NEW, RARE OR INTERESTING LICHENS

FROM THE SOUTHERN HEMISPHERE

I

By I. MACKENZIE LAMB, D. SC.

RESUMEN

Apuntes sobre líquenes nuevos, raros o interesantes del hemisferio austral. — 1. *Verrucaria Durietzii* M. Lamb, *sp. n.*, una especie marina de rocas costaneras en la zona de la espuma del mar (higrohalino), con distribución bicéntrica en el hemisferio austral (Nueva Zelandia y sus islas subantárticas, Fuegia y las Islas Malvinas). Los ejemplares americanos pertenecen a una forma distinta (f. *rhabdota* M. Lamb).

2. *Endocarpon sylvicolum* M. Lamb y *E. Mailae* M. Lamb, dos nuevas especies encontradas en la provincia de Tucumán (R. A.); la primera creciendo sobre corteza de árboles y sobre rocas sombreadas en la selva subtropical, y la segunda sobre rocas esquistosas secas y expuestas al sol.

3. *Calycium peraffine*, liquen coniocarpo descrito sobre material brasileño por el micólogo Spegazzini, se refiere como variedad a *Calicium cinereofuscescens* (Vain.) R. Sant.

4. Cinco especies antárticas de « *Buellia* » descritas por Darbishire, a saber: *B. adarensis, B. flavoplana, B. superba, B. tristis* y *B. variabilis*, son en realidad estados de la misma especie, no de *Buellia*, sino de *Rhizocarpon* (sect. *Catocarpon*), y por lo tanto el material debe llevar el nombre *Rhizocarpon adarense* (Darb.) M. Lamb, *comb. n.*; las otras entidades descritas por Darbishire pasan a la sinonimia.

5. Descripción de *Rhizocarpon* (*Eurhizocarpon*) *compositum* M. Lamb, *sp. n.*, una especie que crece sobre rocas esquistosas en la selva subtropical de la provincia de Tucumán (R. A.).

6. El género liquénico « *Charcotia* », descrito por Hue, no tiene justificación alguna, siendo basado sobre dos elementos discordantes (tallo de *Umbilicaria* y apotecios de un hongo infestante, el último considerado por Hue como frutos del liquen). Lo mismo se establece para el género

« *Lethariopsis* », creado por Zahlbruckner en base de una especie descrita por Hue bajo el nombre de « *Letharia wandelensis* », la que representa nada más que los apotecios de una especie de *Caloplaca* creciendo epifíticamente sobre tallos de *Neuropogon antarcticus*.

7. Descripción de dos nuevas especies de *Acarospora* (subgen. *Xanthothallia*, sect. *Epithallia*), *A. punae* M. Lamb y *A. theleomma* M. Lamb, proveniendo respectivamente de los pedregales subalpinos de la formación de la Puna en las Cumbres Calchaquíes (prov. Tucumán, R. A.), y de prov. Mendoza, Dpto. San Rafael (R. A.); ambas sobre rocas no calcáreas.

8. La sección *Thamnolecania* del género *Lecania*, sección fundada por Vainio, comprende especies con tallo fruticuloso. Las dos especies incluídas por Vainio en dicha sección, *L. Brialmontii* y *L. Gerlachei*, son estados de la misma especie, que deben entonces llevar el nombre específico *Brialmontii*.

9. *Parmelia acervata* Hue, registrada de la región antártica, debe llevarse a *Parmelia saxatilis* (L.) Ach. como forma, f. *acervata* (Hue) M. Lamb.

10. Las especies de *Alectoria* conocidas de las regiones antárticas pertenecen todas, según lo que se sabe con certeza, a la sección *Subparmelia* Degel. Varias especies consideradas como endémicas resultaron pertenecer a dos especies solamente : *A. minuscula* Nyl. y *A. pubescens* (L.) Howe jr., y una de ellas representa el tipo de una sección nueva del género *Catillaria*.

11. *Ramalina lanceolata*, especie brasileña descrita por Nylander en 1870, ha sido interpretada por diferentes autores en sentidos diferentes ; el material original, empero, muy reducido, pertenece sin duda a *R. Ecklonii* (Spreng.) Mey. & Flot. (Syn. *R. yemensis* (Ach.) Nyl.), pudiéndose tal vez considerar una forma especial de esta especie caracterizada por sus esporas más angostas.

12. « *Polycauliona coralligera* » Hue, citada de las regiones antárticas, se muestra, según el material original, idéntica con *Xanthoria candelaria* (L.) Arn.

1. *Verrucaria Durietzii*, N. SP., A MARINE LICHEN OF THE SOUTHERN HEMISPHERE

During my visit to Uppsala in 1947, Prof. G. Einar Du Rietz kindly allowed me to study some of the lichens in his collections, as yet mostly undetermined, from New Zealand and its subantarctic islands, made in the years 1926-27. One of the species, a marine *Verrucaria*, I recognised as specifically identical with specimens which I had myself collected in the Falkland Islands the previous year, and my friend Dr. Rolf Santesson also produced a specimen collected by him in Fuegia in 1940. This previously undescribed species is therefore a further representative of the bicentric element in the southern hemisphere, and it is fitting that it should be named after Prof. Du Rietz, who was the first to observe and collect it. The Fuegian and Falkland Islands specimens show a slight morphological difference, and may be considered as belonging to a distinct form (f. *rhabdota*, vide infra).

Verrucaria Durietzii M. Lamb, *sp. nov.* (Sect. *Euverrucaria*).

Thallus plagas subrotundatas irregularesve latas formans, ad peripheriam distincte effiguratus, lobis marginalibus rimis nigris angustis separatis, subcuneatis, applanatis aut levissime tumidulis, substrato arcte adnatis, thalli centrum versus indefinite productis, marginem aequam vel leviter crenulatam formantibus ; in f. rhabdota *striis nigris numerosis radiantibus ornatis. Pars centralis thalli laevigata vel leviter inaequalis, alutaceo- vel subolivaceo-fuscescens, tesselato-areolata, areolis irregulariter angulosis, planis vel passim tumidis, rimis angustis nigris separatis. Thallus extus intusque* KHO—, $CaCl_2O_2$ —, I —, Pd —. *Hypothallus perbene evolutus, carbonaceus, stratum basale sub thallo efficiens, crassus, ad peripheriam autem non visibilis. Perithecia vulgo copiosissima, thallo immersa,* 1-2 (*rarius* 3) *in quavis areola (aut ad* 6 *in areolis compositis), tantum apicibus (involucrellis) nigris, leviter convexis, paulo emergentibus, opacis aut vulgo nitidis indicata ; globosa aut pyriformia,* 230-330μ *lata, saepe fere ad ostiolum strato tenui thallino vestita, pariete integro, fusconigro,* 40-50μ *crasso, superne cum involucrello carbonaceo hemisphaerico confuso ; involucrellum ad* 90μ *crassum, ad basin vulgo in stratum hypothallinum abiens. Paraphyses omnino in gelatinam diffluxae. Asci e basi lateribusque perithecii orti, clavati. Sporae* (6-) 8*nae, ellipsoideae aut late ellipsoideae* (12-) 13-15 (-16) × (7-) 8-9 (-10)μ. *Gelatina hymenialis* I + *vinoso-rubescens (nulla praecedente caerulescentia). Pycnidia in areolis numerosa, punctulis minutissimis atris indicata, saccata, simplicia ; pycnoconidia bacilliformia, recta, apicibus rotundata,* 3.0-3.5 × 1μ.

F. **rhabdota** M. Lamb, *f. nov.*

Lobi marginales striis atris (jugis) numerosis, radiantibus, leviter prominentibus, saepe ramosis muniti. Ceteris notis ut in forma typica.

Fig. 1, *a*, *b*; fig. 2; tab. I, figs. 1, 2, 3.

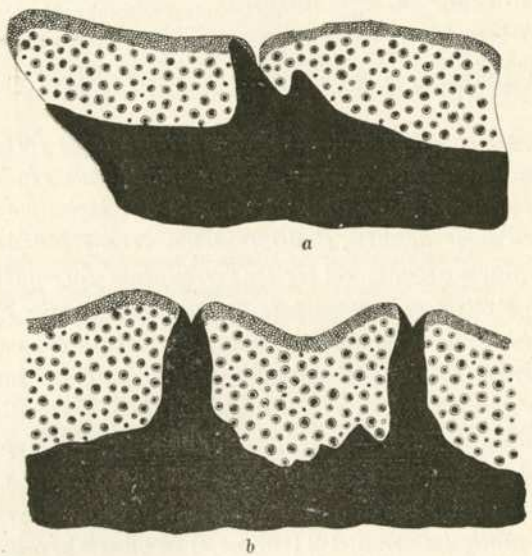

Fig. 1. — *Verrucaria Durietzii* M. Lamb. *a*, tangential section of peripheral lobes in the holotype specimen; *b*, tangential section of peripheral lobes in holotype specimen of f. *rhabdota* M. Lamb. (Somewhat schematic). (Delin. O. Cimetti).

New Zealand. South Island, Southland: Seymour Island, Doubtful Sound, « moderately exposed rocky shore on the western side, hygrohalophyte (geoamphibiontic) belt ». Coll. G. E. Du Rietz, 1927 (n° 2070 : 2).

Subantarctic Islands of New Zealand. Auckland Islands: Port Ross, boulder shore on interior side of the innermost small peninsula in Laurie Harbour, «dominant just above the pure Verrucaria maura belt ». Coll. G. E. Du Rietz, 1927 (n° 2225*b*: 1, holotype). Same locality, « on boulders moistened by a brook just above the Verrucaria maura-belt ». Coll. G. E. Du Rietz, 1927 (nos. 2228*b*: 1, 2228*b*: 2). Carnley Harbour, northernmost cove of North Arm, « sheltered boulder shore, Verrucaria maura-belt (lower hygrohalophyte belt) ». Coll. G. E. Du Rietz, 1927 (n^{os} 2319 : 1, 2319 : 2). Carnley Harbour, Musgrave Peninsula, « in the Verrucaria maura-belt ». Coll. G. E. Du Rietz, 1927 (n° 2340 : 1).

Chile. Magallanes: Isla Navarino, Puerto Navarino, « on sea-shore rocks, in the lowest part of the Caloplaca-belt ». Coll. R. Santesson, 1940 (n° 1221) (f. *rhabdota*).

E. Falkland Islands (Islas Malvinas). Berkeley Sound, Port Louis, on seashore rocks within the salt spray zone. Coll. I. M. Lamb, 1946 (n° 2939) (f. *rhabdota*, holotype). Seashore near Port Stanley, on quartzite rocks just above high water level. Coll. I. M. Lamb, 1946 (n° 2877) (f. *rhabdota*).

The lichen forms conspicuous patches up to 12 centim. diameter or more, and is very obvious by reason of its effigurate margin, made up of radiating lobes separated by black-edged, often anastomosing cracks of various width (0.05-0.10 mm). The lobes are 2-5 mm long (merging gradually into the central part of the thallus), 0.5-1.2 mm wide, about 0.2 mm thick, concolorous with the rest of the thallus or sometimes lighter. The central part of the thallus is usually up to 1, sometimes 2 mm thick, with areolae 0.4-1.6 mm diam. and occasionally divided again into secondary areolae by very thin cracks. Another striking feature is the great development of the carbonaceous basal hypothallus which takes up the greater part of the thickness of the thallus in its central parts, but is not visible at the periphery. Upward extensions of this carbonaceous tissue into the thallus occur constantly at the edges of the areolae and peripheral lobes, and hence the cracks separating these have black edges. In the South American form (f. *rhabdota*) these upward extensions reach the surface of the thallus on the peripheral lobes, and also for some distance in towards the center, and there form parallel, slightly prominent, black striae (juga) running in the same direction as the lobes. These juga are apparently lines of weakness in the thallus, and the cracking of the latter originates by their splitting (Fig. 1, *a* and *b*).

Externally they are seen as black, often branched, stripes about 0.08 mm wide.

The thallus varies in color from a pale sordid buff-brown to brown-blackish [1], but is never jet-black like *V. maura* and many other marine species; surface matt, not pruinose. Upper surface corticate; cortex pale brown to colorless, according to the color of the thallus, 12-16 μ deep, paraplectenchymatic, of cells 2-3 μ diameter. Below this, the thallus, down to the irregularly ridged carbonaceous layer, varies in thickness from 50 to 200 μ, and is filled throughout its whole depth with symbiotic algae, in places with a more or less distinct vertical arrangement, bright green in fresh material, ± globose, 4-8 μ diam., thin-walled. Carbonaceous hypothalline stratum up to 1 or even 1.8 mm thick.

The black emergent apices of the perithecia are 0.15-0.30 mm in diameter. Perithecia in section globose or vertically ellipsoid; in the latter case they may be up to 600 μ high. The apical involucrellum is usually fused at its base and sides with the hypothalline tissue, from which it is microscopically indistinguishable. The perithecial wall merges imperceptibly into the involucrellum in its upper part, but below is often somewhat lighter in color (brown-blackish); it is paraplectenchymatic, with cells 2-3 μ diam., and may be either completely fused with the surrounding hypothalline tissue or separated from the latter by a slight crack (Fig. 2). Periphyses are present on the upper inner wall of the perithecium; ± gelatinised and often indistinct, 16-20 μ long, 1.5-2.5 μ thick. Asci up to 50 × 20 μ, with indistinct gelatinous membrane about 8 μ thick. Pycnidia in section up to 150 μ high and 50 μ wide, with colorless paraplectenchymatic perifulcrial wall 8-10 μ thick, brown around the ostiole. Fulcra exobasidial, simple.

Peripheral effiguration of the thallus is almost unknown in the genus *Verrucaria*; I have been able to find only two references to such in the literature: *V. squamulosocrustacea* (Sav.) Oxner, a Russian calcicolous species, is described as having

[1] Equivalents in Ridgway's *Color Standards* (1912): Pl. XXIX, 15″ *i, k, m*; XLVI, 13‴ *k-m*, 17‴ *k-m*.

the thallus « ambitu aliquot locis subeffiguratus », and in *V. glaucina* f. *sublobulata* Serv. the periphery is said to be « distincte lobulata ». Perhaps this effiguration represents a transition to *Dermatocarpon* (sect. *Catopyrenium*), but *Dermatocarpon*, so far as is known, differs essentially from *Verrucaria* in having the pycnidial apparatus of the endobasidial type.

V. Durietzii is a marine lichen, not exactly amphibious, but characteristic of the zone just above high tide level (lower

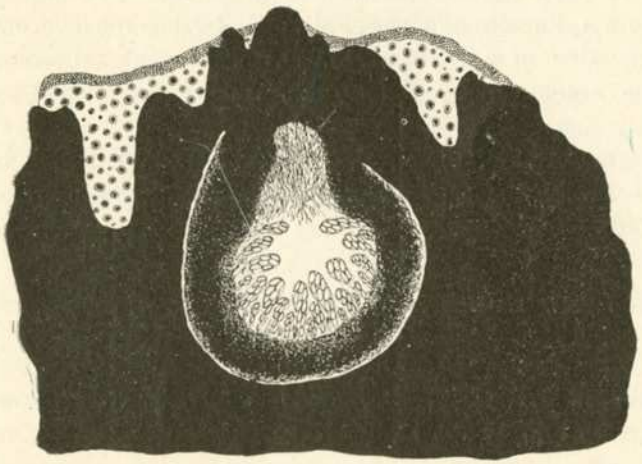

Fig. 2. — *Verrucaria Durietzii* M. Lamb. Section of perithecium in a specimen from New Zealand (Du Rietz n° 2070 : 2). (Somewhat schematic). (Delin. O. Cimetti).

hygrohaline), where it is exposed to the salt spray from wave action. Some of Prof. Du Rietz's specimens were associated with *Verrucaria maura*, *V. striatula* subsp. *australis* and *V. mucosa* (the latter more truly representative of the upper hydrohaline); Dr. Santesson's Chilean sample with a black marine *Thelidium* not yet determined, and one of my Falkland Islands specimens with *Verrucaria maura*.

A large number of species peculiar to the southern hemisphere have bicentric distribution in the South American and the New Zealand sectors respectively, and this is a fact of great phytogeographical interest, indicating as it does the probability of derivation from an original center in the Antarctic

continent, as suggested by Skottsberg (for references, see Du Rietz, *Problems of bipolar plant distribution*, 1940). Whether this explanation may hold good also for *marine* bicentric species like the present, is a point not to be decided without further evidence on the possibilities of purely marine dispersal of these amphibious and semi-amphibious lichens; a line of investigation which up till now has not received due attention. The slight morphological difference found between the specimens from the New Zealand area on the one hand and those from Fuegia and the Falkland Islands on the other is suggestive of a regional differentiation, but further collections are necessary before this can be established as a fact.

Type material of the species in herb. G. E. Du Rietz and herb. I. M. Lamb; type material of the f. *rhabdota* in herb. I. M. Lamb.

2. TWO NEW *Endocarpon*-SPECIES FROM N. W. ARGENTINA

Endocarpon sylvicolum M. Lamb, sp. nov. (Sect. *Paracarpidium*). Fig. 3; tab. II, fig. 4.

Thallus sat continuus, squamoso-lobatus et nonnihil imbricatus, 0.2-0.3 *mm crassus, neque areolatus nec rimosus, lobis rotundatis aut rarius indistincte inciso-crenatis, planis aut convexis, magnitudinis mediocris; pallide alutaceo-rufescens vel subfuscescens, haud pruinosus, ambitu laxe vel sat arcte substrato adpressus, haud adscendens, in centro varie undulatus; subtus usque ad marginem ater, hyphis obscuratis substrato affixus; extus intusque* KHO—, $CaCl_2O_2$—, I —, Pd —. *Hypothallus nullus, rhizinis fasciculatis haud evolutis. Thallus utrinque paraplectenchymatice corticatus, cortex superior* 30-50 (-80)μ *crassus, extus pallide fuscescens, intus hyalinus, cortex inferior omnino fusco-nigrescens,* 15-30μ *crassus. Stratum gonidiale* 40-70 μ *crassum, algis protococcoideis. Medulla hyalina, omnino paraplectenchymatica. Perithecia numerosa, sparsa, immersa, thallum haud inflantia, extus punctulis minutis rufofuscis non prominulis indicata, globosa aut subglobosa,* 260-280μ *diam., haud vel leviter sub thallo detrusa, pariete integro pallide fuscescenti (ad basin obscurius fuscescenti), involucrello nullo. Periphyses numerosae, simplices. Paraphyses omnino gelatinoso-diffluxae. Gonidia hymenialia numerosa, laete viridia, bacillari-elongata. Sporae 2nae, persistenter incoloratae, oblongae, crebre murali-divisae,* 30-45 × 10-15 μ. *Gelatina hymenialis* I + *vinoso-rubescens (nulla praecedente caerulescentia).*

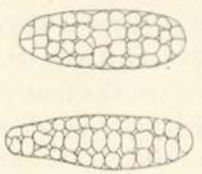

Fig. 3. — *Endocarpon sylvicolum* M. Lamb. Spores. (Delin. O. Cimetti).

ARGENTINA. Prov. Tucumán, eastern slope of Sierra de San Javier near Tucumán, altit. circ. 1200 m. s. m., on the somewhat rough bark of a tree in the rain forest, associated with stunted mosses, hepatics, and another foliose-squamulose pyrenocarp lichen representing the type of an undescribed genus. Coll. I. M. Lamb, 21. Sept. 1947 (n° 5111 *pr. p.*, Herb. Crypt. Inst. Lillo n° 9317 *pr. p.*, holotype). Prov. Tucumán, Valle del Cadillal, altit. circ. 400 m. s. m., on shady conglomerate rocks among trees near the river, associated with *Caloplaca* cfr. *subnitida* (Malme) and traces of *Verrucaria* sp. Coll. I. M. Lamb, 4. July 1947 (n° 5032 *pr. p.*, Herb. Crypt. Inst. Lillo n° 9236 *pr. p.*).

Apparently rare; in the type locality it was found only in one small example, and a subsequent search there failed to reveal any further specimens. The saxicolous specimen from the Cadillal valley is very small, but in spite of the different substratum quite similar to the type, both externally and internally.

Thallus ± continuous or slightly interrupted here and there, squamulose-lobate and ± imbricate, forming a patch with uneven surface (largely due to irregularity of substratum) 2.5 × 1.2 cm; at edge squamulose-lobate (not effigurate) and closely or laxly adpressed, not ascending; individual squamulose lobes 0.6-2.0 mm diam., rounded, rarely indistinctly incised-crenate, plane or variously convex to gibbous, with concolorous margins. The central part of the thallus consists in places of lobes as described in a ± imbricate arrangement, in other places it

has a ± continuous, plane or undulate surface. Color a warm buff to pale tawny brown, corresponding in Ridgway's *Color Standards* to Pl, XL. 17‴, 17‴ *a-b*; surface matt. Underside black right up to edge, closely or laxly attached to substratum by dark hyphae (not visible except in sections under microscope); no formation of fasciculate rhizoids. Upper cortex pallid brownish in outer 12-15 μ, colorless in inner part, not nubilated, paraplectenchymatic, of thin-walled, rounded or ± angulose, isodiametric cells 7-10 (-12) μ diam., those in the outer brownish part somewhat smaller, 4-8μ diam., with slightly thicker (1.5 μ) and faintly pigmented walls. No superficial necrotic layer. Gonidial stratum regular, ± continuous, with a few sporadic algal cells also lower down in the medulla; algae ± globose, thin-walled, 7-11 μ diam. Medulla colorless, hyaline, 100-170μ deep, entirely vesiculose-paraplectenchymatic, with spherical, very thin-walled cells 6-8 μ diam. Lower cortex brown-blackish, paraplectenchymatic, with cells similar to those of the medulla, but somewhat smaller (5-7μ), and with slightly thicker, densely dark brown walls. Rhizoidal hyphae springing from lower cortex, brown, not fasciculate, thin-walled, septate, 3-5 μ thick, soon confused with particles of the substratum. Perithecia entirely immersed in thallus, the ostioles forming minute (0.1-0.2 mm) non-prominent, round, tawny-brown to brown spots, not very much darker than the thallus itself; pore not distinctly visible. In section globose or slightly flattened-globose, with entire wall (20-) 28-35 μ thick, pale brownish at the sides, darker (medium brown to dark brown) at base, composed of tangentially parallel, thin-walled hyphae 3-4 μ thick; in upper part with more isodiametric cells 4-5 μ diam., and round the ostiole itself consisting of closely packed, vertically parallel, fine hyphae 2-3 μ thick; this tissue slightly darkened (light brown) on the surface around the ostiole. Periphyses numerous, crowded, lining the upper wall of the perithecium and the ostiolar canal, stiff, simple, up to 30μ long, 2-3μ thick. Hymenial gonidia 4-10 (-12) × 3-4μ. Asci springing from base of perithecium, cylindrical-clavate, about 100 × 17μ when mature, with uniformly thin wall (1.5-2.0 μ); plasm of immature asci very granulose guttulate. Spores uniseriate in ascus, easily escaping

at maturity, sometimes finally becoming faintly sordid yellowish, but never brown; upper and lower spores of ascus not appreciably different in shape or size. In n° 5032 *pr. p.* the subhymenial tissue stains faintly blue with Iodine. No pycnidia found in the type specimen, but one seen in section in n° 5032 *pr. p.*; narrowly pyriform, completely immersed, with non-prominent and non-colored ostiole and very thin, colorless, indistinct wall, 140 μ deep, 60 μ across; fulcra and conidia not mature, not distinctly seen.

E. sylvicolum is well characterised by its ± continuous (not rimose or areolate), squamose-subimbricate thallus, pale and non-prominent perithecial ostioles, and long hymenial gonidia.

Type material in Herb. Crypt. Instit. Miguel Lillo.

Endocarpon Mailae M. Lamb, *sp. nov.* (Sect. *Paracarpidium*). Fig. 4; tab. II, fig. 5.

Thallus e squamulis minutis discretis sparsisque constans, vulgo 0.3-0.8 *mm metientibus, obscure fuscis vel fusconigrescentibus, saxo arcte adnatis, orbicularibus vel demum ambitu leviter lobato-crenatis et ibi haud vel vix adscendentibus, subtus late affixis et substrato confusis, planis aut subplanis, rhizinis hypothalloque destitutis, haud pruinosis; extus intusque reagentibus immutatus, superne corticatus, cortice fuscescenti, paraplectenchymatico,* 15-20 *(-25)* μ *crasso; inferne haud distincte corticatus (hyphis cum substrato confusis). Squamulae plerumque fertiles, mono- vel rarius bicarpicae, perithecio centrali thallum leviter minuteque umbonato-inflanti, demum apice punctulo minutissimo nigro notato, poro haud visibili. Perithecia globosa, omnino immersa,* 160-170 μ *diam., pariete integro fusconigro* 10-15 μ *crasso cincta. Periphyses numerosae, simplices, incolores; paraphyses nullae (in gelatinam diffluxae). Gonidia hymenialia copiosissima, globosa, laete viridia,* 3-4 μ *diam. Asci pariete gelatinoso, mox deliquescentes. Sporae 2nae, persistenter incoloratae (aut aetate tantum levissime subfus-*

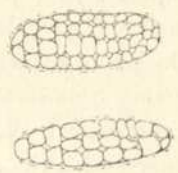

Fig. 4. — *Endocarpon Mailae* M. Lamb. Spores. (Delin. O. Cimetti).

cescenti-tinctae), murali-cellulosae, (20-) 24-30 (-35) × (9-) 10-11 (-15)μ. *Gelatina hymenialis* I — *vel passim dilutissime vinoso-rosea, strato ascigero pallide caerulescenti ; ascis, sporis periphysibusque I* —.

ARGENTINA. Prov. Tucumán, Yerba Buena near Tucumán, altit. circ. 500 m s. m., on loose schistose stones on the ground in an open exposed position, without accompanying species. Coll. Maila M. Lamb, 7. Aug. 1947 (n^{os} 5069, 5070, Herb. Crypt. Inst. Lillo n^{os} 9275, 9276). Sierra de San Javier near Tucumán, eastern slope, altit. circ. 650 m s. m., on bare dry schist rocks at the side of the road, accompanied by a few minute stunted thalli of *Physcia* sp. Coll. I. M. Lamb, 14. Sept. 1947 (n° 5096, Herb. Crypt. Inst. Lillo n° 9302, holotype).

Thallus appearing to the naked eye as irregularly scattered, dark brown or brown-blackish spots on the naked stone ; squamules discrete and scattered (rarely 2 or 3 contiguous), minute, usually 0.3-0.8 mm diam., exceptionally up to 1.3 mm., closely adnate to the rock by the entire under surface, or (in larger squamules) free at the extreme margin, but not or hardly ascending ; small squamules orbicular and ± entire, larger squamules ± orbicular with slightly lobate-crenate margin ; sterile squamules ± plane, fertile squamules with a slight, minute, umbonate swelling in center due to perithecium. Squamules dark dull brown to blackish brown, corresponding in Ridgway's *Color Standards* (1912) to Pl. XLVI. 13"" k-m, rarely paler (buff brown, Pl. XLVI. 17""), matt. Underside not visible (confused with the substratum, which comes away in a thin layer attached to the lower side) except at the extreme edge, where ± concolorous with the upper side or somewhat lighter. Thallus not green when wetted ; outside and inside KHO —, $CaCl_2O_2$—, I—, Pd—. Upper cortex of isodiametric, rounded or angulose, thin-walled cells 4-6 μ diam. Gonidial stratum continuous, 40-60 μ deep ; algae bright green, protococcoid, ± globose, thin-walled, 8-12 μ diam., multiplying by transverse binary fission. Medulla very reduced or absent, mingled with the substratum, up to 15 μ deep, colorless or in places faintly brownish, hyphose or indistinctly paraplectenchymatic, hyphal cells thin-walled, 3-6 μ wide, ± compact, giving out numerous, colorless or pale brownish, thin-walled rhizoid-hyphae 3-4 μ diam. into the interstices of the stone ; this lower tissue perhaps to be considered as a rudimentary lower cortex. Most squamules fertile, with 1 central perithecium (rarely 2) which forms a slight, minute, umbonate swelling of the thallus, with gradually sloping sides, concolorous with the thallus or finally with a minute blackish spot at the apex. Perithecia not protruding below lower surface of thallus. Wall composed of tangentially elongated cells 6-9 × 3-4 μ, with thin, dark brown walls. No involucrellum (ostiole formed of slightly thickened upper part of perithecial wall). Periphyses numerous on upper part of perithecial wall and in the ostiolar passage, crowded, ± gelatinous, 15-30 μ long, 2-3 μ thick. Asci clavate, 50-65 × 12-16 μ, with thin, indistinct, gelatinous wall ; in immature asci the wall is more distinct, thicker, up to 2 μ at sides and 6 μ at apex. Spores ellipsoid to oblong, with slightly gelatinised and often indistinct outer wall 1-2 μ thick ; upper and lower spores of ascus ± similar in shape and size. (No pycnidia seen).

Seems to be related to *E. obscurum* (Müll. Arg.) Zahlbr. and to *E. tenellum* (Müll. Arg.) Zahlbr. ; from the first it differs in the smaller squamules, entirely immersed perithecia, and smaller spores, and from the second in the thallus of scattered squamules, which are not or hardly concave. Subsimilar also to *E. petrolepideum* (Nyl.) Hasse, from which it is distinguished by its persistently colorless spores. *E. Arsenii* (B. de Lesd.) B. de Lesd. and *E. mexicanum* B. de Lesd. differ in the contiguous-concrescent thallus, larger, brown spores, etc.

Type material in Herb. Crypt. Instit. Miguel Lillo and herb. I. M. Lamb.

3. IDENTITY OF *Calycium peraffine* SPEGAZZINI

The Argentine mycologist Spegazzini described a Coniocarp lichen from Brazil in *Bol. Acad. Nacion. Cienc. Córdoba,* XI (1887) 591, under the name of *Calycium peraffine* Speg. ; it was collected near Apiahy by Puiggari. The species is mentioned

in Santesson's recent paper (1943) on the Regnellian *Calicia* as somewhat doubtful, distinguished chiefly by the very narrow spores.

Through the courtesy of Dr. Juan C. Lindquist, of the Instituto de Botánica « Spegazzini », La Plata, Argentina, I was enabled to examine the packet containing Spegazzini's type material.

The material is on old lignum, with fragments of other lichens (*Parmelia* and *Usnea*), and is not homogeneous, two distinct species of *Calicium* being present, on different fragments of wood. One has turbinate-globose, brown, pruinose capitula, while in the other they are cylindrical-turbinate, black, and naked. From a sketch by Spegazzini on the packet it is obvious that his description is based on the former species, as is also seen from his description, *loc. cit.*: « cupulae subglobosae... superne subpulverulentae fusco-atrae ». The specimen agrees well with *C. cinereofuscescens* (Vain.) R. Sant. in all features except the narrow spores (6-8 × 2.5-3.0 µ) and the absence of an outer hyaline layer on the stipe, and appears to deserve the status of a distinct variety.

Thallus obsolete, indicated by a whitish discoloration of the wood. Apothecia numerous, up to 0.8 mm high ; capitula up to 0.25 mm. diam., subglobose-turbinate, quite well delimited from the stipe, brown on the outside and with a slight greyish granulate pruina. Inner side of excipulum not pruinose. Stipe black, about 0.07 mm thick at middle, without any hyaline layer, unchanged by KHO. The capitulum gives out a reddish-yellow solution in KHO. Paraphyses simple, filiform, colorless, about 1.5 µ thick. Asci cylindrical, 35-40 × 4 µ (45-50 × 3-4 µ according to Spegazzini). Spores pale brown, both simple and 1-septate (in about equal proportions), not constricted at septum, ellipsoid to elongate-ellipsoid, 8 in ascus, uniseriate, with very thin wall and septum, 6-8 × 2.5-3.0 µ. Even in KHO they are not over 3 µ broad. Asci and paraphyses not colored by Iodine.

Spegazzini's lichen may therefore be cited as follows :

Calicium cinereofuscescens (Vain.) R. Sant. in *Ark. f. Bot.* XXXA, n° 14 (1943) 7 (*lapsu « cinereorufescens »*) : *Syn. Calicium trachelinum* var. *cinereofuscescens* Vain., *Etude Lich. Brésil,* Part 2 (1890) 177.

Var. **peraffine** (Speg.) M. Lamb, *comb. nov. ; Syn. Calycium peraffine* Speg. in *Bol. Acad. Nac. Cienc. Córdoba,* XI (1887) 591.

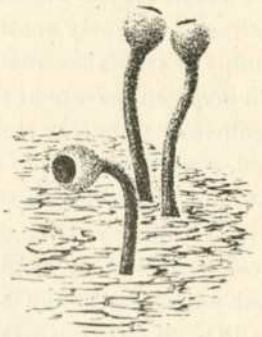

Fig. 5. — *Calicium cinereofuscescens* (Vain.) R. Sant., var. *peraffine* (Speg.) M. Lamb. Three capitula of the type specimen in herb. Spegazzini. (Delin. O. Cimetti).

The other species present in Spegazzini's type material I was not able to identify with certainty ; it may be an undescribed species.

4. *Rhizocarpon adarense* (DARB.) M. LAMB, *comb. nov.*

O. V. Darbishire, in his report on the lichens of the British Antarctic (« Terra Nova ») Expedition *(Nat. Hist. Rept., Bot.,* Part III), pp. 35-44 (1923), published five new species attributed by him to the genus *Buellia*, namely : *B. adarensis* Darb., *B. flavoplana* Darb., *B. superba* Darb., *B. tristis* Darb. and *B. variabilis* Darb. ; all of them characterised by a yellow areolate thallus on conspicuous black hypothallus.

While at the British Museum (Natural History), I had the opportunity of examining the type specimens of these « *Buelliae* », and found that they are all states of one and the same species, not of *Buellia*, but of *Rhizocarpon* (sect. *Catocarpon*). As no previous description of this species exists in the literature, I propose that it should be known as *Rhizocarpon* (*Catocarpon*) *adarense* (Darb.) M. Lamb, *comb. nov.*, the other names of Darbishire falling into synonymy with it. Descriptions are given here of (*a*) the holotype specimen of « *Buellia adarensis* » itself, and (*b*) the species as a whole, including the variation observed in all the material present.

(*a*) *Holotype specimen* of « Buellia adarensis » *Darb.* (*n°* 46 *of the « Terra Nova » collection*): On ± oxydated quartzitic rock. *Thallus* of sparsely scattered areolae on a well developed, continuous or in places disrupted, black, matt, effuse, non-confervoid *hypothallus* about 0.1 mm thick, which is here and there rugulose or minutely rimose-areolate. Assimilative areolae isolated, rounded, pustular (*i. e.*, ± tumid-convex), (0.3-) 0.4-0.8 (-1.0) mm diam, up to about 0.25 mm thick, greenish sulphur-yellow (Ridgway, 1912, Pl. IV. 23. *f*, Pl. V. 25. *f*), their surface smooth or slightly rugulose, matt, not pruinose; they are not black-edged, although embedded in the hypothallus; KHO, $CaCl_2O_2$-, KHO ($CaCl_2O_2$)-, I-, Pd-, both externally and internally. No isidia or soredia. In section of an assimilative areola, upper cortical layer 30-50μ deep, densely opaque by minute yellow granules which are unchanged by HCl and become paler (greyish) but do not dissolve in KHO, but disappear comple, tely in chloral hydrate; cortex formed of compacted, indistinct-gelatinised, ± thin-walled, branching hyphae 3-5μ diam. running in various directions. No outermost necrotic layer is present. Algal stratum 60-90μ deep, ± regular and even. Algae spherical, now pale green, small (7-11μ diam.), ± easily separable, thin-walled. Medulla opaque and greyish in water and KHO by minute particles attached to the hyphae, becoming hyaline in chloral hydrate or HCl; ± compact, of intertexted hyphae 5-8μ thick running in various directions, their walls with secondary gelatinous thickening leaving a central fistulose lumen about 1μ wide. The hypothallus is developed only around, but not below, the assimilative areolae, and is composed of irregularly interwoven and compacted, purple-blackish hyphae 3.5-5.0μ thick, in lower part lighter (sordid purplish). *Apothecia* interareolar, arising from hypothallus, sessile, round, black, matt, naked, 0.5-0.8 mm diam. ± constricted at base, plane then often finally slightly convex; proper margin visible in young stages, thickish, not prominent, entire, occasionally in older, degenerating apothecia becoming eroded and pallescent. Excipulum lateral only, abruptly purple-fuliginous in outer 10-18μ, inner part colorless and hyaline; composed of indistinct, gelatinised, rounded or oblong cells 4-7μ diam, apparently ± thin-walled. Hypothecium up to 150μ deep in center, with ± flat base, dark red-brown (paler, yellow-brown, towards sides and thecium), composed of compacted, brown-walled hyphae 3-4μ thick running in various directions (in upper part mainly vertically). Thecium 70-90μ high, gradually purple-fuliginous in upper 9-16μ (compare Ridgway, 1912, Pl. XII. 67. n), there more intense purple in KHO; otherwise colorless and hyaline. Paraphyses gelatinised, embedded in mucilage, indistinct, sometimes branched, about 2μ thick, slightly irregular, at tips pigmented and gradually slightly thickened (up to 3.5μ), but not capitate. Asci clavate, 60-70 × 20-25μ, with colorless, gelatinous wall 1-3μ thick at sides and up to 12 (-18)μ at apex. Spores 8, ± biseriate in ascus, green-grey then soon blackish and ± opaque, ellipsoid to broadly ellipsoid, 1-septate with equal cells, not or hardly constricted at the septum which is 1.5μ thick; straight, not halonate, with smooth wall of even thickness (1.5μ); (12-) 14-15 × 7-9μ in water, up to 15 × 10.5μ in KHO. Thecium blue then blue-blackish with Iodine. (No pycnidia seen.)

(*b*) By summarizing the variations seen in all the material described by Darbishire under different names, the following general diagnosis of *Rhizocarpon adarense* can be given: *Thallus* of scattered or crowded, ± rounded (or at periphery sometimes slightly radially elongated), flat or tumid-pustular or bullate, lemon- or sulphur-yellow areolae 0.3-1.0 (-1.7) mm diam. sometimes black-edged, with matt, smooth or minutely rugulose surface, inside and outside KHO-, $CaCl_2O_2$-, I-, Pd-; the space between the areolae occupied by a black (or whitish by necrotic desquamation), matt, minutely rugulose or rimose or rimose-areolate *hypothallus* about 0.1 mm thick; periphery of thallus usually bounded by a fairly wide, thin, smooth or slightly radiately rugose, black, hypothalline zone. Cortex of assimilative areolae 30-80μ deep, inspersed with yellow granules; medulla ± compact, greyish-nubilated, of thick-walled, gelatinous hyphae 5-8μ thick. *Apothecia* arising on hypothallus between areolae, (0.3-) 0.5-0.8 (-0.9) mm diam., sessile, slightly constricted at base, black, matt, naked, at first plane with inconspicuous proper margin, then ± convex-immarginate; margin often pallid in

older apothecia by erosion. Excipulum lateral, purple-fuliginous on outside, colorless within. Hypothecium dark red-brown, up to 150μ deep in center. Thecium 70-90μ high, purple-fuliginous above. Paraphyses conglutinated, indistinct. Asci clavate, thickened at apex. Spores (5-) 8 nae, ± biseriate in ascus, greenish then soon blackish, thinly 1-septate, with thin, even wall, not or slightly constricted at septum, not perceptibly halonate, (12-) 14-15 × 7-9μ.

The different states described by Darbishire as species appear to be growth-stages and can be tabulated as follows:

1. Areolae more flattened and crowded together, their edges frequently black: « flavoplana »-state.
2. Areolae tumid-convex, discrete or crowded, not black-edged: « superba» state.
3. Areolae ± plane, crowded, not black-edged, forming ± orbicular thalli bounded by conspicuous hypothalline zone: «tristis»-state.
4. Areolae extremely tumid and bullate, not black-edged, crowded or ± scattered: « variabilis »-state.
5. Areolae slightly to moderately convex, not black-edged, sparsely scattered on the hypothallus: typical or « adarensis »-state.

See the excellent habit-photographs published by Darbishire, *loc. cit.* No doubt all these states flow into each other without definite limits, and no useful purpose would be served by making formal taxonomic combinations of them. In « *Buellia superba* » all the apothecia are degenerate and with pallescent eroded edges; hence Darbishire's words: « saepius primo margine instructa albido ». Darbishire described the assimilative areolae of « *Buellia variabilis* » as up to 3 mm diam., but they are nowhere over 1.7 mm diam. The « sterile black and very distinctly white edged areoles » mentioned by him are actually morbose, eroded apothecia with pallid, eroded margins.

The complete synonymy of the species is as follows:

Rhizocarpon adarense (Darb.) M. Lamb, *comb. nov.*

Buellia adarensis Darb. in *Brit. Antarct. (« Terra Nova ») Exped., Nat. Hist. Rept., Bot.*, Part III, *Lichens* (1923) 35, Pl. I, fig. 2.
Buellia flavoplana Darb. *op. cit.* 38, text-fig. 6, Pl. I, fig. 3; Dodge & Baker in *Ann. Mo. Bot. Gard.* XXV (1938) 640, Pl. 55, figs. 297-302, Pl. 65, fig. 424.
Buellia superba Darb. *op. cit.* 42, Pl. II, figs. 7, 8.
Buellia tristis Darb. *op. cit.* 43, Pl. II, figs. 9, 10.
Buellia variabilis Darb. *op. cit.* 44, Pl. II, figs. 11, 12.

The species is known with certainty only from the Ross Sea area of the Antarctic continent; I did not meet with it in the Graham Land (Palmer Peninsula) sector in 1944-46. The localities are: *South Victoria Land:* Cape Adare (Darb., *loc. cit.*, as « *Buellia adarensis* » and « *Buellia flavoplana* »); Cape Sastrugi (« Sustruzi » acc. to Darb.), Evans Cove (Darb., *loc. cit.*, as « *Buellia flavoplana* », « *Buellia superba* », « *Buellia tristis* » and « *Buellia variabilis* »). *Marie Byrd Land*: Edsel Ford Range, Mt. Donald Woodward (Dodge & Baker, *loc. cit.*, as « *Buellia flavoplana* »).

Rhizocarpon occidentale Lynge, well described and illustrated in Skr. Svalbard og Ishavet, n° 47 (1932) 20, *op. cit.* n° 70 (1937) 27, and Medd. om Grönland, CXVIII, n° 8 (1937) 93, Pl. X, fig. 4, from Greenland and Spitsbergen, may well be identical with the present species, but I have not seen any authentic specimen. Certainly the differences appear to be slight. Should it prove to be identical, then we have another addition to the already considerable number of lichens known to be bipolar in their distribution. A *Rhizocarpon* recently described from the Himalayas by Räsänen, in *Fedde, Repertorium*, LII (1943) 142, under the name of *Rh. himalayense* Räs., also comes very close, and may well be conspecific with *Rh. adarense*, as far as one can judge from the short description given. Another closely related species is *Rh. scabridum* Räs. in *Revist. Sudam. de Bot.* VII (1942, published in Krakau) 77 *et sqq.*, from the Central European Alps.

5. A NEW *Rhizocarpon* - SPECIES FROM N. W. ARGENTINA

Rhizocarpon compositum M. Lamb, *sp. nov.* (Sect. *Eurhizocarpon*). Fig. 6; tab. IV, fig. 8.

Thallus effusus, indeterminatus, tantum conjunctione cum aliis lichenibus anguste nigrescenti-cinctus, plagas irregulares sat latas efficiens, tenuis aut modice incrassatus, olivaceo-cinereus aut pallide virescenti-fuscescens, opacus, epruinosus, omnino areolatus, areolis constanter planis, 0.5-1.0 (-1.5) *mm latis, e verruculis seu microareolis minutissimis, planatis vel leviter convexis, coadunatis formatis et rimis angustis subtiliter sinuosis separatis; extus* KHO —, $CaCl_2O_2$ —, I —, Pd —, *intus (medulla)* KHO *plus minusve (saepe maculatim) rubescens, crystallis rubris praecipitatis,* $CaCl_2O_2$ —, I —, Pd + *persistenter flavescens. Hypothallus nullus; isidia sorediaque desunt. Apothecia numerosa, areolis enata, singula vel bina (raro 3) in quavis areola, aut persistenter adpressa thallumque subaequantia aut adpresso-sessilia leviterque prominentia, basi haud vel vix constricta, rotundata,* 0.3-0.7 (-0.8) *mm lata, atra, nuda, opaca, semper plana, vulgo margine proprio concolore tenui, parum prominenti, integro, interdum evanescenti praedita. Excipulum dimidiatum, fuscum. Hypothecium sat crassum, obscure fuscum, deorsum productum. Thecium* (80-) 90-110 µ *altum, superne fuscum* (KHO−, HNO_3−), *caeterum incoloratum, paraphysibus gelatinam percurrentibus, tenuibus, apicibus fusco-capitatis vel clavatis. Sporae vulgo 6nae, interdum 8nae aut 4nae, mox fuscae, murali-cellulosae, cellulis haud numerosis, halone nullo visibili,* 21-28 × 10-14 µ. *Thecium* I + *persistenter caerulescens.*

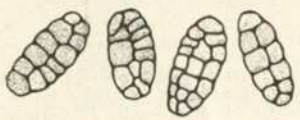

Fig. 6. — *Rhizocarpon compositum* M. Lamb. Spores. (Delin. O. Cimetti)

ARGENTINA. Prov. Tucumán, Dept. Famaillá, Quebrada de Lules, altit. circ. 500 m. s. m., on schistose rocks alongside lanes and tracks in the rain forest, fairly shady position, associated with *Rinodina conspersa, R. deminuta, Caloplaca*-sp. and *Verru-*

caria-sp. Coll. I. M. Lamb, 5. Oct. 1947 (n° 5132, Herb. Crypt. Inst. Lillo n° 9349, holotype; n° 5133, Herb. Crypt. Inst. Lillo n° 9350), 12. Oct. 1947 (n° 5142, Herb. Crypt. Inst. Lillo n° 9359).

The thallus forms irregular patches up to 8 cm or more across, and is 0.15-0.30 (-0.40) mm in thickness. Areolae irregularly angulose, always plane, separated by narrow, usually minutely sinuate cracks less than 0.1 mm wide; sides of cracks concolorous with the thallus (not black). Surface of areolae composed of minute, non-prominent, slightly convex verruculae 0.1 mm or less in diameter. Some parts of the thallus, as a result either of natural wearing down or of the attacks of animals (snails), do not show the composite nature of the areolae distinctly, but the cracks between the areolae usually retain the minutely sinuate edges due to this feature. Color of thallus olivaceous-cinereous or pallid green-brownish, corresponding in Ridgway's *Color Standards* (1912) to Pl. XL. 19‴, 21‴ *a-b*, 21‴ *h*; Pl. XLVI. 21⁗. The red KHO reaction of the medulla is often indistinct macroscopically, and the test is best carried out on sections under the microscope; scattered deposits of red, loosely crossed, spicular crystals are then seen here and there in the medullary tissue. No dark hypothallus is developed, either underneath or at the edge of the thallus, except where it abuts against another crustaceous lichen, in which case the extreme edge of the thallus develops a narrow brown-blackish line. Medulla whitish macroscopically. The thallus has a poorly developed, indistinctly paraplectenchymatic cortex 10-20 µ deep, colorless or faintly brownish (more so in outer 1/3), not nubilated, formed of thin-walled, ± isodiametric, not very distinct cells 3.5-4.5 µ diam. No superficial necrotic layer. Gonidial stratum irregular, slightly interrupted, 100-160 µ deep; algae protococcoid, bright or yellowish-green, ± globose, thin-walled, 8-12 µ diam. Medulla not nubilated, but ± obscured by included substratum-particles, colorless, in sections apparently of paraplectenchymatic structure, but not really so, being composed of compacted and intricated hyphae with the cells preponderantly short, inflated, subglobose, 4-6µ diam., thin-walled, and mostly replete with oil-globules (red

with Sudan III solution); at its base becoming confused with the substratum (no dark hypothalline layer developed). The apothecia vary from adnate-impressed and ± level with the thallus to adpressed-sessile and prominent; most with a fairly distinct proper margin, but some are ± immarginate from the first. Very occasionally the margin may be lighter than the disc (brown). Excipulum present at sides only (± distinct from the hypothecium) (30-) 35-65 μ thick, medium- to dark-brown in section, composed of ± radially elongated cells in flabellate-radiating arrangement, 4-8 × 3-4 μ, with thin brown walls. Hypothecium dark brown (somewhat darker and more dense than the excipulum, with which it comes in contact and overlaps slightly at the sides), of variable depth (its central part irregularly produced downwards into the underlying thallus, where it gradually disappears); in its upper 60-80 μ consisting mainly of vertically-parallel, brown-walled hyphae 2-3 μ thick, in its lower part becoming paraplectenchymatic, with ± isodiametric cells 2.5-4.0 μ diam., with fairly thin, heavily pigmented walls. Thecium light-, medium- or dark brown in upper 12-20 μ (without any purplish or greenish tinge). Paraphyses 1.5-1.7 μ thick, not constricted, simple or occasionally branched, distinct, involved in mucilage but ± separable under pressure, at the tips gradually brown-capitate (sometimes submoniliform) up to 4 μ and there conglutinated. Mature asci about 90 × 22 μ, clavate, with wall 1.0-1-5 μ thick at sides and up to 11 μ at apex. Spores irregularly biseriate in ascus, soon dark olivaceous and then brown, finally becoming dark brown, ± opaque, and shrivelled; HNO_3 —; often slightly constricted at the septa. (No pycnidia seen.)

In n° 5142 a case of apothecial regeneration was seen, the hypothecium of the upper younger apothecium being formed out of the upper part of the thecium of the lower older one, in which numerous shrunken spores were still clearly visible. « Typus innovatus » in Grummann (1941), p. 4, 8.

Rh. compositum is known by the constantly flat, composite areolae of its thallus, separated by minutely sinuate cracks, absence of hypothallus, presence of depsidone lichen-acid (norstictic or α-methyl-ether salazic) in the medulla, negative

Iodine reaction, and soon brown spores. Perhaps related to *Rh. amphibium* (Fr.) Th. Fr., from which it differs in the differently colored thallus, chemical reactions, dark spores, etc.

6. « *Charcotia* » and « *Lethariopsis* », two fictitious lichen genera

The genus *Charcotia* was published by Hue in *Bull. Soc. Bot. France,* LXII (1915) 17, as a monotypic genus of the family *Umbilicariaceae*, the type and only species being *C. rufidula* (Hue) Hue. This was based on *Umbilicaria rufidula* Hue, *Deux. Expéd. Antarct. Franç., Lichens*, p. 52 (1915), the type specimen being from Booth (Wandel) Island off the west coast of Graham Land (Palmer Peninsula). Specimens are also mentioned from Petermann Island nearby. In the appendix to his Antarctic report, *op. cit.*, on p. 185, Hue also deals with the new genus *Charcotia*, explaining that in the long interval which elapsed during the printing of the report, he had come to the conclusion that the species in question must belong to a new genus of *Umbilicariaceae* on account of the divergent structure of the apothecia. The description of *Umbilicaria rufidula, loc. cit.,* is that of a plant very similar in its vegetative characters to *U. Dillenii* Tuckerm., but with very numerous, minute apothecia only 0.20-0.45 mm in diameter; these apothecia entirely black, slightly concave, constricted at the base, with smooth excipulum and hardly visible disc. The margin is described as being formed from the thallus, but not containing gonidial algae. Spores 8, colorless, 1-septate, thin-walled, 12-14 × 4-5 μ. On p. 185 of his Antarctic report Hue states that one of the leading characters upon which the segregation of the new genus *Charcotia* is based is the lecanorine character of the apothecia, and again in the introduction on p. 5 of the same work (obviously written after the taxonomic part of the manuscript had been completed) he states : « A ma grande stupéfaction, je trouvai en eux des apothécies lécanorines parfaitement conformées et présentant des spores uniseptées ! ». This statement about the lecanorine apothecia has been taken up by later

authors (Zahlbruckner in Engler & Prantl, *Nat. Pflanzenfam.*, ed. 2, VIII (1926) 212; Dodge & Baker in *Ann. Mo. Bot. Gard.* XXV (1938) 559, 561). But in the original description, Hue expressly says of the apothecial margin: «gonidia intus deficientia». However, whether the apothecia in *Charcotia* are really lecanorine or not, the genus, to judge by the data given by Hue, would still be distinct by reason of its 1-septate colorless spores.

During a visit to the Muséum d'Histoire Naturelle, Paris, in 1936, I was able to locate the type material of the species in question (n° 123 of the Second French Antarctic Expedition). Examined superficially, it seemed to be *Umbilicaria vellea* or *U. Dillenii*, but, as stated by Hue, there were very numerous, unevenly distributed, minute, black points on the upper surface, 0.1-0.3 mm diam. Sections showed them to be apothecia with 1-septate colorless spores, as described by Hue, but not lecanorine, and not belonging the lichen itself; in other words, the apothecia of a parasitic fungus growing on an *Umbilicaria*-thallus.

A more detailed examination later showed the parasite to be a *Scutula*. The apothecia are sessile, round, black (both wet and dry), convex to hemispherical, immarginate from the first, with black, minutely roughened, matt, naked disc. Thallus around them not discolored or noticeably thickened (very slightly so as seen in sections under the microscope). In section they are quite lecideine, devoid of gonidial algae. Excipulum not well developed, dark brown in outer 6-9 μ, yellow-brown in inner part, lateral (dimidiate), being a radiating continuation of the hypothecial tissue; its outer side formed of the capitate ends (3-5 μ diam.) of the thin-walled, brown, radiating hyphae. Hypothecium light reddish-brown or yellow-brown, compact, composed of indistinct, closely interwoven, thin-walled, yellow-brown hyphae 2.0-4.5 μ thick, becoming more or less paraplectenchymatic in the center, and at the sides more radiate-parallel (where they grade into the excipulum). Thecium 45-65 μ high, faintly sordid yellowish in section, olivaceous brown in upper 6-10 μ. Paraphyses concrete, embedded in mucilage, indistinct in water, slender (about 1 μ thick), mu ch branched, at

tips brown-capitate up to 3 μ. Asci ventricose-clavate, 27-40 × 10-16 μ, with wall about 1 μ thick at sides, at apex often thickened up to 6 μ. Spores 8, approximately 3-seriate in the swollen asci, all distinctly and genuinely 1-septate, colorless, straight or rarely slightly curved, with thin wall and septum; rounded or slightly bluntly pointed at ends, not or occasionally slightly constricted at septum, 12.0-14.5 × 4.5-5.8 μ. With Iodine, thecium deep wine-red (no preceding blue coloration).

From these characters, the *Scutula* appears to be close to *S. epiblastematica* (Wallr.) Rehm. but apparently distinct in having the apothecia black from the beginning. I cannot find any record of a *Scutula* on *Umbilicaria* as host, and most probably it is an undescribed species. It causes a slight hypertrophy of the gonidial algae in those parts of the host-thallus directly below the apothecia, causing them to enlarge up to 15 μ (8-12 μ in other parts of the thallus). Certain colorless thin-walled hyphae, about 3 μ thick, seen among the thick-walled medullary hyphae of the host, appear to belong to the parasite.

There remains the question of the identity of the *Umbilicaria* serving as host. The material is rather fragmentary, and from superficial inspection might be *U. vellea*. The upper surface is alutaceous-buff shading into reddish-brown, and is matt, minutely reticulate-rimose and subscabrid as seen under a lens, in places ± pruinose. This distinguishes it from *U. Dillenii* Tuckerm., in which the upper surface is notably smooth and almost nitid. The two remaining possibilities are therefore *U. vellea* Ach. emend. Frey and *U. antarctica* Frey & Lamb (in *Trans. Brit. Mycol. Soc.* XXII (1939) 270), and sections through the thallus showed that it is actually the latter (subgonidial hyphae not granulate-inspersed, inner part of lower cortex of conglutinated pachydermatic hyphae with fistulose lumina; see remarks of Frey & Lamb, *op. cit.*, p. 271).

The parasite appears to be not uncommon in the Graham Land sector of Antarctica; it has been seen by the author on *Umbilicaria antarctica* in several localities, and one of the specimens collected by the Belgian Antarctic Expedition (n° 266), named «*Umbilicaria Dillenii*» by Vainio (*Rés. Voy. S. Y. Belgica*, 1897-99, *Lichens*, p. 9; 1903), is thickly covered with its

minute apothecia (Densitas circ. 400 per cm.²); this is also *U. antarctica* Frey & Lamb [1].

Before finally disposing of « *Charcotia* », there remains one point to be cleared up, and that is the discrepancy of Hue's statement regarding the alleged lecanorine nature of the apothecia. The solution to this is to be found in a previous paper by Hue published in *Bull. Soc. Bot. France,* LIV (1907) 418, where, after describing a new species of *Stereocaulon,* he makes certain remarks on what he considers to be the essential difference between the lecanorine and the lecideine types of apothecium. His opinion in this respect is eccentric and at variance with the established conception : « la distinction entre les apothécies lécanorines et lécidéines repose non sur la présence ou l'absence des gonidies, mais sur la structure de leurs enveloppes... Quant aux gonidies, leur rôle est absolument nul dans cette distinction ». According to his view, the presence on the sides of the apothecium of cortical tissue derived from the thallus is sufficient grounds for regarding an apothecium as lecanorine. In the *Scutula* of « *Charcotia* », however, even according to this definition, the apothecia are not lecanorine, and it is obvious that Hue, observing, in his sections of younger apothecia, fragments of the upper cortex of the host adhering to the sides of the emergent fruit bodies, mistook this for part of the apothecial tissue.

The specific epithet « *rufidula* » (1915) does not invalidate *Umbilicaria antarctica* Frey & Lamb (1939), because it was based on two entirely discordant elements (parasite and host ; see *Intern. Rules Bot. Nomencl.*, ed. 3 (1935) Article 64).

The genus *Lethariopsis* was created by Zahlbruckner in Engler & Prantl, *Nat. Pflanzenfam.*, ed. 2, VIII (1926) 253, to accommodate a single species described by Hue in *Expéd. Antarct. Franç.*, 1903-05, *Lichens* (1908) 6 under the name of *Letharia wandelensis.* This species, on the data given by Hue, could not possibly be included in the genus *Letharia* in the accepted sense, having spores of the polaribilocular type (in *Letharia* they are simple and thin-walled), and therefore

[1] The true *U. Dillenii* does not appear to occur in the Antarctic.

apparently referable to the family *Teloschistaceae.* Hue's description is that of a fruticulose, caespitose, greenish-yellow plant 3-4 cm. high with ± terete, simple or sparingly divided branches, blackened at the summits, and sorediate towards the tips. There is a central axis of vertically parallel, conglutinated hyphae. The apothecia are described as lateral, adpressed, 0.5-0.6 mm. diam., with entire, non-prominent margin and brown or brown-blackish disc. The epithecium brown, turning red with KHO, the spores colorless, 8nae, polaribilocular, 12-18 × 6-8 µ. Hue emphasises the fact that the cortex of the apothecial margin is different in structure from that of the thallus. The specimen was collected on Booth (Wandel) Island off the west coast of Graham Land (Palmer Peninsula) by the first French Antarctic Expedition of 1903-05 (n° 277-299).

Had Zahlbruckner been able to see the type material of « *Letharia wandelensis* », he would never have created the genus *Lethariopsis,* for what Hue had before him when he drew up his description was actually some rather old specimens of *Neuropogon antarcticus* (DR.) M. Lamb with a few minute, fruiting individuals of a *Caloplaca*- or *Teloschistes*-species epiphytically attached to them. The type material was examined by the present author in Paris in 1936 (one specimen only present, in spite of the double collector's number). Of the identity of the *Neuropogon* there was no doubt at all, but that of the epiphytic *Caloplaca* or *Teloschistes* could hardly be determined, as it was present only as a few, not well developed apothecia, without perceptible thallus. A section through one of these apothecia attached to the branch of the *Neuropogon* showed that the actual point of attachment was the upper part of the thecium, obviously an accidental fusion. Other apothecia seen but not sectioned appeared to be adnate by their base. The transition from the yellow color of the *Neuropogon*-branch to the orange-red of the epiphytic apothecia was quite abrupt, as might be expected. In section, the margin was seen to be corticate, with the cortex orange-red granulate in its outer part (KHO + crimson-red) ; hypothecium colorless ; margin containing protococcoid gonidia ; thecium 90-100 µ high, with epithecium of dense orange-red granulae (KHO + crimson-red) ; para-

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physes discrete, 1.5-2.0 μ thick; spores apparently 8 in ascus, colorless, polaribilocular with the septum occupying about 1/3 of the length, 11-12 × 7-8 μ. Thecium blue, hypothecium green-blue, with Iodine. In the absence of thallus, no certain identification can be made. There were however two identifiable or approximately identifiable lichens occurring epiphytically in minute examples on other parts of the same *Neuropogon; Xanthoria candelaria* (L.) Arn. and a sterile *Physcia*-species. Hue also mentions, *loc. cit.*, « *Polycauliona regalis* et *coralligera*, qui çà et là se sont attachées à ses tiges ». « *Polycauliona regalis* » is *Caloplaca (Thamnoma) regalis* (Vain.) Zahlbr., and « *Polycauliona coralligera* » is *Xanthoria candelaria* (see n° 12 of these Notes). The apothecia in question might then possibly belong to either *Caloplaca regalis* or to *Xanthoria candelaria*. The latter is not likely, on account of the absence of thallus, and the known scarcity of its apothecia in the Antarctic. Almost certainly we have to deal with the fruits of some *Caloplaca*-species, and there the matter must rest.

It is of interest to note that Hue found a parasite in the apothecia of « *Letharia wandelensis* », and submitted it to the mycologist Hariot, by whom it was determined as a new species of *Endococcus, E. wandelensis* Hariot, apud Hue, *op. cit.*, p. 8. From the description given, this is obviously the same as *Didymosphaeria Placodiorum* Vain., *Rés. Voy. S. Y. Belgica*, 1897-99, *Lichens* (1903) 39, a parasite apparently closely (perhaps too closely) allied to *Didymosphaeria bryonthae* (Arn.) Winter, and very common in the apothecia of several *Caloplaca*-species in the Graham Land region of the Antarctic (observation of the present author); also given in the exsiccat Lich. austroamer. ex Herb. Regnell., fasc. XVI, n° 398 on *Caloplaca sublobulata* (Nyl.) Zahlbr. (called *C. lucens* var. *striolata*) from Tierra del Fuego.

7. Two new yellow *Acarospora*-species from Argentina

Acarospora punae M. Lamb, *sp. nov.* (Subgen. *Xanthothallia*, sect. *Epithallia*). (Tab. III, fig. 6).

Thallus ambitu effiguratus, rosulas orbiculares formans et, his confluentibus, saxum sat late tegens, obscure citrinus, lobis marginalibus substrato arcte applanatis, contiguis, convexulis, apicibus plus minusve applanatis expansisque, minute scabrido-granulosis; in parte centrali irregulariter verrucoso-areolatus, mox apotheciis creberrime tectus; cortice (25-) 35-50 μ *crasso, flavido-insperso, opaco; extus intusque* KHO —, $CaCl_2O_2$—, I —. Pd — ; *medulla compacta, hyalina aut passim grisco-nubilata. Apothecia in parte centrali thalli numerosissima, creberrima, supra thallum adpresso-sessilia, lecanorina, rotundata, minuta, basi haud vel vix constricta, margine thallino persistenter prominulo, crassiusculo, disco impresso-punctiformi, fusco, minuto; margine proprio subnullo. Hypothecium tenue, incoloratum; excipulum indistinctum; thecium sat altum* (135-160 μ) *superne flavo-inspersum, ceterum hyalinum, paraphysibus haud arcte concretis, circ.* 1.5 μ *crassis, ramosis et passim anastomosantibus; asci cylindrico-digitiformes; sporae valde numerosae, ellipsoideae aut ellipsoideo-cylindraceae, circ.* 3.0 × 1.5 μ.

Argentina. Prov. Tucumán, Valle de Tafí, western slope of Cumbre Potrerillo (Cumbres Calchaquíes), altit. 3600 m. s. m., in the subalpine « pedregales » (rock wastes) of the Puna formation, on the slightly overhung face of a large schistose rock, without accompanying species. Coll. I. M. Lamb, 20. Nov. 1947 (n° 5290, Herb. Crypt. Inst. Lillo n° 12500).

The thallus covered interruptedly an area of nearly $^1/_4$ m² on the rock. It forms orbicular rosettes 3-9 mm diam., which soon become confluent to cover larger areas. Color rather dark citrine yellow, corresponding to Pl. IV. 23. i in Ridgway's *Color Standards* (1912): surface matt, not pruinose. Peripheral lobes 1.0-1.5 mm long, 0.3-0.7 mm wide, 0.2-0.3 mm thick, closely applied to substratum, sparingly irregularly branched, ± con-

vex and separated by narrow, rounded cracks, at tips ± flattened and expanded, and there rounded or obsoletely crenate; their surface finely scabrid-granulose. Central part of thallus irregularly verrucose-areolate, up to 0.4 mm thick, with tumid, ± smooth areolae of various shapes, 0.25-0.80 mm diam., but soon thickly covered and ± concealed by the very numerous, crowded apothecia; thickness of thallus with apothecia up to 0.6 mm. No isidia or soredia; no hypothallus. Thalline cortex of indistinct structure; it seems to be composed of isodiametric cells 3.0-3.5 μ diam., thin-walled; a superficial, colorless, amorphus, necrotic stratum is present in most places. Gonidial stratum rather diffuse, 140-170 μ deep; algae yellow-green, spherical, thin-walled, 8-16 μ diam. Medulla clear or in places greyish, nubilated, composed of thin-walled hyphae 2.0-3.5 μ thick. Apothecia very numerous in central part of thallus, crowded and ± concealing the areolae, adpressed-sessile on the latter, of lecanorine appearance and structure, 0.25-0.50 mm diam., with persistently prominent, thickish, entire or minutely crenulate, smooth or slightly scabrid, yellow thalline margin, and sunken-punctiform, pale to dark brown disc 0.10-0.25 (-0.30) mm diam. Apothecium at first subglobose, then becoming deeply bowl-shaped; excipulum indistinct, 12-15 μ thick, colorless, hyaline, composed of tangentially elongated cells. Hypothecium shallow (30-40 μ deep), colorless, not or slightly greyish-nubilated, indistinctly cellulose. Thecium heavily yellow-inspersed and opaque in upper 40-50 μ, otherwise colorless. Paraphyses not closely packed, embedded in hyaline mucilage, fairly frequently branched, and occasionally anastomosing, but not conspicuously so; not constricted at septum. Mature asci 80-90 × 20-25 μ; walls of immature asci about 4 μ thick at sides, much thicker at apex (up to 20, sometimes 38 μ); becoming much thinner at maturity (about 3 μ). Spores about 200 in ascus. Thecium blue, then blue-greenish, with Iodine. Pycnidia immersed, not prominent, upright-oval or pyriform, about 100 μ high, 60-70 μ across, with colorless, indistinct perifulcrium 8-10 μ thick, not darkened at ostiole. Fulcra subulate-digitate, 1.0-1.5 μ thick, some of them distinctly branched several times in candelabra-like fashion. (Pycnoconidia not seen with certainty).

Appears to be related to *A. boliviana* H. Magn., from which it differs in its darker yellow color, granulate-scabrid peripheral lobes (as in *A. oxytona*), absence of clear-cut areolation in the central part, and ± sessile, lecanorine apothecia with distinct, tumid, thalline margins (not punctiform-impressed in the areolae at thallus-level as in *A. boliviana*), slightly higher thecium and somewhat smaller spores. From the South African species *A. Finckei* Zahlbr. it is distinguished by the same morphological characters, and in addition its thicker thalline cortex, broader spores, etc. *A. novomexicana* H. Magn. differs in its smooth marginal lobes, impressed apothecial discs below thallus-level, more distinct excipulum, lower thecium, thicker paraphyses and larger spores.

Type material in Herb. Crypt. Instit. Miguel Lillo, herb. I. M. Lamb, and herb. A. H. Magnusson.

Acarospora theleomma M. Lamb, *sp. nov.* (Subgen. *Xanthothallia*, sect. *Epithallia*). (Tab. III, fig. 7).

Thallus effiguratus, laete virescenti-citrinus, plagulas orbiculares demum confluentes efficiens, lobis marginalibus contiguis, substrato arcte adpressis, cuneiformibus, convexulis, apicibus expansis, laevibus aut passim leviter granuloso-scabridis; pars centralis verrucoso-areolata, modice incrassata, areolis tumidis, irregulariter angulosis aut rotundatis, approximatis, superficie aut laevibus aut subtiliter granulato-scabrosis; cortex 30-60 μ *crassus, dense flavo-inspersus, opacus. Thallus extus et intus* KHO —, $CaCl_2O_2$ —, I —, Pd —. *Medulla compacta, corpusculis griseis dense nubilata. Apothecia numerosa, in quavis areola singula, rarius bina, impresso-punctiformia, minuta, mox margine proprio elevato flavido (thallo subconcolore) integro aut crenato-granulato, annulato circumdata, et demum passim in medio flavo-papillata. Hypothecium tenue, hyalinum; excipulum lateribus bene evolutum, sursum prominens et flavido-inspersum, ceterum hyalinum. Thecium altissimum,* 200-240 (-280) μ *altum, mucilaginosum, parte superiore indistincte pallideque fuscescens aut (in apotheciis papilla centrali munitis) strato crasso flavido-insperso onustum. Para-*

physes 1.5-2.0 μ *crassae, abundanter ramosae et passim insigniter ramoso-connexae; asci cylindrico-clavati; sporae valde numerosae, ellipsoideae aut late ellipsoideae aut passim fere subglobosae* (2.5-) 3.0-3.5 (-4.0) × 1.5-1.7 μ.

ARGENTINA. Prov. Mendoza, Dept. San Rafael, Cienaguita-Río Salado, on basaltic rock, accompanied by *Acarospora* cfr. *xanthophana*, *Caloplaca superposita*, *Caloplaca* sp., *Lecanora melanophthalma*, *Lecidea interveniens* and *Rinodina* cfr. *aspicilioides* (det. A. H. Magnusson). Coll. L. Rossi, 25. Jan. 1946 (Herb. Crypt. Inst. Lillo n° 6799).

The thallus forms scattered or confluent, orbicular patches 4-18 mm diam. and is bright greenish-yellow or lemon-yellow (Ridgway, 1912, Pl. IV. 23.-23.h), matt, not pruinose. Peripheral lobes 1.0-1.4 mm long, 0.3-1.0 mm wide, 0.15-0.25 mm thick, closely applied to substratum, ± narrowly fan-shaped, sparingly branched, ± convex, flattened and expanded at the tips; some have finely granulate-scabrid surface, others (on the same thallus) are smooth. Central part of thallus distinctly verrucose-areolate, up to 0.8 mm thick, with tumid, irregularly angulose or ± rounded, smooth or in places slightly granulate-scabrid areolae 0.3-0.7 (-1.0) mm diam, separated by narrow or sometimes rather gaping cracks. No isidia or soredia; no hypothallus developed. Thalline cortex (35-) 40-60μ thick on peripheral lobes, 30-40μ thick on central areolae, and 12-20μ thick on vertical sides of latter, heavily yellow-inspersed and opaque, in thin sections seen to be paraplectenchymatic, of thin-walled, ± isodiametric cells 3-4μ diam. Gonidial stratum 80-200μ deep; algae spherical, thin-walled, yellowish or yellow-greenish, 10-18μ diam.: hyphae of gonidial zone hyaline. Medulla densely grey-nubilated with granules (not dissolved by KHO, $CaCl_2O_2$, or Pd), opaque in section; medullary hyphae thin-walled, 3-4μ thick. Apothecia first visible as minute, pale brown spots on the areolae, then becoming impressed-punctiform, 0.1-0.2 (-0.25) mm diam, pale to dark brown, and surrounded by a conspicuous, elevated, ring-like, entire or crenulate-granulate, yellow, proper margin 0.25-0.50 (-0.70) mm diam., which is concolorous with the thallus or of a slightly deeper yellow color. In many of the older apothecia the central part of the disc is occupied by a yellow papilla, around which the surface of the thecium appears as a sunken brown ring. Apothecium ± globose to deeply bowl-shaped. Excipulum usually very well developed, 25-30μ wide at base, widening to 100-120μ above, where it projects above thallus-surface; formed of vertically parallel, thin-walled hyphae 1.5-3.0μ thick, densely yellow-inspersed in uppermost 40-70μ, inner part colorless and hyaline. Hypothecium + basal excipular stratum 40-50μ deep; the former 25-30μ deep, colorless, hyaline, indistinctly paraplectenchymatic, of cells 2.5-4.0 μ diam., the latter also colorless and hyaline, 15-20 μ deep, consisting of thin-walled hyphae 1.5-2.0 μ thick running parallel to base of apothecium. In apothecia with punctiform brown discs the thecium is gradually and indistinctly pale brownish above, without yellow epithecium; in apothecia with secondary central yellow papilla, the upper part of the thecium is covered by a layer about 40μ thick of yellow-inspersed, opaque tissue of indistinct structure, apparently epithecial in origin. Paraphyses embedded in a hyaline mucilage which stains pale blue with Iodine; much branched and often conspicuously anastomosing, not constricted at septa, somewhat variable in thickness. Mature asci 180-210 × 20-28μ, with colorless gelatinous wall 3-6μ thick at sides, slightly thicker at apex; in immature asci the wall is thickened up to 40μ at apex. Spores some hundreds in ascus, varying in shape from broadly ellipsoid or even subglobose to ellipsoid.

Thecium and hypothecium I + persistently pale blue; the excipulum also stains faintly blue with Iodine, at any rate in its inner part. (No pycnidia seen.)

Undoubtedly a very distinct species, characterised by the peculiar morphology of the apothecia and the exceptionally high thecium. In the sect. *Epithallia* the only species which approaches it in the latter respect is *A. maroccana* B. de Lesd., and this differs in the thicker thalline cortex, larger and constantly globose or subglobose spores, etc.

Type material in Herb. Crypt. Instit. Miguel Lillo and herb. A. H. Magnusson.

Specimens of the foregoing two species were submitted to Dr. A. H. Magnusson, who kindly confirmed the author's view that they are distinct from any previously described.

8. *Lecania* SECT. *Thamnolecania* (VAIN.) ZAHLBR.

Vainio, in *Rés. Voy. S. Y. Belgica,* 1897-99, Lichens (1903) 16, created a subgenus *Thamnolecania,* placed by him under *Lecanora*, to receive what he, on the basis of somewhat fragmentary material collected in the Graham Land (Palmer Peninsula) area of the Antarctic by the Belgian Expedition, judged to be two separate species of a remarkable fruticulose lichen with lecanorine apothecia and colorless 3-septate spores. Zahlbruckner, in Engler & Prantl, *Nat. Pflanzenfam.* I. Teil, Abt. 1 * (1907) 205, transferred the subgenus as a section to *Lecania,* where it more appropriately belongs. Recently it has been considered as a proper genus by Gyelnik, in *Acta Fauna & Flora Univers.*, ser. II, I, n° 5/6 (1933) 8.

The two species described by Vainio, *op. cit.*, p. 17, were *Lecanora Brialmontii* Vain. (Syn. *Lecania Brialmontii* Zahlbr., *Thamnolecania Brialmontii* Gyeln.) and *L. Gerlachei* Vain. (Syn. *Lecania Gerlachei* Darbish., *Thamnolecania Gerlachei* Gyeln.), the material having been found on rocks in two localities in the Palmer Archipelago, off the west coast of Graham Land (Palmer Peninsula). Before I had the opportunity of studying the type material, I analysed the differences between the two species on the basis of Vainio's descriptions, for he makes no remarks on the distinguishing characters. The apparent distinguishing features were expressed in tabular form as follows:

Brialmontii	*Gerlachei*
1. No adnate hypothallus present.	1. Adnate whitish fibrillose hypothallus present.
2. Branches terete.	2. Branches compressed or subterete.
3. Loosely branched.	3. Closely branched. upper parts of branches forming a ± continuous crust.
4. Apothecia 1-3 mm diam.	4. Apothecia 0.7-2.0 mm diam.
5. Discs of apothecia pale testaceous or rarely brownish.	5. Discs of apothecia pale or livid brownish to livid blackish.

Brialmontii	*Gerlachei*
6. Hypothecium blue with Iodine.	6. Hypothecium not blue with Iodine.
7. Thecium about 100 μ high.	7. Thecium 60-70 μ high.
8. Paraphyses embedded in mucilage.	8. Paraphyses loosely coherent.
9. Paraphyses branched.	9. Paraphyses not branched.
10. Spores 3-septate.	10. Spores 3-septate or partly 1-septate.
11. Spores 13-24 × 3.0-4.5 μ.	11. Spores 10-14 × 4.5-5.0 μ.

Some years later I got to see the original material in the Vainio herbarium at Turku (Abo), and made a detailed study of both the types (holotype of *L. Brialmontii* from Bob Islet, *Expéd. Antarct. Belge* n° 262, n° 4277 in herb. Vain.; holotype of *L. Gerlachei* from Auguste Inland, *Expéd. Antarct. Belge* n° 212, n° 4272 in herb. Vain.). The two types looked similar, but the material was in rather fragmentary condition. Upon examination, the following characters of the above table were found to be insignificant, the differences given being covered by the range of variation in the same specimen: 2, 5, 6, 9, 10. But the examination also revealed the following additional differences, not mentioned by Vainio, which were added to the above table:

Brialmontii	*Gerlachei*
12. Medulla of stipes of very fine hyphae, not over 2 μ thick.	12. Medulla of stipes of rather coarse hyphae, 2.0 - 4.5 μ thick.
13. Spores colorless, not highly refractive.	13. Spores with a greenish-yellow tinge, highly refractive (due to abundance of oil).

These differential characters were then used on a fairly abundant material subsequently collected by British expeditions and preserved in the British Museum Herbarium (4 collections), and it was found that with one exception, all of them were without taxonomic significance, grading into each other

without sharp limits. The only character in which no intermediate conditions were found was n° 8, that of the degree of coherence of the paraphyses. This is a very slender character, hardly adequate for the separation of a species. Years later I had the opportunity of collecting and studying *Lecania* sect. *Thamnolecania* in nature, only a few kilometers away from the classical localities, and was able to dispel all doubts concerning the fact that only one species, and not two, is concerned. Microscopical examination of the paraphyses failed to confirm the validity of the last distinguishing character which remained.

The second of Vainio's described species, *L. Gerlachei*, must therefore be retracted into the first, *L. Brialmontii*, as a synonym. The following is a generalised description of the species, based on material from a number of different localities in the Graham Land or Palmer Peninsula of Antarctica and adjacent islands:

Thallus fruticulose, sometimes at first ± adnate to substratum; 5-15 mm high, forming rounded pulvinate clumps directly attached to the rock substratum and up to 2 centim. diam.; finally often fusing into a ± continuous or interrupted crust. Composed of caespitose, crowded, branching trunks which are terete or somewhat compressed in section, 0.4-1.0 mm in diam., frequently irregularly or subdichotomously branched, and covered all over or towards the apices with granular, subhemispherical or irregularly tumid lumps up to 0.4 mm diam., concolorous with or slightly lighter than the stipes. Lower part of stipes often blackish at the base. Color in fresh material greenish-grey, in old herbarium material pale dirty yellowish; matt. No isidia, soredia, or pubescence; no distinct hypothallus developed. Thallus externally and internally KHO —, $CaCl_2O_2$ —, Pd —. The stipes are corticate in some places, in others not; *cortex*, when present, colorless or faintly yellowish, 7-25 µ thick, paraplectenchymatic, of ± isodiametric, irregularly angulose, thin-walled cells 3.0-5-5 µ diam.; not nubilated. *Gonidial stratum* in transverse section appears as an interrupted irregular ring in the upper parts of the stipes; in the lower parts the algae are scanty or entirely lacking. *Algae* protococcoid, bright green, ± globose, 6-12 (-18) µ diam., thin-walled,

multiplying by transverse binary fission; usually aggregated into clumps. Central part of stipes filled with compact *medullary tissue*, without air-spaces: colorless or faintly dull yellowish, not nubilated, composed of thin-walled branching hyphae 1.3-4.5 µ thick interwoven in all directions. In places where no outer cortex is present, the outer covering of the stipes is formed of compacted hyphae similar to those of the medulla, but running mainly perpendicular to the surface. Medulla I-.

Apothecia either terminal or lateral on the branches, usually numerous, 1.5-2.3 mm diam, lecanorine, with a thin, granular-crenulate, persistent margin concolorous with the assimilative lumps of the branches (greenish-grey, or dull yellowish in old preserved material); at first concave to plane, finally convex, sometimes irregularly lobed and furrowed. Disc yellowish flesh-colored to reddish-brown to almost black, smooth or minutely scabrid (under × 10 lens), matt, usually naked, rarely slightly whitish-pruinose. *Thalline margin* in places corticate with a paraplectenchymatic cortex similar to that of the branches, in places ecorticate; filled with medullary tissue like that of the stipes; algae present at the sides and extending below the hypothecium in a ± interrupted zone. *Proper margin* (excipulum) absent or occasionally represented by a few cell-layers between thecium and thalline margin. *Hypothecium* 45-270µ deep, colorless or faintly dull yellowish, formed of closely contexted, thin-walled hyphae 1-2µ thick running in various directions; compact. *Thecium* 45-80µ high, gradually faintly yellowish to yellow-brown in upper 5-15µ, otherwise colorless. *Paraphyses* ± embedded in mucilage or discrete, 2-3µ thick, septate with septa 4-15µ apart, not constricted at septa except near apex; simple or branched, at tips gradually thickened up to 5 µ, there yellowish to yellow-brown and sometimes submoniliform. *Asci* clavate, 30-60 × 6-12 µ, with wall about 1 µ thick at sides, at apex thickened up to 12 µ. *Spores* 6-8 in ascus, irregularly biseriate, colorless, or faintly greenish-yellow and refractive from oil, oblong-ellipsoid or oblong, straight or rarely slightly curved, rounded at ends, mostly thinly transversely 3-septate, occasionally 1- or 2-septate, with thin wall and septa, variable

in length and breadth, 10-20 × 3.3-5.0 µ. With Iodine, asci blue then wine-reddish; paraphyses not stained; hypothecium blue, aeruginose, or unstained.

Pycnidia lateral or terminal on branches, indicated externally by slightly swollen, reddish-brown spots about 0.1 mm diam.; wall colorless; fulcra exobasidial, branched and septate, 8-13 × 1.5-2.5 µ, with subulate branches; pycnoconidia filiform, usually arcuate, 14-24 × about 0.7 µ.

The photographs 11, 12 and 13 on Plate II of Vainio's report (*op. cit.*) show the habitus quite well, although the specimens are rather fragmentary.

Vainio described the same species a third time in *Rés. Voy. S. Y. Belgica*, 1897-99, *Lichens* (1903) 15, under the name of *Stereocaulon pygmaeum* Vain. The original material of this, from Cape Anna Osterrieth, on the mainland coast opposite Brabant Island (*Expéd. Antarct. Belge* n° 201, n° 3941 in herb. Vain.) is very scanty and fragmentary, and from its external appearance might well be a small *Stereocaulon*. Its anatomical structure, however, is exactly that of the present species, and quite distinct from that of *Stereocaulon* (no differentiated central cylinder, core of stipes consisting of hyphae interwovenin various directions; apothecia truly lecanorine).

Lecania cariosa (Hue) Darbishire in *Brit. Antarct. (« Terra Nova ») Exped., Nat. Hist. Rept., Bot.*, Part III, *Lichens* (1923) 57 (Syn. *Lecanora cariosa* Hue in *Deux. Expéd. Antarct. Franç.* 1908-10, *Lichens* (1915) 76) also belongs to the sect. *Thamnolecania*. It was described from Deception Island in the South Shetlands. Unfortunately no material of it could be found at the Paris Museum in 1936. The greater part of Hue's description could apply quite well to *L. Brialmontii*, but he mentions straight, cylindrical pycnoconidia 8-12 × 1µ, which does not tally with the present species.

Lecania (*Thamnolecania*) *Brialmontii* is common along the coasts and on the islands and islets of the west side of Graham Land (Palmer Peninsula), but only near sea-level. The reason for this is that it is an ornithocoprophilous species, and keeps to the lower levels near rookeries and sites frequented by gulls, skuas, and paddies (*Chionis alba*), where it receives a good

supply of nitrogenous matter dissolved in snowmelt water. There it may be found abundantly in many places, forming the dominant component of many lichen associations, on vertical or sloping granodiorite rocks. It forms small, round, pulvinate lumps which often become confluent into an interrupted crust. In one place these clumps were found detached from the substratum, and lying loose on the ground, where they might easily be transported by wind as a « Wanderflechte ». *Xanthoria candelaria* often grows epiphytically upon it.

9. *Parmelia acervata* Hue, a form of *P. saxatilis*

Parmelia acervata was described by Hue in *Deux. Expéd. Antarctic Franç.* 1908-10, *Lichens* (1915) 43, from Cape Tuxen on the west coast of Graham Land (Palmer Peninsula). He places it near *P. omphalodes*. The type specimen, seen by the present author at the Muséum d'Histoire Naturelle, Paris, in 1936 (n° 190 *pr. p.* of the Second French Antarctic Exped.) proved on examination to be referable to *P. saxatilis* (L.) Ach., but in an unusual form, which may be distinguished as *P. saxatilis* f. *acervata* (Hue) M. Lamb, *comb. nov.* It is characterised by its congested habit, the central part of the thallus being heaped up in several layers (the lower layers ± desintegrated) and covered with a dense, continuous, rugulose or verruculose, castaneous crust of isidia. Reticulate cracks are present on the non-isidiate parts of the thallus, although not conspicuous. Color at the edges of the lobes glaucescent yellowish-grey; in the central parts reddish brown or castaneous. Underside black, with copious black rhizinae. Surface of thallus KHO + yellow, $CaCl_2O_2$ —; medulla KHO + yellow then blood-red, $CaCl_2O_2$ —. Upper cortex 25-40 µ deep, light yellow-brown in outer 8-15 µ, colorless in inner part, composed of ± isodiametric, somewhat irregular, thin-walled cells 3-5 µ diam. Gonidial stratum ± continuous, 18-30 µ deep; algae globose, 6-10 µ diam. Medulla faintly yellowish (nubilated), of rather loosely interwoven, thin-walled hyphae 1.5-3.0 µ thick running in various directions, towards the base chiefly horizontally paral-

lel, covered with minute dull yellowish granules. Lower cortex dark brown in section, 12-20 μ thick, of ± indistinct, irregular or rounded, often crushed and deformed cells 4-6 μ diam., with brown walls 1.0-1.5 μ thick. (Only two apothecia present, not examined).

Similar specimens of this form have been seen from the South Shetlands. The thallus is strongly variegated in color, from whitish-glaucescent at the edges to reddish-brown in the central parts. The crust of isidia is often eroded in places, the white medulla showing through in streaks and patches. Isidia verruculose, not elongated, up to 0.3 mm diam. This congested and heaped-up form of *Parmelia saxatilis*, with its dense crust-like coating of coalescent isidia, may be a response to rigorous climatic conditions; I have seen a plant from Novaya Zemlya (Serebryanka, coll. et det. B. Lynge) somewhat approaching it in appearance.

10. SYNONYMY OF THE ANTARCTIC *Alectoriae*

So far as is definitely known at present, the species of *Alectoria* occurring south of the 60th. parallel of latitude belong exclusively to the sect. *Subparmelia* of Degelius (in *Nytt. Mag. f. Naturvidensk.* LXXVIII (1938) 286)[1]. This section comprises the two species *A. minuscula* Nyl. and *A. pubescens* (L.) Howe jr., which are often referred to the genus *Parmelia*. The former was first recorded from the Antarctic by Hue, in *Deux. Expéd. Antarct. Franç.* 1908-10, *Lichens* (1915) 41 (Jenny Island in Marguerite Bay on the west side of the Graham Land or Palmer Peninsula), and the latter by Vainio, in *Rés. Voy. S. Y. Belgica*, 1897-99, *Lichens* (1903) 14 (Brabant Island in the Palmer Archipelago). Actually, as will be shown in the following paragraphs, Vainio's material was not *A. pubescens*, but *A. minuscula*. There have also been some apparently endemic Antarctic entities of this genus described: *Parmelia pubescens* f. *biformis* Vain., *loc. cit.*; *P. pubescens* var. *congesta* Zahlbr. in *Deutsch. Südpolar-Exped.* VIII (1906) 52; *Alectoria corymbosa* Hue in *Expéd. Antarct. Franç.* 1903-05, *Lichens* (1908) 12; *A. nigerrima* Hue in *Deux. Expéd. Antarct. Franç.* 1908-10, *Lichens* (1915) 40; *A. intricata* Hue, *op. cit.*, p. 41; and *A. antarctica* Dodge & Baker in *Ann. Mo. Bot. Gard.* XXV (1938) 599.

[1] Darbishire, in *Trans. & Proc. Bot. Soc. Edinburgh*, XXIII (1905) p. 2 of reprint, records « *Bryopogon jubatum* » (*Alectoria jubata*) from the South Orkney Islands, and in *Wiss. Ergebn. Schwed. Südpolar-Exped. 1901-03*, IV. Lief. 11 (1912) 59 refers apparently to the same record under the name of *Bryopogon prolixum*. I have not seen the specimen upon which this record is based.

Having at one time or another had access to nearly all the original material concerned, I am able to give the following information concerning these records:

Vainio, *loc. cit.*, referred his Antarctic material of « *Parmelia pubescens* » to a distinct form, f. *biformis* Vain., characterised by « thallo passim fasciculis ramorum multoties tenuioribus instructo ». This form, according to the type material (*Expéd. Antarct. Belge*, n^os^ 246 *pr. p.* and 251 *pr. p.*, n^os^ 3604 and 3605 in herb. Vainio respectively), does not belong to *A. pubescens*, but to *A. minuscula*, of which it may be considered as f. *biformis* (Vain.) M. Lamb. *comb. nov.* It is a form of *A. minuscula* with strong dimorphism of the thallus branches expressed in the formation, by regeneration in the central parts of the thallus, of very numerous, extremely minute, crowded and intricated, secondary branchlets only visible under a × 10 lens, and contrasting sharply with the much larger, radiating, original branches of the periphery. Lynge and Scholander, in *Skr. om Svalbard og Ishavet*, n° 41 (1932) 72, point out that this regeneration of finer branches is very characteristic of *A. minuscula*, and is not found in *A. pubescens*. The f. *biformis* differs from f. *applanata* (Lynge apud Lynge & Scholander, *loc. cit.*) M. Lamb (in *Nytt. Mag. f. Naturvidensk.* LXXX (1939) 264) in the terete, not flattened and applanate, original peripheral branches. According to the present author's observations, it is common in the Graham Land (Palmer Peninsula) sector of the Antarctic, and has also been recorded by Räsänen in *Ann. Bot. Vanamo*, II. n° 1 (1932) 19 from Fuegia, and in Revista Universitaria, Santiago, XXII (1937) 198, from Chile, Prov. Cautin.

« *Parmelia pubescens* var. *congesta* » Zahlbr., *loc. cit.*, recorded

from the Gaussberg in Kaiser Wilhelm II Land, may also be distinguished as a distinct form of *A. minuscula*, f. *congesta* (Zahlbr.) M. Lamb, *comb. nov.* The holotype in the Berlin-Dahlem Botanical Museum (unfortunately destroyed during the war) was characterised by the complete or almost complete absence of the original larger peripheral branches; the thallus consisting of irregular, pulvinate, crowded, black, hairy masses about 1 centim. across and up to 3 mm thick, composed of extremely minute, congested and intricated, ± terete branchlets 0.1 mm or less in diameter, only visible under a × 10 leus. Dark brown-blackish, not shining or in places slightly glossy. There is no fusion of the branchlets into a continuous smooth crust, as in « *Parmelia minuscula* f. *crustacea* » Lynge apud Lynge & Scholander, *loc. cit.* An uncommon form, but has also been seen from the Graham Land area (Marguerite Bay).

« *Alectoria intricata* » Hue, *loc. cit.*, from a small unnamed island in Marguerite Bay, is, according to the holotype specimen seen in the Muséum d'Histoire Naturelle, Paris, *A. minuscula* f. *biformis*, differing only in its lighter, olive-brown color, nowhere completely black. In this species the color of the thallus depends very largely on the illumination which it receives, and in a large material one can find all intergrades from dull brown to the more usual brown-black or jet-black. This is also shown by the fact that the branches on the underside of the intricate thalli are usually much paler, as are also those which have grown into a cleft of the rock away from the light. Has been listed by Gyelnik in *Ann. Mus. Nat. Hungar.* XXIX (1935) p. 2 of reprint, as « *Alectoria bicolor* var. *intricata* Gyeln. », and in *Fedde, Repertorium*, XXXVIII (1935) 238 as « *Bryopogon bicolor* var. *intricatus* Gyeln. » Thallus not affected by Pd; this fact, quite apart from the obvious morphological differences, shows that the plant has nothing to do with *A. bicolor*.

« *Alectoria nigerrima* » Hue, from Cape Tuxen, west Graham Land, is the true *A. pubescens*, quite typical (holotype seen in Muséum d'Histoire Naturelle, Paris). Gyelnik mentions it as « *Alectoria bicolor* var. *nigerrima* Gyeln. » and « *Bryopogon bicolor* var *nigerrimus* Gyeln. » in *Ann. Mus. Nat. Hungar.* XXIX (1935) p. 4 of reprint and in *Fedde, Repertorium*, XXXVIII (1935) 237 respectively. Whether « *Alectoria nigerrima* » recorded by Räsänen, in *Ann. Bot. Vanamo*, II, n° 1 (1932) 12, from Mount Buckland in Fuegia is also *A. pubescens*, I am unable to say, not having seen the specimen.

« *Alectoria corymbosa* » Hue, *loc. cit.*, even from the description alone, is obviously no *Alectoria*, and my examination of the type material at the Paris Museum showed that it is a peculiar plant which at the time could only be compared to a fruticulose *Lepraria*. Some years later, however, a fruiting specimen from the South Orkneys came into my hands, and proved it to be referable to the genus *Catillaria*, as a new section, the diagnosis and description of which will be given shortly elsewhere.

Alectoria antarctica Dodge & Baker, *loc. cit.*, from King Edward VII Land, Marie Byrd Land, and South Victoria Land (numerous localities), remains uncertain. Judging by the description and the drawings given, it is completely similar to *A. minuscula*, but small apothecia are described which are peculiar in lacking a thalline margin (amphithecium). The thecium is somewhat lower than is usual in *A. minuscula*, and the spores, according to the measurements given, distinctly smaller. It is not clear whether these apothecia were present in all the specimens enumerated or only in a single one which was selected as the holotype. In the latter case, one might be inclined to suspect that the material was *A. minuscula* and that the apothecia described were ill-developed or abnormal. Apothecia are extremely rare in Antarctic material of this section, and when present are often ± degenerated and carbonised.

« *Parmelia lanata* » in Darbishire, *Brit. Antarct. (« Terra Nova ») Exped., Nat. Hist. Rept.*, Bot., Part III, Lichens (1923) 58, from South Victoria Land, is not *A. pubescens*, but *A. minuscula* f. *biformis*; the material seen by the present author in Brit. Mus. Herb.

We thus know, for the time being at any rate, only two, or possibly three, *Alectoria*-species in the Antarctic continent and adjacent islands lying south of 60° S. lat. (omitting, for the present, consideration of Darbishire's « *Bryopogon jubatum* »):

A. pubescens (L.) Howe jr. (Syn. *Parmelia pubescens* Vain., *P. lanata* Wallr.) and *A. minuscula* Nyl., with the possible addition of the doubtful *A. antarctica* Dodge & Baker. Both of the two former species occur also in the northern hemisphere, where they have a circumpolar arctic-alpine distribution, occurring in the lower latitudes only in mountainous regions. They are closely related, and *A. minuscula* has by some authors been considered as a variety or even as a meager or juvenile state of *A. pubescens*. Lynge & Scholander, however, who studied extensive populations in the field, considered them distinct (*Skr. om Svalbard og Ishavet*, n° 41 (1932) 70-71), not only morphologically but also distributionally, *pubescens* being found in the Arctic at lower altitudes than *minuscula*. Certainly in the Antarctic material seen their separation presented no difficulty.

Both species are externally and internally KHO —, $CaCl_2O_2$ —, Pd —.

One Antarctic specimen of *A. minuscula*, with more than usually torulose and applanate laciniae, was sectioned on the suspicion that it might prove to be *Parmelia Almquistii* Vain., a species known from the Siberian Arctic (see Degelius in *Medd. Göteborgs Bot. Trädg.* XII (1937) 133), but the sections showed the typical structure of *pubescens* and *minuscula* (cortical cylinder of conglutinated hyphae running parallel to the long axis).

As regards their distribution in the Antarctic: *A. minuscula* is perhaps rather more common and abundant than *A. pubescens*, at any rate it is more obvious, being met with often on quite exposed rock faces, where it may form pure associations of handsome circular rosettes. *A. pubescens*, on the other hand, has to be searched for in crannies and among stones in the more sheltered places.

11. WHAT IS *Ramalina lanceolata* NYL.?

In his *Recogn. Monogr. Ramalinarum* (*Bull. Soc. Linn. Normand.* sér. 2, IV (1870) 47 of reprint) Nylander published a species of *Ramalina* from Brazil, *R. lanceolata*, in the following

words: « Sat similis priori » (*R. yemensis*) « thallo solum nonnihil tenuius membranaceo et sporis tenuioribus curvulis vel subcurvulis (longit. 0,010-15 millim., crassit. 0,0035-0,0045 millim.)... Forsan, ob sporas tenuiores, specie differat a *R. Yemensi*, hoc autem haud parum sit dubium; tamen maximam sporarum crassitiem non 0,005 millimetri excedentem vidi, quum haud raro eadem solum 0,003 metitur. Thallus mediocris lanceolato-laciniatus (altit. 4-8 centimetr.), conveniens fere cum *R. Yemensi* communi vel ejus forma *latiore*. Apothecia parva, sparsa et marginalia, saepe conferta. Sporae subrectae vel leviter curvulae ».

Müller Arg., in *Jahrb. Kgl. Bot. Gard. Berlin*, II (1883) 310, makes reference to *Ramalina lanceolata* Nyl. as a proper species close to *R. Ecklonii* (*R. yemensis*), but differing in the spore-characters: « Similis omnino *R. Eckloni* v. *membranaceae*, sed sporae 13-17 μ longae, 4-5 μ latae et omnes v. fere omnes distincte incurvae, ambitu paullo angustiores quam in *R. Eckloni* ». Then again, in *Flora*, LXXII (1889) 143, Müller Arg. repeats this opinion, but this time bases the difference against *R. Ecklonii*, not on the spore characters, of which he now says « re vera hi characteres variabiles sunt, ut in magno aliarum specierum numero hujus generis », but on the gross morphology: « Haec *R. lanceolata* ab omnibus formis *R. Eckloni* Montgn. in eo recedit, quod tota opaca, laciniae insigniter planae et laeves, haud costulato-inaequales, vulgo obscuriores, obscure olivacea, in America australiore late distributa, praesertim in Argentinia et Uruguay frequens ».

Ten years later, Hue, in *Nouv. Arch. Mus. Hist. Nat. Paris*, sér. 4, I (1899) 75, Pl. IV, fig. 4, records *R. lanceolata* from Uruguay, and gives a description; he agrees with Müller Arg. in regarding the smooth surface of the laciniae (« nunquam costato-rugosis ») as the essential difference between this species and *R. yemensis* (*Ecklonii*). But his illustration, which is rather good, shows a plant looking much more like *R. prolifera* Tayl. than *R. Ecklonii*, and this raises doubts as to the correctness of his determination in the first place. He makes no mention of having seen any type material of *R. lanceolata*.

Finally, Malme, in his paper on the *Ramalinae* of the Reg-

nellian Herbarium (*Ark. f. Bot.* XXVIA, n° 12; 1934), lists *R. lanceolata* Nyl. as a doubtful synonym of *R. prolifera* Tayl., adding: « speciminulum visum incertum », this referring apparently to Nylander's type specimen to which he appears to have had access, although he does not make any statement to that effect.

In an attempt to clear up the confusion regarding this species and its relationship to *R. Ecklonii*, I examined the type fragment in Nylander's herbarium (n° 37250) when on a visit to Helsinki in 1947. It consists only of part of a frond, measuring 3.5 by 0.7-0.8 centim., and has taken on a brownish-cartilaginous appearance, as do many *Ramalinae* after some time in the herbarium (see Malme, *op. cit.*, p. 2). Now dark dull greenish, matt. It has a few oval perforations, and under the hand lens is seen to be fairly conspicuously longitudinally (not transversely) wrinkled. There are faint indications of minute, pale, pseudocyphella-like spots here and there between the wrinkles or ridges, but they are uncommon. Thallus outside and inside Pd —. Apothecia quite numerous, both on edges and on both surfaces, but more common on one surface than on the other; up to 1 mm diam., plane, with ± conspicuous, thin, slightly prominent, pallid brown, apparently proper margin, and carneous-brownish or yellowish flesh-colored, not or hardly pruinose disc. Gonidial algae excluded from margin, but present below hypothecium, which is colorless, hyaline, 50-60 µ deep, I + blue (at any rate in upper part). Thecium 40-45 µ high, I + blue, with dense yellowish granulose epithecium. Paraphyses discrete. Spores (6-8 in ascus) usually straight, sometimes almost curved (*i. e.*, with one side convex, the other straight), (8-) 10-12 × 3.5-4.0 µ. Nylander has drawn on the packet some slightly curved spores, with the measurements: « 0,010-14 30-45-50 ».

On external characters, it is not possible to distinguish this specimen from *R. Ecklonii*. The frond is not more « lanceolate » than is usual in that species. It is obvious that Müller Arg. (1889) misinterpreted Nylander's description, and applied the epithet *lanceolata* to another species of *Ramalina*, most probably *R. prolifera* Tayl., to judge by his remarks *loc. cit.*, being

followed in this by Hue (1899), whose illustration shows nothing like *R. Ecklonii*, but a good representation of *R. prolifera*. This circumstance probably led Zahlbruckner to place *R. prolifera* as a variety of *R. lanceolata* in *Cat. Lich. Univ.* VI (1930) 496. In reality *R. prolifera* is quite distinct from *R. Ecklonii* and similar species in its long, strap-shaped, smooth or finely transversely (not longitudinally) wrinkled fronds, with numerous minute pale pseudocyphellae, and in the characteristic abrupt proliferation of secondary laciniae off the main fronds; Malme's photograph (*op. cit.*, Pl. I) is quite characteristic of the species, and shows a plant very similar to the original specimen of Taylor (seen by the author in Brit. Mus. Herb.) [1].

The difference, if any exists, between *R. lanceolata* and *R. Ecklonii* must therefore rest on microscopical characters. The structure of the apothecium, height of thecium etc., seems to be the same in both. Only in the spores there is the difference in width noted by Nylander: in the *lanceolata* type they are (8) 10-15 × 3.0-5.0 µ (concensus of Nylander's published and unpublished measurements and those of the present author); in *R. Ecklonii* they are 11-15 × (4.0) 4.5-7.0 µ, according to S. American material examined and to Malme's description (*op. cit.*, p. 9). The form of the spores shows the same variation in both.

From consideration of these facts, it is apparent that *R. lanceolata* Nyl. cannot be distinguished from *R. Ecklonii* (Spreng.) Mey. & Flot. (= *R. yemensis* (Ach.) Nyl.), unless possibly as an insignificant forma characterised by slightly narrower spores. It is very doubtful however whether this character can be regarded as constant.

12. IDENTITY OF « *Polycauliona coralligera* » HUE

Hue, in his report on the lichens of the First French Antarctic Expedition under Dr. Charcot (1903-05, published in 1908), described several species of the genus « *Polycauliona* » Hue,

[1] Malme gives no indication of the size scale of his illustration; it seems to be about $^3/_4$ natural size. Taylor's type specimen is 27 centim. long, with the main fronds up to 1.4 centim. wide at the base.

the type species of which is obviously *Caloplaca* (*Thamnoma*) *regalis* (Vain.) Zahlbr. One of these species is *P. coralligera* Hue, *op. cit.*, p. 10, based on material collected on Booth (Wandel) Island off the west coast of Graham Land (Palmer Peninsula), growing over the thalli of other lichens. In Zahlbruckner's *Catal. Lich. Univ.* it has been taken up as *Caloplaca coralligera* (Hue) Zahlbr. During my visit to the Muséum d'Histoire Naturelle, Paris, in 1936, I was able to locate the type material of this species, and found that it was nothing but *Xanthoria candelaria* (L.) Arn., which is so common on the bird rocks of that part of the Antarctic. It is quite typical, or perhaps acceding towards the f. *antarctica* (Vain.) Hillm. (*vide infra*) on account of its somewhat narrowly lacerate laciniae, and both morphologically and anatomically shows perfect agreement with specimens of *X. candelaria* seen both from the Antarctic and from N. Europe. It is sterile, as is usually the case, at any rate in the Antarctic, and has numerous granulose soredia.

Much of the material of *X. candelaria* which occurs in the Antarctic belongs to the luxuriant, brightly colored, narrowly laciniate, caespitose form. described by Vainio (*Rés. Voy. S. Y. Belgica*, 1897-99, p. 22 ; 1903) as *X. lychnea* f. *antarctica*. The type specimen of this form, preserved in the Vainio herbarium at Turku (Abo), is shown in Pl. IV, fig. 9. It is tufted-caespitose, 4-5 mm high, with the laciniae crowded, flattened, often longitudinally subcanaliculate, bright orange-yellow above, lower down grading into yellow and at the base whitish ; at margins and summits sparingly sorediose-granulate, not pulverulent. Laciniae 0.3-0.5 mm broad, profusely branched and lacerate. Sterile. This form has also been recorded from Fuegia by Räsänen, in *Ann. Bot. Vanamo*, II. n° 1 (1932) 30. Transitions from it to the typical state are not hard to find in the Graham Land peninsula and adjacent islands, and it is certainly not entitled to the rank of proper species bestowed on it by Dodge & Baker in *Ann. Mo. Bot. Gard.* XXV (1938) 625.

The genus *Polycauliona* has been recognised by Dodge & Baker in *Ann. Mo. Bot. Gard.* XXV (1938) 627, but unless it be emended to include only the species with polaribilocular

spores (*Caloplaca* sect. *Thamnoma*), it is an unnatural genus, containing also elements belonging to the family Lecanoraceae (*Lecanora* sect. *Cladodium*).

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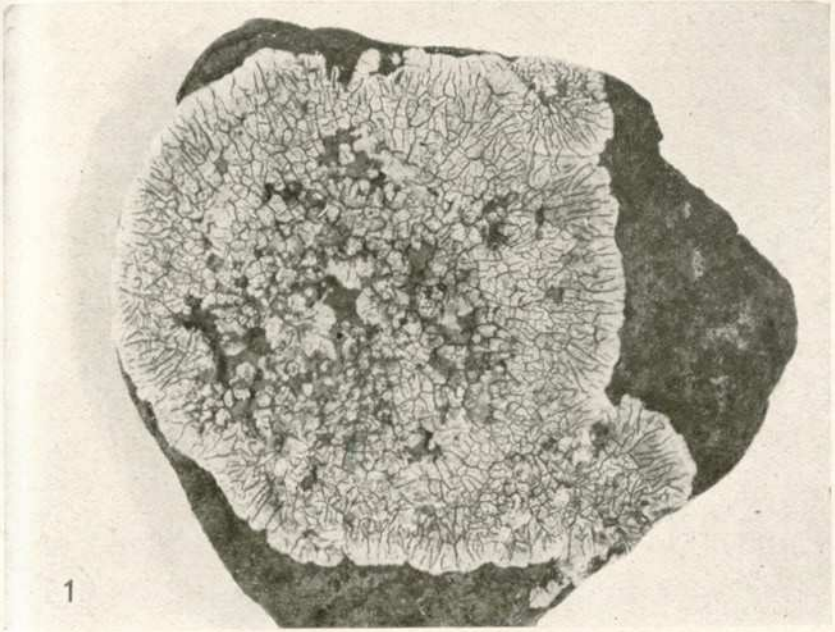
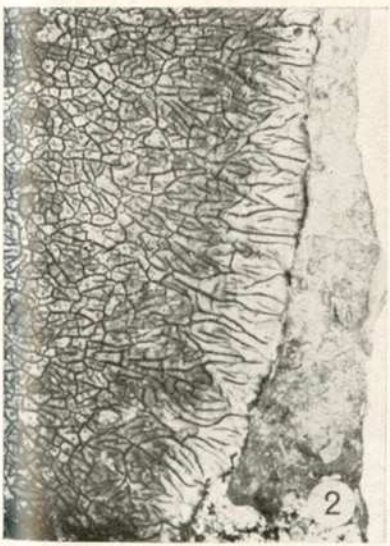
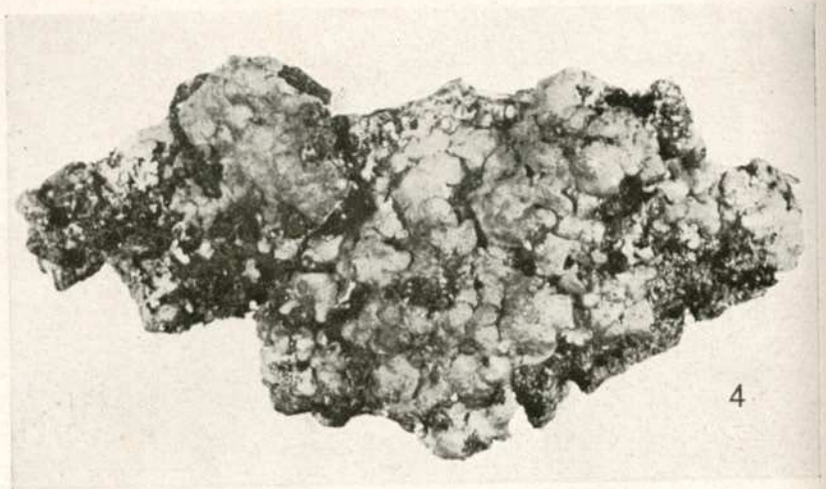
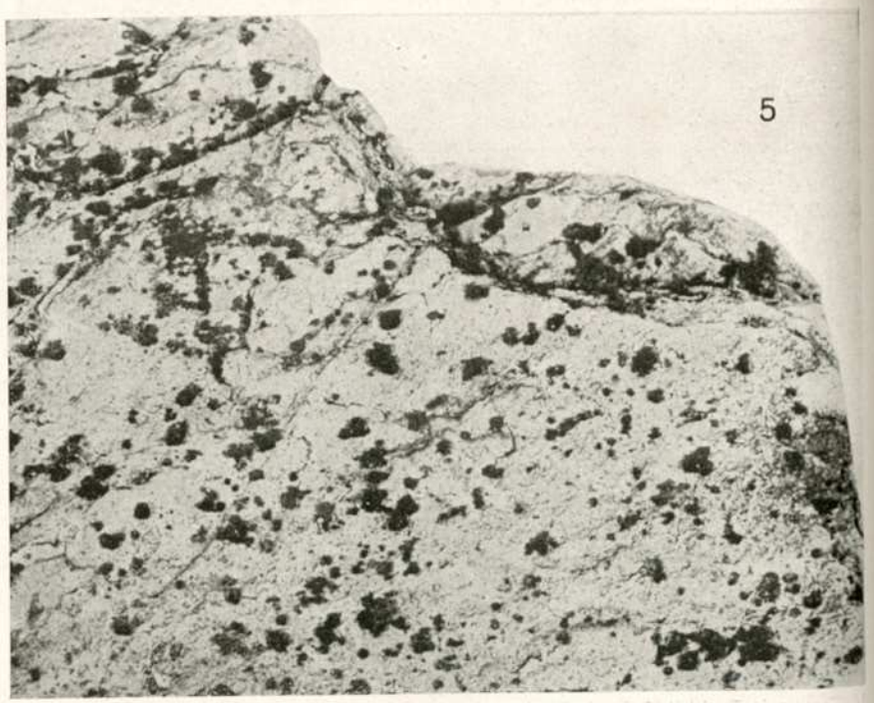


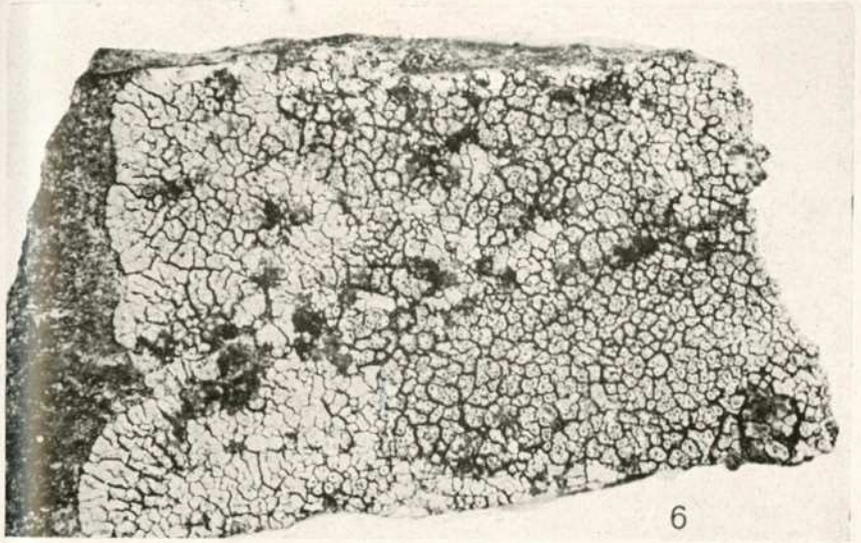


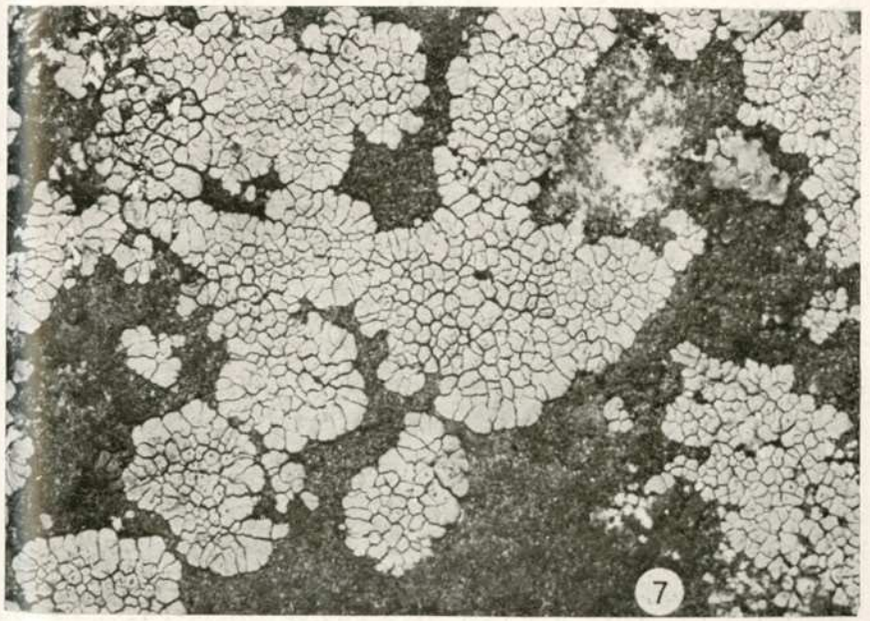
1, *Verrucaria Durietzii* M. Lamb. Specimen from Auckland Islands (subantarctic islands of New Zealand), Carnley Harbour, North Arm, coll. G. E. Du Rietz, 1927 (n° 2319 : 1). 1.75 times nat. size ; 2, *Verrucaria Durietzii* M. Lamb. Periphery of thallus in the type specimen from Auckland Islands, Port Ross, coll. G. E. Du Rietz, 1927 (n° 2225 b : 1). 3 times nat. size ; 3, *Verrucaria Durietzii* M. Lamb. f. *rhabdota* M. Lamb. Periphery of thallus in the type specimen from Falkland Islands (Islas Malvinas), Port Louis, coll. I. M. Lamb, 1946 (n° 2939). 3 times nat. size. (phot. V. Brennan).



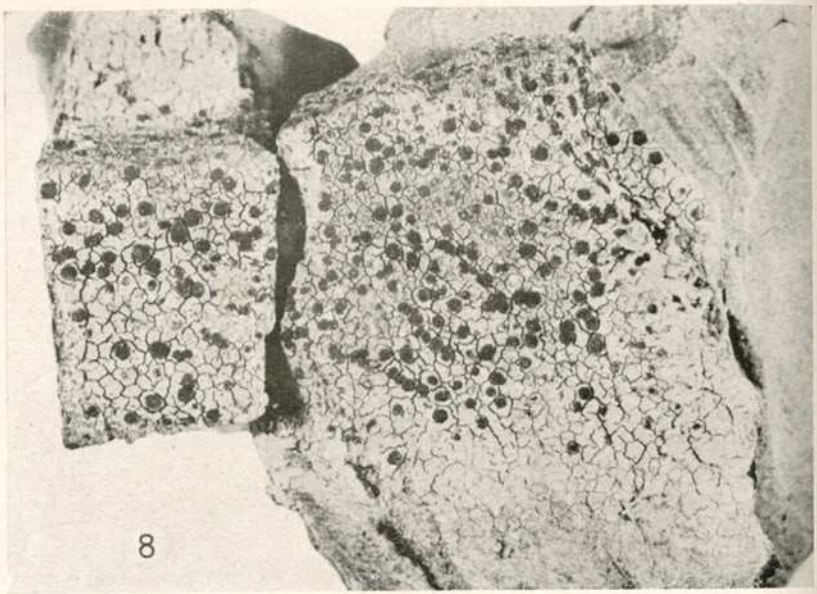


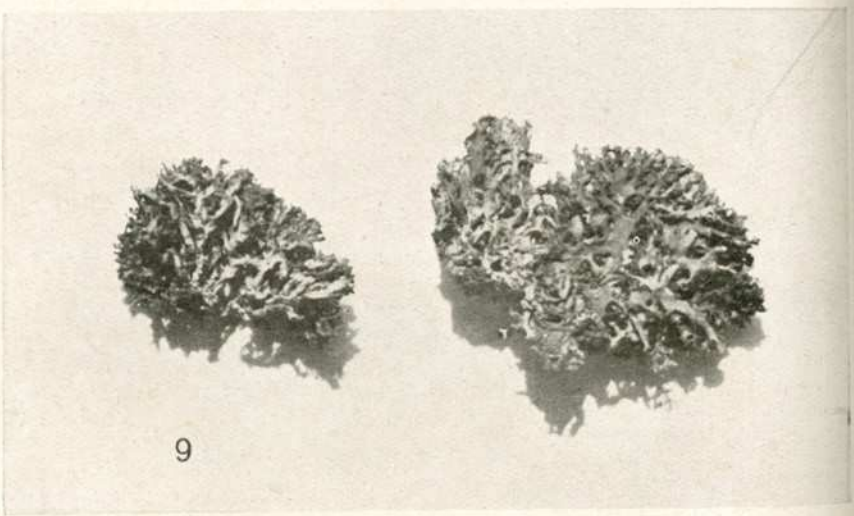
4, *Endocarpon sylvicolum* M. Lamb. The type specimen. 3.5 times nat. size ; 5, *Endocarpon Mailae* M. Lamb. Part of the type specimen. 3.5 times nat. size. (phot. V. Brennan).





6, *Acarospora punae* M. Lamb. Part of the type specimen. 3.5 times nat. size ; 7, *Acarospora theleomma* M. Lamb. Part of the type specimen. 3.5 times nat. size. (phot. V. Brennan).





8, *Rhizocarpon compositum* M. Lamb. Part of the type specimen. 3.5 times nat. size (phot. V. Brennan) ; 9, *Xanthoria candelaria* (L.) Arn., f. *antarctica* (Vain.) Hillm. The type material in herb. Vainio (Expéd. Antarct. Belge n° 167 pr. p.). 4 times nat. size. (phot. M. Lamb).