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Lichens and lichenicolous fungi of Laing Island (Papua New Guinea)

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Abstract: 63 Lichens and lichenicolous fungi are reported from Laing Island, a small coral island on the northern coast of Papua New Guinea. The following new combinations are made: *Anisomeridium anisolobum* (Müll.Arg.) Aptroot and *A. consobrinum* (Nyl.) Aptroot; the following species are described as new: *Arthonia arthoniicola* Diederich & Aptroot, *Enterographa deslooveri* Sérusiaux, *E. littoralis* Sipman & Sérusiaux, *Lecanographa laingiana* Diederich, Egea & Sipman, *Polymeridium campylothelioides* Aptroot & Sipman and *Porina gaumae* Aptroot & Sipman; several species are reported for the first time from Papua New Guinea, amongst which the following are of special interest: *Bactrospora leptoloma* (Müll.Arg.) Egea & Torrente, *Enterographa multiseptata* R.Sant., *Opegrapha vegae* R.Sant., *Pyrenula citriformis* R.C.Harris, and *Stirtonia obvallata* (Stirton) A.L.Smith.

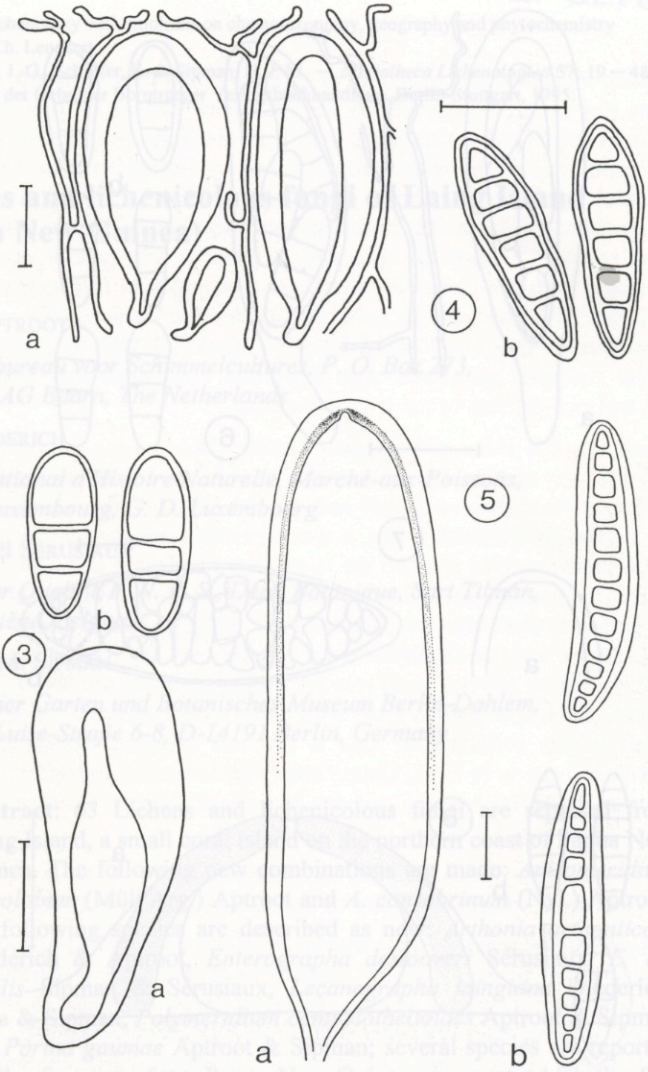

Fig. 3. *Arthonia arthoniicola* Diederich & Aptroot (type collection). a: ascus; b: spores. Scale = 10 µm.
Fig. 4. *Enterographa deslooveri* Sérusiaux (type collection). a: asci and paraphyses. b: spores. Scale = 10 µm.
Fig. 5. *Enterographa littoralis* Sipman & Sérusiaux (type collection). a: ascus; b: spores. Scale = 10 µm.

20 species from a single spot in such habitats). Apparently the proximity of open sea is disadvantageous for the foliicolous flora. The corticolous flora does not seem less varied than on inland sites, although there are no published comparable data available so far. A well-represented taxonomic group is the genus *Enterographa*, while Thelotremataceae are poorly represented when compared to inland virgin forest. No detailed observations were made on the species distribution within Laing Island or on phorophyte preferences. Remarkable, however, is the preference of a community dominated by *Enterographa* cf. *pallidella* for exposed tree trunks on the windward seashore.

Conspectus of species occurring on Laing Island

Anisomeridium anisolobum (Müll.Arg.) Aptroot *comb. nova*

Bas.: *Arthopyrenia anisoloba* Müll.Arg., *Flora* **66**: 305, 1883.

Specimens: *Aptroot 30206* (hb. Aptroot, LG); *Diederich 11643; Sérusiaux 13074; Sipman 34752, 34753*. Madang prov.: Near Bogia, mangrove island in mouth of Boroi river, *Aptroot 30415*; Kranket island near Madang, *Aptroot 31861*. Central prov.: Napa-Napa road, 9 km NW of Port Moresby, *Streimann & Naomi 16373*, 1981 (hb. Aptroot).

Anisomeridium anisolobum is treated here in a broad sense following HARRIS (1990: 31). A short description follows: thallus whitish to grey, UV-, smooth; ascomata perithecia, black, simple (often crowded and seemingly aggregated), 0.4-0.7 mm in diam., with an apical ostiole; asci clavate, c. 90 x 30 µm, with a rather thick wall; spores 8 per ascus, biseriate, smooth, straight, 1-septate with the lower cell smaller and the upper one larger, with rather rounded ends, 18-22 x 10-13 µm.

This species is widespread in the tropical and subtropical areas all over the world (HARRIS 1990: 31); it is reported here for the first time from Papua New Guinea where it is rather common in coastal areas.

The genus *Anisomeridium* is widespread, especially in coastal areas in the Tropics, and has been treated for Florida in the U. S. by HARRIS (1990: 29-35) under the generic name *Ditremis* Clements. As *Ditremis* has now been added to the list of names against which *Anisomeridium* is conserved (HAWKSWORTH 1993: 133), it is necessary to make the formal combinations of several epithets in that genus.

Anisomeridium consobrinum (Nyl.) Aptroot *comb. nova*

Bas.: *Verrucaria consobrina* Nyl., *Ann. Sci. Nat., Bot.*, sér. 4, **15**: 53, 1861.

Specimens: *Aptroot 30192, 30244; Diederich 11624, 11625, 11642; Sérusiaux 13064, 13065; Sipman 34749, 34750*; on *Xylocarpus*, *Lambinon 87.163*, 1987 (LG). Madang prov.: Madang city, *Aptroot 17494*, 1987. Central prov.: Motupore Island, 12 km SE of Port Moresby, *Aptroot 17241*, 1987.

The species is rather common on Laing Island and is easily distinguished by its white thallus containing lichexanthone and thus giving a yellow-orange fluorescence under UV light. A short description follows: thallus whitish to pale greenish grey, UV+ yellow (often only partly), smooth; ascomata perithecia, black, simple, 0.3-0.5 mm in diam. with an apical ostiole; asci cylindrical, c. 150 x 20 µm; spores 8 per ascus, often uniseriate, smooth, straight, ellipsoid, 1-septate, cells equal or slightly unequal, with rather pointed ends, 22-26 x 9-10 µm.

Anisomeridium consobrinum has been described from New Caledonia; as it is one of the most common lichens on Laing Island, it can be expected to have a large distribution. It is new for Papua New Guinea.

Anisomeridium tamarindi (Fée) R.C.Harris

Specimens: *Sipman 34751*. Madang prov.: Madang city, *Aptroot 17497*, 1987; near Bogia, E of Boroi river mouth, *Aptroot 30591*.

Anisomeridium tamarindi can be shortly described as follows (see also HARRIS 1990: 29): thallus whitish, UV-, smooth; ascomata perithecia, black, simple, 0.3-0.5 mm in diam. with an apical ostiole; asci cylindrical, c. 60 x 10 µm; spores 8 per ascus, mostly uniseriate, smooth, slightly bent, fusiform, 1-septate, cells equal with pointed ends, 14-18 x 4.5-5.5 µm.

This species is also known from the Neotropics and Africa (HARRIS 1990: 34) and is probably pantropical. It is new for Papua New Guinea.

Anthracothecium columellatum (Vain.) Zahlbr.

Specimens: *Diederich 11634; Sérusiaux 13068; Sipman 34754*. Madang prov.: Near Bogia, mangrove island in mouth of Boroi River, *Aptroot 30365*; along road Bogia-Josephstaal, *Aptroot 30638, 30639, 30670*; Burbura logging site, 30 km NNW of Madang, *Aptroot 30745, 30768*; Balek Wildlife Reserve, 15 km S of Madang, *Aptroot 30922*; Gogol valley, 30 km W of Madang, *Aptroot 32944, 32947, 33039, 33055*; foothills of Finisterre range along road Madang-Lae, at km 39 from Madang, *Aptroot 33213, 33350*; at km 44 from Madang, *Aptroot 33253*.

HARRIS (1989: 78) provides a workable, albeit polyphyletic, circumscription of the genus. *Anthracothecium columellatum* can be shortly described as follows: thallus greenish brown, corticate, smooth; ascomata perithecia, black, partly covered by the thallus or exposed, simple, 1-2 mm in diam. with an apical ostiole; hamathecium inspersed, I+ red; spores 2-4 per ascus, grey, densely muriform with c. 25 x 3 septa, 120-180 (-220) x 25-40 µm.

This species has a wide distribution in SE Asia and in tropical Australia (type locality in the Philippines); it is however new for Papua New Guinea. It is a conspicuous species in lowland forests along the northern coast.

Arthonia arthoniicola Diederich & Aptroot *spec. nova* (Figs. 1a & 3)

Fungus in thallo *Arthoniae catenulatae* incolens. Ascomata minuta, atrobrunnea, circularia, 60-100(-150) µm diam., in sectione 60-90 µm alta; epithecio indistincto; hymenio et hypothecio hyalinis vel pallide rufescentibus, I+ rubris, KI+ caeruleis; sporis 2-septatis, macrocephalis, oblongo-ovoideis, hyalinis, sed demum brunneo-verruculosis, 14-16.5 x 5.5-7 µm. Pycnidia immersa, nigra, 25-50 µm diam., conidiis filiformibus, 16-18 x 0.5-0.9 µm.

Commensalistic on the thallus of *Arthonia catenulata*, without any thallus of its own.

Ascomata apothecia, scattered, immersed in the host thallus or hymenium, more or less rounded, 60-100(-150) µm in diam., dark brown to black, epruinose, in section 60-90 µm tall. Exciple-like zone reddish brown, K+ olivaceous, 6-15 µm thick; hymenium 50-60 µm tall, hyaline to pale brownish, K+ pale olivaceous, I+ red, KI+ blue; hypothecium 10-20 µm tall, pale reddish brown, K+ pale olivaceous, I+ red, KI+ blue; paraphysoids rather scanty, hyaline, c. 1 µm thick, branched, apically slightly enlarged; epithecium indistinct; asci clavate, 39-43 x 14-17 µm; spores 8 per ascus, oblong-ovoid, always 2-septate, macrocephalic, hyaline and smooth, with a thin perispore getting brownish and distinctly granulose at maturity, 14-16.5 x 5.5-7 µm (measured in KOH). Pycnidia not rare, immersed in the host thallus, blackish, 25-50 µm in diam., wall reddish brown, K- (brownish), 5-6 µm thick; conidiogenous cells hyaline, ovoid, 3-3.5 x 2-2.5 µm; conidia filiform, more or less curved, 16-18 x 0.5-0.9 µm (measured in water).

Type: Papua New Guinea, Madang prov., Laing Island in Hansa Bay near Bogia, on *Arthonia catenulata* epiphytic in coastal forest on coral island, *Aptroot 30233*, 1992 (B-holotype; UPNG-isotype).

The new species strongly resembles two other lichenicolous species of *Arthonia*, both growing on lichens with *Trentepohlia* as photobiont (Coppins 1989: 213-216):

- *A. graphidicola* Coppins differs in having brown to dark brown, but never blackish, often elongate and larger apothecia, narrower ascospores (4.5-5.5 µm wide), which are often 3-septate, much shorter conidia (4.5-5 µm long) and a different host (*Graphis scripta* (L.) Ach.);

- *A. thelotrematis* Coppins differs in having larger, often elongate, sometimes slightly branched or stellate apothecia, a distinct reddish-brown epithecium and hymenium, smaller ascospores (11-14 x 4.5-5 µm), which are generally 3-septate and in being parasitic on a different host (*Thelotrema lepadinum* (Ach.) Ach.).

Arthonia arthoniicola has much longer conidia than most other species in the genus. One can assume that those pycnidia actually belong to this commensalistic species: they are common in the infected areas and are absent in the non-

infected parts of the host thallus. As the conidia are similar to those known in other species of *Arthonia*, it can be argued that they do not belong to an additional lichenicolous coelomycete.

The apothecia often show a distinct, thin, reddish-brown exciple-like zone, similar to what was found by COPPINS (1989) in other species of the genus (*e. g. A. elegans* (Ach.) Almq., *A. excipienda* (Nyl.) Leighton, *A. punctiformis* Ach.).

Arthonia catenulata Nyl.

Specimens: *Aptroot 30183; Diederich 11665, 11666; Sérusiaux 13051; Sipman 34755, 34756*. Madang prov.: Near Bogia, coastal forest E of Boroi river mouth, *Diederich 11854*; Madang city, near Coastwatchers monument, *Aptroot 30036*; Tongu, *Aptroot 30274*. Central prov.: Motupore Island, 12 km SE of Port Moresby, *Aptroot 17246*, 1987. Morobe prov.: 3 km NW of Musum in Busom valley, *Aptroot 18176*, 1987.

The identification of these specimens as *Arthonia catenulata* Nyl. was made following AWASTHI (1991: 37-41) and is provisional as no specimens from the Andaman Islands (the type locality) were examined. To our knowledge, this species has never been reported elsewhere. A short description of our material follows: variable species with a conspicuous white thallus reacting I+ blue, and small, aggregated, stellate-branched, pale orange-brownish to almost black ascomata; hymenium I+ blue; spores 8 per ascus, large, ellipsoid, with an enlarged end cell, (4-)5-7(-8)-septate, (33-) 47-53 x (12-) 16-19 µm.

Arthonia cyanea Müll.Arg.

Specimen: on leaves of *Neisosperma oppositifolia, J. R. De Sloover 87L50*, 1987 (LG).

A common foliicolous species, reported from S America and SE Asia by SANTESSON (1952: 78-79), and later from Central and East Africa (SÉRUSIAUX 1984: 284, FARKAS 1987: 48) and from Papua New Guinea (APTROOT & SIPMAN 1991: 224). Description available in SANTESSON (1952: 78).

Arthopyrenia cf. ***cinchonae*** (Ach.) Müll.Arg.

Specimen: *Aptroot 30208*.

A good description of *A. cinchonae* is provided by HARRIS (1975: 47-48). The specimen from Laing Island is closely related but cannot be definitely referred to that species as its spores are somewhat larger (25-32 x 7-12 µm versus 20-30 x 7-9.5(-11) µm according to HARRIS).

Arthopyrenia cinchonae is widespread in the tropics and subtropics in the New World.

Arthothelium cf. ***ampliatum*** (Knight & Mitt.) Müll.Arg.

Specimens: *Aptroot 30193, 30216; Diederich 11667; Sérusiaux 13080; Sipman 34758*. Madang prov.: Near Bogia, coastal forest E of Boroi river mouth, *Diederich 11684, 11746*.

A conspicuous species, common on dead decorticated wood, with black, rounded, shallowly lobate or ± elongated ascomata (up to 1.5 mm long); hymenium I+ reddish above and pale blue below; spores (2-)6-8 per ascus, ellipsoid and ± macrocephalic, muriform except for the upper larger cell (which remains simple), hyaline, 40-50 x 16-20 µm.

Arthothelium Massal. is a poorly known genus and there are several described species with macrocephalic spores with one large undivided cell at one end. We are not able to identify our collections further and we leave them as *A.* cf. *ampliatum* as this epithet has been used by SZATALA (1956: 25) for material from the West Sepik province in Papua New Guinea.

Bacidina apiahica (Müll.Arg.) Vězda

Specimen: on leaves of *Diospyros marina*, *J. R. De Sloover 87L49*, 1987 (LG).

An inconspicuous, pantropical species, first reported from Papua New Guinea by APTROOT & SIPMAN (1993a: 132). Description available in SANTESSON (1952: 442-443).

Bactrospora leptoloma (Müll.Arg.) Egea & Torrente

Specimens: *Aptroot 30196*; *Diederich 11602; Sipman 34756a*. Madang prov.: Manam Island, in plantation near Budua, *Aptroot 30472*.

The genus *Bactrospora* Massal. (Opegraphales) has just been monographed by EGEA & TORRENTE (1993a) and is widespread in tropical and temperate areas all over the world. It has not yet been included in the cladistic analysis of TEHLER (1990, 1993) but seems nevertheless to be monophyletic. The species with "*dryina*-type" and "*patellarioides*-type" spores have long, cylindrical asci while those with "*jenikii*-type" and "*homalotropa*-type" spores have clavate, shorter asci (see Fig. 11E of EGEA & TORRENTE, *l. c.*). Both groups may warrant taxonomic recognition, *e. g.* at the subgeneric level.

Bactrospora leptoloma was formerly known only from the type collection on Victoria Island, between Singapore and Sarawak (Malaysia). Description available in EGEA & TORRENTE (1993a: 240).

Bactrospora metabola (Nyl.) Egea & Torrente

Specimens: *Sérusiaux 13090; Sipman 34762*. Madang prov.: Mouth of the Boroi river, mangrove forest, on *Rhizophora*, *Aptroot 30413*; Tongu, along the road Bogia-Josephstaal, secondary forest near a village, 330 m, on *Intsia*, *Aptroot 30660*.

This species is easily distinguished from all other described *Bactrospora* species by its muriform spores with a central constriction. Its spores belong to the "*homalotropa*-type" (see EGEA & TORRENTE 1993a: 214, Fig. 2); they first develop 7-8 transverse septa before being constricted and eventually bent at the middle (at this stage they are similar to the "*jenikii*-type"); each cell eventually breaks up ± regularly into 4 (rarely more) cells, leading to a muriform spore; they thus have 15-16 transverse septa with (0-)1 longitudinal septum in each cell. These features are unique in the genus.

Bactrospora metabola is not included in the monograph of the genus (EGEA & TORRENTE 1993a) but has just been added to it (EGEA & TORRENTE 1994a). Its presence on Laing Island is mentioned in that paper. *Bactrospora metabola* is otherwise known from India ("Insula Andaman"), New Caledonia and New Zealand.

Bulbothrix goebelii (Zenker) Hale

Specimen: *Sérusiaux 13058.*

A common pantropical species, already known from Papua New Guinea (HALE 1976: 15). Description available in HALE (1976: 14-15).

Caloplaca byrsonimae Malme

Specimens: *Aptroot 30221.* Madang prov.: Near Bogia, coastal forest E of Boroi river mouth, *Diederich 11791.* Central prov.: Motupore, 12 km SE of Port Moresby, *Aptroot*, 1987.

Caloplaca byrsonimae is an isidiate species, usually sterile, which is probably pantropical; it is however reported here for the first time from Asia. Description available in MALME (1926: 33-34).

Coccocarpia palmicola (Sprengel) Arvidsson & Galloway

Specimens: *Aptroot 30188; Sérusiaux 13078.*

A common species in tropical and subtropical areas, also found in temperate zones in Eastern North America, in Australia and New Zealand, known from Papua New Guinea (ARVIDSSON 1982: 76). Description available in ARVIDSSON (1982: 72-75).

Collema rugosum Kremp.

Specimens: *Aptroot 30205, 30211; Diederich 11615; Sérusiaux 13069; Sipman 34763.*

A widespread species in E Africa, Asia, and the Pacific Islands, incl. Hawaii, already known from Papua New Guinea (DEGELIUS 1974: 154), common along the coasts. Description available in DEGELIUS (1974: 150-155).

Cresponea proximata (Nyl.) Egea & Torrente

Specimens: *Sérusiaux 13089; Sipman 34765*. Madang prov.: Near Bogia, mangrove island in mouth of Boroi river, *Diederich 11669, 11670 & 11736*; near Bogia, coastal forest E of Boroi river mouth, *Diederich 11828*; Burbura logging site, c. 35 km NNW of Madang, *Diederich 11945*; Gogol valley, c. 30 km W of Madang, *Diederich 12081*.

The genus *Cresponea* Egea & Torrente has just been segregated from *Lecanactis* Koerb. by EGEA & TORRENTE (1993b) on the basis of excipular hyphae and ascus structure characters. *C. proximata* is here first reported from Papua New Guinea. The species is otherwise known in the Neotropics (up North to S Florida) and in SE Asia (up to Japan). Description available in EGEA & TORRENTE (1993b: 328-330).

Cryptolechia subincolorella (Nyl.) D.Hawksw. & Dibben

Specimens: *Diederich 11609 & 11610; Sérusiaux 13073; Sipman 34764*. Madang prov.: Madang City, *Aptroot 17468, 17946, 17508*, 1987; ibid., *30089, 30118, 30127, 30140, 30157*; ibid., *Sérusiaux 13004*; Karkar Island, *Aptroot 17624*, 1987. Central prov.: Motupore Island, 12 km SE of Port Moresby, *Aptroot 17239*, 1987.

A short description of this little-known species follows: thallus pale greenish grey; ascomata apothecia, c. 0.3 mm in diam., emergent, with flesh-coloured, concave disc; hymenium 75 µm high, I+ pale blue; paraphyses with slightly inflated apices; asci thin-walled, not thickened at apices; spores c. 16 per ascus, elongate with obtuse ends, 3-septate, hyaline, 10-12 x 4 µm.

Cryptolechia subincolorella was described from New Caledonia and, as it is not rare in coastal and lowland areas of Papua New Guinea, most probably has a wide distribution. It is reported as new from Papua New Guinea.

Cryptothecia lunulata (Zahlbr.) Makhija & Patwardhan

Specimen: *Diederich 11630* (hb. Diederich, LG).

This species is already known from Papua New Guinea (New Britain: STREIMANN 1986: 24, under *Arthothelium lunulatum* Zahlbr.) and is briefly described in MAKHIJA & PATWARDHAN (1987: 46). It is rarely collected and seems to be restricted to India and SE Asia.

Dirinaria applanata (Fée) Awasthi

Specimens: *Aptroot 30230; Diederich 11621; Iserentant 9806*, 1979 (LG); *Sérusiaux 13056; Sipman 34769*.

A common, pantropical and ubiquitous species, already known from Papua New Guinea (STREIMANN 1990: 260). Description available in SWINSCOW & KROG (1988: 78-80).

Dirinaria picta (Swartz) Clements & Shear

Specimens: *Aptroot 30226; Diederich 11622.*

A common, ubiquitous species in tropical and subtropical areas, already known from Papua New Guinea (AWASTHI 1975: 76). Description available in SWINSCOW & KROG (1988: 82).

Enterographa deslooveri Sérusiaux *spec. nova* (Figs. 1b & 4)

Thallus crustaceus, epiphyllus, pallide caeruleo-viridis, pubescens sub lente. Ascomata lirellina, primo simplicia, leviter elongata et 0.1(0.2) x 0.2-0.3 mm metientia, postremo irregularia, 2-8 ramulis et 0.4-0.5 mm longa; disco pallide griseo-brunneolo; excipulo vix distincto; paraphysibus ramosis anastomosantibusque; hypothecio hyalino; epithecio cum numerosis minutis crystallis; ascis 30-40 x 15-20 µm longis; sporis fusiformibus, 5-septatis, 18-24 x 4-5 µm, perisporio 1-2 µm crasso incluso.

Thallus foliicolous, formed of small and very irregular patches, eventually coalescing but never forming large and continuous thalli, never covering large surfaces of the leaves on which they grow, the biggest patches reaching 2 mm in diam., pale bluish green or pale green, surface downy under high magnification, no prothallus. Photobiont: a species of *Phycopeltis*, not forming regular plates, nor arranged in regular rows of cells. TLC: no compounds detected. Colour reactions of the thallus: K- and C-. Ascomata lirelliform, first appearing as a whitish, more or less prominent dot on the surface; young ones are simple, prominent, slightly elongated and measure 0.1(-0.2) x 0.2-0.3 mm; old ones can be extremely irregular, much branched with 2-8 branches of different size and thickness, and reach 0.4-0.5 mm in length, rarely exceeding 50 µm in height; disc open, pale grey brown, sometimes with a violet tinge; margin white, poorly delimited and not prominent, but usually reaching 0.1 mm in width, downy to byssoid. Excipuloid tissue hardly distinct from nearby paraphysoids, very thin; hypothecium hyaline, less than 10 µm high, made of interwoven thin-walled hyphae; paraphysoids numerous, branched and anastomosed, much branched in the epithecium; epithecium very dense, up to 5-8 µm thick, filled with numerous small hyaline crystals; asci embedded in the dense network of paraphysoids, sometimes not numerous, broadly ellipsoid, thick-walled, without any visible structure at the apex, inner content reacting KI+ reddish brown, 30-40 x 15-20 µm; spores 8 per ascus, fusiform, 5-septate, with a thin but distinct perispore (1-2 µm thick), 18-24 x 4-5 µm. Pycnidia not found.

Type: Papua New Guinea, Madang prov., Manam Island, near Waris, coastal forest, foliicolous, *J. R. De Sloover 87L46*, 1987 (LG-holotype; B, hb. Aptroot, hb. Lücking, hb. Vězda, UPNG-isotypes).

Other specimens: Laing Island, on leaves of *Diospyros marina*, *J. R. De Sloover 87L49*, 1987 (LG). Madang prov.: Boroi river, mangrove island in the mouth of the river, foliicolous, *Sérusiaux 13200*.

This new species is related to *E. angustissima* (Vain.) R.Sant., another foliicolous species with 5-septate and slightly halonate spores, and a hyaline hypothecium. It is easily distinguished by the very thin, sometimes hardly visible thallus formed by bluish green patches and by its downy, poorly delimited ascomatal margins.

Although no ontogenetic studies were made, it is assumed that the carpocentrum originates under the thallus and that the epithecium and the byssoid margin of the ascomata are formed by the necrosed algal layer: fragments of hyphae embedded by small but numerous crystals can be seen in the epithecium and the margin is entirely made of short, interwoven hyphae covered by similar crystals. The fertile tissue expands under the thallus which is pushed upwards and destroyed. The ascomatal "margins" are therefore merely remains of the thallus and not genuine margins.

Key to the foliicolous species of *Enterographa*:

(LÜCKING 1991: 272-273; SANTESSON 1952: 104-108; SÉRUSIAUX 1984: 292-298; VĚZDA 1975: 389-390)

1a Hypothecium hyaline, or at most pale brown in upper parts 2
1b Hypothecium brown to dark brown 6

2a Spores 3-5-septate 3
2b Spores 7-septate 4

3a Thallus made of pale greenish, slightly convex patches with a smooth surface; ascomata linear or rarely slightly branched with a white, smooth or hardly byssoid, non spreading margin; known from Brazil, Costa Rica and the Philippines ..... *E. angustissima* (Vain.) R.Sant.
3b Thallus made of pale bluish, flat patches with a downy surface, sometimes hardly visible; ascomata first elongated and with a wide open disc and eventually much and irregularly branched, with a white, downy to byssoid, spreading margin; known from Papua New Guinea ..... *E. deslooveri* Sérusiaux

4a Ascomata with a thick byssoid margin; known from Costa Rica ..... *E. byssoidea* Lücking
4b Ascomata with a smooth or hardly byssoid margin 5

5a Thallus green to greenish grey; ascomata with a yellowish green margin, 0.5-0.8(-1.0) x 0.15-0.2 mm, not exceeding 0.1 mm in height; spores up to 4-5 µm wide with a 3-4 µm thick halo; known from New Zealand ..... *E. bella* R.Sant.
5b Thallus ash green to grey green; ascomata with a whitish margin, 0.3-1.3 x 0.5 mm, up to 0.2 mm in height; spores less than 3.5 µm wide and with a 1.5 µm thick halo; known from Tanzania ..... *E. effusa* Vězda

6a Ascomata simple, or (bi-)trifid, with a wide, orange-brown or sometimes almost red disc; spores 18-21 x 4-5 µm with a 2 µm thick halo; known from New Zealand ..... *E. bartlettii* Sérusiaux

6b Ascomata rarely simple, usually with 3-6 branches, sometimes stellate, with a linear, brown to dark brown disc; spores (26-)27-29(-30) x 3-4 µm with a thin (less than 0.5 µm) halo; known from the Seychelles Islands, Sri Lanka and Papua New Guinea ..... *E. multiseptata* R.Sant.

Enterographa littoralis Sipman & Sérusiaux *spec. nova* (Figs. 1c & 5).

Thallus crustaceus, corticola, cinereoalbus, opacus, ecorticatus, continuus, c. 100-200 µm crassus, acidum psoromicum continens. Ascomata punctiformia, plusminusve in lineis radiatim ramosis disposita; disco 0.05-0.1 mm lato fusco; excipulo evanescente; hymenio 120-160 µm alto, I+ caerulescente; hypothecio pallido; ascis c. 100 x 25 µm; sporis anguste fusiformibus, 9-septatis, 45-55 x 6-8 µm, perisporio 2-3 µm crasso incluso.

Thallus crustose, corticolous, off-white to very pale greenish grey, dull, forming patches several cm in diam., without distinct hypothallus, ecorticate, continuous with a few irregular fissures; in transverse sections c. 100-200 µm thick, epiphloeodal, without differentiated cortical layer, filled with small crystals which disappear in KOH solution and with scattered, large (c. 20 µm diam.) crystals and *Trentepohlia*-type algae spread in the upper 75 µm. TLC: psoromic acid, with unidentified spots that probably include stictic acid. Colour reactions of the thallus: P+ dense yellow, K+ weakly yellow to orange, C- and KC-.

Ascomata punctiform, c. 0.05 mm diam., more or less clearly arranged in stellate-branched lines, discs brown to dark brown, often surrounded by slightly raised, paler thallus tissue, with age widening to c. 0.1 mm and confluent, easily separating from the surrounding thallus.

Exciple unapparent; hymenium c. 120-160 µm high, I+ blue (before and after KOH treatment); hypothecium hyaline; paraphysoids branched and anastomosed; asci c. 100 x 25 µm, slightly thickened at the apex with a small ocular chamber, I- before KOH treatment and after KOH treatment with an I+ blue inner layer which is thickest near the apex and stains strongest around the ocular chamber, thus forming an K/I+ blue apical ring; spores 8 per ascus, elongate-fusiform, 9(-13)-septate, surrounded by a 2-3 µm thick perispore, 45-55 x 6-8 µm.

Type: Papua New Guinea, Madang prov., Laing Island in Hansa Bay near Bogia, epiphyte in coastal forest on coral island, *Sipman 34771*, 1992 (B-holotype; UPNG-isotype).

Other specimens: Same locality as the type, *Diederich 11641; Sérusiaux 13088*.

This new species fits well in the genus as defined by TORRENTE & EGEA (1989: 186). The other currently known corticolous *Enterographa* species with puncti-

form discs and pluricellular spores differ by their smaller and less-septate spores. The European *E. elaborata* (Lyell) Coppins & James (PURVIS *et al.* 1992: 242) may be closely related as it also has large and pluri-septate spores and as it also produces psoromic acid. Its ascomata are however elongated and stellate-branched, and not punctiform as in *E. littoralis*.

Enterographa littoralis is known so far only from Laing Island where it is rare; it grows on well-lit and exposed tree trunks; associated species include *Anisomeridium consobrinum*.

Enterographa multiseptata R.Sant.

Specimens: on leaves of *Neisosperma oppositifolia*, *J. R. De Sloover 87L50*, 1987 (LG). Madang prov., Manam Island, near Waris, coastal forest, on leaves of *Calophyllum inophyllum* and of an undetermined tree, *J. R. De Sloover 87L47 & 45*, 1987 (LG).

A rare species, first described on bamboo culms in Sri Lanka, later reported on living leaves in the Seychelles Islands (SÉRUSIAUX 1984: 295-298). It is new for Papua New Guinea. Description available in SANTESSON (1952: 108).

Enterographa cf. ***pallidella*** (Nyl.) Redinger

Specimens: *Diederich 11659, 11660; Sérusiaux 13061; Sipman 34770*. Other specimens from elsewhere in Papua New Guinea too numerous to list individually.

This species is very common along the coasts in Papua New Guinea. Our material matches quite well the description provided by REDINGER (1938: 61-62), except that the spores have up to 11 septa (and not only 7 as in REDINGER's description). Moreover, HARRIS (1990: 42) states that the type collection, gathered on the Hawaiian Islands, contains no lichen substances, while our specimens produce psoromic acid. HARRIS (*l. c.*) separates the closely related populations from SE of the U. S. as *E. lecanoroides* R.C.Harris. This aggregate clearly needs further investigation in Papua New Guinea.

Enterographa pallidella is reported from India, Japan, Tahiti and the Hawaiian Islands by REDINGER (1938: 61-62).

Enterographa praepallens (Nyl.) Awasthi

Specimens: *Diederich 11658*. Madang prov.: Madang city, *Diederich 11563*.

These specimens, found on bark, were identified as *E. praepallens* following AWASTHI (1991: 122), a species described on rocks from Japan and also reported from Sri Lanka. Our material shows 5-7-septate spores while the description of AWASTHI says they are 5-septate: this small discrepancy may be meaningless.

Graphina streblocarpa (Bél.) Müll.Arg.

Specimens: *Sipman 34772*. Madang prov.: Karkar Island, *Aptroot 17761*, 1987. Central prov.: 5 km NW of Brown River, 50 km NW of Port Moresby, *Aptroot 17302*, 1987.

This species is most probably pantropical, and is reported here for the first time from Papua New Guinea. Description available in REDINGER (1936: 81-84).

Graphis caesiella Vain.

Specimens: *Aptroot 30237, 30243; Diederich 11662, 11663, 11664; Sérusiaux 13072; Sipman 34773, 34774*. Other specimens from elsewhere in Papua New Guinea too numerous to list individually.

Probably a pantropical species, reported here as new for Papua New Guinea. It belongs to the poorly understood group of tropical "*Eu-Graphis*" very much in need of revision. Description available in WIRTH & HALE (1978: 18-19, under *G. leptocarpa* Fée).

Graphis dumastii Fée *s. l.*

Specimens: *Iserentant 9806*, 1979 (LG); *Sipman 34775 & 34776*. Other specimens from elsewhere on Papua New Guinea too numerous to list individually.

A member of the group of fissurine species of *Graphis*, also hardly understood. The epithet *dumastii* is therefore used in a broad sense. Description available in REDINGER (1936: 48 & 63) and in WIRTH & HALE (1978: 23-24, under *G. triticea* Nyl.).

Graphis leptocarpa Ach.

Specimen: *Aptroot 30236*. Other specimens from elsewhere in Papua New Guinea too numerous to list individually.

A second representative of "*Eu-Graphis*", probably pantropical and here reported for the first time from Papua New Guinea. Description available in REDINGER (1936: 47) and in WIRTH & HALE (1978: 18-19).

Graphis lineola Ach.

Specimen: *Aptroot 30200*. Other specimens from elsewhere in Papua New Guinea too numerous to list individually.

A third member of the "*Eu-Graphis*" group, also probably pantropical and here reported for the first time from Papua New Guinea. Description available in REDINGER (1936: 47) and in WIRTH & HALE (1978: 18-19, under *G. leptocarpa* Fée).

Lecanographa laingiana Diederich, Egea & Sipman, *spec. nova* (Figs. 2d, 2d' & 6)

Thallus albidus, ecorticatus, cum pruina viridi-flava, 50-100 µm crassa, cum *Trentepohlia*. Ascomata atrobunnea ad nigra, cum pruina viridi-flava, rotundata

ad lirellata, 0.2-0.4(-1.0) x 0.12-0.2(-0.3) mm, sessilia, basim constricta, disco exposito, margine deminuto, raro disco margine prominente tecto; excipulo atrobrunneo, sub hymenio continuo; epithecio granulato, flavido, cum crystallis in KOH diffluentibus solutione lutea; hymenio hyalino vel pallide brunneolo, 40-50 µm, I+ rubro, KI+ caeruleo, cum fasciis hymenialibus; subhymenio rufo ad atrobrunneo; paraphysibus ramosis anastomosantibusque; ascis e typo *grumulosa*, 35-40 x 8-11 µm, 8-sporis; sporis ellipsoideis, 3(-4)-septatis, 10-12.5 x 3-4 µm cum perisporio 1 µm crasso, post maturitatem brunneolis et verruculosis. Pycnidia 50-70 µm, epruinosa, pariete fusco, K+ olivaceo, conidiis bacilliformibus, non septatis, 3.5-5 x 0.6-0.8 µm.

Thallus white, ecorticate, 50-100 µm thick, often delimited by a blackish, rarely pale, prothallus, often covered by a thick greenish yellow pruina, with crystals 3-14 µm in diam. Photobiont: a species of *Trentepohlia*. Colour reactions of the thallus: K-, C-, UV-. Ascomata rounded to short-lirellate, rarely elongate or branched, dark brown to black, generally covered by a thick greenish yellow pruina, small, 0.2-0.4(-1.0) x 0.12-0.2(-0.3) mm, sessile, with a narrower base; disc generally exposed with a reduced margin, but sometimes disc slit-like and covered by a prominent margin. Exciple continuous under the hymenium, extending into the substratum, dark brown to black, K+ olivaceous, 35-45 µm thick; hymenium hyaline or pale brownish, with hymenial strands (*sensu* TEHLER 1990: 2465), 40-50 µm thick, I+ red, KI+ blue; subhymenium reddish brown to dark brown, 15-30 µm thick, K+ olivaceous, I+ bluish, KI+ blue; paraphyses sparingly branched, but richly branched in the epithecium, sometimes anastomosed, 1 µm in diam., not or slightly enlarged at the apex; epithecium granular, yellowish to green yellow, 28-36 µm thick, with crystals 1-3 µm thick in KOH dissolving into a bright yellow solution; asci 35-40 x 8-11 µm, clavate to cylindrical, with a KI+ blue apical ring, of the *grumulosa* type (TORRENTE & EGEA 1989: 32); spores 8 per ascus, ellipsoid, 3(-4)-septate, slightly narrower in the lower half, cells more or less equal in length, hyaline, 10-12.5 x 3-4 µm, with a thin wall and with septa not or slightly thickened; perispore 1 µm thick, distinctly brownish and verruculose when over-mature. Pycnidia 50-70 µm in diam., black, epruinose; wall reddish brown, 9-14 µm thick, becoming brown-olivaceous in KOH; conidia bacilliform, non-septate, 3.5-5 x 0.6-0.8 µm.

Type: Papua New Guinea, Madang prov., Laing Island in Hansa Bay near Bogia, epiphytic in coastal forest on coral island, *Sipman 34757* (B-holotype; UPNG-isotype).

Other specimen: same locality as the type, *Diederich 11652*.

This new species belongs to the genus *Lecanographa* Egea & Torrente, recently described (EGEA & TORRENTE 1994b) to accommodate the *Lecanactis grumulosa* group. The closest species are *L. lynceoides* (Müll.Arg.) Egea & Torrente, known only from the type locality in Venezuela and *L.* aff. *lynceoides*, known only from a single collection from Ecuador. *L. laingiana* differs by its smaller

spores (15-18(-21) x 4-5 µm in *L. lynceoides* and 13-17 x (3.5)4-4.5 µm in *L.* aff. *lynceoides*) and by the epithecial greenish yellow pruina that dissolves in KOH with a bright yellow reaction.

Both specimens were collected at the same time in the same locality, but apparently on two different trees, and they look quite different. In the holotype specimen the thallus is mostly white, but sometimes coloured, the ascomata are rarely elongate and only occasionally have a prominent excipular margin. The specimen *Diederich 11652* has a greenish yellow thallus and a considerable percentage of apothecia with a slit-like disc and a prominent margin. As they share all other characters, and as there is a continuum between the extremes, it is acceptable to assign both collections to the same species.

Lecidea aurigera Fée

Specimens: on *Xylocarpus moluccensis*, *Lambinon 87.165*, 1987 (LG); *Diederich 11613; Sérusiaux 13087*. Other specimens from elsewhere in Papua New Guinea too numerous to list individually.

This species is not a true *Lecidea* but belongs to a large pantropical group known as the "*Lecidea piperis* aggr." for which a new genus will have to be described. The collections from Laing Island and from other lowland areas in the country were identified using the notes of VAINIO (1921: 121) comparing this taxon with *Lecidea subaurigera* Vain.

Leptogium austroamericanum (Malme) Dodge

Specimens: *Aptroot 30210; Diederich 11611; Sérusiaux 13066*. Other specimens from elsewhere in Papua New Guinea too numerous to list individually.

A common pantropical species, reported for the first time from Papua New Guinea where it is very common in coastal and lowland areas. Description available in SIERK (1964: 296-297).

Letrouitia leprolyta (Nyl.) Hafellner

Specimens: *Demoulin & Smeets 5702*, 1980 (LG, also distributed in VĚZDA, Lichenes Selecti Exsiccati 2059); on *Excoecaria aggalocha*, *Iserentant 9805*, 1979 (LG); on *Celtis latifolia*, *Iserentant 9807*, 1979 (LG); on *Xylocarpus moluccensis*, *Lambinon 87.166*, 1987 (LG); *Aptroot 30209; Diederich 11616; Sérusiaux 13070; Sipman 34777*.

A conspicuous paleotropical species, common on Laing Island, already known from Papua New Guinea (HAFELLNER 1981: 695). Description available in HAFELLNER (1981: 693-695).

Lithothelium hyalosporum (Nyl.) Aptroot

Specimens: *Sérusiaux 13062; Sipman 34778*.

A conspicuous species, best known from eastern North America where it is widespread on deciduous trees (HARRIS 1975: 73, under *Plagiocarpa*

hyalospora (Nyl.) R.C.Harris). The species was later reported from the Maldives Islands and from Papua New Guinea (APTROOT 1991a: 59), and is here further reported from Indonesia: Java, S of Wlingi, *Groenhart 5782* (L, hb. Aptroot); Ibid., Mt. Kendeng, *Otto 5705* (L, hb. Aptroot). The species can be expected to have a pantropical distribution. Description available in APTROOT (1991b: 58-60).

Monoblastia sp.

Specimen: *Sérusiaux 13067.*

There is no doubt that this large collection belongs to the genus *Monoblastia* Riddle as circumscribed by HARRIS (1990: 36) and APTROOT (1991c: 404-406). Perithecia are hard to see as they grow into the bark and are hidden under a green corticate thallus producing large amounts of tiny velvety granules. It is impossible to be sure that the thallus actually belongs to *Monoblastia*. The exciple is carbonized; the ostiole is apical or very slightly eccentric; the asci are 8-spored; the one-celled spores are all ellipsoid, typically warty-granulose and measure 25-35 x 12-18 µm. *M. rappii* Zahlbr. is closely related but has smaller spores (10-21 µm when spherical and 13-18 x 8 µm when ellipsoid; HARRIS 1990: 36). This collection may represent a further species in this little known genus.

Monoblastia is already represented in Papua New Guinea by *M. pellucida* Aptroot, also known in French Guiana (S America).

Opegrapha cf. ***apomelaena*** Massal.

Specimens: *Diederich 11656*; on bark of *Excoecaria*, *Iserentant 9803 & 9804*, 1979 (LG); *Sérusiaux 13055, 13076; Sipman 34779, 34780, 34781.*

This species is quite common on Laing Island and can be briefly described as follows: hymenium inspersed with oil droplets, 60-120 µm in height, I+ reddish; spores 8 per ascus, fusiform, c. 9-septate, hyaline, 29-45 x 5-9 µm, including a thick perispore. It is close to *O. apomelaena* in the sense of REDINGER (1936: 44), who states that the spores are 30-36 x 3-6 µm, thus matching our measurements when the perispore is excluded. As tropical species of *Opegrapha* are very poorly known and as the type of *O. apomelaena* was not checked, it seems wise to maintain a "cf." in the identification.

Opegrapha prosodea Ach.

Specimen: *Diederich 11653.*

This collection matches quite well the description of the species provided by PURVIS *et al.* (1992: 411) for European material. *Opegrapha prosodea* is usually believed to be a temperate species but is obviously widespread in tropical areas as it is mentioned by REDINGER (1936: 44-45) from the Sunda Islands and from South America by the same author (REDINGER 1940: 37). It is new for Papua New Guinea.

Opegrapha vegae R.Sant.

Specimens: on leaves of *Mammea odorata, Diospyros marina, & Neisosperma oppositifolia, J. R. De Sloover 87L35, 87L49 & 87L50*, 1987 (LG).

The material collected on Laing Island is plentiful and matches the description of *O. vegae* R.Sant., except that its spores have a thin but nevertheless distinct perispore and are therefore halonate. This discrepancy is too small to warrant any taxonomical recognition. The species was previously known from Malaysia and Singapore and has just been reported from French Guyana in S America (SIPMAN 1993: 309). Description available in SANTESSON (1952: 99-100).

Pertusaria cicatricosa Müll.Arg.

Specimens: *Diederich 11612; Sérusiaux 13071 & 13082; Sipman 34782.*

A conspicuous species on dead decorticated wood, with a thick, greenish thallus and with large warts containing 1-3(-4) apothecia, visible only as a more or less central and almost translucent pore. The spores are two per ascus, fusiform, multilayered, 140-150 x 40-45 µm, more or less smooth on the outer surface, but reticulate to rugose-verrucose on the inner surface. The specimens match quite well the description of *P. cicatricosa* provided by ARCHER (1992: 17-18) except that the spores are typically fusiform and not ellipsoid (as in ARCHER's description). Following ARCHER, the species is also characterized by the production of stictic acid and of di- and tri-chlorolichexanthones. The TLC analysis performed on the specimens from Laing Island demonstrated the presence of stictic acid and of at least one chlorolichexanthone; the method used did not allow a precise separation of this group of compounds. It is, therefore, with some reservation that we name our specimens *P. cicatricosa*.

This species is known in Socotra, Mauritius, Australia/Queensland, New Caledonia, Vanuatu and Fiji (ARCHER 1992: 17-18); it is new for Papua New Guinea.

Phaeographis exaltata (Mont.) Müll.Arg.

Specimen: *Iserentant 9806b*, 1979 (LG).

A conspicuous species with long and sometimes furcate lirellae, with a large, sometimes pruinose, black disc and 5-septate spores. This species, quite common in the tropics, is most probably pantropical (see WIRTH & HALE 1978: 27 for further details and KANTVILAS & JAMES 1991: 282 for a modern description). It is reported from Papua New Guinea by SZATALA (1956: 27).

Physcia krogiae Moberg

Specimens: *Aptroot 30223, 30225, 30232.*

A common, pantropical species, first reported from Papua New Guinea by STREIMANN (1990: 265). Description available in MOBERG (1990: 332).

Physcia sorediosa (Vain.) Lynge

Specimens: *Aptroot 30221, 30222, 30224; Diederich 11618, 11620; Sérusiaux 13077; Sipman 34783, 34784.*

A common pantropical species, first reported from Papua New Guinea by APTROOT & SIPMAN (1991: 232, as *P. fragilescens* Zahlbr.). Description available in MOBERG (1990: 339).

Polymeridium campylothelioides Aptroot & Sipman *spec. nova* (Figs. 2e & 7)

Thallus corticola, fuscocinereus, endophloeodeus. Ascomata semiglobularia, nigra, nuda vel ad marginem thallo tecta, uni- vel bilocularia, ostiolis in apicibus protuberantiarum lateralium; hamathecio I+ rubescenti, pseudoparaphysibus trabeculatis; ascis clavatis, c. 180 x 70 µm; sporis fusiformibus, muralidivisis, distoseptatis, c. 15-20 x 3-5 cellulis compositis, hyalinis, I-, (55-)65-75(-80) x 17-20(-25) µm. Pycnidia nigra, semiglobularia; conidiis bacilliformibus, 5-6 x 0.5 µm.

Thallus corticolous, pale grey to brownish, forming large patches often over 5 cm in diam., endophloeodal, up to 100 µm thick, not corticate, continuous, smooth, without hypothallus. Colour reactions of the thallus: K-, C- and UV-. Ascomata perithecia, emergent, hemispherical, c. 0.8-1 mm in diam., with one or two chambers with a common ostiole, black and naked or covered by a thin grey thallus layer along the basal part of the ascomata; ostioles lateral, on top of a c. 0.2-0.5 mm long and 0.2 mm wide, procumbent or slightly raised, neck that is sometimes partly covered by the thallus and surfacing only at the ostiole. Exciple black; hamathecium clear, I+ red, consisting of anastomosing, 1-1.5 µm wide, non-septate filaments (trabeculate pseudoparaphyses); asci clavate, c. 180 x 70 µm, with a broad ocular chamber; spores 8 per ascus, biseriate, ellipsoid, distoseptate, muriform with 15-20 x 3-5 cells, hyaline, I-, (55-)65-75(-80) x 17-20(-25) µm, with or without a perispore which is thickest at the ends of the spores. Pycnidia black, hemispherical, 0.5-0.7 mm diam.; conidiophores in cerebriform tissue, acrogenous; conidia rod-like, 5-6 x 0.5 µm.

Type: Papua New Guinea, Madang prov., Laing Island in Hansa Bay near Bogia, epiphytic in coastal forest on coral island, *Sipman 34767* (B-holotype; UPNG-isotype).

Other specimens: Madang prov.: Bilbil village, 5 km S of Madang, coconut plantation, *Aptroot 17741, 17745*, 1987.

This pantropical genus has just been monographed by HARRIS (1993). The new species differs from the only other known *Polymeridium* with muriform spores (*P. proponens* (Nyl.) R.C.Harris) by the larger, non-amyloid spores. In *P. proponens*, the spore walls become dark violet in KI and they measure 39-54 x 15-19 µm.

Polymeridium campylothelioides is so far known only from tropical lowland near the coast, on the northern coast of Papua New Guinea.

Porina gaumae Aptroot & Sipman *spec. nova* (Figs. 2f & 8)

Thallus corticola, crustaceus, viridi- vel fuscocinereus, minute granulosus, c. 40 µm crassus, epiphloeodeus, ecorticatus. Ascomata nigra, emergentia, depresse hemisphaerica, nuda, 0.2-0.3 mm diam.; involucrello dimidiato fusco; excipulo hyalino; ascis 8-sporis; sporis fusiformibus, 7-septatis, (18-)22-31 x 6-7 µm.

Thallus corticolous, greenish to brownish grey, large and usually several cm in diam., minutely granular, not smooth, without hypothallus or sometimes with a dark brown hypothallus, about 40 µm thick, epiphloeodal, without differentiated cortical or medullary layer, without crystals. Photobiont: algal cells irregularly rounded, c. 4-6 µm diam., of rather variable size, thick-walled, irregularly arranged in filaments (*Trentepohlia* type). Colour reactions of the thallus: K-, C- and UV-. Ascomata perithecia, black, emergent, depressed hemispherical, covered by the thallus only at the base, 0.2-0.3 mm in diam.; involucrellum dimidiate, dark brown, K+ darkening, c. 30 µm thick; exciple hyaline; hamathecium not inspersed, I-; paraphyses simple, 1-1.5 µm thick; asci thin-walled, but with the typical refractive apical ring of *Porina* species, I-; spores 8 per ascus, hyaline, widely fusiform, 7-septate when fully mature, occasionally with a longitudinal septum, hyaline, (18-)22-31 x 6-7 µm, with or without a perispore of up to 1.5 µm.

Type: Papua New Guinea, Madang Prov., Laing Island in Hansa Bay, epiphyte in coastal forest, *Sipman 34786* (B-holotype; UPNG-isotype).

Other specimens: Same locality as the type: *Diederich 11645*; *Sérusiaux 13063*. Madang prov., Madang, along the coast near the Coastwatchers Monument, on *Pandanus*, *Aptroot 30037, 30046*; Manam Island, on trail along riverbed 500 m W of Dugulaba, on "gauma gauma" tree, *Aptroot 30521*.

This species is easily characterized by its minutely granular greenish thallus, its small, exposed, black perithecia and especially by its broadly fusiform spores. In these respects it differs from other *Porina* species with 7-septate spores, which have a smooth thallus (with crystals) covering the perithecia, at least partly. *Porina impolita* P.M.McCarthy, just described from Australia (McCarthy 1994: 394-395), could be related to *P. gaumae* but has orange brown to grey brown perithecia and 7-septate, fusiform-cylindrical spores that reach 33-59 x 6-10.5 µm. *P. gaumae* probably belongs to the *Porina nitidula*-group (*sensu* Santesson 1952: 199-211).

Porina mastoidea (Ach.) Müll.Arg.

Specimens: *Diederich 11644; Sérusiaux 13050; Sipman 34785*.

A common, pantropical species (first report for Papua New Guinea by Streimann 1986: 106), highly variable in thallus morphology and in ascospore dimensions. Description available in Aptroot & Sipman (1993b: 29-31).

Porina perminuta Vain.

Specimen: on leaves of *Diospyros marina*, *J. R. De Sloover 87L49*, 1987 (LG).

First report of this minute species from Papua New Guinea, formerly known from the Philippines and Society Islands. Description available in SANTESSON (1952: 217-218).

Pyrenula anomala (Ach.) Vain.

Specimen: *Aptroot 30213*. Other specimens from elsewhere in Papua New Guinea too numerous to list individually.

A common pantropical species, extending into subtropical and warm temperate areas, reported for the first time from Papua New Guinea where it is common in coastal and lowland areas. Description available in HARRIS (1989: 85).

Pyrenula aspistea (Ach.) Ach.

Specimen: *Aptroot 30227*.

Probably a pantropical species, abundant in Africa, and extending into subtropical areas, first reported from Papua New Guinea by APTROOT & SIPMAN (1991: 234). It is very common in coastal and lowland areas. Description available in HARRIS (1989: 86).

Pyrenula citriformis R.C.Harris

Specimen: *Sipman 34787*.

Pyrenula citriformis has hitherto been regarded as a coastal plain endemic of the southeastern U. S. A.: it is therefore a surprising find. It is new to the Paleotropics. Description available in HARRIS (1989: 87-88).

Pyrenula concatervans (Nyl.) R.C.Harris

Specimens: *Aptroot 30182, 30212, 30214, 30218; Diederich 11638; Sérusiaux 13054*.

A common, pantropical species of lowland, mainly coastal, areas. Earlier records of the species from Papua New Guinea were made under the name *P. sexlocularis* (Nyl.) Müll.Arg. (STREIMANN 1986: 111). Description in HARRIS (1989: 88-89).

Pyrenula ochraceoflava (Nyl.) R.C.Harris

Specimens: *Aptroot 30184; Diederich 11637; Sérusiaux 13081, 13091*.

One of the most abundant coastal species on the northern coast of Papua New Guinea, especially on coconut, but also present on other trees, forming large orange patches. Its distribution is pantropical; it was formerly known from Papua New Guinea (APTROOT & SIPMAN 1991: 224, as *Anthracothecium ochraceoflavum* (Nyl.) Müll.Arg.). Description in HARRIS (1989: 96-97).

Pyrenula subferruginea (Malme) R.C.Harris

Specimens: *Aptroot 30197; Diederich 11639.*

This species was formerly known from Brazil and from Louisiana and Florida in the U. S. A.; it is new for the Paleotropics. Description available in HARRIS (1989: 101).

Pyxine cocoes (Swartz) Nyl.

Specimens: On horizontal branch of *Pongamia pinnata*, *Lambinon 87.352*, 1987 (LG); *Aptroot 30231; Sipman 34789.*

A common pantropical species, already known from Papua New Guinea (KASHIWADANI 1977: 64-65). Description available in SWINSCOW & KROG (1988: 264-265).

Pyxine cylindrica Kashiwadani

Specimens: *Diederich 11617; Sérusiaux 13059; Sipman 34791a.*

A species first described from the northern coast of Papua New Guinea, also known on Mt Kaindi near Wau, and in Formosa. Description available in KASHIWADANI (1977: 66-67).

Pyxine farinosa Kashiwadani

Specimens: *Aptroot 30228; Sérusiaux 13053; Sipman 34790.*

The species was first described from collections from the Caroline Islands (Micronesia) and from Papua New Guinea (near Madang, on the northern coast). It is indeed quite common along the northern coast of Papua New Guinea. It was formerly reported from the Morobe province (STREIMANN 1990: 265, under *P. linearis* R.W.Rogers), and otherwise from Java and from Queensland in Australia (ROGERS 1986: 143-145, under *P. linearis*). Description available in KASHIWADANI (1977: 67-68).

Pyxine isidiolenta R.W.Rogers

Specimens: *Aptroot 30229; Diederich 12215.* Madang prov.: Near Bogia, mangrove island in the mouth of the Boroi River, *Aptroot 30441.*

A coastal species, formerly known only from Australia (Queensland and Northern Territory). This is the first report for Papua New Guinea. Description available in ROGERS (1986: 142-143).

Pyxine retirugella Nyl.

Specimens: *Aptroot 30227; Diederich 11619; Sérusiaux 1307; Sipman 34792.*

A well-known species from tropical areas of E Africa, Asia and Australia, already reported from Papua New Guinea (KASHIWADANI 1977: 65, under *P. copelandii* Vain.), where it is common in lowland areas. Description available in ROGERS (1986: 149-151).

Stirtonia obvallata (Stirton) A.L.Smith

Specimen: *Diederich 11626*.

This specimen matches well the description provided by SMITH (1926: 195), based on a single specimen from "India, Bengal (Chinsurah)", which seems to be the only known collection. It is therefore new for Papua New Guinea.

Strigula macrocarpa Vain.

Specimen: on leaves of *Celtis latifolia*, *J. R. De Sloover 87L51*, 1987 (LG).

A foliicolous species first reported from Papua New Guinea by APTROOT & SIPMAN (1991: 235), rare but pantropical (first report for the Neotropics by LÜCKING 1992: 45). Description available in SANTESSON (1952: 174-175).

Strigula nemathora Mont. var. ***hypothelia*** (Nyl.) R.Sant.

Specimen: on leaves of *Celtis latifolia*, *J. R. De Sloover 87L51*, 1987 (LG).

A common pantropical foliicolous species, usually growing on leaf margins and on any leaf wound. First report for Papua New Guinea. Description available in SANTESSON (1952: 156).

Thelotrema sp.

Specimens: *Sérusiaux 13052*; *Sipman 34748*.

These two collections belong to a *Thelotrema* s. str. that will be studied in detail elsewhere. It has a clear hymenium, 60-70 µm thick, its spores are 8 per ascus, 9-septate, hyaline, bacilliform, I-, 20-22 x 5 µm; it contains hypostictic (traces), stictic, and two further acids that might be cryptostictic and constictic acids. It is chemically and morphologically similar to *T. porinoides* Mont. & Bosch (HALE 1981: 266-267), but its spores are much smaller and I-negative. It may represent a new taxon.

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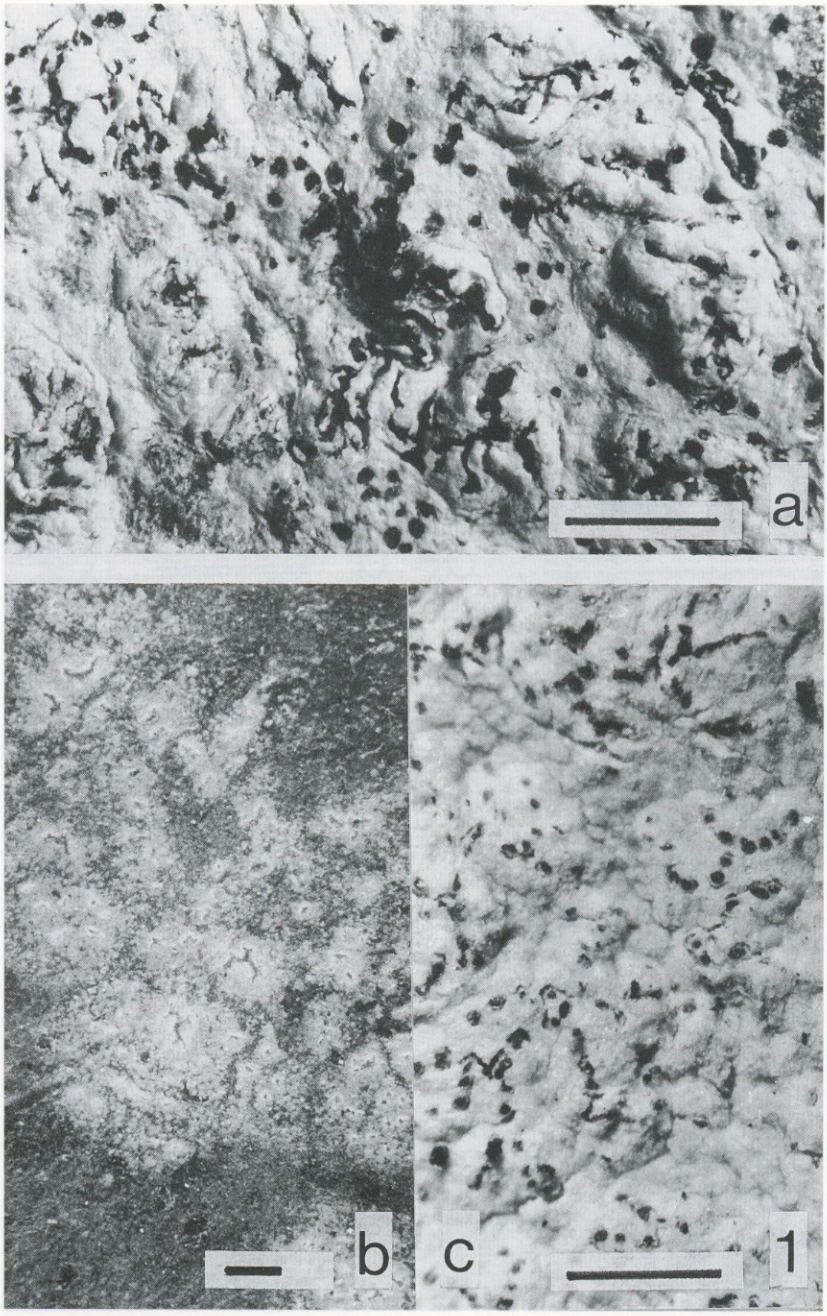

Fig. 1. a: *Arthonia arthoniicola* Diederich & Aptroot, scale = 1 mm; b: *Enterographa deslooveri* Sérusiaux, scale = 1 mm; c: *Enterographa littoralis* Sipman & Sérusiaux, scale = 0.66 mm. All type collections.

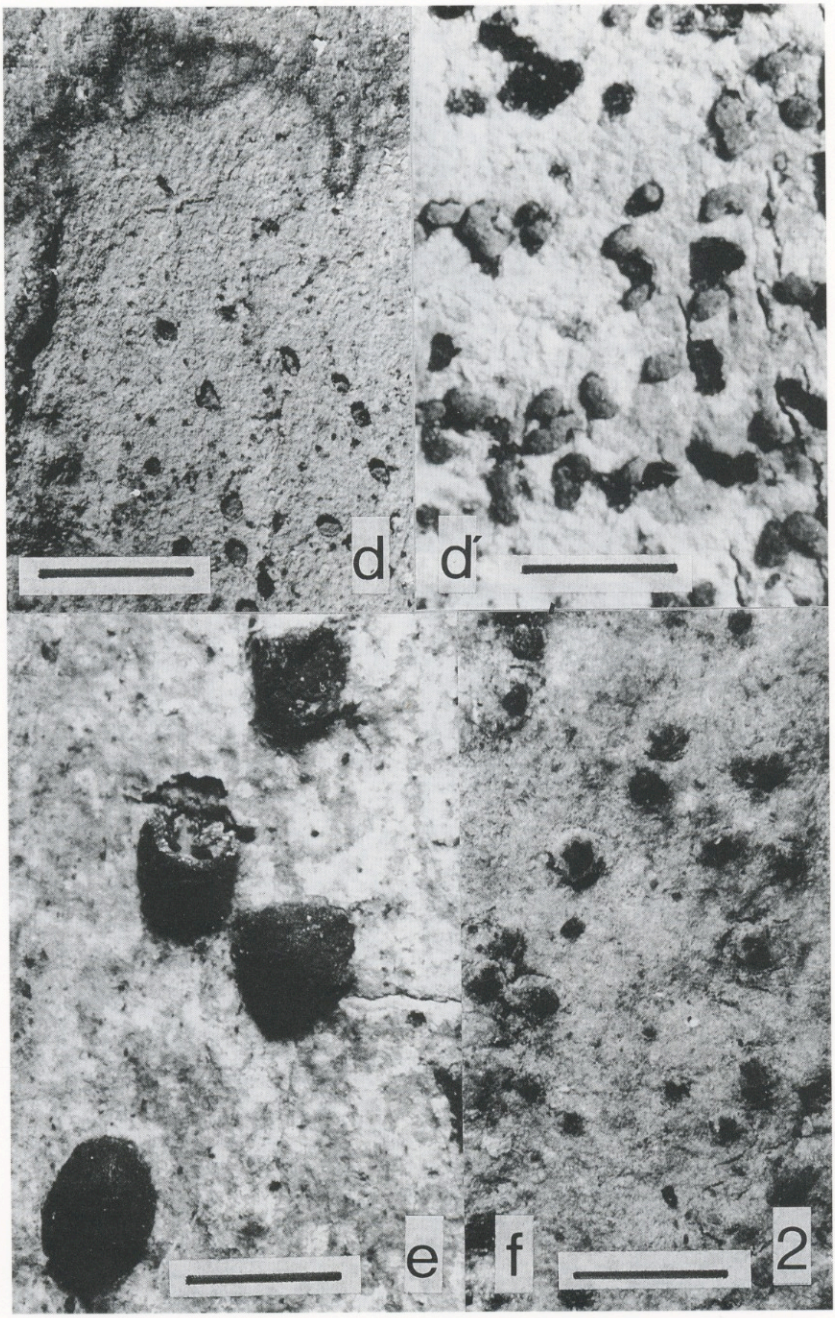

Fig. 2. d & d': *Lecanographa laingiana* Diederich, Egea & Sipman, d-scale = 1.5 mm, d'-scale = 1 mm (d: *Diederich 11652*; d': type collection); e: *Polymeridium campylothelioides* Aptroot & Sipman (type collection), scale = 1.5 mm; f: *Porina gaumae* Aptroot & Sipman, scale = 1 mm.

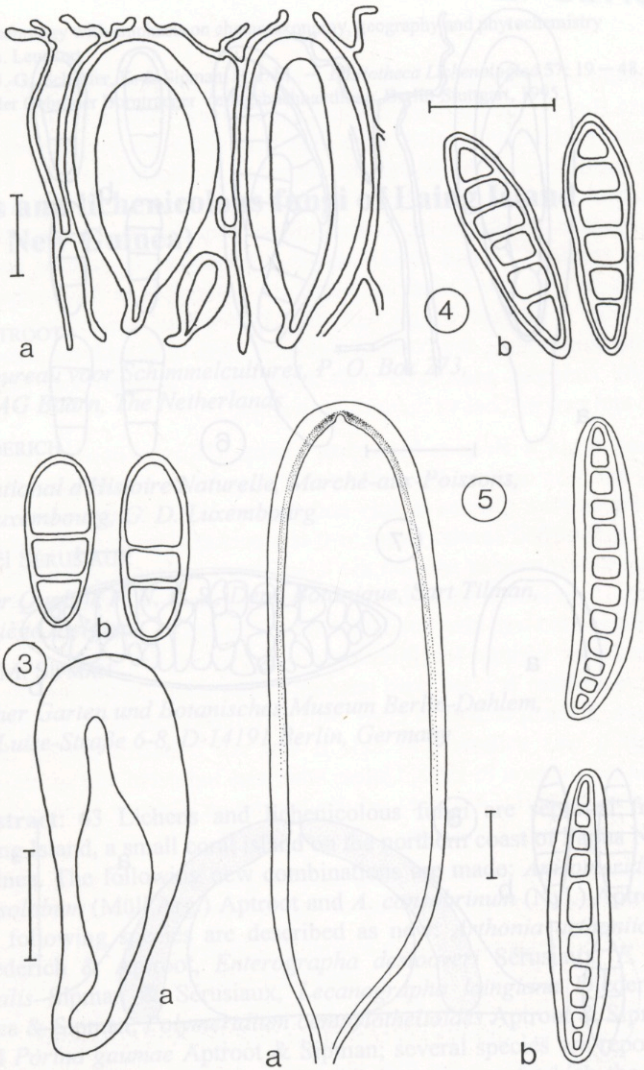

Fig. 3. *Arthonia arthoniicola* Diederich & Aptroot (type collection). a: ascus; b: spores. Scale = 10 µm.
Fig. 4. *Enterographa deslooveri* Sérusiaux (type collection). a: asci and paraphyses. b: spores. Scale = 10 µm.
Fig. 5. *Enterographa littoralis* Sipman & Sérusiaux (type collection). a: ascus; b: spores. Scale = 10 µm.

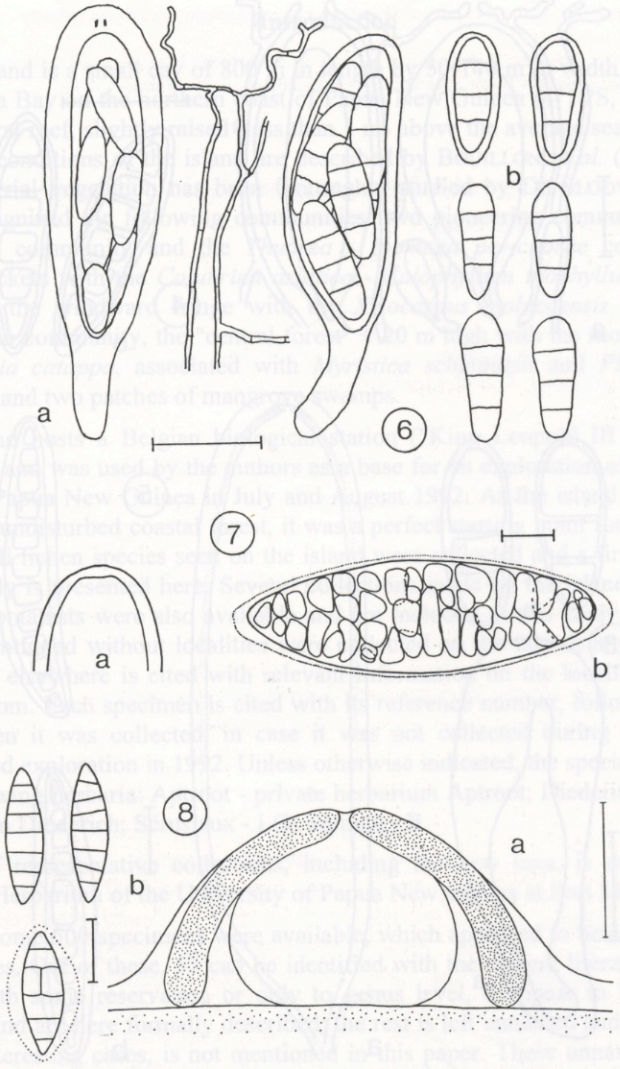

Fig. 6. *Lecanographa laingiana* Diederich, Egea & Sipman (Type collection). a: asci and paraphyses; b: spores. Scale = 10 µm.
Fig. 7. *Polymeridium campylothelioides* Aptroot & Sipman (Type collection). a: ascus tip (schematic); b: spores. Scale = 10 µm.
Fig. 8. *Porina gaumae* Aptroot & Sipman (Type collection). a: schematic cross-section of ascomata, scale = 0.1 mm; b: spores, scale = 10 µm.