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Nomenclatural notes on *Pseudocyphellaria* V: Some Brazilian taxa*

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Abstract. A new, phyllidiate, white-medulla species with yellow pseudocyphellae and a green photobiont, *Pseudocyphellaria kalbii* D.J.Galloway, is described from Brazilian collections, and typification and notes on *P. aurora* (De Not.) Vainio are presented.

According to the literature the lichen genus *Pseudocyphellaria* is represented in Brazil by three taxa; *P. aurata, P. aurora* and *P. clathrata* (De Notaris 1851, Vainio 1890, Zahlbruckner 1902, 1908, 1909, Malme 1934, Xavier Filho & Mariz 1970, Osorio 1977a, 1977b, 1985, 1992, Osorio & Homrich 1978, Osorio & Fleig 1982, 1986a, 1986b, 1987, 1988, 1989, 1990a, 1990b, Marcelli 1991. *P. aurata* and *P. clathrata* both have a green photobiont, yellow pseudocyphellae and a yellow medulla and form a species pair (Galloway & Arvidsson 1990) while *P. aurora* has a green photobiont, white medulla and white pseudocyphellae (Zahlbruckner 1902, Malme 1934). It is typified here from authentic material.

While researching palaeotropical and South American species of *Pseudocyphellaria*, I examined, *inter alia* some Brazilian collections sent to me for identification by Dr K. Kalb (Neumarkt). Kalb's Brazilian collections contained a new species with a white medulla, green photobiont, yellow pseudocyphellae and prominent marginal phyllidia, which is described below as *P. kalbii*.

1. Pseudocyphellaria aurora (De Not.) Vainio, Acta Soc. Flora Fauna fenn. 7: 184 (1890). - *Sticta aurora* De Not., Osserv. Sticta: 9, Tab.1, fig. 3. (1851). - *Crocodia aurora* (De Not.) Trevisan, Lichenotheca Veneta exs. no. 75 (1869). - *Sticta aurata* var. *aurora* (De Not.) Mü ll. Arg., Flora 63: 264 (1880). Type: Casaretto s.n., Brasil, "Serra dos Organos" 1839 (BM - lectotype designated here, PC-LENORMAND, VER, W -

* Part IV in *Lichenologist* 21: 88-89 (1989).

isotypes).
Sticta aurata var. *albocyphellata* Müll. Arg., Flora 63: 264 (1880). - *Pseudocyphellaria albocyphellata* (Müll. Arg.) Malme, Ark. Bot. 26A (14): 9 (1934). Type: M.L. Deventer s.n., Brazil, Petropolis (Brasilia) (L 910,213-1710 - lectotype designated here, BM, W - isotypes).
(Fig. 1)

Pseudocyphellaria aurora is characterised by a white medulla, a green photobiont, sinuous, complex-imbricate lobes with sinuous, crenate-lobulate margins devoid of isidia, phyllidia or soredia. It has white pseudocyphellae on the lower surface, a glabrous to partly pubescent or tomentose upper surface which is occasionally punctate-impressed, and distinctly pedicellate marginal to submarginal apothecia (Fig. 2). Spores are 3-septate, pale yellow-brown, straight to arcuate with pointed apices and evenly spaced locules, (27-)29.5-34(-36.5) x 5-6.5 µm (Galloway 1986: 160). A characteristic, fertile species similar to *P. clathrata* (and like it developing a characteristic brick-red colour on storage in the herbarium) and often occurring sympatrically with it, but distinguished by the white (not yellow) medulla, white pseudocyphellae, a differing chemistry and longer spores (Galloway & Arvidsson 1990: 126).

2. Pseudocyphellaria kalbii D.J. Galloway sp.nov.

Type: Brazil, Rio de Janeiro, Serra da Mantiqueira. Zwischen Registro do Picu und Agulhas Negras. In einem feuchten, lichten, beweideten Wäldchen, 2000 m, 15 March 1980, K. Kalb & G. Plöbst s.n. (Herb. Kalb - holotype; BM, Herb. Kalb - isotypes).
(Fig. 3)

Diagnosis: *Thallus corticola,* Pseudocyphellariae arvidssoniae *similis sed thallo minore, (4-)8-12(-15) cm latus, lobis rosulatis vel irregularibus; phyllidiatus, phyllidiis valde marginalibus vel raro laminalibus, crebris, coralloideis, margibus tomentosis; medulla nivea; photobiontus chlorococcoideus; subtus pallidus, dense tomentosus, pseudocyphellis flavis, raro niveis; apothecia ignota; calycinum, acidum pulvinicum et pulvinicum dilactonum continens.*

Thallus corticolous, orbicular, rosette-forming to irregularly spreading, (4-)8-12(-15) cm diam., loosely attached centrally, margins ± free and subascending. Lobes (2-)5-10(15) mm wide, rounded to irregularly divided to rather ragged-incised, 1-3(-5) cm long, ± discrete to closely contiguous to complex-imbricate. Margins rarely subentire, more usually crenate or pectinate to ± densely phyllidiate, narrowly deflexed, often with minute, white, silky glistening, projecting hairs, slightly thickened below and commonly furnished with ± linear, discontinuous yellow pseudocyphellae. Upper surface bright lettuce green to olivaceous when moist, pale glaucous-grey to buff tinged red-brown when dry to distinctly ochraceous in parts on storage, shallowly undulate to plane, or irregularly pitted to subfaveolate in parts, matt, with extensive smooth patches to minutely scabrid-areolate in parts, often delicately white-pubescent at margins, delicate, fragile when dry, flabby when wet. Phyllidia frequent, mainly marginal but also occasionally laminal and there rather scattered or more commonly developing from tears of cracks in the upper cortex, fragile, flattened, dorsiventral, rarely simple, terete to furcate to palmately divided appearing squamiform, to complex- imbricate to ± coralloid, crowded, 0.2-0.8(-1.2) mm tall, margins glistening, delicately white-pubescent above, lower surface with minute yellow pseudocyphellae. Isidia, maculae, pseudocyphellae and soredia absent. Medulla white. Photobiont green. Lower surface whitish to pale buff at margins, darkening slightly towards centre, ± uniformly tomentose from margins to centre, tomentum medium to short, velvety at margins, ± woolly or shaggy centrally, whitish to buff or brownish to ± blackened centrally. Pseudocyphellae yellow (rarely white), numerous, conspicuous, 0.1-0.5(- 1.0) mm diam., round to irregular to ± sigmoid or effigurate, decorticate area flat to slightly curved, margins inapparent, concolorous with lower surface. Apothecia not seen. Pycnidia rather sparse, when present often locally crowded, laminal, minute, slightly swollen, ostiole dark red-brown, to 1 mm diam.

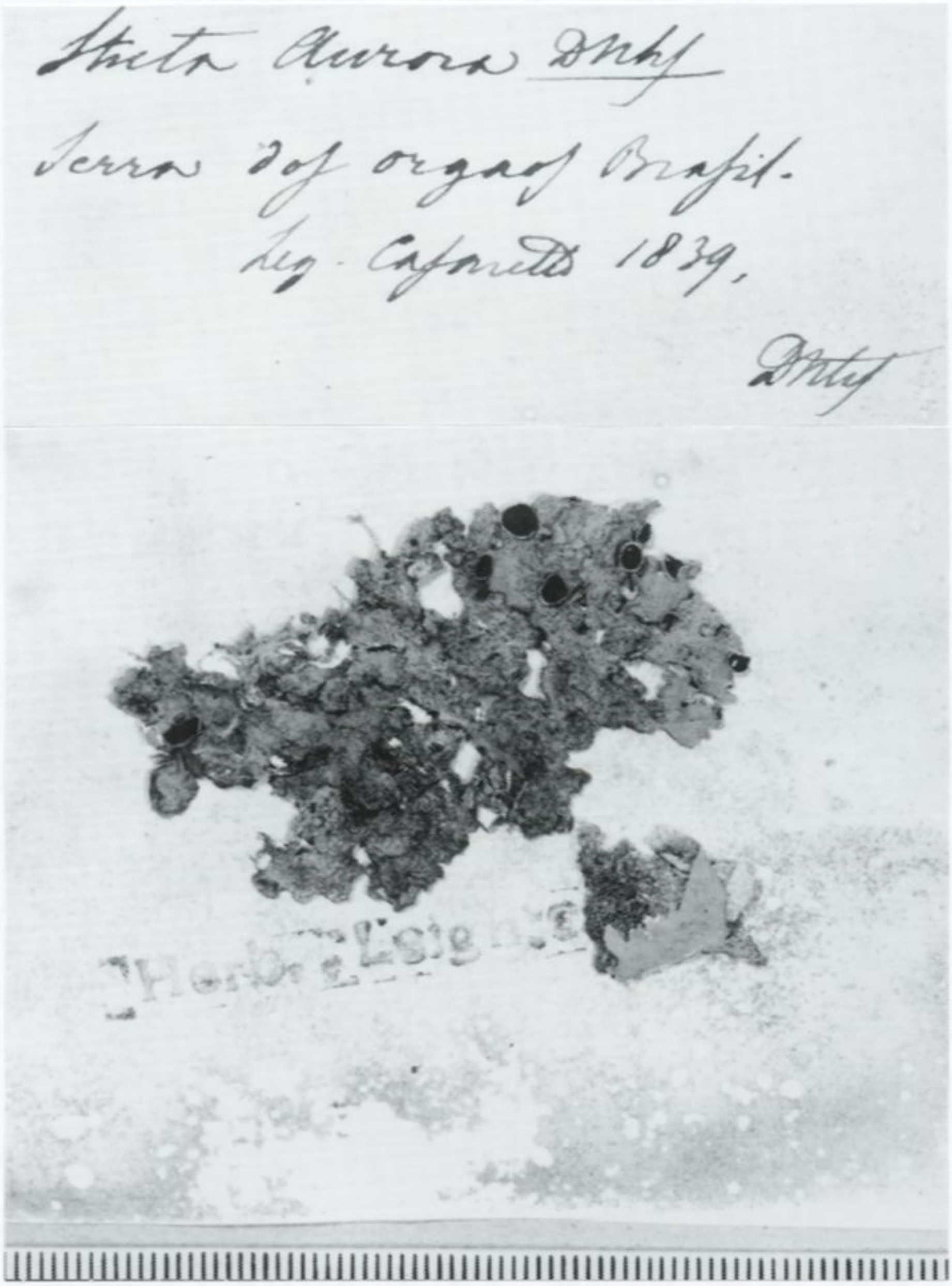

Fig. 1. Lectotype of *Sticta aurora* De Not. (BM). Scale in mm.

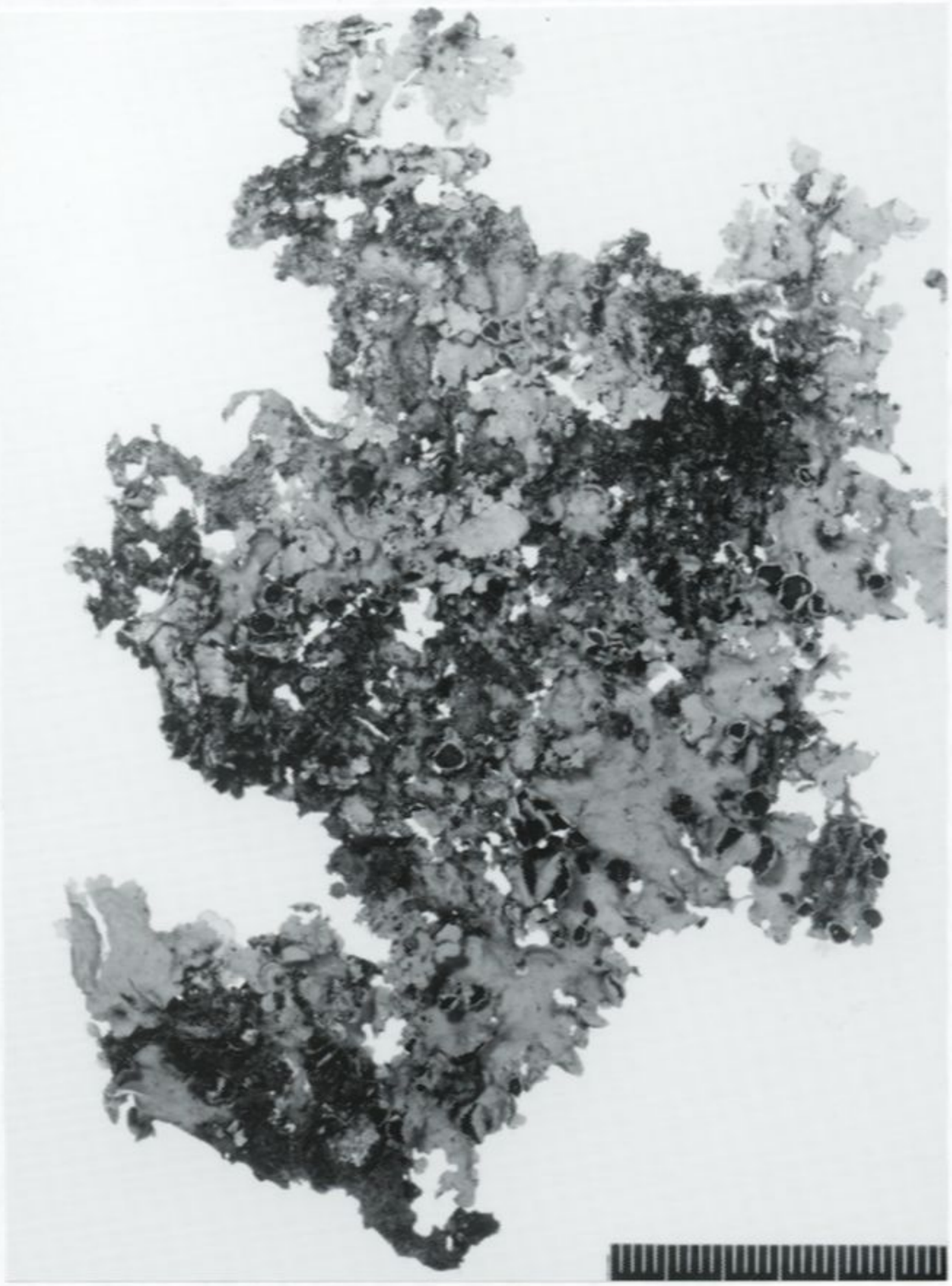

Fig. 2. *Pseudocyphellaria aurora*, K. Kalb 222a, 15.iii.1980, (Herb. Kalb). Scale in mm.

Chemistry: Pulvinic acid, pulvinic dilactone, calycin [TLC according to standardised methods (see Galloway 1992)].

Pseudocyphellaria kalbii is a neotropical species, apparently endemic to Brazil, having irregularly incised, rounded to rather ragged lobes and characterized by a white medulla, a green photobiont, yellow (rarely white) pseudocyphellae on the lower surface which is uniformly white, silky tomentose, and prominent crowded marginal (occasionally also laminal) squamiform to subcoralloid phyllidia which are delicately white-pubescent at the margins.

Pseudocyphellaria kalbii is distinguished from *P. arvidsonii* by its white medulla, smaller and more irregular lobes and apparent absence of apothecia, and from *P. aurora* by the mainly yellow pseudocyphellae and the conspicuous development of marginal phyllidia.

Distribution and ecology: The type collection (holotype and five isotype specimens) is associated with *Heterodermia leucomelos* and *Teloschistes flavicans* at a height of 2000 m. Material collected from south of Curitiba came from the forest interior and in this shaded site the lichen grows amongst bryophytes, the thallus appearing rather thinner and the pseudocyphellae lack the yellow pigments common in the specimens from the type collection. It is possible that the lack of the yellow pigments in the pseudocyphellae is a response to the lower light intensity of this habitat.

Specimens examined: Brazil: *Rio de Janeiro:* Serra da Mantiqueira; Itatiaia, zwischen Registro do Picu und Agulhas Negras, 23 July 1978, *K. Kalb & G. Plöbst* s.n. (Herb. Kalb). *Parana:* Mun. Tijucas do Sul, 46 km S de Curitiba, Campinas, interior de selva, 14 February 1978, *A. Krapovickas & C.L. Cristobal* 33745 (COLO 313895).

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Literature

De Notaris, G. 1851. Osservazioni sul genere *Sticta*. 20 pages. Torino.

Galloway, D.J. 1986. Non-glabrous species of *Pseudocyphellaria* from southern South America. Lichenologist 18: 105-168.

Galloway, D.J. 1992. Studies in *Pseudocyphellaria* (lichens) III. The South American species. Bibliotheca Lichenologica 46: 1-275.

Galloway, D.J. and Arvidsson, L. 1990. Studies in *Pseudocyphellaria* (lichens) II. Ecuadorean species. Lichenologist 22: 103-135.

Malme, G.O.A. 1934. Die Stictazeen der ersten Regnellschen Expedition. Arkiv för Botanik 26A (14): 1-18.

Marcelli, M.P. 1991. Aspects of the foliose lichen flora of the southern-central coast of Sao Paulo State, Brazil. Pp 151-170. In: (ed. D.J. Galloway) Tropical lichens: Their systematics, conservation, and ecology. Systematics Association Special Volume 43. Clarendon Press, Oxford.

Osorio, H.S. 1977a. Contribution to the lichen flora of Brazil. II. Lichens from Guarapuava, Parana State. Dusenia 10 (2): 101-102.

Osorio, H.S. 1977b. Contribution to the lichen flora of Brazil III. Lichens from western Parana. Acta Biologica Paranaense (Curitiba) 6 (1-4): 3-7.

Osorio, H.S. 1985. Contribution to the lichen flora of Brazil. XIV. Lichens from Gramado, Rio Grande do Sul State. International Journal of Mycology and Lichenology 2: 43-50.

Osorio, H.S. 1992. Contribution to the lichen flora of Brazil. XXIX. Lichens from Ponta Pora, Mato Grosso do Sul. Comunicaciones Botanicas del Museo de Historia Natural de Montevideo 5 (98): 1-6.

Osorio, H.S. and Homrich, M.H. 1978. Contribution to the lichen flora of Brazil IV. Lichens from southern Rio Grande do Sul. Bryologist 81: 452-454.

Osorio, H.S. and Fleig, M. 1982. Contribution to the lichen flora of Brazil IX. Lichens from the municipality of Torres, Rio Osorio, H.S. and Fleig, M. 1986a. Contribution to the lichen flora of Brazil XVII. Lichens from Sâo Francisco de Paula, Rio Grande do Sul State. Comunicaciones Botanicas del Museo de Historia Natural de Montevideo 4 (74): 1-4.

Osorio, H.S. and Fleig, M. 1986b. Contribution to the lichen flora of Brazil XVIII. Comunicaciones Botanicas del Museo de Historia Natural de Montevideo 4 (75): 1-8.

Osorio, H.S. and Fleig, M. 1987. Contribution to the lichen flora of Brazil. XIX. New or additional records from Santa Maria, Rio Grande do Sul State, Comunicaciones Botanicas del Museo de Historia Natural de Montevideo 5 (81): 1-8.

Osorio, H.S. and Fleig, M. 1988. Contribution to the lichen flora of Brazil. XX. Additional records from Sao Francisco de Paula, Rio Grande do Sul State. Comunicaciones Botanicas del Museo de Historia Natural de Montevideo 5 (85): 1-7.

Osorio, H.S. and Fleig, M. 1989. Contribution to the lichen flora of Brazil. XXII. Lichens from Canela, Rio Grande do Sul State. Comunicaciones Botanicas del Museo de Historia Natural de Montevideo 5 (88): 1-4.

Osorio, H.S. and Fleig, M. 1990a. Contribution to the lichen flora of Brazil. XXIV. Lichens from Nova Petropolis, Rio Grande do Sul State. Mycotaxon 36: 325-327.

Osorio, H.S. and Fleig, M. 1990b. Contribution to the lichen flora of Brazil. XXVI. Lichens from “Vale do Diablo”, Rio Grande do Sul State. Comunicaciones Botanicas del Museo de

Fig. 3. Holotype of *Pseudocyphellaria kalbii* (Herb. Kalb). Scale in mm.

Historia Natural de Montevideo 5 (92): 1-6.

Vainio, E.A. 1890. Étude sur la classification naturelle et la morphologie des lichens du Bré sil. Acta Societatis Flora Fauna Fennica 7(1): 1-247.

Xavier Filho, L. and Mariz, G. 1970. Alguns macroascoliquens dos arredores do Recife (Pe.) e Joao Pessoa (Pb.). Universidade Federal de Pernambuco. Série B Estudios e Pesquisas 1 (2):-7.

Zahlbruckner, A. 1902. Studien über brasilianische Flechten. Sitzungsberichte der Akademie der Wissenschaften Wien, mathematisch-naturwissenschaftliche Klasse 111: 357-432.

Zahlbruckner, A. 1908. Beiträge zur Flechtenflora Brasiliens. Bulletin de l'Herbier Boissier sé r. 2, 8: 459-468.

Zahlbruckner, A. 1909. Lichenes (Flechten). Ergebnisse der botanischen Expedition der kaiserlichen Akademie der Wissenschaften nach Südbrasilien 1901. Band II. Thallophyta und Bryophyta. Denkschriften der mathematisch-naturwissenschaftlichen Klasse der kaiserlichen Akademie der Wissenschaften 83: 87-211.