

HABITAT.— On leaves, shoots and stems of numerous dicotyledonous plants.

DISTRIBUTION.— Europe, North America, and South America.

TYPE SPECIMENS were examined as reported by Rossman (1979b, 1983).

ILLUSTRATIONS.— Crous & Wingfield (1994, Figs. 12 A–C); Rossman (1979a, Figs. 1–4; 1983, Figs. 25–26, 8C–D).

NOTES.— Crous & Wingfield (1994) present a review of the biology of this species.

**CALOSTILBE** Sacc. & Syd., Syll. Fung. 16: 591. 1902.

Type: *C. longiasca* (A. Möller) Sacc. & Syd. (= *Sphaerostilbe longiasca* A. Möller), recognized as *C. striispora* (Ellis & Everh.) Seaver.

= *Phaeonectria* (Sacc.) Sacc. & Trotter, Syll. Fung. 22: 485. 1913 (= *Nectria* subgenus *Phaeonectria* Sacc., Syll. Fung. 11: 359. 1895). — Type: *Nectria striispora* Ellis & Everh., recognized as *C. striispora*.

Anamorph: *Calostilbella*

Stromata well-developed, originating from a central point, pseudoparenchymatous below the ascomata, giving rise to synnemata, ascomata forming at the base and on rhizoids that arise from the stromata, growing under bark and breaking through at points. Ascomata superficial, densely aggregated, ovoid, not collapsing or collapsing laterally when dry, orange, KOH+ sienna, apical region with acute papilla. Ascomatal surface prosenchymatous, walls thickened. Ascomatal wall 40–70 µm thick, of two regions: outer region about 30 µm thick, of elongate interwoven cells perpendicular to the surface, 3–5 µm diam, with thickened walls and narrow lumina; inner region of flattened cells with thickened walls. Asci clavate, apex simple, base pointed to pedicellate, ascospores biserial. Ascospores fusiform–ellipsoid, one-septate, slightly constricted or not, translucent yellow-brown, coarsely striate, striations appearing as longitudinal furrows. Anamorph *Calostilbella*. Sterile elements interspersed with phialides. Conidia ellipsoid, 1-septate, translucent yellow-brown. On decaying woody dicotyledonous and monocotyledonous substrata, often fruiting on newly killed wood.

NOTES.— *Calostilbe* was originally described for species that were like *Sphaerostilbe* but differed in having colored ascospores and an 'arthrosporoid conidial state' (Seaver, 1928). Samuels (1973a) reviewed the *Nectria*-like fungi having golden to brown ascospores. He did not consider ascospore color to be a distinctive generic character and placed all species of *Nectria*-like fungi in the genus *Nectria sensu lato*, rather than in

genera segregated from *Nectria* on the basis of ascospore color alone. A number of *Nectria*-like genera have stilbellaceous anamorphs and these are distributed throughout the *Nectriaceae*. The only species included in the original description of the genus *Calostilbe* was *C. longiasca*, for which *Nectria striispora* provides the oldest epithet. *Calostilbe striispora* is an unusual and distinctive species occurring commonly in tropical regions in both its teleomorph and anamorph (Hewings & Crane, 1984). *Calostilbe* is recognized at the generic level because the type and only species is unique among hypocrealean fungi. The ascomatal wall of *C. striispora* is composed of thick-walled cells that form a *textura epidermoidea* in an upright palisade of interwoven cells visible below the white to pale yellow scurf. Although bearing some resemblance to *Neonectria* in the distinctive ascomatal wall structure of the '*Nectria*' *mammoidea*-group (Booth, 1959), *Calostilbe* is unlike *Neonectria* in the furfuraceous outer ascomatal layer, the large, striate, yellow-brown ascospores, and the distinctive synnematus anamorph.

*Nectria* subgenus *Phaeonectria* was established for one species of *Nectria* having yellow-brown ascospores, namely *N. striispora*. When the taxon was raised to generic rank by Saccardo & Trotter (1913), *P. olivacea* was added to the genus. In raising *Nectria* subgenus *Phaeonectria* to generic rank, reference was made to the original publication, although *Nectria striispora* was never formally transferred to *Phaeonectria*. We follow Samuels (1973a) who accepted the reference to the subgeneric description in the text of generic recognition as sufficient to consider *Nectria striispora* as type of the taxon, despite the fact that *N. striispora* was never formally transferred to *Phaeonectria*. Thus, *Phaeonectria* is a later synonym of the unispecific genus *Calostilbe*.

**Calostilbe striispora** (Ellis & Everh.) Seaver, Mycologia 20: 248. 1928. — Plate 27, a–d.

= *Nectria striispora* Ellis & Everh., in C.L. Smith, Bull. Iowa Univ. Lab. Nat. Hist. 2: 398. 1893.

= *Macbridella striispora* (Ellis & Everh.) Seaver, Mycologia 1: 196. 1909.

= *Letendreaa striispora* (Ellis & Everh.) Weese, Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl., Abt. 1, 125: 514. 1916.

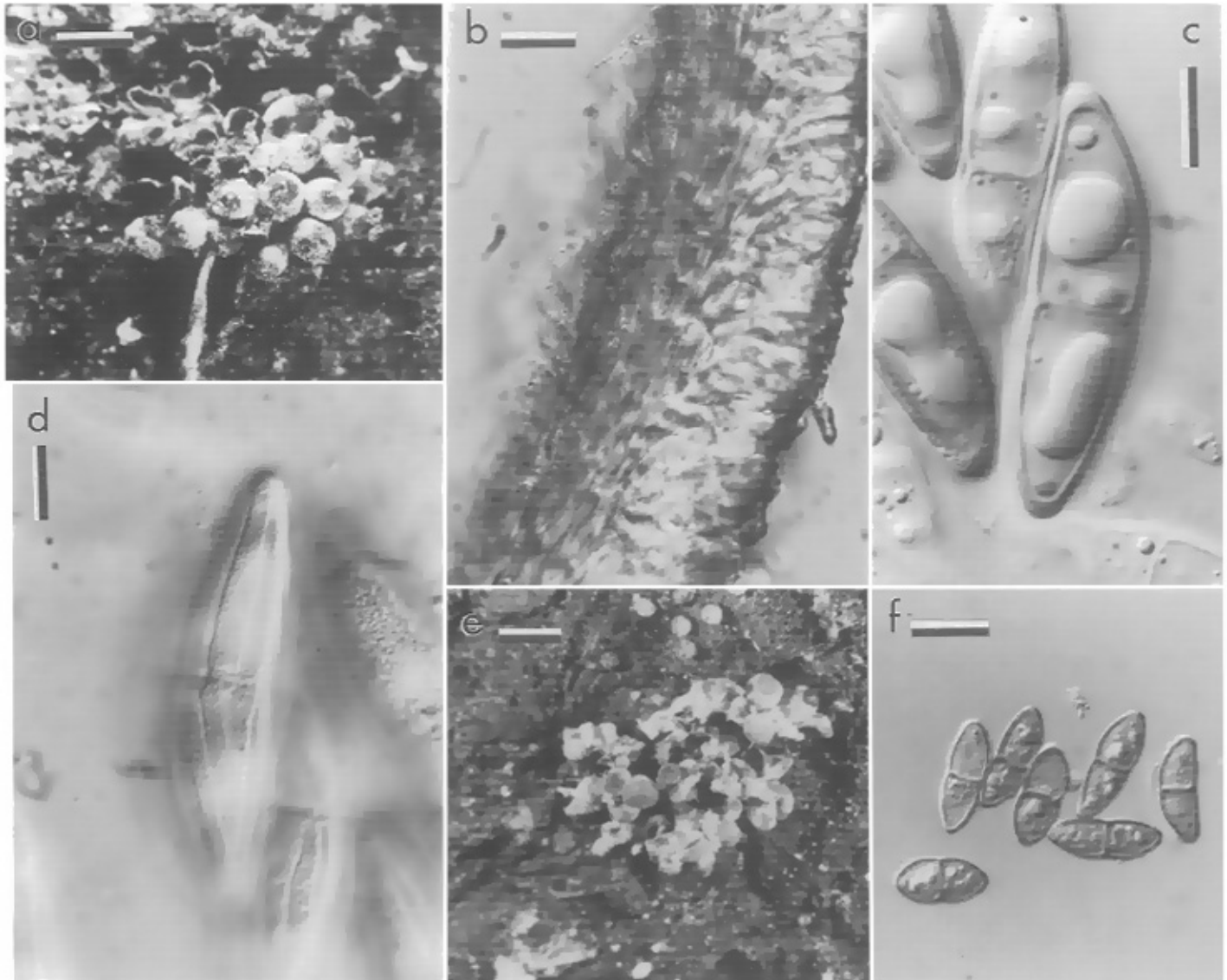
= *Sphaerostilbe longiasca* A. Möller, Bot. Mitt. Tropen 9: 122. 1901.

= *Calostilbe longiasca* (A. Möller) Sacc. & P. Syd., Syll. Fung. 16: 591. 1902.

= *Letendreaa longiasca* (A. Möller) Weese, Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl., Abt. 1, 128: 742. 1919.

= *Nectria longiasca* (A. Möller) E. Müll., in Müller & von Arx, Beitr. Kryptogamenfl. Schweiz 11(2): 636. 1962.

= *Sphaerostilbe musarum* Ashby, Bull. Dept. Agric. (Kingston), N.S. 2: 118. 1914.



**Plate 27. a–d.** *Calostilbe striispora*. a. Ascomata on natural substratum. b. Median section of ascromatal wall. c. Ascospores in median focus. d. Ascospores in off-median focus to show wall ornamentation. **e–f.** *Corallomycetella jatrophae*. e. Ascomata on natural substratum. f. Ascospores. a, c, d. BPI 1107297, b. BPI 553210, isolectotype of *Nectria striispora*. e–f. BPI 1107268. Scale bars: a, e = 1 mm; b–d = 10  $\mu$ m; f = 25  $\mu$ m.

= *Calostilbe ledermannii* Syd., Engl. Bot. Jahrb. 57: 322. 1922.

Anamorph: *Calostibella calostilbe* Höhn., Ber. Deutsch. Bot. Ges. 37: 160. 1919.

= *Xenostilbum sydowii* Petrak, Sydowia 13: 106. 1959.

Stromata erumpent through bark, at first appearing as yellow cushions, up to 6  $\mu$ m wide  $\times$  2–5  $\mu$ m high; stromata originating from a central point; in longitudinal section, cells prosenchymatous below, becoming pseudoparenchymatous immediately subtending the ascromata, cells 10–30  $\mu$ m diam, walls about 1  $\mu$ m thick. Synnemata arising from the stromata prior to ascroma formation, eventually ascromata displacing the synnemata. Rhizoids arising from the base of the stromata, growing under the bark, and breaking through at points;

ascromata frequently forming on rhizomorphs. Ascromata ovoid, 800–1150(–1425)  $\times$  500–675  $\mu$ m, superficial, densely aggregated in groups of 20–100 or more, wall orange, KOH+ sienna, appearing white to straw due to furfuraceous hyphal covering, with acute, papillate apex, scarlet, glabrous, not collapsing or collapsing laterally when dry. Ascromatal wall cells in surface view prosenchymatous, with about 2  $\mu$ m thick walls. Ascromatal wall 40–70  $\mu$ m thick, of two regions: outer region about 30  $\mu$ m thick, of elongate interwoven cells perpendicular to the surface, 3–5  $\mu$ m diam, with about 2  $\mu$ m thick walls and narrow lumina; inner region about 15–20  $\mu$ m thick, of flattened cells with about 2  $\mu$ m thick walls. Hyphal covering of branched, septate, spinulose hyphae, 2–4  $\mu$ m wide, thin-walled. Asci clavate, 210–360(–490)  $\times$  18–32  $\mu$ m, 6–8-spored, ascospores

forming in the upper third of the asci, lower portion elongate, apex simple, base pointed to pedicellate, ascospores biserial. Ascospores fusiform-ellipsoid, (27–)35–52(–55) × (8–)11–14 μm, one-septate, slightly constricted or not, translucent yellow-brown, coarsely striate, striations appearing as longitudinal furrows. ANAMORPH: Synnemata arising throughout the stromata, conidia forming only on the longest synnemata. Hyphae of synnema surface parallel, branched, 2–3 μm wide, ends of the hyphae at the surface with small, 1 μm wide ‘cork screws’, giving the surface a granular-crystalline aspect. Phialides formed in a well-defined, hemispherical cluster; each phialide 22–34 μm long, with a swollen apex, 3.5–5 μm wide at the cylindrical base, then 2 μm wide, apex often slightly flared. Sterile elements interspersed with phialides, straight, smooth, 1.5–2 μm wide, thin-walled, septate. Conidia ellipsoid, 44–65 × 13–18 μm, 1-septate, translucent yellow-brown, wall 0.5–1 μm thick, hyaline ends with walls less than 0.5 μm thick, held in a solitary, brown drop of liquid at the apex.

HABITAT.— On rotting woody tissue of dicotyledonous plants and *Musa* sp. *Calostilbe striispora* is the cause of Bonnygate disease of banana (Wardlaw, 1961).

DISTRIBUTION.— Pantropical, known from Brazil, Colombia, Ecuador (Hewings & Crane, 1984), French Guiana, Jamaica, Nicaragua, New Guinea, Puerto Rico (Samuels, 1973a), Sierra Leone, Trinidad, Venezuela, and Congo (Steyaert, 1948).

TYPE.— NICARAGUA. Castillo Viejo, on bark, C.L. Smith, Feb–Mar 1893, Central American Fungi 6 (NY, lectotype of *N. striispora*; BPI, isoelectotypes, three specimens, one bound, two unbound as BPI 553210 & BPI 553211). JAMAICA. Manacal, Causal, on wood, Ashby, Oct 1924 (NY, holotype of *Sphaerostilbe musarum*). BRAZIL. pr. Blumenau, auf morschem Holz, Santa Catarina, Roland Thaxter, No. 893 (FH – General Herbarium, holotype of *Sphaerostilbe longiasca*). NEW GUINEA. In dead wood with bark (Type of *Calostilbe ledermanii* – not seen).

ADDITIONAL SPECIMENS EXAMINED.— BRAZIL. San Domingo, Mato Grosso, K. D. Butler 7069, 30 June 1941 (BPI 553204); COLOMBIA. Near Tumaco, on latex (?) of *Hevea*, Skutch & Striker, E.C. Stakman 245, Dec 1940 (BPI 631902); Puerto Japon, Rio Peneya, Caqueta, Y. Doi, 25–28 July 1973, TNS–F 224809 = TNS–D 1580 (NY). FRENCH GUIANA. Route de Belizon, track to Montagne Tortue, 15 km from road N2, on bark of newly killed branch, 18 Feb 1988, A.Y. Rossman 3230C & C. Feuillet (BPI 1107297). SIERRA LEONE. Njala, Kori, on rotten trunk of *Albizia zygia*, coll. & det. F.C. Deighton, 4 Oct 1954, IMI 58125a (BPI 631903, NY). TRINIDAD. Verdant Vale, Arima, on *Erythrina velutina* Willd., R. Thaxter 1913, Reliquiae Farlowianae 632 (BPI – 2 specimens; FH). VENEZUELA. Amazonas, Neblina Base Camp on Rio Baria, 140 m, on bark, A. Rossman 2183, 19 Feb 1985 (BPI 553205); *ibid.*, 23 Feb 1985, A. Rossman 2213 (BPI 553206).

ILLUSTRATIONS.— Booth & Holliday (1973b, Figs. A–D); Hewings & Crane (1984, Figs. 1 a–e, anamorph only); Morris (1963, Pl. 11); Samuels (1973a, Figs. 16–21); Samuels &

Brayford (1994, Figs. 112–117, as *N. striispora*); Steyaert (1948, Figs. 6a–d).

NOTES.— This is a relatively common species on newly killed wood and bark in tropical regions.

**CORALLOMYCETELLA** Henn., *Hedwigia* 43: 245. 1904.

Type: *C. heinsenii* [as *heinesii*] (Henn.) Henn. (= *Corallomyces heinsenii* Henn., *Bot. Jahrb. Syst.* 23: 538. 1897), recognized as *Corallomycetella repens* (Berk. & M.A. Curtis) Rossman & Samuels.

[= *Corallomyces* Berk. & M.A. Curtis, *J. Acad. Nat. Sci. Philadelphia*, Ser. 2, 2: 289. 1853, non Fr. 1849. — Type: *C. elegans* Berk. & M.A. Curtis, recognized as *Corallomycetella repens* (Berk. & M.A. Curtis) Rossman & Samuels].

Ascomata solitary to gregarious, often associated with the synnematosus anamorph, obpyriform, orange-red to red, KOH+ purple, slightly scurfy, smooth around the ostiole. Surface wall cells globose to angular, with 1–2 μm thick walls. Ascomatal wall of one region of angular cells. Asci clavate to cylindrical, ascospores uniseriate to apically biserial. Ascospores ellipsoid, one-septate, hyaline, slightly roughened. Anamorph synnematosus *Fusarium* or *Rhizostilbella*. On woody plants including monocotyledons, also isolated from soil.

NOTES.— Hennings established *Corallomycetella* for one species of *Corallomyces* having hyaline ascospores. The type specimen of *C. heinsenii* apparently no longer exists; however, the illustration of *C. heinsenii* in the protologue suggests that this is a taxonomic synonym of *C. repens*. In order to ensure that synonymy, *C. heinsenii* is neotypified with the type specimen of *Sphaerostilbe repens*. The name *Corallomyces elegans* was described in a genus that is a later homonym and thus, according to Article 55 of the ICBN (Greuter *et al.*, 1994), this name would have legitimacy only when it is placed in a legitimate genus. The genus *Corallomycetella* is recognized with two species.

**Corallomycetella repens** (Berk. & M.A. Curtis) Rossman & Samuels, *comb. nov.* — Plate 22 (page 96).

= *Sphaerostilbe repens* Berk. & M.A. Curtis, *J. Linn. Soc., Bot.* 14: 114. 1875.

[= *Corallomyces elegans* Berk. & M.A. Curtis, *J. Acad. Nat. Sci. Philadelphia*, Ser. 2, 2: 289. 1853, genus illeg., Art. 53].

[= *Corallomyces elegans* var. *camerunensis* Henn., *Bot. Jahrb. Syst.* 22: 76. 1895, genus illeg., Art. 53].

= *Corallomycetella heinsenii* Henn., *Bot. Jahrb. Syst.* 23: 538. 1897.

[= *Corallomyces mauritiicola* Henn., *Hedwigia* 43: 244. 1904, genus illeg., Art. 53].

= *Nectria mauritiicola* (Henn.) Seifert & Samuels, *Stud. Mycol.* 27: 161. 1985.

[= *Corallomyces berolinensis* Henn., *Verh. Bot. Vereins Prov. Brandenburg* 40: 153. 1898, genus illeg., Art. 53].