

KEY TO THE SPECIES OF *SELINIA*

1. Ascospores more than 45  $\mu\text{m}$  long ..... 2  
 1. Ascospores less than 45  $\mu\text{m}$  long ..... 3
2. Ascospores 45–50  $\times$  20–25  $\mu\text{m}$  ..... *S. intermedia*  
 2. Ascospores 48–64  $\times$  20–26  $\mu\text{m}$  ..... *S. pulchra*
3. Ascospores 25–30  $\times$  12–13  $\mu\text{m}$  ..... *S. antarctica*  
 3. Ascospores (26–)32–39(–41)  $\times$  (12–)14–18(–22)  $\mu\text{m}$  ..... *S. africana*

TYPE.— ENGLAND: Shrewsbury, on sheep dung, W. Phillips, G. Winter, issued as C.B. Plowright, Sphaeriacei Britannici 100 (B – authentic specimen of *Hypocreopsis pulchra*).

SPECIMEN EXAMINED.— UNITED STATES: Florida, off Mill-hopper Road, 10 mi. NW of Gainesville, on cow dung in pasture, 7 May 1970, J.W. Kimbrough (FLAS-F 48-978).

ILLUSTRATIONS.— von Arx & Müller (1955, Figs. 1, 2); Bell (1983, Fig. 35), Dennis (1978, Pl. 31D); Læssøe (1995, p. 52–53); Udagawa (1980, Figs. 8, 21).

NOTES.— According to the original description, the type specimen of *Selinia pulchra* was found 'auf trockenem Schafkoth am Galgenberg bei Halle a. S.' No specimen agreeing with these data has been located. Plowright, Sphaeriacei Britannici no. 100 was apparently examined by Winter and is considered authentic material. Although unusual in having large, thick-walled, non-septate ascospores, developmental studies by Mercuri (pers. comm.) revealed the presence of apical paraphyses characteristic of hypocrealean fungi. Ranalli & Mercuri (1995) report an anamorph and were able to produce fertile ascomata in culture.

Three additional species are included in *Selinia*, *S. africana* Khan & Krug, *S. antarctica* Speg., and *S. intermedia* Speg., as reviewed by Khan & Krug (1989). *Selinia intermedia* may be a synonym of *S. pulchra*.

**STILBOCREA** [*'Stilbocera'*] Pat., Bull. Soc. Mycol. France 16: 186. 1900.

Type: *S. dussii* Pat., a synonym of *S. macrostoma* (Berk. & M.A. Curtis) Höhn.

Ascomata immersed in a hyphal stroma that forms a continuous or discontinuous layer. Ascomata globose to ellipsoid or ovoid, pale yellow to orange, becoming red-brown or dark olive-green with age. KOH–, walls relatively thick, more than 25  $\mu\text{m}$ . Asci narrowly clavate to cylindrical, 8-spored. Ascospores ellipsoid to ellipsoid-fusiform, 1-septate, hyaline, verrucose, echinulate or conspicuously spinulose. Anamorph *Acremonium*-like or *Stilbella*. On dead woody dicotyledonous and monocotyledonous substrata as well as decaying ascomycetous stromata.

NOTES.— Patouillard described the genus *Stilbocrea* as being like *Hypocrea* but having a *Stilbum* anamorph and he included one species. Seifert (1985) studied the type specimens of *Stilbocrea dussii* and found *Nectria macrostoma* to be an earlier name. The genus *Stilbocrea* includes two additional species, namely *S. gracilipes*, with an even more darkly pigmented synnematal base than the dark green one of *S. macrostoma*, and *S. impressa*, with an *Acremonium*-like anamorph.

***Stilbocrea macrostoma*** (Berk. & M.A. Curtis) Höhn., Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl., Abt. 1, 118: 1185. 1909. — Plate 4, d (see page 25).

≡ *Nectria macrostoma* Berk. & M.A. Curtis, J. Linn. Soc., Bot. 10: 378. 1868.

≡ *Hypocreopsis macrostoma* (Berk. & M.A. Curtis) E. Müll., Beitr. Kryptogamenfl. Schweiz 11(2): 650. 1962.

= *Hypocrea corticioides* Berk. & Broome, J. Linn. Soc. Bot. 14: 111. 1873.

≡ *Clintoniella corticioides* (Berk. & Broome) Petch, Ann. Roy. Bot. Gard. (Peradeniya) 8: 134. 1920.

= *Sphaerostilbe variabilis* Berk. & Broome, J. Linn. Soc., Bot. 14: 115. 1875.

≡ *Nectria grisea* Dingley, Trans. Roy. Soc. New Zealand 79: 180. 1951.

= *Sphaerostilbe hypocreoides* Kalchbr. & Cooke, Grevillea 9: 26. 1880.

≡ *Stilbocrea hypocreoides* (Kalchbr. & Cooke) Seaver, Mycologia 2: 62. 1910.

= *Hypocrea carteri* Berk. & Broome, Grevillea 12: 79. 1883.

≡ *Hypocreopsis carteri* (Berk. & Broome) Sacc., Syll. Fung. 9: 981. 1891.

= *Stilbocrea dussii* Pat., Bull. Soc. Mycol. France 16: 186. 1900.

= *Sphaerostilbe henningsii* Ferd. & Winge, Bot. Tidsskr. 29: 12. 1908.

[≡ *Sphaerostilbe hypocreoides* Hennings, Hedwigia 41: 4. 1902. non Kalchbr. & Cooke 1880].

= *Sphaerostilbe intermedia* Ferd. & Winge, Bot. Tidsskr. 29: 12. 1908.

≡ *Stilbocrea intermedia* (Ferd. & Winge) Seaver, Mycologia 2: 63. 1910.

= *Sphaerostilbe placenta* Theissen, Ann. Mycol. 9: 55. 1911.

= *Stilbocrea jenkiana* [sic] Viégas, Bragantia 4: 97. 1944.

Anamorph: *Stilbella aleuriata* (Berk. & M.A. Curtis)

Seifert, Stud. Mycol. 27: 54. 1985.

- = *Stilbum aleuriatum* Berk. & M.A. Curtis, *Grevillea* 3: 63. 1874.  
 = *Botryonipha aleuriata* (Berk. & M.A. Curtis) O. Kuntze, *Rev. Gen. Pl.* 2: 845. 1891.  
 = *Stilbum cinnabarinum* Mont., *Ann. Si. Nat., Bot. Sér.* 2: 8: 360. 1837 (nom. rej.).  
 = *Botryonipha cinnabarina* (Mont.) O. Kuntze, *Rev. Gen. Pl.* 2: 845. 1891.  
 = *Stilbella cinnabarina* (Mont.) Wollenw., *Angew. Bot.* 8: 195. 1926.  
 = *Stilbum connatum* Kalchbr. & Cooke, *Grevillea* 9: 22. 1880.  
 = *Botryonipha connata* (Kalchbr. & Cooke) O. Kuntze, *Rev. Gen. Pl.* 2: 845. 1891.  
 = *Isaria aggregata* Cooke & Masee, *Grevillea* 19: 48. 1890.  
 = *Stilbum corallinum* Cooke & Masee, *Grevillea* 19: 91. 1891.  
 = *Stilbum subiculosum* Pat., *Bull. Trimestriel Soc. Mycol. France* 20: 138. 1904.  
 = *Stilbum intermedium* Sacc. & Trott., *Syll. Fung.* 22: 477. 1913, as anamorph of *Sphaerostilbe intermedia* Ferd. & Winge.  
 = *Stilbum vanderystii* Sacc. & Trott., *Syll. Fung.* 22: 477. 1913, as anamorph of *Sphaerostilbe henningsii* Ferd. & Winge.

Stromata convex, round, ellipsoid or irregular in outline, at first white, becoming orange or pink and finally grey, smooth, punctate or pubescent, 1–15 mm long, 1–10 mm diam, 375–1250  $\mu\text{m}$  thick, of *textura intricata*, hyphae 3–5  $\mu\text{m}$  wide. Ascumata up to several hundred embedded in a single layer in the stroma, visible as a papilla protruding through the surface of the stroma, orange when young, becoming red-brown to dark olive-green with age, globose to subglobose, KOH–, 250–375  $\mu\text{m}$  high  $\times$  200–300  $\mu\text{m}$  diam, collapsing cupulate or laterally; papilla about 70–90  $\mu\text{m}$  diam, of a palisade of vertically oriented, parallel hyphae, 2.5–3  $\mu\text{m}$  wide; periphyses 1–1.5  $\mu\text{m}$  wide. Ascumatal wall of a single, 10–30  $\mu\text{m}$  thick region of compressed, ellipsoid to fusiform, hyaline cells, 5–17  $\times$  2–3  $\mu\text{m}$ , with walls slightly thickened, becoming less thickened towards the centrum; wall surrounded by *textura intricata*, hyphae 2.5–3  $\mu\text{m}$  wide. Asci cylindrical, 70–110  $\times$  5–11  $\mu\text{m}$ , with an apical ring, 8-spored, ascospores uniseriate. Ascospores ellipsoid to slightly fusiform, (8.5–)10–14  $\times$  4–6  $\mu\text{m}$ , 1-septate, not constricted or slightly constricted at the septum, hyaline, verruculose to verrucose.

ANAMORPH.— Synnemata of two types, called A-synnemata and B-synnemata by Seifert (1985). A-synnemata solitary, gregarious, crowded or caespitose, arising from the teleomorph stroma, cylindrical-capitate, subulate-capitate, sometime clavate, slender to robust, curved, nodding or straight, unbranched or sometimes with a single branch, in some specimens with up to 10 inequivalent branches near the apex, smooth to granulate, stipe at first white, becoming orange or orange-pink, 250–2000  $\mu\text{m}$  tall  $\times$  50–225(–375)  $\mu\text{m}$  wide. B-synnemata solitary, gregarious to 3–4 caespitose,

emerging from a stroma at the periphery or several mm away from the stroma, subulate-capitate, cylindrical-capitate, or clavate, stipe grey, black or grey-brown, shiny, sometimes granulate toward the apex, 1–2 mm tall, 50–200  $\mu\text{m}$  wide. Conidiophores branching once, monovericillate, stipe 1.5–2  $\mu\text{m}$  wide. Phialides cylindrical, subulate, straight or curved, lateral and terminal or in terminal whorls of 3–4, 10–25  $\mu\text{m}$  long  $\times$  1–1.5  $\mu\text{m}$  wide, periclinal thickening sometimes obvious. Conidial mass hemispherical, globose or ellipsoid, orange, pink-orange, yellow-orange or red-brown, 75–350(–550)  $\mu\text{m}$  diam. Conidia oblong-ellipsoid, cylindrical or obovate, 3–6(–13)  $\times$  1–2(–2.5)  $\mu\text{m}$ . Descriptions modified from Seifert (1985).

HABITAT.— On bark and decaying wood of dicotyledonous plants, often on other ascomycetes.

DISTRIBUTION.— Pantropical and subtropical, occasionally temperate.

TYPES.— CUBA. On bark, date unknown, Wright 517 (K, holotype of *N. macrostoma*); SRI LANKA (Ceylon). South of the Island, on bark, July 1868, Herb. Berkeley No. 645 (K, holotype of *H. corticioides*); INDIA. Bombay, on bark, H.J. Carter, Herb. Berkeley, No. 8318 (K, holotype of *H. carteri*). Additional specimens examined from Indonesia are listed in Samuels *et al.* (1990). Culture CBS 542.95.

ILLUSTRATIONS.— Müller & von Arx (1962, Fig. 256, as *Hypocreopsis macrostoma*), Seifert (1985, Figs. 12–13, as *N. macrostoma*), Samuels *et al.* (1990, Fig. 29, as *N. macrostoma*).

SPECIMEN ILLUSTRATED.— UNITED STATES. Mississippi: Wilkinson Co., Clark Creek Natural Area, vicinity of pond, on twigs of dicotyledonous tree, 18 Aug 1996, G.J. Samuels, G.J.S. 96-175 = CBS 101601, M. Blackwell (BPI 744508).

NOTES.— Seifert (1985) presented a complete account of *Nectria macrostoma* and its anamorph, *Stilbella aleuriata*, with documentation of their numerous synonyms.

***Stilbocrea gracilipes*** (Tul. & C. Tul.) Samuels & Seifert, *comb. nov.*

= *Sphaerostilbe gracilipes* Tul. & C. Tul., *Sel. Fung. Carpol.* 1: 131. 1861.

= *Nectria gracilipes* (Tul. & C. Tul.) Wollenw., *Angew. Bot.* 8: 198. 1926.

= *Nectria dealbata* Berk. & Broome, *J. Linn. Soc., Bot.* 14: 117. 1873.

= *Nectria hypocreoides* Berk. & Cooke, *Grevillea* 12: 81. 1884.

= *Sphaerostilbe tetraspora* Pat. & Gaill., *Bull. Soc. Mycol. France* 4: 115. 1888.

= *Sphaerostilbe cinerascens* Hennings, *Ann. Jard. Bot. Buitenzorg, Sér.* 11, 8: 63. 1909.

[= *Sphaerostilbe ochracea* Syd., *Ann. Mus. Roy. Congo Belg.*, ser. 5, 3: 15. 1909, non Pat. 1903].

= *Sphaerostilbe vanderystii* Hennings, *in* Beeli, *Bull. Jard. Bot. Nat. Belg.* 8: 77. 1922.

= *Allantonectria creonectrioides* Chardón, J. Dept. Agric. Porto Rico 14: 241. 1930.

ANAMORPH: *Stilbella clavulata* (Mont.) Seifert, Stud. Mycol. 27: 85. 1985.

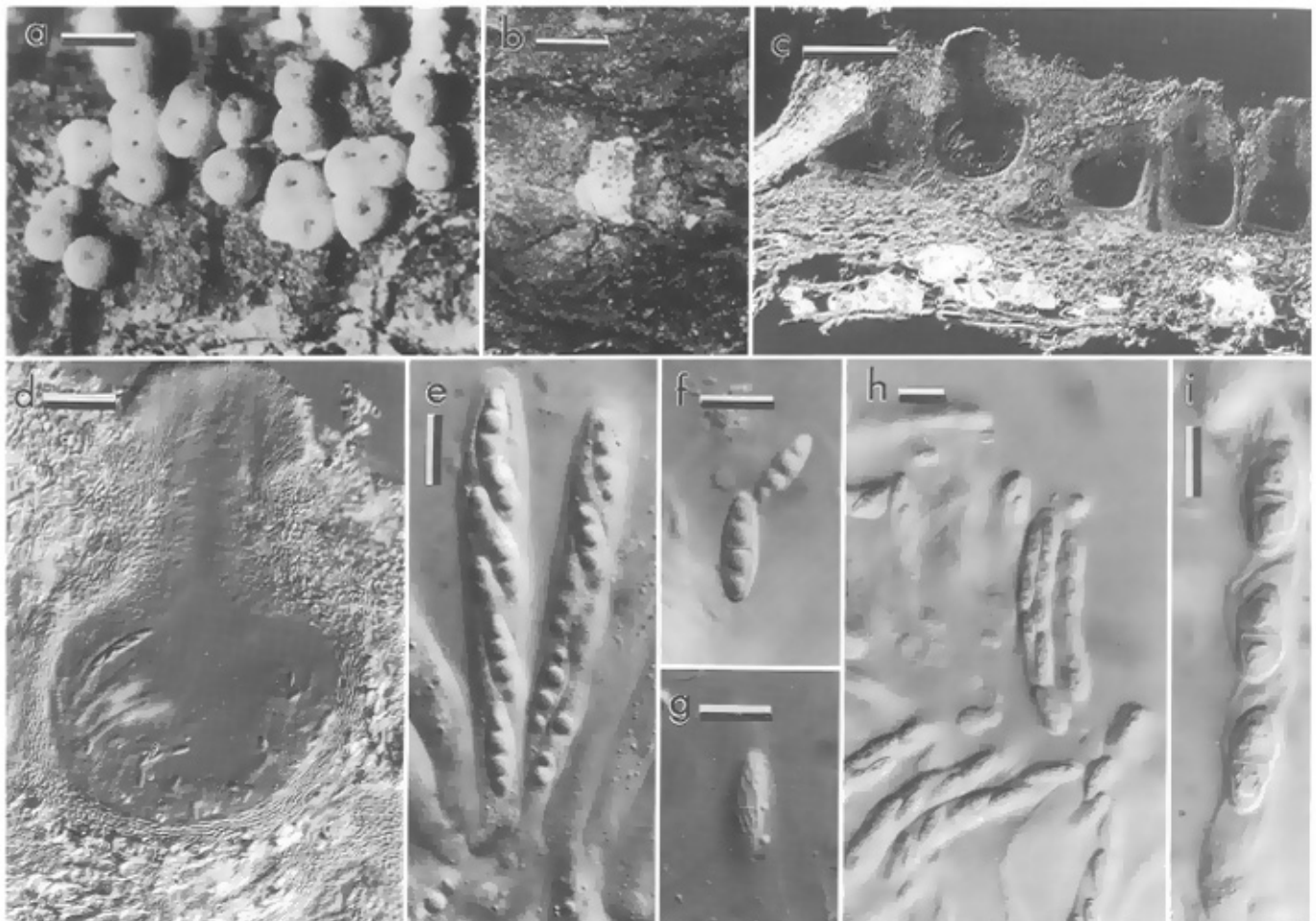
= *Stilbum clavulatum* Mont., Ann. Sci. Nat. Bot., Sér. 2, 18: 248. 1842.

Additional synonyms listed in Seifert (1985).

Stroma white, grey or brown, erumpent, composed of *textura intricata* of hyaline hyphae, 3–9  $\mu\text{m}$  wide, with smooth, to 0.5  $\mu\text{m}$  thick walls. Ascumata 10–30(–50) caespitose, rarely solitary, seated on or slightly immersed in the stroma, globose to ellipsoid, 200–375  $\mu\text{m}$  diam, sometimes collapsed cupulate, pale yellow, orange or pink when young, becoming brown with age, finally black, with an orange to black spot around the ostiole, KOH–, smooth-walled to granulose; papilla about 60–100  $\mu\text{m}$  diam, of vertically oriented parallel, 1–2  $\mu\text{m}$  wide hyphae, with slightly thickened walls; periphyses 1  $\mu\text{m}$  wide. Ascumatal wall in surface view of

monilioid hyphae, 4–8  $\mu\text{m}$  wide, which ultimately fragment into globose to ellipsoid cells, 5–10  $\mu\text{m}$  diam, accumulating black pigment; in section 25–50  $\mu\text{m}$  thick, of two regions: outer region of *textura intricata* to *textura angularis*, 15–35  $\mu\text{m}$  thick, cells hyaline, 3–6  $\times$  3–8  $\mu\text{m}$ , becoming incrustated with black pigment with age, walls up to 0.5  $\mu\text{m}$  thick; inner region of *textura prismatica*, 10–20  $\mu\text{m}$  thick, of thin-walled, hyaline cells, 5–12  $\times$  3  $\mu\text{m}$ . Asci cylindrical, 60–90  $\times$  5–7  $\mu\text{m}$ , apex simple, 8-spored, ascospores uniseriate. Ascospores ellipsoid, often flattened on one side, 9.5–15(–17)  $\times$  3.5–6  $\mu\text{m}$ , 1-septate, not or slightly constricted at the septum, hyaline, spinulose.

ANAMORPH.—Synnemata scattered, gregarious, crowded, 2–10 caespitose, erumpent through the bark, emerging from a white basal subiculum or ascumatal stroma, cylindrical-capitate, subulate-capitate to spatulate, straight, nodding or sinuous, usually slender, unbranched, or in some collections dichotomously to highly branched, stipe black, grey, or grey-brown,



**Plate 15.** a. *Stilbocrea impressa*. Ascumata on natural substratum. b–g. *Valsonectria simpsonii*. b. Ascumata in stroma partially immersed in substratum. c. Median section of ascumata. d. Close-up of median section of ascumata. e. Asci with ascospores. f. Ascospores. g. Ascospore focussed out of median plane to show surface ornamentation. h. *Valsonectria boldoae*, asci with ascospores. i. *Valsonectria pulchella*, close-up of ascus with ascospores. a. BPI 745018. b–g. BPI 802564. h. LPS holotype. i. LPS holotype. Scale bars: a = 500  $\mu\text{m}$ ; b = 1 mm; c = 100  $\mu\text{m}$ ; d = 50  $\mu\text{m}$ ; e–i = 10  $\mu\text{m}$ .

smooth to hirsute at the base, upper parts granulose, grey to white, 500–4000  $\mu\text{m}$  tall  $\times$  50–250  $\mu\text{m}$  wide in the middle, up to 450  $\mu\text{m}$  wide at the base. Conidiophore branching once or twice monochasial. Phialides subulate or cylindrical, straight or curved, lateral, lateral and terminal, or in terminal whorls of 3(–6), 10–25  $\mu\text{m}$  long  $\times$  1–5–3  $\mu\text{m}$  wide at the base, sometimes proliferating percurrently to form a new phialide, 1–1.5  $\mu\text{m}$  wide at the conidiogenous aperture, collarettes sometimes slightly flared, periclinal thickening usually obvious. Conidial mass orange or green, at times yellow, red, or brown, hemispherical to globose, ovoid or ellipsoid, 60–625  $\mu\text{m}$  diam. Conidia ellipsoid, oblong–ellipsoid or ovoid, straight or slightly curved, 4–7(–8)  $\times$  2–3(–3.5)  $\mu\text{m}$ , walls slightly thickened. Description modified from Seifert (1985).

**HABITAT.**— On dead wood and bark of dicotyledonous plants and palms.

**DISTRIBUTION.**— Pantropical and warm temperate regions; anamorph common in temperate North America.

**TYPES.**— Holotype of *Sphaerostilbe gracilipes* at PC, fide Seifert (1985), not examined for this study. COLOMBIA, Dept. Valle de Cauca: Hacienda El Hatico between Cerrito and Palmira, on dead bark, 23 May 1929, C. E. Chardón & J. A. B. Nolla, 735 (CUP, holotype of *Allantonectria creonectrioides*). Cultures: CBS 657.83, 658.83, 523.85, 531.85, 532.85.

Additional specimens examined from Indonesia are listed in Samuels *et al.* (1990).

**ILLUSTRATIONS.**— Tulasne & Tulasne (1865, Pl. XIV, Figs. 14–19, as *Sphaerostilbe gracilipes*); Samuels *et al.* (1990, Fig. 30, as *N. gracilipes*), Seifert (1985, Figs. 26, 27, as *N. gracilipes*).

***Stilbocrea impressa*** (Mont.) Samuels, *comb. nov.* — Plate 10, c, e; Plate 15a.

≡ *Hypocrea impressa* Mont., Ann. Sci. Nat. Bot., Sér. 4, 3: 143, 1855.

≡ *Clintoniella impressa* (Mont.) Sacc. & P. Syd., Syll. Fung. 16: 588, 1902.

**ANAMORPH:** *Acremonium*-like.

Stroma 1–2 mm diam, about 350  $\mu\text{m}$  high, erumpent through the bark at a single point, then spreading out, discrete, scattered, each with a single upper layer of 2–30 ascospores; stromal surface white to dull buff, slightly furfuraceous, hyphae highly branched, 3.5  $\mu\text{m}$  wide, with many free ends, basal stroma of loose hyphae, occasionally associated with a black, pycnidial fungus. Ascospores globose, 280–500  $\mu\text{m}$  diam, brown, KOH–; ascospore wall 20–30  $\mu\text{m}$  thick, of three regions: outer region ca 10  $\mu\text{m}$  thick, of tightly compacted pseudoparenchyma, cells ca 5  $\mu\text{m}$  diam, walls slightly thickened; middle region 15–20  $\mu\text{m}$  thick, of loosely joined hyphae with cells 10–15  $\times$  2–3  $\mu\text{m}$ ; inner region ca 7  $\mu\text{m}$  thick, of compacted, fusoid cells, 5–7  $\times$  ca 1  $\mu\text{m}$ . Periphyses 20–30  $\mu\text{m}$  long, tapering from ca 1  $\mu\text{m}$  in the lower part to the apex, stout toward outer regions. Asci clavate, 65–141  $\times$  16–25  $\mu\text{m}$ , apex simple, 8-spored, ascospores biserial or irregular. Ascospores ellipsoid to ellipsoid–fusiform, ends slightly pointed, 15–22  $\times$  7–10  $\mu\text{m}$ , equally 1-septate, hyaline, with a sheath that at maturity appears prominently spinulose.

**ANAMORPH.**— Buff-colored sporodochia formed on PDA after eight weeks. Sporodochia scattered, hemispherical, 1–2 mm diam, 45–55  $\mu\text{m}$  thick, basal tissue of tightly compacted hyphae. Conidiophores arising as lateral branches from basal hyphae forming abundantly in sporodochia or from surface of agar, densely packed into a compact palisade, loosely and more or less verticillately branched, macronematous, mononematous, 25–37  $\mu\text{m}$  long  $\times$  2–3  $\mu\text{m}$  at the base to 1–1.5  $\mu\text{m}$  at the apex, straight, smooth, aseptate or 1-septate, not conspicuously thickened or flared at the apex, proliferating percurrently to form a second full-length phialide, conidia held in hyaline to buff drops of liquid. Phialides straight, smooth, tapering gradually and uniformly from 2–3  $\mu\text{m}$  at the base to ca 1  $\mu\text{m}$  at the apex, apex with periclinal thickening, not flared, many phialides proliferating percurrently to form a second phialide. Conidia oblong, straight or slightly curved, with apical end often broader than the basal end, 3.5–7.5  $\times$  1.5–3  $\mu\text{m}$ , unicellular, hyaline, smooth, lacking an obvious basal abscission scar.

### KEY TO THE SPECIES OF *STILBOCREA*

1. Ascospores 15–22  $\times$  7–10  $\mu\text{m}$ , ellipsoid to ellipsoid–fusiform, ends slightly apiculate; anamorph known only in culture, *Acremonium*-like ..... *S. impressa*
1. Ascospores generally less than 15  $\mu\text{m}$  long, ellipsoid to fusiform, not apiculate; anamorph synnematous, often present in nature ..... 2
2. Ascospores orange to red-brown or dark olive-green; ascospores (8.5–)10–14  $\times$  4–6  $\mu\text{m}$ , verrucose to verruculose ..... *S. macrostoma*
2. Ascospores pale yellow, orange or pink to dark brown with age; ascospores 9.5–15(–17)  $\times$  3.5–6  $\mu\text{m}$ , spinulose ..... *S. gracilipes*



HABITAT.— On small, dead twigs with bark still present.  
DISTRIBUTION.— Northern South America (Brazil, French Guiana, and Guyana)

HOLOTYPE.— FRENCH GUIANA. On bark, Leprieur, Crypt. Guyan. 517 (PC).

ADDITIONAL SPECIMENS EXAMINED.— BRAZIL. Amazonas, 0.3 km S of central portion of Serra Araca and 8 km E of Rio Javari, ca 1 h walk SE from camp, on twigs with bark, elev. 60 m, 00°49' N, 63°19' W, 6 Mar 1984, G.J. Samuels 84-256 (NY). FRENCH GUIANA. Remire, 15 km from Cayenne, trail to Vidal old farm, 52°18' W, 4°52' N, on dead twigs, 12 Feb. 1988, A. Rossman 3198, cult. G.J. Samuels 88-8 = CBS 101600 (BPI, CAY); St. Laurent, near Mana, along road to Jahoury, white sand forest, 53°51' W, 5°34' N, on dead wood, 18 Nov 1986, A. Rossman 4020, cult. G.J. Samuels 86-570 (BPI 745018, CAY).

NOTES.— Doi (1975a) described and illustrated a *Hypocrea* as *H. impressa* but, based on a comparison of his description with the type specimen of *H. impressa*, Doi's specimen is of *Hypocrea*, not *Stilbocrea*.

**TRICHONECTRIA** Kirschst., Verh. Bot. Vereins Prov. Brandenburg 47: 60, 1906 [1907].

Type: *T. aculeata* Kirschst., a synonym of *Trichonectria hirta* (Bloxam) Petch.

Ascomata solitary, superficial, without stroma; globose to subglobose, white, yellow, pale orange to pale reddish-brown, occasionally pink when fresh. KOH–, not collapsing when dry, wall less than 40  $\mu\text{m}$  thick, of small, non-descript cells; with thick-walled, straight, solitary hairs, or glassy, hyaline appendages in *T. hyalocristata*, arising from the surface of the ascomatal wall. Asci clavate, broadly clavate or broadly cylindrical. Ascospores ellipsoid, fusiform, broadly to long fusiform or cylindrical, 1- to multiseptate, hyaline, smooth-walled. Anamorph, where known, *Acremonium*-like. On decaying algae, mosses, lichenized and non-lichenized fungi.

NOTES.— *Trichonectria* was described as being similar to *Calonectria* and *Ophionectria*, differentiated by the delicate, prosenchymatous ascomata covered with stiff hairs. The type specimen of the type species, *T. aculeata*, was apparently destroyed and Hawksworth (1978) neotypified that name with the type of *T. hirta*, thus assuring the synonymy of these two species. *Trichonectria* is characterized by a pallid, thin-walled ascomata having hyaline, thick-walled hairs and are often associated with lichens, bryophytes, and fungi.

Döbbeler (1978) described one additional species in *Trichonectria*, *T. pellucida*, from living leaves of a liverwort in Brazil, Samuels (1988) added four species, three of which are fungicolous, and Scheuer (1988, 1989) described a species having glassy, flattened, hyaline appendages around the ostiolar region that occurs on overwintered leaves of *Carex*. At present, seven

species are included in *Trichonectria*. Species of *Trichonectria* show affinities to species of *Nectriopsis* and *Paranectria* in having small, pallid, thin-walled ascomata and occurring primarily on algae, bryophytes, lichens or other fungi.

**Trichonectria hirta** (Bloxam) Petch, Naturalist (Hull) 1937: 282, 1937.

= *Nectria hirta* Bloxam, in Currey, Trans. Linn. Soc. London 24: 158, 1884.

= *Calonectria hirta* (Bloxam) Sacc., Michelia 1: 307, 1878.

= *Lasionectria hirta* (Bloxam) Cooke, Grevillea 12: 112, 1884.

= *Calonectria vermisporea* Masee & Crossland, Naturalist (Hull) 1904: 4, 1904.

= *Dialonectria vermisporea* (Masee & Crossland) Masee & Crossland, Fungus Flora Yorkshire p. 214, 1905.

= *Trichonectria aculeata* Kirschst., Verh. Bot. Vereins Prov. Brandenburg 47: 60, 1906 [1907].

= *Calonectria aculeata* (Kirschst.) Weese, Centralbl. Bakteriologie, Abth. 2, 42: 595, 1914.

= *Trichonectria rosella* Höhn., Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl., Abt. 1, 127: 624, 1918.

Ascomata solitary or sparsely aggregated, superficial on the substratum, without a stroma or with a sparse hyphal subiculum radiating from the base of the ascomata, hyphae hyaline, thin-walled, 1.5–2  $\mu\text{m}$  wide. Ascomata globose to subglobose, 230–300  $\mu\text{m}$  high  $\times$  240–300  $\mu\text{m}$  diam, laterally pinched or not collapsing when dry, white to pale yellow or pale saffron, KOH–, without papilla, with numerous, long, straight, solitary hairs projecting from the upper part of the ascomata, hairs 43–100  $\mu\text{m}$  long  $\times$  10–12  $\mu\text{m}$  wide at the base, with 1.5–3  $\mu\text{m}$  thick walls, unthickened toward the apex. Ascomatal wall 25–40  $\mu\text{m}$  thick, of two regions: outer region 20–35  $\mu\text{m}$  thick, of hyaline, thin-walled, elongate cells, 6–12  $\times$  3–4  $\mu\text{m}$ ; inner region 3–7  $\mu\text{m}$  thick of hyaline, thin-walled, elongate cells. Asci broadly cylindrical, 60–100  $\times$  11–15  $\mu\text{m}$ , apex simple, 8-spored, ascospores pluriseriate. Ascospores long fusiform to cylindrical, vermiform or sigmoid, 45–85  $\times$  5–8  $\mu\text{m}$ , 11–21-septate, forming cuboid to subcuboid cells, hyaline, smooth.

HABITAT.— On very rotten, decorticated wood, often associated with granular lichen thalli.

DISTRIBUTION.— Austria, Belgium, Denmark (T. Læsøe, pers. comm.), England, and Germany.

HOLOTYPE.— England, Twycross, Leicestershire, on decaying rails, associated with *Lecidiea uliginosa* (K).

Additional specimens examined as cited in Rossman (1983).

ILLUSTRATIONS.— Dennis (1978, Pl. 31G); Döbbeler (1978, Fig. 21, as *T. rosella*); Hawksworth (1978, Fig. 7); Petch (1938, Fig. 26); Rossman (1983, Fig. 46).