

SOUTH GEORGIAN MICROLICHENS: I. THE GENERA *Buellia* AND *Rinodina*

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ABSTRACT. The genera *Buellia* and *Rinodina*, as they occur on South Georgia, are reviewed and ten and eight species respectively are reported from each genus. *Rinodina convoluta* D. C. Lindsay is described as new to science and a key to the species of *Rinodina* is provided.

ALTHOUGH a number of large collections have recently been made on South Georgia, the microlichens, due to their small size and often drab thallus colouring, have frequently been overlooked in favour of the larger and more brightly coloured macrolichens. Extensive collections of microlichens were made by the author during the 1971-72 summer and it is these that form the basis of the present paper. As Lamb (1968), in his monograph of the genera *Buellia* and *Rinodina* for the Antarctic Peninsula-Scotia Ridge sector of the Antarctic, has included data on several South Georgian species, full descriptions and illustrations already exist for most of the species covered in this paper.

Nomenclature follows Lamb (1968) but for convenience the species are arranged alphabetically with anatomical and morphological data being provided for the few species not mentioned in that monograph. Distribution data are arranged for each species by means of the 5 km. grid squares overprinted on the South Georgia map in Greene (1964) and include many extensions of range, as well as additional ecological data for a number of species. Herbarium contractions follow those recommended by Lanjouw and Stafleu (1964).

Full collecting details for all specimens and data relating to field records are lodged in the botanical data bank associated with the herbarium of the British Antarctic Survey (AAS) at present housed in the Department of Botany, University of Birmingham, Birmingham, England.

Buellia De Not.

Thallus crustose, rimose to areolate, thick or thin, white, yellow, reddish to brown; apothecia lecideine, immersed to sessile, disc black; ascospores brown, 1-3 septate, without a hyaline epispore, 6-8 per ascus; paraphyses simple with clavate apices. Phycobiont *Trebouxia*.

Most Antarctic species of this genus are ornithocoprophilous to a greater or lesser extent and appear to have a relatively broad ecological amplitude, which results in a great degree of variation between specimens. As the key to species provided by Lamb (1968) takes into consideration the variants that have been found so far, a key is not provided here.

The fruticose *Buellia cladocarpiza* M. Lamb, apparently widespread in the South Orkney and South Shetland Islands and along the west coast of the Antarctic Peninsula (Lindsay, 1971), has not so far been found on South Georgia. Fruticose development has occurred in a number of crustose genera in the Antarctic in response to conditions of extreme ornithocoprophily, conditions which exist on South Georgia, but species such as *Buellia cladocarpiza* appear to be absent. This could be attributed to undercollecting, but the absence of fruticose species of *Bacidia*, *Catillaria*, *Lecania* and *Rinodina* on South Georgia, with similar ecological requirements and geographical distribution to *B. cladocarpiza*, tends to refute this and suggests an interesting phytogeographical problem.

Buellia anisomera Vain.

Descrip. Lamb (1968, p. 15-17).

Icon. Lamb (1968, pl. VIb-d).

This species is widespread on the north-east coast of South Georgia in dry, enriched or non-enriched habitats from near sea-level to 200 m. In enriched habitats it is associated with

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ornithocoprophilous species such as *Mastodia tessellata* (Hook. f. et Harv.) Hook. f. et Harv., *Haematomma erythromma* (Nyl.) Zahlbr. and *Buellia russa* (Hue) Darb., while in non-enriched situations it is found with *Parmelia ushuaeensis* Zahlbr. and *Usnea antarctica* Du Rietz. Although most of the specimens were growing directly on rock, a number, especially those from the northern part of the island, were growing epiphytically on *Buellia russa*. There have been no previous records of this species from South Georgia, it having been recorded from the South Sandwich, South Orkney and South Shetland Islands and the west coast of the Antarctic Peninsula (Lindsay, 1971).

Specimens examined

050 150 Lindsay 2761b (AAS), Lindsay 3775b (AAS). 140 115 Lindsay 4177 (AAS, IAA). 155 095 Lindsay 3931 (AAS, S). 160 055 Lindsay 4446b (AAS). 160 095 Lindsay 4065b (AAS), Lindsay 4095 (AAS, CHR, LE, MEL). 170 070 Lindsay 3680 (AAS). 170 090 Lindsay 3481 (AAS, SGO, TNS, US). 175 070 Lindsay 3713 (AAS, PC, PRE).

Buellia augusta Vain.

Descrip. Lamb (1968, p. 47).

Icon. Lamb (1968, pl. XIId).

Lamb (1968) reported *B. augusta* as being widespread throughout the South Orkney and South Shetland Islands and the west coast of the Antarctic Peninsula. The species can now be reported from South Georgia which is thus the northernmost locality for this Antarctic endemic species.

Specimens examined

170 090 Lindsay 3503 (AAS), Lindsay 3505 (AAS).

Buellia coniops (Wahlenb. ex Ach.) Th. Fr.

Descrip. Lamb (1968, p. 43-45).

Icon. Lamb (1968, pl. Xd).

Syn. ? *Buellia subconca* Müll. Arg. (Müller [Argoviensis], 1886, p. 127).

? *Buellia subviolascens* Zahlbr. (Zahlbruckner, 1917, p. 51).

First reported from South Georgia by Lindsay (1971), subsequent collections have shown this species to be the commonest and most variable species of *Buellia* on this island. It is a highly nitrophilous maritime species, most frequently found on coastal rocks beneath bird rookeries, especially those of the Dominican gull (*Larus dominicanus*), at altitudes of 2-5 m., but it has been found up to 30 m. Lamb (1968) described five forms of this species, of which f. *areolata* Vain. and f. *incrassata* M. Lamb appear to be the commonest on South Georgia. Since these forms appear to be environmentally induced modifications and intergrade to some extent, they have not been distinguished in the specimens cited below.

Buellia subconca Müll. Arg. was retained as a distinct species by Lamb (1968, p. 83) and Lindsay (1971, p. 17) on account of the persistently concave apothecia, the only real character distinguishing it from other species of the *B. coniops* group. However, as concave and convex apothecia occur frequently on the same thallus in *B. coniops*, *B. subconca* appears to be an unimportant modification of *B. coniops*. Since the type of *B. subconca* has not been available for study, a formal reduction into synonymy cannot yet be made.

Another species, *B. subviolascens*, was described by Zahlbruckner (1917) for material collected from Maiviken, and Lamb (1968, p. 83), pointing to its close relationship with *B. subconca*, noted that the characters separating the two were slight. The distinguishing characters listed by Lamb (1968, p. 83), namely more emergent apothecia, slightly higher hymenium, thinner paraphyses and slightly longer spores, are considered by the author to fall within the range of variation of *B. coniops*. Again, since the type specimen has not been available for examination, reduction into synonymy cannot definitely be made.

Specimens examined

050 150 Lindsay 3766 (AAS), Lindsay 3785 (AAS). 070 145 Greene 1276a (AAS). 120 145 Lindsay 4340 (AAS), Lindsay 4341 (AAS). 125 095 Greene 2505 (AAS as *Buellia subconca*, Lindsay, 1971, p. 17). 130 120 Lindsay 3095 (AAS), Lindsay 3103 (AAS, H, TNS, US), Lindsay 3104 (AAS, S), Lindsay 3107 (AAS, MEL). 130 125 Lindsay 4261 (AAS). 135 115 Lindsay 3445 (AAS). 140 120 Greene 976 (AAS), Lindsay 3285 (AAS, SGO), Lindsay 4239 (AAS), Lindsay 4240 (AAS), Lindsay 4244 (AAS). 155 055 Lindsay 4399 (AAS). 155 095 Lindsay 3908 (AAS), Lindsay 3921 (AAS, BM, FH, IAA, PC, PRE). 160 055 Lindsay 4440 (AAS), Lindsay 4444 (AAS). 160 100 Lindsay 4012 (AAS, CHR, LE, MEL). 165 075 Lindsay 3635 (AAS). 165 080 Lindsay 3651 (AAS, CHR, LE), Lindsay 3657 (AAS, SGO). 165 090 Lindsay 3567 (AAS), Lindsay 3563 (AAS), Lindsay 3570 (AAS), Lindsay 4391 (AAS, US), Lindsay 4386 (AAS, S). 170 070 Lindsay 3687 (AAS, TNS).

Buellia granulosa Darb.

Descrip. Lamb (1968, p. 20–22).

Icon. Lamb (1968, pl. VIIc and d).

Another Antarctic endemic species widely distributed in the maritime Antarctic (Lamb, 1968), this species is recorded from South Georgia for the first time, thus giving a northerly extension to its distribution range. The specimen listed below is from an enriched rock outcrop by the shore, associated with *Buellia coniops* and is referable to f. *incrassata* (Hue) D. C. Lindsay.

Specimen examined

140 120 Lindsay 4242 (AAS).

Buellia isabellina (Hue) Darb.

Descrip. Lamb (1968, p. 45–46).

Icon. Lamb (1968, pl. XIa and b).

A species with a similar distribution to the preceding one, *B. isabellina* is another new record for South Georgia which is now its northernmost known locality. The two specimens cited below were found on enriched coastal rocks at 2–3 m. a.s.l. associated with *B. coniops*, *Physcia caesia* (Hoffm.) Hampe, *Verrucaria tessellatula* Nyl. and *Xanthoria elegans* (Link) Th. Fr.

Specimens examined

120 145 Lindsay 4334 (AAS). 160 100 Lindsay 4018 (AAS).

Buellia latemarginata Darb.

Descrip. Lamb (1968, p. 50, 52–53).

Icon. Lamb (1968, pl. XIe and f, XVIb).

A common species in the maritime Antarctic (Lamb, 1968, p. 53), the range of this Antarctic endemic is now extended northward to South Georgia. The single specimen collected is identical to that illustrated by Lamb (1968, pl. XIe) and was growing on bird-perching rocks by the shore, with *B. coniops*, *Mastodia tessellata* and *Rinodina petermannii*.

Specimen examined

155 095 Lindsay 3917 (AAS).

Buellia melanostola (Hue) Darb.

Descrip. Lamb (1968, p. 40–41).

Icon. Lamb (1968, pl. IXd).

An Antarctic endemic species previously reported from the South Orkney Islands and the west coast of the Antarctic Peninsula (Lamb, 1968, p. 41), *B. melanostola* can be reported from

South Georgia. It is easily distinguished from the other South Georgian species of *Buellia* by the ascospores being polarilocular when immature.

Specimen examined

130 120 Lindsay 3097 (AAS).

Buellia punctata (Hoffm.) Massal.

Descrip. Lamb (1968, p. 26).

Icon. None of Antarctic material; Galløe (1932, pl. 8-17 as *B. myriocarpa*) for European material.

A cosmopolitan species, *B. punctata* was reported from the west coast of the Antarctic Peninsula and the South Orkney Islands by Lamb (1968) and Lindsay (1971), respectively. It appears to be widespread on South Georgia where it was growing only on introduced timber (Lindsay, 1973). However, since Lamb (1968, p. 25) recorded it as growing over stunted moss, this species is best considered as native, rather than introduced, to the Antarctic regions. Its absence from natural habitats on South Georgia may be ascribed to undercollecting.

Specimens examined

050 150 Lindsay 3847 (AAS), Lindsay 3849 (AAS), 130 120 Lindsay 4292 (AAS).
140 115 Lindsay 4202 (AAS).

Buellia russa (Hue) Darb.

Descrip. Lamb (1968, p. 32, 34-40).

Icon. Lamb (1968, pl. VIIIc-h, IXb, XVa).

An extremely variable, highly ornithocrophilous species, *B. russa* was previously considered endemic to the maritime Antarctic. It is now known from South Georgia where it appears to be widely distributed in enriched habitats on the north-east coast.

B. russa presents a far smaller range of variation on South Georgia than it does farther south, all material listed below being referable to var. *russa*; a number of specimens were overgrown by *B. anisomera*.

Specimens examined

050 150 Lindsay 3761a (AAS), Lindsay 3775a (AAS, US), Lindsay 3810 (AAS, SGO).
120 145 Lindsay 4331 (AAS, S), 140 115 Lindsay 4183 (AAS, TNS), Lindsay 4184 (AAS, CHR, H), 155 055 Lindsay 4398 (AAS), 155 095 Lindsay 3882 (AAS), 160 055 Lindsay 4446a (AAS), 160 095 Lindsay 4085 (AAS, LE, MEL), Lindsay 4087a (AAS), Lindsay 4088 (AAS).

DUBIOUS RECORDS AND EXCLUDED SPECIES

Buellia argillacea Müll. Arg.

The type specimen was described briefly by Müller [Argoviensis] (1888, p. 129) from South Georgia and re-described by Lamb (1968, p. 81), who noted that it was distinct from the Antarctic species he studied, but did not indicate the distinguishing characters. Since the type specimen has not been available for study and the species was not seen on South Georgia by the author, no comment can be made on its status.

Buellia austrogeorgica Müll. Arg.

Müller [Argoviensis] (1886, p. 128) described this species as new from South Georgia. Examination of the type in Hamburg (HBG) by the author revealed that it was *Rhizocarpon superficiale* (Schaer.) Vain.

Buellia melanotrichia Darb.

Described by Darbishire (1912, p. 15) from material collected by C. J. F. Skottsberg from Moraine Fjord, Cumberland East Bay, this species was shown to be synonymous with *Rhizocarpon polycarpon* (Grogg.) Th. Fr. by Zahlbruckner (1917, p. 23).

Buellia protothallina Vain.

Darbishire (1912) included this species in a compilation of literature records of South Georgian lichens, apparently in error, since *B. protothallina* has never been reported from the island. Lamb (1968, p. 31) showed that Antarctic records of this species referred to *B. russa*, which is already known from South Georgia.

Buellia saxatilis (Schaer.) Körb.

This species was reported from South Georgia by Taylor (1914) but it has not been seen subsequently on the island. In the light of Lamb's (1968) revision, Taylor's (1914) record is considered doubtful but it cannot be confirmed or rejected until his material is located.

Buellia stellulata (Tayl.) Mudd.

The only record of this species from South Georgia is that of Müller [Argoviensis] (1890, p. 326). Although Lamb (1968, p. 81-82) discussed *B. stellulata*, he did not cite it from the Antarctic or sub-Antarctic. Since the species has not been re-found on South Georgia, and as Müller's [Argoviensis] specimen has not been available for examination, the record must remain dubious.

Rinodina (Ach.) Gray

Thallus crustose, squamulose or subfruticose in which areolae become elevated on short thalline stipes, rimose to areolate, thick or thin, grey to dark brown; apothecia lecanorine, immersed to sessile, disc grey, brown or black; ascospores brown, 1-septate, of various types (Lamb, 1968, fig. 14a-e), 3-8 per ascus; paraphyses simple with clavate apices. Phycobiont *Trebouxia*.

A key is given to the species of *Rinodina* occurring on South Georgia and brief descriptions for those not treated by Lamb (1968).

1. Plant muscicolous or lignicolous	2
Plant saxicolous	5
2. Plant growing on decaying mosses, thallus \pm evanescent	3
Plant growing on wood, thallus \pm persistent	4
3. Ascospores $25-30 \times 10-12 \mu\text{m}$	<i>R. turfacea</i>
Ascospores $15-20 \times 7-9 \mu\text{m}$	<i>R. archaeoides</i>
4. Epithecium reddish brown, thallus granulose-areolate	<i>R. archaea</i>
Epithecium dark brown, thallus warted-areolate	<i>R. cf. metaboliza</i>
5. Apothecia appearing lecideine, immersed in thallus	<i>R. deceptionis</i>
Apothecia not appearing lecideine, sessile on thallus	6
6. Thallus crustose, effuse	<i>R. interpolata</i>
Thallus subsquamulose, effigurate	7
7. Thallus grey, apothecial disc pruinose	<i>R. convoluta</i>
Thallus brown, apothecial disc not pruinose	<i>R. petermannii</i>

Rinodina archaea (Ach.) Arnold

Icon. None.

Thallus crustose, granulose-areolate, grey, often with a brownish tinge, thin; apothecia lecanorine, up to 0.5 mm. in diameter, immersed at first, becoming sessile, round, occasionally irregularly angled through mutual pressure; disc black, concave to plane, slightly shining; thalline margin concolorous with thallus, up to 0.1 mm. broad, smooth to crenulate; hymenium up to $120 \mu\text{m}$. tall, epithecium reddish brown; ascospores 8 per ascus, polarilocular, pale

olivaceous when young, brown when mature, $17-24 \times 8-10 \mu\text{m.}$, 1-septate, thickened at apices and septum, cell lumina angular, septum thickened up to $5 \mu\text{m.}$; spores of the "Mischoblastia-type" (Lamb, 1968, fig. 14e).

This species is apparently new to the Southern Hemisphere, only one specimen being found on timber debris of huts near Köppen Point, Royal Bay, of the German International Polar-Year Expedition of 1882-83. Lindsay (1973) considered it as a probable introduction to South Georgia from the Northern Hemisphere. Poelt (1969) noted this species as being arctic-alpine in Europe, and it may possibly occur in the colder zones of the Southern Hemisphere, but it has been overlooked or misidentified.

Specimen examined

160 095 Lindsay 4048b (AAS).

Rinodina archaeoides H. Magn.

Descrip. Filson (1966, p. 41); Lamb (1968, p. 64).

Icon. Filson (1966, pl. 12), Kashiwadani (1970, pl. 3, fig. 8).

Filson (1966) recorded *R. archaeoides* from Mac.Robertson Land; further reports from South Victoria Land (Lamb, 1968) and Enderby Land (Kashiwadani, 1970) indicate that it is probably circum-polar continental Antarctic in its distribution. So far it has not been found in the maritime Antarctic.

The single specimen from South Georgia agrees exactly with Filson's (1966, p. 41) description and the illustrations of Kashiwadani (1970, fig. 2f-h). It appears to be locally abundant in continental Antarctica, growing over mosses in dry habitats (Kashiwadani, 1971). The South Georgian specimen was growing on a small, damp acrocarpous moss on an east-facing boulder at 100 m. a.s.l. associated with *Massalongia carnosa* (Dicks.) Körb.

Specimen examined

175 065 Lindsay 3720b (AAS).

Rinodina convoluta D. C. Lindsay, *sp. nov.*

Thallus orbicularis, effiguratus, squamulosus, densus pruinosis; squamulae pallido-cinerascentes vel alutaceae, peripheriam versus radiatim elongatae, in parte centrali rotundatae, nodulosae, imbricatae, suffruticosae. Apothecia lecanorina, 0.8-2.5 mm. diametro, sessilia, disco plano vel leviter convexo, nigro, pruinosis. Ascospores octonae, fuscae, ellipsoidae, parietibus tenuibus, uniseptatae, $15-20 \times 8-12 \mu\text{m.}$ Paraphyses simplices, apices capitatae. Thallus intrinsecus et extrinsecus reagentibus immutatibus.

Holotypus: supra saxa prope litus, South Georgia, Royal Bay, prope Köppen Point, GR. 162 098, leg. S. W. Greene, 19.ii.1961, Greene 2230 (AAS).

Thallus forming circular patches up to 15 cm. in diameter, effigurate, squamulose; squamules light grey to alutaceous, forming radiating elongated lobes at periphery, in central part of thallus rounded, nodular and imbricate, giving a subfruticose appearance, densely pruinose; ventral surface of thallus pallid to black, without rhizinae; hypothallus not seen.

Apothecia abundant, 0.8-2.5 mm. in diameter, sessile, circular, constricted at base, with persistent, prominent, smooth, entire, thalline margin concolorous with thallus; no proper margin visible. Disc plane to slightly convex, black, lightly or densely pruinose. Margin with brown cortex similar to that of the thallus, medulla colourless, containing algae. Hypothecium 80-200 $\mu\text{m.}$ deep, light to dark brown, subtended by scattered groups of algae. Hymenium 100-120 $\mu\text{m.}$ tall, hyaline to light brown. Paraphyses simple, apices dark brown, capitate to 4-5 $\mu\text{m.}$ Asci clavate, 70-90 $\mu\text{m.}$ tall, 20-25 $\mu\text{m.}$ wide. Ascospores 8 per ascus, irregularly arranged, brown, ellipsoid, evenly thin-walled, 1-septate, not constricted at the septum, $15-20 \times 8-12 \mu\text{m.}$

Pycnidia not seen. Phycobiont trebouxoid. Thallus negative with K, C, P and I.

Holotype: on rocks by shore, South Georgia, Royal Bay, near Köppen Point, grid reference 162 098, leg. S. W. Greene, 19.ii.1961, Greene 2230 (AAS).

This species is quite distinct from any of those described by Lamb (1968) in possessing a completely squamulose thallus. In habit it resembles *Acarospora convoluta* Darb. (Darbishire, 1912, pl. III, fig. 32), in which the thallus becomes subfruticose by the imbrication of lobules near its centre, unlike the situation in *Rinodina petermannii*, in which the thallus becomes fruticose by the elevation of areolae on thalline stipes. It does not appear to be related to any of the species of *Rinodina* so far recorded from the Antarctic.

On South Georgia, this species is readily recognized by the squamulose, convolute, pruinose thallus. It appears to be moderately nitrophilous and has been found almost exclusively on rock overhangs facing south, inundated occasionally by nitrogenous melt, within a few metres of high-tide level, though it has been found occasionally on bird-perching stones at altitudes of up to 50 m.

Specimens examined

120 145 Lindsay 4343 (AAS, SGO). 130 115 Lindsay 4296 (AAS). 130 120 Lindsay 3096 (AAS), Lindsay 3334 (AAS). 130 125 Lindsay 4257 (AAS, CHR, LE). 155 095 Lindsay 3896 (AAS, MEL, S), Lindsay 3922 (AAS). 160 095 Greene 2230 (HOLOTYPUS, AAS), Lindsay 4066 (AAS). 165 075 Lindsay 3634 (AAS). 165 085 Lindsay 3585 (AAS). 165 090 Lindsay 3569 (AAS, S). 170 070 Lindsay 3686 (AAS, TNS, US).

Rinodina deceptionis M. Lamb

Descrip. Lamb (1968, p. 65–68).

Icon. Lamb (1968, pl. XII c and d).

This species was described by Lamb (1968, p. 65–68) on the basis of two specimens from Deception Island, South Shetland Islands. The three specimens cited below agree exactly with Lamb's description. Owing to the immersed apothecia, which may be taken to be lecideine instead of lecanorine, this species may be mistaken for a *Buellia*, but it can be immediately distinguished by the orcularioid ascospores (Lamb, 1968, fig. 14c). The combination of immersed apothecia and orcularioid spores also separates this species from the other Antarctic *Rinodinas*. Lamb (1968, table XXXI) indicated that *R. deceptionis* may be slightly ornithocoprophilous; the South Georgian specimens came from altitudes below 10 m., and were found on boulders enriched by bird droppings.

Specimens examined

050 150 Lindsay 3783 (AAS), Lindsay 3786 (AAS). 155 055 Lindsay 4405 (AAS).

Rinodina interpolata (Stirt.) Sheard

Descrip. Lamb (1968, p. 64–65, as *Rinodina* cf. *diplocheila*).

Icon. Lamb (1968, fig. 14c, ascospores only).

Syn. *Buellia interpolata* (Stirt.) A.L. Sm.

Lecidea interpolata Stirt.

Rinodina diplocheila Vain. ex H. Magn.

This species was reported for the first time from the Southern Hemisphere by Lamb (1968, table XXX as *R. cf. diplocheila*), who expressed some doubt over the identification. Sheard (1973) has shown *R. diplocheila* to be a synonym of *R. interpolata*, previously thought to be an endemic British species. The range of this species in the Southern Hemisphere is extended to South Georgia, where it is known from one locality, on a steep south-facing cliff running with slightly nitrogenous melt water, a similar habitat to that which it occupies in the Northern Hemisphere (Lamb, 1968, p. 65).

Specimen examined

130 120 Lindsay 3094 (AAS).

Icon. None.

Rinodina cf. *metaboliza* Vain.

Thallus crustose, light grey, warted-areolate, thin; apothecia lecanorine, but occasionally appearing lecideine, up to 0.4 mm. in diameter, adnate to sessile, round, disc black, plane to convex, smooth, slightly shining; thalline margin concolorous with thallus, up to 0.4 mm. broad, smooth to slightly crenulate, occasionally becoming excluded when disc becomes strongly convex; hymenium up to 100 μ m. tall, epithecium dark brown; ascospores 8 per ascus, polarilocular, olivaceous to brown, 17–22 \times 9–11 μ m., thickened at apices, cell lumina angular, septum thickened or unthickened, up to 7 μ m. thick; spores of the "Mischoblastia-type" (Lamb, 1968, fig. 14e).

The single specimen collected from South Georgia is very similar to the Northern Hemisphere *R. metaboliza*, differing only in the ascospores hardly being expanded at the septum, but this is a variable character and may have little taxonomic significance (personal communication from J. W. Sheard). The species is new to the Southern Hemisphere and was growing on wood near the former whaling station at Grytviken, Cumberland East Bay. Lindsay (1973) noted this specimen as being a probable introduction to South Georgia.

Specimen examined

130 125 Lindsay 3212 (AAS).

Rinodina petermannii (Hue) Darb.

Descrip. Lamb (1968, p. 68–69, 71).

Icon. Lamb (1968, pl. XIIa, XIVa and b).

Previously reported from South Georgia by Lindsay (1971), this maritime nitrophilous species is apparently widespread on the island on bird-perching stones, wet runnels in cliffs and rock overhangs near coastal bird rookeries. Although in Antarctic specimens growing near penguin rookeries the areolae often become elevated on short thalline stipes, this feature was not noticed in South Georgian material from similar habitats.

Specimens examined

075 120 R. Smith 1607 (AAS). 115 135 Greene 3256 (AAS). 120 145 Lindsay 4342 (AAS, CHR). 130 120 Lindsay 3203 (AAS, MEL). 155 095 Lindsay 3907 (AAS, LE), Lindsay 3909 (AAS), Lindsay 3916 (AAS). 165 090 Lindsay 3560 (AAS, SGO, TNS).

Rinodina turfacea (Wahlenb.) Krb.

Descrip. Lamb (1968, p. 62–63).

Icon. Lamb (1968, pl. XIIe).

Apparently widespread in the maritime Antarctic (Lamb, 1968, table XXIX), this species is reported for the first time from South Georgia, where it was found on decaying *Colobanthus subulatus* cushions on coastal rocks and also on cushions of species of *Andreaea*. The specimens agree in all respects with Lamb's (1968, p. 62–63) description.

Specimens examined

070 125 R. Smith 1537 (AAS). 140 120 Lindsay 4251 (AAS, CHR, MEL).

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