

Lichenological Contributions in Honour of David Galloway.
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New species in the lichen family Parmeliaceae (Ascomycota) from Australasia

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Abstract: The following new species of *Parmeliaceae* are described: *Anzia gallowayi* Elix and *Parmelia nortestacea* Elix from New Zealand, *Hypotrachyna leswellensis* Elix and *Parmeliopsis chlorolecanorica* Elix from mainland Australia, *Parmotrema paracrinitum* from Australia and Norfolk Island, *Menegazzia lordhowensis* Elix from Lord Howe Island and *Menegazzia faminensis* Elix and *Relicina diderichii* Elix from Papua New Guinea.

Introduction

The Australasian region has a rich and diverse lichen flora belonging to the family *Parmeliaceae* (ORCHARD 1994; GALLOWAY 1985; LOUWHOFF & ELIX 1999, 2002; MCCARTHY 2006). The species are prominent on exposed, non-calcareous rock surfaces, consolidated soils, dead wood, trees and shrubs and are found from alpine to temperate, subarid and tropical areas. While *Xanthoparmelia* is undoubtedly the largest genus (MCCARTHY 2005), other common and diverse genera include *Hypotrachyna*, *Menegazzia*, *Parmotrema* and *Relicina*. The paucity of collections from remote or little-studied habitats of this type in Australasia has meant that a number of species remain to be described. This report presents descriptions of eight new species in the genera *Anzia*, *Hypotrachyna*, *Menegazzia*, *Parmelia*, *Parmeliopsis*, *Parmotrema* and *Relicina* from the region.

Materials and Methods

The morphology of the lichen specimens was examined using a Zeiss Stemi 2000C stereo microscope, and conidia and ascospores were examined using a Zeiss Axiolab compound microscope. Chemical constituents were identified by thin layer chromatography (ELIX & ERNST-RUSSELL 1993), high performance liquid chromatography (ELIX *et al.* 2003) and comparison with authentic samples.

The new species

Anzia gallowayi Elix, sp. nov.

(Fig. 1A)

Thallus ut in *Anzia minor* sed corticolo, superficie sparsim isidiato et acidum divaricaticum continente differt.

Typus here designated: New Zealand, North Island, North Auckland, Hunua Ranges, 37°05'S, 175°11'E, on bark of *Agathis australis*, 1974, I. Baten (CHR – holotypus).

Thallus corticolous, loosely adnate, orbicular to spreading, 1–2.5 cm wide. *Lobes* linear, separate, dichotomously to subdichotomously branched, 0.3–1.2 mm wide. *Upper surface* pale grey to grey-white, weakly convex, smooth, emaculate, very sparsely isidiate; isidia globose. Medulla white. *Lower surface* ivory to pale yellow, smooth, visible between the spongiostratum cushions. *Spongiostratum* moniliform, forming globose to ellipsoid cushions, up to 1.0 mm thick, dark brown to black; rhizines simple, scattered, up to 1.2 mm long, tufted at the apices, born singly at the border of the spongiostratum. *Apothecia* and pycnidia not seen.

Chemistry: Cortex K⁺ yellow; medulla K⁻, C⁻, P⁻; containing atranorin (minor), chloroatranorin (minor), divaricatic acid (major).

Etymology: This species is named in honour of Dr David Galloway, New Zealand lichenologist and friend.

Notes: Morphologically *A. gallowayi* resembles the Australian *A. minor*, as both have fragile thalli, very narrow lobes and a moniliform spongiostratum. However, *A. minor* differs in being exclusively saxicolous, in lacking isidia and in containing protocetraric acid or 4-*O*-methylhypoprotocetraric acid in the medulla (YOSHIMURA & ELIX 1993). *Anzia pseudoangustata* Yoshim. & Sipman, a corticolous species from Papua New Guinea, has a moniliform spongiostratum but lacks isidia and contains caperatic acid and lobaric acids (YOSHIMURA *et al.* 1995). *Anzia gallowayi* could possibly be confused with forms of *Pannoparmelia wilsonii* (Räsänen) D. J. Galloway growing in very shaded habitats where the thallus becomes 'bleached' and lacks substantive quantities of usnic acid in the upper cortex. However, *P. wilsonii* differs in having dense, cylindrical isidia and in lacking atranorin and chloroatranorin in the upper cortex. At present this new species is only known from the type collection.

Hypotrachyna leswellensis Elix, sp. nov.

(Fig. 1B)

Thallus ut in *Hypotrachyna gondyophora* sed diminutus, lobis angustioribus, rhizinis sparsis et acidum succinprotocetraricum maius continente differt.

Typus here designated: Australia, Queensland, near the summit of Mount Leswell, 32 km S of Cooktown, 15°46'S, 145°15'E, 440 m, on detritus over granite rocks in

Eucalyptus dominated woodland, 5 July 1984, J. A. Elix 17372 & H. Streimann (BRI – holotypus; CANB – isotypus).

Thallus foliose, adnate to loosely adnate, 4–6 cm wide. *Lobes* separate to imbricate, sublinear, subdichotomously branched, 1–3 mm wide; with entire to occasionally crenate, eciliate margins; apices subtruncate; margins laciniate, laciniae flat to weakly revolute, sublinear, sparingly dichotomously branched, becoming sorediate at the apices, 0.5–0.8 mm wide. *Upper surface* pale grey to grey-white, flat to weakly convex, emaculate, smooth or becoming weakly rugulose; lacking isidia and pustules, sorediate; soralia spreading over the apices of the laciniae, subcapitate, soredia granular, blackening with age. *Medulla* white. *Lower surface* black, dark brown at the lobe apices; rhizines very sparse, simple to sparsely dichotomously branched. *Apothecia* and pycnidia not seen.

Chemistry: Cortex K⁺ yellow, UV⁻; medulla K⁺ pale, dirty yellow-brown, C⁻, P⁺ orange; containing atranorin (minor), chloroatranorin (minor), succinprotocetraric acid (major), fumarprotocetraric acid (minor), protocetraric acid (minor or trace), virensic acid (trace), gyrophoric acid (minor or absent).

Etymology: The specific epithet derives from the Latin *ensis* (place of origin) and an abbreviation of Mount Leswell, the type locality.

Notes: In many respects this new species resembles the Neotropical *H. gondyophora* (Hale) Hale as both have sublinear lobes bearing capitate soralia on short lateral laciniae and have comparable chemistry (HALE 1975). However, *H. gondyophora* differs in having larger thalli (8–15 cm cf. 4–6 cm wide), broader lobes (2–4 mm cf. 1–3 mm wide) and a densely rhizinate lower surface with richly branched rhizines (2–5 times dichotomously branched). By contrast, the rhizines of *H. leswellensis* are sparse, simple or 1–2 times dichotomously branched. In addition, *H. gondyophora* contains fumarprotocetraric acid as the major medullary metabolite and only minor or trace quantities of succinprotocetraric acid, the major substance present in *H. leswellensis*. *Hypotrachyna leswellensis* could also be confused with *H. baguioensis* (Hale) Hale but this species is distinguished by its preference for corticolous substrata, the much broader lobes (3–6 mm wide) with subrotund apices and the presence of fumarprotocetraric acid as the major medullary substance (ELIX 1994). At present *H. leswellensis* is known only from two localities in far north Queensland.

Additional specimen examined: **Australia**: *Queensland*: Fitzroy Island, Great Barrier Reef, 25 km E of Cairns, 16°56'S, 145°59'E, 50–100 m, on granite boulder in remnant forest, A. & M. Aptroot 22537, Mar. 1988 (CANB, herb. Aptroot).

***Menegazzia faminensis* Elix, sp. nov.** (Fig. 1C)

Thallus ut in *Menegazzia malesiana* sed acidum sticticum noncontingente differt.

Typus here designated: Papua New Guinea, Eastern Highlands, near Famin, Kainantu-Okapa road, 28 km SW of Kainantu, 6°27'S, 145°40'E, 2080 m, on canopy of *Sloanea* in montane forest, 9 Dec. 1982, J. A. Elix 12620 & H. Streimann (CANB – holotypus).

Thallus corticolous, foliose, adnate to loosely adnate, up to 3 cm wide, often forming rosettes or sometimes irregularly spreading. *Lobes* hollow, sublinear-elongate, fragile, contiguous or separate, ±overlapping in older parts of the thallus, sparingly subdichotomously branched, 1–2 mm wide; apices subrotund; margins ±lobulate, lobules rotund to subrotund, 0.3–0.8 mm wide, unbranched, perforate or not. *Upper surface* pale grey or grey-green, often with blackish margins, convex, dull to shiny, perforate, dactylate; *dactyls* inflated, isidioid, globose or cylindrical, not branched, 0.5–1.5 mm high, apices soon eroding and becoming pustulate, pustules expanding and becoming efflorescent, funnel-shaped or lacerate, densely sorediate, soredia granular; soralia more rarely developing at lobe apices, labriform to gaping with ±lacerate margins. *Perforations* laminal, numerous or scattered, oval or rounded, gaping, margin ±elevated, 0.2–0.8 mm wide. *Medulla* white or pale yellow in part, darkening with age, lower side of internal cavity black. *Lower surface* black, shiny, wrinkled, erhizinate. *Apothecia* and *pycnidia* not seen.

Chemistry: Cortex K+ yellow; medulla K-, C+ pink, P-; containing atranorin (major), chloroatranorin (minor), unknown fatty acid (major), gyrophoric acid (minor), ± pigmentosin A (minor), ± strepsilin (minor).

Etymology: The specific epithet derives from the Latin *ensis* (place of origin) and the village of Famin, the type locality.

Notes: The most characteristic feature of this new species and *M. malesiana* Elix, Bawingan & Schumm (ELIX *et al.* 2005) are the elevated, erumpent dactyls on the upper surface which become densely sorediate and expand to become funnel-shaped, and ultimately lacerate. The Australasian species, *M. nothofagi* (Zahlbr.) P. James & D.J. Galloway is also similar in having sorediate pustules on the upper surface, but it can be distinguished by the narrower lobes (0.5–0.8 mm cf. 1–2 mm wide), and by the absence of marginal lobules. Both *M. malesiana* and *M. nothofagi* contain the stictic acid chemosyndrome in the medulla whereas *M. faminensis* contains an unknown fatty acid (which moves slightly faster than caperatic acid in the standard TLC solvent systems) and varying amounts of gyrophoric acid. According to JAMES *et al.* (2001), *M. faminensis* is a member of their so-called “species aggregate 1”.

Additional specimen examined: Papua New Guinea: Eastern Highlands: type locality, on canopy of *Sloanea*, 9 Dec. 1982, J. A. Elix 12626 & H. Streimann (CANB).

***Menegazzia lordhowensis* Elix, sp. nov.**

(Fig. 1D)

Thallus ut in *Menegazzia platytrema* sed medulla flavescens et isopigmentosiniorum continente differt.

Typus here designated: Australia, New South Wales, Lord Howe Island, track from Smoking Tree Rigde to Rocky Run, 31°33'35"S, 159°05'09"E, 170 m, on canopy of tree in lowland forest on moderate slope, 10 Feb. 1995, *J. A. Elix 42450* (CANB – holotypus).

Thallus corticolous, foliose, adnate, 5–8 cm wide, forming rosettes or irregularly spreading. *Lobes* hollow, sublinear, contiguous or sparingly imbricate, subdichotomously to irregularly branched, 1–3.5 mm wide; apices rotund; margins elobulate. *Upper surface* pale grey to yellow-grey, convex, dull to shiny, perforate, emaculate at the tips but becoming maculate and rugulose in the thallus centre, lacking soredia, isidia and dactyls. *Perforations* laminal, numerous, gaping, oval or rounded, margin becoming ±downturned with age, 0.5–1.0 mm wide. *Medulla* yellow-pigmented subapically, blackening with age. *Lower surface* black, shiny, rugulose, erhizinate. *Apothecia* numerous, laminal, sessile, 1–3 mm wide; disc concave then undulate-distorted and ultimately flattened with age, dark brown to black; exciple rugulose with a dentate margin. *Asci* 2-spored, ascospores broadly ellipsoid, 45–50 x 30–40 µm. *Pycnidia* common, punctiform, immersed, ostiole dark brown to black. *Conidia* bacilliform to narrow fusiform, straight to slightly curved, 4–5 x 0.5 µm.

Chemistry: Cortex K+ yellow; medulla K+ yellow, C-, KC-; P+ yellow-orange; containing atranorin (minor), chloroatranorin (trace), stictic acid (major), menegazziaic acid (minor), constictic acid (minor), peristictic acid (minor), norstictic acid (minor), cryptostictic acid (minor), substictic acid (trace), isopigmentosin A (minor), isopigmentosin B (minor), isopigmentosin C (minor).

Etymology: The specific epithet derives from the Latin *ensis* (place of origin) and Lord Howe Island, the type locality.

Notes: This species is characterized by the non-sorediate, convex upper surface, the sessile apothecia with concave dark brown to black discs, the yellow medulla, 2-spored asci and the presence of the stictic acid chemosyndrome and isopigmentosin derivatives in the medulla. The overall morphology of this new species resembles some forms of the very common *M. platytrema* (Müll. Arg.) R. Sant., a species which also contains the stictic acid chemosyndrome and has 2-spored asci. However, the spores of *M. platytrema* are more elongate-ellipsoid (45–55 x 25–32 µm cf. 45–50 x 30–40 µm) and this species has a white medulla near the apices which becomes purple-black above and black below with age. The isopigmentosin pigments were originally identified in the unrelated lichen, *Dactylina ramulosa* (Hook. f.) Tuck. (ELIX *et al.* unpublished).

Additional specimen examined: Australia: *New South Wales*: type locality, on canopy of forest tree, 10 Feb. 1995, *J. A. Elix 42428* (CANB).

Parmelia nortestacea Elix, sp. nov.

(Fig. 2 A)

Thallus ut in *Parmelia subtestacea* sed acidum echinocarpicum noncontinente differt.

Typus here designated: New Zealand, South Island, Canterbury, Greyneys Flat, 6 km S of Arthurs Pass township, 42°59'S, 171°35'E, 690 m, on *Nothofagus solandri* var. *cliffortioides* in *Nothofagus* forest, 10 Feb. 1980, J. A. Elix 7058 (CHR – holotypus).

Thallus corticolous, foliose, adnate, 5–12 cm wide. *Lobes* subirregular, short, imbricate, irregularly branched, 1–5 mm wide, apices rotund; margins lacinate, laciniae 1–2 mm wide, subrotund. *Upper surface* pale grey to yellow-grey with age, shiny, flat to distinctly rugose-foveolate, emaculate, pseudocyphellate; pseudocyphellae forming a near continuous white rim around the lobes and laciniae, also developing laminally on older lobes, separate, sparse, 0.2–0.4 mm long. *Medulla* white. *Lower surface* black, sparsely to moderately rhizinate, with a narrow, brown erhizinate or papillate marginal zone; rhizines simple, furcate or sparsely squarrosely branched, 0.5–1.5 mm long. *Apothecia* common, substipitate, 4–20 mm wide; disc concave then undulate-distorted and ultimately flattened and becoming stellate-cracked with age, pale to dark brown; exciple rugose, effigurate-pseudocyphellate. *Ascospores* ellipsoid, 12–14 x 8–10 µm. *Pycnidia* common, punctiform, immersed, ostiole black. *Conidia* bacilliform to weakly bifusiform, 5–7 x 1 µm.

Chemistry: Cortex K⁺ yellow; medulla K⁻, C⁻, KC⁻; P⁻; containing atranorin (minor), chloroatranorin (minor), testacein (major).

Etymology: The specific epithet derives from the similarity of this taxon to *Parmelia subtestacea*.

Notes: This new species is a member of the *P. testacea* Stirt. group (HALE 1987) characterized by their adnate, irregularly lobed thalli, the frequent production of marginal, subrotund laciniae, the relatively sparse, predominantly marginal pseudocyphellae and the sparse to moderate rhizines. This group of species contains three major medullary lichen substances in four different combinations, namely echinocarpic acid and testacein (*P. subtestacea* Hale), salazinic acid or salazinic acid and testacein (*P. testacea*) or testacein alone (*P. nortestacea*). HALE (1987) considered the latter to be an 'acid-free' chemotype of *P. subtestacea* despite the fact these two taxa show different geographic distributions (*P. subtestacea* does not occur in the north island of New Zealand) and that *P. nortestacea* typically has dark brown discs (97% of *P. subtestacea* specimens have pale tan to light brown discs). *Parmelia testacea* sens. str. occurs in both islands of New Zealand and in Victoria and Tasmania but *P. nortestacea* has not been found in Australia. *Parmelia nortestacea* is considered a separate species because of its distinctive chemistry and distribution.

Additional specimens examined: New Zealand: North Island, Wellington, Tongariro National Park, Mangawhero Forest Walk, Ohakune, 39°20'S, 175°31'E, 650 m, on fallen branches in mixed podocarp forest, 14 Jan. 1985, *J. A. Elix 18922, 18924* (CANB); Wellington, Tongariro National Park, Waihohonu walking track, Ohirepango Creek, 39°13'30"S, 175°44'E, 1000 m, on *Nothofagus* trunk in small stand of *Nothofagus*, 19 Mar. 1985, *J. Johnston 2344* (CANB). South Island, Canterbury, Arthurs Pass National Park, 42°57'S, 171°34'E, 670 m, on *Nothofagus solandri* var. *cliffortioides* in *Nothofagus* forest, 8 Feb. 1980, *J. A. Elix 6989* (CANB); Canterbury, Banks Peninsula, summit trail to Mt. Sinclair, 43°43'S, 172°51'E, 550 m, on twigs of tree in dense podocarp forest, 14 Feb. 1980, *J. A. Elix 7138* (CANB).

***Parmeliopsis chlorolecanorica* Elix sp. nov.** (Fig. 2 B)

Thallus ut in *Parmeliopsis macrospora* sed acidum lecanoricum, acidum 5-chlorolecanoricum et acidum 3,5-dichlorolecanoricum continente differt.

Typus here designated: Australia, Western Australia, unnamed Nature Reserve, 46 km E of Merredin along the Great Eastern Highway, 31°22'30"S, 118°43'02"E, 380 m, on dead shrub in *Eucalyptus–Melaleuca* woodland, 23 Apr. 2004, *J. A. Elix 31966* (PERTH – holotypus; CANB – isotypus).

Thallus corticolous, foliose, adnate, 2-3 cm wide. *Lobes* sublinear to subirregular, contiguous to imbricate, irregularly branched, 1-2 mm wide, apices incised; margins eciliate. *Upper surface* pale grey, smooth, ±flat, white maculate, pruinose near the apices, lacking soredia, isidia and lobules. *Medulla* white. *Lower surface* mid to dark brown, moderately to densely rhizinate; rhizines simple, pale to dark brown. *Apothecia* common, sessile to substipitate, 0.8-2.0 mm wide; disc weakly concave then ±flat, mid to dark brown; exciple smooth, margin thick and pruinose at first, then thin but persistent with age. *Ascospores* reniform, biguttulate, 17-21 x 4-5 µm. *Pycnidia* common, punctiform, immersed, ostiole black; conidiophores *Psora*-type. *Conidia* filiform, curved, 9-11 x 1 µm.

Chemistry: Cortex K⁺ yellow; medulla K⁻, C⁺ red, KC⁺ red; P⁻; containing atranorin (minor), chloroatranorin (minor), lecanoric acid (major), 5-chlorolecanoric acid (submajor), 3,5-dichlorolecanoric acid (minor).

Etymology: The specific epithet derives from the occurrence of the rare depsides, 5-chlorolecanoric acid and 3,5-dichlorolecanoric acid in this taxon.

Notes: Morphologically this new species closely resembles *P. macrospora* (Elix & J. Johnst.) Elix both having adnate, sublinear to subirregularly lobed thalli, with a maculate upper surface which lacks vegetative propagules, a brown lower surface, long, reniform ascospores and curved, filiform conidia (ELIX 2004). The two species can be distinguished by their very distinctive medullary chemistries. *Parmeliopsis macrospora* contains scabrosin diacetate (negative to all spot tests) whereas *P. chlorolecanorica* contains lecanoric, 5-chlorolecanoric and 3,5-dichlorolecanoric acids (C⁺ red). The rare depside, 5-chlorolecanoric acid, has previously been observed in the

genus *Punctelia* (ELIX & WARDLAW 2002). The two species are sympatric and endemic to Western Australia.

Additional specimens examined: Australia: Western Australia: 3 km N of Corinthia, 31°06'25"S, 119°13'46"E, on *Callitris*, 4 Dec. 1997, R. J. Cranfield 11814 (PERTH); type locality, on dead shrub, 23 Apr. 2004, J. A. Elix 31965, 31967, 31968, 31969 (CANB); Bullfinch–Evanston road, 51.3 km N of Bullfinch, 30°37'19"S, 119°13'37"E, 360 m, on *Callitris* in *Eucalyptus*–*Callitris* woodland with *Acacia* understorey, 28 Apr. 2004, J. A. Elix 32507 (CANB); Goongarrie, 30 km S of Menzies, 29°58'55"S, 121°01'34"E, on *Acacia* in *Eucalyptus* woodland with *Casuarina* and *Acacia*, 8 Aug. 2005, E. McCrum GG153 (CANB, PERTH).

***Parmotrema paracrinitum* Elix, sp. nov.** (Fig. 2C)

Thallus ut in *Parmotrema crinitum* sed lobis eciliatis differt.

Typus here designated: Australia, New South Wales, Old Macleay River estuary, Stuarts Point, 30°49'S, 153°00'E, 1 m, on *Casuarina glauca* in mangrove swamp and strand vegetation, 18 January 1987, J. A. Elix 21352 (CANB – holotypus).

Thallus foliose, adnate to loosely adnate, coriaceous, 4–6 cm wide. Lobes imbricate, subirregular, irregularly branched, 5–10 mm wide; margins crenate or irregularly incised, eciliate. *Upper surface* pale grey to grey-green, flat, emaculate, smooth or becoming rugulose; cortex fragile; lacking soredia, isidiate; isidia dense, laminal and marginal, short-cylindrical, becoming coralloid, ±granular, apices syncorticate, eciliate. *Medulla* white. *Lower surface* black, with an erhizinate marginal zone; rhizines dense, simple, slender, to 1 mm long. *Apothecia* and pycnidia not seen.

Chemistry: Cortex K⁺ yellow; medulla K⁺ yellow, C⁻, P⁺ orange; containing atranorin, chloroatranorin, stictic acid (major), constictic acid (minor), cryptostictic acid (minor), menegazziaic acid (minor), norstictic acid (trace), hypostictic acid (trace).

Etymology: The specific epithet refers to the similarity of this species to *Parmotrema crinitum*, (Greek, *para* = near, compared with).

Notes: This species is characterized by the adnate to loosely adnate thallus, the lobes with eciliate margins, copious isidia and the presence of the stictic acid complex in the medulla. *Parmotrema crinitum* (Ach.) M. Choisy is morphologically similar and chemically identical to *P. paracrinitum*, but has conspicuously ciliate margins and the cylindrical isidia are often ciliate at the apices. The lobe margins and isidia of *P. paracrinitum* are by contrast, eciliate. *Parmotrema paracrinitum* was previously confused with *P. crinitoides* Wei (ELIX & STREIMANN 1999) but the latter has since been shown to lack isidia and to contain medullary alectoronic acid rather than the stictic acid complex (CHEN *et al.* 2005). This new species is very rare on the Australian mainland but is quite common on Norfolk Island.

Additional specimens examined: Australia: New South Wales: type locality, on *Casuarina glauca*, 20 Jan. 1987, J. A. Elix 21386 (CANB). Norfolk Island: At end

of abandoned track (Marshs road), Mt Pitt National Park, 29°00'48"S, 167°56'50"E, 180 m, on *Dodanea* twigs in subtropical forest on moderate slope near head of creek, *J. A. Elix* 29152, 17 June 1992 (CANB); Douglas Drive (property of W.W. Sanders), 29°02'10"S, 167°55'44"E, 90 m, on vine in disturbed, exotic infested dry forest on moderate slope, *J. A. Elix* 29190, 17 June 1992 (CANB); Filmy Fern Trail, off Selwyn Pine Road, Mt Pitt National Park, 29°01'20"S, 167°57'40"E, 150 m, on *Lagunaria* stem on side of road, *H. Streimann* 321818, 3 Dec. 1984 (CANB).

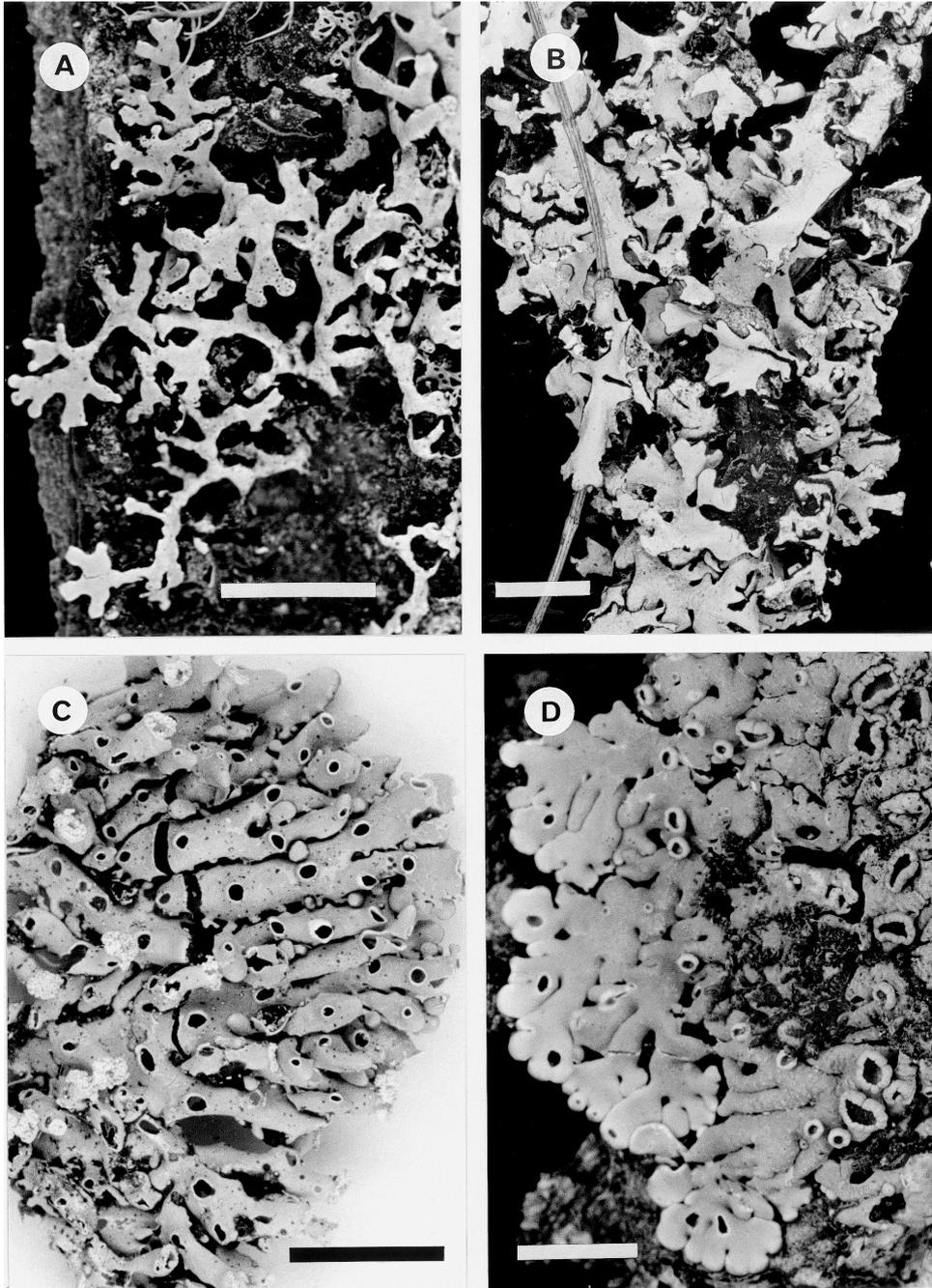


Fig. 1. A-D. New species of Parmeliaceae. A. *Anzia gallowayi* (holotype in CHR). B. *Hypotrachyna leswellensis* (holotype in BRI). C. *Menegazzia faminensis* (holotype in CANB). D. *Menegazzia lordhowensis* (holotype in CANB). Scale A-D = 5 mm.

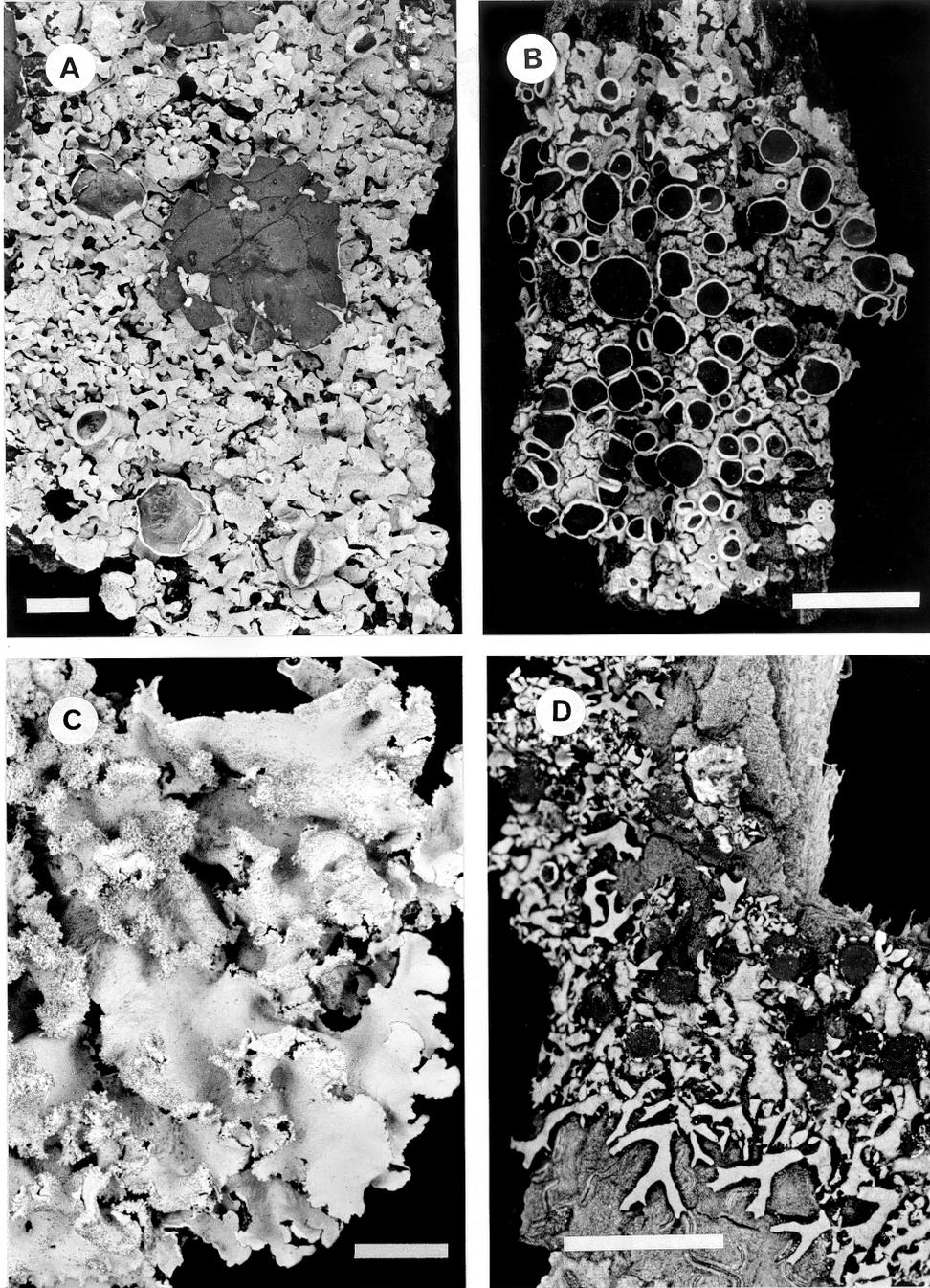


Fig. 2. A-D. New species of Parmeliaceae. A. *Parmelia nortestacea* (holotype in CHR). B. *Parmeliopsis chlorolecanorica* (holotype in PERTH). C. *Parmotrema paracrinitum* (holotype in CANB). D. *Relicina diderichii* (holotype in herb. Diederich). Scale A-D = 5 mm.

***Relicina diderichii* Elix sp. nov.**

(Fig. 2D)

Thallus ut in *Relicina samoensis* sed lobulatis et acidum hyposticticum, acidum hyposalazinicum et acidum hypoconsticticum continente differt.

Typus here designated: Papua New Guinea, Madang Province, near Bogia, along the Bogia–Josephstaal road, near Tanggu church, 4°27'S, 144°56'E, on crown and trunk of felled tree among gardens, 25 July 1992, P. Diederich 11461 (herb. Diederich – holotypus).

Thallus corticolous, tightly adnate, orbicular to spreading, 1.5–2.0 cm wide. *Lobes* linear to sublinear, separate, not or sparingly imbricate, dichotomously to subdichotomously branched, 0.2–1.0 mm wide, lobulate; lobules marginal, linear, 0.05–0.1 mm wide, not branched; margins bulbate-ciliate, cilia conspicuous, strongly inflated to globose, sparingly branched, to 1 mm long. *Upper surface* yellow-green, ±flat, shiny, smooth, emaculate, lacking isidia. *Medulla* white. *Lower surface* jet-black, smooth; rhizines dense, simple or sparingly branched, black. *Apothecia* common, 0.8–1.2 mm wide; disc ±flat, dark brown; exciple densely coronate, retrorsely rhizinate. *Ascospores* subglobose, 5–7 x 4.5–5.5 µm. *Pycnidia* common, laminal, emergent. *Conidia* bifusiform, 6–10 x 1 µm.

Chemistry: Cortex K+ pale yellow; medulla K+ yellow then pale red, C-, P-; containing usnic acid (minor), atranorin (minor), hypostictic acid (major), hyposalazinic acid (minor), hypoconstictic acid (minor), lecanoric acid (minor or trace).

Etymology: This species is named in honour of the collector and friend, Dr Paul Diederich.

Notes: Morphologically *R. diderichii* resembles the very common *R. samoensis* (Zahlbr.) Hale, as both have small thalli, very narrow, separate lobes, lack isidia, have a black, densely rhizinate lower surface and coronate apothecia. However, *R. samoensis* differs in lacking marginal lobules and in containing echinocarpic, conechinocarpic and gyrophoric acids in the medulla. No other species of *Relicina* is known to contain hypostictic acid as the major medullary substance (ELIX 1996). At present this new species is only known from the type collection.

Acknowledgments

I dedicate this paper to my friend Dr David Galloway on the occasion of his 65th birthday in honour of his many contributions to lichenology. I thank Drs. André Aptroot, Paul Diederich and the following herbaria, CANB,

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References

- CHEN, J.-B., WANG, S.-L. & ELIX, J. A. (2005): Parmeliaceae (Ascomycota) lichens in China's mainland. III. The genus *Parmotrema*. *Mycotaxon* **91**: 93–113.
- ELIX, J. A. (1994): *Hypotrachyna*. *Flora of Australia* **55**: 49–59.
- ELIX, J. A. (1996): A revision of the lichen genus *Relicina*. *Bibliotheca Lichenologica* **62**: 1–150.
- ELIX, J. A. (2004): Two new species of *Imshaugia* (Ascomycota: Parmeliaceae) from South America. *Mycotaxon* **90**: 337–341.
- ELIX, J. A. & ERNST-RUSSELL, K. D. (1993): A catalogue of standardized thin layer chromatographic data and biosynthetic relationships for lichen substances, 2nd Edn. Australian National University: Canberra.
- ELIX, J. A., BAWINGAN, P. A., LARDIZAVAL, M. & SCHUMM, F. (2005): A new species of *Menegazzia* (Parmeliaceae, lichenized Ascomycota) and new records of Parmeliaceae from Papua New Guinea and the Philippines. *Australasian Lichenology* **56**: 20–24.
- ELIX, J. A., GIRALT, M. & WARDLAW, J. H. (2003): New chloro-depsides from the lichen *Dimelaena radiata*. *Bibliotheca Lichenologica* **86**: 1–7.
- ELIX, J. A. & WARDLAW, J. H. (2002): 5-Chlorolecanoric acid, a new depside from *Punctelia* species. *Australasian Lichenology* **50**: 6–9.
- ELIX, J. A. & STREIMANN, H. (1999): Additional lichen records from Australia 41. Further new records of Parmeliaceae from Australia. *Australasian Lichenology* **45**: 5–7.
- GALLOWAY, D. J. (1985): *Flora of New Zealand Lichens*. P.D. Hasselberg, New Zealand Government Printer, Wellington.
- HALE, M. E. (1975): A revision of the lichen genus *Hypotrachyna* (Parmeliaceae) in tropical America. *Smithsonian Contribution to Botany* **25**: 1–73.
- HALE, M. E. (1987): A monograph of the lichen genus *Parmelia* Acharius sensu stricto (Ascomycotina: Parmeliaceae). *Smithsonian Contribution to Botany* **66**: 1–55.
- JAMES, P. W., APTROOT, A., DIEDERICH, P., SIPMAN, H. J. M. & SÉRUSIAUX, E. (2001): New species of the lichen genus *Menegazzia* in New Guinea. *Bibliotheca Lichenologica* **78**: 91–108.
- LOUWHOFF, S. H. J. J. & ELIX, J. A. (1999): *Parmotrema* and allied genera in Papua New Guinea. *Bibliotheca Lichenologica* **73**: 1–152.
- LOUWHOFF, S. H. J. J. & ELIX, J. A. (2002): *Hypotrachyna* (Parmeliaceae) and allied genera in Papua New Guinea. *Bibliotheca Lichenologica* **81**: 1–149.
- MCCARTHY, P. M. (2006): Checklist of the Lichens of Australia and its Island Territories. ABRs: Canberra. <http://www.anbg.gov.au/abrs/lichenlist/introduction.html> (last updated 13 April 2006).

- ORCHARD, A. E. (1994): Lichens – Lecanorales 2. Parmeliaceae. *Flora of Australia* **55**: 1–360.
- YOSHIMURA, I. & ELIX, J. A. (1993): The lichen genera *Anzia* and *Pannoparmelia* in Australia. *Journal of the Hattori Botanical Laboratory* **74**: 287–298.
- YOSHIMURA, I., SIPMAN, H. J. M. & APTROOT, A. (1995): The lichen genus *Anzia* in New Guinea. *Bibliotheca Lichenologica* **58**: 439–469.