea:** line 5 of the description: delete “unknown in British material” [there are 2 British collections with apothecia]
- P. 418 Gyalecta biformis:** delete Scandinavia as part of its distribution.
- P. 425 Haematomma ochroleucum var. ochroleucum:** line 6 of the first para. read “Pd+ pale yellow.”
- P. 425 Haematomma ochroleucum var. ochroleucum:** the colour of this variety is not given – it is yellow-green.
- P. 425 Haematomma ochroleucum var. ochroleucum:** It would be worth alerting readers to the potential confusion with *Lecanora orosthea*. The latter shares a sorediate thallus and yellow-green colour due to usnic acid. *L. orosthea* occurs in similar situations such as the sides of sandstone headstones and often possesses a fimbriate margin. The thallus (by which I mean the crust of soredia) tends to be thinner in *L. orosthea* and the fimbriate margin less well-developed but when seen in isolation these two taxa can be easily confused.
- P. 428 Halecania viridescens:** “Ascospores 12-17(-20) x 4-6 µm (in water, including perispore) 3.5-4.5 µm wide (in K, excluding perispore)” – this combination of measurements does not tell us the thickness of the perispore in either medium! A useful feature of this species is described in the original description, namely the single haustorial connection with each algal cell (but note similar is observed in several *Catillaria* species). “Pd+ red” most specimens give a rather weak reaction especially when tested in damp field conditions. The colour of spot reactions would usually be described by the layman as ‘dirty orange’. The active substance is given as pannarin and in *Pannaria* this is said to be Pd+ orange-red.
- P. 429 Herteliana:** “Asci elongate-clavate, with a thickened K/I+ blue tholus including a less intensely staining ocular chamber”. Presumably it is the apical cushion which is being referred to as less intensely staining rather than the ocular chamber.
- P. 430 Hertelidia botryosa:** “Ascospores ellipsoid, simple or very rarely 1-septate”. Chatsworth material in Herb. Powell, has mainly 1-septate ascospores. *H. botryosa* appears only in Key 6a and not in Key 6c, making it impossible to arrive at this genus if septate material is encountered.
- P. 431 Couplet 2b:** for “*japonica*” read “*obscurata*”

**P. 431 *H. japonica*:** change name and author citation to ***H. obscurata*** (Nyl.) Trevis (1869). The synonymy should now read, "*H. japonica* (M.Sato) Swinscow & Krog (1976).

Under this new name ***H. obscurata***: change the description in the final paragraph from "....., as *H. obscurata* differs in its...." to "..., but *H. obscurata* differs in its..."

**P. 432 *Hymenelia*:** the paraphyses are stated to be "simple or bifurcate above". This should be investigated further. In *H. prevostii* the paraphyses are anastomosed.

**P. 436/437 *Hypocenomyce anthracophila* and *scalaris*:** additional illustrations in Brodo *et al.* (2001, pp. 344 and 345 respectively).

**P. 438 *Hypogymnia physodes*:** this species very often has numerous pycnidia and these are sometimes mistaken for lichenicolous fungi. The generic description of *Hypogymnia* states "**Conidiomata** pycnidial, common in fertile species..." This might be considered to suggest that in the non-fertile, sorediate species pycnidia are not common. The pycnidia and conidia should be included in the description of *H. physodes* (and *H. tubulosa*?).

**P. 441 *H. revoluta*** should be in Roman script not *italics*.

**P. 447 *Jamesiella*:** Under literature, Vězda (1972) does not appear in References.

**P. 454 *Lecania*:** Asci are stated as having "a central apical plug". It would be best to keep terminology consistent throughout. Presumably an 'apical plug' is the same as an 'apical cushion' (the term most commonly used in the Flora).

**P. 455 line 3:** for ***erysibe f. soralifera*** read ***erysibe f. soredata***

**P. 455 couplet 9b:** change "Ascospores >3-septate" to 'Ascospores ≥3-septate'.

**P. 457 *L. chlorotiza*:** last line: change "*Biatoria sphaeroides*" to "*Mycobilimbia pilularis*"

**P. 458 *Lecania cyrtella*:** ignore last line of the description "*Micarea prasina* has simple paraphyses...." etc. Or keep the comparison with *M. prasina* and correct it as follows: "*Micarea prasina* has richly branched and anastomosed paraphyses".

Line 12: change "*Biatoria sphaeroides*" to "*Mycobilimbia pilularis*"

**P. 459 *Lecania dubitans*:** The description would benefit from more detail. The comparison with *L. naegelii* and *L. cyrtella* implies that both of those species have 3-septate ascospores (they are 1-septate in *L. cyrtella*).

**P. 459 line 12:** for *Lecania erysibe f. soralifera* J.R.Laundon (1967) read *Lecania erysibe f. soredata* J.R. Laundon (1967)

**P. 463 *Lecanographa*:** the assertion in the key that *L. lyncea* lacks brown flecks needs checking. Some specimens appear to have such flecks.

**P. 466 line 7 (generic description of *Lecanora*):** Are we happy with the use of the word "Flora"?

**P. 469 couplet 23b:** "caesiosor" change to "caesiosora"

**P. 469 couplet 32b:** *L. albellula* is Pd- and is keyed out at couplet 43. *L. albella* is keyed out at couplet 40. Neither contains usnic acid (couplet 26).

**P. 469 couplet 25:** no option is given for soil (a species such as *L. zosteræ* may be terricolous).

**P. 470:** the route to *Lecanora zosteræ* on wood follows couplet 47b through to 66b but *L. zosteræ*, in its description, is said to have red-brown discs which, if so, would require us to choose 47a. Several observers have reported that the discs of *L. zosteræ* are most typically pale to medium brown and not obviously red-brown. Perhaps the key is reliable but the description of *L. zosteræ* needs reviewing.

- P. 470 couplet 49:** the colour of the thallus is not a reliable character for separating *L. argentata*. The combination of massive amphithecial crystals and lack of epithelial granules is diagnostic.
- P. 471 couplet 61a:** *Lecanora fuscescens* is Pd+ orange to red but at couplet 38 to arrive here we had to chose 38b “thallus, exciple and discs Pd-”.
- P. 478 *Lecanora barkmaniana*:** “superficially resembling *L. compallens*, *L. expallens*, *L. farinaria* and *L. strobilina*, but differing in its chemistry, pale grey colouration and lack of a yellow tinge.” In fact this species is usually recognised by the pale, pastel yellow tinge of its soredia (not usnic-acid yellow) and so the account is misleading (see also the *Lecanora* key, p. 468, couplet 6). See Malíček & Powell (2013) in *Bull. Brit. Lichen Soc.* **112**: 66-71.
- P. 480 *Lecanora chlarotera*:** “epithecium colourless to grey-brown, overlain with numerous coarse granules (epipsamma) soluble in K and N”. The term epipsamma is a tricky one; it is not defined in Bisby & Ainsworth’s Dictionary. Sliwa (2007) gives a different definition to that in the Glossary of the Flora (she uses the term for granular matter above, not interspersed between, the paraphyses). For other species e.g. *L. pulicaris*, *L. carpinea* and *L. albella*, any granular matter on or in the epithecium is referred to as “granules” and we might be better to stick to “epithecial granules” in *L. chlarotera*. The granules in *L. chlarotera* penetrate down between the apices of the paraphyses and they are insoluble in N (see Part 2 for more details).
- P. 482 *Lecanora confusa*:** In comparing this species with *L. symmicta* the account states that *L. symmicta* has a “K+ pale yellow” thallus, whereas the description of that species states that its thallus is “K-”.
- P. 485 *Lecanora expallens*:** “UV+ orange (thiophanic and usnic acids, ± arthothelin and ‘expallens unknown’.” Insert end bracket.
- P. 485 *Lecanora farinaria*:** this species is often recognised by the pinkish colour of the soredia (especially in fresh specimens). This is not mentioned.
- P. 487 *Lecanora hagenii*:** See Powell (2014) in *Bull. Brit. Lichen Soc.* **114**: 62-67.
- P. 488 *Lecanora horiza*:** The description is inaccurate in several ways, in particular the apothecial discs are not pruinose, the epithecium contains no granules and the thallus has a distinct (rather than indistinct) K+ yellow reaction. See Malíček & Powell (2013) in *Bull. Brit. Lichen Soc.* **112**: 66-71.
- P. 493 *Lecanora persimilis*:** See Powell (2014) in *Bull. Brit. Lichen Soc.* **114**: 62-67.
- P. 494 *Lecanora pruinosa*:** “Asci elongate-clavate, apical dome ± evenly K/I+ blue with only a shallow meniscus-like K/I- apical dome”. My investigations show that *L. pruinosa* possesses a very standard *Lecanora*-type ascus.
- P. 495 *Lecanora pulicaris*:** line 3, the diameter of the apothecia should be 0.3-1(-1.5) mm.
- P. 496 *Lecanora salina*:** “Thallus c. 0.25 mm diam.” Presumably should be “c. 0.25 cm diam.” “epithecium colourless to pale brown-yellow, not granular”. Sliwa (2007) states that the epithecium is granular.
- P. 498 *Lecanora stenotropa*:** “epithecium colourless, not granular”. The epithecium is granular in this species (similar to *L. polytropa*).
- P. 501 *L. swartzii*:** italicise “*L. subcarnea*”.
- P. 503 *Lecidea* under *Literature*:** change “Hertel (1969b, 1995, 2006, 2008)” to “Hertel (1969b, 1995, 2006, 2009)”

**P. 512 Lecidea hypopta:** the ascospores are stated as “spuriously 1-septate”. Most ascospores appear to be simple but some are found that apparently have well-formed septa. The ascus type is not really similar to *Catillaria*-type; they are more similar to those in *Fuscidea* (to which *L. hypopta* is probably related).

**P. 513 Lecidea lichenicola:** the alga (which isn’t mentioned in the account) is *Scytonema*. The sheaths of *Scytonema* are orange-brown in colour and this sometimes causes an orange tinge to the surface of the thallus. “hypothecium orange-brown” change to “hypothecium poorly developed, pale orange”.

**P. 515 Lecidea nylanderii:** In penultimate paragraph change “*Haematomma caesium*” to “*Mycoblastus caesius*”.

**P. 519 Lecidella:** the UV reactions are only given for some species.

**P. 520 Lecidella:** couplet 2a of key “blastidia up to 0.1 mm wide”. Change to “blastidia up to...”

**P. 520 Lecidella:** couplet 8b “On rock...” *L. carpathica* sometimes occurs on lignum; “hypothecium pale or yellow-brown...” the hypothecium of *L. carpathica* is deep orange-brown.

**P. 521 Lecidella carpathica:** “epithecium brown”. The epithecium in this species is dark green.

**P. 523 Lecidella scabra:** add to the description the diameter of the apothecia = 1mm.

**P. 523 Lecidella scabra:** “Cortex K+ yellow, soredia C+ orange” – the full reactions, including UV, for both thallus and soredia would be helpful.

**P. 524 Lecidella scabra:** “*L. scabra* is not generally corticolous while *L. carpathica*, also with thuringione, is entirely saxicolous”. Change “*carpathica*” to “*carpathica*”. *L. carpathica* sometimes occurs on lignum.

**P. 524 Lecidella subviridis:** “*Lecanora expallens* contains usnic acid and zeorin and lacks atranorin (K-)” *Lecanora expallens* is K+ yellow.

**P. 525 Lecidoma demissum:** the septation of the ascospores is not stated. Add that they are simple.

**P. 532 Lepraria Supplementary Key:** couplet 1, both parts of the couplet contain the phrase “with numerous septa” which hence seems superfluous.

**P. 535 Lepraria bergensis:** add “Germany” to the distribution data.

**P. 547 Leptogium hildenbrandii:** The width of the lobes should be “to 6 mm” not “to 0.6mm”

**P. 549 Leptogium palmatum:** change “Apothecia unknown in the British Isles.” to “Apothecia rare.” A fertile specimen was identified at Findhorn Dunes, Moray in October 2016 which may be the first known fertile material in the British Isles.

**P. 549 Leptogium palmatum:** the description states that the upper surface is “blackish olive-green, without a reddish tinge.” The Findhorn population has been observed to be dark brown with a slightly reddish tinge, sometimes grey and often shiny.

**P. 550 Leptogium subtile:** change “*Pyrenopsis furfuracea*” to ‘*Pyrenopsis furfurea*’.

**P. 550 Leptogium subtorulosum:** In the statement “Specimens on moist sandstone should be checked against *L. massiliense*” presumably “sandstone” should be changed to ‘limestone’.

**P. 559 Lithothelium:** It is stated that “*Pyrenula* differs by the absence of an ocular chamber in the ascus...” while the generic account for *Pyrenula* states that the asci in that genus have “an internal apical beak”. The Glossary implies that ‘ocular chamber’ is synonymous with ‘apical beak’.

**P. 560 Llimonaea soreliata:** line 6, the soredia dimensions should be 25-35µ not 0.25-0.35mm.

**P. 565 Megalaria:** the asci are stated to have “a broad, non-amyloid apical cushion and a distinct ocular chamber and apical cushion.” This sounds rather confused.

**P. 570 line 6, Melanelia disjuncta:** *X. verruculifera* is not “almost exclusively coastal”.

**P. 571 Melanelixia fuliginosa:** The citation for the synonym *Parmelia glabratula* subsp. *fuliginosa* should read “(Fr.ex Duby)”

**P. 591 Micarea curvata:** “Apothecia 0.2-0.5, convex...” insert “mm diam.”

**P. 592 Micarea denigrata:** line 8, only the apothecia are C+ orange Remove this ‘correction’ – thallus (best seen in section) is C+ orange-red as well as apothecial sections.

**P. 595 Micarea lignaria** (Ach.) Hedl. (1892) var. **lignaria:** line 9, add to “Ascospores.....,” the phrase “3-to 7-septate” and remove this phrase from line 10 describing pycnidia type (a)

**P. 596 Micarea lignaria var endoleuca** (Leight.) Coppins (1983) is also known from Norway (Tønsberg 1992)

**P. 606 Microcalicium:** couplet 2 (and in description of *M. ahlneri*) “ascospore mass... with sclerotized hyphae”. Sclerotized is not defined in the Glossary.

**P. 617 Mycoblastus caesius:** line 5, change “*F. viridis*” to ‘*Ropalospora viridis*’ and put in correct alphabetical order in the list.

**P. 620 Mycomicrothelia atlantica, confusa and walrothii:** Illustrations of all three in Hawksworth (1985) in *Bull. Br. Mus. nat. Hist. (Bot.)* **14:** 71, 78 and 116 respectively.

**P. 627 Ochrolechia key, couplet 6b:** “C± red or C-”. The “C-” seems superfluous.

**P. 628 Ochrolechia arborea:** “UV+ bright orange”. Neil Sanderson (and other sources) report a bright yellow UV reaction (see UKLichens Yahoo post, 18<sup>th</sup> March 2016).

**P. 631 Opegrapha:** various characters are treated inconsistently or incorrectly in the account of this genus. See Part 2 for further details.

**P. 636 Opegrapha areniseda:** Width of conidia given as “(1-)1.2-1.5(-1.7)” whereas in Sterile Key 8f (page 117) the width is given as “0.5-0.7”.

**P. 638 Opegrapha corticola:** “Most frequent in S.W. .France”. A superfluous full stop has appeared before “France”.

**P. 641 line 16:** for **O. niveoatra** (Borrer) Laundon (1963) read **O. niveoatra** (Borrer) J.R. Laundon (1963)

**P. 641 Opegrapha ochrocheila:** the pigment and reactions of the excipular hyphae are not mentioned in the description (only the presence of K+ magenta-red granules is given). In the key on p. 633 (couplet 9a): “exciple brownish in section, K+ diffusing magenta”. When mounted in water *O. ochrocheila* has fuscous brown hyphal walls with a purplish hue (I still need to work out exactly where the purple pigment is situated but it is not an optical effect). To my surprise this purple pigment dulls distinctly in K to a dull olive-brown (brightens to reddish-brown in N). There is however often a purplish patch near the upper edge of the exciple which intensifies purple in K (due to the presence of magenta granules rather than the pigment of the excipular hyphae). If one considers the true pigmentation of their exciples, *O. herbarum* is very similar to *O. ochrocheila*: in water there is a purplish pigment detectable among the fuscous brown hyphal walls and once again this purplish pigment is lost in K and the exciple becomes dull olive (N+ reddish-purplish-brown).

The presence or absence of a perispore is not mentioned in the text but the drawing of *Opegrapha* spores on p. 639 seems to indicate the absence of a perispore in *O. ochrocheila*. Staining appears to reveal a definite (though thin) perispore.



The spores of both *O. ochrocheila* and *O. herbarum* are consistently 3-septate and those of *O. herbarum* are generally larger, wider and with a chubbier appearance. However, the difference in width is not as marked as the published dimensions imply with those of *O. ochrocheila* being often near the upper end of its range and those of *O. herbarum* towards the lower end of its. In both species, the second cell is often somewhat enlarged, more often and more exaggeratedly so in *O. herbarum* but without such a clear-cut difference that inexperienced lichenologists can reliably distinguish them. In the Flora account for *O. ochrocheila* it is stated that *O. herbarum*, in comparison with *O. ochrocheila*, has broader ascospores “with a distinctly swollen second cell”. The second cell in both species is always the widest. The second cell in *O. herbarum* is often also longer than the others. When deciding if a cell is distinctly swollen are we considering the width, the length, or a combination of the two (area)?

**P. 646 *Opegrapha vulgata*:** the last measurements for conidia are given as “3-5 × 1-1(-1.8) μm”. Presumably there is a decimal point and a number absent immediately before the brackets.

**P. 646 *Opegrapha vulgata*:** line 6, change ...”4- to 7(-8)-clavate” to... “4- to 7(8) septate”.  
Line 13, change “*O. lithygra*” to “*O. lithyrga*”

**P. 649 *Pachyphiale*:** the paraphyses are stated to be “unbranched, thread-like, septate...”. This assertion requires further investigation. Stained sections of *P. carneola* appear to show anastomosed paraphyses with numerous short branches.

**P. 652 *Parmelia*:** “Ascospores ellipsoid, 8 per ascus”. Add that they are simple.

**P. 654 *Parmelia sulcata*:** “Cortex K+ yellow>red; medulla and soredia C-, K+ orange...” The reactions given in Lichen Flora of the Greater Sonoran Desert Region, Vol. 1 (2002) seems much more accurate and complete: “Upper cortex K+ yellow, C-, KC-, P+ yellow; medulla K+ yellow turning deep red, C-, KC-, P+ orange.” Over-generous spot tests may cause the medulla reaction to seep back up into the cortex.

**P. 662 *Parmotrema crinitum*:** the final sentence attempts to summarise the differences from *Parmelinopsis horrescens* which is said here to have a K+ yellow medulla. However, the description of *P. horrescens* on pg. 659 states that its medulla is K-.

**P. 665 couplet 13a:** describing *Peltigera didactyla* the couplet should read “Thallus rarely > 3cm broad”.

**P. 677 line 9:** for “The var. **corallina** (Zahlbr.)” Laundon (1963) read “The var. **corallina** (Zahlbr.)” J.R. Laundon (1963)

**P. 681 *Pertusaria flavida*:** “*Lecanora expallens* has a less robust, thinner... contains usnic, zeorin and thiophanic acids and is UV-“. The description of *L. expallens*: “UV+ orange (thiophanic and usnic acids, ± arthothelin and ‘expallens unknown’. Recent examination using 365nm UV shows a dull orange UV reaction in *L. expallens*.”

**P. 704 Fig 44:** the scale bar is missing; on the diagram it should be a 28mm line. This diagram is, apparently, a very naturalistic drawing but it does not capture the way that *P. grisea* rhizines often have a rather ‘frayed’ appearance. Many beginners/improvers wrongly assume that the rhizines of *P. grisea* are more strictly pale and simple than is the case.

**P. 706 *Piccolia ochrophora*:** “with some eastern occurrences” should be “with some eastern occurrences”.

**P. 707 *Placidopsis*:** “Upper cortex pseudoparenchymatous, thin”. Sections of *P. custnani* in water or K appear to show a coarsely ‘cellular’ upper cortex but staining shows the cortex to



comprise intricate, branching hyphae with narrow lumina. The cellular nature is an illusion caused by the voids between the hyphae.

**P. 708 Placidium:** “Asci 8-spored... and without an ocular chamber”. Asci of *P. squamulosum* show a well-developed, elongated-conical ocular chamber. “Ascospores uniseriate” – ascospores of *P. squamulosum* are not strictly uniseriate.

**P. 712 Placynthiella key:** couplet 1b “goniocysts <0.1 µm diam.” Change to “goniocysts <0.1 mm diam.”

**P. 712 Placynthiella dasaea:** “Pycnidia not seen, very rare.” This statement is either contradictory or else the pycnidia are invisible.

**P. 714 Placynthium key, couplet 1a:** this option, which includes “thallus... not pruinose” separates *Placynthium* from *Collolechia* but some *Placynthium* species (e.g. *garovaglioii* and *hungaricum*) are pruinose.

**P. 716 Placynthium garovaglioii:** delete “prothallus not visible” from the first line of the description.

**P. 725 Polyblastia quartzina:** The second paragraph should read “On the thallus of *Verrucaria aethiobola*, *V. cernaensis* and *Ionaspis lacustris*”

**P. 726 P. terrestris:** change the BLS code from “1157” to “1161”

**P. 729 Polysporina lapponica:** This name is applied by field recorders to gyrose, *P. simplex*-type apothecia occurring in a rather thick brown thallus. In many cases, there appears to be a gradation from typical *P. simplex* (with an inconspicuous thallus) to specimens with a well-developed thallus. Perhaps many instances of ‘*P. lapponica*’ are just *P. simplex* with a conspicuous thallus.

**P. 733 Porina byssophila:** The description is rather good. Almost all collections are 3-septate as indicated by “3(-7)-septate”. We now know that *P. byssophila* is widespread and fairly common on old bark (but not restricted to ancient woodland). See Powell (2013) in *Bull. Brit. Lichen Soc.* **112:** 71-73.

**P. 737 Porina rosei:** The distribution should be updated to read “On usually base-rich bark of *Quercus*, *Fraxinus* or *Taxus*, occasionally overgrowing bryophytes on calcareous rock, in ancient woodland; widespread but rare. S.W. England, Wales, S.W. Highlands. Ireland. W. Europe, Madeira. “

**P. 738 Porocyphus coccodes:** the two synonyms should both be printed *Psorotichia* [as written, the “P” would imply *Porocyphus*.]

**P. 742 Porpidia contraponenda:** line 3 of the description should read “Apothecia (0.3-) 0.5—1.0(-1.3) mm diam., coal black, immersed at first, becoming sessile, solitary to 2- to 5-confluent, rounded....etc.”

**P. 751 Protomicarea limosa:** add that the ascospores are simple.

**P. 755 Protoparmelia oleagina:** The very useful ‘K+ oily’ reaction shown by thallus sections is not mentioned.

**P. 762 Psilolechia clavulifera:** “conidia 7-15 x 2-2.3 µm”. I have previously made significantly different measurements and this needs checking. Herb. Powell 1188 has conidia 3-3.5 x 1.3-1.7 µm.

“Pycnidia frequent, the thallus surface often with scattered conidiogenous cells...” The conidiomata are not pycnidia.

**P. 763 *Psilolechia lucida*:** "...on non-calcareous rocks and walls". On church buildings, particularly on the north wall, this species is often found colonising old mortar and sometimes preferentially occurring on the mortar rather than the more acidic bricks. *P. lucida* is often favoured by metal influence, such as run-off from window grilles and around rusty iron fittings in old wooden posts.

**P. 763 *Psilolechia lucida*:** line 12; change "*Coniocybe furfuracea*" to its current name "*Chaenotheca furfuracea*".

**P. 771 *Punctelia subrudecta*:** the conidia are stated to be "unciform" but recent observations suggest that they are merely curved at one end and not really hooked.

**P. 772 *Pycnora sorophora*:** in the comparison with *P. leucococca*, "which has larger, prominent areolae, and discrete..." Remove the comma. Also, earlier in the description of this species the plural of areole "areoles" is used instead of (and perhaps preferable to) "areolae".

**P. 773 *Pycnothelia*:** "Asci *Cladonia*-type". In the generic description of *Cladonia* the asci in that genus are stated to be "*Porpidia*-like". These two statements are not necessarily contradictory but a more synchronised version would be desirable.

**P. 773 *Pyrenocarpon thelostomum*:** add to the synonymy *Thrombium thelostomum* (Ach. ex J. Harriman) A.L. Sm. (1911)

**P. 777 *Pyrenula coryli*:** change the first line of the description from "probably lichenized" to read "probably not lichenized"

**P. 795 *Rhizocarpon* key, couplet 38a:** this couplet implies that *R. reductum* always has positive reactions. Several observers have reported a problem here since almost all specimens that they examine have negative reactions.

**P. 805 *Rhizocarpon reductum*:** the thallus reactions are given as usually K+ yellow, Pd+ orange, "rarely K-, Pd- (no lichen substances)". Several observers report that almost all specimens that they examine have negative reactions.

**P. 809 *Rimularia*:** "Brown spored *Fuscidea* species have richly branched and anastomosed paraphyses..." The generic description of *Fuscidea* (p. 407) gives: "**Hamathecium** of paraphyses 1.5-2 µm wide, simple or sparsely branched..."

**P. 812 *Rinodina*:** "Separated from *Buellia* mainly by the presence of a thalline exciple, mostly unpigmented hypothecium, a *Lecanora*-type ascus..." *Rinodina* itself is stated as having *Lecanora*-type asci.

**P. 816 *Rinodina* key:** couplet 32b "Thallus dark grey to greenish, K-" leads to *R. teichophila*. Changing this to "K± yellow" would make this character consistent with the description of *R. teichophila*.

**P. 816 *Rinodina aspersa*:** the habitat information implies that this is strictly a coastal species which is not the case (several inland records in the BLS database).

**P. 818 *Rinodina calcarea*:** This species often occurs as separated rounded areoles. It is often sterile but usually has a single immersed pycnidium in each areole. See Powell (2012) in *Bull. Brit. Lichen Soc.* **110**: 55-58.

**P. 823 *Rinodina pityrea*:** this species is sorediate, not granular.

**P. 827 *Ropalospora*:** change the name of L.H. Skjoldahl a part author to S.K. Skyoldal.

**P. 839 *Scoliciosporum*:** "Similar to *Micarea* in having... but differing in its *Lecanora*-type asci..." Coppins (1983) states that *Micarea* also has *Lecanora*-type asci (has this been superseded?)

**P. 841 line 3:** change "*Biatoria sphaeroides*" to "*Mycobilimbia pilularis*"

- P. 842 *Solenopsora*:** ascospores are given as “0- 1-septate”. Replace with ‘0- to 1-septate’.
- P. 844 *Solenopsora vulturiensis* line 3:** change Pd- to Pd+ orange.
- P. 862 *Stereocaulon leucophaeopsis*:** “Distinguished from *S. tornensis*...” Replace with ‘*S. tornense*’.
- P. 866 *Sticta canariensis*:** The free-living green algal morphotype also occurs in one Welsh site.
- P. 876 *Tephromela atra* var. *torulosa*:** “On trees... occasional; very rare” Does this make sense?
- P. 893 *Thermutis*:** “The *Scytonema* photobiont distinguishes *Thermutis* from other fruticose lichens with cyanobacterial photobionts.” *Lichinodium sirosiphoideum* is fruticose and has *Scytonema* as its photobiont.
- P. 895 *Tomasellia*:** on line 8 it is asserted that “In *Tomasellia* the ascospores are cylindrical with comparatively thicker and more even walls.” Both here and in the generic description of *Mycoporum* (pg. 621) there is perhaps some confusion between the characters stated for asci and for ascospores.
- P. 906 *Trapelia* key:** couplet 12b “...without scattered marginal areolae” Why areolae rather than areoles?
- P. 907 *Trapelia corticola*:** “UV- white” Should be “UV+ white”?
- P. 909 *Trapeliopsis gelatinosa*:** its distribution is given as “rather local, especially in upland districts.” This is a pedantic point but that statement suggests that it is especially local in upland districts. Presumably what is meant is that it is more common in upland districts.
- P. 916 *Umbilicaria polyphylla*:** the upper surface is described as “dark- to brown-black”. Surely black is dark. Perhaps what was meant was “dark brown to black”.
- P. 921-P. 929. *Usnea*, general comment:** all chemical tests are for the medulla not for the “thallus” as is sometimes stated, unless the soralia are also specifically mentioned.
- P. 922 *Usnea chaetophora*:** lines 2&3: for increased clarity these lines should read ...”forming +/- cylindrical segments which may be slightly swollen but also narrowed between adjacent segments.
- P. 924 *Usnea flavocardia*:** the thallus is +/- erect.
- P. 924 *Usnea flavocardia*:** line 1, “paler towards the base” whereas in the generic description “Blackening of the holdfast area occurs in *U. flavocardia*...”
- P. 927 *Usnea glabrescens*:** lines 3 & 4 change “..., blackened at the base, main branches with evenly spaced, densely papillate, thinner....etc” to “.., blackened at the base. Main branches with dense, evenly spaced papillae; thinner branches...etc”  
Lines 7 & 8, to chemotype (b) add “Pd+ yellow to orange.”
- P. 927 *Usnea hirta*:** line 1, change “.., main branches to 1 mm long” to... “1 cm long”
- P. 928 *Usnea rubicunda*:** add to thallus description “not blackened at base”
- P. 929 *Usnea wasmuthii*:** line 3; change “Apothecia unknown” to “Apothecia rare” and later in the same sentence change “P-“to “Pd -“.
- Line 7: delete “also, fertile specimens of the complex are invariably *U. Subfloridana*”.
- Lines 11&12 change “: in *U. wasmuthii* the soralia Pd+ yellowish after one minute” to “: in *U. wasmuthii* the soralia turn Pd+ yellowish after one minute”
- P. 930 *Vahliella atlantica*:** Jørgensen & James (2005) not in References.
- P. 932:** under **Literature**: change “Breuss (2007a, b, 2008)” to “Breuss (2007a, b, 2009)”
- P. 935 *Verrucaria* key:** couplet 33b “Involucrum present...” leads eventually to *V. ochrostoma* (which lacks an involucrum).

- P. 941 Verrucaria aethiobola:** add synonym: *V. latebrosa auct. brit.* under the name.
- P. 942 Verrucaria baldensis:** spore size range is incorrect and more like that of *V. calciseda*. The incomplete information on spore size for *V. baldensis* in the table (page 940) is closer to the true range.
- P. 945 Verrucaria csernaensis:** change spelling to **V. cernaensis** and change alphabetical order. And add synonym: *V. aethiobola auct. brit. p. p.*
- P. 949 Verrucaria fusconigrescens:** line 16, change “....brown thallus on a black prothallus, ...” to “....brown thallus on a dark brown to nearly black prothallus,....”
- P. 950 Verrucaria latericola:** line 8 of the notes paragraph: change the full stop after “*flavescens*” to a comma.
- P. 950 Verrucaria macrostoma:** “Conidiomata not found”. Van den Boom & Brand (2003) give the following for *V. macrostoma*: “Pycnidia inconspicuous, but not rare, c. 100 µm with a pale brownish wall. Conidia short bacilliform with rounded ends, sometimes slightly curved. 3.5-4.3 x 1.0-1.2 µm.” Also observed in British material e.g. Powell 2936.
- P. 952 Verrucaria muralis:** “exciple... colourless to pigmented at base”. This implies that the upper part is unpigmented whereas it is usually or always pigmented.
- P. 953 Verrucaria nigrescens:** the most distinctive feature, the thick black basal layer is not mentioned.
- P. 959 Vezdaea aestivalis:** the spores are stated as “1(-3)-septate”. Recent examination has suggested that some ascospores in some specimens have more than 3 septa.
- P. 968 Couplet 8b:** this reads better as “Lobes yellow-orange, lacking isidia; when fertile apothecia outer margin smooth.....9”
- P. 971 Xanthoria ucrainica:** the length measurement of the conidia in the first brackets (0.9) should be (1.9) as in Kondratyuk (1997).
- P. 973 Xylographa key, couplet 2a:** for “paralella” read “paralela”. Re name first entry from “**X. paralela**” to **X. “paralela.”**

#### References:

- P. 977 Arup, U.** (2009). The *Caloplaca holocarpa* group in the Nordic countries, except Iceland. *Lichenologist* **42**: 111-130.
- P. 978 Brand, M. et al** (2009): change page numbers from “83-93” to “81-91”
- P. 978 Breuss, O.** (2008): change to “**Breuss, O.** (2009) and, in the same entry, change the page numbers from “94-114” to “95-112”
- P. 993 Hertel, H.** (2008): change to “**Hertel, H.** (2009)” and, in the same entry change “187-207” to “185-204”.
- P. 999 “Knudsen, K & Lumbsch, H. T. (2007)”** change to “**Knudsen, K. & Lumbsch, H. T. (2007)”**
- P. 999 Knudsen, K & Lumbsch, H. T. (2007):** “pp. 310-302” change to “pp. 301-302”.

#### Index:

- P. 1019:** delete page 725 from the list of references for aethiobola (Verrucaria)
- P. 1021:** Biatoria 18, **213**, 218, 429, 614, 698; add page **975**
- P. 1023:** add cernaensis (Verrucaria) 446, 725, 941, 942, **945**
- P. 1024:** cinerea (Rhizocarpon) reductum f. (var. on p.803)
- P. 1025:** delete csernaenis (Verrucaria) incorrect spelling of cernaensis (Verrucaria)

- P. 1026:** delete “delisei (Melanelia) 570”  
delisei (Xanthoparmelia) **964**, 966; add page 570.
- P. 1030:** “Halecania 18, 283, 426, 454” change to “Halecania 18, 283, **426**, 454”.
- P. 1031:** *hydrela* (*Verrucaria*) p.946 (not 945)
- P. 1032:** japonica (*Heterodermia*) should be in italic type (as a synonym of *Heterodermia obscurata*)
- P. 1032:** “latebrosa (*Verrucaria*) 725, 941, **950**, **951**” should read “*latebrosa* (*Verrucaria*) 941” as a synonym of *V. aethiobola*.
- P. 1035:** modesta (*Catillaria*) add page 341 to references.
- P. 1037:** below *perlata* (*Parmelia*) 662 add perlatum (*Parmotrema*) 662
- P. 1038:** pilularis (*Mycobilimbia*): change page numbers to read 216, 457, 458, **614**, 841.
- P. 1038** “polycarpon (*Rhizocarpon*)” should read “polycarpum (*Rhizocarpon*)”
- P. 1039:** insert “pulvinatum (*Leptogium*) **546**” after “*pulvinata* (*Toninia*) 902”
- P. 1040:** insert *Pyrenocollema* = *Collemopsisidium* **357**  
“ralfsii (*Halecania*) ...” should read “ralfsii (*Halecania*)...”
- P. 1042:** second column line 3: delete *soralifera* (*Lecania*) *erysibe* f. 459 and replace with *sorediata* (*Lecania*) *erysibe* f. 459 after line 12 in roman because the name is accepted in the key.
- P. 1042:** delete line “sphaeroides (*Biatoria*) 457, 458, 841”
- P. 1044:** for *symphycarpia* **read** *symphycarpia*
- P. 1044:** change “tetramera (*Biatoria*) 219” in roman type to *italic*. Add page 615  
*Thelocarpon* 19, 308, 622, **884**, 960; add page **975**