

Lambinonia, a new genus for *Melanconium strigulae*, a lichenicolous hyphomycete on foliicolous species of *Strigula*

Emmanuel SÉRUSIAUX and Paul DIEDERICH

Abstract: The new genus *Lambinonia* Sérus. & Diederich is introduced for the lichenicolous hyphomycete *Melanconium strigulae* Elenkin & Woron. This species forms dark sporodochia on the surface or at the margin of the thalli, or extruding out of the perithecia and pycnidia of the foliicolous *Strigula buxi*, *S. nemathora* and *S. nitidula*. It is so far known from the western Caucasus (Georgia and Russia), southern Italy, Tenerife (Canary Islands), St-Lucia (West Indies), and Burundi and Rwanda in Africa. The new combination *Lambinonia strigulae* (Elenkin & Woron.) Sérus. & Diederich is introduced and a neotype collection is designated.

Key words: Deuteromycetes, mitosporic fungi, Burundi, Georgia, Italy, Russia, Rwanda, St-Lucia, Tenerife

Introduction

Lichenicolous fungi are rather rare on foliicolous representatives of the genus *Strigula* and, when present, seem to maintain rather small populations which, with a few notable exceptions, hardly affect their hosts.

In his monograph on lichenicolous hyphomycetes, Hawksworth (1979) reported the following taxa: *Ampullifera leonensis* on *Strigula smaragdula*, *Sessiliospora bicolor* on *S. nemathora*, and *Teratosperma anacardii* and *T. lichenicola* on *S. smaragdula*. Matzer (1996), in his monograph on lichenicolous ascomycetes with fissitunicate asci, reported the following species: *Hemigrapha phaeospora* on *Strigula phyllogena*; *H. strigulae* on *S. maculata*, *S. nemathora*, *S. nitidula*, *S. smaragdula*, *S. subtilissima* and an unknown species of *Strigula*; *Opegrapha strigulae* on *S. nemathora*, *S. subelegans* and an unknown species of *Strigula*; *O. uniseptata* on *S. smaragdula* and *S. cf. schizospora*; *Paradoxomyces nymanii* on *S. nitidula* and an un-

known species of *Strigula*; *Trichophyma bunchosiae* (= *Arthothelium bunchosiae*) on *S. orbicularis*; and *Trichophyma similis* on *S. smaragdula*.

However, Elenkin & Woronichin (1908) had described a further species: *Melanconium strigulae* from the western Caucasus, on *Strigula buxi* [as *S. elegans*; see Roux & Sérusiaux (2004) for a detailed study of the status of *S. buxi*]. The epithet has been lost, except for two short mentions in Santesson (1952: 147) and Lawrey & Diederich (2003: 97). D. L. Hawksworth (pers. comm.) examined a collection from LE in 1989, collected in Russia (Black Sea coast near Sochi, Krasnaya Polyana, on *Strigula*, on leaves of *Buxus*) and his notes read as follows: "this fungus was described as forming below the cuticle and above the epidermal cells in sites formerly occupied by *Strigula elegans*. A stroma developed from which brown ellipsoid conidia $2.5\text{--}2.6 \times 1.15\text{--}1.25 \mu\text{m}$ were formed. The specimen in LE (!) contained no such species now (...). Probably not really lichenicolous (...). Name is of uncertain application." This collection is not the type as the label (photocopy available with the notes of D. L. Hawksworth) bears the annotation "Det. N. Woronichin, 22/vii

E. Sérusiaux: Plant Taxonomy & Conservation Biology Unit, University of Liège, Sart Tilman B22, B-4000 Liège, Belgium.

P. Diederich: Musée national d'histoire naturelle, 25 rue Munster, L-2160 Luxembourg, Luxembourg.

912", which we assume as being annotated in 1912, i.e. four years after the formal description of the new species.

Rather large collections of foliicolous lichens from the western Caucasus are now available (Vězda 1983) and we found several collections of *Strigula* which host a lichenicolous fungus perfectly matching the original description of *Melanconium strigulae*. Its taxonomic position can thus be reassessed, and erection of a new genus has proved to be necessary to accommodate it. Furthermore, studies of large sets of foliicolous *Strigula* demonstrate that the species is widespread and can attack three species of this genus.

Lambinonia Sérus. & Diederich gen. nov.

Genus hyphomycetum a genere *Cystodendron* conidiophoris aggregatis in sporochiis densis, phialidibus brevioribus et conidiis siccis differt, et a *Bloxamia* conidiophoris ramosis et conidiis ellipsoideis non catenatis differt.

Typus: *Melanconium strigulae* Elenkin & Woron. (i.e. *Lambinonia strigulae*).

Colonies lichenicolous, forming discrete sporodochia, roundish to elongate, applanate with a thin excipulum-like margin to strongly convex and immarginate, pale greyish to dark brown or almost black, matt. *Mycelium* immersed. *Setae* and *hyphopodia* absent. *Conidiophores* macronematous, relatively long, branched, brown, smooth, aggregated into dense tufted sporodochia. *Conidiogenous cells* enteroblastic, monophialidic with broad collarettes (slightly to strongly inflated and usually as long as the mature and still attached conidium, clearly differentiated from the venter of the phialide), integrated, terminal, determinate, more or less cylindrical, base not visibly swollen, hyaline to brown. *Conidia* endogenous, becoming extruded, single, not catenate, dry, not aggregated in slimy heads, aseptate, elongate ellipsoid, basally slightly but distinctly truncate and slightly refractive, hyaline, smooth-walled.

Lambinonia strigulae (Elenkin & Woron.) Sérus. & Diederich comb. nov.

Melanconium strigulae Elenkin & Woron., *Zhurnal Bolezni Raztenii* 1908 (3-4): 137 (1908); type: lost? (LE); Georgia: Colchis, distr. Gagra, in valle angusta rivuli Gulripsh, epiphylla (*Buxus colchica*), on *Strigula nitidula*, 30-50 m, 17 vi 1978, A. Vězda s. n. (BRA—neotypus hic designatus; B, LG—isoncotypi).

(Figs 1-5)

Colonies lichenicolous, forming discrete sporodochia developing in the host perithecia, pycnidia or thallus margin or surface, protruding through the ostiole or erumpent from the thallus, with the fertile part entirely superficial when mature, roundish to elongate, applanate with a thin excipulum-like margin to strongly convex and immarginate, pale greyish to dark brown or almost black, matt, 120-360 × 100-220 µm. *Mycelium* immersed, brownish just underneath the sporodochia, hyaline and indistinct below. *Conidiophores* yellowish to reddish brown, K+ darker (blackish ochraceous), smooth, 1.5-3 µm thick. *Conidiogenous cells* almost hyaline to most frequently brown, 4-10 (-14) × 1.5-2.5 µm. *Conidia* hyaline, smooth-walled, 2.5-4.5 × 1.5-2 µm.

Etymology. The new genus is named after Professor Jacques Lambinon, an eminent botanist working at the University of Liège, and the mentor of both authors.

Notes. The conidiomata of *Lambinonia strigulae* look very similar to basidiomata of some lichenicolous heterobasidiomycetes, and without microscopical examination they could easily be mistaken for a species of *Tremella*. Microscopically, they appear as a dense agglomeration of elongate, brown, branched conidiophores, and the surface of the conidiomata is covered by minuscule, hyaline, aseptate conidia, produced endogenously.

The species surely does not belong to *Melanconium*, a genus with brown conidia and a different conidiogenesis (Ellis & Ellis 1985; Kirk *et al.* 2001). Two genera of

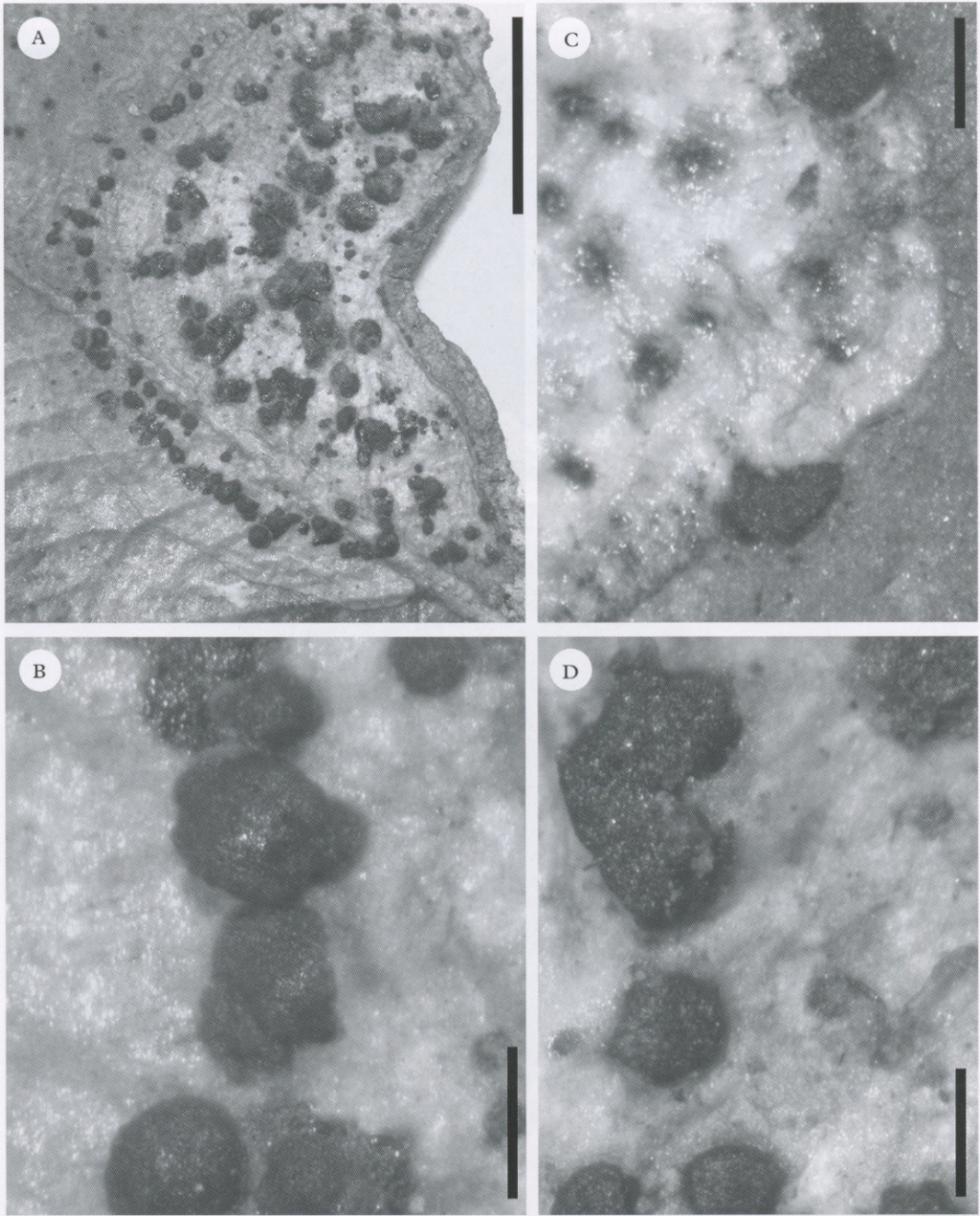


FIG. 1. *Lambinonia strigulae*. A, thallus of *Strigula nitidula* with numerous concentrically arranged sporodochia (neotype, BRA: A. Vězda, 17 vi 1978); B, same specimen, showing strongly convex sporodochia; C, thallus of *S. buxi* with two marginal, flattened sporodochia (D. Puntillo 10390); D, thallus of *S. nemathora* with slightly flattened sporodochia with a constricted base (visible in section, see Fig. 2A) (J. Lambinon 72-959). Scales: A=1 mm; B-D=200 μ m.

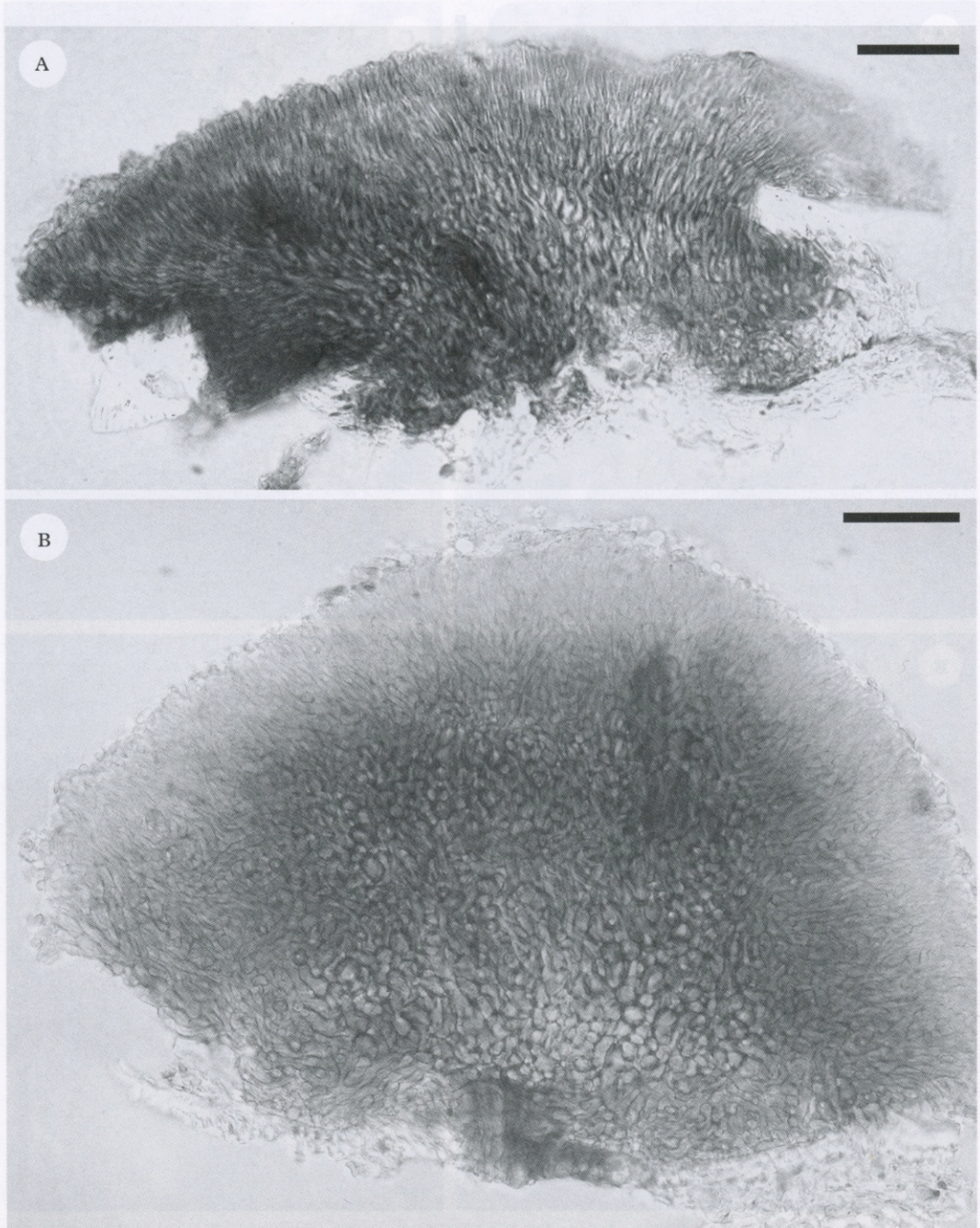


FIG. 2. *Laminonia strigulae*. A, section through a blackish, slightly flattened sporodochium with a constricted base, on *Strigula nemathora* (J. Lambinon 72-959) (in lactophenol cotton blue); B, section through a greyish, strongly convex sporodochium, on *S. buxi* (A. Vězda, 15 vi 1979) (in water). Scales: A & B=20 μ m.

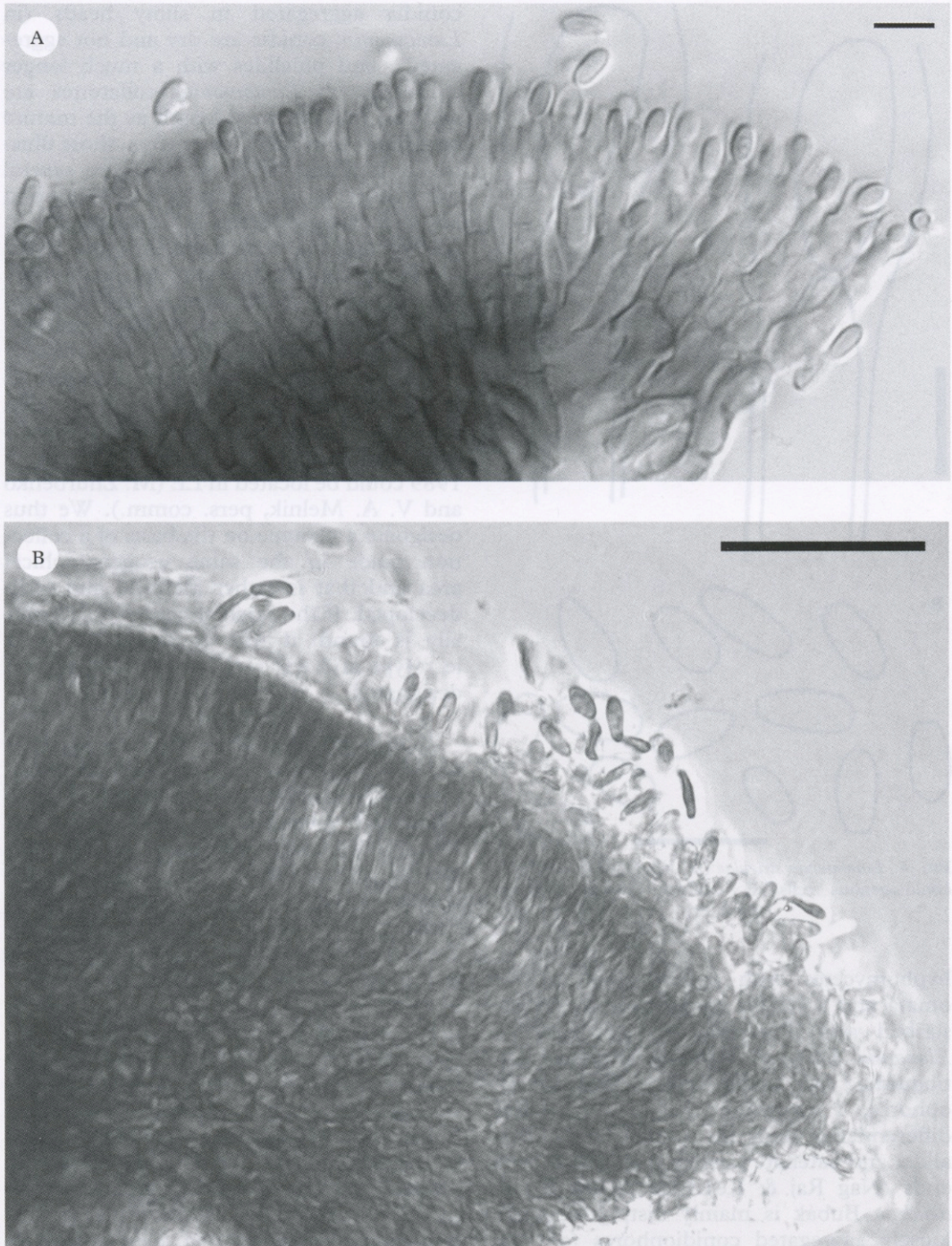


FIG. 3. *Lambinonia strigulae*. A, section through a sporodochium showing conidiophores and conidiogenesis (A. Vězda 24 vi 1979); B, section through a sporodochium covered by numerous conidia (J. Lambinon 72-959) (in water, phase contrast). Scales: A=10 μ m; B=20 μ m.

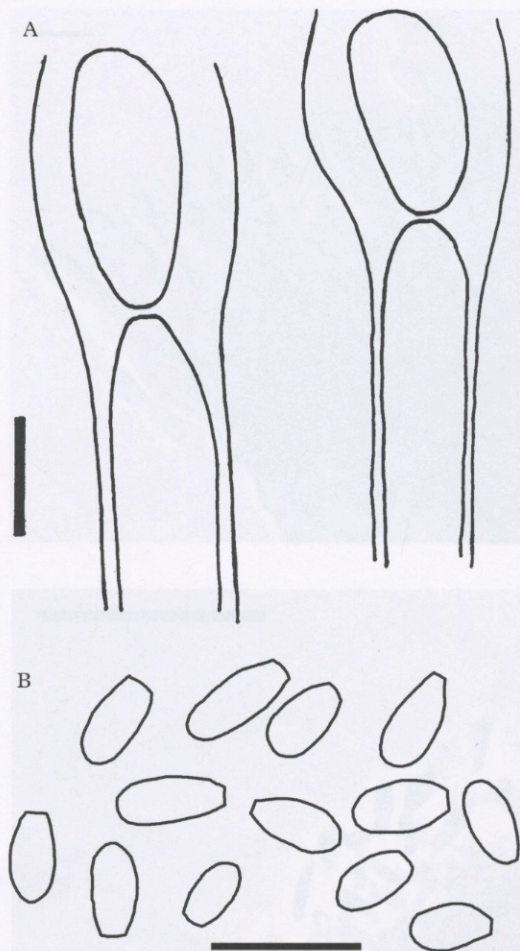


FIG. 4. *Lambinonia strigulae* (A. Vězda 24 vi 1979). A, conidiogenous cells; B, conidia. Scales: A=2 μ m; B=5 μ m.

hyphomycetes with sporodochial conidiomata and a similar conidiogenesis are described and illustrated by Ellis (1971). *Bloxamia* Berk. & Broome is easily distinguished by usually unbranched conidiophores, a collarette that is not visibly differentiated from the venter of the phialide, and catenate conidia truncate at both ends (Nag Raj & Kendrick 1975). *Cystodendron* Bubák is mainly distinguished by loosely aggregated conidiophores (see fig. 367 in Ellis 1971; in *Lambinonia*, conidiophores are densely aggregated and difficult to separate in microscopical preparations),

conidia aggregated in slimy heads (in *Lambinonia*, conidia are dry and not aggregated), and phialides with a much longer collarette (in *Lambinonia*, collarettes are more or less the same length as the mature conidium, whilst in *Cystodendron*, those illustrated in Ellis, 1971, fig. 367 are several times longer as a conidium). We did not find any other suitable genus in Carmichael *et al.* (1980), and the description of a new genus *Lambinonia* is therefore appropriate. Despite the superficial resemblance with heterobasidiomycetes, the species most probably belongs to the ascomycetes.

No collection that could be identified as the one studied by Elenkin and Woronichin for their original description, nor the specimen examined by D. L. Hawksworth in 1989 could be located in LE (M. Zhurbenko and V. A. Melnik, pers. comm.). We thus designate a neotype on the basis of a collection made in the same ecogeographical area and that is rather plentiful and well-developed. If the original collection eventually is found, it will be designated as a lectotype and will replace the neotype here designated.

Ecology and distribution. With the data now at hand, *Lambinonia strigulae* is restricted to three foliicolous species of *Strigula* (*S. buxi* Chodat, *S. nemathora* Mont. and *S. nitidula* Mont.). We have not found it on any other species of the same genus, whether foliicolous or not. It can grow on the thallus surface, at the thallus margin, or starts its development inside pycnidia or perithecia and eventually produces its sporodochia out of them.

It seems to be very rare, except in the western Caucasus where it is now known from six localities. Hundreds of thalli of *S. buxi* and especially *S. nitidula* from western Europe and Macaronesia have been studied (Roux & Sérusiaux 2004) and only scanty collections with *L. strigulae* have been detected in two localities. Moreover, *S. nitidula* is a common pantropical species and no collections with the new genus were seen from tropical areas. *Lambinonia strigulae* has been found three times on the pantropical



FIG. 5. Known world distribution of *Lambinonia strigulae* (one dot may represent several collections).

S. nemathora, once in the West Indies and twice in central Africa.

Specimens examined. **Russia:** Colchis: distr. Lazarevskoje, Dagomys, in faucibus rivi Dagomys Vostocnyi, supra vicum Baranovka, epiphylla (*Buxus colchica*), on *Strigula buxi*, 100–150 m, 24 vi 1979, A. Vězda s. n. (LG); *ibid.*, distr. Lazarevskoie, in valle fluminis Shakhe, infra vicum Solokhaul, on *S. buxi*, 100–300 m, 30 vi 1980, V. Vasák s. n. (B); *ibid.*, distr. Chosta, ad latera austro-orientalia iugi montium Achun, in valle rivi dextra fluminis Chosta prope Krasnaja Volja, epiphylla (*B. colchica*), on *S. buxi*, 200 m, 15 vi 1979, A. Vězda s. n. (BRA).—**Georgia:** Colchis: distr. Gagra, in valle angusta rivi Zo Ekvara, on *S. buxi*, 50 m, 13 vi 1978, V. Vasák s. n. (BRA; Vězda *Lich. Sel. Exs.* 1570, sub *Strigula nitidula*: *S. nitidula* and *S. buxi* present, only the latter being attacked by *Lambinonia strigulae*): *ibid.*, 18 vii 1979, A. Vězda s. n. (BG).—**Italy:** Campania, Salerno, Morigerati, grotta del Bussento, on leaves of *Buxus sempervirens*, on *S. buxi*, 1997, D. Puntillo 10390 & 10404 (CLU, LG).—**Tenerife:** Las Montañas de Anaga, Bosque de Las Mercedes, between Las Mercedes and Ermita Cruz del Carmen, by a road in a dense forest, on leaves, on *S. nitidula*, c. 700 m, 1976, R. Santesson 26838 (UPS).—**St-Lucia** (West Indies): route Castries-Dennery, Barre de l'isle, à proximité de

l'abri touristique, forêt tropicale perturbée, sur feuilles, sur *S. nemathora*, 250–300 m, ii 1993, E. Sérusiaux s. n. (LG).—**Rwanda:** forêt de Nyungwe (précédemment Rugege), forêt de montagne entre le Mt Muzimu et le Bigugu, au-dessus de la rivière Kalundura, epiphyllie sur *Xymalos monospora*, sur *S. nemathora*, 2480 m, 1972, J. Lambinon 72/959 (LG).—**Burundi:** prov. Bubanza: Mugomero (Rugazi), forêt de montagne, epiphyllie sur *Entandrophragma*, sur *S. nemathora*, 2200 m, 1981, M. Reekmans 10636 (LG).

We would like to thank Prof. D. L. Hawksworth for making the notes on the LE specimen available to us, Prof. J. Lambinon for most useful comments on an earlier draft of this paper, Dr J. Miądlikowska for translating the original Russian description of *Melanconium strigulae*, and Dr M. Zhurbenko and Dr V. A. Melnik for their help in getting information on the collections preserved in LE. The curators of the herbaria B, BG, BRA, CLU et UPS are kindly thanked for making valuable specimens available to us.

REFERENCES

- Carmichael, J. W., Kendrick, W. B., Connors, I. L. & Sigler, L. (1980) *Genera of Hyphomycetes*. Edmonton: The University of Alberta Press.

