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Some synonyms in *Chrysothrix* and *Lepraria*

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Abstract: The genus *Alysphaeria* Turpin is typified; it belongs to *Chrysothrix* Mont. nom. cons. Five old unused names are added to the synonymy of *Chrysothrix candelaris* (L.) J. R. Laundon. *Lepraria atrotomentosa* Orange & Wolseley is a synonym of *L. cupressicola* (Hue) J. R. Laundon, a new combination. *Lepraria nigrocincta* Diederich *et al*. is identical with the earlier *L. yunnaniana* (Hue) Zahlbr. and therefore also goes into synonymy.

Key words: *Alysphaeria*, *Crocynia*, lichens, taxonomy

Introduction

Two French lichenologists, l'abbé Hue (1840–1917) and Maurice Bouly de Lesdain (1869–1965), described 127 sterile new species of *Crocynia* (Ach.) A. Massal. nom. cons., mostly in Hue (1924). They were usually descriptions of single specimens.

Unfortunately ''tous les *Crocynia* dicrits par Hue ou par moi, ont ètè détruits par les bombes incendiaries allemande'' (Bouly de Lesdain, in letter of 25 May 1962). Although most were destroyed at Dunkirk in 1940, a few specimens remained in Edinburgh (E), Kyoto (KYO), and Paris (PC). It is impossible to identify the lichens from the descriptions alone, and one cannot therefore classify most of them. The majority belong to *Lepraria* Ach. nom. cons., but some are referable to *Chrysothrix* Mont. nom. cons. and to other genera.

The genus *Lepraria* was little studied until an account of the British species appeared (Laundon 1992). Chemistry was the most important character used to separate the morphologically similar, but distinct, sterile taxa. At that time it was considered that the species did ''not have a common ancestry, but are heterogeneous'' (Laundon 1992: 318). However, ten years later a vital molecular study proved that this was not the case, and in fact the species did ''form a single monophyletic group'' (Ekman & Tønsberg 2002: 1262). They (Ekman & Tønsberg 2002: 1270–1272) also showed that the genus *Leproloma* Nyl. ex Cromb. should be included in *Lepraria*.

In this paper I deal with five names of lichens published in 1924 which have been little studied, as well as two old generic names. They are listed under the name by which the species should now be known. As a result two species described in recent years are placed in synonymy. An exclamation mark (!) after a herbarium or type citation indicates that I have critically examined the specimen concerned.

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The Species

Chrysothrix candelaris (L.) J. R. Laundon

Lichenologist **13:** 110 (1981);—*Byssus candelaris* L., *Sp. Pl.* **2:** 1169 (1753); type: unlocalized drawing in Dillenius, *Hist. Musc.*: tab. 1 fig. 4 (1742) (BM!); typotype: Britain, not in existence; neotypotype (selected by Laundon 1981: 110): London Borough of Lewisham, Blackheath, on timber, *c.* 1800, hb. J. E. Smith [Misc. lich. coll.] (LINN ! [TLC: calycin]).

Alysphæria candelaris (L.) Turpin, *Mém. Mus. Hist. nat. Paris* **14:** 63, plate 4 fig. 7 (1827). See below.

Courtoisia candelaris (L.) L. Marchand, *Bijdr. Natuurk. Wet. Amst.* **5:** 193 (1830).

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Crocynia filamentosa Hue, *Bull. Soc. Bot. Fr.* **71:** 348 (1924); type: New Caledonia, Lifou, on wood, 1865, *Thiébaut* 22 (PC—holotype!).

Crocynia flavissima B. de Lesd. ex Hue, *Bull. Soc. Bot. Fr.* **71:** 324 (1924); type: France, Yvelines, Louveciennes ["Luciennes"], on corticated wood, 12 mai 1839, *J. H. Léveillé* (PC—holotype!).

Crocynia mauritima Hue, *Bull. Soc. bot. Fr.* **71:** 337 (1924); type: Mauritius, Pamplemousses, "sur un Manguier", *Darutz* 25 (PC—holotype!).

For a description see Laundon (1981: 111–112).

Taxonomy. Readily identified by its vivid warm yellow colour and leprose form, which is usually sterile.

Ten valid synonyms were listed by Laundon (1981: 110) but for four of them the types had not been found. Two were located in Paris in 1981 and therefore this information is provided here. Unfortunately chemical work could not be carried out and therefore their chemistry is not known. *Chrysothrix candelaris* consists mainly of two chemomorphs, one with calycin and the other with pinastric acid; only three specimens with both substances were seen (Laundon 1981: 112), although chemical overlap was also reported by Kalb (2001: 144). Recently the chemomorph with pinastric acid "in the tropics" was separated as *C. xanthina* (Vain.) Kalb (2001: 144), despite the absence of significant morphological characters, although small differences in soredial size were alleged. In fact the oldest valid name for this chemomorph is *Lepra citrina* Schaer. (Schaerer 1823: 2; Laundon 1981: 110), and this should have priority if the species is split on chemical grounds, a procedure, however, of doubtful merit.

Lepraria cupressicola (Hue) J. R. Laundon, comb. nov.

Crocynia cupressicola Hue, *Bull. Soc. bot. Fr.* **71:** 395 (1924); type: Japan, insula Yezo, Hakodate, December 1896, *Urbain Faurie* 18 (KYO—holotype! [TLC: atranorin, lecanoric acid, and zeorin]).

Lepraria atrotomentosa Orange & Wolseley, *Bibliotheca Lichenologica* **78:** 328 (2001); type: Sri Lanka, Central Province, Nuwara Eliya District, Ramboda, 07°03′30″N, 80°42′E, 1700 m, on rocks and soil in road-cutting, 12 January 2000, *V. Karunaratne, K. Bombuwala & S. Mendis* (BM—holotype! [TLC: atranorin, lecanoric acid, and zeorin]; PDA—isotype, not seen).

Thallus leprose, diffuse, sometimes with marginal lobes, of a mass of powdery spherical granules, up to 0·1 mm diam., with projecting hyphae, forming a powdery crust, pale bluish-grey. *Medulla* undifferentiated. Dark hyphae are frequently produced from the underside of the thalline granules. *Thallus* C+ pink or red, K+ faint yellow, P − . Contains atranorin, lecanoric acid, and zeorin.

Taxonomy. A well-defined species readily identified by its bluish-tinged dull thallus, with an undifferentiated medulla, frequently on a mass of black hyphae, the granules reacting C+ pink or red. Superficially it bears some resemblance to *Lepraria incana* (L.) Ach.

Göran Thor (in letter dated 27 August 1995) stated that the "species is easily recognized in the field by the bluish tint of the thallus and it is one of the most common and widespread *Lepraria* species in Japan. It is resistent [sic] to air pollution and can still be found in downtown Tokyo."

The positive reaction with bleach is due to the presence of lecanoric acid. *Lepraria atrotomentosa* is identical and is therefore a synonym of *L. cupressicola*. The species *L. achariana* Flakus & Kukwa (2007: 464), *L. goughensis* Elix & Øvstedal in Elix *et al.* (2005: 274), *L. impossibilis* Sipman (2004: 30), and *L. lecanorica* Tønsberg in Nash *et al.* (2004: 326), also possess lecanoric acid usually in addition to other products. The differences between all five species were discussed by Flakus & Kukwa (2007: 464).

Selected specimens examined. **Thailand:** *Chiang Mai province*: Doi Suthep chedi, San Khu, in montane oak/chestnut forest, 99°54′E, 18°49′N, 1600 m, 1993, *P. W. James & P. A. Wolseley* 1554 (BM!); Doi Inthanon summit bog, in high altitude savanna, 98°29′E, 18°50′N, *c.* 2000 m, 1993, *P. A. Wolseley & Svasti* 3141 (BM!).

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Lepraria yunnaniana (Hue) Zahlbr.

In Handel-Mazzetti, *Symbolae Sinicae* **3:** 244 (1930);—*Crocynia yunnaniana* Hue, *Bull. Soc. bot. Fr.* **71:** 396 (1924); type: China, Yunnan, "sur la terre, près les rochers de Kou-foui, au-dessous de Mo-So-yn", 17 juin 1887, *abbé Delavay* 2995 (PC—holotype!, BM—isotype! [TLC: divaricatic acid + unidentified substance, apparently nordivaricatic acid]).

Lepraria nigrocincta Diederich *et al.*, *Bibliotheca Lichenologica* **64:** 78 (1997); type: Burundi, Galerie forestière de la Siguvyage un peu en aval du pont de la route Rumonge-Bururi, 1750 m, dans le bas d'un gros tronc de *Carapa*, 20 September 1974, *J. Lambinon* 74/1266 (LG—holotype! [TLC: divaricatic acid and trace of nordivaricatic acid]; herb. Diederich—isotype! [TLC: divaricatic acid and trace of nordivaricatic acid]).

Thallus leprose, diffuse, without marginal lobes, of a mass of powdery spherical granules, up to 0·05 mm diam., forming a powdery crust, pale yellowish grey. *Medulla* white. Light to dark hyphae are produced from the underside of the granules to form a well-developed hypothallus. *Thallus* C+ orange, rarely C−, K−, P−. Contains divaricatic acid and nordivaricatic acid.

Taxonomy. This *Lepraria* is identified by the off-white granules, usually reacting KC+ orange or pink, on a distinct hypothallus. *Lepraria nigrocincta* was published in Aptroot *et al.* (1997: 78) and is identical with the earlier *L. yunnaniana* and must therefore be subsumed. It has a unique chemistry of divaricatic acid with a trace of nordivaricatic acid. The positive reaction with bleach is due to nordivaricatic acid; some thalli with only traces of this chemical are C−. Two other species of *Lepraria* also have divaricatic acid, namely *L. crassissima* (Hue) Lettau and *L. incana* (L.) Ach., but both possess zeorin which is absent from *L. yunnaniana*. The lichen *L. crassissima* has a thick, often whitish grey or brownish thallus, reacting C+ red or pink due to a high content of nordivaricatic acid, and grows on shaded rocks; see van den Boom *et al.* (1994: 157) for a detailed account. *Lepraria incana* has a thinner, dull greenish-grey, bluish tinged, thallus with an undifferentiated medulla, reacting C−, and grows especially on bark; see Laundon (1992: 333–336) for further details. The status of *L. crassissima* and *L. incana* was also discussed by Baruffo *et al.* (2006: 397 and 402), together with valuable accounts of most other European species, including two keys.

The genus *Alysphaeria*

Seven species were listed and illustrated for the genus *Alysphæria* (Turpin 1827), two of which, No. 12–13, were pollen and were not named. The other five were *A. candelaris* based on *Lepra candelaris*, *A. antiquitatis* based on *Lepra antiquitatis*, *A. flavovirens* based on *Lepra flavovirens*, *A. chlorina* based on *Lepra chlorina*, and *A. muscorum* based on *Lepra muscorum*. The authors for the species of *Lepra* were not cited. However, *L. candelaris*, based on *Byssus candelaris* L., *Sp. Pl.* **2:** 1169 (1753), and *L. chlorina*, based on *Lichen chlorinus* Ach., *Lich. Suec. Prodr.*: 6 (1799), are both now placed in *Chrysothrix*. *Lepra antiquitatis*, based on *Byssus antiquitatis* L., *Sp. Pl.* **2:** 1168 (1753), is probably of mineral origin (Laundon 1992: 340). *Lepra flavovirens* appears to be newly validly described and resembles *Botryolepraria lesdainii* (Hue) Canals *et al.*, and *L. muscorum*, also newly validly described, is a squamulose thallus on moss. Because only *Alysphæria candelaris* and *A. chlorina* of the seven species can be classified and both belong to *Chrysothrix*, this is where the genus *Alysphæria* must be placed. Therefore *A. candelaris* is selected here as the type of the genus. Unfortunately it was described before *Chrysothrix* Mont. (Montagne 1852: 312) nom. cons., and must therefore now be proposed for rejection in order to retain the genus name *Chrysothrix*. The formal synonymy is as follows:

Chrysothrix Mont. nom. cons.

Annls Sci. nat. (Bot.), *sér.* 3, **18:** 312 (1852); type: *Chrysothrix noli-tangere* (Mont.) Mont. [=*C. pavonii* (Fr.) J.R. Laundon].

Alysphaeria Turpin, *Mémoires du Muséum d'Histoire Naturelle* **14:** 35, 63 plate 4 (1827); typus: *Alysphaeria candelaris* (L.) Turpin. Basionym: *Byssus candelaris* L., Sp. Pl. **2:** 1169 (1753) (lectotype—selected here).

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