

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, isolectotypes, 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].

= *Nectria coccinea* (Pers. : Fr.) Fr. var. *platyspora* Rehm, Ann. Mycol. 7: 137. 1900.
 = *Nectria platyspora* (Rehm) Weese, in Höhn. & Weese, Ann. Mycol. 8: 464. 1910.

Anamorph: *Rhizostilbella hibisci* (Pat.) Seifert, Stud. Mycol. 27: 162. 1985.

= *Stilbum hibisci* Pat., J. Bot., Paris 1891: 320. 1891.
 = *Rhizostilbella rubra* van der Wolk, Mycol. Centralbl. 4: 237. 1914.
 = *Stilbum incarnatum* Wakker, Ziekten van het Suikerriet op Java. Leiden, p. 197. 1898.
 = *Stilbum incarnatum* var. *dioscoreae* Sacc., Boll. Orto Bot. Regia Univ. Napoli 6: 63. 1918.
 = *Cephalosporium kashiense* R.Y. Roy & G.N. Singh, Curr. Sci. 37: 535. 1968.
 = *Acremonium kashiense* (R.Y. Roy & G.N. Singh) W. Gams, *Cephalosporium-artige Schimmelpilze* (Hyphomycetes) p. 138. 1971.

Ascomata up to 10, caespitose, associated with rhizomorphs or synnemata, obpyriform, 300–650 μm high \times 250–450 μm diam, orange-red to red, KOH+ dark red, yellow in lactic acid, papilla of vertically oriented, clavate hyphae, 20 \times 7–10 μm . Ascomatal wall covered with globose or angular cells, smooth around the ostiole, cells with 1–2 μm thick walls; in section 50–70 μm thick, of a single region of angular cells, 7–35 μm diam, becoming narrow, compressed towards the centrum, with 1–2 μm thick walls, thinner towards the centrum. Asci cylindrical to clavate, 185–220 \times 8–9 μm , 8-spored, ascospores uniseriate or apically biseriate. Ascospores ellipsoid, 14–21 \times 5–9 μm , 1-septate, sometimes slightly constricted at the septum, hyaline to pale brown, with roughened walls up to 1 μm thick.

ANAMORPH: Synnemata scattered, gregarious, densely crowded or 2–5 caespitose, arising laterally or as terminal extensions of the rhizomorphs or directly from the substratum, cylindrical-capitate, subulate-capitate, cylindrical, slender to robust, straight, curved or sinuous, unbranched or inequivalently once or twice branched, or repeatedly dichotomously branched, hirsute in young collections, becoming smooth with age, orange to red-brown, KOH+ bright red to dark red, yellow in lactic acid, 250–8000 μm high \times 75–375(–1000) μm diam. Conidiophores unbranched, or once simple monochasial or monovericillate; sterile hyphae intermixed with conidiophores, 100–200 μm long, 1.5–2 μm wide with abruptly rounded tips. Phialides cylindrical, terminal, lateral and terminal, or in terminal whorls of 3, 34–60 \times (1.5–)2.5–3 μm , collarettes not flared, periclinal thickening conspicuous. Conidial mass white to yellow, becoming red-brown or black when dried, 250–450(–1500) μm diam. Conidia ellipsoid, ovoid, fusiform-ellipsoid, or oblong-ellipsoid, often with a truncate base, (9–)12–26 \times (3.5–)5–9.5 μm . Rhizomorphs spreading over the surface of the substratum

or underneath the bark, red-brown, becoming almost black with age, KOH+ dark red, 0.5–2 mm thick and 2–10 mm long. Description modified from Seifert (1985).

HABITAT.— On woody plants including monocots such as *Musaceae* and *Arecaceae*. According to Seifert (1985), this species is mildly parasitic or saprobic on roots and bark of trees, probably plurivorous, and also isolated from soil.

DISTRIBUTION.— Pantropical

TYPES.— SRI LANKA (Ceylon). Peradeniya, on decaying wood of *Artocarpus integrifolia*, August, Herb. Berkeley, no. 1005 (K, holotype of *Sphaerostilbe repens*, also neotype of *Corallomycetella heinsenii*, designated herein). SURINAM. Ex herb. Schweinitz in herb. Berkeley (K, holotype of *Corallomyces elegans*). GERMANY. Berlin-Dahlem, in the greenhouse, Dec 1893, P. Hennings (B, holotype of *Corallomyces berlinensis*).

ILLUSTRATIONS.— Booth & Holliday (1973a, Figs. A–D, as *S. repens*); Botton *et al.* (1979, Figs. 1–14, as *S. repens*); Goos (1962, Figs. 1–16); Hennings (1897, Figs. 2 a–e as *C. heinsenii*); Seifert (1985, Figs. 54–55, as *N. mauritiicola*).

SPECIMEN ILLUSTRATED.— JAMAICA. Cane River, 16 km from Kingston, on rotten bark, 11 Jan 1971, R.P. Korf *et al.*, A. Rossman A.Y.R. 412, Gary Samuels, G.S. 90J (CUP-MJ 822).

NOTES.— An extensive search was made for the type specimen of *Corallomyces heinsenii* (Type data: East Africa, 'Derema, auf Baumrinden. Heinsen no. 51. 1896'). It is not at B (Hein, 1989, and *in lit.*), HBG, K, L, MA, or S. Thus, this name is neotypified with the type of the next available epithet for this species in the genus *Corallomycetella*, specifically that of *Sphaerostilbe repens*. Booth & Holliday (1973a, as *Sphaerostilbe repens*) reviewed the diseases caused by this fungus, namely 'violet root rot' of *Theobroma cacao*, root rot of *Carica papaya*, and 'stinking root disease' of many tropical woody plants, including *Camellia*, *Citrus*, *Coffea*, *Mangifera*, and *Persea americana*. This fungus is easily identified by its red rhizomorphs.

Corallomycetella jatrophae (A. Möller) Rossman & Samuels, *comb. nov.* — Plate 27, e–f.

[= *Corallomyces jatrophae* A. Möller, Bot. Mitt. Tropen 9: 295. 1901, genus illeg., Art. 53].

= *Nectria jatrophae* (A. Möller) Wollenw., Z. Parasitenk. (Berlin) 3: 498. 1931.

[= *Corallomyces caricae* Henn., Hedwigia 43: 245. 1904, genus illeg., Art. 53].

= *Macbridella amazonensis* Bat., J.L. Bezerra & C.R. Almeida, An. XIV Congr. Nac. Soc. Bot. Brasil. 1963: 118. 1964.

= *Nectria amazonensis* (Bat., J.L. Bezerra & C.R. Almeida) Samuels, Canad. J. Bot. 51: 1278. 1973.

Anamorph: *Fusarium* sp.

Ascomata usually at the base of red synnemata, seated

KEY TO THE SPECIES OF *CORALLOMYCETELLA*

1. Ascomata red with a furfuraceous, white to yellow coating below the papilla; ascospores 29–35 × 9–11 μm, pale brown, smooth *C. jatrophae*
1. Ascomata orange-red to red, with a thin, concolorous scurf; ascospores 14–21 × 5–9 μm, hyaline to pale yellow, roughened *C. repens*

on an erumpent stroma, in caespitose clusters of 2 to several, obpyriform, 350–700 × 460–500 μm, not collapsing when dry, red, KOH+ dark red, yellow in lactic acid, with white to yellow furfuraceous covering over the lower third of each perithecium that often wears off, with acute, red, smooth apex; papilla of cylindrical, septate hyphae with rounded apices, 2–3 μm wide, walls about 1 μm thick. Cells at the surface of *textura angularis*, 10–15 μm diam, with about 2 μm thick walls, producing yellow, thin-walled hyphae. Ascumatal wall 30–40 μm thick, not differentiated into regions, cells ellipsoid, 15–20 μm long, becoming progressively more flattened toward the interior, about 2 μm wide. Asci clavate, 90–110 × 13–18 μm, apex simple, 8-spored, ascospores biserial. Ascospores ellipsoid to reniform, 29–35 × 9–11 μm, 1-septate, not constricted, hyaline, pale brown when discharged, smooth-walled.

ANAMORPH: Symbiotaxa arising from ascumatal stromata, red, branched, fertile tips widely inflated at maturity, discoidal. Macroconidia developing on a disc, 40–100 × 8–10 μm, 3–7-septate.

HABITAT.— On bark.

DISTRIBUTION.— Brazil, Colombia, Costa Rica, French Guiana, Nicaragua, Panama (Samuels, 1973a; Samuels & Dumont, 1982), Venezuela.

TYPE.— BRAZIL. Amazonas, Manaus, on bark of unidentified plant, Batista, 20 Feb 1961 (URM 22, holotype of *M. amazonensis*); Rio Jurua, Cacoira, on dead stems of *Carica* sp., May 1901, Ule 2822 (FH, isotype of *Corallomyces caricae*). PUERTO RICO, base of living tree, culture G.J.S. 96-18 = CBS 913.96.

ADDITIONAL SPECIMENS EXAMINED.— FRENCH GUIANA. Route de Belizon, track to Montagne Tortue, 15 km from road N2, on bark of newly killed tree, 18 Feb 1988, A.Y. Rossman 3230b & C. Feuillet (BPI 1107295); *ibid.*, A.Y. Rossman 3222 (BPI 1107291). NICARAGUA. Indian River, on bark of unidentified tree, 2 Mar 1896, C.L. Smith (NY). VENEZUELA. Amazonas: Cerro de la Neblina, valley at N base of Pico Phelps, cloud forest, on bark, Apr 1984, G.J. Samuels 1297 (BPI 1107268); Bolivar, along Rio Caroni near rapids just below Uriman, on bark, 11 Jan 1955, J.A. Steyermark & J.J. Wurdack, det. G.J. Samuels (BPI 552420).

ILLUSTRATIONS.— Möller (1901, Pl. 1, Figs. 21–28, 30; Pl. 2, Figs. 31, 32; Pl. 9, Fig. 5, as *Corallomyces jatrophae*); Samuels (1973a, Figs. 10–13, as *N. amazonensis*); Wollenweber (1930, No. 684, as *C. jatrophae*).

COSMOSPORA Rabenh., *Fungi europaei* no. 459. 1862

≡ *Nectria* subgenus *Cosmospora* (Rabenh.) Sacc., *Syll. Fung.* 2: 508. 1883.

Type: *C. coccinea* Rabenh.

= *Dialonectria* (Sacc.) Cooke, *Grevillea* 12: 109. 1884 (≡ *Nectria* subgenus *Dialonectria* Sacc., *Syll. Fung.* 2: 490. 1883). — Lectotype, designated by Clements & Shear (1931): *D. episphaeria* (Tode : Fr.) Cooke (≡ *Sphaeria episphaeria* Tode : Fr.), recognized as *Cosmospora episphaeria* (Tode : Fr.) Rossman & Samuels.

= *Chrysogluen* Briosi & Farneti, *Atti Ist. Bot. Univ. Pavia, Ser. 2*, 8: 117. 1904. — Lectotype, designated by Rogerson (1970): *C. biasoletianum* Briosi & Farneti, recognized as *Cosmospora biasoletiana* (Briosi & Farneti) Rossman & Samuels.

= *Sylonectria* Höhn., *Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl., Abt. 1*, 124: 52. 1915. — Type: *S. applanata* Höhn., a synonym of *Cosmospora purtonii* (Grev.) Rossman & Samuels.

Ascumata solitary to densely gregarious, superficial, rarely immersed, non-stromatic or seated on a thin basal stroma, globose, obpyriform to broadly obpyriform, small to medium-sized, usually less than 300 μm diam, collapsing laterally or not collapsing when dry, orange to red or dark red, rarely pale yellow, usually KOH+ darker, rarely KOH–, smooth to slightly scaly, glabrous or with few to numerous hairs arising from cells of the ascumatal wall surface; papilla of parallel hyphal elements with rounded ends. Cells of the ascumatal wall surface lacking a definite shape, often with a meandering aspect with walls of variable thickness and narrow lumina, adjacent cells joined by fine pores. Ascumatal wall thin, less than 20 μm thick, often translucent, of a single region of intertwined hyphae, rarely of two regions; cells lacking a definite shape or appearing ellipsoid. Asci cylindrical to narrowly clavate, apex simple or with a ring, sessile or short-stalked, 8-spored, ascospores generally uniseriate. Ascospores ellipsoid to ellipsoid-fusiform, rarely ovoid or cylindrical, 1(–3)-septate, usually yellow-brown, also hyaline, usually spinulose to tuberculate, rarely striate or smooth. Anamorphs, where known, *Acremonium*-like, with colonies and microconidia similar to those of *Fusarium* sect. *Eupionnotes*, *Chaetopsina*, *Cylindrocladiella*, *Stilbella*, and *Volutella*. On other fungi and scale insects, less frequently on decaying woody substrata.

NOTES.— *Cosmospora* and its type species were described on the label of Rabenhorst, *Fungi europaei* no.