Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

Ascomycetes described on *Freycinetia*

Kevin D. Hyde

Department of Ecology and Biodiversity, The University of Hong Kong, Pokfulam Road, Hong Kong

Hyde, K. D. (1997). Ascomycetes described on *Freycinetia*. – Sydowia 49(1): 1–20.

Sixteen species of ascomycetes with their type specimens recorded from *Freycinetia* are re-examined and their taxonomic positions considered. *Ellisiodothis microdisca*, *Melanochaeta aotearoae*, *Mycosphaerella freycinetiae*, *Nectria freycinetiae*, *Nectriopsis squamulosa*, *Phyllachora freycinetiae* and *Stictis subiculata* are considered correctly placed, *Hugueninia freycinetiae*, *Guignardia freycinetiae*, *Hypoxylon freycinetiae* and *Seynesia atkinsonii* are transferred to other genera. *Auerswaldia merrillii*, *Clypeosphaeria stevensii*, *Metasphaeria christophersenii*, *Peltella freycinetiae* and *Pyrenocyclus ambiguus* are considered ambiguous species. Finally, *Pyrenula* sp. is described and illustrated. Each accepted species is redescribed and illustrated with light micrographs.

Keywords: Ascomycetes, taxonomy.

The monocotyledonous family Pandanaceae has members throughout the Old World tropics to Australia, New Zealand, and other parts of Polynesia (Willis, 1973; Mabberley, 1987). *Freycinetia* species are usually lianas with scrambling or climbing stems with adhesive roots and are distributed from Sri Lanka, throughout South-East Asia and Malesia to Taiwan, New Zealand, and the Pacific islands in the east (McKenzie & Hyde, 1996, 1997). There has been little interest in the fungi on *Freycinetia*. The first record was the ascomycete *Auerswaldia merrillii* Hennings (1908), described from the Philippines. In the first comprehensive account of fungi on the Pandanaceae, Verona (1932) treated 90 species including nine from *Freycinetia*, one of which was described as a new species. Few other studies of the mycota on *Freycinetia* exists and to date only thirty-six fungi including 16 ascomycetes, 4 basidiomycetes and 16 deuteromycetes are described from this host genus. Most of these fungi have been recorded from Hawaii, the Philippines and New Zealand (McKenzie & Hyde, 1996a). McKenzie & Hyde (1996a) have reviewed the literature pertaining to the fungi on the Pandanaceae, while a checklist of these fungi is provided by McKenzie & Hyde (1997).

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

In our laboratory we are presently carrying out a survey of the fungi on the Pandanaceae and we are re-examining species with their type specimens recorded from this family. This paper deals with the 16 ascomycetes recorded from *Freycinetia*.

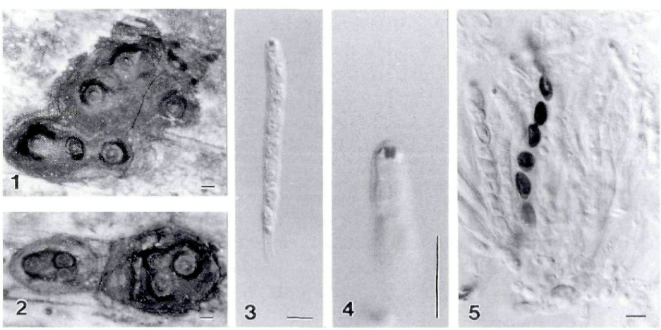
Taxonomy

1. ***Astrocystis freycinetiae*** (Rehm) K. D. Hyde, comb. nov. – Figs 1–5.
≡ *Hypoxylon freycinetiae* Rehm, Leafl. Philipp. Bot. 8: 2959. 1916.

Ascomata ca 2 mm diam., superficial, black, carbonaceous, solitary or mostly clustered, with a central raised ostiolate region (Figs 1, 2). – Paraphyses up to 3 µm wide, hypha-like, filamentous, irregular, septate, numerous and embedded in a gelatinous matrix. – Asci 80–100 × 8 µm (all immature), 8-spored, cylindrical, unitunicate, pedicellate, apically rounded, with a J+ wedge-shaped ring, 2 mm diam., 2.5 mm high (Figs 3, 4). – Ascospores 12–13 × 4.5–6 µm, overlapping uniseriate, inequilateral, brown, unicellular, with a germ slit along the entire length (Fig. 5).

Material examined. – PHILIPPINES, Luzon, Laguna, Mt Makiling, on stem of *Freycinetia* sp., Dec. 1915, C. F. Baker 3927 (S).

After examination of the type specimens (C. F. Baker 3416 & 3927), Miller (1961) noted that the material was too depauperate to make a determination, but placed the taxon in *Hypoxylon* section *Annulata*. I have been able to locate some good material on



Figs 1–5. *Astrocystis freycinetiae* (from Baker 3927). – 1, 2. Ascomata on host surface. – 3, 4. Asci with J+ subapical ring. – 5. Squash mount of asci and ascospores. – Bars: 1, 2 = 1 mm; 3–5 = 10 µm.

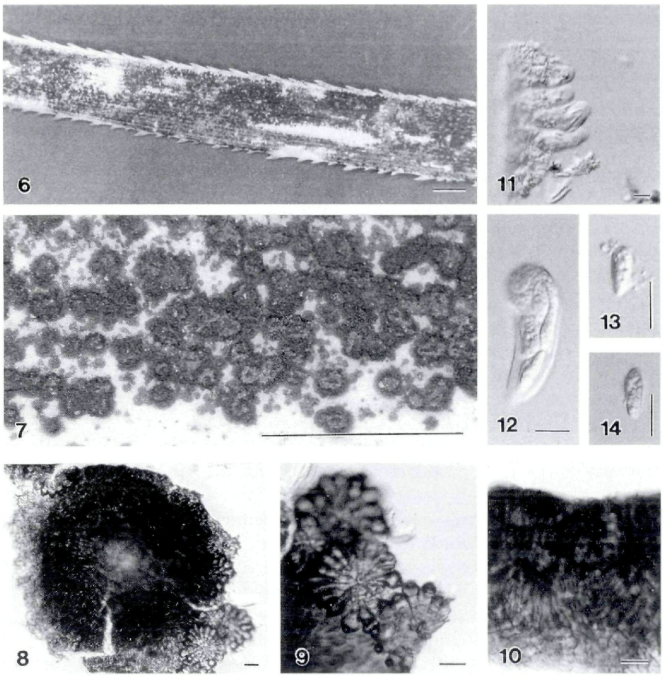
Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

C. F. Baker 3927, although Ju & Rogers (1996) cite C. F. Baker 3416 as holotype. It is not clear who designated this holotype, whether Ju & Rogers examined the holotype or it is in good condition. Yu & Rogers (1996) indicate that *Hypoxylon freycinetiae* is a synonym of *Nemania bipapillata* (Berk. & M. A. Curtis) Pouzar. In his key to *Nemania*, however, Pouzar (1985) describes the stromal surface of *N. bipapillata* to be beige-brown, greyish-brown to dirty copper-brown. *Hypoxylon freycinetiae* would therefore key to *Nemania carbonacea* as it has a deep carbaceous black stromal surface. *Nemania carbonacea*, however, is not suitable for this species, which would fit better in *Astrocystis sensu* Læssøe & Spooner (1994). Ju & Rogers (1996) consider *Astrocystis* to be a synonym of *Rosellinia* De Not. Differences among the genera *Astrocystis, Nemania* and *Rosellinia* are outlined by Læssøe & Spooner (1994) and this delineation is followed here. Læssøe & Spooner (1994) considered the most striking difference between *Astrocystis* and *Rosellinia* to be the form and size of the ascus subapical ring. They found species of *Rosellinia* to have a massive, typical, barrel-shaped subapical ring, whereas those of *Astrocystis* were relatively small and wedge-shaped. The length of the ascal stipe is also considered important, but this was not always easy to observe in rehydrated material. In many *Astrocystis* species a carbonized basal ring surrounds the ascoma (Læssøe & Spooner, 1994). Species of *Hypoxylon* Bull. develop within variously shaped, immersed or superficial stroma and externally may be brightly coloured or black. The ascomata are immersed, sphaerical to obovoid, few or many, with essentially papillate ostioles, or with an annular disc surrounding the papillate ostiole. Asci are cylindrical, 8-spored, stalked and usually with a discoid J+ subapical ring. Ascospores are variously shaped, mosty ellipsoid-inequilateral, brown, with a germ slit (Van der Gucht, 1994; Ju & Rogers, 1996). *Hypoxylon freycinetiae* has characters that conform to *Astrocystis* and is therefore transferred here. It differs from any of the species known from palms (Hyde & Læssøe, pers. obs.).

2. ***Ellisiodothis microdiscus*** Syd. & P. Syd., Ann. Mycol. 15: 221. 1917. – Figs 6–14.

Ascostromata 130–180 µm diam., circular, concentric, subcarbonaceous, opaquely dark, superficial, gregarious, composed of opaquely brown radiating hyphae, 2–3 µm long, straight (Figs 6–10). – Hypostroma subepidermal. – Ascomata hyaline, fibrous, discrete, with a pore. – Pseudoparaphyses thin. – Asci 32–38 × 12–16 µm, 8-spored, clavate to saccate, bitunicate, pedicellate and apically rounded (Figs 11, 12). – Ascospores 10–12 × 4–5 µm, 2–3 seriate, clavate or ovate-oblong, hyaline, unicellular (Figs 13, 14).

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.



Figs 6–14. *Ellisiodothis microdisca* (from lectotype). – 6, 7. Ascomata on host surface. – 8–10. Radiating cells in ascomata. – 11, 12. Asci. – 13, 14. Ascospores. – Bars: 6, 7 = 10 mm; 8–14 = 10 µm.

Material examined. – PHILIPPINES, Biliran, on leaves of *Freycinetia* sp., Jun. 1914, R. C. McGregor (Bur. Sci. 18393) (S, lectotype designated here).

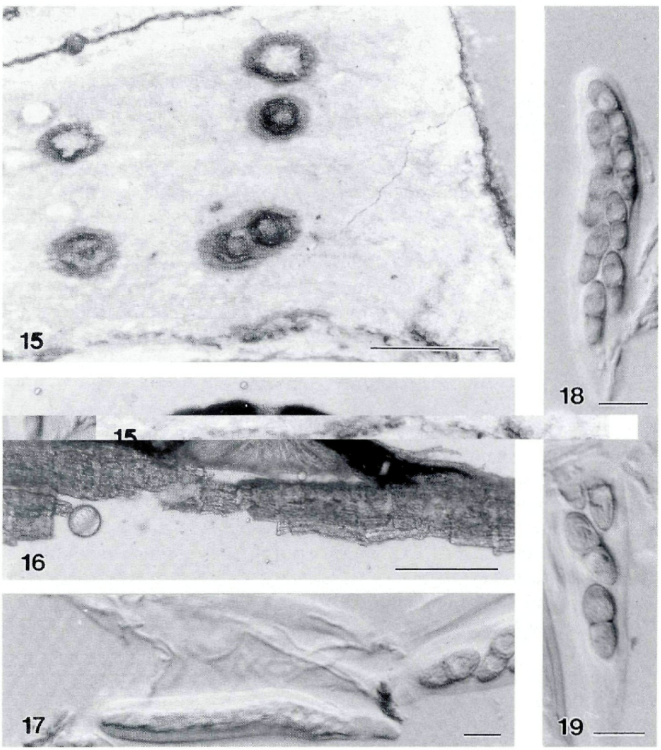
This species is accepted in *Ellisiodothis* Arx (Batista & Vittal, 1960). A recent addition to the genus is *E. cocoicola* A. Sivan. & W. H. Hsieh from *Cocos nucifera* in Taiwan (Sivanesan & Hsieh, 1989). In *E. cocoicola* the discoid ascostromata are scattered, mostly in rows, and are black with a central ostiole. The clavate to saccate, bitunicate asci contain ovate-oblong, aseptate ascospores that are light brown at maturity. In *E. pandani* Syd. & P. Syd. the discoid ascostromata are attached at several points by hypostroma, asci are clavate or saccate, and ascospores are ellipsoidal or oblong-ellipsoidal, hyaline and unicellular (Batista & Vittal, 1960). *Ellisiodothis*

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

microdiscus differs from *E. pandani* in having clavate or ovate-oblong ascospores (10–12 × 4–5 µm, vs 17–20 × 8 µm). In the recent Dictionary of the Fungi (Hawksworth & al., 1995) *Ellisiodothis* is considered to be possibly congeneric with *Muyocopron* Speg.

3. ***Kirschsteiniothelia atkinsonii*** (F. Stevens & R. W. Ryan) K. D. Hyde, comb. nov. – Figs 15–19.

≡ *Seynesia atkinsonii* F. Stevens & R. W. Ryan, Bernice P. Bishop Mus. Bull. 19: 69. 1925.



Figs 15–19. *Kirschsteiniothelia atkinsonii* (from lectotype). – 15. Ascomata on host surface. – 16. Section of ascoma. – 17, 18. Asci. – 19. Ascospores. – Bars: 15 = 10 mm; 16 = 100 µm; 17–19 = 10 µm.

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

= *Seynesia freycinetiae* G. F. Atk. ex Arx & Müller, Beitr. Kryptogamenflora der Schweiz 11(2): 90. 1954.
= *Myiocopron freycinetiae* (G. F. Atk.) G. Arnaud ex Arx & Müller, Beitr. Kryptogamenflora der Schweiz 11(2): 90. 1954.
= *Myiocopron freycinetiae* G. Arnaud, Ann. Crypt. Exot. 4: 88. 1931.

Ascomata subcuticular, developing under raised, black, shiny, dome-shaped regions ca. 500 µm diam, ostiolate (Figs 15, 16). – Pseudoparaphyses 1–1.5 µm diam., filamentous, simple or branched, septate, embedded in mucilage (Fig. 17). – Asci 70–90 × 9–16 µm, 8-spored, clavate, short pedicellate, thick-walled, bitunicate, with an ocular chamber (Figs 17, 18). – Ascospores 14–16 × 5–6 µm, 2–seriate, clavate, light brown, 1-septate, upper cell wider than elongated lower cell, verrucose (Fig. 19).

Material examined. – HAWAII, Oahu, Palolo Valley, Mt Olympus, on leaves of *Freycinetia arnotti*, 16 Jun. 1921, F. Stevens 300 (BISH, lectotype of *Seynesia atkinsonii*, designated here).

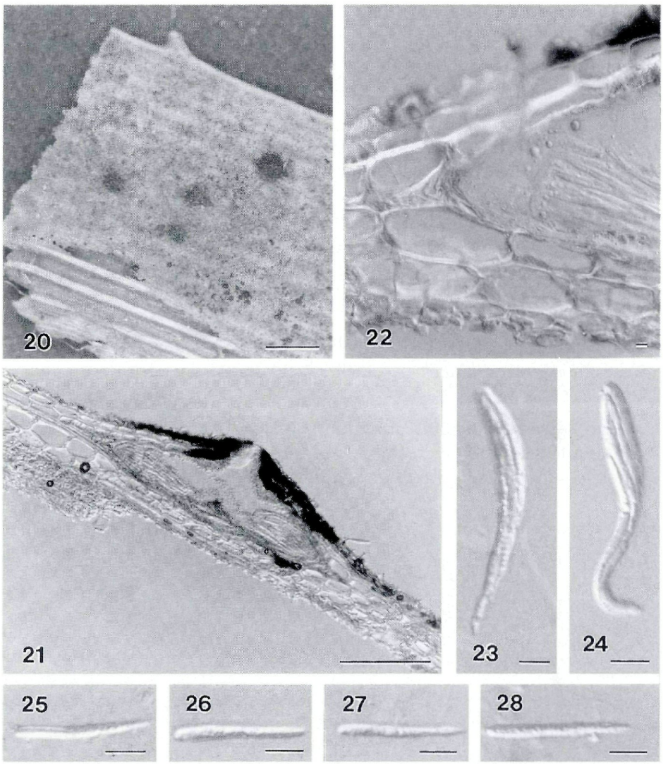
The history of this specimen is discussed by Hyde (1995). The correct name for *Myiocopron* Speg. is *Muyocopron* Speg. (Hawksworth & al., 1995), and is not a suitable genus to accommodate *S. freycinetiae*. *Muyocopron* belongs in the Microthyriaceae, a family in which the ascomata are superficial and strongly flattened, composed of radiating rows of isodiametric cells, the interascal tissue is composed of trabeculate pseudoparaphyses, and the asci are saccate (Hawksworth & al., 1995). *Microdothiella* Syd. & P. Syd. is another genus that might accommodate *S. freycinetiae*. In *M. culmicola* Syd. & P. Syd., however, ascomata are subcuticular, asci are clavate and ascospores are aseptate and hyaline. A more suitable genus may be found in *Kirschsteiniothelia* D. Hawksw., a genus in which ascomata are erumpent, usually with a flattened base, pseudoparaphyses are cellular and branched, asci are subcylindrical or elongate-clavate and ascospores are 1-septate and brown. Many of these characters are found in *S. freycinetiae*, although ascomata are not erumpent, but are subcuticular. The most appropriate genus available is *Kirschsteiniothelia*.

A second specimen cited as this species (Stevens, 1925) is a *Pyrenula* (see *Pyrenula* sp.).

4. ***Linocarpon freycinetiae*** (Rehm) K. D. Hyde, Bot. J. Linn Soc. 121: 123: 126. 1997. – Figs 20–28.
≡ *Guignardia freycinetiae* Rehm, Philipp. J. Sci. Sect C, Bot. 8: 184. 1913.
≡ *Micronectriopsis freycinetiae* (Rehm) Höhn., Ann. Mycol. 16: 59. 1918.

Ascomata developing beneath black, slightly raised, shiny discs, to 500 µm diam., on the host leaves, with a central ostiolum,

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.



Figs 20–28. *Linocarpon freycinetiae* (from lectotype). – 20. Ascomata on host surface. – 21. Section of ascoma. – 22. Peridium. – 23, 24. Asci. – 25–28. Ascospores. – Bars: 20 = 10 mm; 21 = 100 µm; 22–28 = 10 µm.

gregarious (Fig. 20); in section 280–420 µm diam., 100 µm high, lenticular, immersed beneath a clypeus, surrounded by variable stromatal tissue, ostiolum periphysate (Fig. 21). – Peridium comprising a few layers of thin-walled, elongate cells which are light-brown at the outside (Fig. 22). – Paraphyses poorly preserved. – Asci 54–82 × 7–10 µm, 8-spored, cylindric-clavate, pedicellate, apically truncate, with a subapical ring (Figs 23, 24). – Ascospores 28–32 × 2.5–3 µm, multiseriate, unicellular, acicular, hyaline, straight or slightly curved, no appendages observed (Figs 25–28).

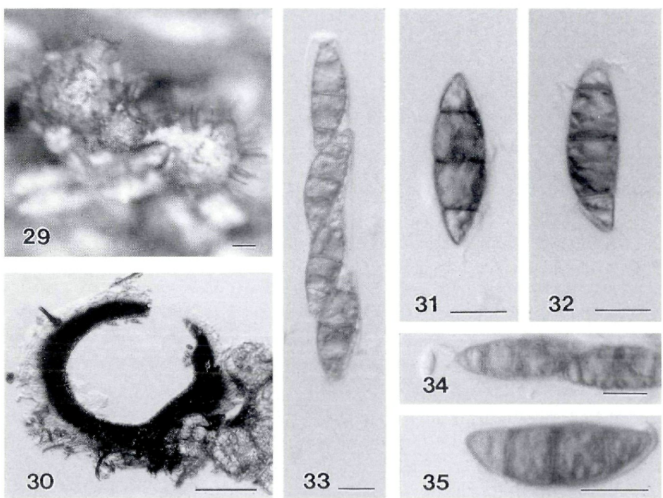
Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

Material examined. – PHILIPPINES, Luzon, Laguna, Los Baños, on dead *Freycinetia* sp. leaves, C. F. Baker 58 (FH, lectotype).

This species has acicular ascospores and unitunicate asci and does not belong in *Guignardia*. It was clear that Höhnel (1918) was of the same opinion in transferring it to a new genus *Micronectriopsis*. At this time Höhnel may not have known the genus *Linocarpon*, as the characters of this species conform to *Linocarpon*, which was described earlier by Sydow & Sydow (1917). *Micronectriopsis*, is therefore, a synonym of *Linocarpon* (Hyde, 1996). A. Rossman has also examined this specimen and has annotated it as a *Linocarpon*. *L. freycinetiae* is presently the only species of *Linocarpon* known from *Freycinetia*.

5. ***Melanochaeta aotearoae*** (S. Hughes) E. Müller, Harr & Sulmont, Revue Mycol. 33: 378. 1969. – Figs 29–35.
≡ *Chaetosphaeria aotearoae* S. Hughes, NZ J. Bot. 4: 78. 1966.

Ascomata 230–330 µm diam., 320–410 µm high, superficial, hyaline and then black, solitary, scattered in groups of two to seven, or densely crowded, growing amongst conidiophores and capitate



Figs 29–35. *Melanochaeta aotearoae* (from holotype). – 29. Ascomata on host surface. – 30. Section of ascoma. – 31, 32, 35. Ascospores. – 33, 34. Asci with refractive apical ring. – Bars: 29, 30 = 100 µm; 31–35 = 10 µm.

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

hyphae, covered in hairs, coriaceous with a black ostiolar papilla (Figs 29, 30). – Peridium up to 50 mm wide, composed of several layers of brown-walled *textura angularis* (Fig. 30). – Paraphyses hypha-like, filamentous, irregular, septate, in a gelatinous matrix. – Asci 175–215 × 11–15 µm, 8-spored, cylindrical, short pedicellate, apically rounded with a J– apical refractive ring (Figs 33, 34). – Ascospores 25–32(–38) × 8.3–10 µm, overlapping uniseriate, broadly fusoid, often inequilateral, 3-septate with two pale brown central cells, and smaller hyaline end cells, verrucose, surrounded by remnants of mucilage (Figs 31, 32, 35).

Anamorph. – *Sporoschisma mirabile* Berk. & Broome.

Material examined. – NEW ZEALAND, Auckland Province, Waitakere Ranges, Ruaotowhenua, on *Freycinetia banksii*, 7 Aug. 1963 (PDD 21403, holotype).

The history of this species is well documented by Müller & Samuels (1982).

6. ***Mycosphaerella freycinetiae*** F. Stevens, Bernice P. Bishop Mus. Bull 19: 103. 1925. – Figs 36–42.

Leaf spots irregularly ellipsoidal, visible on both sides of the leaf, tan-coloured, margins definite (Fig. 36). – Ascomata on the upper surface only visible as minute blackened dots, 150–200 µm diam., black, ostiolate (Fig. 37). – No pseudoparaphyses. – Asci 50–94 × 16–22 µm, 8-spored, obclavate, bitunicate (Figs 38, 39). – Ascospores 24–32 × 4–5 µm, 2–3-seriate, cylindrical, hyaline, 1-septate, straight, obtuse, some with remnants of mucilage (Figs 40–42).

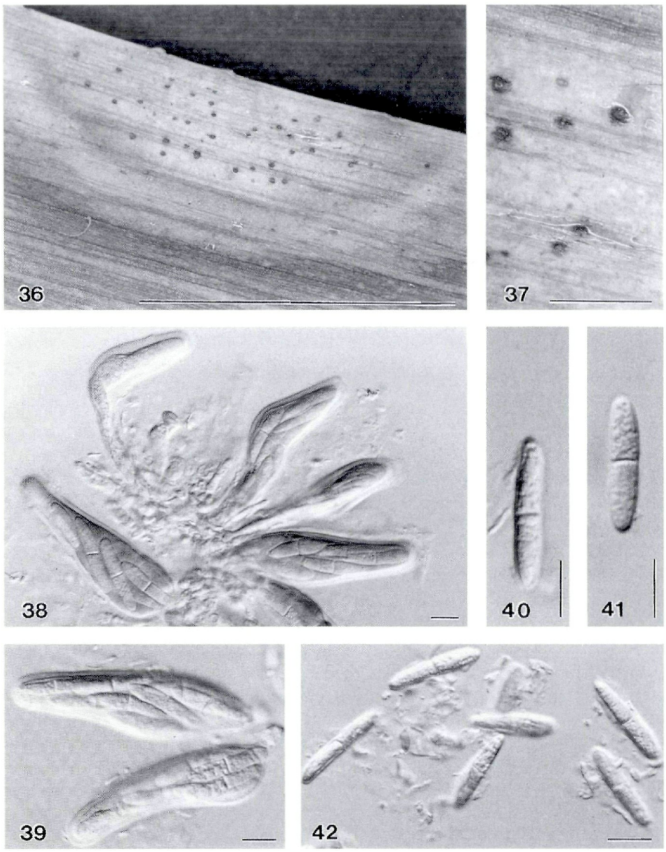
Material examined. – HAWAII ISLANDS, Oahu, Kalihi Valley, on leaves of *Freycinetia arnotti*, Dec. 1908, Forbes no 3, (BISH, lectotype designated here).

This is a typical species of *Mycosphaerella*.

7. ***Nectria freycinetiae*** Samuels, N. Z. J. Bot. 14: 243. 1976. – Figs 43–52.

Ascomata 260–340 µm diam., globose, orange, superficial on a ring of white mycelium, collabent when dry, not changing colour in 3% KOH, solitary or in caespitose clusters of up to ten, papillate (Figs 43, 44). – Asci 100–110 × (8–)11–17 µm, 8-spored, apices rounded (Figs 45, 46). – Ascospores 26–32 × 6–7(–8) µm, biseriate, fusiform, straight or slightly curved, equally 2-celled, hyaline with wall striations (Figs 47–50).

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

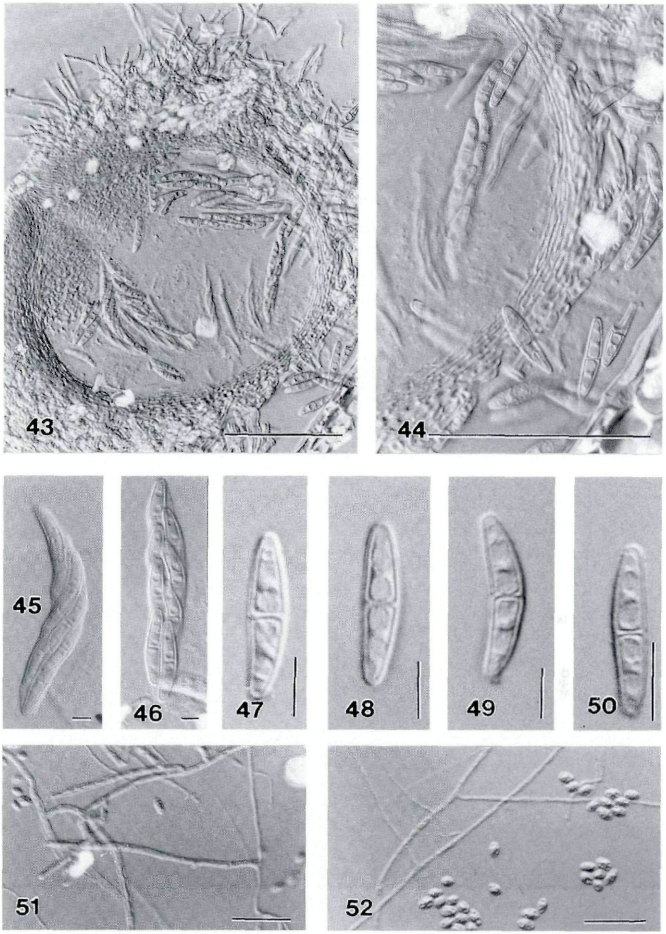


Figs 36–42. *Mycosphaerella freycinetiae* (from lectotype). – 36, 37. Ascomata on host surface. – 38, 39. Asci. – 40–42. Ascospores. – Bars: 36 = 10 mm; 37 = 1 mm; 38–42 = 10 µm.

Anamorph. – *Acremonium* sp. (Figs 51, 52).

Material examined. – NEW ZEALAND, Auckland Province, Thames County, Coromandel Forest Park, Kauaeranga Valley, vic. Thames, on leaves of *Freycinetia banksii* Dingley & al., 27 Aug. 1974, Samuels 74–115 (PDD 32577, holotype).

©Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.a



Figs 43–52. *Nectria freycinetiae* (from holotype). – 43. Section of ascoma. – 44. Peridium. – 45, 46. Asci. – 47–50. Ascospores. – 55, 56. Anamorph. – Bars: 43 = 100 µm; 44–52 = 10 µm.

This taxon is described and illustrated in detail by Samuels (1976) and some of his measurements are used above.

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

8. ***Nectriopsis squamulosa*** (Ellis) Samuels, Mem. N.Y. Bot. Garden 48: 44. 1988. – Figs 53–56.

≡ *Nectria squamulosa* Ellis, Bull. Torrey Bot. Club 9: 20. 1882.

≡ *Dialonectria squamulosa* (Ellis) Cooke, Grevillea 12: 110. 1884.

see Samuels (1988) for other synonyms.

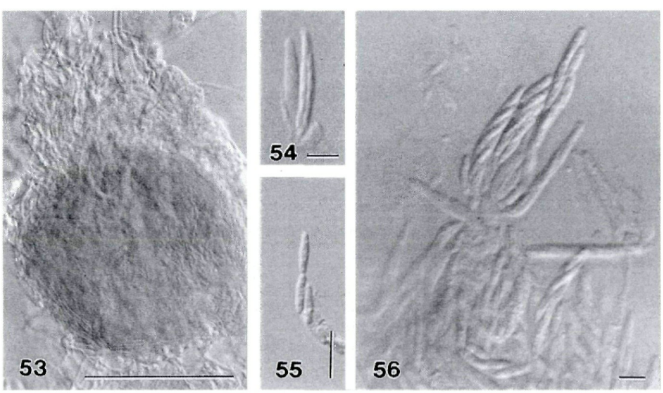
Ascomata (100–)116–160(–175) × (100–)111–147(–175) µm, globose to broadly pyriform, yellow to orange yellow, either not changing colour or becoming roseous in 3% KOH, smooth, ostiolate, non-papillate, gregarious, seated on the mycelium (Fig. 53). – Asci (27–)33–49(–65) × 5–6.7(–8) µm, 8-spored, broadly cylindrical to narrowly clavate (Figs 54, 56). – Ascospores (6–)7.5–10.3(–14) × 1.5–2.3(–3) µm, ends obtuse, 1-septate, smooth, hyaline (Fig. 55).

Material examined. – NEW ZEALAND, North Island, Coromandel, Thames Co., Coromandel Forest Park, vic. Thames, Kauaeranga Valley, on decaying leaf of *Freycinetia baueriana* Endl. subsp. *banksii* (A. Cunn.) Stone, Dingley, Samuels (71–111) & Haydon, 27 Aug. 1974 (PDD 34054).

This taxon is described and illustrated in detail by Samuels (1988) and some of his measurements are used above.

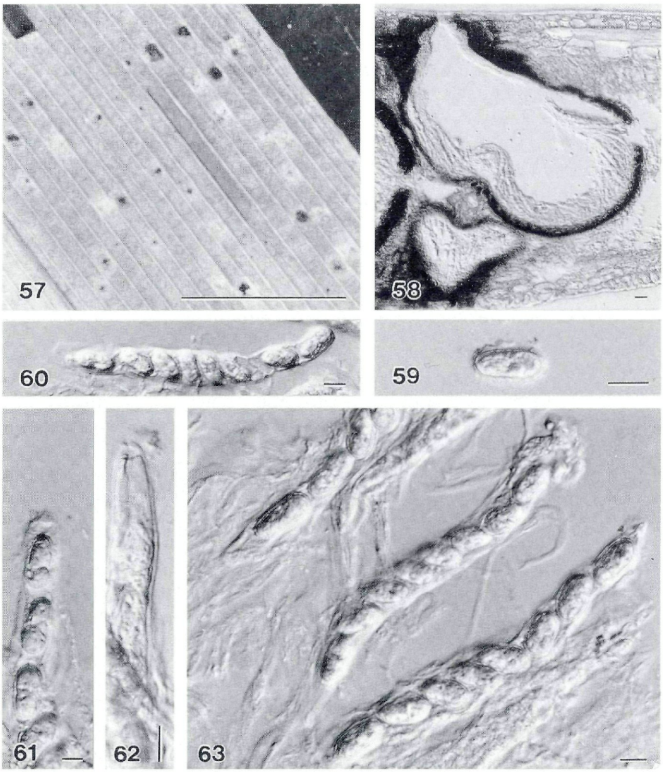
9. ***Phyllachora freycinetiae*** F. Stevens, Bernice P. Bishop Mus. Bull., 19: 22. 1925. – Figs 57–63.

Ascomata developing under slightly raised, tan coloured, oval spots, many with a central, blackened, shiny clypeus on one or both surfaces, to 1 mm diam., scattered, with a central ostiolar dot



Figs 53–56. *Nectriopsis squamulosa* (from PDD 34054). – 53. Ascoma. – 54, 56. Squash mount with asci. – 55. Ascospores. – Bars: 53 = 100 µm; 54–56 = 10 µm.

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.



Figs 57–63. *Phyllachora freycinetiae* (from lectotype). – 57. Ascomata on host surface. – 58. Section of ascoma. – 59. Ascospore. – 61–63. Asci and paraphyses. – Bars: 57 = 10 mm; 58 = 100 µm; 59–63 = 10 µm.

(Fig. 57); in vertical section irregularly subglobose, immersed under a poorly developed clypeus (Fig. 58). – Paraphyses up to 2 µm wide, hypha-like, filamentous, septate, numerous, hyaline and embedded in a gelatinous matrix (Fig. 63). – Asci 105–130 × 12–16 µm, 8-spored, broad cylindrical to cylindrico-clavate, short pedunculate, apically rounded with a J- apical ring, 2 µm high, 4 µm diam. (Figs 60–63). – Ascospores 13–20 × 6–8 µm, overlapping uniseriate, ellipsoidal, hyaline, unicellular, with a thin irregular sheath (Fig. 59).

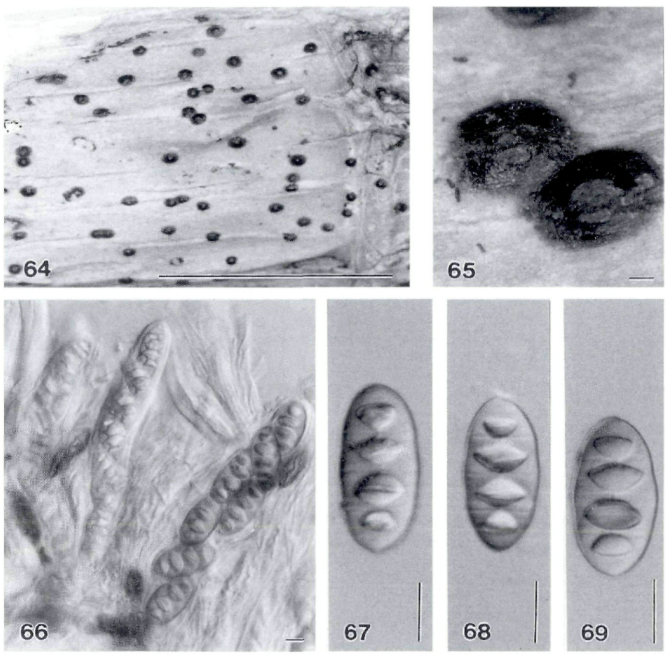
Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

Material examined. – HAWAII, Oahu, Kalihi Valley, on leaves of *Freycinetia arnotti*, 2 Jun. 1921, Stevens 184 (BISH, lectotype designated here).

This appears to be a typical *Phyllachora* species.

10. ***Pyrenula*** sp. – Figs 64–69.

Ascomata developing under raised, black, shiny, conical pseudostroma, ostiolate (Figs 64, 65). – Paraphyses 1–1.5 µm diam., filamentous, simple or branched, septate, embedded in mucilage (Fig. 66). – Asci 120 × 25 µm, 8-spored, cylindrical, pedicellate, thick-walled, bitunicate, with an ocular chamber (Fig. 66). – Ascospores 26.5–33.5 × 10–15 µm (1–)2-seriate, ellipsoidal with acute ends, light brown, 3-distoseptate, smooth-walled (Figs 67–69).



Figs 64–69. *Pyrenula* sp. – 64, 65 (from H. L. Lyon 87). Ascomata on host surface. – 66. Squash mount with asci and pseudoparaphyses. – 67–69. Ascospores. – Bars: 64 = 10 mm; 65 = 100 µm; 66–69 = 10 µm.

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

Material examined. – HAWAII, Oahu, Tantalus Ridge, on living branches of *Freycinetia arnotti*, 5 Sep. 1909, H. L. Lyon 87 (CUP).

Eastern North American species of *Pyrenula* have been dealt with by Harris (1989). In *Pyrenula* ascomata are enclosed in a pseudostromatic shell and have simple, apical, erect ostioles. Interascal tissue are of true paraphyses and asci are probably bitunicate but degenerate in most taxa to release ascospores. Ascospores are distoseptate and coloured. This is the first record of a species of *Pyrenula* from *Freycinetia*.

11. ***Stictis subiculata*** P. R. Johnson, N. Z. J. Bot. 21: 271. 1983. – Figs 70–75.

Ascomata appearing as darkened region on the host surface with a central blackened dot and lighter rim (Figs 70, 71), deeply immersed, urceolate, round, 0.4–0.8 mm diam., paraphysate (Figs 72, 74, 75). – Asci 420–520 × 5–7 µm, 8-spored (Figs 72, 73). – Ascospores 350–600(–800) × 1.5–2.5 µm, sometimes with an indistinct gelatinous sheath.

Anamorph. – *?Coleophoma* sp. (Fig. 75).

Material examined. – NEW ZEALAND, Auckland, Waitakere Ranges, Cascades Track, on *Freycinetia baueriana* ssp. *banksii*, 9 Mar. 1981, P. R. Johnson, G. J. Samuels, (PDD 41899, holotype).

This species has been described and illustrated in detail by Johnston (1983) and only a brief description is provided here.

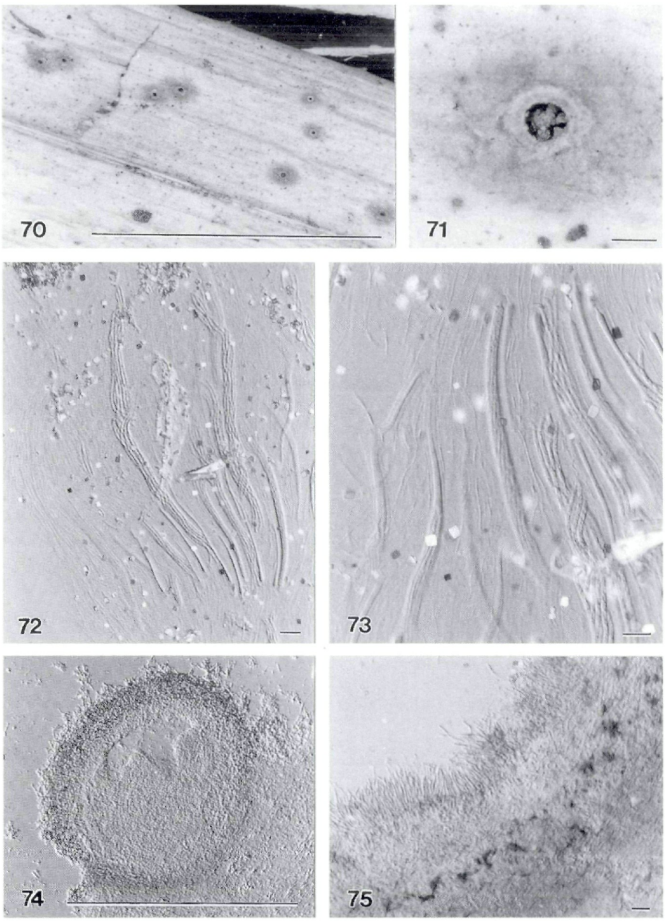
12. ***Stomiopeltis freycinetiae*** (J. L. Bezerra & T. T. Barros) K. D. Hyde, comb. nov. – Figs 76–79.

≡ *Hugueninia freycinetiae* J. L. Bezerra & T. T. Barros, Publ. Inst. Micol. Recife 643: 5. 1970.

Ascomata superficial, epiphyllous, sparse, plano-scutate, 350–490 µm diam., 25–35 µm high, membranous, glabrous, brown, with a rounded central ostiolum, 24–32 µm diam. (Figs 76, 77) – Upper peridium 12.5–28 µm wide, composed of irregular cells, radiating to the margin, lower peridium inconspicuous. – Pseudoparaphyses 1–1.5 µm diam., hypha-like, filamentous, branched, septate. – Asci 60–70 × 16–22 µm, 8-spored, bitunicate, cylindrico-clavate, pedicellate (Fig. 78). – Ascospores 16–22 × 6–7 µm, clavate, 1-septate, apical cell larger, constricted at the septum, hyaline (Fig. 79).

Material examined. – NEW CALEDONIA, 800 m, on leaves of *Freycinetia longispica* Mart., 16 Sep. 1966, B. Huguenin (IMUFPe 76445, holotype; NC 66109, I. F. O. Noumea, isotype).

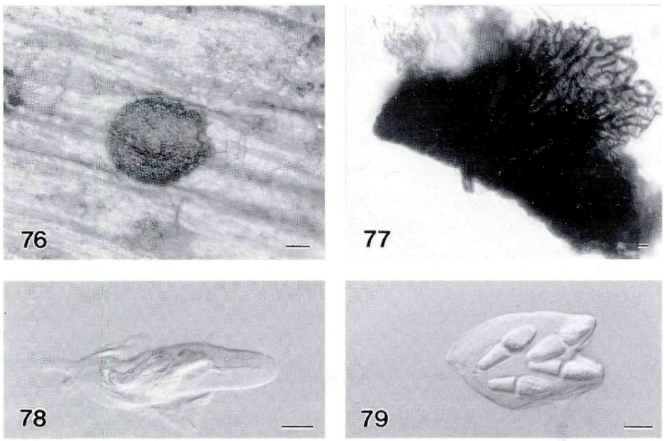
Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.



Figs 70–75. *Stictis subiculata* (from holotype). – 70, 71. Ascomata on host surface. – 72, 73. Squash mount with asci and pseudoparaphyses. – 74. Section of conidiomata. – 75. Peridium, conidiophores and conidia. – Bars: 70 = 10 mm; 71, 74 = 100 µm; 72, 73, 75 = 10 µm.

Hugueninia freycinetiae typifies the genus *Hugueninia* Bezerra & Barros, which is regarded as a member of the Microthyriaceae

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.



Figs 76–79. *Stomiopeltis freycinetiae* (from holotype). – 76. Ascoma on host surface. – 77. Radiating cells in ascomata. – 78. Ascus. – 79. Ascospores. – Bars: 76 = 100 µm; 77–79 = 10 µm.

(Hawksworth & al., 1995). *Hugueninia* was introduced by Bezerra & Barros to accommodate species with a radiating ascostroma with asci developing at the periphery and growing horizontally inward. A tuft of vertically oriented pseudoparaphyses were also situated below the central ostiole. Ascospores were reported to be ovoid, bicellular and hyaline, becoming olivaceous brown at maturity (Bezerra & al., 1970). This appears to be a species of *Stomiopeltis* Theiss. (*sensu* Ellis, 1977) and is transferred above.

Doubtful or transferred species

13. **Auerswaldia merrillii** Henn, Hedwigia 47: 255. 1908.
≡ *Sphaerodothis merrillii* (Henn.) Theiss. & Syd., Ann. Mycol. 13: 578. 1915.

Type. – PHILIPPINES, Mindoro, Mt. Halcon, on leaves of *Freycinetia* sp., Nov. 1906, Merrill n. 5526, not seen.

The type material of this species is not available at B and is presumably destroyed.

Auerswaldia Sacc. is a tropical genus in which the species form pulvinate stromata containing several locules (Barr, 1987). Asci are thick-walled and bitunicate and the ellipsoidal ascospores are dark brown at maturity. There has been no recent account of the genus.

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

Sphaerodothis, on the other hand, are tar-spotting fungi, have unitunicate asci and dark brown, wide, unicellular ascospores (Hyde & Cannon, in prep). The description provided by Hennings (1908) give few clues to the identity of this species.

14. ***Clypeosphaeria stevensii*** Syd., Bernice P. Bishop Mus. Bull. 19: 107. 1925.

Type. – HAWAII, Keauhou, Kona, Bishop Estate Road, on stem of *Freycinetia* sp., 25 Jul. 1921, Stevens 992, not seen.

The type material of this species is listed as being available at BISH (Goos & Gowing, 1992), however, the herbarium sheets labelled as this species lack contents. The material is, therefore, presumably missing or destroyed. From the description provided by Stevens (1925) this may be a *Clypeosphaeria*. Type material or new collections, however, need to confirm this, and the species must therefore be considered doubtful.

15. ***Metasphaeria christophersenii*** Verona, Nuovo Giornale Botanico Italiano 39: 459. 1932.

Type. – SAMOA, Savai, on leaf on *Freycinetia samoensis* Warb., Oct. 1931, Christophersen n. 2945, Herb. Martelli (Inst. Bot., Università di Pisa), not seen.

I have been unable to locate the type of this species. *Metasphaeria* is no longer a valid genus (Hawksworth & al., 1995). From the description and diagram provided by Verona (1932), I am unsure of the affinities of this taxon and it must be considered doubtful.

16. ***Muyocopron freycinetiae*** (F. Stevens & R. W. Ryan) G. Arnaud ex Hyde, Sydowia 47: 208. 1995.

≡ *Peltella freycinetiae* F. Stevens & R. W. Ryan, Bernice P. Bishop. Mus. Bull. 19: 69. 1925.

Ascomata 200–350 µm diam., dull black, with superficial concentric rings, and a slightly raised central ositiolar dot. No contents found.

Material examined. – HAWAIIAN ISLANDS, Oahu, Wahiawa, on leaves of *Freycinetia arnotti*, 3 Jun. 1921, F. Stevens 977 (BISH).

The material examined is in poor condition. Stevens (1925) report ascomata to be 280 (28 in paper!) µm diam., carbonaceous, ostiolate with a fimbriate margin and aparaphysate, asci 55–60 × 26–

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

29 µm and spatulate, and ascospores 12–17 × 5–7 µm, 1-septate, hyaline and spatulate. This species may be identical to *Hugueninia freycinetiae*, but must be regarded as doubtful until new material is found.

There is confusion surrounding the *Muyocopron* (*Myiocopron*) names from *Freycinetia* and these are discussed by Hyde (1995).

17. ***Pyrenocyclus ambiguus*** Petr., Sydowia 9: 516. 1955.

Type. – HAWAII, Lauai, Mahana, on leaves of *Freycinetia arnotti*, Aug. 1910, Rock. (Not in W!) – not seen.

It has not been possible to locate type material of this monotypic genus introduced by Petrak (1955). A brief English translation is provided from Petrak's description.

Ascomata superficial, subcarbonaceous, rounded or ellipsoidal, scutate, widely dispersed; in section depressed hemisphaerical, 400–750 µm diam, 150–180 µm high, ostiolate. – Pseudoparaphyses 1–1.5 µm diam., filamentous, simple or branched, embedded in mucilage. – Asci 90–115 × 17–23 mm, 8-spored, cylindric-obclavate, short pedicellate, thick-walled. – Ascospores 19–26 × 7–11 µm, (1–)2-seriate, oblong-ellipsoidal or widely rounded, hyaline then olivaceous, 1-septate and striate.

This may be a *Muyocorpon* or *Microthyrium* and must be regarded as doubtful until type or fresh material is found.

References

Arx, J. A., von & E. Müller (1954). Die Gattungen der amerosporen Pyrenomyceten. – Beitr. Kryptogamenfl. Schweiz 11(1): 1–434.

Barr, M. E. (1987). Prodromus to class Loculoascomycetes. – Published by the author.

Batista, A. C. & A. F. Vittal (1960). A revision of the species of *Ellisiodothis* Theiss. – Atas Inst. Micol. Univ. Recife 1: 189–198.

Bezerra, J. L., T. T. Barros, & F. B. Leal (1970). *Hugueninia*, um novo genero da familia Microthyriaceae. – Publ. Inst. Mycol. Univ. Recife 643: 1–11.

Ellis, J. P. (1977). The genus *Stomiopeltis* in Britain. – Trans. Brit. Mycol. Soc. 68: 157–159.

Goos, R. D. & D. P. Gowing (1992). Type specimens of fungi maintained at Herbarium Pacificum, Bernice P. Bishop Museum, Honolulu. – Mycotaxon 43: 177–198.

Gucht, K. van der (1994). The Xylariaceae of Papua New Guinea. – PhD Thesis, Universiteit Gent, Belgium.

Harris, R. C. (1989). A sketch of the family Pyrenulaceae (Melanommatales) in Eastern North America. – Mem. N. Y. Bot. Gard. 49: 74–107.

Hawksworth, D. L., P. M. Kirk, B. C. Sutton & D. N. Pegler (1995). Ainsworth & Bisby's Dictionary of the Fungi. Ed. 8. – C.A.B. International, UK.

Verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

Hennings, P. (1908). Fungi paraënses. III. – Hedwigia 48: 101–117.
Höhnel, F. (1918). Mycologische Fragmente. – Ann. Mycol. 16: 35–174.
Hyde, K. D. (1995). Fungi from palms. XXI. The genus *Seynesia*. – Sydowia 47: 199–212.
——, (1996). Additions to the genus *Linocarpon*. – Bot. J. Linn. Soc. 123: 109–131.
Johnston, P. R. (1983). *Stictis* and its anamorphs in New Zealand. N.Z. J. Bot. 21: 249–279.
Ju, Y.-M. & J. D. Rogers (1996). A revision of the genus *Hypoxylon*. – Mycol. Mem. 20: 1–365.
Læssøe, T. & B. M. Spooner (1994). *Rosellinia* and *Astrocystis* (Xylariaceae): New species and generic concepts. – Kew Bull. 49: 1–70.
Mabberley, D. J. (1987). The Plant-Book. Cambridge, University Press.
McKenzie, E. H. C. & K. D. Hyde (1996). Index of fungi described from the Pandanaceae. – Mycotaxon 57: 125–144.
—— & —— (1997). Microfungi on Pandanaceae. In: Hyde, K. D. (ed.) Diversity of tropical microfungi, pp. 157–178. Hong Kong, University Press.
Miller, J. H. (1961). A monograph of the world species of *Hypoxylon*. – University of Georgia Press, Athens, USA.
Müller, E. & G. J. Samuels (1982). Anamorphs of pyrenomycetous Ascomycetes III. The *Sporoschisma* and *Chalara* anamorphs of *Melanochaeta aotearoae*. – Sydowia 35: 155–161.
Petrak, F. (1955). *Pyrenocyclus* n. gen., eine neue, den Parmulineen nahe stehende Pyrenomyzetengattung. – Sydowia 9: 515–517.
Pouzar, Z. (1985). Reassessment of the *Hypoxylon serpens* – complex II. Ceska Mycol. 39: 129–134.
Samuels, G. J. (1976). Perfect states of *Acremonium*. The genera *Nectria*, *Actiniopsis*, *Ijuhya*, *Neohenningsia*, *Ophiodictyon*, and *Peristomialis*. N. Z. J. Bot. 14: 231–260.
—— (1988). Fungicolous, lichenicolous, and myxomyceticolous species of *Hypocreopsis*, *Nectriopsis*, *Nectria*, *Peristomialis*, and *Trichonectria*. – Mem. NY Bot. Gard. 48: 1–78.
Sivanesan, A. & W. H. Hsieh (1989). New species and new records of ascomycetes from Taiwan. – Mycol. Res. 93: 340–351.
Stevens, F. L. (1925). Hawaiian fungi. – Bernice P. Bishop Mus. Bull. 19: 1–189.
Sydow, H. & P. Sydow (1917). Beitrag zur Kenntnis der Pilzflora der Philippinen-Inseln. – Ann. Mycol. 15: 165–268.
Verona, O. (1932). Note micologiche sulle Pandanaceae. – Nuovo G. Bot. Ital. n. s. 39: 454–476.
Willis, J. C. (1973). A Dictionary of the Flowering Plants and Ferns. Ed. 8. – Cambridge, University Press.

(Manuscript accepted 28th December 1996)

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: Sydowia

Jahr/Year: 1997

Band/Volume: 49

Autor(en)/Author(s): Hyde Kevin D.

Artikel/Article: Ascomycetes described on Freycinetia. 1-20