Key to the species of *Lanatonectria*

1. Ascomatal hairs smooth-walled; anamorph not known ..... *L. raripila*
1. Ascomatal hairs spinulose; anamorph *Actinostilbe* 2

2. Ascospores (17–)24–30(–34) × (5–)7–9(–10) μm ..... *L. mammiformis*
2. Ascospores less than 20 μm long 3

3. Ascospores 10–13(–17) × (2.5–)3–4.5(–6) μm; anamorph sporodochial ..... *L. flocculenta*
3. Ascospores 13.5–18(–21) × 4–6(–7.5) μm; anamorph synnematous ..... *L. flavolanata*

Type.— PUERTO RICO. Maricao, forest reserve, on dead wood, 11 Nov 1921, C.E. Chardón, Cornell University Explorations of Porto Rico no. 1270 (BPI 631164, holotype). Additional specimens examined are listed in Samuels & Brayford (1994) and Samuels & Dumont (1982).

Illustrations.— Samuels & Brayford (1994, Figs. 32–34, 55–61, as *N. mammiformis*).
Specimen illustrated.— PUERTO RICO. Bosque Estatal de Guajataca, along Vereda Nueva, on branch, 22 Jan 1996, S.M. Huhndorf 2002 (F).

Notes.— *Lanatonectria mammiformis* is characterized by its large ascospores and conidia and by the lanose covering on the ascomata that leaves the ostiolar area free. Two species of *Lanatonectria*, *L. flavolanata* and *L. mammiformis*, are known to have synnematous anamorphs. Of these, the conidia and ascospores of *L. mammiformis* are larger than those of *L. flavolanata*. *Stilbella ecuadorensis* Morgan-Jones & McKemy (Morgan-Jones *et al.*, 1991) is a probable synonym of *Actinostilbe mammiformis*.

Lanatonectria raripila (Penz. & Sacc.) Samuels & Rossman, *comb. nov.*

= *Nectria raripila* Penz. & Sacc., Malpighia 15: 228. 1901.

Anamorph: None known.
Ascomata scattered, solitary to gregarious in small groups, superficial on a minute basal stroma, pyriform, 220–280 μm high × 220–250 μm diam, apex acute, not collapsing when dry, red to yellow, with scattered hairs; hairs flexuous, cylindrical, 80–100 μm long × 10–15 μm wide, septate, unbranched, end obtuse, walls *ca* 2 μm thick, smooth. Ascomatal surface cells and warts angular, 15–20 μm diam, with *ca* 1 μm thick walls. Ascomatal wall *ca* 20 μm thick, of two regions: outer region, *ca* 10 μm thick, of large, angular cells; inner region *ca* 10 μm thick, of flattened, compressed cells. Asci clavate, 60–87 × 13–17 μm, apex simple, 8-spored, ascospores biseriate. Ascospores fusiform, (24–)27.5–32(–33) × (6–)6.5–8 μm, 1-septate, not constricted at the septum, hyaline, coarsely striate.
Habitat.— On decaying stems of *Elettaria (Zingiberaceae)*.

Distribution.— Indonesia (Java), known only from the type collection.

Type.— INDONESIA. Java, [Tjibodas, on *Elettaria* sp., 1898, M. Fleischer] 923 (PAD, holotype).

Illustrations.— Penzig & Saccardo (1904, Pl. 32, Fig. 2); Samuels & Brayford (1994 Figs. 83, 84); Samuels *et al.* (1990 Fig. 19g), all as *N. raripila*.

Notes.— *Lanatonectria raripila* is distinguished by its large ascospores. The hairs are unusual in the genus in being smooth-walled, not spinulose.

LEUCONECTRIA Rossman, Samuels & Lowen, Mycologia 85: 868. 1993.

Type: *L. clusiae* (Samuels & Rogerson) Rossman, Samuels & Lowen (≡ *Pseudonectria clusiae* Samuels & Rogerson).

Ascomata superficial, solitary, with a thin, hyphal stroma, globose to subglobose, scarlet, KOH+ purple, with a white to pale yellow, furfuraceous outer coating on the ascomatal wall; ascomatal wall about 25 μm thick, of two regions: outer region of angular to circular, thick-walled cells; inner region of ellipsoid to elongate, thick-walled cells, that become thinner toward the centrum. Asci narrowly clavate, apex with a ring. Ascospores non-septate, hyaline, smooth-walled. Anamorph *Gliocephalotrichum*. On decaying leaves and woody fruits of *Clusia*, also isolated from soil.

Notes.— The genus *Leuconectria* was established for one species having both a distinctive teleomorph and anamorph. Molecular analysis of 28S rDNA sequence data (Rehner & Samuels, 1995) support the hypothesis that *Leuconectria* is similar to but not congeneric with *Calonectria*.

Leuconectria clusiae (Samuels & Rogerson) Rossman, Samuels & Lowen, Mycologia 85: 686. 1993.

≡ *Pseudonectria clusiae* Samuels & Rogerson, Mem. New York Bot. Gard. 64: 173. 1990.

Anamorph: *Gliocephalotrichum bulbilium* J. J. Ellis &

Hesseltine, Bull. Torrey Bot. Club 89: 22. 1962.

Ascomata solitary, superficial on a sparse hyphal stroma, globose to subglobose, 180–260 μm diam, not collapsed when dry, wall red-orange, scarlet when dry, becoming slightly darker in KOH, yellow in lactic acid, appearing white to pale yellow due to an amorphous substance coating the ascomatal wall; amorphous substance dissolving in KOH, but not in water; ascomatal wall slightly rugose; ostiolar region without amorphous substance, thus appearing scarlet, non-papillate. Ascomatal surface cells angular to circular, 10–20 μm diam, with pigmented, about 1 μm thick walls, fine pores joining the cells, evident as small depressions in face view. Ascomatal wall about 20–25 μm thick, of two regions: outer region of angular cells, 8–12 μm diam, with 1.5 μm thick walls; inner region about 10 μm thick, of elongate cells, with 1.5 μm thick walls. Asci narrowly clavate, 50–70 × 7–10 μm, apex with a minute ring, 8–spored; ascospores biseriate toward the apex. Ascospores ellipsoid, (8–)9–11(–12.5) × (2.5–)3–4 (–4.5) μm, non-septate, hyaline, smooth-walled.

Anamorph: In culture vegetative hyphae flexuous, 3–6 μm wide, thin-walled, becoming orange toward the colony center. Microsclerotia irregularly globose, 42–63 μm diam, of inflated cells with orange, thin walls, each cell filled with guttules. Conidiophores formed abundantly within 5 days, scattered, solitary, arising directly from the agar surface, 120–540 μm high, stipe 10–15 μm wide, thin-walled, pale orange, often once or twice branched; primary branches developing from inflated apex, 13–16 μm wide, slightly clavate, 18–23 μm long × 4.5–7 μm wide at the base, 7.5–10 μm wide at the apex, bearing secondary branches similar to the primary branches, or conidiogenous cells. Three to six sterile, determinant 'arms' developing from below the base of the secondary branches, arms 160–220 μm long, extending well beyond the penicillus. Conidiogenous cells phialidic, narrowly clavate to cylindrical, constricted at the apex, 6–9 × 2–3 μm. Conidia ellipsoid with ends broadly rounded to cylindrical, variable in size and shape, 3.5–10 × 2.5–3.5 μm, hyaline, non-septate, smooth-walled, forming a droplet at the apex.

Habitat.— On the undersurface of decaying leathery leaves and fruits of *Clusia*. Anamorph isolated from diverse substrata including soil and wood.

Distribution.— Teleomorph known from Guyana and Puerto Rico. Anamorph only reported from the Central African Republic, India, Indonesia, Japan, Peru, Thailand, United States (Hawaii, Louisiana, West Virginia, Wisconsin).

Types.— GUYANA. Cuyuni-Mazaruni Region: VII: Mazaruni Subregion, VII–2, foothills immediately S of Mt. Ayangana, *ca* 1 km W of Pong River, 05°28′ N, 60°04′ W, elev. 550–650 m, on decaying leaves of *Clusia* sp., 26 Feb 1987, Samuels 4854 *et al.* (NY, holotype of *Pseudonectria clusiae*). UNITED STATES. Louisiana, Tunica Hills, isolated from a soil sample collected under moss, L.J. Wickerham, isol. C.W. Hesseltine, 24 Aug. 1960, ex-type culture of *G. bulbilium*, ATCC 22228 (≡ NRRL 2899 ≡ QM 9007), (BPI 414619, lectotype of *Gliocephalotrichum bulbilium*, designated by Rossman *et al.*, 1993, NY).
Additional specimens examined listed in Rossman *et al.* (1993).

Illustrations.— Ellis (1971, Fig. 398, anamorph); Ellis & Hesseltine (1962, Figs. 1–19, anamorph); Rossman *et al.* (1993, Figs. 1–6); Samuels & Rogerson (1990, Figs. 36–40, as *P. clusiae*); Tubaki & Fujita (1980, Figs. 1–6, 16C, 21–22, anamorph); Wiley & Simmons (1971, Figs. 1–5, anamorph).

NECTRIA (Fr.) Fr., Summa Veg. Scand. 2: 387. 1849, *nom. cons.*

≡ *Hypocrea* Fr. sect. *Nectria* Fr., Syst. Orb. Veg. p. 105. 1825.
Lectotype, designated by Clements & Shear (1931): *N. cinnabarina* (Tode : Fr.) Fr. (≡ *Sphaeria cinnabarina* Tode : Fr.).
= *Ephedrosphaera* Dumort., Commentat. bot. p. 90. 1822. — Lectotype, designated by Cannon & Hawksworth (1983): *Sphaeria decolorans* Pers., a synonym of *Nectria cinnabarina* (Tode : Fr.) Fr.
= *Sphaerostilbe* Tul. & C. Tul., Sel. Fung. Carpol. 1: 130. 1861. — Lectotype, designated by Seaver (1909b): *S. aurantiaca* Tul. & C. Tul., recognized as *Nectria aurantiaca* (Tul. & C. Tul.) Jacz.
= *Pleonectria* Sacc., Mycotheca Ven. no. 688. 1876. — Type: *P. lamyi* (Desm.) Sacc. (≡ *Sphaeria lamyi* Desm.), recognized as *Nectria lamyi* (Desm.) De Not.
= *Chilonectria* Sacc., Michelia 1: 279. 1878. — Lectotype, designated by Clements & Shear (1931): *C. cucurbitula* (Tode : Fr.) Sacc. (= *Sphaeria cucurbitula* Tode : Fr.), recognized as *Nectria cucurbitula* (Tode : Fr.) Fr.
= *Megalonectria* Speg., Anales Soc. Ci. Argent. 12: 211. 1881. — Type: *M. pseudotrichia* (Berk. & M.A. Curtis) Speg., recognized as *Nectria pseudotrichia* Berk. & M.A. Curtis.
= *Aponectria* (Sacc.) Sacc., Syll. Fung. 2: 516. 1883 (≡ *Nectria* subgenus *Aponectria* Sacc., Michelia 1: 296. 1878). — Type: *A. inaurata* (Berk. & Broome) Sacc. (≡ *Nectria inaurata* Berk. & Broome), a synonym of *Nectria aquifolii* (Fr.) Berk.
= *Stilbonectria* P. Karst., Hedwigia 28: 194. 1889. — Type: *S. lateritia* P. Karst., recognized as *Nectria lateritia* (P. Karst.) Rossman.
= *Allantonectria* Earle, *in* E.L. Greene, Plantae Bakerianae 2: 11. 1901. — Type: *A. yuccae* Earle, a synonym of *Nectria miltina* (Mont.) Mont.
= *Creonectria* Seaver, Mycologia 1: 183. 1909. — Type: *C. purpurea* (L.) Seaver (≡ *Tremella purpurea* L. 1753), a synonym of *Nectria cinnabarina* (Tode : Fr.) Fr.
= *Scoleconectria* Seaver, Mycologia 1: 197. 1909. — Type: *S. scolecospora* (Brefeld & Tavel) Seaver (≡ *Ophionectria scolecospora* Brefeld & Tavel 1891), a synonym of *Nectria cucurbitula* (Tode : Fr.) Fr.

Stroma well-developed, pseudoparenchymatous. Ascomata superficial, generally aggregated on a stroma. Ascomata subglobose, globose to ellipsoid, collapsing