PERSOONIA
Published by the Rijksherbarium, Leiden
Volume 1, Part 1, pp. 15–19 (1959)

ON A NEW FAMILY OF THE SPHAERIALES

K. B. BOEDIJN
The Hague

(With three Text-figures)

Renewed study of the type material of species formerly described under *Xylaria* necessitates the recognition of a new family, for which the name Sarcostromellaceae Boedijn is proposed. This family comprises two new genera, *Sarcostromella* Boedijn and *Pseudoxylaria* Boedijn. *Sarcostromella polysticha* (Penz. & Sacc.) Boedijn and *Pseudoxylaria nigripes* (Kl.) Boedijn are new combinations, *S. amorpha* Boedijn is a new species. *Xylaria xanthophaea* Penz. & Sacc. appears identical with *S. polysticha*. *Xylaria torrubioides* Penz. & Sacc. is a synonym of *Pseudoxylaria nigripes*.

Among the Sphaeriales, the Xylariaceae take a prominent position, one of the chief characters being the presence of a long germ slit in the wall of the one-celled, dark coloured spores. The shape of the fructification is one of the main distinguishing features of the genus *Xylaria*; it always is an elongated, erect, simple or branched stroma which is either cylindrical, or more or less flattened, or club-shaped, and which bears the perithecia in a single layer. The latter are wholly immersed, more or less erumpent, or sometimes even nearly free. The consistency of the stroma is typically corky.

On account of their general shape, some species have been placed in *Xylaria* to which they certainly do not belong. Already von Höhnel (1) declared *Xylaria nigripes* to be entirely different from the typical species of that genus, noteworthy differences being the soft texture of the stroma, the very small spores, and the absence of a germ slit. Two other aberrant species, *Xylaria polysticha* and *X. xanthophaea*, were described by Penzig & Saccardo (2, 3, 4). However, examination of the type material, preserved in the Herbarium of the Botanical Gardens at Bogor, revealed that, firstly, *X. xanthophaea* is identical with *X. polysticha*, and, secondly, the latter is no true *Xylaria* either, since it is characterized by a fleshy and rather pale stroma, wholly immersed perithecia at several depths, and very small spores. Apart from this species, a second and closely related species was found at Bogor which seems undescribed. Both constitute a new genus, for which the name *Sarcostromella* is proposed. To accomodate *Xylaria nigripes* it is equally necessary to erect a new genus which is hereby called *Pseudoxylaria*. Both genera have to be removed from the Xylariaceae and ranged in a new family, the Sarcostromellaceae.

Sarcostromellaceae Boedijn, *nov. fam.*

Stromata carnosa vel subcarnosa, hemisphaerica, substipitata vel cylindrica saepe compressa, brunnea vel nigra. Perithecia ovata, mono- vel pluristicha, immersa. Ostiola omnia immersa vel prominula. Asci numerosi, cylindracei, octospori, paraphysibus destituti. Sporae uniseriatae, minutissimae, ellipsoideae vel amygdalinae, atrobrunneae, plerumque poris germinativis minutis praeditae.

Typus familiae: *Sarcostromella* Boedijn.

Fructifications fleshy to cartilaginous, variously shaped, either globose to flattened, sometimes weakly lobed and attenuate at the base into a more or less distinct stipe-like structure, or elongate, cylindrical and often slightly compressed, some shade of brown to nearly black. Perithecia ovoid to subangular, either in a single layer just beneath the cortex, or at several depths and deeply immersed. Ostioles long and canal-like or short and more or less protruding. Asci very numerous, filling nearly the whole inside of the perithecia, cylindrical, 8-spored. Spores very small, ellipsoid to almond-shaped, brown to blackish brown, with or without a minute germ pore.

Sarcostromella Boedijn, *nov. gen.*

Stromata hemisphaerica substipitata vel cylindrica, interdum compressa, carnosa, ochracea vel fulva. Perithecia profunde immersa, 3-6-sticha, ostiolis totis immersis. Asci numerosi, cylindracei, octospori, paraphysibus destituti. Sporae uniseriatae, minutissimae, amygdalinae, atrobrunneae, poris germinativis minutis praeditae.

Typus generis: *Sarcostromella polysticha* (Penz. & Sacc.) Boedijn.

Fructifications hemisphaerical, sometimes weakly lobed, somewhat flattened and substipitate, or cylindrical and often slightly compressed, fleshy, ochraceous to brown. Perithecia ovoid to subangular, wholly immersed and arranged at three to six depths, this number diminishing further downwards to two or one near the stipe. Ostioles long, canal-like and wholly immersed or protruding. Asci very numerous, cylindrical, 8-spored. Paraphyses absent. Spores 1-seriate, very small, almond-shaped, blackish brown, with very small germ pore at pointed end.

Since the walls of the old asci dissolve, the perithecia soon get filled with spores, but these are driven out through the ostioles by the new asci which are constantly being formed. The spores may be washed away from the surface of the fructification by rain, or perhaps insects act as distributing agents.

Sarcostromella polysticha (Penz. & Sacc.) Boedijn, *nov. comb.*

Xylaria polysticha Penz. & Sacc. *in* Malpighia **11**: 500. 1897. — Type: Java, Tjibodas (BO).
Xylaria xanthophaea Penz. & Sacc. *in* Malpighia **15**: 226. 1902. — Type: Java, Tjibodas (BO).

Fructifications cylindrical or club-shaped, mostly slightly compressed and with a more or less distinct stipe-like portion, at first brown, darkening with age, 2–5 cm long, the fertile part 7–12 mm, the stalk 4–7 mm wide. Perithecia at three to four depths, broadly ellipsoid, 400–690 × 370–460 μ. Perithecial wall very prominent, brown, 34–57 μ thick, consisting of brown, elongated cells, 2–4 μ wide. Ostioles canal-like, 80–138 μ diam., those of the deep-seated perithecia up to 1 mm long, mostly wholly filled with spores. Asci very numerous, filling nearly the whole inside of the perithecia, cylindrical, 8-spored, 42–50 × 4.5–6 μ. Spores uniseriate, very small, 5–7 × 3–4 μ, blackish brown, almond-shaped, with a minute germ

pore at the pointed end. Stroma of a typical fleshy structure, compactly plectenchymatic, colourless to somewhat tinted in the centre, consisting of moderately thick-walled to thick-walled hyphae, 2–6 μ diam., towards the surface with a brown layer of 60–80 μ.

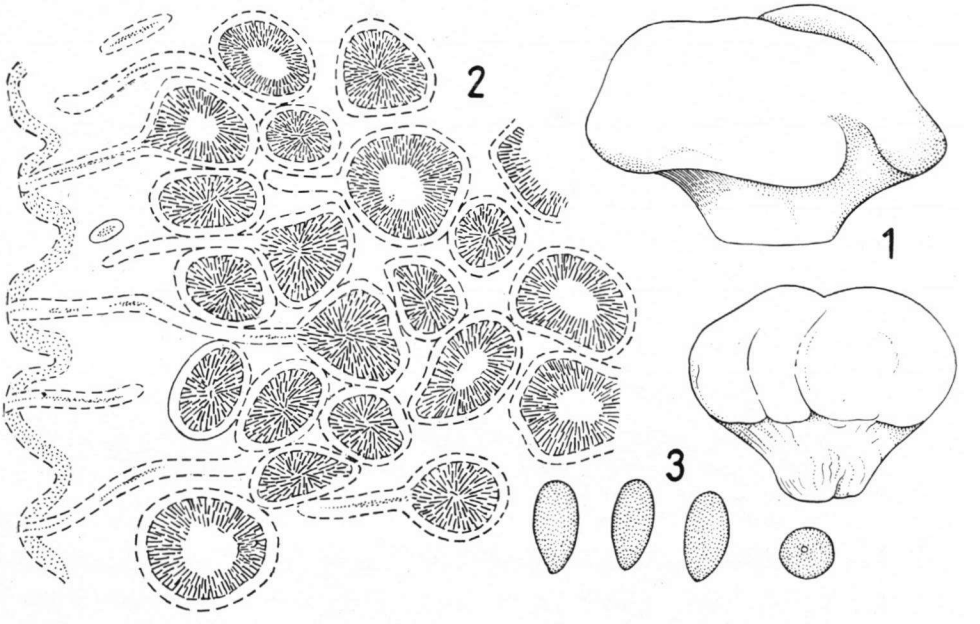
MATERIAL EXAMINED.—Java, Tjibodas, on wood, 1899, *Penzig*; Oct. 1938, *Boedijn 3305*; Nov. 1952, *Hoogland* (BO).

Sarcostromella amorpha Boedijn, *nov. spec.*

Stromata hemisphaerica, depressa, substipitata, 3–6 cm lata, 2.5–4 cm alta, sordide ochracea, carnoso-coriacea. Perithecia profunde immersa, 3–6-sticha, ellipsoidea vel subangularia, 400–700 × 300–500 μ. Ostiola usque ad 3 mm longa, 80–100 μ diam. Asci numerosi, cylindracei, octospori, 34–46 × 4–6 μ. Sporae uniseriatae, atrobrunneae, amygdalinae, 6–8 × 3.5–4 μ, poris germinativis minutis praeditae.

Typus: Java, Tjibodas, *Bruggeman 8851* (BO).

Fructifications irregularly tuberiform, with a more or less distinct stipe-like base, ochraceous, darkening on drying, 3–6 cm wide, 2.5–4 cm high, solid, becoming hollow when old. Surface finely granulated under a hand lense, each granule being the terminal of an ostiole. Perithecia at three to six depths, this number diminishing further downwards to two or one near the base, broadly ellipsoid to subangular, 400–700 × 300–500 μ. Perithecial wall 20–40 μ thick, very conspicuous even though nearly concolorous with surrounding stromatic tissue, consisting of rather indistinct, elongated cells of about 2 μ wide. Ostioles 80–100 μ wide, especially



Figs. 1–3. *Sarcostromella amorpha* Boedijn: 1—fructifications; 2—peripheral part of section, showing various depths of perithecia; 3—spores, one of which is shown from above to show the germ pore.

those of the deep-seated perithecia up to 3 mm long. Asci very numerous, filling nearly the whole inside of the perithecia, cylindrical, 8-spored, 34–46 × 4–6 μ. Spores uniseriate, small, 6–8 × 3.5–4 μ, blackish brown, almond-shaped, with a minute germ pore at the pointed end. Stroma fleshy-coriaceous, becoming very hard when dried, compactly plectenchymatic, weakly coloured, darkening on drying, consisting of moderately thick-walled hyphae, 4–6 μ diam.

MATERIAL EXAMINED. — Java, Tjibodas, on wood, Sept. 1924, *Bruggeman 8851* (BO).

Pseudoxylaria Boedijn, *nov. gen.*

Stromata cylindracea, simplicia vel parce ramosa, subcarnosa vel cartilaginea, stipite gracili, flexuosa, parte basali saepe sclerotiiformi. Perithecia monosticha, ostiolis prominentibus. Asci numerosi, cylindracei, octospori, paraphysibus destituti. Sporae uniseriatae, minutissimae, ellipsoideae, atrobrunneae, poris germinativis nullis.

Typus generis: *Pseudoxylaria nigripes* (Kl.) Boedijn.

Fructifications long, cylindrical, simple, rarely branched, somewhat fleshy to cartilaginous. Stalk greatly elongated and hidden in the soil, often springing from a sclerotium. Perithecia in a single layer just beneath the cortex, with protruding ostioles. Asci numerous, cylindrical, 8-spored, without paraphyses. Spores uniseriate, very small, ellipsoid, blackish brown, without a germ pore.

Pseudoxylaria nigripes (Kl.) Boedijn, *nov. comb.*

Sphaeria (*Cordyceps*) *nigripes* Kl. *in* Linnaea **7**: 203. 1832. — *Xylaria nigripes* (Kl.) Sacc., Syll. Fung. **9**: 527. 1891. — Type locality: "India orientalis".

Xylaria torrubioides Penz. & Sacc. *in* Malpighia **11**: 496. 1897. — Type: Java, Bogor (BO).

Fructifications elongate, cylindrical, rarely branched, 4–15 cm long, 1–6.5 mm wide, at first murky brown, soon becoming sooty. Stalk elongated into a root-like structure, hidden in the soil, up to 8 cm long, often springing from a large sclerotium. Perithecia in a single layer just beneath the cortex, globose to broadly ellipsoid, 345–450 × 242–400 μ, with protruding ostioles. Perithecial wall neatly defined, 11–15 μ thick, consisting of brown, flattened cells, 2–4 μ wide. Asci numerous, cylindrical, 8-spored, 48–54 × 4–5 μ, covering bottom and sides of the perithecia. Spores very small, 5–6.5 × 2.5–3 μ, blackish brown, ellipsoid, without a germ pore. Stroma somewhat fleshy to cartilaginous, plectenchymatic, brown in the centre, white near the periphery, consisting of rather thin-walled hyphae, but also mixed with some thick-walled, often tortuous threads of 3–6 μ diam. Cortex thin, brown, 11–23 μ. Preceding the formation of the perithecia, the stroma is covered with a palisade layer of conidiophores which produce the conidia, but these disappear when the perithecia are being developed. Conidiophores up to 25 μ long, 1.5–2 μ wide. Conidia colourless, 2.5–5 × 1.5–2 μ.

On old, deserted termite nests, known from Ceylon and Java, and probably occurring throughout the Malayan region.

Whether the present species always grows on termite nests is not known with certainty, since the root-like stem connecting the fungus with the nests is easily broken. Also, it is not clear for the same reason whether all fructifications arise from a sclerotium. To make sure about this, one would have to dig up the nests, but the undertaking is a difficult one which rarely yields success, since the nests are often deeply lodged. Once, after a nest had been excavated, 24 sclerotia were

found. These were blackish, globose or limoniform to ellipsoid, 2–7 × 1.5–5.5 cm.

Xylaria torrubioides Penz. & Sacc. is identical with the present species, but was based on poorly developed specimes, as could be ascertained by an examination of the type.

LITERATURE

1. HÖHNEL, F. VON, 1908. Fragmente zur Mykologie. *In* S.B. Akad. Wiss. Wien, math. naturw. Kl. **117**: 10–12, pl. 1–2.
2. PENZIG, O. & SACCARDO, P. A. 1897. Diagnoses fungorum novorum in insula Java collectorum. Series secunda. *In* Malpighia **11**: 500–501.
3. —— 1902. Idem. Series tertia. *In* Malpighia **15**: 226.
4. —— 1904. Icones fungorum javanicorum 30–31, pl. 21 fig. 4, pl. 22 fig. 3.
5. PETCH, T., 1906. The fungi of certain Termite nests (*Termes redemanni* Wasm.; and *T. obscuriceps* Wasm.). *In* Ann. roy. bot. Gdns, Peradeniya **3**: 185–270, 17 pl.
6. —— 1907. *Sclerotium stipitatum* Berk. & Curr. *In* Ann. mycol. **5**: 401–403, fig. 1.
7. —— 1913. Termite fungi: a resume. *In* Ann. roy. bot. Gdns, Peradeniya **5**: 303–341.