

NOTES ON THE LICHENIZED ASCOMYCETE GENUS *THELENELLA*
Nyl. IN AUSTRALIA, SOUTHERN AFRICA AND ON THE ISLANDS OF
THE SUBANTARCTIC AND ANTARCTIC

by

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ABSTRACT

Mayrhofer, H. and McCarthy, P.M. Notes on the lichenized Ascomycete genus *Thelenella* Nyl. in Australia, Southern Africa and on the islands of the Subantarctic and Antarctic. *Muelleria* 7(3): 333–341 (1991) — The Australian, South African, Subantarctic and Antarctic records of the lichen genus *Thelenella* are summarized. *Thelenella tasmanica* Mayrh. & McCarthy is new to science. The new combination *Thelenella mawsonii* (Dodge) Mayrh. & McCarthy (syn. *Microglaena austrogeorgica* D.C. Lindsay) is made for a species closely related to *T. kerguelena* (Nyl.) Mayrh. *Thelenella luridella* (Nyl.) Mayrh. and *T. brasiliensis* (Müll. Arg.) Vainio are reported for the first time from Australia and South Africa, respectively. Additional records are given for *T. antarctica* (M. Lamb) Eriksson, *T. kerguelena*, *T. luridella*, and *T. mawsonii*. *Microglaena tibestiana* Werner is a new synonym of *T. luridella*. A revised key to the saxicolous species of *Thelenella* is provided.

INTRODUCTION

The lichen genus *Thelenella* was described by Nylander (1855) on the basis of a single species, *Verrucaria modesta*. Later, Zahlbruckner (1907, 1926) subsumed the genus within *Microglaena* Koerber, while more recently, Lindsay (1976b) provided a key to the Subantarctic and Antarctic *Microglaenae*.

According to Santesson (in Farr *et al.* 1979), *Microglaena* is a later homonym of *Microglena* Ehrenberg, an algal genus. Thus, in compliance with Articles 64 and 75 of the Code, it becomes illegitimate. Mayrhofer & Poelt (1985), in a revision of the European species of *Microglaena sensu* Zahlbr., recognised three genera, viz. *Chromatochlamys* Trevisan, *Protothelenella* Räsänen and *Thelenella* (syn. *Microglaena sensu stricto*) together with several discordant elements already detected by other workers (Vězda 1969, Santesson (in Hawksworth *et al.*) 1980, Jørgensen *et al.* 1983 and Jørgensen & Vězda 1984). In accordance with the suggestion of Eriksson (1981: 96), Mayrhofer (1987) described the new family Thelenellaceae, and although Harris (1989) agreed with this move, he disputed the inclusion therein of *Chromatochlamys* and *Julella* H. Fabre. The latter, according to Barr (1986) belongs in the Arthopyreniaceae.

Thelenella is defined by a crustose thallus, often immersed perithecia, thick-walled bitunicate asci, a hamathecium of branched and anastomosing paraphyses and periphysoids, colourless to pale brown submuriform to muriform ascospores and conidiomata with filiform conidia; an open involucrellum is present in only a few species. It is noteworthy that most of the saxicolous species, with the exception of *T. brasiliensis* and *T. luridella*, appear to be restricted to maritime or at least oceanic habitats.

REVISED KEY TO THE SAXICOLOUS SPECIES OF *THELENELLA*

1. Ascospores more than 22 μm broad, 50–82 \times 22–33 μm . Thallus thick, verrucose-areolate, sordid white to yellowish-white. Perithecia immersed. Antarctic islands *T. antarctica*

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1. Ascospores less than 23 μm broad 2
2. Mature ascospores pale brown to brown, 30–45 \times 15–22 μm . Thallus relatively thick, rimose-areolate to areolate, pale grey to grey-brown. Perithecia immersed. Juan Fernandez Island (SE Pacific Ocean) *T. fernandeziana*
2. Mature ascospores colourless; over-mature ones may be pale brown 3
3. Perithecia possessing an involucrellum 4
3. Perithecia lacking an involucrellum 6
4. Ascospores ellipsoid to elongate-ellipsoid, 20–32 \times 10–16 μm . Thallus thin, membranous to rimose. Perithecia semi-immersed to almost superficial. Subantarctic islands *T. kerguelena*
4. Ascospores elongate-ellipsoid to subcylindrical, 34–52 \times 13–20 μm 5
5. Thallus thick, matt, rimose-areolate, pale grey-brown to ochraceous. Involucrellum dark brown. Perithecia semi-immersed in thalline warts. Ascospores 35–47 \times 14–19 μm . Guadalupe (Mexico) and San Nicholas Island (California) *T. weberi*
5. Thallus very thin, smooth, effuse or determinate, continuous to sparingly rimose, pale greenish-grey. Involucrellum dark olive-brown to black (especially near the apex). Perithecia almost superficial. Ascospores 34–52 \times 14–20 μm . Subantarctic islands *T. mawsonii*
6. Ascospores 35–55 μm long 7
6. Ascospores 20–36 μm long 8
7. Perithecia with a hemispherical or conical apex, protruding from thalline warts. Thallus thin, sordid white to yellowish-green, rimose, smooth. Ascospores subcylindrical, 40–55 \times 14–20 μm . Java *T. marginata*
7. Perithecial apex not protruding from thalline warts. Thallus thin, ochraceous, yellowish-grey, grey or grey-brown, matt to slightly glossy, membranous-rimose to rimose-areolate. Ascospores ellipsoid to elongate-ellipsoid, 35–50 \times 13–20 μm . Tropical and subtropical regions *T. luridella*
8. Medulla I+ pale blue. Thallus thin, sordid white to yellowish-grey, continuous to rimose, smooth. Perithecia immersed to semi-immersed. Ascospores broadly ellipsoid, 22–27 \times 10–14 μm . St Vincent Island (West Indies) *T. elliottii*
8. Medulla I- 9
9. Ascospores broadly ellipsoid to ellipsoid, with 3–4 longitudinal divisions, 20–35 \times 12–18.5 μm . Thallus rimose to areolate, pale to dark greenish-grey to grey-brown, glossy, smooth or uneven. Perithecia semi-immersed in thalline warts to almost superficial. Tasmania *T. tasmanica*
9. Ascospores elongate-ellipsoid, oblong or subcylindrical, with 2–3 longitudinal divisions, 20–36 \times 9–13 μm 10
10. Thallus thick, ochraceous to pale reddish-brown, rimose-areolate. Perithecia immersed in thalline warts. Ascospores elongate-ellipsoid to oblong, 24–36 \times 9–13 μm . SW Europe, Canary Islands, California *T. inductula*
10. Thallus thin, membranous to rimose, rarely rimose-areolate. Ascospores elongate-ellipsoid to subcylindrical 11
11. Thallus pale ochraceous to yellowish-brown, membranous-rimose, matt. Perithecia immersed. Ascospores 24–30 \times 9–13 μm . Ellesmere Island (Arctic Canada), Disko Island (Greenland) *T. sordidula*

11. Thallus pale brown, olive-brown or olive-green, membranous to membranous-rimose, matt to glossy. Perithecia immersed to semi-immersed. Ascospores $20\text{--}32 \times 9\text{--}13 \mu\text{m}$. Tropical and subtropical regions *T. brasiliensis*

1. *Thelenella antarctica* (M. Lamb) Eriksson, *Opera Botanica* 60: 96 (1981) — *Microglæna antarctica* M. Lamb., *Discovery Reports* 25: 24 (1948).

This species is known from Deception, Desolation, Nelson and King George Islands in the South Shetland group (Lamb 1948, Guzman & Redon 1981) and also from the South Orkney Islands (Smith 1972, Redon 1985).

ADDITIONAL SPECIMENS EXAMINED:

South Shetland Islands — King George Island, Filder Peninsula, 6.ii.1983, *L. Kappen* (KIEL-HA).

South Orkney Islands — Livingston Island, South Beaches, Byers Peninsula, 7.xii.1965, *D.C. Lindsay* 176 (AAS); Signey Island, NE side of Bernsten Point, Borge Bay, 21.xi.1966, *D.C. Lindsay* 1396 (AAS); Signey Island, Bernsten Point, Borge Bay, 20.i.1967, *D.C. Lindsay* 1513b, 1514a, 1523 (AAS).

2. *Thelenella brasiliensis* (Müll. Arg.) Vainio, *J. Bot.* 34: 293 (1896) — *Microglæna brasiliensis* Müll. Arg., *Flora, Jena* 71: 547 (1888).

This lichen was reported for the first time from Australia (SE Queensland) by Hafellner *et al.* (1989). The following is the first record from Southern Africa.

SPECIMEN SEEN:

Republic of South Africa — Cape Province, Humansdorp District, Blaauwkrantz Pass, on rocks in a ravine near the Bridge over Blaauwkrantz River, 23.viii.1953, *O. Alborn* 3762 (LD).

3. *Thelenella harrisii* Mayrh., *Biblioth. Lichenol.* 26: 36 (1987).

This inconspicuous corticolous lichen, first described from California, U.S.A., is known from one locality in south-central New South Wales, Australia (Mayrhofer 1987).

4. *Thelenella kerguelena* (Nyl.) Mayrh., *Biblioth. Lichenol.* 26: 43 (1987) — *Microglæna kerguelena* (Nyl.) Zahlbr., *Deutsche Südpolar Exp., 1901–1903* 8: 51 (1906) — *M. austrocinerascens* D. Lindsay, *Nova Hedwigia* 27: 878 (1976).

This species has been reported from Kerguelen Island (Crombie 1876), Marion Island (Lindsay 1976a) and Heard Island (Dodge & Rudolph 1955; specimen not seen). The report from South Georgia (Mayrhofer 1987) refers to *T. mawsonii*.

5. *Thelenella luridella* (Nyl.) Mayrh., *Biblioth. Lichenol.* 26: 45 (1987) — *Microglæna luridella* (Nyl.) Zahlbr., *Cat. Lich. Univ.* 1: 192 (1921); for further synonyms, see Mayrhofer (1987).

NEW SYNONYM: *Microglæna tibestiana* Werner, in Maire & Monod, *Mem. Inst. Franc. Afrique Noire* 8: 18 (1950) — Lamb, *Ind. Nom. Lich.*: 416 (1963) — Mayrhofer, *Biblioth. Lichenol.* 26: 87 (1987). TYPUS: Algeria, Tibesti, Emi Koussi, Guelta de Karaie, alt. 2000 m, 12.ii.1940, *T. Monod* 7781 (HOLOTYPUS: BC).

Mayrhofer (1987) reported *T. luridella* from the South Island of New Zealand and from the Transvaal, South Africa. Fully mature ascospores of re-examined and newly studied specimens are larger ($35\text{--}50 \times 13\text{--}20 \mu\text{m}$) than previously cited (Mayrhofer 1987; $30\text{--}45 \times 12\text{--}19 \mu\text{m}$). An ascus with immature ascospores is seen in Fig. 4.

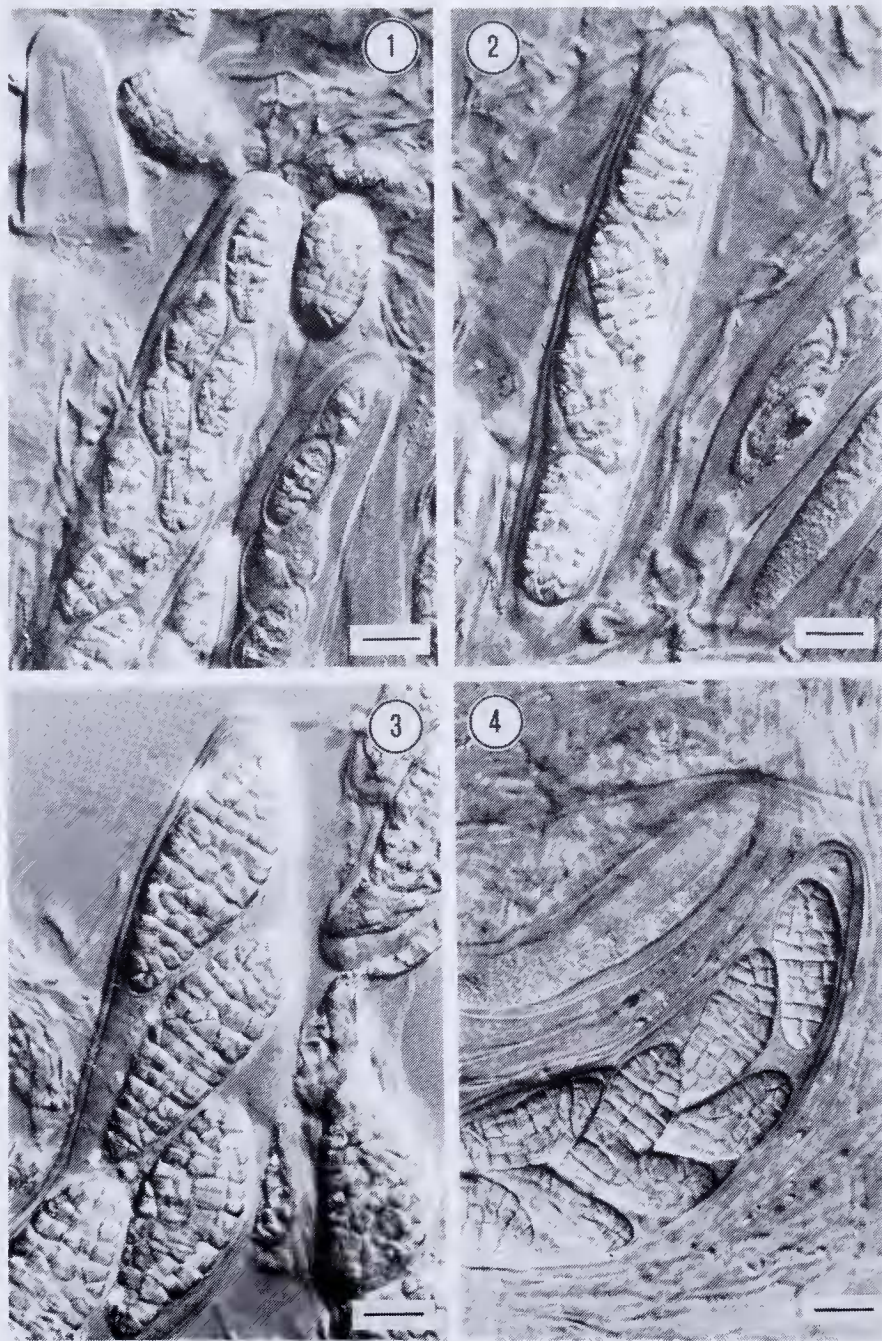


Fig. 1. *Thelenella tasmanica* (Holotypus). Asci with immature ascospores; scale 10 μm .

Fig. 2. *Thelenella tasmanica* (Holotypus). Ascus with mature ascospores; scale 10 μm .

Fig. 3. *Thelenella mawsonii* (Heard Island, MEL 1032266). Ascus with four mature ascospores; scale 10 μm .

Fig. 4. *Thelenella luridella* (Holotypus of *Microglæna tibestiana*). Ascus with immature ascospores; scale 10 μm .

ADDITIONAL SPECIMENS EXAMINED:

Australia — Queensland, Woodford Road, N of Dayboro, Terrors Creek, on greenstone boulders, alt. c. 300 m, 13.viii.1986, *J. Hafellner 15645* & *G.N. Stevens* (Herb. Hafellner).

Southern Africa — Lesotho [Basutoland], Maseru Division, Roma Valley, 24.vi.1962, *L. Kofler* (LD).

6. *Thelenella mawsonii* (Dodge) Mayrh. & McCarthy, *comb. nov.*

BASIONYM: *Microglæna mawsonii* Dodge, *B.A.N.Z.A.R.E. 1929–1931 Rep., Ser. B*, 7: 46 (1948) — Lamb, *Ind. Nom. Lich.*: 416 (1963) — Lindsay, *Nova Hedwigia* 27: 879 (1976) — *Bull. Br. Antarct. Surv. Bull.* 44: 105 (1976) — Øvstedal, *Norsk Polarinstitutt Skr.* 185:50 (1986) — Mayrhofer, *Biblioth. Lichenol.* 26: 44 (1987). TYPUS: *Kerguelen Island*, Observatory Bay, above Port Jeanne d'Arc, alt. 1600 feet, 20.ii.1930, *B.A.N.Z.A.R.E. B 201* (HOLOTYPUS: FH; associated with *Steinera* sp., called *S. werthii* by Dodge (1948); according to Henssen & James (1982), it is *S. glauccella*).

SYNONYM: *Microglæna austrogeorgica* D. C. Lindsay, *Br. Antarct. Surv. Bull.* 44: 105 (1976) — Mayrhofer, *Biblioth. Lichenol.* 26: 44 (1987). TYPUS: *South Georgia*, Zenker Ridge, between Moraine Fjord and Hestesletten, alt. 25 m, 19.ii.1971, *R. I. L. Smith 1703* (HOLOTYPUS: AAS).

Thallus crustose, epilithic, pale greenish-grey, thin, effuse, continuous to sparingly rimose; surface matt, smooth. *Perithecia* numerous, usually solitary, almost superficial, with an open dark olive-brown to black (especially near the apex) involucrellum, 0.45–0.65 mm diam. *Ostiole* inconspicuous to excavate. *Excipulum* hyaline to pale brown at the base, becoming brown to dark brown at the sides, 25–35 µm thick. *Paraphyses* multicellular, branched and anastomosing, 0.8–1.2 µm thick. *Ascus* (4–)6(–8)-spored. *Ascospores* colourless, muriform, with 12–16 transverse and 3–4 longitudinal divisions, elongate-ellipsoid, 34–52 × 14–20 µm. *Conidiomata* not seen. (Figs. 3, 5)

Thelenella mawsonii is characterised by perithecia with a spreading involucrellum. Mayrhofer (1987) tentatively placed *Microglæna mawsonii* and *M. austrogeorgica* in the synonymy of the closely-related *T. kerguelena*. However, it is distinguished from *T. kerguelena* mainly by its larger ascospores.

DISTRIBUTION:

This lichen is known from Kerguelen, Heard and Macquarie Island, from South Georgia and from Bouvetøya (Øvstedal 1986, specimen not seen). It is represented in the MEL collections by 11 specimens from nine localities on Macquarie Island, where it has been found at altitudes ranging from 60 m to 370 m above sea-level. A selection of the latter is listed below.

ADDITIONAL SPECIMENS EXAMINED:

Kerguelen Island — Low Lands, 11.ii.1963, *R. B. Filson 4644* (MEL).

Heard Island — Atlas Cove, 8.ii.1963, *R. B. Filson 4584* & *J. Williams* (MEL 1032266; associated with *Verrucaria maura*).

Macquarie Island — 1 mile N of Bauer Bay, 28.i.1964, *R. B. Filson 5827* (MEL); W of Brothers Summit, alt. 200 feet, 14.viii.1965, *K. Simpson E81* (MEL 1000416); peak of hill on the ridge N of and above Caroline Cove, alt. 800–900 feet, 20.i.1966, *K. Simpson E75* (MEL 1000267).

7. *Thelenella modesta* (Nyl.) Nyl., *Mem. Soc. Sci. Nat. Cherbourg* 3: 193 (1855) — *Microglæna modesta* (Nyl.) A. L. Sm., *Monogr. Brit. Lich.*: 308 (1911).

The report of this corticolous species from SE Queensland, Australia by Hafellner *et al.* (1989) was the first from the Southern Hemisphere. It has a scattered distribution in Europe and North America (Mayrhofer 1987).

8. *Thelenella tasmanica* Mayrh. & McCarthy, sp. nov.

Thallus epilithicus, pallidus vel atroviridigriseus vel griseobrunneus, 40–60(–100) μm crassus, rimosus vel areolatus. *Perithecia* simplicia, 0.4–0.6(–0.7) mm diametro, in verrucis thallinis semiimmersa vel fere superficialia. *Excipulum* ad basim hyalinum vel subfuscum, ad latera fuscescens, 25–35 μm crassum. Ascospores 6–8, incolorate, muriformes, (20.6–)27.9(–35.3) \times (11.8–)15.2(–18.5) μm . *Conidia* valde curvata, 10–16 \times 0.7–0.9 μm .

TYPUS: Australia, Tasmania, Bass Strait, Furneaux Group, Isabella Reef, 32 m SE of summit, on maritime granite, alt. 6.5 m, 12.iii.1986, J. S. Whinray 1707 (HOLOTYPE: MEL 117717; ISOTYPUS: GZU).

Thallus crustose, epilithic, pale to dark greenish-grey to grey-brown, usually 1–2 cm diam., 40–60(–100) μm thick, rimose to areolate; surface usually glossy, smooth or uneven. *Areolae* 0.2–0.7(–1.0) mm wide, angular, regular or irregular

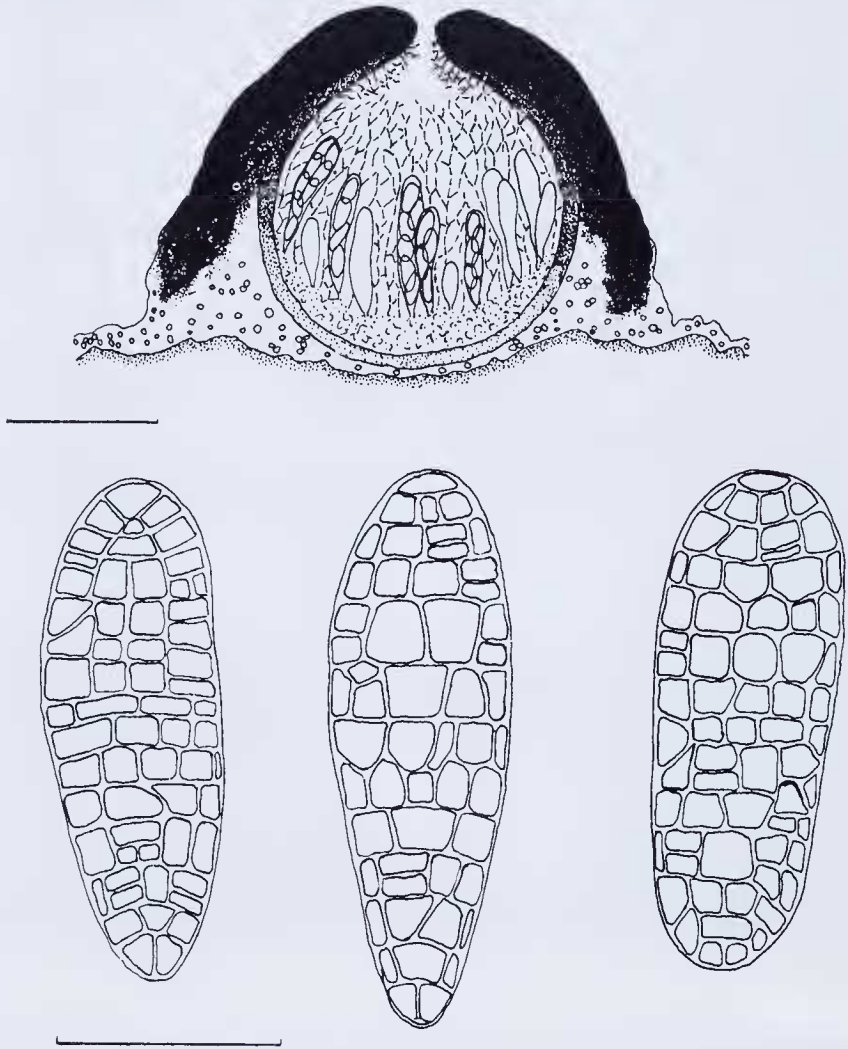


Fig. 5. *Thelenella mawsonii* (Heard Island, MEL 1032266). A — vertical section of perithecium and thallus; scale 0.2 mm. B — ascospores; scale 20 μm .

in shape, plane to somewhat convex, frequently rimulose. *Prothallus* often visible, dark olive-brown. The thallus is covered by a 15–25 μm thick colourless necral layer that is subtended by 1–2 layers of 3–5 μm diam brown-pigmented hyphal cells. *Algae* green, globose, 8–14(–16) μm diam; interstitial hyphae thick-walled, 2–3(–4) μm diam. *Perithecia* simple, 0.4–0.6(–0.7) mm diam., semi-immersed in thalline warts to almost superficial, often numerous, usually solitary, but occasionally in groups of 2–3. *Perithecial apex* grey-green to olive-brown to black, rounded, flattened or becoming concave. *Ostiole* inconspicuous or up to 0.1 mm diam. *Centrum* globose to transversely ellipsoid, 0.3–0.5(–0.55) mm wide. *Excipulum* hyaline to pale brown at the base, becoming brown to dark brown at the sides, 25–35 μm thick. *Paraphyses* and *periphysoids* multicellular, richly branched and anastomosing, 1.0–1.5 μm wide. *Periphyses* absent. *Asci*

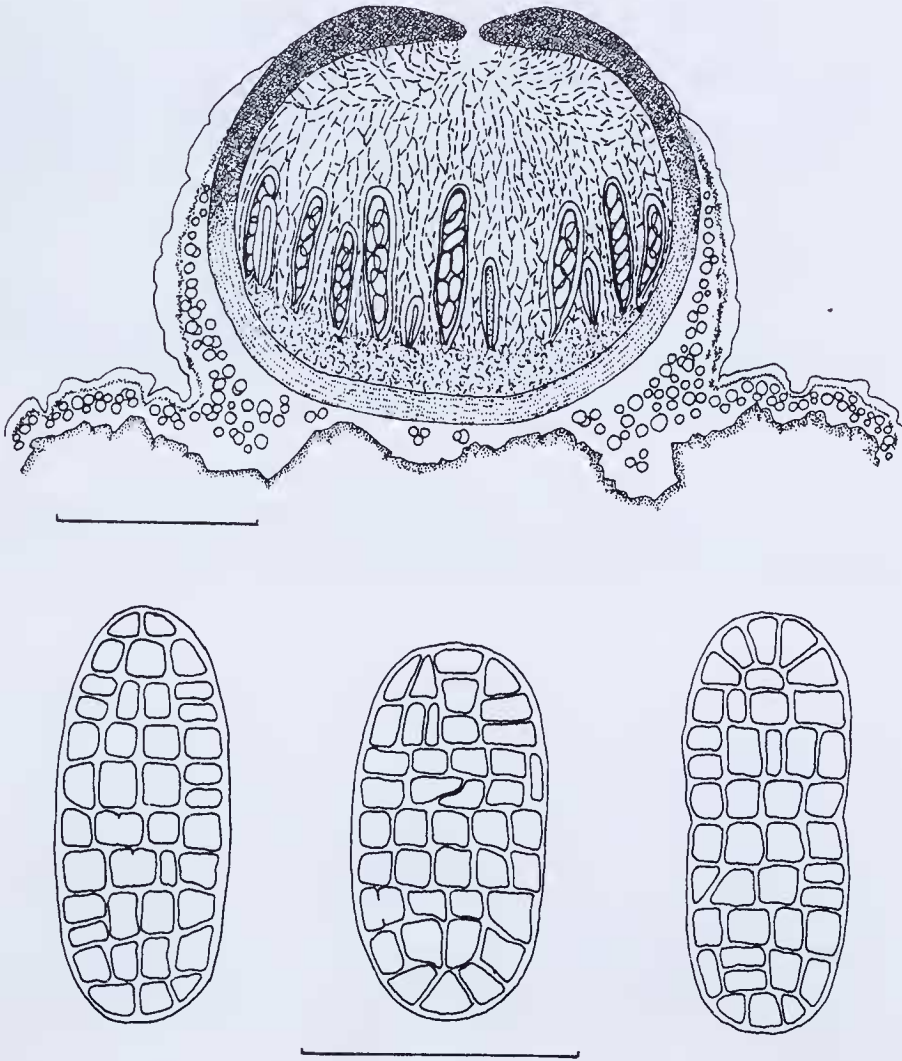


Fig. 6. *Thelenella tasmanica* (Holotypus). A — vertical section of perithecium and thallus; scale 0.2 mm. B — ascospores; scale 20 μm .

bitunicate, cylindro-clavate to cylindrical, thin-walled, 6–8-spored, I–, 100–140(–160) × 20–30 μm; apex rounded or flattened, without a visible apical apparatus. *Ascospores* colourless, muriform, with 7–11 transverse divisions and 3–4 longitudinal divisions, ellipsoid to broadly ellipsoid, usually uniseriate or biseriate in the asci, (20.6–)27.9(–35.3) × (11.8–)15.2(–18.5) μm (80 individuals measured). *Conidiomata* occasional, brown-walled, immersed, 0.08–0.12 mm diam. *Conidia* filiform, 10–16 × 0.7–0.9 μm, strongly curved. (Figs. 1, 2, 6)

Thelenella tasmanica is characterised by its rather thick areolate thallus, semi-immersed to almost superficial perithecia and broadly ellipsoid ascospores. The new species occurs mainly on maritime granite and is known from several islands in the Bass Strait and from a single locality on the north coast of mainland Tasmania.

ADDITIONAL SPECIMENS EXAMINED:

Tasmania (mainland) — Stanley Peninsula, North Point, on sea-worn basalt pebbles, alt. 3 m, 29.i.1965, J.H. Willis (MEL 7592; filed with *Lecanora ? sordida*).

Bass Strait Islands — Hunter Island, Big Duck Bay, on maritime quartzite, 5.xi.1973, T.B. Muir 5252 (MEL 1021262; filed with *Rinodina teichophiloides*¹); Curtis Island, ridge above NE peninsula, on exposed maritime granite, 9.ii.1971, R.B. Filson 12113 (MEL 40289; filed with *Ochrolechia parella*); Furneaux Group, Little Green Island, on exposed maritime granite, 5–8 m in from high water level, alt. 2.5–3.5 m, 3.i.1975, J.S. Whinray (MEL 1019991); Furneaux Group, Passage Island, on maritime granite, 5–9 m in from high water level, alt. 1.5–3 m, 13.x.1979, J.S. Whinray 1377 (MEL); Furneaux Group, Long Island, on exposed maritime granite, 1–3 m in from high water level, alt. 0.9–2.4 m, 1.i.1971, J.S. Whinray & M.H. Christie (MEL 1031727); Furneaux Group, Doughboy Island, on exposed maritime granite, alt. 0.5–0.75 m, 5.xi.1969, J.S. Whinray (MEL); Furneaux Group, Flinders Island, Killiecrankie Bay, on exposed maritime granite, 29.vii.1966, J.S. Whinray (MEL 1516785); Furneaux Group, Badger Island, Unicorn Point, on granite, 25 m in from high water level, alt. 5 m, 10.x.1975, J.S. Whinray (MEL 1019461); Kents Group, Deal Island, Browns Bay, on exposed maritime granite, 9–13 m in from high water level, alt. 1–2 m, 22.xii.1970, J.S. Whinray (MEL 1012507); Kents Group, North-east Island, on granite, 9 m in from high water level, alt. 4.5 m, 29.xi.1971, J.S. Whinray (MEL 1012610); Hogans Group, Hogans Island, on exposed maritime granite, alt. 4–5 m, 27.xii.1973, J.S. Whinray (MEL 1012985).

ACKNOWLEDGEMENTS

We should like to thank Dr Josef Hafellner (Graz), Peter Jacobsen (Kiel), Prof. Dr Josef Poelt (Graz) and Dr Christoph Scheidegger (Birmensdorf, Switzerland) for their assistance and the curators of the following institutions for the loan of material: AAS, BC, FH, KIEL-HA, and LD.

REFERENCES

- Barr, M. E. (1986). On *Julella*, *Delacourea* and *Decaisnella*, three dictyosporous genera described by J. H. Fabre. *Sydowia* 38: 11–19.
- Crombie, J. M. (1876). Lichenes Terrae Kergueleni. *J. Linn. Soc., Bot.* 15: 183–190.
- Dodge, C. W. & Rudolph, E. D. (1955). Lichenological notes on the flora of the Antarctic Continent and Subantarctic Islands. *Ann. Mo. bot. Gdn* 42: 131–149.
- Eriksson, O. (1981). The families of bitunicate Ascomycetes. *Opera Botanica* 60: 1–220.
- Farr, E. R., Leussnik, J. A. & Stafleu, F. A. (1979). 'Index nominum genericorum (plantarum)'. 3 volumes, (Bohn, Scheltema & Holkema: Utrecht.)
- Guzman, G. G. & Redon, J. F. (1981). Los líquenes de Península Ardlé y zonas adyacentes, Isla Rey Jorge, Antártica Occidental. *I.N.A.C.H., Scr. Cient.* 27: 19–37.
- Hafellner, J., Filson, R. B. & Rogers, R. W. (1989). Some genera and species of lichenized fungi new to Australia. *Nova Hedwigia* 48: 229–235.
- Harris, R. C. (1989). A sketch of the family Pyrenulaceae (Melanommatales) in Eastern North America. *Mem. New York Bot. Gdn* 49: 74–107.
- Hawksworth, D. L., James, P. W. & Coppins, B. J. (1980). Checklist of British lichen-forming, lichenicolous and allied fungi. *Lichenologist* 12: 1–115.
- Henssen, A. & James, P. W. (1982). The lichen genus *Steinera*. *Bull. Br. Mus. nat. Hist. (Bot.)* 10: 227–256.

¹ All records of *Rinodina subcrustacea* from the Bass Strait islands (Mayrhofer 1984) belong to *R. teichophiloides* (Stizenb.) Zahlbr. a maritime lichen described from the Cape of Good Hope and also known from coastal areas of the Tasmanian mainland, New Zealand and Tierra del Fuego.

- Jørgensen, P. M. & Vězda, A. (1984). *Topelia*, a new Mediterranean lichen genus. *Beih. Nova Hedwigia* 79: 501–510.
- Jørgensen, P. M., Vězda, A. & Botnen, A. (1983). *Clathroporina calcarea*, a misunderstood lichen species, and a note on the genus *Clathroporina* in Europe. *Lichenologist* 15: 45–55.
- Lamb, I. M. (1948). Antarctic pyrenocarp lichens. *Discovery Reports* 25: 1–30.
- Lindsay, D. C. (1976a). Two new lichens from Marion Island, Southern Indian Ocean. *Nova Hedwigia* 27: 877–880.
- Lindsay, D. C. (1976b). South Georgian microlichens: II. A new species of *Microglæna* Korb. *Br. Antarct. Surv. Bull.* 44: 105–106.
- Mayrhofer, H. (1984). The saxicolous species of *Dimelaena*, *Rinodina* and *Rinodinella* in Australia. *Beih. Nova Hedwigia* 79: 511–536.
- Mayrhofer, H. (1987). Monographie der Flechtengattung *Thelenella*. *Biblioth. Lichenol.* 26: 1–106.
- Mayrhofer, H. & Poelt, J. (1985). Die Flechtengattung *Microglæna sensu Zahlbruckner* in Europa. *Herzogia* 7: 13–79.
- Nylander, W. (1855). Essai d'une nouvelle classification des lichens. *Mem. Soc. Sci. Nat. Cherbourg.* 3: 161–194.
- Øvstedal, D. O. (1986). Crustose lichens of Bouvetøya. *Norsk Polarinstitutt Skr.* 185: 35–56.
- Redon, J. F. (1985). 'Liquenes antarticos'. (Instituto Antartico Chileno: Santiago.)
- Smith, R. I. L. (1972). Vegetation of the South Orkney Islands with special reference to Signy Island. *Br. Antarct. Surv. Sci. Rep.* 68: 1–124.
- Vězda, A. (1969). *Leucocarpia* gen. nov., eine neue Gattung der Flechtenfamilie Verrucariaceae. *Herzogia* 1: 187–194.
- Zahlbruckner, A. (1907). Lichenes (Flechten). B. Spezieller Teil. In 'Die natürlichen Pflanzenfamilien. 1. Teil, Abteilung 1', Engler, A. & Prantl, K., eds.: 49–249. (Engelmann: Leipzig.)
- Zahlbruckner, A. (1926). Lichenes. B. Spezieller Teil. In 'Die natürlichen Pflanzenfamilien. 2. Auflage', Engler, A. & Prantl, K., eds., 8: 61–270. (Engelmann: Leipzig.)

