KUNGL. SVENSKA VETENSKAPSAKADEMIENS HANDLINGAR. Band 57. N:o 6.

BOTANISCHE ERGEBNISSE

DER

SCHWEDISCHEN EXPEDITION NACH PATAGONIEN

UND DEM FEUERLANDE 1907—1909

VI.

DIE FLECHTEN

VON

DR. A. ZAHLBRUCKNER
WIEN

MITGETEILT AM 25. OKTOBER 1916 DURCH O. JUEL UND R. SERNANDER

STOCKHOLM
ALMQVIST & WIKSELLS BOKTRYCKERI-A.-B.
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cat.

Die unten behandelten Flechten wurden mit wenigen Ausnahmen von dem Leiter der Expedition, Dr. C. Skottsberg, gesammelt. Einige Gesteinsproben mit Flechten, die er auf der Schwedischen Südpolarexpedition 1901—1903 gesammelt hatte, und die erst nachträglich wiedergefunden wurden, hat er mir gleichfalls übermittelt. Sonst wurde diese Sammlung bekanntlich von Herrn Dr. O. V. Darbishire bearbeitet.[1] Ferner empfing ich auch einige von Dr. P. Dusén während der Expedition 1895—97 nach den Magellansländern (Exp. O. Nordenskjöld) zusammengebrachte Flechten.

Die pflanzengeographischen Erörterungen nehmen in der Studie Darbishire's einen breiten Raum ein; er behandelt die Fragen, soweit es die einschlägige Literatur und das ihm zur Verfügung stehende Material gestattete, ausführlich und ich glaube, es ist alles gesagt, was sich ohne eigene Beobachtungen vorbringen lässt. Ich kann es daher unterlassen, neuerlich diese Fragen zu berühren, umsoweniger als die Ergebnisse meiner Studien im Wesentlichen die Kenntnis der antarktischen Flechtenflora nicht abändern. Denn das von den verschiedenen Sammlern mitgebrachte Flechtenmaterial gibt in grossen Zügen ein Bild der Flechtenflora der antarktischen und subantarktischen Gebiete, aber es reicht nicht aus, die einzelnen Territorien und Inseln pflanzengeographisch zu gliedern oder sie einer eingehenden vergleichenden Untersuchung unterziehen zu können. Trotz des dankenwerten Bemühens so vieler Forscher bleibt noch sehr Vieles zu tun übrig und wenn ich gerade an dieser Stelle darauf hinweise, so geschieht dies, um nicht den Eindruck zu erwecken, als ob die bezüglichen Arbeiten abgeschlossen wären. Wenn ich trotzdem am Schluss dieser Arbeit eine Zusammenstellung der Flechten der *Falklandinseln* bringe, so geschieht dies einerseits, weil ein solcher Versuch bisher nicht gemacht wurde, andererseits um auf dieses lichenologisch so interessante Gebiet besonders hinzuweisen.

Das grosse Entgegenkommen von Prof. Dr. C. A. M. Lindman, der mir die Originalien der von Darbishire als neu beschriebenen Flechten leihweise überliess, hat meine Studien wesentlich erleichtert, da die knappen Diagnosen, die Darbishire gibt, so manches Merkmal, welches nach meinen Erfahrungen innerhalb gewisser Gattungen (so sei beispielweise nur die Gattung *Buellia* genannt) zur Abtrennung der Arten von Wichtigkeit ist, übergehen. Zu Dank bin ich ferner verpflichtet den Herren G. Beauverd (Chambésy) und P. Hariot (Paris), die meine Arbeiten ebenfalls durch Zusendung von Originalien erleichterten. Ihnen Allen meinen besten Dank.

Wien im Januar 1916.

[1] Wiss. Ergebn. Schwed. Südpolarexp. Vol. IV, Liefog 11 (1912).

Pyrenocarpeae.

Verrucariaceae.

Verrucaria maura WAHLNBG. apud. ACH., Method. Lich., 1803, p. 19, NYL., Expos. Synopt. Pyrenocarp., 1858, p. 28; WAINIO in Résulat. Voyage S. Y. Belgica, Botan., 1903, p. 38 et in Arkiv för Botan., vol. VIII, no. 4. 1909, p. 159; DARBISH. in Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 60.

Chiloé: Quemchi, ad saxa maritima.

Westpatagonien: Canal Adalbert, Heinrichsfjord, an den der Brandung ausgesetzten Felsen häufig.

Verrucaria chiloënsis A. ZAHLBR. nov. spec.

Thallus crustaceus, uniformis, epilithicus, tenuissimus, 0,8—0,9 mm altus, effusus, glaucocinereus vel murinus, opacus, KHO—, $CaCl_2O_2$—, continuus, solum in centro circa apothecia parum et irregulariter rimosus, sublaevigatus, sorediis et isidiis destitutus, in margine linea obscuriore non cinctus, cortice distincto non supertectus, gonidiis cystococcoideis, subglobosis, 5,5—6 μ latis, laete viridibus, membrana tenui cinctis, in seriebus perpendicularibus plus minus dispositis; hyphis thallinis perpendicularibus.

Apothecia sessilia, nigra, subopaca, 0,4—0,6 mm lata, dispersa, approximata vel subconfluentia, semiglobosa, ad verticem plus minus retusata, poro tenui, 26—30 μ lato pertusa; perithecium depresso-globosum vel globosum, integrum, tenue, fuscum vel fuscescens, ex hyphis valde tenuibus, tangentialibus, eseptatis et conglutinatis formatum; involucrellum semiglobosum, perithecio adpressum, nigrum, crassum, 85—95 μ latum, strato corticali tenui et pallidiore superne suffusum, ad basin subanguloso-retusum; periphyses filiformes, tenues, 23—30 μ longae 1—1,4 crassae, eseptatae, subtorulose-inaequales, simplices, subdivaricatae; hymenium decolor, guttulis oleosis non inspersum, J e coerulescente aeruginascens; paraphyses mox diffluentes; asci ovali-subclavati, 40—44 μ longi et 10—16 μ lati, 8-spori; sporae in ascis 2—3 seriales, decolores, simplices, late ellipsoideae vel late subovales, membrana tenui et laevi cinctae, 9—13 μ longae et 6—7,5 μ latae.

Pycnoconidia non visa.

Chiloé: bei Quemchi, and Strandfelsen.

Nach dem Bau des Invulokrellums gehört die hier beschriebene Art in den Formenkreis der *Verrucaria rupestris* SCHRAD.; die Thallusfarbe, die sitzenden, am Scheitel häufig abgestutzten Apothezien, deren Grösse und die kleinen Sporen sind die Merkmale, welche ihre Abtrennung von den bisher beschriebenen Arten der Gruppe erheischen.

Dermatocarpaceae.

Normandina pulchella NYL. in Annal. Scienc. Nat., Botan., ser. 4., vol. XV, 1861, p. 382 et Lich. Envir. Paris, 1896, p. 115; WAINIO, Etud. Lich. Brésil, vol. II, 1890, p. 188; A. L. SMITH, Monogr. Brit. Lich., vol. II, 1911, p. 272, tab. 38. — *Verrucaria pulchella* BORR. apud HOOK. et SOWERB., Suppl. Eng. Botan., vol. I, 1831, tab. 2602, fig. 1. — *Normandina jungermanniae* NYL. im Mémoir. Soc. Imp. Scienc. Natur. Cherbourg, vol. III, 1855, p. 191 et Expos. Synopt. Pyrenocarp., 1858, p. 10.

Feuerland: im Walde unweit der Mündung des Rio Azopardo, zwischen anderen Flechten auf Baumrinden, fruchtend. Für das Feuerland bisher nicht angegeben, doch war das Auffinden daselbst zu erwarten.

Ich gebe im Anschlusse die Beschreibung der Früchte nach den gesammelten fruchtenden Stücken.

Apothecia suspensa, thallo 4—5-plo latiora, nigricantia, 0,3—0,4 mm lata; excipulum subpyriforme, ab involucrello non circumdatum, superne et inferne a thallo obductum, duplex, excipulum exterius integrum, nigrum, 18—20 μ. crassum, circa ostiolum paulum latius, excipulum interius subdecolor, 12—18 μ. crassum, ex hyphis longitudinalibus, tenuibus, septatis et conglutinatis formatum, collo recto et terminali praeditum, interne a periphysibus vestitum, periphyses tenues, circa 1 μ. crassae, filiformes, simplices, eseptatae, densae et patentes; paraphyses non evolutae; asci ovali- vel ellipsoideo-clavati, ad verticem rotundati, mox diffluentes, 8-spori; sporae in ascis 3—4 seriales, verticales, decolores, digitiformi—fusiformes, utrinque rotundatae vel subacutatae, rectae vel leviter curvulae, 6—8-loculares, septis valde tenuibus, membrana tenui cinctae, 35—50 μ. longae et 8,5—10 μ. latae.

Pyrenulaceae.

Pyrenula mamillana TREVIS., Conspect. Verruc., 1860, p. 13; MÜLL. ARG. in Flora, vol. LXVII, 1884, p. 663 et in Mémoir. Soc. Phys. et Hist. Nat. Genève, vol. XXX, n:o 3, 1888, p. 30; WAINIO in Botan. Tidsskrift, vol. XXIX, 1909, p. 146; HARM. in Bull. Soc. Scienc. Nancy, ser. 3., vol. XII, 1911, p. 135. — *Verrucaria mamillana* ACH., Method. Lich., 1803, p. 120, tab. III, fig. 2. — *Arthopyrenia americana* MASS., Ricerch. Auton. Lich., 1853, p. 170. fig. 341.

Chiloé: Queilen, an Baumrinden in einer Form mit kleinen, 0,4—0,6 mm. breiten Apothezien.

Phyllopyreniaceae.

Lepolichen granulatus MÜLL. ARG. in Flora, vol. LXXI, 1888, p. 549 et in Nuov. Giorn. Botan. Ital., vol. XXI, 1889, p. 51; HUE in Annal. Associat. Scienc. Natur. Levallois-Perret, vol. X, 1904, p. 32 (ubi diagnosis ampla et synonymia). — *Porina granulata* HOOK. f. et TAYL. apud. HOOK., Flora antarctica, vol. I, 1844, p. 200. — *Pertusaria coccophora* NYL., Lich. Fuegiae et Patagon., 1887, p. 11.

Falkland-Inseln: Westinsel, Mt. Adam.

Westpatagonien: Estero Peel, Puerto Témpanos und Canal Messier, Caleta Rayo; Archip. Reina Adelaida: Isla Atalaya.

Eine dem antarktischen Amerika eigentümliche, rindenbewohnende Flechte.

Gymnocarpeae.

Coniocarpinae.

Sphaerophoraceae.

Sphaerophorus tener Laur. in Linnaea, vol. II, 1827, p. 45, tab. I, fig. 4; Mont. apud Gay, Hist. Físic. y Polític. Chile, Botan., vol. VIII, 1852, p. 194; Nyl., Lichen. Fuegiae et Patagon., 1887, p. 3; Wainio in Résult. Voyage S. Y. Belgica, Botan. 1903, p. 35; Darb. in Wissensch. Ergebn. Schwedisch. Südpolar-Expedit., vol. IV, Liefrg. 11, p. 20 et p. 47.

Chiloé.

Westpatagonien: Canal Messier, Caleta Hale, Puerto Grappler, Puerto Rayo; Archip. Reina Adelaida, Isla Atalaya; Canal Jerónimo, Caleta Cutter.

Feuerland: Seno Almirantazgo, Puerto Gomez.

Sphaerophorus globosus Wainio in Résult. Voyage S. Y. Belgica, Botan., 1903, p. 35; Herre in Proceed. Washington Acad. Scienc., vol. VII, 1906, p. 393. — *Lichen globosus* Huds., Flora Anglica, 1762, p. 460. — *Lichen globiferus* Linn., Mantissa I, 1767, p. 133. — *Sphaerophorus coralloides* Pers. in Neue Annal. der Botan., I. Stück, 1794, p. 33; Mont. apud Gay, Hist. Físic. y Polític. Chile, Botan., vol. VIII, 1852, p. 195; Hue apud. Charcot, Expedit., Antarct. Franc., Botan,, 1908, p. 1; Darb. in Wissensch. Ergebn. Schwedisch. Südpol. Expedit., Vol. IV, Liefrg. 11, 1912, p. 30 et p. 47. — *Sphaerophorus globiferus* DC. apud Lam. et DC., Flor. Franç., edit. 3., vol. II, 1805, p. 327; Müll. Arg. in Nuov. Giorn. Botan. Ital., vol. XXI, 1889, p. 35 et apud Mission Scientif. Cap Horn, vol. V, 1889, p. 145.

S. Westpatagonien: Archip. Reina Adelaida: Isla Pacheco; Skyring: Punto Pinto, auf dem Erdboden, steril.

Sphaerophorus melanocarpus DC. apud Lam. et DC., Flor. Franç., edit. 3., vol. II, 1805, p. 178; Schaer., Enumer. Europ. Lich., 1850, p. 177. — *Lichen melanocarpus* Sw., Nova Gener. et Spec. Plant., 1788, p. 147. — *Sphaerophorus compressus* Ach., Method. Lich., 1803, p. 125 et Lichenogr. Univers., 1810, p. 586, tab. XII, fig. 6; Mont. apud Gay, Hist. Físic. y Polít. Chile, Botan., vol. VIII, 1852, p. 196; Nyl., Lich. Fuegiae et Patagon., 1887, p. 3; Müll. Arg. in Nuov. Giorn. Botan. Ital., vol. XXI, 1889, p. 36 et apud Mission Scientif. Cap Horn, vol. V, 1889, p. 146; Darb. in Wiss. Ergeb. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 20 et p. 47.

Westpatagonien: Canal Messier, Punto Simpson, auf der Erde, fruchtend; Otway: Puerto Toro.

Sphaerophorus australis Laur. in Linnaea, vol. II, 1827, p. 44; Nyl., Synops. Method. Lich., vol. I, 1860, p. 170 et Lich. Fuegiae et Patagon., 1887, p. 24; Mont. apud Gay, Hist. Físic. y Polít. Chile, Botan., vol. VIII, 1852, p. 36; Müll. Arg. apud Mission Scientific. Cap Horn, Vol. V, 1889, p. 146; Wainio, Étud. Lich. Brésil, vol. II, 1890, p. 170; Darb. in Wissensch. Ergebn. Schwedisch. Südpol. Expedit., vol. IV, Liefrg. 11, 1912, p. 47.

Feuerland: Isla Desolación, Puerto Angosto (Dusén no. 174).

Graphidinae.

Arthoniaceae.

Arthonia palmicola Ach., Synops. Lich., 1814, p. 5; Nyl. in Acta Soc. Scient. Fenn., vol. VII, 1863, p. 485 et Lich. Fuegiae et Patag., 1887, p. 18; Müll. Arg. in Mémoir. Soc. Phys. et Hist. Natur. Genève, vol. XXIX, no. 8, 1887, p. 57; Eckf. in Bull. Torrey Botan. Club, vol. XVII, 1890, p. 256; Willey, Synops. Gen. Arthonia, 1890, p. 38; Hue apud Patouill., Catal. Raisonn. Plant. Tunisie, 1897, p. 150; Darr. in Wissensch. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 47.

Feuerland: im Walde am Westende des Lago Fagnano, auf der Rinde von *Drimys Winteri*.

Epithecium distinctum nullum; hymenium superne rufum, caeterum decolor vel fere decolor, 42—46 μ altum, J ex aeruginoso lutescens; hypothecium lutescens, molle, ex hyphis intricatis formatum; paraphyses indistinctae; asci subglobosi, membrana in parte superiore valde incrassata cincti, 20—24 μ longi et 16—18 μ lati; sporae in ascis 3—4-seriales, verticales, incolores, oblongae, utrinque rotundatae, 3-septatae 11—12 μ longae et 3,5—4 latae.

Arthonia turbatula Nyl.!, Lichen. Fuegiae et Patagon., 1888, p. 18; Willey, Synops. Gen. Arthonia, 1890, p. 38; Müll. Arg. in Nuov. Giorn. Botan. Ital., vol. XXI, 1889, p. 50. — *Arthonia heteromorpha* Müll. Arg. in Mission Scientif. Cap Horn, vol. V, 1889, p. 169; Darb. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit. 1901—1903, vol. IV. Liefrg. 11, 1912, p. 47.

Feuerland: im Walde am Westende des Lago Fagnano, auf *Drimys Winteri*.

Asci subglobosi, 85—95 μ longi et 70—80 μ lati, superne membrana bene incrassata cincti, 8-spori; sporae in ascis 4—5-seriales, e decolore mox fuscae et demum nigricantes, ellipsoideae, 3-septatae, ad septum medium constrictae, cellulis non aequalibus, ut ait cel. Nylander, sed 2 apicalibus distincte minoribus.

Graphidaceae.

Opegrapha betulina Sm. apud Sm. et Sowerb., Engl. Botan., vol. XXXII, 1811, tab. 2281 (non Pers.); Hue in Revue de Botan., vol. VI, 1887—88, p. 80, Harm. in Bull. Soc. Scienc. Nancy, ser. 2., vol. XXXIV (1899) 1900, p. 58, tab. XXVIII, fig. 12 et tab. XXIX, fig. 14; A. L. Smith, Monogr. Brit. Lich., vol. II, 1894, p. 233. — *Opegrapha herbarum* Mont. in Guillem., Archiv. de Botan., vol, II, 1833, p. 302, tab. XV, fig. 1; Mass., Memor. Lichenogr., 1853, p. 101, fig. 119. — *Opegrapha atrorimalis* Nyl. in Flora, vol. XLVII, 1864, p. 488 et Lich. Envir. Paris, 1896, p. 105. — *Opegrapha atra* var. *herbarum* Mont. apud Gay, Hist. Físic. y Polític. Chile, Botan., vol. VIII, 1852, p. 183.

Chiloé: in foliis emortuis *Greigiae sphacelatae.*

Thallus epiphloeodes, crustaceus, uniformis, valde tenuis, 20—40 μ crassus, substrato quasi suffusus, albus vel albidus, opacus, continuus, laevigatus, sorediis et isidiis destitutus, in ambitu linea obscuriore distincta non limitatus, fere homoeomericus, ex hyphis tenuibus, conglutinatis et gonidiis chroolepoideis compositus, cellulis gonidiorum concatenatis, subanguloso-rotundatis, 5—9 μ latis. Apothecia 0,15—0,2 mm lata; excipulum crassum, fuligineum, inferne incrassatum, retusum vel rarius angustatum, labiis conniventibus et integris; hymenium 70—80 μ altum, superne anguste nigricans, caeterum decolor, guttulis oleosis non impletum, J e lutescente cupreum; asci ellipsoideo-clavati, ad apicem rotundati, parum incrassati, 8-spori; sporae in ascis biseriales, decolores, fusiformi-oblongae vel oblongae, utrinque rotundatae, rectae 3-septatae, septis tenuibus, cellulis subaequalibus, membrana tenui cinctae. Pycnoconidia bacillaria-oblonga, recta vel rarius subrecta, utrinque rotundata, 4—6 μ longa et ad 1 μ lata.

Opegrapha (sect. **Euopegrapha**) **quinqueseptula** A. Zahlbr. nov. spec.

Thallus crustaceus, uniformis, epilithicus, tenuissimus, continuus vel dispersus, passim evanescens, albus, opacus, KHO—, $CaCl_2O_2$—, sorediis et isidiis destitutus, hypothallo obscuriore non cinctus, fere homoeomericus, hyphis thalli J cupreo-fulvescentibus, gonidiis chroolepoideis, cellulis concatenatis, pallide viridibus, subglobosis, 7—11 μ longis.

Apothecia nigra, linearia, sessilia, utrinque acuta, recta vel subrecta, simplicia dispersa vel passim aggregata, 0,6—2 mm longa et 0,2—0,5 mm lata; discus primum rimiformis, demum leviter dilatatus, epruinosus et planus, margine proprio integro, tenui et parum prominulo cinctus; excipulum integrum, carbonaceum, infra hymenium crassum, labiis erectis et integris; hymenium superne late aeruginoso-nigrescens, caeterum decolor, 75—80 μ altum, non inspersum, J cupreum; paraphyses filiformes, ramosae, eseptatae, ad apicem vix latiores; asci ellipsoideo- vel oblongi-clavati, ad apicem angustato-rotundati et membrana incrassata ibidem cincti, 8-spori; sporae in ascis 2—3-seriales, decolores, oblongo-fusiformes, utrinque acutatae vel acutato-rotundatae, rectae vel subrectae, 5-septatae, cellulis disciformibus, aequalibus, septis tenuibus, membrana tenui cinctae, 16—18 μ longae et 3,5—4 μ latae.

Conceptacula pycnoconidiorum punctiformia, subsemiglobosa, nigra, perifulcrio dimidiato, fusconigrescente; fulcra exobasidialia; pycnoconidia bacillari-cylindrica, recta vel subrecta, utrinque retusa, 4—5 μ longa et ad 1 μ lata.

Falkland-Inseln: Westinsel, Port Philomel, Halfway Cowe, auf Sandstein.

Die der neuen Art zunächst stehende Spezies ist die von der Insel S. Paul im indischen Ozean beschriebene *Opegrapha consimillina* NYL. Diese Art kenne ich nur aus der Beschreibung NYLANDER's und nach dieser musste ich die Falklandsflechte artlich abtrennen, da diese einen dünneren Tallus, anders gestaltete Apothezien, einen endlich erweiterten Discus und schmälere Sporen besitzt.

Opegraphia medusuliza NYL.!, Lichen. Fuegiae et Patagon., 1887, p. 17; MÜLL. ARG. in Nuov. Giorn. Botan. Ital., vol. XXI, 1889, p. 49. — *Opegrapha pseudoagelaea* MÜLL. ARG. in Mission Scientif. Cap Horn, vol. V, 1889, p. 168; DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit. 1901—1903, vol. IV, Liefrg. 11, 1912. p. 47.

Feuerland: im Walde am Westende des Lago Fagnano, auf *Drimys Winteri*.

Chiodectonaceae.

Enterostigma Skottsbergi A. ZAHLBR. nov. spec.

Thallus crustaceus, uniformis, subtartareus, tenuis, 0,2—0,3 mm altus, effusus, aurantiaco-ochraceus, opacus, KHO—, $CaCl_2O_2$—, areolatus, areolis angulosis, 3—5 mm latis, fissuris altis et leviter undulatis limitatis, planis, laevigatis vel demum leviter subverruculoso-inaequalibus, sorediis et isidiis destitutus, in margine linea obscuriore non cinctus, superne corticatus, cortice 45—70 μ alto, in ambitu fuscescente, caeterum decolore, non insperso, ex hyphis leptodermaticis, eseptatis et intricatis formato et maculas parvas, anguloso-rotundatas offerente; stratum gonidiale infra corticem situm, cortice subaequilatum, plus minus continuum; gonidia chroolepoidea, cellulis late ellipsoideis, membrana tenui cinctis, concatenatis, catenis perpendicularibus; medulla alba, KHO—, $CaCl_2O_2$—, J—.

Stromata dispersa, inter areolas thalli sessilia et a thallo demum fissuris altis separata, altitudinem thalli aequantia vel vix superantia, rotundata, subangulosa vel subsinuata, 1,5—5 mm lata, ferrugineo-fusca, opaca, gyroso-plicatula, intus albida, medullum crassam includentia, gonidiis destituta; apothecia lirellina, immersa, brevia, simplicia vel bi- et trifurcata, curvula, valde angusta et parum visibilia; discus impressus, niger, epruinosus, valde tenuis, 0,1—0,16 mm latus, margine proprio, tenui, integro et prominulo cinctus, excipulum integrum, ad latera hymenii incrassatum, infra hymenium angustius, obscure fuscum vel fusco-nigricans, subcarbonaceum, labiis leviter convergentibus, non sulcatis, KHO rufescens; hypothecium dilute fuscum, NO_5 rufescens, ex hyphis intricatis tenuibus formatum; hymenium 140—150 μ altum, guttulis oleosis non impletum, in sectione transversali rotundatum, superne obscure fuscum, NO_5 rufescens, caeterum decolor, J coerulescens, utplurimum simplex, rarius columella longitudinali divisum; paraphyses tenues, ad 1,5 μ crassae, eseptatae, ramosae (ramis brevibus) et connexae; asci oblongo- vel ellipsoideo-clavati, ad basin breviter

pedicellati et in ipsa basi dein dilatati, ad apicem rotundati et ibidem membrana valde incrassata (imprimis in statu juvenili), 8-spori; sporae in ascis plus minus biseriales, decolores, ovales vel late ellipsoideae, septis horizontalibus 3, rarius 2 vel 4 et septo perpendiculari unico, depauperato-murales, septis omnibus tenuibus, membrana tenui cinctae, 16—21 μ latae et 8,5—9 μ latae.

Pycnoconidia non visa.

Juan Fernandez: auf dem Hochplateau von Masafuera, bei 1200 m über dem Meere, auf Lava.

Für seine Gattung *Enterostigma* gibt MÜLLER ARG.[1] mauerartige endlich braun gefärbte Sporen als Gattungscharakter an; ihm folgend habe ich in diesem Sinne die Gattung in ENGLER-PRANTL's »Natürlichen Pflanzenfamilien« begrenzt. Die Sporen der einzigen bis dahin bekannt gewordenen Art, des *Enterostigma compunctum* (ACH.) MÜLL. ARG.,[2] bezeichnet der genannte Autor als »e hyalino pallidum fusca«. Mit Rücksicht auf diesen Umstand möchte ich für die neubeschriebene Art, trotzdem sie konstant farblose Sporen besitzt, die selbst im Absterben ihre Farbe nicht verändern höchstens etwas gelblich werden, keine auf die Sporenfarbe beruhende neue Gattung aufstellen, umsoweniger als ich durch eigene Untersuchung nicht feststellen kann, ob bei *Enterostigma compunctum* das Braunwerden der Sporen nicht etwa eine Alterserscheinung sei. So bleibt für die Gattung nur die mauerförmigen Sporen als Gattungscharakter übrig, seien sie nun farblos oder braun. Inbezug auf das Lager gleicht unsere Art dem *Chiodecton* (sect. *Stigmatidium*) *graphidioides*[3] aus dem Feuerland. Ein im Herbare der botanischen Abteilung des naturhistorischen Hofmuseums in Wien liegendes Original dieser Flechte besitzt indes andere Stromen, Sporen hingegen nicht, wie dies schon CROMBIE a. a. O. angibt. Ich glaube nicht zu irren, wenn ich annehme, dass die beiden Flechten nicht identisch sind.

Dirinaceae.

Dirina falklandica A. ZAHLBR. nov. spec.

Thallus crustaceus, uniformis, crassus et valde inaequalis, usque 8 mm altus, a substrato facile dissolutus, tartareus, sordide cinerascens, opacus, KHO—, $CaCl_2O_2$—, in superficie parum inaequalis et passim subleprosus, rimosus, sorediis et isidiis destitutus, superne strato corticali, ex hyphis intricatis et inspersis formato, angusto obductus; stratum gonidiale infra corticem situm, continuum, angustum, gonidiis chroolepoideis, cellulis concatenatis, rotundatis vel late ellipsoideis, 10—12 μ longis; medulla percrassa, alba, KHO—, $CaCl_2O_2$—, J—.

Apothecia copiosa, lecanorina, adpressa, approximata, e rotundo mutua pressione plus minus angulosa vel difformia et inciso-lobata, 1—2,5 mm lata; discus sordide cinereo-suffusus, e plano convexulus, demum tenuiter rimulosus; margo thallinus thallo concolor, crassiusculus, obtusus, vix prominulus, flexuoso-inaequalis, cor-

[1] Mémoir. Soc. Phys. et Hist. Nat. Genève, vol. XXIX, no. 8, 1887, p. 70.
[2] In Flora, vol. LXVIII, 1885, p. 254.
[3] CROMBIE in Journ. Linn. Soc. London, Botan., vol. XV, 1876, p. 233.

ticatus, gonidia et medullam includens; hypothecium crassum, hymenio 5—8-plo latius, niger; epithecium angustum, hyalinum, amorphum; hymenium lateraliter linea valde angusta et nigra cinctum, superne late fusconigrum, NO_5—, caeterum fere decolor, guttulis oleosis non inspersum, 100—130 μ altum, J e coeruleo cupreo-rufescens; paraphyses capillares, ad 1 μ crassae, simplices, eseptatae, ad apicem non latiores, imprimis superne conglutinatae; asci oblongi, hymenio vix breviores, 8-spori; sporae in ascis 2—3-seriales, decolores, fusiformes, leviter curvulae, rarius subrectae, ad apices rotundatae vel subacutae, 3-septatae, septis valde tenuibus, membrana tenui cinctae, 32—35 μ longae et 5—5,5 μ latae.

Pycnoconidia non visa.

Falkland-Inseln: Westinsel, Halfway Cove auf Felsen.

Eine auffallende, durch das dicke Lager und die schmalen Sporen charakterisierte Art.

var. **corticola** A. Zahlbr. nov. var.

A typo differt thallo tenuiore, lutescenti-cinerascente, apotheciis paulum minoribus et nonnihil minus pruinosis, nigris.

Falkland-Inseln: Westinsel, Crooked Inlet, auf entrindeten Ästchen des *Chiliotrichum diffusum*.

Cyclocarpineae.

Ephebaceae.

Ephebe lanata Wainio in Meddel. Soc. Fauna et Flora Fennic., vol. XIV, 1888, p. 20 et in Természetr. Füzetek, vol. XXII, 1899, p. 314; A. Zahlbr. in Engler-Prantl, Natürl. Pflanzenfamil., I. Teil, Abt. I*, 1906, p. 155, fig. 76, C—D; Lindau, Die Flechten, 1913, p. 161. — *Lichen lanatus* Linn., Spec. Plant., 1753, p. 1155. — *Ephebe pubescens* Fries, Nov. Sched. Critic., 1826, p. 7 et Stirp. Agri Femsj., 1826, p. 35; Bornet in Annal. Scienc. Nat., Bot., ser. 3., vol. XVIII, 1852, p. 168, tab. VII, fig. 1—8; Nyl. Synops. Meth. Lich., vol. I, 1858, p. 90, tab. II, fig. 1 et 17—20; Leight. in Annal. and Magazin Nat. Hist., ser. 3., vol. XVI, 1865, p. 10, tab. IV, fig. 12—14; Schwend. in Naegeli, Beiträge zur wiss. Botan., 4. Heft, 1868, p. 167, tab. XXIII, fig. 14—17; Tuck., Synops. North Americ. Lich., vol. I, 1882, p. 132; Cromb., Monogr. Lich. Brit., vol. I, 1894, p. 28, fig. 4; Harm. Lich. de France, fasc. I, 1905, p. 29, tab. III, fig. 4—5; Elfving in Acta Soc. Scient. Fenn., vol. XLIV, 1913, tab. IV, fig. 1—12.

Westpatagonien: Canal Sarmiente, an Felsen am Meeresstrand. — Diese Flechte wurde bisher für die Südspitze Amerikas nicht verzeichnet.

Collemaceae.

Leptogium tremelloides (Linn. f.) Wainio, Étud. Lich. Brésil, vol. I, 1890, p. 224 (ubi synon.).

Westpatagonien: Canal Smyth, Caleta Connor, über Moosen, steril.

Leptogium moluccanum (PERS.) WAINIO, Étud. Lich. Brésil, vol. I, 1890, p. 223 (ubi syn. et descript. ampla).

Juan Fernandez: Masatierra, Cumberland Bay, fruchtend.

Leptogium (sect. **Mallotium**) **patagonicum** A. ZAHLBR. nov. spec.

Thallus plumbeus, coerulescenti- vel umbrinoglaucus, madefactus olivaceus, membranaceus, tenuis, 0,11—0,13 mm crassus, dense lobatus, lobis plus minus difformibus, subimbricatis, inciso-sinuatis vel sinuatis, in margine parum elevatis, marginalibus majoribus, usque 6 mm latis, omnibus superne laevibus, sorediis et isidiis destitutis, subtus rhizinis cinerascenti-albidis, densis et longiusculis obsitis, in ipso margine tomentellis, utrinque corticatus, cortice e serie unica cellularum formato, cellulis corticis inferioris majoribus, quadrangulari-rotundatis, leptodermaticis, 17—24 μ longis et 7—10 μ latis, cellulis corticis superioris minoribus, rotundatis, plus minus inaequalibus, leptodermaticis; stratum medullare vix gelatinosum, ex hyphis leptodermaticis densis, et horizontalibus et perpendicularibus formatum, gonidia includens; gonidia nostocacea, aeruginosa, cellulis sat magnis, 7—9 μ latis, concatenatis, catenis plus minus horizontalibus; rhizinae fasciculatae, 0,3—0,4 mm latae, ex hyphis simplicibus, decoloribus, 3,5—5,5 μ crassis, leptodermaticis, septatis (cellulis oblongis), ad septa non constrictis, laevibus formatae. Inter hyphas rhizinarum colonia nostocacea vigent.

Apothecia superficialia, in uno lobo utplurimum pluria, ad basin bene constricta et fere pedicellata, lecanorina, usque 1,5 mm lata; discus rufescenti- vel alutaceofuscus, opacus, epruinosus, e concavo planus vel leviter convexus; margo thallinus primum bene inflexus, demum rectus, parum prominulus, valde tenuis, integer et acutiusculus; receptaculum extus thallo paulum dilutius, rhizinis increbris munitum, cortice paraplectenchymatico, versus basin sensim crassiore, ex hyphis radiantibus, crassis et leptodermaticis formato obductum, hic cortex in parte superiore laterali marginis thallini e serie unica cellularum formatus est, ad basin receptaculi series cellularum superpositas 5—6 offert, receptaculum dein stratum medullare, ex hyphis densis formatum et gonidia includit; excipulum ad latera hymenii distinctum, angustum, ex hyphis latis septatisque 3—4 (cellulis oblongis et leptodermaticis) formatum, inferne cum hypothecio flavescente, ex hyphis intricatis composito confluens; epithecium distinctum nullum; hymenium superne rufescens, caeterum decolor, non inspersum, 110—115 μ altum, J coeruleum; paraphyses densae, conglutinatae, crassae, 5—6 μ latae, membrana tenui cinctae, simplices vel solum versus apicem breviter furcatae, increbre septatae, ad septa plus minus constrictae, ad apicem rotundatae, sed vix latiores; asci angusti, clavati, hymenio subaequilongi, ad apicem rotundati et ibidem membrana incrassata cincti, 8-spori; sporae in ascis subbiseriales, decolores, late ellipsoideae vel ovales, utrinque subacutatae, septis horizontalibus 3, cellulis mediis septo unico perpendiculari divisis, depauperato-murales, membrana tenui cinctae, 16—18 μ longae et 7,5—8,5 μ latae.

Pycnoconidia non visa.

Südpatagonien: Penins. Brunswick, zwischen Rio Amarillo und Rio Colorado, über Moosen (leg. T. Halle).

Die neue Flechte steht dem *Leptogium australe* (Hook. f. et Tayl.), von welchem Müll. Arg. in Flora, vol. LXX, 1887, p. 268 eine ausführliche Beschreibung gibt und welche gut auf ein im Herbare des Naturhistorischen Hofmuseums in Wien aufbewahrtes Stück passt, gewiss nahe. Durch den anatomischen Bau des Lagers weichen beide von den übrigen Arten der Section ab; beide besitzen eine nicht gallertige Markschicht und grosse Gonidialzellen. *Leptogium patagonicum* weicht von *Leptogium australe* insbesonders durch die Gestalt der Sporen ab und besitzt ausserdem sehr lange, gebüschelte Rhizinen auf der Lagerunterseite. Die Differenz in diesen Beziehungen ist so weitgehend, dass sie nicht mehr in die Variationsbreite einer Art aufgenommen werden kann. *Leptogium Menziesii* (Ach.), im Baue des Filzes der Thallusunterseite mit unserer Art nahezu übereinstimmend, weist einen anderen anatomischen Bau der Hüllschichten des Hymeniums auf und besitzt ferner auch anders gestaltete, grössere Sporen.

Leptogium (sect. Mallotium) **Menziesii** Mont. in Annal. Scienc. Nat., Botan., ser. 3., vol. XVIII, 1852, p. 313 et apud Gay, Hist. Físic. y Polít. Chile, Botan., vol. VIII, 1852, p. 223, tab. XIII, fig. 5; Nyl., Synops. Meth. Lich., vol. I, 1858. p. 128; Müll. Arg. apud Balfour in Transact. Roy. Soc. Edinburgh, vol. XXXI, 1888, p. 346; Hue in Bull. Soc. Botan. France, vol. XXXVI, 1889, p. 158 et in Nouvell. Archiv. du Muséum, ser. 3., vol. X, 1898, p. 229. — *Collema Menziesii* Ach., Liehenogr. Univers., 1810, p. 645.

Südgeorgien: Cumberland Bay, über Moosen im Moränenfjord, steril.

Pannariaceae.

Pannaria dichroa Cromb., A. Zahlbr. in »Deutsch. Südpol.-Expedit., 1901—1903», vol. VIII, Botan., 1906, p. 44 (ubi synon. et descript.).

Feuerland: Sierra Valdevieso, Paso Lagunas bei 900 m. ü. d. M., auf Schieferfelsen.

Pannaria fuegiensis A. Zahlbr. nov. spec.

Thallus effusus, uniformis, tenuis, 0,14—0,18 mm altus, glauco-cinerascens, opacus, ex verruculis congestis, granuliformibus, minutis, 0,2—0,4 mm latis, plus minus imbricatis, convexis vel imprimis versus marginem thalli subsquamiformibus, 0,3—0,4 mm latis, plus minus oblongis, incisis, planis et minus congestis formatus, KHO—, $CaCl_2O_2$—, sorediis et isidiis destitutus, subtus brunnescens, intus albus, omnino paraplectenchymaticus, superne gonidiis destitutus et stratum corticale offerens, cellulis paraplectenchymatis anguloso-rotundatis, sat leptodermaticis, 3—9 μ latis; gonidia nostocacea, aeruginoso-coerulescentia vel olivacea, excepto strato corticali inter cellulas paraplectenchymatis aequaliter dispersa; inferne rhizinis destitutus et substrato

simpliciter adpressus vel rarius fasciculis rhiziniformibus, fuscescentibus et brevibus munitus.

Apothecia dispersa vel plus minus approximata, persistenter sessilia, lecanorina, usque 1,2 mm lata, e rotundato difformia vel pressione mutua subangulosa, ad basin breviter angustata; discus alutaceo-rufescens, opacus, epruinosus, e concavo subplanus, sed nunquam convexus; margo thallinus thallo concolor, discum superans, parum inflexus, minute granulosus vel granuloso-inaequalis, extus corticatus, cortice flavescente, inaequali, ad ambitum superne suberoso, ad basin in rhizinas liberas paucas transiente, 17—36 μ crasso, paraplectenchymatico, cellulis rotundatis, 3,5—8 μ latis, pachydermaticis, medullam etiam paraplectenchymaticam, cellulis rotundatis et plus minus leptodermaticis, et gonidia includens; excipulum solum ad latera hymenii evolutum in sectione transversali flabellatum, ab hymenio parum separatum, ex hyphis filiformibus, conglutinatis, paraphyses simulantibus, sed J non tinctis, formatum; hypothecium decolor, ex hyphis intricatis formatum; hymenium decolor, non inspersum, superne strato angusto, amorpho, inaequali obtectum, 100—110 μ altum, J e coeruleo aeruginoso-flavescens; paraphyses filiformes, simplices, eseptatae, ad apicem vix latiores, conglutinatae et strictae; asci cylindrico-clavati, ad apicem rotundati, hymenio subaequilongi, 8-spori; sporae subuniseriales, simplices, decolores, late ovales vel late ellipsoideae, passim subcubico-globosae, membrana tenui et laevi cinctae, 10—14 μ longae et 8,5—10 μ latae.

Feuerland: im Walde unweit der Mündung des Rio Azopardo, auf Baumrinden.

Habituell der europäischen erdbewohnenden *Pannaria nebulosa* (Hoffm.) Nyl. sehr ähnlich, lässt sie sich von dieser durch den anatomischen Bau des Lagers, welchen Hue für die Erstere genau beschreibt, leicht unterscheiden. Auch in einigen anderen Merkmalen, die Apothezien betreffend, zeigen sich von der genannten Art Unterschiede. Eine *Pannaria* aus der Verwandtschaft der *Pannaria pezizoides* (Web.) Leigth. und *Pannaria nebulosa* ist bisher aus dem antarktischen Amerika nicht bekannt geworden.

Psoroma paleaceum Nyl. in Annal. Scienc. Nat., Bot., ser. 4., vol. XII, 1859, p. 293 et Synops. Method. Lich., vol. II, 1863, p. 22. — *Parmelia paleacea* Fries, Lichenogr. Europ. Reform., 1831, p. 97. — *Lecanora paleacea* Hook. f., Flora Antarct., pars I, 1847, p. 534, tab. CXCVII, fig. III. — *Lecanora hypnorum* f. *paleacea* Th. Fr., Lichenogr. Scandin., vol. I, 1871, p. 233. — *Psoroma ciliatum* Nyl. apud Hue in Nouv. Archiv. du Muséum, ser. 3., vol. III, 1891, p. 44; Darb. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. II, 1912, p. 53.

Lecanora ciliata Ach. wurde nie publiziert, darf daher zur Speziesbenennung nicht verwendet werden.

Falkland-Inseln: Port Stanley.

Psoroma sphinctrinum Nyl. in Mémoir. Soc. Imp. Scienc. Nat. Cherbourg, vol. III, 1855, p. 176 et Synops. Method. Lich., vol. II, 1863, p. 24; Linds. in

Transact. Linn. Soc. London, vol. XXV, 1866, tab. XLII, fig. 12—14; HUE in Nouv. Archiv. du Muséum, ser. 3., vol. III, 1891, p. 44; REINKE in PRINGSHEIM's Jahrbüch. für wiss. Botan., vol. XXVIII, 1895, p. 446, fig. 165—166; DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 54. — *Parmelia sphinctrina* MONT. in Annal. Scienc. Nat., Botan., ser. 2., vol. IV, 1835, p. 90.

Feuerland: Isla Hoste, Bahia Orange, auf Baumrinden; Rio Azopardo, mit den folgenden zusammen.

Psoroma pholidotum MÜLL. ARG. in Flora, vol. LXXI, 1888, p. 45. — *Parmelia pholidota* MONT. in Annal. Scienc. Nat., Botan., ser. 2., vol. IV, 1835, p. 91. — *Pannaria pholidota* NYL. in Mémoir. Soc. Scienc. Nat. Cherbourg, vol. V, 1857, p. 108; HUE in Nouv. Archiv. du Muséum, ser. 4., vol. X, 1908, p. 171.

Feuerland: im Walde an der Mündung des Rio Azopardo, auf Baumrinden.

Psoroma xanthomelaenum NYL. in Annal. Scienc. Nat., Botan., ser. 4., vol. XII, 1859, p. 294 et Synops. Method. Lich., vol. II, 1863, p. 16; WAINIO in Résult. Voyage S. Y. Belgica, Botan., 1903, p. 29. — *Pannaria xanthomelaena* HUE in Nouv. Archiv. du Muséum. ser. 4., vol. VIII, 1906, p. 263.

Feuerland: im Walde an der Mündung des Rio Azopardo, an Baumrinden.

Psoroma hypnorum (DICKS.) HOFFM.

Falkland-Inseln: Port Stanley, auf der Erde.

Südgeorgien: Cumberland Bay, zwischen anderen Flechten auf der Erde in einem Sumpf am Moränenfjord.

var. **deaurata** (ACH.) MÜLL. ARG. in Mission Scientif. Cap Horn, vol. V, 1889, p. 160 et in Nuov. Giorn. Botan. Ital., vol. XXI, 1889, p. 39.

Westpatagonien: Canal Messier, Puerto Rayo, über Moosen, und Estero Peel am grossen Gletscher; Skyring: Puerto Pinto, auf Moosen.

Feuerland: Ushuaia, Rio Olivia, zwischen Moosen.

Stictaceae.

Sticta (sect. Stictina) **argyracea** DEL. (var. *sorediifera*), Hist. Lich., Sticta, 1822, p. 2, tab. VII, fig. 31.

Feuerland: im *Nothofagus*-Walde an der Mündung des Rio Azopardo, auf Rinden.

Sticta (sect. Stictina) **intricata** var. **Thouarsii** HELLB. in Bihang till Kgl. Svensk. Vetensk.-Akad. Handl., vol. XXI, afd. III, no. 13, 1896, p. 32. — *Sticta Thouarsii* DEL., Hist. Lich., Sticta, 1822, p. 90, tab. VIII, fig. 29. — *Stictina intricata* var. *Thouarsii* NYL., Synops. Meth. Lich., vol. I, 1860, p. 334. — *Pseudocyphellaria intricata* var. *Thouarsii* WAINIO in Hedwigia, vol. XXXVII, 1898, p. (34) et in Philippin. Journ. of Scienc., sect. C, vol. VIII, 1913, p. 120 et p. 121; MALME in Bihang till Kgl. Svensk. Vetensk.-Akad. Handl., vol. XXV, afd. III, no. 5, 1899, p. 24.

Chiloé: Punta Talcan, steril.

Feuerland: Isla Dawson Insel, Bahia Harris, steril; im *Nothofagus*-Walde an der Mündung des Rio Azopardo, an Baumrinden, steril.

Falkland-Inseln: Westinsel, Halfway Cove, steril.

Sticta (sect. Stictina) **Berteroana** MONT. in Annal. Scienc. Nat., Botan., ser. 2., vol. IV, 1835, p. 90 et apud GAY, Fisic. y Polític. Chile, Botan., vol. VIII, 1852, p. 125. — *Stictina Berteroana* NYL. apud STZBGR. in Flora, vol. LXXXI, 1895, p. 128 et in Acta Soc. Scient. Fenn., vol. XXVI, no. 10, 1900, p. 8, not. — *Ricasolia Berteroana* HUE in Nouv. Archiv. du Muséum, ser. 3., vol. II, 1890, p. 309.

Juan Fernandez: Masatierra, im Wald der Bahia Cumberland.

Der Thallus des gesammelten Stückes besitzt nur eine einzige junge Frucht; es war daher nicht möglich, den Fruchtbau näher zu studieren. Die Pseudocyphellen sind sehr klein, 0,1—0,15 mm breit und spärlich entwickelt, aber ihr Vorhandensein ist nicht zu übersehen; sie sind ferner weiss und im Umriss etwas unregelmässig.

Sticta (sect. Stictina) **coriifolia** A. ZAHLBR. nov. comb. — *Stictina coriifolia* MÜLL. ARG.; in ENGLER, Botan. Jahrbüch., vol. IV, 1883, p. 55; STZBGR. in Flora, vol. LXXXI, 1895, p. 129; DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. II, 1912, p. 38.

Thallus superne valde sparse et minute albo-punctatus (etiam in specimine originali MÜLLERI), subtus primum usque ad marginem rhizinosus, dein glabrescens; utrinque corticatus, cortex superior non inspersus, ad ambitum fuscolutescens, caeterum decolor, 55—80 μ altum, paraplectenchymaticum, cellulis rotundatis vel oblongo-rotundatis, mediis maximis, usque 10 μ latis, superne sensim minoribus, omnibus membrana sat crassa cinctis, in seriebus superpositis 6—7; cortex inferior 50—60 μ crassus, non inspersus, decolor, in ambitu fuscescens, paraplectenchymaticus, cellulis rotundatis vel oblongis, usque 11 μ latis, pachydermaticis; medulla alba, KHO—, $CaCl_2O_2$—, J—, ex hyphis intricatis, 3,5—4 μ crassis, non inspersis formata; gonidia nostocacea, cellulis primum aeruginosa-coeruleis, in partibus vetustioribus olivaceis, concatenato-glomerulosis, 3,5—4 μ latis, stratum infra corticem superiorem interruptum vel subcontinuum formantibus; rhizinae paginae inferioris thalli ex hyphis fasciculatis formatae, hyphis usque 0,18 mm longis et 5—6 μ crassis, membrana mediocri cinctis, demum septatis (cellulis oblongis).

Chiloé: Ancud, auf Strandfelsen, steril.

Sticta (sect. Stictina) **cinnamomea** A. RICH., Voyage de Decouv. de l'Astrolabe, Botan., vol. I, 1832, p. 28, tab. VIII, fig. 3; HOOK., Flora Nov. Zeland., vol. II, 1855, p. 279; HELLB. in Bihang till Kgl. Svensk. Vetensk.-Akad. Handl., vol. XXI, afd. III, no. 13, 1896, p. 32. — *Stictina fragillima* var. *dissimilis* NYL., Synops. Meth. Lich., vol. I, 1860, p. 336. — *Stictina dissimilis* LINDS. in Transact. Linn. Soc. London, vol. XXV, 1866, p. 506; NYL., Lich. Nov. Zeland., 1880, p. 30. — *Sticta fragillima* var. *dissimilis* KRMPHBR. in Reise Oesterr. Freg. Novara, Botan.

Theil, vol. I. 1870, p. 119, tab. XIV, fig. 2. — *Stictina cinnamomea* MÜLL. ARG. in Flora, vol. LXVI, 1883, p. 22 et in Bull. Herbier Boissier, vol. II, appendix I, 1894, p. 33; SHIRLEY in Proceed. Roy. Soc. of Queensland, vol. VI, 1889, p. 20.

Juan Fernandez: Masatierra, Cumberland Bay, steril.

Sticta (sect. Stictina) **faveolata** DEL., Hist. Lich., Sticta, 1822, p. 101, tab. VIII, fig. 36. — *Stictina faveolata* NYL., Synops. Method. Lich., vol. I, 1860, p. 337.

Chiloé: Isla Huafe, steril.

Sticta (sect. Stictina) **crocata** (LINN.) ACH.

Westpatagonien: Estero Peel, am grossen Gletscher, steril.

Andines Patagonien: Terr. Chubut, Colonia Corcovado, an Felsen 600 m ü. d. M., steril.

Falkland-Inseln: Westinsel, Halfway Cowe und am Warrah River, steril.

f. **citrina** A. ZAHLBR. nov. comb. — *Sticta citrina* PERS. apud. GAUDICH., Voyage Uranie et Physic., Botan., 1826, p. 201.

Thallus superne sorediis citrinis reticulatim costulatus.

Feuerland: im *Nothofagus*-Walde an der Mündung des Rio Azopardo, auf Baumrinden, steril.

Sticta (sect. Stictina) **hirsuta** MONT. in Annal. Scienc. Nat., Botan., ser. 2., vol. IV, 1835, p. 88 et apud DUMONT-D'URVILLE, Voyage Pole Sud, Botan., vol. I, 1843, p. 188, tab. XV, fig. 2; MEY. et FW. in Nova Acta Acad. Caes. Leopoldin.-Carolin., vol. XIX, suppl., 1843, tab. III, fig. 4; DNOTRS. in Memor. R. Accad. Sc. Torino, ser. 2., vol. XII, 1851. p. 146, tab. I, fig. 1. — *Stictina hirsuta* NYL., Lich. Scandin., 1861. p. 95, not. — *Pseudocyphellaria hirsuta* MALME in Bihang till Kgl. Svensk. Vetensk.-Akad. Handl., vol. XXV, afd. III, no. 5, 1899, p. 18.

Westpatagonien: Canal Adalbert, Heinrichs Fjord, fruchtend.

Patagonien: Mischwald bei Lago San Martin, fruchtend.

Sticta (sect. Stictina) **Weigelii** (ISERT) WAINIO, Étud. Lich. Brésil, vol. I, 1890, p. 189 (ubi descript. et synon.). — *Stictina Weigelii* DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 55.

Westpatagonien: Canal Messier, Caleta Hale, steril.

Feuerland: Canal de Beagle, Rio Olivia, an der Erde, steril.

Sticta (sect. Stictina) **Gaudichaldia** DEL., Hist. Lich., Sticta, 1822, p. 80, tab. VII, fig. 23. — *Stictina Gaudichaudii* NYL., Synops. Meth. Lich., vol. I, 1860, p. 345. — *Sticta malovina* FRIES, Syst. Orb. Veget., pars I, 1825, p. 283.

Westpatagonien: Estero Peel am grossen Gletscher, steril; Canal Jerónimo, Bahia Arauz, steril. Skyring: Puerto Pinto, auf der Erde im Hochmoor, steril.

Sticta (sect. Stictina) **caulescens** DNotrs. in Memor. R. Accad. Sc. Torino, ser. 2., vol. XII, 1851, p. 152; Malme in Bihang till Kgl. Svensk. Vetensk.-Akad. Handl., vol. XXV, afd. III, no. 5, 1899, p. 10, tab. I, fig. 2—3. — *Sticta caulescens* Darb., Wiss. Ergebn. Schwedisch. Südpol.-Exped., vol. IV, Liefrg. 11, 1912, p. 54.

S. Chile: Seno Reloncaví, Caleta Buill, auf Baumrinden, fruchtend.

Südpatagonien: Otway, Puerto Pomar, fruchtend. Westpatagonien: Canal Messier, Puerto Hale, auf Baumzweigen, fruchtend.

Sticta (sect. Eusticta) **dissimulata** Nyl., Synops. Meth. Lich., vol. I, 1860, p. 362 et Lich. Mov. Zeland., 1888, p. 37; A. Zahlbr. apud Rechinger in Denkschrift. math.-natur. Classe Kais. Akad. Wiss. Wien, vol. LXXXI, 1907, p. 261 (ubi synon.).

Chiloé: San Pedro, fruchtend; Isla Huafo, fruchtend.

Sticta (sect. Eusticta) **Freycinitii** Del., Hist. Lich., Sticta, 1822, p. 124, tab. XIV, fig. 51; Darb. in Wiss. Ergebn. Schwedisch. Südpol.-Exped., vol. IV, Liefrg. 11, 1912, p. 37.

Falkland-Inseln: Westinsel, Halfway Cove, steril.

Feuerland: auf *Nothofagus* im Walde unweit der Mündung des Rio Azopardo.

var. **chloroleuca** A. Zahlbr. nov. comb. — *Sticta chloroleuca* Hook. f. et Tayl. in Hook. London Journ. of Botan., vol. III, 1844, p. 649. — *Sticta Freycinetii* var. *isidioloma* Nyl. in Bull. Soc. Linn. Normand., ser. 2., vol. II, 1868, p. 504, not. et Lich. Nov. Zeland., 1888, p. 39. — *Pseudocyphellaria Freycinetii* var. *isidioloma* Malme in Bihang till Kgl. Svensk. Vetensk.-Akad. Handl., vol. XXV, afd, III, no. 5, 1899, p. 34. — *Pseudocyphellaria Freycinetii* var. *chloroleuca* Wainio in Résult. Voyage S. Y. Belgica, Bot., 1903, p. 28.

Westpatagonien: Canal Messier, Puerto Rayo, fruchtend.

Feuerland: im *Nothofagus*-Wald an der Mündung des Rio Azopardo, auf Baumrinden, steril.

var. **lactucaefolia** Müll. Arg. in Mission Scientif. Cap Horn, vol. V, 1889, p. 157. — *Parmelia lactucaefolia* Pers. apud Gaudich., Voyage Uranie et Physic. Botan., 1826, p. 199. — *Pseudocyphellaria Freycinetii* var. *lactucaefolia* Malme in Bihang till Kgl. Svensk. Vetensk.-Akad. Handl., vol. XXV, afd. III, no. 5, 1899, p. 36.

Juan Fernandez: Masatierra, steril.

Südgeorgien: Cumberland Bay, Moränenfjord, steril.

Sticta (sect. Eusticta) **cellulifera** Hook. f. et Tayl. in London Journ. of Botan., vol. III, 1844, p. 647; Hook., Flora Antarct., vol. I, 1844, p. 198; Nyl., Lich. Nov. Zeland., 1888, p. 38; Hue in Nouv. Archiv. du Muséum, ser. 4., vol. III, 1901, tab. III, fig. 2 et 2, ter.

Feuerland: im Walde unweit der Mündung des Rio Azopardo, auf *Nothofagus* fruchtend.

Sticta (sect. Eusticta) **physciospora** NYL., Synops. Meth. Lich., vol. I, 1860, p. 364; HUE in Nouv. Archiv. du Muséum, ser. 4., vol. III, 1901, p. 46.

Feuerland: am Azopardofluss, fruchtend.

Sticta (Sect. Eusticta) **endochrysea** DEL., Hist. Lich., Sticta, 1822, p. 43, tab. 1, fig. 1; HUE in Nouv. Archiv. du Muséum, ser. 4., vol. III, 1901, p. 48; DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 37.

Juan Fernandez: Masafuera, auf dem Hochplateau, bei 1200 m ü. M.

Westpatagonien: Estero Peel, nahe dem grossen Gletscher.

Südgeorgien: Cumberland Bay, am Moränenfjord.

var. **flavicans** (NYL.) MÜLL. ARG. — HUE in Nouv. Archiv. du Muséum, ser. 4., vol. III, 1901, p. 49.

Chiloé: Ancud, steril.

Westpatagonien: Canal Messier, Puerto Simpson, fruchtend.

Feuerland: Isla Dawson, Bahia Harris, auf Baumzweigen, steril; Islas Wollaston, I. Otter, steril.

var. **orygmaeoides** (NYL.) MÜLL. ARG.; HUE in Nouv. Archiv. du Muséum, ser. 4., vol. III, 1901, p. 49.

Chiloé: Rio Pudeto, steril.

S. Westpatagonien: Canal Jerónimo, Caleta Cutter, fruchtend.

Feuerland: Isla Felix, auf Baumächsten, fruchtend; Almirantazgo, Puerto Gomez und an der Mündung des Rio Azopardo, auf *Nothofagus*.

Sticta (sect. Eusticta) **nitida** TAYL. in HOOK., London Journ. of Botan., vol. VI, 1847, p. 178; NYL., Synops. Meth. Lich., vol. I, 1860, p. 359; MÜLL. ARG. in Flora, vol. LXXI, 1888, p. 23. — *Pseudocyphellaria nitida* MALME in Bihang till Kgl. Svensk. Vetensk.-Akad. Handl., vol. XXV, afd. III, no. 5, 1899, p. 26.

Apothecia superficialia vel submarginalia, parmeloidea, ad basin bene constricta, 1,5—2,5 mm lata, e concavo subplana; receptaculum thallo concolor (subochraceum), nudum, granulatum, corticatum, cortice in ambitu eroso, ex hyphis radiantibus, pachydermaticis et septatis formato, cellulas rotundato-oblongas offerente; discus e fusco nigricans, opacus, epruinosus; margo thallinus angustus, integer, acutiusculus, discum vix superans; excipulum in latere hymenii flabellatum, infra hymenium evanescens, paraplectenchymaticum, cellulis oblongis; hypothecium angustum, sordidescenti-lutescens, KHO magis lutescens, ex hyphis tenuibus et intricatis formatum; hymenium superne anguste nigrescens, KHO violascens, caeterum decolor, non inspersum, J coeruleum (imprimis asci); paraphyses strictae, filiformes, simplices, eseptatae, ad apicem leviter clavatae, conglutinatae; asci oblongo-clavati, 8-spori; sporae in ascis biseriales, fusiformes, utrinque acutiusculae, rectae vel subrectae, 3-septatae, 36—44 μ longae et 7,5—8 μ latae.

Chiloé: Seno Reloncaví, im Walde auf Baumrinden; Isla Huafo.

Westpatagonien: Estero Aysen, Puerto Chacabuco und Canal Messier, Puerto Rayo, fruchtend.

Sticta (sect. Eusticta) **Richardi** var. **divulsa** HUE in Nouv. Archiv. du Muséum, ser. 4., vol. III, 1901, p. 56, tab. II, fig. 1—2. — *Sticta divulsa* TAYL. apud HOOK. London Journ. of Botan., vol. VI, 1847, p. 182.

Westpatagonien: Canal Messier, Puerto Hale, Puerto Rayo et Puerto Simpson, auf Baumrinden.

Peltigeraceae.

Nephroma antarcticum (WULF.) NYL.

Westpatagonien: Estero Peel, am grossen Gletscher, fruchtend.

Feuerland: im *Nothofagus*-Walde an der Mündung des Rio Azopardo und Isla de Navarino.

Nephroma patagonicum KRMPHBR. in Verhandl. zool.-bot. Gesellsch. Wien, vol. XXVI, 1876, p. 439. — *Nephroma analogicum* NYL. apud CROMB. in Journ. Linn. Soc. London, Botan., vol. XV, 1876, p. 231; NYL., Lichen. Fuegiae et Patagon., 1888, p. 21. — *Opisteria analogica* WAINIO in Arkiv för Botan., vol. VIII, no. 4, 1909, p. 93.

Thallus KHO—, $CaCl_2O_2$—, medulla flavida, $CaCl_2O_2$ aurantiaca, KHO—.

Eine durch den Habitus und die Farbe der Medullarschicht ausgezeichnete Art. KREMPELHUBER und NYLANDER haben die Art in demselben Jahre veröffentlicht und es ist daher kaum möglich festzustellen, welchem der beiden Autoren die Priorität zukommt. Ich habe dem KREMPELHUBER'schen Namen den Vorzug gegeben, da dieser Autor eine ausführliche, zur Erkennung der Flechte geeignete Beschreibung gab.

Westpatagonien: Skyring; Ensenada de las Rucas, auf Baumrinden, fruchtend.

Feuerland: Almirantazgo, Puerto Gomez, auf Baumzweigen, fruchtend.

Peltigera spuria (ACH.) DC.

Westpatagonien: Estero Peel, Moränen am grossen Gletscher, fruchtend.

Peltigera erumpens WAINIO, Étud. Lich. Brésil, vol. I, 1890, p. 182 et in Természetr. Füzetek, vol. XXII, 1899, p. 306. — *Peltidea erumpens* TAYL. in HOOK. London Journ. of Botan., vol. VI, 1847, p. 184. — *Peltigera spuria* var. *erumpens* HARM. in Bull. Soc. Scienc. Nancy, ser. 2., vol. XXXI, 1897, p. 248 et Lich. de France, fasc. IV, 1910, p. 676.

Falkland-Inseln: unweit Port Stanley, auf dem Erdboden, steril.

Peltigera polydactyla var. **pellucida** DIETRICH, Lichenogr. German., 1832—37, p. 27, tab. 128; CROMB. in Flora, vol. LXVII, 1884, p. 236. — *Lichen caninus, pellucidus* DILL. apud WEB., Spicil. Flor. Goetting., 1778, p. 270.

Juan Fernandez: Masafuera, fruchtend.

var. **microcarpa** SCHAER., Lichen. Helvet. Spicil., sect. I, 1823, p. 15 et Enumer. Critic. Lich. Europ., 1850, p. 21; MONT. apud GAY, Hist. Físic. y Polític. Chile,

Botan., vol. VIII, 1852, p. 96. — *Peltidea polydactyla* var. *microcarpa* Ach., Lichenogr. Univers., 1810, p. 520.

Südchile: Seno Reloncaví, Caleta Buill, auf der Erde, fruchtend.

Peltigera canina (Linn.) Schaer.

Feuerland: Lago Fagnano, Isla Lagrelius, auf der Erde, fruchtend.

Peltigera rufescens (Neck) Hoffm.

Falkland-Inseln: Westinsel, Halfway Cove, auf der Erde, fruchtend.

Andines Patagonien: Rio Aysen, dürre Grassteppe am Coihaike alto, fruchtend; Rio Carbón, auf der Erde zwischen Moosen, fruchtend (leg. T. Halle).

Feuerland: Westende des Lago Fagnano, auf der Erde, fruchtend, und am Canal de Beagle, Rio Olivia, steril und reichlich von einem parasitischen Pilz, *Illosporium carneum* Fr., befallen.

Lecideaceae.

Lecidea elata Schaer., Lichen. Helvet. Spicil., sect. 3, 1828, p. 137; Nyl. in Act. Soc. Linn. Bordeaux, vol. XXI, 1856, p. 380; Th. Fries, Lichenogr. Scandin., vol. I, 1874, p. 535; Darb. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 21.

Falkland-Inseln: Westinsel, Rabbit Island, auf Sandstein.

Lecidea euphorea Flk. apud Nyl., Herbar. Musci Fennic., 1859, p. 90; Lamy in Bull. Soc. Botan. France, vol. XXX, 1883, p. 406; Arn. in Flora, vol. LXVII, 1884, p. 559; Hue in Revue de Botan., vol. VI, 1887—88, p. 10; Harm. in Bull. Soc. Scienc. Nancy, ser. 2., vol. XXXIII, (1898) 1899, p. 79; Sandt. in Abhandl. Naturw. Verein Bremen, vol. XXI, 1912, p. 88.

Falkland-Inseln: Westinsel, Halfway Cove, auf entrindeten Baumzweigen.

Lecidea (sect. Eulecidea) **austropatagonica** Müll. Arg.! in Flora, vol. LXIX, 1886, p. 126.

Thallus crustaceus, uniformis, tenuis, usque 0,75 mm altus, subtartareus, cinereoalbidus, opacus, KHO e flavo subferrugineus, $CaCl_2O_2$—, minute rimuloso-areolatus, arolis planis, angulosis, sorediis et isidiis destitutus; prothallus plumbeocinereus vel plumbeo-obscuratus, tenuissimus, versus ambitum thalli et etiam inter areolas thalli evolutus; medulla alba, KHO e flavo aurantiaco-ferruginaceus, tantem pallescens, $CaCl_2O_2$—, J violacea.

Apothecia lecideina, sessilia, parva, usque 1,2 mm lata, utplurimum congesta vel seriatim disposita, e rotundo anguloso vel irregularia, primum urceolata, demum concava vel subplana, nigerrima, epruinosa, opaca; margo proprius crassiusculus, integer, niger, nitidulus, prominulus et persistens, intus pallidus, ex hyphis medullaribus compositum, sed gonidia non continens, KHO e flavo ferrugineus; hypothecium obscure fuscum, infra hymenium late obconicum, lateraliter angustatum et usque ad

verticem hymenii assurgens, hymenium in parte suprema late aeruginoso-nigricans, KHO aeruginoso-olivaceum, caeterum decolor, non inspersum, 100—120 μ altum, J violaceo-coeruleum; paraphyses densae, strictae, 1,5—1,7 μ latae, simplices vel parce ramosae, etiam passim clathratim junctae, ad apicem clavatae, eseptatae, modice conglutinatae; asci ellipsoideo- vel ovali-clavati, hymenio subaequilongi, ad apicem rotundati et membrana incrassata cincti, 8-spori; sporae in ascis 2—3-seriales, decolores, simplices, ovales vel ellipsoideo-ovales, membrana tenui cinctae, 9—11 μ longae et 4—5 μ latae.

Pycnoconidia non visa.

Südgeorgien: Cumberland Bay, auf Schieferfelsen im Moränenfjord.

Catillaria grossa (PERS.) TH. FR. var. **mesoleucodes** A. ZAHLBR. nov. comb. — *Lecidea melastegia* f. *mesoleucodes* NYL., Lichen. Fueg. et Patagon., 1888, p. 15; SPEGAZZINI, Lich. Patagon. no. 31! — *Patellaria* (*Catillaria*) *premnea* MÜLL. ARG. in Nuov. Giorn. Botan. Ital., vol. XXI, 1889, p. 47.

Hypothecium albidum; excipulum dimidiatum, chondroideum, crassum, dilute nigricanti-coerulescens, KHO violaceum, ex hyphis crassis et pachydermatis, radiantibus et septatis formatum, luminibus brevibus vel linearibus; paraphyses capillares, simplices, eseptatae, ad apicem haud latiores; asci 8-spori; sporae in ascis 1—3-seriales, verticales vel obliquae, rectae vel curvulae, membrana et septo tenui, 28—36 μ longae et 12—16 μ latae.

Chiloé: Queilen, auf Baumrinden.

Catillaria melaleuca A. ZAHLBR. nov. comb. — *Lecidea melaleuca* TUCK. apud NYL. in Annal. Scienc. Nat., Botan., ser. 4., vol. XIX, 1863, p. 341, not., in Bull. Soc. Limn. Normand., ser. 2., vol. II, 1868, p. 84 et Lich. Nov. Zeland., 1888, p. 85. — *Patellaria* (sect. *Psorothecium*) *melaleuca* MÜLL. ARG. in Bull. Herbier Boissier, vol. II, appendix I, 1894, p. 63.

Chiloé: Queilen, auf Baumrinden.

Bacidia (sect. Eubacidia) **sclerocarpa** A. ZAHLBR. nov. spec.

Thallus crustaceus, uniformis, tenuissimus, viridescenti-cinerascens, KHO—, $CaCl_2O_2$—, pulverulentus vel subleprosus, inaequalis, continuus, isidiis destitutus, in ambitu linea obscuriore non cinctus, fere homoeomericus, gonidiis palmellaceis, hyphis thalli non amylaceis.

Apothecia crebra, utplurium congesta vel plus minus confluentia, rare solitaria, pallescenti-alutacea vel pallide rufescentia, opaca, demum usque 1,2 mm lata, e plano convexa vel semiglobosa; margo proprius primum valde tenuis, subinteger, parum dilutior, demum depressus; excipulum pallidum, ambitum versus lutescens, chondroideum, ex hyphis radiantibus, conglutinatis et leviter intricatis, pachydermaticis et septatis formatum, maculas parvas plus minus rotundatas offerens; epithecium distinctum non evolutum, hymenium lutescens, non inspersum, 95—110 μ altum, J e coerulescente sordidescens; hypothecium lutescenti-rufescens, ex hyphis dense intri-

catis formatum, sensim in stratum medullare thalli abiens, paraphyses capillares, ad 1 μ crassae, strictae, simplices, eseptatae, ad apicem latiores, conglutinatae; asci cylindrico-clavati, ad apicem retusato-rotundati, hymenii subaequilongi, 8-spori; sporae in ascis verticales, decolores, acicullariae—filiformes, rectae vel subrectae, pluriseptatae, cellulis brevibus, septis parum distinctis, 70—80 μ longae et 1,6—1,8 μ latae.

Pycnoconidia ignota.

Feuerland: im Walde unweit der Mündung des Rio Azopardo, über abgestorbenen Moosen.

Auf den ersten Blick glaubt man eine *Bacidia* aus der Section *Weitenwebera* vor sich zu haben, etwa eine hellfrüchtige *Bacidia hypnophila* (Ach.); die Gestalt der Sporen weisen indes auf die Section *Eubacidia* hin. Durch die hellen, verhältnismässig grossen Apothezien und die langen Sporen ist der Anschluss an die Sippe der *Bacidia luteola* (Ach.) gegeben. Habituell gleicht die neue Art sehr der neuseeländischen *Bacidia glomerulosa* Kn., doch weicht diese durch die kurzen Sporen wesentlich ab.

Rhizocarpon (sect. Catocarpon) **Copelandi** Th. Fr., Lichenogr. Scandin., vol. I, 1874, p. 615; Malme in Svensk Botan. Tidskrift, vol. VIII, no. 3, 1914, p. 277 et p. 284. — *Buellia Copelandi* Körb. in Zweite Deutsch. Nordpolf., vol. II, 1874, p. 79; Eckf. in Bull. Torrey Botan. Club, vol. XXII, 1893, p. 257. — *Lecidea Copelandi* Wainio in Meddel. Soc. Faun. et Flor. Fenn., vol. X, 1883, p. 129. — *Catocarpon Copelandi* Arn. in Verhandl. zool.-bot. Gesellsch. Wien, vol. XXVIII, 1878, p. 288 et Labrador, 1896, p. 16.

Andines Patagonien: Terr. Chubut, Cerro Lelej, bei 1200 m ü. M., auf Granitfelsen. — Die Flechte ist neu für das südliche Amerika.

Rhizocarpon (sect. Catocarpon) **polycarpum** (Hepp) Th. Fr., Lichenogr. Scandin., vol. I, 1874, p. 617. — *Buellia melanotrichia* Darb.! in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. II, 1912, p. 15, tab. III, fig. 27.

Südgeorgien: Cumberland Bay, Moränenfjord, bei 500 m ü. M. (Skottsberg 1902). — Die Flechte war bisher für das antarktische Amerika nicht verzeichnet.

Rhizocarpon geographicum (Linn.) DC.

f. *contigua* (Fr.).

Falkland-Inseln: Ostinsel, North-Arm, auf Urgestein.

f. *atrovirens* (Linn.)

Andines Patagonien: Terr. Chubut, Cerro Lelej 1200 m ü. M.; Terr. Sta Cruz, Fósiles-Pass, nördlich vom Lago San Martin, auf Urgestein.

Falkland-Inseln: Port Stanley; Westinsel auf dem Gipfel des Mt. Adam.

Südgeorgien: Cumberland Bay, Moränenfjord, auf Kieseln.

f. *protothallina* Körb.

Andines Patagonien: Terr. Chubut, Cerro Lelej, bei 1200 m ü. M., auf Granit.

Rhizocarpon geminatum (Fw.) Th. Fr.

Andines Patagonien: Fósiles-Pass, nördlich vom Lago San Martin, bei 1200 m ü. M., auf Urgestein.

Rhizocarpon distinctum Th. Fr., Lichenogr. Scandin., vol. I, 1874, p. 625 (ubi synon.).

Falkland-Inseln: Westinsel, Rabbit Island, auf Sandstein. — Neu für das subantarktische Amerika.

Cladoniaceae.

Cladonia rangiferina (Linn.) Web.

Feuerland: im Moore unweit der Mündung des Rio Azopardo (Dusén no. 159); Felsenheide oberhalb des Azopardotales, bei 700 m ü. M. und im Sumpfe unweit der Mündung des Rio Fontaine.

Südgeorgien: Cumberland Bay, Moränenfjord.

Cladonia sylvatica (Linn.) Hoffm. f. *sphagnoides* Flk.

Feuerland: im Sumpfe unweit der Mündung des Rio Fontaine, steril.

Cladonia pycnoclada (Gaudich.) Nyl.

Chiloé: Isla San Pedro, am Meeresstrand in der Moosmatte, steril.

f. *exalbescens* Wain.

Falkland-Inseln: Port Stanley, steril.

Cladonia alpestris (Linn.) Rabh.

Feuerland: unweit der Mündung des Rio Azopardo, auf dem Erdboden.

Cladonia bacillaris (Ach.) Nyl.

Juan Fernandez: Masatierra, Bahia Cumberland, auf morschen Baumstrünken.

Cladonia macilenta var. *styracella* (Ach.) Wain.

Chiloé: Queilen.

Cladonia digitata f. *brachytes* (Ach.) Wain.

Feuerland: Ushaia, auf der Erde (Dusén no. 234).

Cladonia coccifera var. *stemmatina* Ach.

Juan Fernandez: Masafuera, auf dem Hochplateau, bei 1200 m ü. M.

Andines Patagonien: Mischwald am Westende des Lago San Martin.

Feuerland: am Westende des Lago Fagnano im offenen Wald zwischen Moosen und im Sumpfe unweit der Mündung des Rio Fontaine.

Falkland-Inseln: auf dem Mt. Adam (Westinsel) und am Port Stanley.

Exemplare aus Westfalkland, am Meerestrand bei Port Howard gesammelt, kommen durch ihr kräftiges Wachstum der f. *insignis* (Nyl.) nahe, unterscheiden

sich aber durch die lediglich am Grunde und nie am Rande der Becher beschuppten Podezien.

Cladonia flavescens WAINIO, Monogr. Cladon., vol. 1, p. 197.

Feuerland: im *Nothofagus*-Walde unweit der Mündung des Rio Azopardo, zwischen Moosen.

Falkland-Inseln: Port Stanley, fruchtend.

Cladonia bellidiflora (ACH.) SCHAER.

Südgeorgien: im Sumpfe am Moränenfjord, zwischen Moosen.

Cladonia aggregata (SW.) ACH.

Juan Fernandez: Masafuera, am Hochplateau, 1000—1200 m ü. M.

Chiloé: Isla San Pedro.

Westpatagonien: Archip. Reina Adelaida, Isla Atalaya; Skyring, Puerto Pinto, Estero Peel, am grossen Gletscher.

Feuerland: am Westende des Lago Fagnano, zwischen Moosen, und am Rio Azopardo (DUSÉN no. 137); Islas Wollaston, I. Otter.

Falkland-Inseln: auf dem Mt. Adam, steril, in einer Form, welche nach der Beschreibung der »*Cladonia cornicularia* FLK.» (vergl. WAINIO, Monogr. Cladon., vol. I, p. 230) entsprechen könnte.

Cladonia furcata var. *palamacea* f. *subulata* (FLK.) WAINIO.

Feuerland: im Sumpfe unweit der Mündung des Rio Fontaine, steril.

Cladonia furcata var. *nudior* A. ZAHLBR. nov. comb. — *Cladonia subsquamosa* f. *nudior* NYL.! apud CROMB. in Journ. Linn. Soc. London, Botan., vol. XV, 1876, p. 224.

Thallus caespitose crescens, podetia erecta, 4—6 cm longa et 1—1,8 mm lata, simplicia vel inferne et superne iteratim et fastigiatim ramosa, subulata vel scyphifera, scyphis valde angustis, usque 2 mm latis, anguste obconicis, axillis perforatis, in margine subulato-proliferis, inferne eburnea, in parte superiore spadiceo-castanea vel castanea, nitidula, ad basin fere semipellucida, KHO flavescentia, demum subaurantiaca, corticata, cortice laevi, continuo vel subareolato, usque ad apicem squamis parvis, inciso-crenatis, brevibus vel oblongis, plus minus patentibus vel incurvis, subtus albis obsita. Cortex podetiorum chondroideus, 25—30 μ crassus, ex hyphis intricatis, pachydermaticis et gelatinoso-conglutinatis formatus; stratum gonidiale angustum; stratum chondroideum podetiorum bene evolutum, 120—140 μ crassum, distincte limitatum, ad ambitu irregulare.

Feuerland: am Rio Azopardo, im Torfmooren (DUSÉN no. 181).

Ich fand die von DUSÉN gesammelten Stücke mit dem Originale NYLANDER's vollkommen übereinstimmend. Spricht schon der Habitus für eine Zugehörigkeit zu *Cladonia furcata*, so lässt der anatomische Bau des Lagers, insbesondere derjenige des »stratum chondroideum» der Podezien darüber keinen Zweifel aufkommen. Auf das

Gelbwerden der Podezien nach Hinzufügung von Kalilauge ist in diesem Falle kein Gewicht zu legen, gerade sowenig als dieses Merkmal zur Trennung der *Cladonia subsquamosa* von *Cladonia squamosa* verwendet werden kann. Sehr nahe steht der obigen Varietät *Cladonia furcata* var. *subpungens* MÜLL. ARG.!, doch besitzt diese bedeutend längere und grosskörnig berindete Podezien. Obwohl der Varietätsnamen NYLANDER's recht unpassend ist, so muss er dennoch beibehalten werden.

Cladonia crispata var. *infundibulifera* (SCHAER.) WAINIO.

Feuerland: am Rio Azopardo, fruchtend (DUSÉN no. 144). Die gesammelten Stücke weichen insoferne von der Beschreibung WAINIO's ab, als die Podezien hie und da durchlöchert sind; sie erinnern an die f. *schistopoda* WAINIO, entsprechen aber in ihren übrigen Merkmalen mehr der obigen Varietät.

Cladonia squamosa var. *asperella* FLK.—WAINIO.

Patagonien: Punta Arenas, auf dem Erdboden, steril.

var. *muricata* (DEL.) WAINIO.

Chiloé: Queilen, auf der Erde, steril.

Cladonia cariosa var. *pruniformis* NORM.—WAINIO.

Feuerland: am Rio Grande, zwischen *Azorella*-Polstern, fruchtend (DUSÉN no. 119).

Cladonia gracilis var. *dilatata* (HOFFM.) WAINIO.

Westpatagonien: Puerto Eden, fruchtend.

var. *chordalis* (FLK.) SCHAER.

Juan Fernandez: Masafuera, am Hochplateau, steril.

Chiloé: Queilen, fruchtend.

Andines Patagonien: am Westende des Lago San Martin, fruchtend.

Feuerland: am Rio Azopardo in der f. *hybrida* (DUSÉN no. 138).

Südgeorgien: Cumberland Bay, Sumpf am Moränenfjord, steril.

Cladonia cornuta (LINN.) SCHAER.—WAINIO.

S. Westpatagonien: Archip. Reina Adelaida, Isla Atalaya, steril.

Cladonia verticillata var. *cervicornis* (ACH.) FLK.—WAINIO.

Falkland-Inseln: Westinsel, Port Howard, auf Strandfelsen, reichlich fruchtend.

Cladonia pyxidata var. *neglecta* (FLK.) MASS.—WAINIO.

Andines Patagonien: Mischwald am Westende des Lago San Martín, fruchtend. Eine monströs grosse Form.

Falkland-Inseln: Westinsel, Halfway Cove, steril.

var. *chorophaea* FLK.—WAINIO.

Südgeorgien: Cumberland Bay, Sumpf am Moränenfjord, steril.

Cladonia fimbriata var. *simplex* (WEIS.) FW.—WAINIO.
Patagonien: Punta Arenas, steril (DUSÉN no. 19).
Feuerland: im *Nothofagus*-Walde unweit der Mündung des Azopardo, steril.

f. *minor* (HAG.) WEIS.
Feuerland: San Sebastian, steril (DUSÉN no. 79).

Cladonia pityrea I. *Zwackhii* B. *sorediosa* WAINIO.
Juan Fernandez: Masatierra, Cumberland Bay, fruchtend, sich der f. *subacuta* WAINIO nähernd.

Cladonia carneola f. *prolifera* FW.—WAINIO.
Feuerland: am Westende des Lago Fagnano.

Stereocaulon tomentosum (FR.) TH. FR.
Westpatagonien: Canal Smyth, Puerto Ramirez, im Walde, fruchtend; Skyring, Est. de los Ventisqueros, Moränenhügel bei dem grossen Gletscher.

var. *magellanicum* TH. FR.
Feuerland: alpine Region beim Lago Fagnano, fruchtend.
Südgeorgien: Cumberland Bay, am Moränenfjord, steril und der Thallus fast weiss.

Stereocaulon ramulosum (SW.) ACH.
Chiloé: Isla San Pedro, am Meeresufer, reichlich fruchtend.
Westpatagonien: Estero Pedro, am grossen Gletscher, fruchtend.
Südpatagonien: Skyring, Est. Excelsior, Paso de Corindios, im Walde, fruchtend

var. *implexum* (TH. FR.) NYL.
Juan Fernandez: Masatierra, Cumberland Bay, im Walde; Masafuera.
Westpatagonien: Estero Peel, am grossen Gletscher.

Gyrophoraceae.

Gyrophora dichroa MÜLL. ARG. in Jahrbüch. Kgl. Botan. Gart. Berlin, vol. II, 1883, p. 316. — *Umbilicaria dichroa* NYL. in Flora, vol. XLI, 1858, p. 674 et Synops. Method. Lich., vol. II, 1863, p. 8. — LECHLER, Plant. Peruv. no. 1757!
Andines Patagonien: Felsen am Lagerplatz, 15. XI. 08 nö. vom Lago General Paz, steril.

Gyrophora polyphylla (LINN.) KÖRB. — *Gyrophora polyphylla* var. *glabra* TH. FR., Lichenogr. Scand., vol. I, 1871, p. 163.
Falkland-Inseln: Ostinsel, Navy Point, an Felsen, steril.

Gyrophora cylindrica (Linn.) Ach.

Andines Patagonien: Terr. Chubut, Felsen am Colonia Corcovado, bei 600 m ü. M. — Die gesammelten Stücke nähern sich durch die kurzen und krausen, oft auch auf die Lageroberfläche tretenden Rhizinen der f. *propagulifera* A. Zahlbr. — (*Umbilicaria cylindrica* f. *propagulifera* Wainio.)

Gyrophora proboscidea var. *pulla* A. Zahlbr. nov. comb. — *Lichen pullus* Wulf. apud Jacqu., Miscell. Botan., 1781, p. 83, tab. IX, fig. 3. — *Gyrophora proboscidea* var. *Jacquiniana* Ach., Lichenogr. Univers., 1810, p. 221. — *Umbilicaria proboscidea* var. *duplicans* Nyl., Lichen. Scandin., 1861, p. 116 et Synops. Method. Lich., vol. II, 1863, p. 13; Wainio in Arkiv för Botan., vol. VIII, no. 4, 1909, p. 11. — *Gyrophora proboscidea* f. *duplicans* Th. Fr., Lichenogr. Scandin., vol. I, 1871, p. 163. — Exsicc.: Anzi, Lichen. Ital. super., no. 77!

Andines Patagonien: Terr. Chubut, Pampa Chica, fruchtend. — *Gyrophora proboscidea* ist für Südamerika neu.

Gyrophora angulata Herre in Contrib. U. S. Nation. Herbarium, vol. XIII, 1911, p. 318; Hasse in Contrib. U. S. Nation. Herbarium, vol. XVII, 1913, p. 61. *Umbilicaria angulata* Tuck., Synops. Lich. New England, 1848, p. 74 et Synops. North Americ. Lich., vol. I, 1882, p. 88.

Falkland-Inseln: Port Stanley. — Die Bestimmung ist nicht absolut sicher, da lediglich sterile Stücke gesammelt wurden, die allerdings gut zur nordamerikanischen Flechte passen. — Der *Gyrophora angulata* habituell sehr nahe stehend und nur durch die Gestalt der Apothezien sicher zu unterscheiden ist *Gyrophora Mühlenbergii* var. *alpina* Tuck., doch führen mich pflanzengeographische Erwägungen dazu, die Falklandflechte zur Ersteren zu ziehen.

Acarosporaceae.

Acarospora citrina (Tayl.) A. Zahlbr. apud Rechinger in Denkschrift. math.-naturw. Classe K. Akad. Wiss. Wien, vol. LXXXVIII, 1911, p. 28 (ubi synon.).

Andines Patagonien: Terr. Chubut, Cerro Lelej, bei 1200 m ü. M., auf Sandstein.

Pertusariaceae.

Perforaria cucurbitula (Mont.) Müll. Arg. in Nuov. Giorn. Botan. Ital., vol. XXIII, 1891, p. 126. — *Pertusaria cucurbitula* Mont.; Nyl., Lichen. Fuegiae et Patagon., 1887, p. 11.

Feuerland: am Westende des Lago Fagnano, am Grunde von Baumstämmen im offenen Wald.

Pertusaria macloviana Müll. Arg. in Flora, vol. LXVII, 1884, p. 271; Wainio in Mémor. Herbier Boissier, no. 5, 1900, p. 8.

Falkland-Inseln: Port Stanley, auf Quartzit.

Pertusaria corrugata DARB.! in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 6 et p. 27, tab. I, fig. 10.

f. **phaeizans** A. ZAHLBR. nov. f.

A typo differt apotheciis pallidis.

Thallus epilithicus, crustaceus, uniformis, tartareus, effusus, ad 0,5 mm crassus, passim excrescens et dein usque 2 mm altus, lutoso-albicans, KHO purpurascenti-lutescens, $CaCl_2O_2$—, areolato-rimosus, areolis contiguis, superne corrugato-inaequalibus, fissuris tenuibus, sed altis limitatis, sorediis et isidiis destitutus, protothallus distinctus, angustus et tenuis; stratum corticale tenue, ex hyphis dense intricatis et inspersis formatum; gonidia glomerata, glomerulis plus minus dispersis vel confluentibus, cellulis laete viridibus, globosis, rarius subellipsoideis, 4—7 μ latis; hyphae thalli in strato gonidiali KHO sanguineae; medulla alba, KHO—, $CaCl_2O_2$—, J—.

Apothecia crebra, verrucas apotheciigeras distinctas non formantia, lecanorina, immersa, rotunda vel difformia, plus minus approximata, usque 1 mm lata; discus ceraceo-testaceus, madefactus magis fuscescens (in planta typica niger et opacus); excipulum distinctum non evolutum; hymenium decolor, 200—250 μ altum, superne anguste olivascens et KHO in rufescentem vergens, caeterum decolor, non inspersum, J coeruleum; paraphyses densae, filiformes, ad 1 μ crassae, eseptatae; asci hymenio fere subaequilonges, oblongo-clavatae, ad apicem rotundati, recti vel curvati, 8-spori; sporae in ascis subbiseriales vel uniseriales, decolores, simplices, ovales vel ovali-ellipsoideae, 44—58 μ longae et 20—30 μ latae, membrana duplici, 3,5—4 μ crassa, laevi.

Conceptacula pycnoconidiorum immersa, vertice nigricanti, punctiformi, vix prominulo; perifulcrium pallidum; fulcra exobasidialia, basidiis subampullaceis vel subcylindricis, fastigiatis, pycnoconidiis brevioribus; pycnoconidia filiformia, subrecta vel subcurvata, utrinque retusa, 23—28 μ longa et ad 1 μ lata.

Falkland-Inseln: Westinsel, Port Philomel, Halfway Cove, auf Sandstein.

Pertusaria cerebrinula A. ZAHLBR. nov. spec.

Thallus epilithicus, crustaceus, uniformis, valde tenuis, 0,2—0,24 altus, late effusus, ochraceo-cinerascens, opacus, KHO lutescens, $CaCl_2O_2$—, ex areolis formatus minutis, 0,2—0,8 (—1) mm latis, subangulosis, leviter convexis, superne inaequalibus, plus minus congestis, rarius subdispersis, isidiis et sorediis destitutus, in margine linea obscuriore non cinctus, superne strato corticali angusto, ex hyphis dense intricatis formato obductus; medulla alba, J—, hyphis inspersis; gonidia laete viridia, cellulis globosis, 7—14 μ latis.

Verrucae apotheciigerae sessiles, ad basin constrictae, dispersae vel approximatae, turgidae, magnae, usque 4 mm latae et usque 2 mm altae, thallo pallidiores, albidae, opacae, ad verticem crasse et profunde gyroso-plicatae, hymenia plura (6—8) includentes, KHO flavidae, $CaCl_2O_2$—, strato corticali obductae, stratum gonidiale angustum, infra corticem situm et medullum sat amplam includentes; disci apotheciorum nigricantes, impressi, punctiformes vel breviter rimaeformes; hymenium superne nigrescens, KHO violascens, passim strato decolore angusto supertectum, caeterum

incolor, leviter inspersum, J coeruleum; paraphyses filiformes, ramosae et connexae, eseptatae, ad apicem non latiores, ad 1 μ crassae; asci cylindrici, ad apices rotundati et membrana incrassata cincti, (4)—6—8-spori; sporae in ascis uniseriales, decolores, simplices, ellipsoideae, ovali- vel oblongo-ellipsoideae, ad apices rotundatae vel subacuminatae, membrana duplici cinctae (membrana externa laevi, angustiore, 1,7—2,2 μ lata, membrana interna etiam laevi, 4—6 μ crassa), guttula oleosa unica et ampla impletae, 65—70 μ longae et 34—35 μ latae, KHO non tinctae.

Conceptacula pycnoconidiorum in tuberculis minutis, 0,3—0,5 mm latis, albidis inclusa; perifulcrium pallidum; fulcra exobasidialia; basidia angusta, subampullacea; pycnoconidia capillaria, subrecta vel leviter arcuata, utrinque retusa, 14—16 μ longa et ad 0,5 lata.

Falkland-Inseln: Westinsel, Port Philomel, Halfway Cove, auf Sandstein.

Durch die Gestalt der Fruchtwarzen, das dünne Lager und die kurzen Pyknokonidien gut charakterisiert.

Pertusaria melanospora Nyl.! in Annal. Scienc. Nat., Botan., ser. 4., vol. III, 1855, p. 159, in Bull. Soc. Linn. Normand., ser. 2., vol. IV, 1872, p. 289, not. et Lichen. Pyren. Orient., 1891, p. 61, not.; Hue in Nouv. Archiv du Muséum, ser. 3., vol. III, 1891, p. 85.

Thallus epilithicus, crustaceus, uniformis, subtartareus, tenuis, effusus, alutaceo-lacteus, subopacus, KHO vix mutatus, $CaCl_2O_2$ leviter erythrinosus, KHO lutescens, areolato-diffractus, areolis parvis, 0,1—0,5 mm latis, angulosis, fissuris tenuibus limitatis, planiusculis, superne laevibus, continuis, sorediis et isidiis destitutus, superne strato corticali obductus, ex hyphis dense intricatis et dense inspersis formato; medulla alba, KHO flavescens, $CaCl_2O_2$ erythrinosa, J—.

Verrucae apotheciigerae dispersae, sessiles, 0,8—1,2 mm latae, ad basin leviter constrictae, subsemiglobosae, thallo concolores, laeves, ad verticem primum punctiformiter pertusae, demum sat breviter transversim fissae, 1—5-carpicae, strato corticali obductae, medullam et gonidia includentes; disci apotheciorum nigri, opaci, minuti, rotundi et vix impressi; epithecium nigrescens, KHO violascens; hymenium decolor, guttulis oleosis non impletum, J intense coeruleum, 330—370 μ altum; hypothecium angustum, decolor, ex hyphis intricatis tenuibus formatum; paraphyses capillares, ramosae et connexae, eseptatae, ad apicem non latiores; asci oblongo-clavati, ad apicem retuso-rotundati, pachydermatici, 4—8-spori; sporae in ascis 1—2-seriales, ex decolore mox coeruleo-nigricantes, simplices, ellipsoideae, membrana duplici cinctae, membrana externa valde tenui, ad 1 μ crassa, interna ad 9 μ crassa, colorata, KHO violascens, subtiliter striolatae, 62—80 μ longae et 36—46 μ latae.

Conceptacula pycnoconidiorum verrucosa, sessilia, hemisphaerica, parva, ad 1,1 mm lata, vertice punctiformi vel paulum irregulari, nigricante; fulcra exobasidialia; pycnoconidia capillaria, plus minus curvata vel hamata, 21—26 μ longa et 0,5 μ lata.

Juan Fernandez: Masatierra, Bahia del Padro, auf Lava.

Lecanoraceae.

Lecanora capistrata A. ZAHLBR. comb. nov. — *Lecidea capistrata* DARB.! in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 3, tab. I, fig. 2.

Thallus crustaceus, uniformis, epilithicus, usque 1,4 mm altus vel passim tenuior, tartareus, late effusus, pallide argillaceus, fere stramineus vel stramineo-cinerascens, opacus, KHO flavens, $CaCl_2O_2$ aurantiaco-erythrinosus, areolato-rimosus, areolis parvis, 0,2—1 mm latis, angulosis vel plus minus elongatis, fissuris valde tenuibus separatis, continuis, in superficie ruguloso-inaequalibus, planiusculis vel levissime convexis, soredia et isidia non gerens, in margine passim lineis protothallinis nigris et tenuibus notatus; stratum corticale tenue, 18—25 μ crassum, ex hyphis intricatis, dense pulverulento-inspersis formatum; gonidia stratum angustum, subcontinuum formantia, cystococcoidea, cellulis 7—9 μ latis, globosis; medulla tartarea, alba, KHO flavens, KHO + $CaCl_2O_2$ aurantiaca, J—, ex hyphis intricatis et insperis formatum, lacunas aëriferas includens.

Apothecia numerosa, primum subimmersa, dein adpressa et demum sessilia, approximata, usque 1,2 mm lata, rotunda vel subflexuosa, nigra, madefacta in aeruginosum vergentia, opaca, e plano leviter convexa; margo thallinus thallo concolor, valde tenuis, haud prominulus, demum depressus, fere evanescens; excipulum integrum, ad latera hymenii ex hyphis radiantibus, valde tenuibus formatum, in ambitu olivaceo-nigriscens, infra hymenium ex hyphis magis tangentialibus compositum; epithecium tenue, increbre pulverulentum; hypothecium pallidum, fere decolor, solum inferne parum obscuratum, molle, in parte superiore guttulis majusculis, usque 6 μ latis, impletum; hymenium superne smaragdulo-nigrescens, KHO viridescens, NO_3 sordide violascenti-rubrum, caeterum decolor, non inspersum, 80—90 μ altum, J violaceo-coeruleum; paraphyses filiformes, ad 1 μ crassae, simplices vel parce furcatae, eseptatae, ad apicem leviter capitatae; asci oblongo- vel ellipsoideo-clavati, ad apicem rotundati et ibidem membrana primum bene incrassata cincti, 8-spori; sporae in ascis 1—2-seriales, decolores, simplices, oblongae vel plus minus ellipsoideae, membrana tenui laevique cinctae, 10—16 μ longae et 5,5—7,5 μ latae.

Conceptacula pycnoconidiorum tubercula minuta, 0,1—0,25 mm lata formantia, approximata, thallo fere concoloria (magis in carneum vergentia), ad verticem nigricantia, cavitates irregulares vel cerebriformes gerentia, fulcra exobasidialia; basidia fasciculata, subfiliformia, pycnoconidiis brevioria; pycnoconidia filiformia, utrinque retusa, curvata vel arcuata, rarius hamata, 18—28 μ longa et ad 1 μ lata.

Falkland-Inseln: Westinsel, Port Philomel, Halfway Cove, auf Sandstein; Port Stanley, ebenfalls auf Sandstein.

Ich halte die Art für eine echte *Lecanora*, welche in den Formenkreis der *Lecanora sulphurea* gehört.

Lecanora (sect. Eulecanora) **subelata** A. ZAHLBR. nov. spec.

Thallus epilithicus, crustaceus, uniformis, tartareus, 0,4—1 mm crassus, plagas plus minus rotundatas et sat amplas formans, ochroleucus, opacus, KHO flavens, demum fuscatus, $CaCl_2O_2$ erythrinosus, areolato-rimosus, areolis angulosis, usque 2 mm latis, planis, in superficie parum laevigatis et passim parum inaequalibus, sorediis et isidiis destitutus, in margine protothallo angusto chalybaeo-nigricanti cinctus; stratum corticale parum distinctum, ex hyphis intricatis et valde pulverulento-inspersis formatum; medulla tartarea, alba, KHO e flavo aurantiaca, KHO + $CaCl_2O_2$ erythrinosa, J—, ex hyphis intricato-conglutinatis et inspersis formata; gonidia stratum sat latum formantia, cellulis 7—11 μ latis.

Apothecia sessilia, dispersa vel plus minus approximata, nigra vel lurido-nigricantia, usque 2 mm lata, ad basin constricta, e rotundo mox sinuato-flexuosa; discus primum concaviusculus, dein planus et demum plus minus convexus; margo thallinus niger, primum discum bene superans, sinuoso-flexuosus, demum depressus, in sectione transversali ad ambitum anguste coeruleo-nigricans, KHO smaragdulus, intus decolor, ex hyphis flexuoso-radiantibus et conglutinatis formatus, gonidia pallida, subseriatim vel subradiatim disposita, usque ad marginem penetrantia includens; excipulum distinctum, sed angustum, J—, decolor, ex hyphis tangentialibus, tenuissimis et conglutinatis formatum, integrum, usque ad verticem hymenii assurgens et ibidem dilute olivaceo-aeruginascens; hypothecium hymenio paulum angustius, fere decolor vel pallide fuscescens, molle, ex hyphis intricatis formatum, in parte superiore maculas rotundas, aëre impletas copiosas includens; hymenium superne aeruginoso-nigricans, KHO smaragdulum, NO_3 sordide roseum, caeterum decolor, 150—165 μ altum, guttulatum, superne passim epithecio pulverulento, olivaceo-fusco tectum, J violaceo-coeruleum; paraphyses densae, capillares, simplices, eseptatae, ad apicem vix latiores, conglutinatae; asci hymenio subaequilongi, ovali- vel oblongo-clavati, ad apicem rotundati, 8-spori; sporae in ascis 2—3-seriales, decolores, simplices, ellipsoideo-oblongae vel oblongae, utrinque rotundatae, membrana tenui et laevi cinctae, 11—14 μ longae et 3,5—5 μ latae.

Conceptacula pycnoconidiorum immersa, globosa, vertice punctiformi nigro, thallum vix superantia; perifulcrium pallidum; fulcra exobasidialia; pycnoconidia bacillaria, utrinque retusa, recta vel subrecta, sat brevia, 10,5—12 μ longa et 1,5 μ lata.

Falkland-Inseln: Port Stanley, auf Quarzit.

Trotz der scheinbar lezideinischen Apothezien eine echte *Lecanora*, habituell der vergehenden Art nahe kommend, aber von dieser sofort durch die kurzen Pyknokonidien als verschieden erkennbar.

Lecanora (sect. Eulecanora) **atra** var. **lirellina** A. ZAHLBR. nov. comb. — *Aspicilia lirellina* DARB.! in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 10, tab. II, fig. 18—19.

Thallus crustaceus, uniformis, tartareus, crassiusculus, in centro usque 2 mm altus, sublutescenti-albidus, KHO flavescens, $CaCl_2O_2$—, e subcontinue demum bene areolato-diffractus, areolis planiusculis, superne tenuissime subreticulatim-impressis,

fissuris altis et hiantibus separatis, hypothallo distincto non limitatus, soredia et isidia non gerens.

Apothecia immersa, rare demum paulum elevata, rotunda, rotundata, non raro 2—3 confluentia et dein oblonga vel elongata, usque 1,8 mm longa; margo thallinus tenuis, integer, parum conspicuus, circa apothecia emergentia demum distinctus et crassiusculus; discus niger, opacus; epithecium distinctum non evolutum; excipulum integrum, angustum, decolor; hymenium in parte superiore late violaceo-nigrescens, KHO sordide purpureo-violascens, caeterum inaequaliter vel fasciatim violaceo-fuscescens, 250—350 μ altum, J coeruleum; hypothecium sordide lutescens, KHO ferruginascens, strato medullari thalli, glomerulos gonidiorum paucos includenti superpositum; paraphyses conglutinatae, simplices vel subramosae, eseptatae, 3—3,5 μ crassae, ad apicem vix latiores, gelatinam rigidiusculam percurrentes; asci oblongo-clavati, hymenio subaequilongi, 8-spori; sporae in ascis subbiserialis, decolores, simplices, ellipsoideae vel ovales, membrana tenui et laevi cinctae, sat parvae, 10,5—12 μ longae et 5—6 μ latae.

Falkland-Inseln: Westinsel, Port Philomel, Halfway Cove, auf Sandstein, und Darwin Harbour, auf Schiefer und Sandstein.

In denjenigen Teilen, wo einzelne Apothezien über das Lager hervortreten und vom Lager dick berandet werden, erinnert die Flechte sehr an die var. *urceolata* Mass. Nachdem aber die strichförmige Anordnung der Apothezien vorherrscht und der Flechte den habituellen Charakter verleiht, so ist eine Abtrennung als eigene Varietät am Platz. Darbishire hatte mehr jugendliche Stücke zur Hand, daher die Abweichungen in der Beschreibung.

Lecanora (sect. Eulecanora) **polytropa** (Ehrht.) Ach.

Falkland-Inseln: Westinsel, Rabbit Island, auf Sandstein.

Lecanora (sect. Eulecanora) **badia** var. *cinerascens* Nyl., Lich. Scandin., 1861, p. 170.

Hymenium strato amorpho decolore supertectus; sporae 10—11 μ longae et 3—4 μ latae, fusiformi-oblongae, utrinque rotundatae vel in uno apice acutatae; pycnoconidia 8,5—10 μ longa, recta.

Falkland-Inseln: Ostinsel, Stanley Harbour, Navy Point, auf Sandsteinfelsen.

Lecanora (sect. Placodium) **stramineocarnea** A. Zahlbr. nov. spec.

Thallus placodimorphus, substrato primum bene, demum non arcte adnatus, subpulvinatus, stramineus, fere opacus, epulverulentus, KHO —, $CaCl_2O_2$ —, in centro verruculoso- vel subbullato-complicatus, lobi marginales sat breves, usque 3 mm longi, subgyrosi, planiusculi vel leviter canaliculati, passim tortuosi et subintricati, superne non rare transversim fissi, in apice digitato-divisi, lobis rotundatis et plus minus incisis, subtus in margine subchalybaeus, caeterum sordide albescens, opacus, isidiis et sorediis destitutus; superne corticatus, cortice ad ambitum olivaceo-fuscescente et strato tenui amorpho et decolore supertecto, inferne decolore, 50—80 μ

crasso, ex hyphis intricatis et septatis, ad 3,5 μ latis formato, maculas subrotundatas offerente; stratum gonidiale fasciculis hypharum longitudinalium et conglutinatarum interruptum vel rarius subcontiguum, gonidiis hyphis laxiusculis circumdatis, globosis, laete viridibus, 7—15 μ latis; medulla alba, cretacea, KHO —, $CaCl_2O_2$ —, J —, in parte superiore laxius contexta et aërem copiosam includens, inferne ex hyphis dense intricatis, 3,5—4 μ crassis, non inspersis, versus marginem thalli globoso-septatis formata.

Apothecia copiosa, fere totum thallum obtegentia, lecanorina, ad basin bene constricta, sessilia, congesta, e mutua pressione e rotundato subangulosa vel plus minus irregularia, usque 2 mm lata, thallo concoloria vel paulum in carneum vergentia, e plano convexa; discus epruinosus, madefactus cinerascenti-diaphanus; margo thallinus integer vel subinteger, prominulus, demum depressus, strato corticali obductus, gonidia et medullam includens; exipulum angustum, integer, ex hyphis tangentialibus, tenuibus et intricatis formatum; hymenium strato medullari thalli, ex hyphis plus minus verticalibus formato superpositum, superne olivaceo-fuscescens et leviter inspersum, $CaCl_2O_2$ —, 70—90 μ altum, J coeruleum; paraphyses conglutinatae, filiformes, ad 1,5 μ crassae, leptodermaticae, in parte superiore iteratim dichotome vel subdichotome divisae, ad apicem haud latiores, eseptatae; asci oblongo- vel ovali-clavati, hymenio subaequilongi, 8-spori; sporae in parte superiore asci biseriales, decolores, simplices, late ovales vel late ellipsoideae, membrana tenui et laevi cinctae, 7—10 μ longae et 4,5—6 μ latae.

Conceptacula pycnoconidiorum immersa, ovalia; perifulcrium pallidum; fulcra exobasidialia, basidiis pycnoconidiis multum breviora, oblonga; pycnoconidia filiformia, utrinque retusa, curvata vel flexuosa, rare subrecta, 24—27 μ longa et ad 1 μ lata.

Andines Patagonien: Terr. Chubut, Cerro Lelej, bei 1200 m ü. M., auf Sandsteinfelsen.

Die neue Art, durch ihre Wachstumweise auffallend, steht zwischen dem Formenkreis der *Lecanora chrysoleuca* Ach. und demjenigen der *Lecanora concolor* Ram., ersterer mehr durch den Habitus, der letzeren durch Farbe des Lagers und der Apothezien nahe kommend.

Lecanora (sect. Placodium) **melanophthalma** (Ram.) Schaer.

Andines Patagonien: Terr. Chubut, Cerro Lelej, bei 1200 m ü. M., auf Sandsteinfelsen.

Lecanora (sect. Placopsis) **argillacea** Stzbgr. in Flora, vol. LXXII, 1889, p. 366. — *Placodium argillaceum* Kn. in Transact. Linn. Soc. London, ser. 2., vol. I, 1877, p. 282, tab. XXXVIII, fig. 14. — *Lecanora rhodomma* var. *argillacea* Hue in Nouv. Archiv. du Muséum, ser. 3., vol. III, 1891, p. 59.

f. **rhodophthalma** A. Zahlbr. nov. comb. — *Lecanora* (*Placopsis*) *rhodophthalma* Müll. Arg. in Flora, vol. LXII, 1879, p. 164 et in Bullet. Herbier Boissier, vol. II, appendix I, 1894, p. 48. — *Placopsis rhodomma* Nyl., Lichen. Nov. Zeland., 1888, p. 56. — *Lecanora rhodomma* Hue in Nouv. Archiv. du Muséum, ser. 3., vol. III,

1891, p. 59. — *Placodium rhodomma* HELLB. in Bihang till Kgl. Svensk. Vetensk.-Akad. Handl., vol. XXI, afd. III, no. 13, 1896, p. 59.

Thallus epilithicus, in margine subplacodinus, tenuis, 0,1—0,2 mm crassus, caeterum subsquamosus, squamis parvis, 0,3—0,4 mm latis, rotundatis, plus minus incisis, planiusculis vel leviter convexis, demum soredioso-dissolutis, glaucescenti-albidus, opacus, KHO —, $CaCl_2O_2$ erythrinosus, in superficie subfarinaceus, hypothallo distincto non limitatus; cephalodia e roseo subochracea vel ochracea, majorem partem thalli occupantia, verruculoso-granulata, thallum haud superantia.

Apothecia lecanorina, sessilia, ad basin bene constricta, usque 2 mm lata, dispersa, rotunda vel rotundata; discus e concavo subplanus, roseus, leviter pruinosus; margo thallinus thallo concolor, crassus, integer, subsphinctrinus, primum bene inflexus et prominulus, corticatus, gonidia copiosa continens; excipulum decolor, dimidiatum, ex hyphis longitudinalibus, tenuibus et conglutinatis formatum; hymenium 175—185 μ altum, superne pulverulento-inspersum, KHO —, asci cylindrico-clavati, 8-spori; sporae in ascis uniseriales, ellipsoideae vel ovales, membrana tenui et laevi cinctae, 14—20—(22) μ longae et 8—11 μ latae. Conceptacula pycnoconidiorum immersa, vertice paulum impresso, nigricante; fulcra exobasidialia; pycnoconidia capillaria, curvata vel hamata, 25—27 μ longa et vix 1 μ lata.

Juan Fernandez: auf Lavatuff.

Lecanora (sect. Placopsis) **rhodocarpa** NYL. apud HUE in Nouv. Archiv. du Muséum, ser. 3., vol. III, 1891, p. 59. — *Squamaria rhodocarpa* NYL. in Annal. Scienc. Nat., Botan., ser. 4., vol. XV, 1861, p. 376. — *Placopsis rhodocarpa* NYL. in Journ. Linn. Soc. London, Botan., vol. IX, 1868, p. 251 et Lich. Nov. Zeland., 1888, p. 56; WAINIO in Hedwigia, vol. XXXVIII, 1899, p. (187). — *Placodium rhodocarpum* MÜLL. ARG. in Bullet. Herbier Boissier, vol. II, appendix I, 1894, p. 46; HELLB. in Bihang till Kgl. Svensk. Vetensk.-Akad. Handl., vol. XXI, afd. III, no. 13, 1896, p. 59.

Westpatagonien: Estero Peel, am grossen Gletcher, auf der Erde.

Lecanora (sect. Placopsis) **gelida** (LINN.) ACH.

Juan Fernandez: Masatierra, Lavasteine in der Steppe auf der Südseite von Portezuelo.

Lecanora (sect. Placopsis) **patagonica** A. ZAHLBR. nov. spec.

Thallus crustaceus, substrato arcte affixus, in margine effiguratus, orbicularis, usque 8 cm latus (thalli plures utplurimum confluentes) tartareus, 0,15—0,2 mm altus, ochraceo-glaucescens, opacus, KHO flavens, $CaCl_2O_2$ erythrinosus, in centro areolato-diffractus, areolis angulosis, fissuris demum altis separatis, superne planiusculis et laevigatis, lobis marginalibus continuis, latiusculis, 2—3 mm latis, ad apicem obtusatis vel rotundatis, radiatim fissis, subplanis, ad ambitum tenuiter umbratis, sorediis et isidiis destitutus, superne strato corticali, 25—30 μ crasso, ex hyphis tenuibus, intricatis et dense pulverulento-inspersis formato obductus; stratum gonidialae infra corticem situm, cellulis globosis, 6—8 μ latis, viridibus, parum congestis, medulla

albida, $CaCl_2O_2$ leviter erythrinosa, KHO lutescens, J –, ex hyphis leptodermaticis et intricatis formata; cephalodia primum in centro thalli sita, dein plus minus dispersa, lutoso-aurantiaca, opaca, usque 6 mm lata et ad 0,8 mm alta, sessilia, fissuris altis, radiantibus et ramosis, dein plus minus patentibus divisa, intus decoloria, passim (imprimis superne) maculatim subaurantiaca, superne et secus fissuris etiam lateraliter tenuiter infuscata, strato tenui corticali obducta, intus ex hyphis subperpendiculari-intricatis, leptodermaticis, non inspersis, tenuibus formata, gonidiis in parte superiore olivaceis, glomeratis, glomerulis plus minus separatis et elongato-oblongis, cellulis gonidiorum subglobosis, membrana tenuissima cinctis, 3,5—4 μ latis, in parte inferiore cephalodiorum decoloribus, magis dispersis.

Apothecia lecanorina, usque 2 mm lata, sessilia, ad basin bene constricta, demum plus minus approximata, rotunda vel mutua pressione subangulosa; discus cerasino-fuscus, opacus, epruinosus, e concavo subplanus; margo thallinus crassus, thallo concolor; integer, inflexus, strato corticali obductum medullam amplam et gonidia plus minus radiatim-seriata includens; excipulum ad latera hymenii distincte evolutum, decolor, ex hyphis longitudinalibus, non inspersis, tenuibus et conglutinatis formatum; hypothecium percrassum, hymenio latius, pallidum, subdecolor, solum versus hymenium lutescenti-fuscescens, molle, strato gonidiali non superpositum, ex hyphis leptodermaticis, in parte superiore fere verticalibus, in parte inferiore magis intricatis formatum; epithecium angustum, pulverulentum, umbrinum, KHO roseolum, $CaCl_2O_2$ –; hymenium decolor, non inspersum, 240—270 μ altum, J coerulum; paraphyses capillares, ad 1 μ crassae, simplices, ad apicem non latiores, facile liberae; asci cylindrico-clavati, ad apicem rotundati, hymenio subaequilongi, 8-spori; sporae in ascis uniseriales, decolores, simplices, ovales vel ovali-ellipsoideae, membrana tenui laevique cictae, 13—19 μ longae et 7,5—9 μ latae.

Conceptacula pycnoconidiorum immersa, extus vertice punctiformi, vix prominulo, thallo concolore indicata; fulcra exobasidialia, basidiis congestis, pycnoconidiis brevioribus; pycnoconidia filiformia, utrinque retusa, subrecta, curvata vel arcuata, 20—24 μ longa et vix 1 μ lata.

Westpatagonien: Estero Peel, am grossen Gletscher, auf Urgestein.

Feuerland: Canal Beagle, Darwingletscher, auf Granit.

In der Gestalt der Sporen und Pyknokonidien mit *Lecanora gelida* (Linn.) übereinstimmend, unterscheidet sie sich von dieser durch das Wachstum des helleren Lagers, durch die breiten und flachen Randlappen desselben, durch die grossen, anders gefärbten tiefrissigen Zephalodien und die Farbe der Fruchtscheibe.

Lecanora (sect. Placopsis) **perrugosa** Nyl. in Journ. Linn. Soc. London, Botan., vol. IX, 1865, p. 250, in Flora, vol. XLVIII, 1865, p. 338, Lich. Fuegiae et Patagon., 1887, p. 8; Hue in Nouv. Archiv. du Muséum, ser. 3., vol. III, 1891, p. 59. — *Placopsis perrugosa* Nyl. in Journ. Linn. Soc. London, Botan., vol. IX, 1865, p. 251, not. et Lich. Nov. Zeland., 1888, p. 57. — *Placodium perrugosum* Müll. Arg. in Nuov. Giorn. Botan. Ital., vol. XXI, 1889, p. 40.

Westpatagonien: Peel Inlet, am grossen Gletscher, auf Kieselsteinen.

Die von der Schwedischen Expedition mitgebrachten Stücke der Flechte sind vielfach mehr weniger abgeschliffen infolge ihres Standortes, wo die losen Kieseln, auf denen sie sitzen, gerollt werden. Solche stark abgeschliffene Stücke machen zunächst einen fremdartigen Eindruck, aber wenn man jede Vertiefungen auf den Kieseln, wo die Flechte nicht angegriffen wurde, näher ansieht, so findet man, dass an diesen Stellen der Thallus ein ganz normaler ist und vollständig mit demjenigen der fünf Originalstücke, welche im Herbare des Naturhistorischen Hofmuseums in Wien liegen, übereinstimmt. *Lecanora* (sect. Placopsis) *stenophylla* Hue besitzt nach der Beschreibung ebenfalls schmale Randlappen; ich kann nicht entscheiden, ob diese Flechte von der Obigen spezifisch zu trennen sei.

Ochrolechia tartarea var. **frigida** (Sw.) Körb.

Westpatagonien: Skyring, Puerto Pinto, im Hochmoore über abgestorbenen Pflanzen und Moosen.

Falkland-Inseln: Westinsel, Halfway Cove, über Moosen und auf der Heide bei Port Howard, über abgestorbenen Pflanzen.

Ochrolechia parella (Linn.) Mass.

Falkland-Inseln: Port Stanley, auf Schiefer; Westinsel, Halfway Cove, auf Sandstein, und North Arm, auf Schiefer.

Haematomma erythromma A. Zahlbr. nov. comb. — *Lecanora erythromma* Nyl.! in Flora, vol. XLV, 1862, p. 83. not. et Lichen. Insul. Guineens., 1889, p. 44.

Thallus crustaceus, uniformis, tartareus, tenuis, 0,8—1,2 mm altus, stramineo-flavus vel isabellinus, opacus, KHO luteus, $CaCl_2O_2$ bene aurantiaco-erythrinosus, inaequaliter areolato-diffractus, areolis angulosis, fissuris tenuibus limitatis, planis vel planiusculis, superne corrugato-inaequalibus, sublaevibus, soredia et isidia non gerens, in margine bene limitatus, protothallo distincto nullo; stratum corticale tenue, ex hyphis plus minus verticalibus, tenuibus, non septatis et dense pulverulentis formatum; medulla tartarea, lutescenti-albida, KHO —, $CaCl_2O_2$ aurantiaca, J —, gonidia in parte superiore thalli disposita, glomerata, glomerulis plus minus discretis, cellulis globosis, laete viridibus, 9—12 μ latis.

Apothecia lecanorina, basi late sessilia, sed ad basin nonnihil leviter constricta, 0,8—3 mm lata, approximata, e rotundo subangulosa vel demum crenato-sinuosa; discus coccineus, nudus, subcerino-nitidulus, planus vel planiusculus; margo thallinus primum crassiusculus, thallo concolor, obtusatus, discum leviter superans, integer vel demum subinteger, corticatus, gonidia copiosa et elementa substrati (particulas subcristallinas) includens; excipulum angustum, decolor, integrum, ex hyphis valde tenuibus et conglutinatis formatum, J —; epithecium angustum, coccineum, KHO solutionem violaceam effundens; hypothecium angustum, decolor, ex hyphis intricatis formatum, strato medullari thalli, gonidia includenti superpositum; hymenium decolor, non inspersum, 110—120 μ altum, J coeruleum: paraphyses densae, capillares, ad 1 μ crassae, simplices, eseptatae, ad apices non latiores; asci hymenio subaequi-

longi, clavati vel oblongo-clavati, 8-spori; sporae in ascis 2—3-seriales, decolores, oblongo-fusiformes, utrinque plus minus rotundatae, rectae, 4-septatae, septis tenuibus, membrana tenui cinctae, 18—22 μ longae et 5—6 μ latae.

Pycnoconodia non visa.

Falkland-Inseln: Ostinsel, Strandfelsen, Navy Point bei Stanley Harbour. Steht dem *Haematomma Fenzlianum* MASS. vom Kap der guten Hoffnung nahe; diese besitzt jedoch einen graulichen, dünneren, mit Chlorkalk sich nicht färbenden Thallus und viel kleinere Apothezien.

Haematomma puniceum MASS. in Atti I. R. Istit. Veneto, ser. 3., vol. V, 1869, p. 253; WAINIO, Étud. Lich. Brésil, vol. I, 1890, p. 72; A. ZAHLBR. in ENGLER—PRANTL, Natürl. Pflanzenfamil., I. Teil, Abt. 1*, 1907, p. 105, fig. 105, H—J. — *Lecanora punicea* ACH., Synops. Lich., 1814, p. 74.

Feuerland: im Walde am Westende des Lago Fagnano, auf der Rinde von *Drimys Winteri*.

Parmeliaceae.

Parmelia lugubris PERS.; BITTER in Hedwigia, vol. XL, 1901, p. 239 et p. 268, tab. X, fig. 5—6.

Westpatagonien: Canal Smyth, Isla Piazzi, auf Baumzweigen, fruchtend.

Feuerland: San Sebastian, auf Baumrinden, fruchtend (DUSÉN no. 78).

Falkland-Inseln: Westinsel, Mt. Adam und Halfway Cove, steril.

Parmelia antarctica BITTER! in Hedwigia, vol. XL, 1901, p. 248, tab. X, fig. 3, DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Exped., vol. IV, Liefrg. 11, 1912, p. 52.

Feuerland: Ushaia, auf der Rinde von Nothofagus, fruchtend (DUSÉN no. 259).

Parmelia solidepedicellata BITTER! in Hedwigia, vol. LX, 1901, p. 250, DARB. in Wissensch. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 52.

Patagonien: Punta Arenas (DUSÉN no. 10).

Feuerland: am Rio Grande (DUSÉN no. 112). Auf Baumrinden, fruchtend.

Parmelia cincinnata ACH. — DARB., Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 52.

Westpatagonien: Estero Peel, Puerto Témpanos, auf Baumzweigen, fruchtend.

Ich glaube nicht, dass *Parmelia foraminulosa* KRMPHBR. von der obigen spezifisch verschiedenen sei, doch reicht das mir vorliegende Material der Letzteren zur Entscheidung der Frage nicht aus.

var. **albida** A. ZAHLBR. nov. var.

Thallus osseo-albidus, nitidus. Sporas in speciminibus visis 18—22 μ longas et 9—12 μ latas vidi, ergo minores, ut in typo, sed haec sporae non omnio evolutae videntur.

Feuerland: im *Nothofagus*-Walde an der Mündung des Rio Azopardo und am Westende des Lago Fagnano, auf Baumzweigen, fruchtend.

Parmelia (sect. Menegazzia) **dispora** NYL.! in Journ. Linn. Soc. London, vol. XV, 1876, p. 228 et Lichen. Fuegiae et Patagon., 1887, p. 21; DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 52.

Thallus superne stramino-glaucescens vel demum in centro chalybaeus, opacus, KHO flavens, $CaCl_2O_2$ —, sat laxe subdichotome divisus, ramis fistulosis, in sectione, transverali ellipticis, 2—4 mm latis, ad apices rotundatis, non vel vix continuis, plus minus flexuosis et intestiniformibus, laevibus, subrugoso-foveolatis, sorediis et isidiis destitutis, foraminibus rotundis, usque 1 mm latis pertusis, subtus (et etiam ad latera ramorum vel anguste etiam in parte superiore thalli) niger, nitidulus, nudus et laevis, foraminibus increbris rotundatis pertusus et rugosus; circumcirca corticatus, cortice superiore chondroideo, lutescente, usque 40 μ crasso, ex hyphis intricatis, pachydermaticis formato, maculis distinctis non praedito, cortice inferiore fusconigricante, 10—14 μ crasso; stratum gonidiale angustum et continuum, cellulis laete viridibus, globosis, 7,5—9 μ latis; medulla alba, KHO flavens, KHO + $CaCl_2O_2$ aurantiaca, $CaCl_2O_2$ —, angusta, ex hyphis plus minus horizontalibus, leptodermaticis, 4—9 μ crassis, parce ramosis, minus densis formata.

Apothecia cupularia, leviter pedicellata, pedicello utplurium nigricante, usque 8 mm lata; discus fuscus, epruinosus, concavus; receptaculum superne thallo concolor, rugosum, corticatum, cortice 38—80 μ crasso, in parte inferiore receptaculi niger, caeterum pallidiore vel fere decolore, chondroideo, medullam crassam et solidam, gonidia infra corticem et infra hymenium disposita continente, excipulum sub hymenio bene evolutum, integrum, cum cortice receptaculi superne confluens, decolor, ex hyphis intricatis formatum, maculis rotundis et minutis praeditum; hypothecium angustum, decolor, J —; hymenium 160—180 μ altum, superne, fuscescens, inaequalis et non inspersum, caeterum decolor, non inspersum, J coeruleum (imprimis asci); paraphyses filiformes, strictiusculae, chondroideo-conglutinatae, parum distinctae, increbre ramosae; asci ovales, superne membrana incrassata cincti, 2-spori; sporae decolores, simplices, ovales, membrana crassiuscula (ad 3,5 μ lata) cinctae, lumine lutescente, J fusco, 42—54—(62) μ longae et 26—33—(44) μ latae.

Conceptacula pycnoconidiorum versus apicem ramorum sita, crebra, immersa, vertice nigro, punctiformi, globosa; perifulcrium pallidum; fulcra parmelioidea, endobasidialia; pycnoconidia recta, aciculari-bacillaria, ad medium non constricta, 5—6 μ longa et 0,5 μ lata.

Feuerland: Isla Desolación, Puerto Augosto, auf Baumzweigen, fruchtend. (DUSÉN no. 187.)

var. **Alboffi** A. ZAHLBR. nov. var.

Thallo soralibus increbris, albis, pulverulentis, usque 1,5 mm latis, rotundis vel plus minus oblongatis, versus centrum thalli dispositis, sessilibus, dispersis vel approximatis praedito a typo differt. Apothecia hucusque ignota.

Feuerland: im Walde an der Mündung des Rio Azopardo und am Westende des Lago Fagnano, auf Baumzweigen; ferner im Walde am Rio Olivia, hier von ALBOFF gesammelt.

Parmelia (sect. Menegazzia) **opuntioides** MÜLL. ARG. in Mission Scientif. Cap Horn, vol. V, 1889, p. 158; WAINIO in Mémoir. Herbier Boissier, no. 5, 1960, p. 7; DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 52.

Thallus superne glaucescenti-stramineus vel subvirenti-stramineus, nitidulus, KHO vix lutescens, $CaCl_2O_2$ —, iteratim articulato-ramosus, articulis angustis, rotundatis, oblongis vel rarius modice irregularibus, 1—5 μ longis, convexis vel subvesiculosis, fistulosis, sorediis et isidiis destitutus, laevigatus et demum leviter lacunoso-inaequalis, foramine utplurimum unico in articulo, rarius foraminibus 2—3, rotundis, 0,5—0,8 mm latis, annulo nigro, nitido et prominulo cinctis: articuli ultimi ad marginem gemminascentes, inferne et ad latera niger, nitidus, rhizinis omnino destitutus, intestiniformi-plicatus, non perforatus; utrinque corticatus, cortice superiore chondroideo, lutescente ex hyphis pachydermaticis, arcte conglutinatis, plus minus perpendicularibus et parce ramosis, lumine valde angustis preditis formato, 28—36 μ crasso; cortice inferiore fusco-nigricante, 24—60 μ crasso, strato valde tenui decolore supertecto; medulla alba, KHO vix lutescens, $CaCl_2O_2$ —, stuppea, ex hyphis laxis, ramosis, usque 5,5 μ crassis, sat pachydermaticis, versus corticem decoloribus, versus cavitatem thalli umbrino-fuscescentibus, parum inspersis formata; stratum gonidiale supra corticem superiorem dispositum, gonidiis pleurococcoideis, glomerulatis, glomerulis plus minus dispersis et stratum continuum non formantibus, cellulis 7—9 μ latis.

Apothecia parmelioidea, brevissime pedicellata, superficialia, 1—3 in articulo, parva, usque 2,5 mm lata, dispersa vel congesta; receptaculum thallo concolor, sphinctrino-corrugatum, laevigatum, corticatum, cortice lutescente, chondroideo, 33—38 μ crasso, ex hyphis subverticalibus, conglutinatis, parum distinctis, maculas minutas, rotundatas vel lineares offerentibus formato, versus hymenium inflexo et ibidem obscurato, medullam albam, solidam, sed laxiusculam, ex hyphis infra hymenium usque 9 μ latis, caeterum ex hyphis 3,5—4 μ crassis, leviter inspersis formata, gonidiorum glomerulos paucos et infra hymenium et infra corticem dispositas includens; discus fuscus, opacus, epruinosus, e concavo subplanus, linea valde tenui nigra in ambitu limitatus; excipulum infra hymenium solum evolutum, angustum, decolor, ex hyphis tangentialibus et tenuibus formatum, hypothecium valde angustum, vix distinguendum; hymenium 170—210 μ altum, superne fuscescens et strato tenui decolore supertectum, non inspersum, gelatinoso-chondroideum, J coeruleum; paraphyses filiformes, ramosae, gelatinoso-conglutinatae, ad apicem non latiores, eseptatae, lumina perangusta offerentes; asci ovales, pachydermatici, hymenio subaequilongi, bispori; sporae decolores, simplices, late ovales, late ellipsoideae vel fere subglobosae, membrana crassa, 8—9 μ lata cinctae, 62—70 μ longae et 42—52 μ latae.

Conceptacula pycnoconidiorum gregaria, thalli lobos juveniles insidentia, minuta, ad 0,1 mm lata, vertice punctiformi, nigricante, nitido, vix prominula, globosa; perifulcrium superne (sub lente visum) obscure fuscum, infra fere decolor; fulcra parmeli-

oidea; pycnoconidia brevia, recta, anguste bacillaria, utrinque plus minus retusa, 5—7 μ longa et ad 0,5 μ lata.

Feuerland: Isla Desolación; Puerto Angosto, auf Baumrinden (DUSÉN no. 188).

Von allen Arten der Section *Menegazzia* durch die engeschnürten Lagerabschnitte erheblich abweichend; aber auch die kleinen Apothezien mit ihrem zerknitterten Gehäuse sind für die Art recht charakteristisch. MÜLLER ARG. beschreibt die Thallusfarbe als »subfuscescenti-pallidus», was nicht zutrifft; das ihm vorliegende Material hat offenbar während des Transportes gelitten.

Parmelia kamtschadalis var. **cirrhata** (FR.) A. ZAHLBR. in Annal. Naturhist. Hofmuseum Wien, vol. XIX, 1904, p. 417 (ubi synon.).

Patagonien: Territorium Chubut, an Felsen am Colonia Corcovado, bei 600 m ü. M., steril. — Bisher für Patagonien nicht angegeben.

Parmelia reducens NYL.! in Acta Soc. Scient. Fenn., vol. VII, 1863, p. 438 et in Annal. Scienc. Nat., Bot., ser. 4., vol. XIX, 1863, p. 307; KRMPHBR. in Reise Oesterr. Fregatt. Novara, Botan. Theil, vol. I, 1870, p. 115, tab. XIII, fig. 2; HUE in Nouv. Archiv. du Muséum, ser. 3., vol. II, 1890, p. 288.

Westpatagonien: Estero Peel, Puerto Tempanos, auf Baumrinden; Canal Messier, Puerto Rio Frio, auf den Zweigen von *Philesia buxifolia*. — Für Patagonien ebenfalls neu.

Parmelia lanata (LINN.) WALLR. — DARB., Wissensch. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 58.

S. Westpatagonien: Archip. Reina Adelaida, Isla Atalaya, zwischen Moosen, steril.

Parmelia conspersa (EHRHT.) ACH. — DARB., Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 52.

Falkland-Inseln: Westinsel, Halfway Cove, auf Felsen, steril.

var. **rugulosa** MÜLL. ARG.! in Mission Scientif. Cap Horn, vol. V, 1889, p. 158.

Juan Fernandez: Masatierra, Bahia del Padre, auf Felsen, steril.

Parmelia subconspersa NYL.

Andines Patagonien: Felsen am Lagerplatz 15.IX.08 nö. von Lago General Paz bei 950 m ü. M., steril.

Parmelia saxatilis (LINN.) ACH. (sens. strict.). — *Parmelia cruenta* DARB.!

Falkland-Inseln: Westinsel, Halfway Cove, steril.

f. **furfuracea** SCHAER.

Juan Fernandez: Mazafuera, bei 1200 m ü. M., auf Felsen, steril.

Feuerland: S. Sebastian (DUSÉN no. 83), am Rio Grande (DUSÉN no. 120) et bei Ushuaia (DUSÉN no. 262), auf Felsen.

Parmelia omphalodes (LINN.) NYL.

Andines Patagonien: im Mischwalde am Westende des Lago San Martin, auf Felsen, steril.

Parmelia (Hypotrachyna) **ushuaiensis** A. ZAHLBR. nov. spec.

Thallus spadiceo-fuscus vel olivaceo-fuscus, ad ambitum nitidus, caeterum opacus, $CaCl_2O_2$ —, NO_5 paulum in rubentem vergens, substrato arcte adpressus, late expansus, usque 12 cm latus, tenuis, 0,12—0,16 mm altus, membranaceus, radiatim crescens, lobis subflexuosis, pauciramosis, 4—9 mm latis, sinuato-inaequalibus, planis, plus minus discretis vel subconfluentibus, ad apicem rotundatis, incisis et crenulatis, versus marginem laevis et nudus, versus centrum thalli scabridiusculus, soralibus glomeruliformibus, corticatis, plus minus ovalibus, minutis, solum sub lente bene visibilibus obsitus, longitudinaliter rugulosus; subtus nigrescens, opacus, rhizinis nigris, sat crebris munitus; utrinque corticatus, cortice superiore fuscescente, chondroideo, angusto, 10—14 μ crasso, e serie unica cellularum minutarum, subcubicarum et pachydermaticarum composita, strato amorpho, tenui supertecto; cortice inferiore obscure fusco vel nigricante, cortici superiori similiter formato et totidem lato; medulla alba, KHO —, $CaCl_2O_2$ —, ex hyphis laxiusculis, ad 5 μ crassis, sat pachydermaticis formata; gonidia pleurococcoidea, infra corticem in glomerulis parvis et dispersis disposita, cellulis laete viridibus, 7—8 μ latis; rhizinae fuscae, simplices, validiusculae, 70—80 μ crassae, ex hyphis longitudinalibus et conglutinatis formatae.

Apothecia et lateralia et superficialia, alte sessilia, ad basin bene constricta, subcupuliformia, thallo concoloria vel magis rufofusca, leviter concava, parva, usque 1,5 mm lata; margo thallinus valde tenuis, integer, prominulus; discus nitidus, imperforatus; receptaculum crasse corticatum, cortice chondroideo, lutescente, ex hyphis intricatis, pachydermaticis, ramosis et dense conglutinatis formato, extus rhizinis non vestitum; excipulum crassum, chondroideum, usque ad verticem hymenii lateraliter assurgens, integrum, ex hyphis pachydermaticis, conglutinatis, maculas minutas et rotundatas offerentes formatum, crassitudine hymenium aequans; hypothecium decolor, angustum, ex hyphis intricatis formatum; hymenium superne fuscescens, caeterum decolor, 55—65 μ altum, non inspersum, strato amorpho et decolore supertectum, J coeruleum (excepta parte superiore infuscata et strato amorpho); paraphyses strictae, utplurimum simplices, eseptatae, chondroideo-conglutinatae, luminibus valde angustis, continuis vel subcontinuis, ad apicem non clavatae; asci hymenio parum breviores, ellipsoidei, membrana bene incrassata cincti, 8-spori; sporae in ascis subuniseriales, simplices, subglobosae vel globosae, membrana tenui cinctae, 7,5—8 μ longa et fere totidem lata.

Pycnoconidia non visa.

Feuerland: bei Ushuaia, auf den Stämmen von *Nothofagus antarctica* (DUSÉN no. 239).

Eine sehr auffallende Art aus der *Olivacea*-Gruppe, gekennzeichnet durch das strahlig wachsende, der Unterlage sich enge anschmiegende, breitlappige Lager, die kleinen Apothezien und die kugeligen Sporen.

Parmelia (sect. Amphygymnia) **piloselloides** A. ZAHLBR. nov. spec.

Thallus ut in *Parmelia pilosella* HUE, sed paulum major, usque 16 cm latus, lobis marginalibus rotundatis, usque 2 cm latis.

Lobi thalli, imprimis partis centralis, in margine et etiam in superficie isidioso-sorediati, soralibus rhizinis paucis, brevibus, nigris et erectis ornatis et circa soredia rhizinis sat densis, arcte adpressis nigro-maculatus. — Apothecia et pycnoconidia ignota. — Ulterius tractanda.

Juan Fernandez: Masatierra, Cumberland Bay, auf Felsen.

Parmelia perlata f. **ciliata** DC.

Chiloé: Ancud, auf Strandfelsen, steril.

Parmelia proboscidea (TAYL.) WAINIO, Étud. Lich. Brésil, vol. I, 1890, p. 29.

Chiloé: Quellon, steril.

Parmelia (sect. Omphalodium) **pisacomensis** (MEY et FW.), NYL. — DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 52.

Andines Patagonien: Terr. Chubut, Cerro Lelej, und Pampa chica, bei 950 m ü. M., auf Felsen, fruchtend.

Cetraria (sect. Platysma) **antarctica** A. ZAHLBR. nov. spec.

Thallus foliaceus, haud amplus, 5—6 cm latus, rigidiusculus, tenuis, 0,3—0,35 mm crassus, stramineus vel ochraceo-stramineus, nitidulus, KHO fulvescens, $CaCl_2O_2$ —, iteratim et irregulariter divisus, laciniis usque 10 mm latis, ad apices rotundatis, ad marginem inciso-sinuatis vel inciso-crenatis, subimbricatis, plus minus convexis, marginibus assurgentibus, lacinulatis, superne laevigatus vel leviter rugulosus, isidiis et sorediis destitutus, subtus marginem versus late osseus vel umbrino-osseus, in centro obscure fuscus, subnitidus, passim albomaculatus; utrinque corticatus, cortice superiore continuo, 26—35 μ crasso, superne anguste sordidescente et pulverulento insperso, caeterum decolore, paraplectenchymatico, cellulis 7—11 μ latis, rotundato-subangulosis, in seriebus superpositis utplurimum 3, rarius 4—5; cortice inferiore pro parte nigricante, 14—16 μ crasso, paraplectenchymatico, cellulis minutis, 2—3-serialibus; stratum gonidiale infra corticem superiorem situm, angustum, continuum, cellulis globosis, dilute viridibus, 5—12 μ latis; medulla alba, KHO e flavo subaurantiaca, $CaCl_2O_2$—, ex hyphis 3,5—4 μ crassis, membrana mediocri cinctis, inspersis et intricatis formata.

Apothecia et pycnoconidia ignota.

Feuerland: im *Nothofagus*-Walde an der Mündung des Rio Azopardo, auf Baumrinden.

Die Flechte scheint im Feuerlande verbreitet zu sein, ich sah Rudimente zwischen anderen Flechten der Aufsammlungen SKOTTSBERG's und SPEGAZZINI's. In guten Exemplaren erhielt ich sie schon im Jahre 1896 von N. ALBOFF, der sie in den Wäldern bei Ushuaia sammelte. Anatomisch und auch habituell nähert sie sich

einigermassen der *Cetraria complicata* Laur. und *Cetraria Oakesiana* Nyl., von beiden unterscheidet sie sich hauptsächlich durch Kalilaugereaktion der Markschicht, von der Esteren ausserdem durch die dunkle Lagerunterseite, von der Letzteren durch das Fehlen der Sorale.

Cetraria gracilenta (Krmphbr.) Wainio. — Darb. in Wiss. Egebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1911, p. 32 et p. 52.

Andines Patagonien: Terr. Chubut, Pampa chica auf einem Gipfel, steril.

Usneaceae.

Ramalina laevigata Fries.

Falkland-Inseln: and Meeresstrandfelsen, Port Stanley und Darwin Harbour.

Usnea dasypoga f. **dasypogoides** (Nyl.) Hue in Nouv. Archiv. du Muséum, ser. 4., vol. I, 1889, p. 47 (ubi descr. et syn.).

Juan Fernandez: Masafuera, auf Baumzweigen, steril.

Usnea articulata var. **asperula** Müll. Arg.

Feuerland: im *Nothofagus*-Walde an der Mündung der Rio Azopardo, auf Baumzweigen, steril in einer Form mit spärlich sorediösen Enden der letzten Thallusabschnitte. Die Form würde vielleicht einen einigen Namen verdienen, aber da mir nur sterile Stücke vorliegen, möchte ich von einer Benennung vorderhand absehen. Die gleiche Flechte, ebenfalls steril, erhielt ich von Alboff, der sie in der Umgebung von Ushuaia sammelte.

Usnea angulata Ach. — Hue in Nouv. Archiv. du Muséum, ser. 4., vol. I, 1889, p. 44 (ubi descr. et synon.).

Juan Fernandez: Masafuera, auf Baumzweigen. fruchtend.

Usnea cavernosa Tuck. — Darb. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 33 et 53.

Feuerland: Lago Fagnano, Isla Lagrelius auf Baumzweigen. steril.

Usnea sulphurea (Koen.) Th. Fr.

var. **normalis** Wainio in Résult. Voyage S. Y. Belgica, Botan., 1903, p. 11.

f. **activa** A. Zahlbr. nov. f.

Stratum myelohyphicum KHO e luteo sanguineo-aurantiaca.

Falkland-Inseln: Port Stanley, Sapper Hill, auf Felsen, fruchtend.

var. **vulgaris** Wainio l. s. c.

Andines Patagonien: Terr. Chubut; Terr. St. Cruz, Belgranopass und Fosilespass nördlich vom Lago San Martín, steril.

Feuerland: am Westende des Lago Fagnano, bei 1000 m ü. M., steril.

var. **spadicea** A. ZAHLBR. nov. var.

Rami primarii verruculosi, non scrobiculati; stratum myelohyphicum KHO e flavo sanguineum, rami ultimi partim annulatim spadicei, partim annulatim nigri; soredia desunt.

Falkland-Inseln: Westinsel, Mt. Adam, auf Felsen, fruchtend.

Usnea trachycarpa (STRTN.) MÜLL. ARG.

Andines Patagonien: Terr. Chubut, Cerro Lelej, 1200—1300 m ü. M.; auf einem Gipfel des Pampa chica; Terr. Sta Cruz, Fosilespass nördlich vom Lago San Martin, fruchtend und steril.

Thamnolia undulata NYL., Synops. Lich., vol. I, 1860, p. 265. — DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 55.

Falkland-Inseln: Ostinsel, Stanley Harbour, Klondyke, steril; Westinsel, Mt. Adam, steril.

Siphula patagonica WAINIO in Résult. Voyage S. Y. Belgica. Botan., 1903, p. 39, tab. II, fig. 15—17.

Westpatagonien: Islas Guaitecas, auf feuchten Abhängen zwischen Moosen.

Siphula ramalinoides NYL. — DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 55.

S. Westpatagonien: Archip. Reina Adelaida; Isla Atalaya, auf der Erde.

Siphula obtusula A. ZAHLBR. nov. spec.

Thallus subcaespitose crescens, lacteus, solum basin versus plus minus sordidescens, opacus, KHO leviter alutaceo-lutescens, $CaCl_2O_2$ —, podetia stricta vel subflexuosa, compressa, usque 7 cm alta et 0,5—4 mm lata, simplicia vel furcata et dein ramis subaequilongis, ad apicem rotundatis vel obtusiusculis, ad apicem subpulverulenta et rimulosa caeterum laevia et nuda, longitudinaliter leviter rugulosa, valde fragilia, in dimidio inferiore passim papillis verruculiformibus, minutis, ad verticem impressis, subcarneis, dispersis munita, soredia et isidia non gerentia; circumcirca corticatus, cortice 12—15 μ crasso, subdecolore, ex hyphis perpendicularibus, intricatis, crebre septatis, pachydermatice formato, luminibus cellularum usque 9 μ longis, rotundatis; medulla subtartarea, alba, KHO et $CaCl_2O_2$ flavens, J —, solida, ex hyphis longitudinalibus, conglutinatis, 3,5—4 μ crassis, membrana mediocri cinctis, non inspersis, aërem inter fasciculos includentibus formata; gonidia pleurococcoidea, dilute vel laete viridia, congesta, stratum perangustum, non continuum formantia cellulis globosis, 4,5—5,5 μ latis.

Feuerland: Isla Desolación: Puerto Angosto, zwischen Moosen und abgefallenem Laub (DUSÉN no. 206).

Von den antarktischen Arten der in der Gattung *Siphula* untergebrachten Flechten ist *Siphula obtusula* die grösste. Sie weicht von den Übrigen durch die

unverzweigten oder nur gegabelten, bandförmigen Podezien, deren Spitzen abgestumpft sind, ab. Die kleinen Wärzchen an den Podezien zeigen den anatomischen Bau des Lagers und führen Gonidien.

Siphula aquatica A. ZAHLBR. nov. spec.

Thallus subdecumbens, fruticulosus, usque 7 cm altus, argillaceo-cinerascens, subopacus, KHO dilute fulvescens, $CaCl_2O_2$ —, siccus coriaceus, iteratim dichotome vel sympodialiter ramosus, ramis applanatis, usque 2 mm latis, versus apicem paulum latioribus vel rotundatis, planis vel planiusculis, plus minus ruguloso-inaequalibus, circumcirca corticatus, cortice subdecolore, leviter insperso, 20—35 μ crasso, ex hyphis pachydermaticis, perpendicularibus, ramosis et intricatis formato, maculis parvis et rotundis praedito; gonidia infra corticem glomerata, increbra, cellulis globosis, dilute vel laete viridibus, membrana tenui cinctis, 5—3 μ latis; medulla solida, albida, KHO —, $CaCl_2O_2$ —, J violaceo-coerulescens, ex hyphis longitudinalibus et increbre ramosis, 3,5—5,5 crassis membrana mediocri cinctis formata.

S. Westpatagonien: Adelaida Archip. Reina; Isla Pacheco, Puerto San Ramon, meist lose liegend im seichten Wasser eines Tümpels.

Ich habe auffallende Flechte beschrieben und benannt, bin mir indes bewusst, dass mit der Beschreibung nicht mehr geschehen konnte, als auf den sonderbaren Organismus aufmerksam gemacht zu haben. Der anatomische Bau des Lagers gestattet die Unterbringung bei der Gattung *Siphula*, womit allerdings nicht viel gesagt ist. Auch der Standort ist interessant.

Endocaena informis CROMB. — DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 55.

Falkland-Inseln: Westinsel, Hornby Mountains, zwischen Moosen.

Caloplacaceae.

Blastenia ferdinandeziana A. ZAHLBR. nov. spec.

Thallus crustaceus, uniformis, subtartareus, tenuis, 0,1—0,2 mm crassus, effusus, fulvo-aurantiacus, opacus, KHO e purpureo violaceo-obscuratus, areolato-rimosus, areolis versus ambitum thalli plus minus discretis, in centro thalli contiguis, omnibus parvis, 0,25—0,3 mm latis, planis vel convexiusculis, soredia et isidia non gerens, hypothallus valde tenuis, cinero-nigrescens; thallus superne strato corticali, tenui et insperso supertectus; gonidia protococcoidea, cellulis 7—11 latis.

Apothecia biatorina, sessilia, ad basin leviter constricta, dispersa rotunda vel approximata et subangulosa, minuta, usque 1 mm lata, ferruginea, opaca; discus leviter pruinosus, planus; margo proprius integer, tenuis, acutiusculus, prominulus, subflexuosus; excipulum integrum, ad ambitum fuscum et pulverulentum, intus decolor, ex hyphis radiantibus et parce intricatis formatum; hypothecium dilute sordidescens, molle, ex hyphis tenuibus et dense intricatis formatum; epithecium cras-

siusculum, ochraceo-fuscum, pulverulentum, KHO solutionem kermesinam effundens; hymenium non inspersum, 85—95 μ altum, J coeruleum; paraphyses ad 1,5 μ crassae, simplices vel pauciramosae, eseptatae, ad apicem submoniliformi-capitatae; asci ellipsoideo-clavati, hymenio aequilongi, ad apicem rotundati et membrana bene incrassata cincti, 8-spori; sporae in ascis biseriales, decolores, ellipsoideae vel subrhomboideae, placodiomorphae, septo circa 1/3 longitudinis sporae aequante, tubulo tenui, sed distincto predito, 10—13 μ longae et 7,5—8,5 μ latae.

Pycnoconidia non visa.

Juan Fernandez: Masatierra, Bahía del Padre, auf Lava.

Blastenia austroshetlandica A. Zahlbr. nov. spec.

Thallus epilithicus, crustaceus, uniformis, valde tenuis, 0,15—0,1 mm crassus, sordide cinerascens, opacus, KHO —, $CaCl_2O_2$ —, diffracto-areolatus, areolis minutis, planiusculis, fissuris pertenuibus separatis, continuis, sorediis et isidiis destitutus, hypothallo distincto non limitatus; stratum corticale parum distinctum; gonidia cystococcoidea, aggregata, cellulis globosis, 8—10 μ latis.

Apothecia lecideina, sessilia, nigra, opaca, dispersa vel approximata, rotunda, parva, 0,4—0,8 mm lata, e plano levissime convexiuscula; discus epruinosus, niger; margo proprius tenuis, acutiusculus, prominulus, demum leviter depressus; epithecium pulverulentum, coerulescenti-nigricans, KHO et NO_3 aeruginaceus; hypothecium crassiusculum, fusconigrum; hymenium non inspersum, 140—166 μ altum, J violaceo-coeruleum; paraphyses modice conglutinatae, simplices, eseptatae, 1,5—1,7 μ crassae, versus apicem pauciramosae et fuscatae, ad ipsam apicem clavato-capitatae, obscuratae et magis conglutinatae; asci subcylindrico- vel oblongo-clavati, ad apicem rotundati et ibidem membrana modice incrassata et subcalyptriformi cincti, 8-spori; sporae in ascis plus minus biseriales, decolores, placodiomorphae, ellipsoideae vel subovales, loculis ad basin retusis, isthmo valde tenui junctis, septo circa 1/3 longitudinis sporae aequante, 11—14 μ longae et 7—8 μ latae.

Pycnoconidia non visa.

Süd-Shetland-Inseln: Nelson Insel, auf Urgestein (Skottsberg 1902).

Es liegt mir nur ein einziges Exemplar dieser Flechte u. zw. auf jenem Stücke, welches das Original der *Buellia Nelsoni* Darb. trägt, vor. Es kann daher die Beschreibung nicht den Anspruch erheben, vollständig zu sein, doch wollte ich über diese Flechte mit Stillschweigen umsoweniger hinweggehen, als eine schwarzfrüchtige, lezideine *Blastenia* aus dem antarktischen Amerika bisher nicht bekannt ist.

Caloplaca (sect. Gasparinnia) **subdimorpha** A. Zahlbr. nov. spec.

Thallus epilithicus, placodiomorphus, tartareus, sat late effusus, vitellino-aurantiacus vel aurantiacus, epruinosus, KHO kermesinus, lobi marginales thalli bene evoluti, radiantes, continui, adpressi, convexi, ad apicem dilalati, utplurimum inciso-crenati, pars centrali thalli granuloso-verruculosa, verrucis plus minus semiglobosis, congestis, 0,2—0,4 mm latis, sorediis et isidiis destitutus, superne strato corticali,

decolore, ad ambitum tamen aurantiaco-insperso, ex hyphis intricatis formato obductus; medulla alba, J —, gonidia glomerata.

Apothecia sessilia, lecanorina, usque 1,5 mm lata, congesta et plus minus angulosa, e concaviusculo demum leviter convexa; discus aurantiaco-fulvus, epruinosus, KHO kermesinus; margo thallinus integer, obtusiusculus, disco paulum dilutior, demum angustatus, sed persistens, strato corticali obductus, medullam sat amplam et gonidia includens; excipulum integrum, decolor, ad latera hymenii flabellatum, infra hymenium sat tenue, ex hyphis intricatis formatum et maculas parvas rotundatas offerens, strato medullari gonidia continenti superpositum; hypothecium sublentiforme, minus diaphanum ut excipulum, ex hyphis subinspersis, tenuibus et intricatis formatum; hymenium 80—100 μ altum, superne pulverulento-inspersum, aurantiaco-fulvum, caeterum decolor, non inspersum, J violaceo-coerulum; asci hymenii subaequilongi, oblongo-clavati, ad apicem obtusato-rotundati et membrana conspicue incrassata cincti, 8-spori; sporae in ascis subbiseriales, decolores, ovales, ellipsoideae vel oblongi-ellipsoideae, polaribiloculares, loculis circa $^1/_3$ longitudinis sporae aequantibus, isthmo tenui junctis, 11—16 μ longae et 7,5—8,5 μ latae.

Pycnoconidia non visa.

Andines Patagonien: Terr. Chubut, Cerro Lelej, auf Sandstein.

var. **leprascens** A. ZAHLBR. nov. var.

Minus distincte placodiomorphus, lobis ad 1 mm longis et fere totidem latis, planiusculis, irregularibus et haud radiantibus; pars centralis thalli passim granuloso-verruculosa, passim (et pro majore parte) maculatim subleprosa, e verruculis minutissimis, subcorallinis, et ibidem areolato-fissa, fissuris hiantibus. Apothecia minora, usque 1 mm lata et dilutioria.

Südgeorgien: Cumberland Bay, häufig auf Strandfelsen.[1]

Die neue Art gehört nach der Gestalt ihrer Sporen und zum Teil auch was den Habitus betrifft, in den Formenkreis der *Caloplaca murorum* (HOFFM.) TH. FR., unterscheidet sich von dieser aber wesentlich durch der körnig-warzigen Bau des Lagerzentrums, ferner durch grössere Apothezien und grössere Sporen. MÜLLER ARG. beschreibt von der Insel Südgeorgien zwei neue *Caloplaca*-Arten aus der Sektion *Gasparinnia* mit warzigem bis korallinischem Lager. Die eine, *Caloplaca millegrana* A. ZAHLBR. (= **Amphiloma millegranum* MÜLL. ARG. in Flora, vol. LXIX, 1886, p. 124) weicht durch gewimperte Randlappen und fast kugelige Sporen, die andere, *Caloplaca dimorpha* A. ZAHLBR. (= **Amphiloma dimorphum* MÜLL. ARG., l. s. c., p. 125) durch ebenfalls bewimperte Randlappen des korallinischen Thallus und fast spindelförmige Sporen ab. Indes kenne ich beide Arten nur aus der Beschreibung.

Caloplaca (sect. Gasparinnia) **lucens** A. ZAHLBR. in Deutsch. Südpol.-Expedit. 1901—1903, vol. VIII, 1906, p. 29. — *Placodium lucens* NYL.; DARB. in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 28 et p. 50.

[1] Die Fruchtscheiben der Stücke sind von einem parasitischen Pilz, *Tichothecium gemmiferum* var. *brachysporum* ZOPF (det. von KEISSLER) besetzt.

Thallus superne et lateraliter corticatus, cortice subchondroideo, 35—70 μ crasso (inferne sensim angustiore), ad ambitum tenuiter pulverulento-insperso, caeterum decolore, ex hyphis perpendicularibus, pachydermaticis, conglutinatis et septatis formato, luminibus cellularum rotundatis vel oblongis; medulla ex hyphis sat leptodermaticis et septatis et intricatis formata, luminibus cellularum angulosis vel subcylindricis; cellulae gonidiorum globosae, laete virides, membrana tenui cinctae, 8—10 μ latae, stratum continuum vix formantes. Exipulum decolor, integrum, infra hymenium subobconice productum, minute paraplectenchymaticum, superne usque ad verticem hymenii assurgens, extus a margine thallino corticato et medullam increbram, sed gonidia crebra includenti obductus; hypothecium sublentiforme, molle, dilute rosaceo-lutescens, ex hyphis intricatis et tenuibus formatum; hymenium decolor, eguttulatum, 100—120 μ altum, superne ochraceo-fuscescens, pulverulentum, KHO purpureum.

Andines Patagonien: Terr. Chubut, Pampa Chica, auf Felsen.

Falkland-Inseln: Ostinsel, Port Stanley und Darwin Harbour, auf Quarzit.

Südgeorgien: Cumberland Bay, im Maihafen auf Schiefer ziemlich häufig. Die Apothezien sind von *Tichothecium gemmiferum* var. *Sendtneri* Arn. (det. von Keissler) besetzt.

var. **striolata** A. Zahlbr. nov. var.

A typo differt thallo vix radiante, lobis marginalibus non semper evolutis, brevibus, usque 2 mm longis, dispersis, non continuis, convexulis vel planiusculis, areolis in centro thallo majoribus et verruculosis, lobis marginalibus et verrucis centralibus in superficie leviter longitudinaliter striolatis.

Falkland-Inseln: Westinsel, Port Philomel, Halfway Cove, an Strandfelsen.

Theloschistaceae.

Xanthoria lychnea (Ach.) Th. Fr. — Darb. in Wiss. Ergebn, Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 27.

Falkland-Inseln: Westinsel, Halfway Cove, auf entrindeten Zweigen fruchtend.

Xanthoria parietina (Linn.) Th. Fr.

var. **australis** A. Zahlbr. nov. var.

Thallus late effusus, aurantiacus vel rutilus, vitellino-variegatus, iteratim lobatus, laciniis ad apicem subintegris vel digitatis, subcontinuis, laeviusculis, ad 1,5 mm latis, in margine sinuato-incisis, concaviusculis vel planiusculis, passim leviter impressis, centralibus imbricatis, convexis, non impressis, hinc inde minute granulosis. Apothecia lecanorina, basi lata sessilia et ad basin leviter constricta, aurantiaca vel vitellina, plana vel planiuscula, demum leviter convexa, margine thallino integro et prominulo cincta, sporae ellipsoideae, ovales vel ellipsoideo-oblongae, rectae vel rarius leviter curvulae, 9—13 μ longae et 5,3—7,5 μ latae.

Juan Fernandez: Bahia del Padre, auf Lava am Ufer.

Chiloé: Ancud, auf Strandfelsen.

Westpatagonien: Canal Sarmiento, Puerto Bueno, auf Strandfelsen.

Durch ihre kleineren Sporen nähert sich die Varietät der *Xanthoria parietina* var. *ectanioides* (Nyl.), aber die Apothezien sind klein, sitzen mit breiter Basis auf und wölben sich im Alter. Vielleicht eine eigene Art.

Theloschistes flavicans f. **glabra** Wainio, Étud. Lich. Brésil, vol. I, 1890, p. 114.

Chiloé: an Strandfelsen, bei Ancud, steril.

Buelliaceae.

Buellia punctiformis var. **aequata** (Ach.) Arn.

Falkland-Inseln: Westinsel, Halfway Cove, auf Sandstein; Ostinsel, Darwin Harbour, auf Schiefer.

Buellia (sect. Eubuellia) **Skottsbergii** Stnr. et A. Zahlbr.

Thallus epilithicus, crustaceus, uniformis, tenuis, 0,8—0,11 mm crassus, cervinus vel plus minus ochraceus, opacus, KHO —, $CaCl_2O_2$ —, subcontinuus vel hinc inde irregulariter fissus, in superficie leviter vel verruculoso-inaequalis, soredia et isidia non gerens, hypothallo distincto non circumdatus, superne corticatus, cortice 15—25 μ crasso, extus plus minus fuscescente, intus decolore, ex hyphis intricatis formato; stratum goniale amplum, fere totam altitudinem thalli occupans, cellulis laete viridibus, 7—10—(12) μ latis; hyphae thalli non amylaceae.

Apothecia lecideina, primum immersa, mox sessilia, dispersa vel plus minus approximata, nigra, opaca, parva, 0,5—0,8 mm lata, e plano mox convexiuscula; margo proprius tenuis, integer, primum bene prominulus; excipulum dimidiatum, sed infra hymenium angustatum, fusco-nigrum in parte marginali, intus pallidior, fere decolor; hypothecium subdilute fuscum, obconicum, crassiusculum; epithecium nigro-fuscum, hypothecio obscurius; hymenium non inspersum, 55—80 μ altum, J e coeruleo aeruginascens; paraphyses filiformes, eseptatae, ad apicem clavato-capitatae et ibidem usque 5,4 μ latae; asci oblongae, 8-spori; sporae diu pallidae, fumosae, demum obscuratae, ellipsoideae vel ovales, placodiomorphae, luminibus circa $^1/_3$ longitudinis sporae aequantibus et tubulo tenui junctis, 11—16 μ longae et 6—9 μ latae.

Conceptacula pycnoconidiorum minuta, nigra, globosa; fulcra exobasidialia; basidiis elongato-oblongis, fasciculatis; pycnoconidia filiformia, curvata vel arcuata, 15—19 μ longa et 0,7 μ lata.

Falkland-Inseln: Westinsel, Rabbit Island, auf abgestorbenen Zweigen von *Chiliotrichum diffusum*.

Steht der *Buellia myriocarpa* (DC.) nahe, weicht aber durch die Gesamtheit der Merkmale von den übrigen Arten des Formenkreises ab.

Buellia (sect. Eubuellia) **discreta** DARB.! in Wiss. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 14, tab. III, fig. 25 et in Nation. Antarct. Expedit. 1901—1904, vol. V, 1910, p. 7, tab. I, fig. 4.

Thallus epilithicus, crustaceus, uniformis, tenuissimus, 0,1—0,15 mm crassus, effusus vel maculatim dispersus, protothallo cinereo-nigricanti insidens, ochraceo- vel umbrino-fuscatus, rarius magis in cinereum vergens, opacus, KHO —, $CaCl_2O_2$ —, continuus vel hinc inde tenuissime et irregulariter fissus, sorediis et isidiis destitutus, strato corticali angusto, ex hyphis intricatis formato, superne strato amorpho, decolore et tenui obducto vestitus, gonidia fere totum thallum occupantia, cellulis globosis, 8—13 μ latis; hyphae thalli non amylaceae, ad 3,5 μ crassae, ramosae et intricatae, non inspersae, plus minus verticales et imprimis versus basin thalli constricto-septatae.

Apothecia lecideina, dispersa vel approximata, adpresso-sessilia, rotunda, minuta, 0,2—0,4 mm lata, nigra, opaca, epruinosa, primum concava, demum leviter convexa; margo proprius tenuis, niger, acutiusculus, leviter prominulus, demum depressus; excipulum integrum, fusco-nigrum, intus versus hymenium lutescenti-fuscescens, crassum, superne ad verticem hymenii inflexum; epithecium angustum, amorphum, decolor; hymenium superne anguste obscure fuscum, NO_5 —, caeterum decolor, non inspersum, 80—90 μ altum, J coeruleum; paraphyses tenues, ad 1,5 μ crassae, filiformes, simplices, eseptatae, ad apices clavato-capitatae et conglutinatae; asci ellipsoideo-clavati, ad apicem retuso-rotundati et primum membrana valde incrassata cincti, 6—8, rare 4-spori; sporae in ascis 2—3-seriales, in juventute dilute fumosae, demum fuscae, late ellipsoideae vel subovales, utplurimum rectae, loculis primum distantibus, ad basin retusis vel subobconicis, tubulo junctis, circa $^1/_3$ longitudinis sporae aequantibus, demum approximatis, septo tenui et imperforato separatis, 12—16 μ longae et 7,5—8 μ latae.

Conceptacula pycnoconidiorum punctiformia, nigra, nitida, vertice convexo vel fere semigloboso prominula, globosa; perifulcrium pallidum; fulcra exobasidialia, basidia fastigiata, subampullacea, pycnoconidiis multum breviora; pycnoconidia filiformia, utrinque retusa, hamata vel rarius curvata, 13—16 μ longa et ad 1 μ lata.

Falkland-Inseln: Ostinsel, Darwin Harbour, auf Schiefer.

Die Art steht der *Buellia myriocarpa* (DC.) ebenfalls nahe, die siphoniaten Sporen weisen schon darauf hin, aber auch sie muss wegen ihres Habitus und der Merkmale im inneren Fruchtbau als eigene Art angesehen werden.

Buellia (sect. Eubuellia) **subviolascens** A. ZAHLBR. nov. spec.

Thallus epilithicus, crustaceus, uniformis, tartareus, tenuis, 0,2—0,25 mm crassus, cinereo-albicans, opacus, KHO spurie vel dilute violascens, $CaCl_2O_2$ —, minute areolatus vel areolato-diffractus, areolis planis, plus minus angulosis, 0,2—0,5 mm latis, fissuris parum hiantibus separatis, soredia et isidia desunt; protothallus niger, angustus, thallum limitans vel eum percurrens; stratum corticale angustum, ex hyphis intricatis, leviter inspersis formatum; gonidia crebra, cellulis globosis, usque 18 μ

latis, in toto thallo dispersa; hyphae thalli non amylaceae, ramosae, leptodermaticae, articulato-ramosae et plus minus intricatae.

Apothecia adpressa, nigra, opaca, dispersa et rotunda vel aggregata et angulosa, parva, usque 0,8 mm lata; discus e concavo subplanus, niger, epruinosus; margo proprius prominulus, integer, semper bene evolutus; excipulum carbonaceum, dimidiatum, percrassum, infra hymenium productum et ibidem utplurimum angustatum; hypothecium plus minus obconicum, fuscum; hymenium superne anguste fuscum, non pulverulentum, caeterum decolor, non inspersum, 70—85 μ altum, J violaceo-coeruleum; paraphyses filiformes, ad 1,5 μ crassae, leptodermaticae, conglutinatae, simplices, eseptatae, ad apicem capitatae; asci hymenio parum breviores, ellipsoideae, ad verticem rotundati et ibidem membrana bene incrassata cincti, 8-spori; sporae in ascis 2—3-seriales, fuscae, late ellipsoideae vel subovales, utrinque late rotundatae, uniseptatae, septo non incrassato, 12—16 μ longae et 7—9 latae.

Conceptacula pycnoconidiorum immersa, solum vertice nigro, punctiformi, nitidulo prominentia; perifulcrium pallidum; fulcra exobasidialia; pycnoconidia filiformia, curvata vel hamata, basidiis multum longiora, 20—26 μ longae et ad 1 μ lata.

Südgeorgien: Cumberland Bay, Maihafen, auf Schiefer (SKOTTSBERG 1902).

Habituell gleicht die neue Art der *Buellia falklandica* DARB.! Die Gestalt der Pyknokonidien weist auf die Verwandtschaft zu *Buellia myriocarpa* (DC.) hin, die langen Pyknokonidien, die Kalilaugereaktion des Lagers und die nicht siphoniaten Sporen sind jene Merkmale, welche eine Abtrennung erheischen.

Buellia (sect. Eubuellia) **frigida** DARB.! in Nation. Antarct. Expedit. 1901—1904, vol. V, 1910, Lichen., p. 7, tab. I, fig. 4. — *Buellia latemarginata* DARB.! in Wissensch. Ergebn. Schwedisch. Südpol.-Expedit., vol. IV, Liefrg. 11, 1912, p. 15, tab. III, fig. 29 fide STEINER non distat.

Thallus epilithicus, crustaceus, uniformis vel in margine subradiatus, sat crassus, in centro thalli usque 1 mm altus, tartareus, effusus, fuscescenti-cinerascens vel fuscescens, KHO —, $CaCl_2O_2$ —, opacus, rimoso-areolatus, areolis 0,3—0,8 mm latis, irregularibus, planiusculis vel convexis, fissuris hinc inde hiantibus separatis, sorediis et isidiis destitutus, protothallus angustus vel latiusculis, nigrescens et opacus, in partibus substrati adumbratis albidus vel albus, longitudinaliter tenuissime striolatus, passim evanescens; stratum corticale thalli usque 50 μ crassum, subamorphum, ex hyphis fere horizontalibus, tenuibus et dense conglutinatis formatum; hyphae thalli non amylaceae, plus minus perpendiculares, leptodermaticae et crebre septatae, cellulis parvis, rotundatis, 3,5—5 μ latis, subangulosis.

Apothecia lecideina, primum immersa, demum adpressa, usque 1,8 mm lata, primum plana et margine proprio tenui, parum prominulo cincta, mox convexa et emarginata, congesta, nigra, opaca, epruinosa; excipulum intus decolor, ad marginem fusco-nigrum, angustum, ex hyphis radiantibus formatum, ad verticem hymenii inflexum; hypothecium demum fere semiglobosum, crassum, obscure rufo-fuscum, versus hymenium sensim dilutius, KHO magis in rufum vel in sanguineum vergens, ex hyphis perpendicularibus, dense conglutinatis formatum, ab hymenio bene non sepa-

ratum, ad basin subconico-angustatum et cum thallo confluens; hymenium superne fusco-nigricans, KHO vix mutatum, NO_3 sordide roseum, pulverulentum, strato tenui amorphe supertectum, caeterum incolor, non inspersum, 70—80 μ altum, J violaceo-coeruleum; paraphyses filiformes, eseptatae, simplices vel rarius furcatae, ad apicem globoso-clavatae et capitulis conglutinatae, gelatinam sat crebram percurrentes; asci oblongo-clavati, hymenio subaequilongi, ad apicem rotundati et ibidem primum membrana bene incrassata cincti, 8-spori; sporae in ascis subbiseriales, fuscae, uniseptatae, oblongo-ellipsoideae vel ellipsoideae, utrinque rotundatae, ad septa non constrictae, septo tenui, 12—14 μ longae et 5,5—7 μ latae.

Conceptacula pycnoconidiorum minuta, punctiformia, nigra, globosa; fulcra exobasidialia; pycnoconidia filiformia, curvata vel arcuata, 13—18 μ longae et 0,7 μ latae.

Graham Land: auf Urgestein (Skottsberg 1902).

Buellia (sect. Eubuellia) **fernandeziana** A. Zahlbr. nov. spec.

Thallus epilithicus, crustaceus, subplacodinus, tartareus, maculas parvas, 8—20 mm latas, bene determinatas, dispersas confluentes formans, tenuis, ad 0,3 mm altus, albus vel paulum sordidescens, opacus, KHO sanguineus, $CaCl_2O_2$ —, areolato-rimosus, areolis polygonis, parvis ad 1 mm latis, planis vel planiusculis, laevigatis, ad ambitum thalli subsquamiformibus, rare subgranulosis, sorediis et isidiis destitutus, protothallo distincto non limitatus; stratum corticale superficiei thalli angustum, 22—28 μ crastum, ex hyphis intricatis et dense inspersis formatum; gonidia stratum plus minus continuum formantia, cellulis globosis, 9—12 μ latis; medulla alba, KHO sanguinea, $CaCl_2O_2$ —, J —, ex hyphis ramosis et intricatis, 3—3,5 μ crassis leptodermaticis formata.

Apothecia lecideina, nigra, opaca, epruinosa, rotunda, usque 0,8 mm lata, dispersa vel approximata, adpresso-sessilia, plana vel planiuscula; margo proprius valde tenuis, acutiusculus, prominulus, niger, nitidus, persistens; exipulum nigrum cum hypothecio fusco-nigro confluens; epithecium distinctum nullum; hymenium superne olivaceo-fuscum, caeterum decolor, non inspersum, 85—100 μ altum, J coeruleum; paraphyses filiformes, ad 1,5 μ latae, simplices, eseptatae, ad apicem breviter capitatae, leviter conglutinatae; asci oblongo-clavati, ad apicem rotundati et membrana incrassata cincti, 8-spori; sporae in ascis biseriales, fuscae, late ellipsoideae vel late ovales, utrinque rotundatae, uniseptatae, septo tenui, ad septa non constrictae, 8,5—11 μ longae et 5—6 latae.

Conceptacula pycnoconidiorum immersa, vertice punctiformi, nigro, haud prominulo; perifulcrium pallidum, fulcra exobasidialia, basidiis fasciculatis, subampullaceis vel vermiculari-subcylindricis, pycnoconidiis 3—4-plo longoribus; pycnoconidia oblonga vel subcylindrica, utrinque rotundata, in medio passim leviter angustata, 3,5—4 μ longa et ad 1 μ lata.

Juan Fernandez: Masatierra, Bahia del Padre, auf Lava.

Im Lagerbaue herrscht wohl einige Ähnlichkeit mit *Buellia lepidota* Tuck. und *Buellia subnivea* (Nyl.), doch bestehen engere verwandtschaftliche Beziehungen zu diesen nicht.

Rinodia (sect. Orcularia) **philomelensis** A. ZAHLBR. nov. spec.

Thallus epilithicus, crustaceus, uniformis, maculatim effusus, tenuis 0,2—0,3 mm crassus, subtartareus, cinereus, opacus, KHO —, $CaCl_2O_2$ —, areolato-rimosus, areolis planis vel planiusculis, parvis, 0,2—0,4 mm latis, superne laevigatis, fissuris tenuibus separatis, soredia et isidia non gerens, in margine linea obscuriore non cinctus; stratum corticale duplex, strato externo decolore, inaequali, ex hyphis intricatis, non inspersis formato, strato interiore umbrino-fusco, etiam ex hyphis intricatis, sed non pulverulento-inspersis composito; gonidia stratum sat amplum, plus minus continuum formantia, cellulis globosis, 10—16 μ latis; medulla alba, KHO —, $CaCl_2O_2$ —, J —, ex hyphis ramosis, intricatis, leviter inspersis, ad 3,5 crassis, leptodermaticis formata.

Apothecia crebra, plus minus approximata, rotunda, primum immersa, aspiciloidea, concava et margine prominulo cincta, demum adpresso-sessilia, leviter convexa, usque 0,8 mm lata, discus nigerrimus, opacus, epruinosus, madefactus in fuscum vergens; excipulum dimidiatum, solum ad latera hymenii evolutum, ex hyphis conglutinatis et decoloribus formatum; hypothecium decolor, molle, ex hyphis verticalibus, sensim im hymenium abeuntibus, conglutinatis formatum, J coeruleum; hymenium superne umbrino-fuscum, NO_3 olivascens, strato angusto decolore et amorpho supertectum, caeterum decolor, non inspersum, 110—130 μ altum, J violaceo-coeruleum; paraphyses filiformes, ad 1,5 μ crassae, simplices, eseptatae, ad apicem clavatae, vix conglutinatae; asci ellipsoideo-clavati, ad apicem rotundati et membrana incrassata cincti, 8-spori; sporae in ascis biseriales, e fumoso fuscae, ovales vel ellipsoideae, luminibus binis, circa $^1/_3$ longitudinis sporae aequantibus, versus basin obconico-angustatis et isthmo latiusculo junctis, septo tenui, sed distincto, 17—22 μ longae et 10—12 μ latae.

Conceptacula pycnoconidiorum sat crebra, immersa, globosa, vertice nigricanti, madefacto fuscescente; fulcra endobasidialia, basidiis parum ramosis, brevibus, septatis, cellulis brevibus; pycnoconidia oblonga, recta, in medio leviter constricta, circa 2 μ longa et ad 0,5 μ lata.

Falkland-Inseln: Westinsel, Port Philomel, Halfway Cove, auf Sandstein.

Der Bau der Sporen ist sehr charakteristisch. Ich kenne keine Art, welche ich, nach den gegebenen Beschreibungen, ihr nahe bringen könnte.

Physciaceae.

Physcia adscendens BITT.

Feuerland: am Rio Grande, zwischen Moosen, steril (DUSÉN). — Diese Flechte ist bisher für das Feuerland nicht verzeichnet.

Anaptychia magellanica A. ZAHLBR. nov. spec.

Thallus rosulas compactas, usque 3,5 cm latas formans, tenuis, 0,01—0,018 mm altus, albidus opacus, KHO flavescens, $CaCl_2O_2$ —, rigidiusculis, in margine lobatus, lobis brevibus, usque 2 mm longis, digitato incisis, eciliatis, lobis thalli caeteris

valde minutis, 0,3—0,8 mm longis, digitato-divisis, laciniis plus minus linearibus, congestis et intricatis, passim verruculiformibus, esorediosus, isidiis destitutus, subtus albescens, passim lutescens vel centrum versus sordidescens, rhizinis paucis, umbrino-nigricantibus vel umbrino-cinereis praeditus, superne solum corticatus, cortice subchondroideo, decolore et solum ad marginem anguste fuscescente et insperso, valde inaequali, 35—100 μ crasso, ex hyphis subhorizontalibus, intricatis formato; stratum gonidiale infra corticem superiorem situm, vix continuum, cellulis globosis, laete viridibus, 5—7 μ latis; medulla alba, KHO flavens, $CaCl_2O_2$ —, J —, ex hyphis inspersis, ad 3,5 μ crassis, leptodermaticis, septatis (cellulis oblongis vel cylindricis), ramosis, in parte superiore medullae intricatis, inferne laxis, ramosis et clathratim-connexis.

Apothecia imprimis versus marginem thalli disposita, parmelioidea, ad basin bene constricta, substipitata, usque 6 mm lata, dispersa vel approximata, rotunda vel rotundata; discus leviter convexus, obscure fuscus, epruinosus; margo thallinis discum superans, plus minus inflexus, ad verticem rotundato-laceratus vel subverruculosus; receptaculum thallo concolor, laevigatus, ad verticem superne ruptus et medullam apperiens, medullam amplam et glomerula gonidiorum infra corticem disposita, plus minus dispersa, includens, corticatus, cortice decolore, chondroideo, 50—90 μ crasso, ex hyphis intricatis, pachydermaticis formato; excipulum distinctum non evolutum; hypothecium angustum, lutescens, ex hyphis dense intricatis, tenuibus formatum, molle, medullae thalli superpositum, J coerulescens; hymenium superne rufescenti-flavescens, caeterum decolor, 120—130 μ altum, non inspersum, J coeruleum; paraphyses filiformes, ad 1 μ crassae, subflaccidae, simplices, eseptatae, ad apicem vix latiores, gelatinam increbram percurrentes; asci oblongo-clavati vel subovales, ad apicem rotundati et membrana bene incrassata cincti, hymenio subaequilongi, 8-spori; sporae in ascis biseriales, primum fumosae, dein fuscae, uniseptatae, late, ellipsoideae vel ovales, septo tenui, luminibus sexangularibus, approximatis, demum in sporis obscuratis minus conspicuis, 28—30 μ longae et 14—18 μ latae.

Conceptacula pycnoconidiorum minuta, immersa, vertice nigro, convexa, tenuissime pertusa; fulcra endobasidialia; pycnoconidia subbacillaria, ad apices rotundata, recta, ad 3,5 μ longa et 1 μ lata.

Feuerland, an der Magellanstrasse: Isla Felix, auf Felsen(?).

Von allen *Anaptychien* stark abweichend.

Hymenolichenes.

Cora pavonia Fr.

Juan Fernandez: Masatierra, Cumberland Bay, auf der Erde.

Südliche: Seno Reloncaví, Caleta Buill, zwischen Moosen.

Chiloé: Queilen.

Westpatagonien: Canal Messier, Puerto Riofrio.

Feuerland: am Rio Azopardo, auf der Erde.

Die Flechten der Falklandinseln.

Verrucariaceae.

Verrucaria dermoplacacea NYL.
» *glaucoplacoides* DARB.

(Dermatocarpaceae.)

(*Endocarpon maclovianum* D'URV. — Es ist erst aufzuklären, um was es sich handelt.)

Pyrenulaceae.

Pyrenula falklandica (NYL.) A. ZAHLBR.

Astrotheliaceae.

Lithothelium cubanum MÜLL. ARG.

Phyllopyreniaceae.

Lepolichen granulatus (HOOK. F. et TAYL.) MÜLL. ARG.

Sphaerophoraceae.

Sphaerophorus compressus ACH.
» *coralloides* PERS.
» *tener* LAUR.

(Arthoniaceae.)

(*Arthonia abrothallina* NYL. ist ein auf *Sticta* lebender parasitischer Pilz, wahrscheinlich der Gattung *Celidium* angehörend.)

Graphidaceae.

Opegrapha atra PERS.
» *quinqueseptula* A. ZAHLBR.

Dirinaceae.

Dirina falklandica A. ZAHLBR.
» var. *corticola* A. ZAHLBR.

Collemaceae.

Leptogium (sect. Mallotium) *Menziesii* (ACH.) NYL.

Pannariaceae.

Parmeliella adumbrans f. *nigrata* MÜLL. ARG. (Syn.: *Lecidea mamillata* HOOK. F. et TAYL.)
Pannaria rubiginosa (ACH.) DEL.
Massalongia carnosa (DICKS.) MUDD.
Psoroma hypnorum (DICKS.) HOFFM.
» *paleaceum* (FR.) NYL. (Syn.: *Psoroma ciliatum* (ACH.) NYL.)

Stictaceae.

Sticta (sect. Eusticta) *endochrysea* DEL.
» » » » var. *flavicans* (HOOK F. et TAYL.) MÜLL. ARG.
» » » » var. *Urvillei* (DEL.) MÜLL. ARG.
» » » *Freycinetii* DEL.
» » » » var *prolifera* MÜLL. ARG. (Syn.: *Sticta glabra* HOOK. F. et TAYL.)
» » » *impressa* HOOK. F. et TAYL.
» » » *lactucaefolia* (PERS.) NYL. (Syn.: *Sticta fulvocinerea* MONT.)
» (sect. Stictina) *crocata* (L.) ACH. (Syn.: *Sticta citrina* PERS.)
» » » *filicina* ACH.
» » » *fuliginosa* (DICKS.) ACH.
» » » *Gaudichaldia* DEL. (Syn.: *Sticta malovina* FR.)
» » » *gilva* ACH. (Syn.: *Collema lanatum* PERS.)
» » » *intricata* var. *Thouarsii* (DEL.) NYL.
Lobaria scrobiculata (SCOP.) DC.

Peltigeraceae.

Peltigera canina (L.) HOFFM.
» *erumpens* (TAYL.) WAINIO.
» *malacea* (ACH.) FR.
» *polydactyla* (NECK.) HOFFM.
» *rufescens* (NECK.) HOFFM.

Lecideaeceae.

Lecidea (sect. Eulecidea) *agellata* DARB.
» » » *contigua* FR.
» » » *elata* SCHAER.
» » » *euphorea* FLK.
» » » *interrupta* DARB.
» » » *olivacea* (HOFFM.) ARN.
» » » *protracta* DARB.
» » » *protrusa* FR. (Syn.: *Lecidea scabra* TAYL.)
» » » *subconfluens* ANZI.
» » » *tenebrosula* MÜLL. ARG.
» (sect. Biatora) *granulosa* (EHRHT.) SCHAER. (Syn.: *Lecidea quadricolor* TAYL.)

(*Lecidea petraea* var. *conglobata* ACH. ist nach TH. FRIES, z. T. *Lecidea speirea* ACH., z. T. *Lecidea olivacea* HOFFM., es bleibt daher fraglich, was mit dieser Angabe gemeint ist.)

Catillaria (sect. Biatorina) *pulverea* (BORR.) LETTAU.
Bacidia (sect. Weitenwebera) *ligniaria* (ACH.)
» » » *sabuletorum* (FLK.).
» (sect. Eubasidia) *tuberculata* DARB.
Toninia (sect. Thalloidima) *coeruleonigricans* (LEIGHTF.) TH. FR.
Rhizocarpon distinctum TH. FR.
» *geographicum* (L.) DC.
» » f. *atrovirens* (L.) KÖRB.
» » f. *contiguum* (FR.) KÖRB.
» *geminatum* (FW.) KÖRB.

Phyllopsoraceae.

Phyllopsora corallina (ESCHW.) MÜLL. ARG.

Cladoniaceae.

Cladonia aggregata (SW.) ACH. (Syn.: *Dufourea collodes* HOOK. F. et TAYL.)
» *alpestris* (L.) RABH.
» *bacillaris* NYL. (nach WAINIO noch fraglich).
» *coccifera* var. *stemmatina* ACH.
» » var. *pleurota* (FLK.) SCHAER.
» *cornuta* (L.) SCHAER.
» *deformis* HOFFM.

Cladonia degenerans (FLK.). Nach WAINIO fraglich.
» *fimbriata* (L.) FR.
» » var. *prolifera* (RETZ.) MASS. (Syn.: *Cladonia allotropa* var. *lomagona* ACH.)
» » var. *Balfourii* (ACH.) WAINIO. (Syn.: *Cladonia costulata* HOOK. f. et TAYL.)
» *flabelliformis* var. *tubaeformis* (MUDD) WAINIO.
» *flavescens* WAINIO.
» *furcata* (HUDS.) SCHRAD.
» *gracilis* (L.) WILLD.
» » var. *elongata* f. *ecmocyna* (JACQU.) FLK.
» *macilenta* HOFFM.
» *pityrea* (FLK.) FR. — Nach WAINIO noch nicht sichergestellt.
» *pycnoclada* (GAUD.) NYL.
» » f. *exalbescens* WAINIO.
» » f. *flavida* WAINIO.
» *pyxidata* (L.) FR.
» » var. *chlorophaea* FLK.
» » var. *neglecta* (FLK.) MASS.
» *squamosa* var. *denticollis* (HOFFM.) FLK. (Syn.: *Cenomyce scabrosa* GAUDICH.)
» *subsquamosa* (NYL.) WAINIO.
» *sylvatica* var. *sylvestris* OED.
» *verticillata* var. *alcicornis* (ACH.) FLK.
» » var. *evoluta* TH. FR.
Stereocaulon magellanicum TH. FR.
(» *turfosum* D'URV., eine nicht aufgeklärte, fragliche Art.)

Gyrophoraceae.

Gyrophora angulata (TUCK.) HERRE.
» *polyphylla* (L.) KÖRB. (Syn.: *Umbilicaria stygia* HOOK. f. et TAYL.)

Pertusariaceae.

Pertusaria alterimosa DARB.
» *cerebrinula* A. ZAHLBR.
» *corrugata* DARB.
» » var. *phaeizans* A. ZAHLBR.
» *erubescens* (HOOK. f. et TAYL.) NYL.
» *macloviana* MÜLL. ARG.
» *microcarpa* NYL.

Pertusaria oculata (DICKS.) TH. FR.
» *solitaria* DARB.
» *Wulfenii* DC.
(*Porina confusa* BORY eine steinbewohnende *Pertusaria*, die aber erst aufzuklären ist.)
Perforaria coccophora (MONT.) MÜLL. ARG.

Lecanoraceae.

Lecanora (sect. Eulecanora) *atra* (HUDS.) ACH.
» » » » var. *lirellina* (DARB.) A. ZAHLBR.
» » » *badia* var. *cinerascens* NYL.
» » » *bicincta* (RAM.) NYL.
» » » *capistrata* (DARB.) A. ZAHLBR.
» » » *epibryon* ACH.
» » » *flavovirens* FÉE. (Syn.: *Lecanora aeruginosa* NYL. und *Lecanora subfusca* var. *pelidnocarpa* MART.)
» » » *frustulosa* (DICKS.) ACH.
» » » *glaucoma* ACH.
» » » *polytropa* (EHRHT.) ACH.
» » » *subelata* A. ZAHLBR.
» » » *subfusca* (L.) ACH.
» (sect. Asipicilia) *atroviolacea* FW.
» » » *orbiculata* (DARB.) A. ZAHLBR.
Ochrolechia parella (L.) MASS.
» *tartarea* (L.) KÖRB.
» » var. *frigida* (ACH.) KÖRB.
» *upsaliensis* (L.) MASS. (Syn.: *Lecanora macloviana* PERS.)
Candelariella vitellina (EHRHT.) MÜLL. ARG.
Haematomma coccineum (DICKS.) KÖRB.
» *erythromma* (NYL.) A. ZAHLBR.
» *ventosum* (L.) MASS.

Parmeliaceae.

Candelaria concolor (EHRHT.) WAIN.
Parmelia conspersa (EHRHT.) ACH.
» *enteromorpha* ACH.
» *lugubris* PERS.
» *Mougeotii* SCHAER.
» *saxatilis* (L.) ACH.
» *tenuirimis* TAYL. (Syn.: *Parmelia reticulata* TAYL.)

Cetraria aculeata (SCHREB.) FR.
» f. *spadicea* (ACH.) TH. FR.

Usneaceae.

Ramalina laevigata FR. (Syn.: *Ramalina terebrata* HOOK. f. et TAYL., *Ramalina flaccidissima* BORY und *Ramalina sepiacea* (PERS.) NYL.)
» *linearis* (L. f.) NYL.
» *scopulorum* (RETZ.) ACH.
Usnea articulata (L.) HOFFM.
(» *barbata* ACH., eine ganz unklare Angabe).
» *dasypoga* var. *plicata* (HOFFM.) HUE.
» *sulphurea* var. *normalis* WAINIO mit f. *activa* A. ZAHLBR.
» *trachycarpa* (STRTN.) MÜLL. ARG.

Incertae sedis.

Thamnolia undulata NYL.
» *vermicularis* (SW.) ACH.
(*Cenomyce vermicularis* var. *rugulosa* BORY ist noch nicht aufgeklärt.)
Endocena informis CROMB.

Caloplacaceae.

Caloplaca erythrella (ACH.) KIEFF.
» (sect. Gasparrinia) *lucens* (NYL.) A. ZAHLBR. (Syn.: *Lecanora murorum* var. *farcta* BAB.)
» » » » var. *striolata* A. ZAHLBR.
» » » *murorum* var. *miniata* (HOFFM.) HELLB.
» (sect. Thamnomona) *ambitiosa* (DARB.) A. ZAHLBR.

Theloschistaceae.

Xanthoria lychnea var. *polycarpa* (EHRHT). TH. FR.
Theloschistes flavicans (SW.) NORM.

Buelliaceae.

Buellia coniops (WAHLBG.) TH. FR. — Ist fraglich.
» *discreta* DARB.
» *falklandica* DARB.

Buellia punctiformis var. *aequata* (ACH.) ARN.
» *Skottsbergii* STNR. et A. ZAHLBR.
» *stellulata* (TAYL.) MUDD.
Rinodina confragosa (ACH.) S. GRAY, nicht sichergestellt.
» *philomelensis* A. ZAHLBR.

Lichenes imperfecti.

Lepraria flava ACH.

Tryckt den 10 juli 1917.

Uppsala 1917. Almqvist & Wiksells Boktryckeri-A.-B.

KUNGL. SVENSKA VETENSKAPSAKADEMIENS HANDLINGAR. Band 61. N:o 4.

BOTANISCHE ERGEBNISSE

DER

SCHWEDISCHEN EXPEDITION NACH PATAGONIEN UND DEM FEUERLANDE 1907—1909

VII.

LES MÉLOBÉSIÉES

PAR

Mme PAUL LEMOINE
DOCTEUR-ÈS-SCIENCES

AVEC UNE PLANCHE ET TROIS FIGURES DANS LE TEXTE

COMMUNIQUÉ LE 28 AVRIL 1920 PAR G. LAGERHEIM ET C.-A.-M. LINDMAN

STOCKHOLM
ALMQVIST & WIKSELLS BOKTRYCKERI-A.-B.
1920

I. Chili proprement dit.

La région explorée au Chili par M. Carl Skottsberg est celle de l'Ile Chiloe (Cap Alman, Ile San Pedro) et au sud de l'Ile Chiloe, Ile Huafo; dans ces localités, comprises entre le 43° et le 44°, plusieurs espèces ont été recueillies dont quatre sont nouvelles:

Lithothamnion validum Fosl.
» *pauciporosum* n. sp.
» *Caroli* n. sp.
Lithophyllum (?) *Skottsbergii* n. sp.
» (?) *almanense* n. sp.
» (?) *fetum* Fosl.

Au large des côtes chiliennes, l'archipel Juan Fernandez lui a fourni une espèce nouvelle: *Lithophyllum fernandezianum* n. sp.

Jusqu'ici un petit nombre d'espèces de Mélobésiées avaient été recueillies au Chili; aussi les récoltes de M. Skottsberg apportent elles pour cette région une contribution très importante.

Les espèces signalées auparavant au Chili avaient été récoltées dans des localités eloignées de l'Ile Chiloe; leur nombre est si restreint que l'énumération en sera facile.

Taltal 26° *Lithothamnium taltalense* Fosl.
Coquimbo 30° *Lithophyllum peruviense* Heydr.[1]
Talcahuano 36° 30′ » *accedens* Fosl.
Corral 40° » *fetum* Fosl.
» 40° » *aequum* Fosl.

De plus Darwin avait recueilli aux Iles Chonos (45°) un échantillon désigné par Harvey (Nereis, 1847, p. 110) sous le terme trop peu précis de *Melobesia polymorpha;* l'examen de l'échantillon seul permettrait de compléter la diagnose insuffisante dans l'état actuel de l'algologie.

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[1] L'échantillon de l'Herbier du Muséum d'histoire naturelle de Paris, nommé *L. peruviense* par Heydrich, a été récolté à Coquimbo par Gaudichaud. Deux échantillons de la même localité, rapportés par le même voyageur, sont désignés dans l'Herbier Thuret-Bornet sous le nom *Goniolithon Darwinii* Harv.; ces échantillons sont, a tous point de vue, identiques à l'échantillon du *Lithophyllum peruviense* de l'Herbier du Muséum. D'ailleurs Harvey (Nereis Australis 1847, p. 109) avait crée son *Melobesia Darwinii* pour des échantillons d'Australie.

Enfin une espèce, *Archaeolithothamnium chilense* Fosl. a été signalée à Lobos de Afuera.[1]

Dans l'archipel de Juan Fernandez, aucune espèce de Mélobésiée n'avait été signalée en dehors de celle désignée par DICKIE (1876, Journ. Linn. Soc. XV, p. 452) sous le nom de *Melobesia pustulata* sans figure, ni description.

En résumé la florule de Mélobésiées du Chili contient, après étude des échantillons de M. SKOTTSBERG s'ajoutant aux études antérieures: une espèce d'*Archaeolithothamnium*, quatre espèces de *Lithothamnium*, sept espèces de *Lithophyllum:* la plupart des dernières ont montré un type de structure aberrant dans ce genre.

1. **Lithothamnium validum** Fosl. Algol. Notiser III, p. 10 (D. K. Norske Vid. Selsk. Skr. Trondhjem 1906, no. 8, paru 1907). — Syn.: L. rugosum Fosl. f. valida Fosl. New Melob. p. 4 (Ibid. 1900, no. 6. paru 1901).

Planche, fig. 4, 5, 6.

Bien que FOSLIE n'a jamais figuré cette espèce, je crois devoir lui rapporter des échantillons dont tous les caractères concordent avec les descriptions données par cet auteur. Ce sont de tres beaux échantillons, dragués en abondance dans le Golfe de Corcovado où ils paraissent constituer des amas importants à une profondeur d'environ 20 mètres.

L'importance des matériaux recueillis permet de reconstituer les étapes du développement de l'algue. Tout d'abord, elle forme sur les cailloux une croûte (pl. fig. 4 et 6) dont l'épaisseur la distingue dès son plus jeune âge, des autres espèces qui partagent avec elle ce substratum: dans les échantillons les moins développés que j'ai observés, la croûte montre déjà de petits cônes dressés de 3 à 6 mm. de longueur; a cet état l'algue rappelle par son aspect le *Lithophyllum grumosum* Fosl. de Californie. Lorsque l'algue a atteint son complet développement (Pl. fig. 5) elle forme des massifs de 6 à 7 centimetres de diamètre, divisés en un certain nombre de branches grossières qui se ramifient en donnant chacune plusieurs rudiments de branches à leur extrémité; à ce stade de maturité l'algue se présente sous l'aspect d'une boule plus ou moins arrondie qui repose librement sur le fond de la mer. Le support primitif de l'algue, un caillou, a été englobé par l'algue dans sa croissance, il existe au centre de cette boule où l'on le découvre en brisant l'algue dont l'épaisseur atteint de 2 à 3 centimètres autour de lui.

L'étude de la structure de la croûte montre un hypothalle formi de cellules courtes, rectangulaires ou carrées; leur longueur est 7 à 11 μ, le plus souvent 8 à 9 μ, leur largeur est de 5 à 7 μ. Le périthalle est formé de cellules presque carrées, de 6 à 8 μ de longueur, plus rarement de 10 à 12 μ, et de 5 à 7 μ de largeur, disposées en files serrées. On remarque dans le périthalle la présence de zones concentriques d'accroissement.

[1] Sur les cartes je ne trouve pas de localité chilienne de ce nom; il existe au Chili un Cabo Lobos aux environs du 19°; l'Ile Lobos de Afuera, située vers le 7° est au large du Pérou septentrional.

La structure des sortes de cônes ou de branches grossières qui s'élèvent de la croûte primaire, rappelle celle du périthalle de cette croûte. En effet le tissu de ces branches est formé de files serrées dont les cellules mesurent 6 à 11 μ de longueur et 5 à 7 μ de largeur; à un faible grossissement on observe des zones d'accroissement superposées dans le tissu; dans chacune de ces zones la taille des cellules va en diminuant de la base vers le sommet.

Les conceptacles à sporanges sont extrêmement nombreux sur toute la surface de la croûte et des branches; ils sont de grande taille 350 à 400 μ, leur toit est plat, arrondi ou ovale, légèrement surélevé au dessus de la surface de la croûte, traversée par un grand nombre de pores; ces pores, au nombre d'au moins 85, ont une forme irregulière et son dispersés sans aucune symétrie sur toute la surface du toit. Je n'ai observé ni les sporanges, ni les conceptacles à cystocarpes.

Habitat. Chiloe: Golfe Corcovado, Cap Alman, Station 34, 1 Aôut 1908, profondeur 20 mètres.

Répartition géographique: A. validum avait éte décrit d'après des échantillons recueillis à San Diego, Californie.

2. **Lithothamnium pauciporosum** nov. sp.

Planche, fig. 4, 6, 7.

Crusta circiter 700 μ crassa, margine lobata, adfixa, albolimbata; conceptacula sporangifera in thallo immersa, haud prominentia, valde numerosa et conferta, 150 —230 μ, tecto circa 15-poroso. Hypothallum e cellulis rectangulis 7—14 μ longis, 3—5 μ latis constans. Perithallum e cellulis rotundatis 4—6 μ longis, 3—6 μ latis constans. Crustae aliae aliis superpositae.

L. pauciporosum est abondamment représenté dans la collection de M. Skottsberg dans les parages de l'Ile Chiloe; on le trouve sur les cailloux recueillis dans la région littorale, jusqu'a une profondeur de 20 mètres. Cette espèce se présente sous l'aspect de croûtes, tres adhérentes par toute leur surface inférieure, lobées au bord et liserées de blanc sur les echantillons secs; l'épaisseur parait assez constante malgré quelques inégalités de sa surface et ne dépasse guère 700 μ dans les fragments décalcifiés; lorsque deux thalles du même support arrivent à se souder par leur croissance, il y a formation d'un épaississement suivant la ligne de rencontre, d'une sorte de petite crête.

Les conceptacles de 150 à 230 μ de diamètre extrêmement nombreux, sont immergés dans de petites cavités de la croûte; le toit est à peu près au niveau de la surface de la croûte; il est traversé par un petit nombre de pores environ 14 à 16; le toit s'affaise peu à peu au fur et à mesure de l'évolution du conceptacle; lorsqu'il a disparu il ne reste que les cavités très nombreuses et très rapprochées qui donnent à la croûte un aspect caractéristique (fig. 4 et 6) et lui donnent une ressemblance assez frappante avec *Lithophyllum* (*Ant.*) *subantarcticum* Fosl.

En coupe on observe une structure compacte. L'hypothalle est formé de cellules rectangulaires de 7 à 14 μ de longueur et 3 à 5 μ de largeur; les cellules du

périthalle sont arrondies; elles mesurent 4 à 6 μ de longueur et 3 à 6 μ de largeur; ces deux tissus ont une épaisseur très faible; l'épaisseur totale de la croûte est obtenue par la formation répétée d'un certain nombre de croûtes superposées, chacune constituée par un hypothalle et un périthalle.

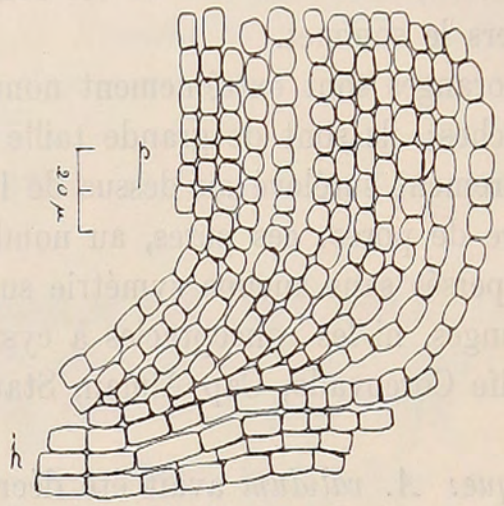

Fig. 1. Coupe verticale d'une croûte de *Lithothamnium pauciporosum.*

Habitat. Chiloe: Golfe de Corcovado, Cap Alman, Station 34, profondeur 20 mètres, 1 Août 1908; Ile Huafo, Samuel Cove, Station 31, 27 Juillet 1908, région littorale. Patagonie: Baie Reñihue, Buill Cove, Station 35, profondeur 20 mètres, 2 Août 1908.

3. **Lithothamnium Caroli** nov. sp.

Planche, fig. 6.

Crusta tenuis, 150—250 μ crassa, irregulariter rugulosa. Conceptacula sporangifera 100—160 μ diam., tecto applanato, ovali vel rotundo, 10—15 poroso. Hypothallum cellulis ovoideis, 10—13 μ longis, 5—7 μ latis. Perithallum cellulis rectangulis, 3—8 μ longis, 3—4 μ latis. Hypothallum ut perithallum textura densa.

L'espèce est représentée dans la collection de M. Skottsberg par de petites croûtes qui vivent sur des cailloux en compagnie de *Lithothamnium validum* et *pauciporosum;* elle forme de petites croûtes de 3 à 4 centimètres de diam., la surface est parsemée de petites rugosités de moins de 1 mm de diam. disposées irrégulièrement.

A la coupe les conceptacles apparaissent en grand nombre au milieu de ces granulations; ils sont arrondis ou ovales, d'un faible diamètre 100 à 160 μ; leur toit plat est percé de 10 à 15 pores.

La coupe verticale d'une croûte montre à la base l'hypothalle dont les files cellulaires sont entremêlées à leur partie inférieure; les cellules sont ovoïdes; elles mesurent 10 à 13 μ de longueur et 5 à 7 μ de largeur; le périthalle est formé de cellules rectangulaires de 3 à 8 μ de long et 3 à 4 μ de large; l'aspect du tissu est compact.

Cette espèce rappellerait, par son aspect extérieur, l'espèce subantarctique *L. granuliferum* Fosl.

Habitat. Chiloe: Cap Alman, Golfe Corcovado, Station 34, 1 Aôut 1908, profondeur 20 mètres.

4. **Lithophyllum** (?) **Skottsbergii** nov. sp.

Planche, fig. 3 et 8.

Crusta in medio 2 mm crassa, ad marginem lobatum minus crassa, in centro inaequalis, crustae ipsae parvae, inter se coalescentes. Hypothallum e cellulis 4—9 μ longis, 3—4 μ latis. Perithallum e cellulis quadraticis, 2—5 μ longis, 2—6 μ latis, densissime seriatis. Conceptacula numerosissima, convexa, 100—150 μ diam. poro unico.

Cette espèce, recuellie en grande abondance, forme sur les roches schisteuses de petites croûtes de couleur rose-saumon, superficiellement lobées au bord et lisérées de blanc sur les échantillons secs; par leur croissance les différentes croûtes nées sur le même support arrivent à se réunir en formant une croûte unique de plus de 10 centimètres, dans laquelle les limites des croûtes primaires sont complètement effacées; très minces et très adhérentes à leur contour les croûtes agées peuvent atteindre 2 mm d'épaisseur sur la plus grande partie de leur surface, par la formation de sortes de verrues qui donnent aux croûtes un aspect irregulier et rugueux; a cet état la croûte peut être facilement détachée de son support.

Les conceptacles, très petits, répartis en grand nombre sur la surface de la croûte, sont convexes, percés d'un pore, ils ont un diam. de 100 à 150 μ; je n'ai pas observé les spores; ils apparaissent assez distinctement figure 8.

En coupe verticale, on observe, à la partie inférieure quelques files hypothallines serrées, formées de cellules très petites, de 4 à 9 μ de long et 3 à 4 μ de large. Le périthalle est également formé de cellules très petites de 2 à 5 μ de hauteur et 4 à 6 μ de large, disposées en files très denses.

Dans cette espèce les caractères fournis par les conceptacles ne concordent pas avec ceux donnés par la structure; la présence d'un pore unique dans les conceptacles à sporanges doit faire placer cette espèce dans le genre *Lithophyllum*, d'autre part il s'en éloigne par son tissu dont les cellules ne paraissent, à aucune époque de sa croissance, s'organiser en rangées horizontales. Dans une classification générale des Mélobésiées, il y aura lieu de placer cette espèce, ainsi que *L. fetum* et *L. almanense* du Chili, et quelques autres espèces des Antilles, dans une section tout à fait aberrante dans le genre *Lithophyllum*.

Habitat. Chiloe: Ile San Pedro 27 Juillet 1908.

5. **Lithophyllum** (?) **almanense** nov. sp.

Planche, fig. 4 et 7.

Crusta circiter 400—500 μ crassa; conceptacula 250—400 μ, convexa, crateriformia, poro 100 μ. Perithallum textura compacta, cellulis rectangulo-rotundatis, 4—7 μ longis, 3—7 μ latis.

L. almanense a été découvert dans le Golfe Corcovado, où il vivait en compagnie de *Lithothamnium validum* et *pauciporosum*. Il forme une croûte d'une épaisseur assez constante (400—500 μ). Les conceptacles sont très nombreux; leur diamètre est 250 à 400 μ; ils sont convexes, déprimés dans leur partie centrale qui est percée d'un large pore d'environ 100 μ dans son plus grand diamètre; ainsi qu'on le voit figure 7 où les conceptacles ont été grossis, ils rappellent l'aspect d'une sorte de cratère.

En coupe les cellules, de forme rectangulaire-arrondie, forment un tissu compact; elles mesurent 4 à 7 μ de longueur et 3 à 7 μ de largeur. Je n'ai pas observé l'hypothalle qui doit être absent ou sinon très faiblement développé.

Ainsi que j'ai fait remarquer au sujet de l'espèce précédante, *L. almanense* doit être placé dans une section tout à fait à part dans le genre *Lithophyllum* dont sa structure l'éloigne.

Habitat. Chiloe: Cap Alman, Golfe Corcovado, Station 34, 1 Août 1908, profondeur 20 mètres.

6. **Lithophyllum fetum** Fosl. Algol. Notiser III, 24 (D. K. Norske Vid. Selsk. Skr. Trondhjem 1906, no. 8, paru 1907).

Je rapporte à cette espèce des croûtes dont l'aspect rappelle à s'y méprendre celui de *Lithophyllum aequabile* Fosl. var. *wandelica* Fosl., espèce antarctique et subantarctique.

Les croûtes sont irregulières, mamelonnées, et porvues de sortes de crêtes; l'épaisseur de la croûte est très inégale, elle atteint 7 mm. Les conceptacles forment des sortes de papules plates percées d'un pore en leur centre, ils sont peu proéminants et très serrés; souvent une dépression circulaire les entoure; lorsque le toit a disparu, il reste à leur place de petits trous. Le diamètre des conceptacles est de 230 à 250 μ, le pore, large et irregulier, a environ 50 μ de diamètre.

Le coupe montre une structure compacte: à la base on observe un hypothalle bien développé d'une épaisseur de 80 μ environ; les cellules mesurent 25 à 35 μ de longueur et 7 à 10 μ de largeur; le périthalle est formé de cellules rectangulaires de 9 à 17 μ de longueur, en moyenne de 12 à 13 μ, et 4 à 6 μ de largeur.

L'espèce se differencie de *L. aequabile* pas ses conceptacles et par sa structure, en particulier par l'absence totale de rangées de cellules dans le périthalle. La structure de *L. fetum* l'éloigne d'ailleurs de la plupart des espèces de *Lithophyllum*, et ainsi que quelques autres espèces aberrantes il doit être placé dans une section spéciale de ce genre.

Habitat. Ile Huafo, Samuel Cove, Station 31, 25 Juillet 1908, région littorale.

Répartition géographique. Jusqu'ici *L. fetum* n'était connu qu'à Corral (40°) ou il avait été recuelli par THAXTER. La localité nouvelle étend un peu son aire de répartition.

7. **Lithophyllum fernandezianum** nov. sp.

Planche, fig. 2.

Crusta laevis, tenuissima, margine translucens. Conceptacula sporangifera in thallo immersa, circumlimbata, porus unicus, cellulis uniseriatis coronatus; conceptacula 50—100 μ diam.; hypothallum indistinctum, crusta e cellulis gradatim minoribus constitutus, cellulis partis inferioris 10—18 μ longis, partis mediae 8—10 μ, partis superioris 3—5 μ.

Cette espèce forme de petites croûtes lisses, extrèmement tenues, si minces que leur marge est translucide sur une largeur de 1 à 2 mm et laisse diviner la couleur

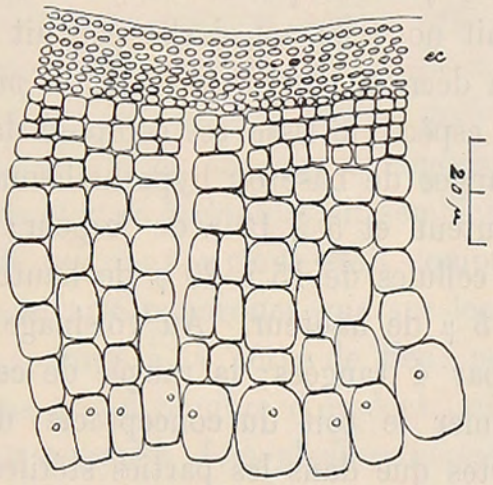

Fig. 2. Coupe verticale de la croûte de *Lithophyllum fernandezianum.*

du caillou sur lequel elles sont fixées; dans leur partie centrale elles sont opaques et montrent de très petits conceptacles enfoncés dans le thalle, entourés d'une bordure; le toit du conceptacle est percé d'un seul pore bordé par une couronne de 7 à 8 cellules; le diamètre des conceptacles est de 50 à 100 μ.

La structure est simplifiée; l'hypothalle n'est pas différencié; on peut admettre qu'il est représenté par la rangée de base des cellules, semblables comme forme aux autres cellules du thalle, mais de taille plus grande (15 à 18 μ) et pourvues de pores. Le périthalle est formé de files cellulaires dressées côté à côté; dans chaque file les cellules diminuent graduellement de taille de la partie inférieure vers la partie supérieure: les cellules de base mesurent 10 à 15 μ de long et 8 à 12 μ de large; celles de la partie médiane mesurent 8 à 10 μ de long et 8 à 12 μ de large; enfin, à la partie supérieure elles n'ont plus que 3 à 5 μ de long et 4 à 5 μ de large. Il y a peu d'exemples d'une diminution aussi rapide et aussi considérable de la taille des cellules, surtout étant données l'épaisseur minime de ces croûtes, 50 à 80 μ.

Dans certaines coupes le périthalle est recouvert par une écorce formée de cellules encore plus petites, qui n'ont guère que 1 a 2 μ de hauteur et 2 μ de large, empilées les unes sur les autres; elles ne se colorent pas sous l'influence de l'acide iodhydrique iodé fumant.

Cette espèce ne montre pas les rangées de cellules caractéristiques du genre *Lithophyllum* mais il appartient à ce genre par ces conceptacles percés d'un seul pore. D'autre part la couronne de cellules autour du pore rappelle les *Melobesia*, et enfin les cellules par leur grosseur et l'épaisseur très grande de leur paroi ont des analogies avec celles des *Mastophora*. C'est à tous points de vue une espèce intéressante par sa structure qui ne rappelle aucune autre espèce.

Habitat. Juan Fernandez, Masatierra, Baie Padre, Station 39.1, 26 Août 1908, bassins de la région littorale.

8. **Lithophyllum** (Dermatolithon) spec.

La seconde espèce recueillie à Juan Fernandez forme des croûtes extrêmement tenues sur d'autres algues; je n'ai pu en faire une étude assez approfondie pour savoir si cette espèce était nouvelle, ou si elle pouvait être considérée comme une variété d'une espèce déjà décrite, par exemple de *L. pustulatum*. Dans les coupes que j'ai obtenu de cette espèce, le tissu est composé dans les parties stériles de 3 rangées de cellules; la rangée de base ou hypothallienne est formée de hautes cellules de 60 à 70 μ de hauteur et 5 à 10 μ de largeur; la rangée médiane ou périthallienne est formée de cellules de 15 à 20 μ de hauteur; enfin la rangée corticale est formée de cellules de 5 μ de hauteur. Au voisinage immediat d'un conceptacle le tissu était constitué par 4 rangées; la rangée de cellules périthalliennes se dédouble de manière à former le toit du conceptacle; dans cette coupe les cellules hypothalliennes, plus courtes que dans les parties stériles mesuraient 40 à 60 μ. Il est possible que cette espèce soit la même que celle désignée par DICKIE sous le nom de *Melobesia pustulata* (voir page 4).

Habitat. Juan Fernandez, Masatierra, Baie Padre, Station 39.2, 26 Août 1908, région littorale inférieure.

II. Région subantarctique américaine.

Les échantillons de Mélobésiées recueillies dans cette région par M. SKOTTSBERG proviennent de l'Archipel de la Reine Adelaide, situé sur la côte pacifique, au débouché des canaux de la Patagonie, de la Terre de Feu, et des Iles Malouines ou Falkland. La plupart des espèces ont déjà été décrites dans un travail d'ensemble sur les Mélobésiées antarctiques et subantarctiques[1] et je ne recommencerai pas ici leur description.

[1] Mme PAUL LEMOINE. Mélobésiées, Révision des M. antarctiques. Deuxième expédition antarctique française 1908—1910. Sci. natur. Paris, MASSON, 1913, 67 pp. 2 pl. 14 fig. texte.

1) Terre de Feu et Patagonie occidentale.

La région de la Terre de Feu et du Détroit de Magellan a été explorée à différentes reprises; en laissant de côté quelques espèces sous des noms sujets à caution, il reste une douzaine d'espèces signalées dans cette région sudaméricaine dont on trouvera ci-dessous la liste:

Lithothamnium antarcticum (Hook. f. & Harv.) Heydr.	Lithothamnium Mülleri (Lem.) Rosenv.
» Lenormandi (Aresch.) Fosl.	» heterocladium Fosl.
» Mangini Lem. & Rosenv.	Pseudolithophyllum discoideum (Fosl.).
» Schmitzii (Har.) Heydr.	Lithophyllum rugosum (Fosl.) Lem.
» exasperatum Fosl.	» (Derm.) pustulatum (Lamx.)
» fuegianum Fosl.	» » conspectum Fosl.

Dans ses explorations à la Terre de Feu M. Skottsberg a recueilli trois espèces citées ci-dessus: *Lithothamnium Schmitzii*, *L. fuegianum*, et *Pseudolithophyllum discoideum*. De plus il y a découvert trois autres espèces qui y étaient inconnues: *Lithothamnium Patena*, *L. neglectum*, *Lithophyllum falklandicum*.

Ainsi qu'on le verra plus loin ces trois espèces font parti de la flore des Malouines, de sorte que la découverte de ces espèces augmente le nombre des espèces communes à la Terre de Feu et aux Malouines; il semblait à la suite des premières explorations que la flore de ces deux régions était composée d'élements différents; actuellement on peut au contraire remarquer que sur les espèces qui composent la flore des Malouines, 7 sont connues à la Terre de Feu; mais la flore de la Terre de Feu reste composée d'un plus grand nombre d'espèces (au total 16 espèces).

Une espèce, tout a fait nouvelle, *Lithophyllum atalayense* n. sp. a été rapportée de l'Archipel de la Reine Adelaide, d'où jusqu'ici on ne connaissait aucune Mélobésiée.

1. **Lithothamnium Schmitzii** (Har.) Heydr.

Habitat. Terre de Feu: Baie Orange, Station 44, 11 Mars 1909, profondeur 15 à 20 mètres, et St. 45, région littorale.

Répartition géographique. L. Schmitzii avait déjà été recueilli à la Baie Orange, ainsi que dans plusieurs autres localités fuégiennes, au Cap Horn, en Patagonie, à l'Ile des Etats, aux Malouines, Géorgie du Sud, Orcades du Sud.

2. **Lithothamnium Patena** (Hook. f. & Harv.) Heydr.

Habitat. Terre de Feu: Baie Orange, sur *Ballia*, Station 45, 11 Mars 1909, région littorale.

Répartition géographique. Cette espèce a tout d'abord été signalée en dehors des régions antarctiques: Cap, Sud-Australie, Nouvelle Zélande; puis elle a été re-

trouvée aux Iles Auckland, aux Malouines; la Terre de Feu est une nouvelle région à ajouter aux précedentes stations de cette espèce; sa répartition apparait beaucoup plus étendue qu'on ne le supposait jusqu'ici.

3. **Lithothamnium neglectum** Fosl.

Habitat. Terre de Feu: Baie Orange, Station 45, 11 Mars 1909.

Répartition géographique. Cette espèce n'était connue jusqu'ici qu'à l'Ile Kerguelen[1] et aux Iles Malouines où elle abonde. C'est la première fois qu'elle est recueillie à la Terre de Feu.

4. **Lithothamnium fuegianum** Fosl.

Un petit échantillon de la Terre de Feu forme une petite croûte en forme de chapeau, avec quelques stries concentriques a la surface; les conceptacles à sporanges sont absents; les conceptacles à cystocarpes mesurent 400 à 600 μ. En coupe la croûte se montre principalement formée par l'hypothalle; le périthalle très peu développé montre la disposition en rangées qui caracterise cette espèce; les cellules mesurent en certains points 10 μ tandis qu'en d'autres elles atteignent 10 à 18 μ; il en est de même pour l'échantillon des Malouines (p. 15); il y aura donc lieu de modifier la dimension que j'avais auparavant indiquée pour cette espèce, lorsque l'étude de nouveaux échantillons aura permis de fixer la dimension moyenne des cellules de cette algue. Par ailleurs tous les autres caractères, en particulier l'épaisseur de la croûte, concordent avec ceux indiqués jusqu'ici pour cette espèce.

Habitat. Terre de Feu: Baie Slogget, Station 47 B, 16 Mars 1909.

Répartition géographique. Terre de Feu, Iles Malouines Est.

5. **Pseudolithophyllum discoideum** (Fosl.) Lem.

Habitat. Terre de Feu: Baie Orange, Station 45, 11 Mars 1909.

Répartition géographique. Cette espèce a déjà été signalée à la Terre de Feu, en Patagonie, dans le Détroit de Magellan, à l'Ile de l'Observatoire, aux Malouines et en Géorgie du Sud.

6. **Lithophyllum falklandicum** Fosl.

M. Skottsberg a recueilli à la Terre de Feu un caillou recouvert de croûtes dont la surface irrégulière a de grandes analogies avec l'aspect des croûtes jeunes de *Lithophyllum falklandicum*. L'étude de la structure confirme cette ressemblance extérieure; la coupe verticale de cette croûte est identique à d'autres coupes de la

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[1] Les échantillons de l'Ile Kerguelen ont été décrits sous le nom de *L. variabile* Fosl. J'ai montré (Linn. Soc. Journ. Bot. XLIII, 1915, p. 196 qu'il me paraissait impossible de distinguer les deux espèces *L. neglectum* Fosl. et *L. variabile* Fosl.

même espèce, faites sur des échantillons des Iles Malouines; la seule différence, c'est qu'ici sur une épaisseur de 500 μ, la croûte est composée uniquement par le périthalle primaire, l'apparition du périthalle secondaire parait avoir été retardée. Les cellules du périthalle primaire ont l'aspect et les dimensions ordinaires de même que l'hypothalle, formé seulement d'une rangée basilaire.

Les conceptacles sont moins proéminants que ceux des échantillons de Malouines; leur diamètre est d'environ 200 μ; à la fin de leur évolution ils forment dans le thalle des cavités nombreuses qui ont un aspect alvéolaire, et qui ont un diamètre de 270 à 325 μ. La différance dans l'aspect des conceptacles pourrait s'expliquer facilement s'il s'agissait de sortes différentes de conceptacles, ce que je n'ai pas pu vérifier.

Habitat. Terre de Feu: Baie Orange, Station 45, 11 Mars 1909, région littorale.

Répartition géographique. Ainsi qu'il a été dit plus haut, cette espèce, extrêmement abondante aux Ils Malouines, où elle a été déjà signalée en 7 localités, n'avait jamais été récoltée ailleurs; ce serait sa première station en dehors des Malouines.

7. **Lithophyllum atalayense** nov. sp.

Planche, fig. 1.

Crusta parva, adnata, inciso-crenata; crustae in crustam unicam ± coalescentes inde indistinctae, 70 μ crassae e cellulis 15-seriatis, 4—5 μ longis, 3—7 μ latis constantes; cellularum series alia ab altera distantes. Conceptacula 150—250 μ diam.; alia summo subplane depressa, alia summo crateriformia tecti centro altius depresso, annulo prominentia quasi circumducto. Tecto delapso conceptacula concava evadunt.

Cette nouvelle espèce forme sur des cailloux de petites croûtes roses, très adhérentes au substratum, très minces, d'environ 70 μ d'épaisseur; leur contour est profondément découpé et déchiqueté. Ces petites croûtes, nombreuses sur le même substratum, confluent et forment des croûtes un peu plus étendues.

La croûte ne parait pas augmenter d'épaisseur avec l'âge; en coupe on n'observe qu'un très petit nombre de cellules, environ 12 à 15 superposées, constituant toute l'épaisseur du tissu. En général les cellules sont rectangulaires et mesurent 4 à 8 μ de longueur et 4 à 8 μ de largeur; dans certaines coupes faites sur le bord des croûtes, qui n'ont que 35 μ d'épaisseur, les cellules sont encore moins hautes; leur dimensions sont alors 2 à 4 μ de hauteur et 3 à 6 μ de largeur, c'est l'aspect de ces cellules qui est figuré ici, fig. 3. Toutes les cellules ont des cloisons fortement colorées par l'acide iodhydrique iodé, qui paraissent s'aligner suivant des lignes horizontelles; les cellules sont disposées en files plutôt lâches. L'hypothalle n'est représenté que par une rangée de cellules basilaire (h fig. 3).

Les conceptacles sont abondants sur les croûtes âgées; ils sont de petite taille; 150 à 250 μ de diamètre, de forme convexes mais peu proéminents. Ils paraissent être de deux sortes; les uns ont un diamètre de 200 à 250 μ, leur forme est convexe

avec le sommet plan ou même déprimé autour du pore; dans d'autres la partie centrale du toit est nettement affaissée et parait entourée par un anneau ovale formé par la partie du conceptacle resté en saillie; le diametre de ces derniers serait de

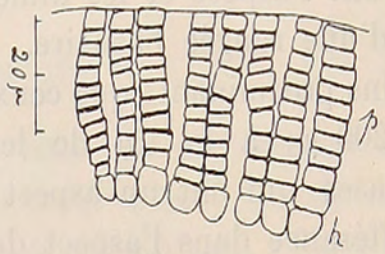

Fig. 3. Coupe verticale faite sur le bord d'une croûte de *Lithophyllum atalayense*.

175 à 200 µ. A la fin de l'évolution des conceptacles il reste dans le thalle des cavités. Je n'ai pas observé les spores.

Habitat. Archipel de la Reine Adelaide, Ile Atalaya, Station 25, 25 Mai 1908, région littorale.

2) Iles Malouines ou Falkland.

A la suite des précédents voyages de M. Skottsberg aus Iles Malouines et des récoltes faites dans la partie Ouest de cet archipel par Mrs Vallentin en 1910[1] un certain nombre d'espèces[2] dont je donne ci-dessous la liste, avaient été signalées aus Malouines. Dans cette liste les espèces recueillies lors du dernier voyage de M. Skottsberg sont marquées d'une croix.

Malouines occidentales	Maluines orientales
+ Lithothamnium antarcticum (H. f. & H.) Heydr.	+ L. antarcticum.
» Schmitzii (Har.) Heydr.	L. Schmitzii.
» Patena (H. f. & H.) Heydr.	+ L. Patena.
» neglectum Fosl.	+ L. fuegianum Fosl.
+ Lithophyllum falklandicum Fosl.	+ L. neglectum.
+ Pseudolithophyllum discoideum (Fosl.) Lem.	+ L. falklandicum.
Epilithon Vallentinae Lem.	+ P. discoideum.

On voit par ce petit résumé que la plupart des espèces de Mélobésiées sont uniformement répandues dans la partie occidentale et orientale des Malouines; de *Lithothamnium Patena* signalé seulement jusqu'ici dans la partie occidentale, vient d'être découvert dans la partie orientale au dernier voyage de M. Skottsberg. Une seule espèce est actuellement connue seulement dans la partie orientale, *Lithophyllum fuegianum* Fosl. et réciproquement *Epilithon Vallentinae* Lem. n'a été encore recueilli que dans la partie occidentale.

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[1] Mme Paul Lemoine in A. D. Cotton, Cryptogams from the Falkland Islands. Linn. Soc. Journ. Botany XLIII, Nov. 1915, p. 193—200, pl. IX, X.

[2] Mme Paul Lemoine. Mélobésiées, Révision des M. antarctiques. Deuxième expédition antarctique française 1908—1910. Sciences naturelles. Masson, 1913, 67 pp., 2 pl., 14 fig. texte.

1. **Lithothamnium antarcticum** (Hook. fil. et Harv.) Heydr.

Les échantillons recueillis ont une surface légèrement irrégulière; l'épaisseur est de 100 à 180 μ dans les parties stériles, elle atteint 300 μ dans les parties fructifiées. Certaines croûtes fixées sur *Ballia* sont pourvues de conceptacles à cystocarpes de 400 à 480 μ de diametre, mamilliformes-coniques; à maturité l'orifice de sortie des spores mesure 50 à 75 μ de diamètre; d'autres croûtes mélangées aux précedentes montres des conceptacles à sporanges.

Habitat. Malouines Est: Cap Pembroke, Station 3 B, 7—8 Novembre 1907, région littorale; M. Ouest: Ile West Point, Station 8, 8 Décembre 1907, région littorale.

Répartition géographique. Patagonie, Detr. de Magellan, Cap Horn, Malouines, Georgie du Sud, Orcades du Sud, Kerguelen, Iles Auckland, Tasmanie, Sud de l'Australie.

2. **Lithothamnium Patena** (Hook. fil. et Harv.) Heydr.

Habitat. Malouines Est: Port Williams, Station 2, profondeur 12 mètres, 7 novembre 1907.

Répartition géographique. Cette espèce avait été signalée aux Malouines par des échantillons mal développés, qui avaient été recueillis dans la partie occidentale par Mrs. Valentin. Il est intéressant d'en voir de beaux spécimens dans la collection de M. Skottsberg; c'est une espèce répandue dans les régions australes: Sud de l'Australie, Nouvelle Zélande, Cap. Les Iles Auckland et les Malouines étaient les seules localités subantarctiques de cette espèce avant la découverte à la Terre de Feu (voir page 11).

3. **Lithothamnium fuegianum** Fosl.

Cette espèce avait jusqu'ici été seulement récoltée sur des algues; cet échantillon-ci vivait sur des balanes et recouvrait en partie la roche qui servait de support à ces animaux. La croûte, d'un aspect légèrement brillant, est pourvue de nombreux conceptacles de grande taille, très rapprochés et très serrés.

Habitat. Malouines Est: Sparrow Cove, Station 9, profondeur 11 à 13 mètres, 10 Janvier 1908.

Répartition géographique. L. fuegianum a été signalé à la Terre de Feu (Ile Désolation) et dans la partie orientale des Malouines: Berkeley Sound, Port Louis.

4. **Lithothamnium neglectum** Fosl.

Habitat. Malouines Est: Cap Pembroke, Station 3 B, 7—8 Novembre 1907; Low Bay, 19 Janvier 1908.

Répartition géographique. Cette espèce a déjà été recueillie dans la partie orientale des Malouines à Berkeley Sound, Port Louis et Stanley Harbour, et également dans la partie occidentale, à l'Ile Kerguelen et à la Terre de Feu (voir page 12).

5. **Lithophyllum falklandicum** Fosl.

Cette espèce a été recueillie sur des rochers et sur des moules qu'elle recouvre d'une croûte mince avec de nombreuses petites têtes serrées de 1 à 2 mm de diamètre, couvertes de conceptacles.

Habitat. Malouines Est: Cap Pembroke, Station 3 B, 7—8 Novembre 1907, région littorale. M. Ouest: Côte sud de King George's Bay, Station 4 C, 22 Novembre 1907, bassin littoral; Port North, Station 7 B, bassin littoral, 2 Décembre 1907.

Répartition géographique. L. falklandicum parait une espèce très caractéristique des Malouines où elle est connue dans les parties orientale (Stanley Harbour, Berkeley Sound, Port Louis, Seal Cove) et occidentale. Elle vient d'être découverte à la Terre de Feu (voir p. 12).

6. **Pseudolithophyllum discoideum** (Fosl.) Lem.

De très beaux échantillons ont été recueillis; les croûtes pourvues d'excroissances ou de crêtes dressées ont souvent une épaisseur de 2 cent. 5 mm, et même 4 cent. dans l'un des échantillons; ceux des échantillons dans lesquels des crêtes dressées se soudent pour former des sortes de tête doivent être rangées dans la var. *capitulata* Heydr.

Habitat. Malouines Est: Cap Pembroke, Station 3 B, 7—8 Novembre 1907, région littorale. M. Ouest: Côte sud de King George's Bay, Station 4 C, 22 Novembre 1907, bassin littoral; Port North, Station 7 B, 2 Décembre 1907, bassin littoral.

Répartition géographique. P. discoideum est représenté dans de nombreuses localités subantarctiques: Patagonie, Terre de Feu, Detr. de Magellan, Ile de l'Observatoire près de l'Ile des Etats, Georgie du Sud; aux Malouines elle avait été recueillie auparavant dans la côte ouest (sans indication de localité) et dans les côtes Est: Berkeley Sound, Port Louis, Hooker's Point.

Explication de la Planche.

Fig. 1. Croûtes de *Lithophyllum atalayense*, grossies 4 fois.
» 2. *Lithophyllum fernandezianum*, grandeur naturelle.
» 3. » (?) *Skottsbergii*.
» 4. Caillou servant de support aux espèces *Lithothamnium validum* (croûte jeune, à la partie superieure de la figure), *Lithothamnium pauciporosum* (marquées o) et *Lithophyllum*(?) *almanense* (au centre, marquées d'un v), grandeur naturelle.
» 5. Thalle adulte de *Lithothamnium validum*.
» 6. Caillou servant de support à *Lithothamnium validum* (à la partie supérieure de la figure), à *Lithothamnium pauciporosum* (au centre) et à *Lithothamnium Caroli* (à la partie inférieure), grandeur naturelle.
» 7. Portion grossie de la fig. 4, croûtes de *Lithophyllum*(?) *almanense* (marquées d'un v), entourées par *Lithothamnium pauciporosum* (marquées d'un o), gross. 4 fois.
» 8. Portion grossie de la fig. 3, *Lithophyllum*(?) *Skottsbergii*, abondamment fructifié.

Tryckt den 17 augusti 1920.

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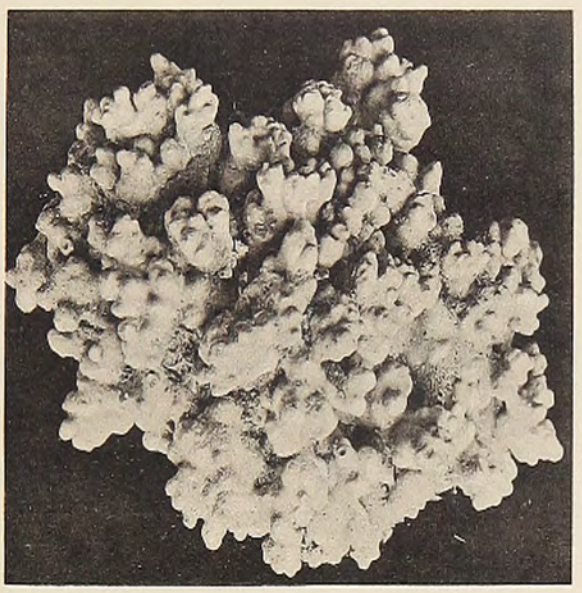

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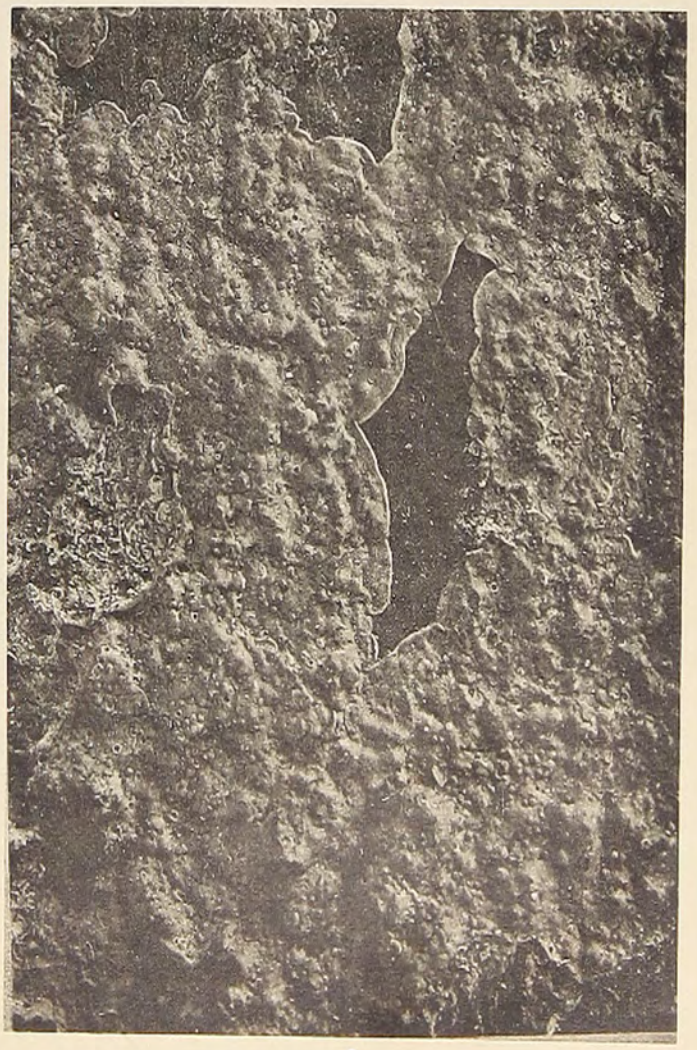

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Ljustr. A. B. Lagrelius & Westphal, Stockholm

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BOTANISCHE ERGEBNISSE

DER

SCHWEDISCHEN EXPEDITION NACH PATAGONIEN UND DEM FEUERLANDE 1907—1909

VIII.

MARINE ALGAE 1. PHAEOPHYCEAE

BY

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WITH 20 TEXT FIGURES

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During my voyage in 1907—09 I devoted much time to the study of marine algæ. Large collections were made, and it was my intention to make a very detailed study of all the material available from Subantarctic America. In 1911, I spent two months at the biological station on Heligoland with Professor Dr. Paul Kuckuck, who was at that time occupied with monographical work in the Phæophyceæ. What he did to promote my work is not told in a few words. It is indeed very sad that he did not live to receive my thanks for all that I owe to him; his fine library, his unique collection of microscopic slides, and, last not least, his enthusiasm, that made him sacrifice much time for my sake, all largely contributed to the results of my studies. Forced to leave his beloved island at the outbreak of the war, he subsequently took up his quarters at the Dahlem Museum. We continued to discuss some open questions concerning my algæ, and I had just received a letter from him telling me that the first part of his work, where some of my species were to be treated, was nearly finished, when death suddenly put a stop to his active life, bereaving me of a faithful friend and the algological science of one of its very best men. I had handed over some of the Ectocarpaceæ and the Elachistaceæ to him, and some of the figures published here, drawn by me under his supervision, were intended for his monograph. Some of his notes, especially on Gononema and the Elachistas, which I had proposed as new species, were sent to me after his death.

While waiting for his memoir, I had laid aside my material for some years and I did not take up the work again until after my return from the Juan Fernandez expedition in December, 1917. As said above, my first intention was to make a very detailed study of the collection; this, however, would have delayed the publication for another number of years, and, on the other hand, the cost of printing being very high, it became necessary to condense the descriptions and discussions as much as possible. What I publish here is therefore a list of the species with notes on some of them. The numerous figures, drawn at double the enlargement indicated and reduced to half size, will, I hope, help the reader to get a fairly good idea of some of the more interesting Subantarctic species.

My treatise on the algæ of the Swedish South Polar Expedition together with the present paper will show, I think, that there is along the coasts of Subantarctic America and round the islands in the South Atlantic a rich and quite interesting marine flora. The time has come, according to my opinion at least, when some competent person ought to take up algological work in the field and with laboratory facilities. The lighthouse near Cape Pembroke in the Falkland Islands would make

a fine place for a small biological station, and South Georgia with its flourishing whaling industry offers considerable facilities for this kind of work. Success is certain to follow. Anybody who consults my papers will understand how much there is to be done before we shall arrive at a thorough knowledge of the Subantarctic flora.

An account of the Rhodophyceæ, by the writer, will soon follow, while the Chlorophyceæ will be treated by Dr. D. Hylmö. The collection from Juan Fernandez has been handed over to Dr. F. Börgesen together with the material from my latest journey.

Botanic Gardens, Gothenburg, November, 1920.

Abbreviations: sp. = specimens with sporangia, gt. = specimens with gametangia.

Phæosporales.

Ectocarpaceæ.

Pylaiella Bory.

P. litoralis (L.) Kjellm.

* *opposita* Kjellm. f. *typica* Kjellm.

Not uncommon in the litoral region, sometimes in great masses. Fuegia: Beagle Channel, Ventisqueros Inlet (St. 43, 5. 3. 09, sp.), on boulders in brackish water, also in the upper sublitoral; Slogget Bay, on rocks (St. 47, 16. 3. 09, sp.); Admiralty Inlet, Hope Bay, on sand (St. 13, 25. 3. 08, sp.). The form from St. 47 is rather like f. *crassiuscula* Kjellm., the tufts only about 1 cm long. Falkland Islands: Stanley Harbour, very numerous on small stones (St. 1, 3. 11. 07, sp.).

f. *rigidiuscula* nov. f.—Pusilla, obscura, 1—2 cm. alta, subrigida, firme penicillata, ramis 40—55 μ crassis, ramulosa, ramulis 20—30 μ crassis rectis, angulo acuto exeuntibus, brevis vel brevissimis, apice subacutis, alternis (sæpe aggregatis) vel oppositis; sporangiorum catenæ in ramulis subterminales vel terminales; sporangia subglobosa, 40—50 μ crassa, interdum longitudinaliter divisa. — Fig. 1 a, 2 a.

Fuegia: Slogget Bay, in tide-pools on *Cladostephus* and *Scytothamnus* (St. 47, 16. 3. 09, sp.). — This does not agree with any of the described forms; it bears some resemblance to f. *ramellosa* (Kütz.) Kuck., but the position of the sporangia is more as in *P. varia* Kjellm.

* *divaricata* Kjellm.

Near f. *prætorta* Kjellm., but with shorter branches. A very delicate form, thickest filaments only about 20 μ. Branches sometimes opposite, often under right angle, not tapering. Colour very dark brown. — Patagonia: Otway Water, Puerto Toro, in beach drift on *Cladostephus* (St. 16 b, 15. 4. 08, sp.).

f. *botryoclada* nov. f.—Intricate cæspitosa, tortuosa, parcissime ramulosa, filis majoribus 30—40 μ crassis, articulis diametro æquilongis — duplo longioribus; ramulis brevibus, simplicibus vel sæpe brevissime et irregulariter fasciculatim ramellosis. Sporangia intercalaria vel in ramulis terminalia, breve cylindrica, interdum ambitu sat irregularia, filis paulum latiora. Gametangia in individuis distinctis eodem loco quam sporangia evoluta, filis aequilata, nonnumquam subtuberculata. — Fig. 1 b-d.

Fuegia: Ushuaia, in shallow tide-pools (St. 46, 14. 3. 09, sp. & gt.). — This form looks quite peculiar and rather unlike other varieties. The branching is much the same as in *P. varia*, but no botryoid branchlets have been observed in this and the sporangia are different. Gametangia and sporangia were observed on different

specimens; in the plant with gametangia there are short, irregular fertile branches, that seem to correspond to the sterile ramelli in the other plant.

* *firma* KJELLM.

Large forms with all the branches conspicuously attenuate, not rarely ending in a hair. — Fuegia: Admiralty Inlet, Hope Bay, common with *Ahnfeltia* (St. 13, 25. 3. 08, sp.). Falkland Islands: Stanley Harbour, on pebbles (St. 1, 3. 11. 07, sp.).

Distribution of *P. litoralis:* subcosmopolitan.

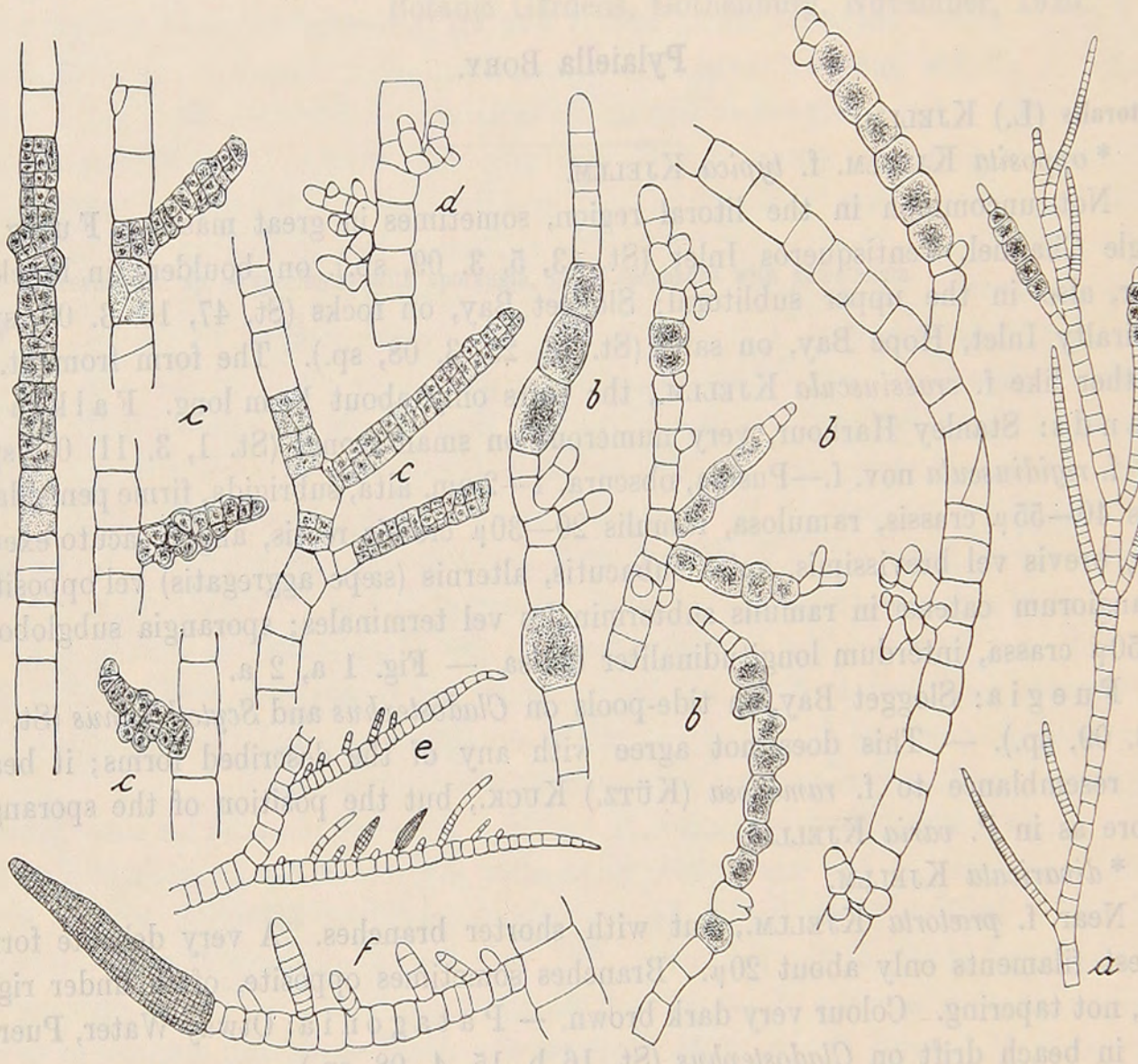

Fig. 1. **a** *Pylaiella litoralis* f. *rigidiuscula*, × 55. **b—d** f. *botryoclada:* **b** branches with sporangia, × 180; **c** with gametangia, × 180; **d** sterile branchlets, × 180. **e—f** *Ectocarpus falklandicus*, **e** × 55; **f** × 180.

Ectocarpus LYNGB.

E. exiguus SKOTTSB. Ant. Meeresalg. I p. 5.

This I believe to be the *E. humilis* of REINSCH non KÜTZ., at least its var. β, found growing on *Desmarestia* at South Georgia. I do not know the varieties α and γ, the latter quoted from the Mediterranean. This time I have rich material from South Georgia, on *Desmarestia ligulata.* It is of *confervoides*-type as to the shape of gametangia and chromatophores, but the dimensions are decidedly smaller and the

chromatophores comparatively shorter and broader in a living state. A basal disc is very conspicuous, not very unlike that of a *Myrionema*, and bearing basal gametangia. On the other hand, there is in the Subantarctic a real *E. confervoides*, which Prof. KUCKUCK declared identical with European plants. *E. exiguus* is perhaps similar to *E. pygmæus* ARESCH. = *confervoides* f. *pygmæa* KJELLM.

Fuegia: Orange Bay, on *Lessonia* (St. 45, 11. 3. 09, gt.). Falkland Islands: Port William, on *Macrocystis* (St. 2, 7. 11. 07, gt.). South Georgia: Bay of Isles, on *Desmarestia ligulata* (St. 52, 25. 4. 09, gt.).

Distribution: Fuegia, Falkl., S. Georgia.

E. confervoides (ROTH) LE JOL.

Patagonia: Canal Gajardo, on rocks (St. 21 b, 27. 4. 08, gt.). Fuegia: Slogget Bay (St. 47, 16. 3. 09, gt.). Falkland Islands: Stanley Harbour, on other algæ in the litoral region (St. 1, 3. 11. 07, gt.); Cape Pembroke, common in tide-pools on *Corallina* (St. 3, 7—8. 11. 07, sp. & gt. on different individuals); West Falkl., Halfway Cove, sublit. 5 m (St. 5, 25. 11. 07, gt.); Westpoint Isl., on *Macrocystis* (St. 8, 6. 12. 07, gt.). South Georgia: Boiler Harbour, on *Desmarestia Harveyana* (St. 48, 20. 4. 09, gt.).

Distribution: N. Atl. and Pacif. Oceans, circumpolar subantarctic.

E. siliculosus (DILLW.) LYNGB.

Patagonia: Skyring Water, Rucas Bay in large masses at 1 dm depth (St. 19 b, 25. 4. 08, gt.). Fuegia: Admiralty Inlet, on *Adenocystis* (St. 13, 25. 3. 08, gt.). Falkland Islands, Cape Pembroke, with the former (St. 3, 7. 11. 07, gt.); Westpoint Island, tidal basins, on *Ballia* (St. 8, 6. 12. 07, gt.).

Distribution: Probably the same as of *E. confervoides.*

E. Constanciæ HARIOT.

West Patagonia: Puerto Bueno, sublitoral on other algæ, 1—3 m (St. 27, 3. 6. 08, gt.). Falkland Islands: Cape Pembroke, upper litoral with *Bostrychia* (St. 3, 7. 1. 08, gt.); Westpoint Isl., in basins on Florideæ (St. 8, 5. 12. 07, gt.). — The specimens from St. 27 correspond very well to HARIOT's description and figure (Miss. sci. Cap Horn, Pl. 3), but the gametangia sometimes are as much as 100 μ long. There are numerous band-like chromatophores in each cell, the younger ones being short, almost disc-shaped as in the figure quoted.

Distribution: Subant. Amer., Falkl., S. Georgia, Kerg.

E. penicillatus AG.

Patagonia: Canal Fitzroy, Los Amigos, on drifted *Leathesia* (St. 17 b, 19. 4. 08, gt.); Skyring Water, Puerto Altamirano, on stones, 1—2 dm (St. 18, 22. 4. 08, gt.).

Distribution: Arct. & Atlant., Baltic, Subantarct. Amer.

E. falklandicus SKOTTSB. Ant. Meeresalg. I, p. 5. — Fig. 1 e—f, 2 b—c.

Falkland Islands: West Falkl., Halfway Cove, on *Macrocystis* (23. 4. 07, gt.). — I can see now that the gametangia described in 1907 were unripe. The ripe ones are narrow conical, sessile or pedicillate, sometimes apical in a short branch,

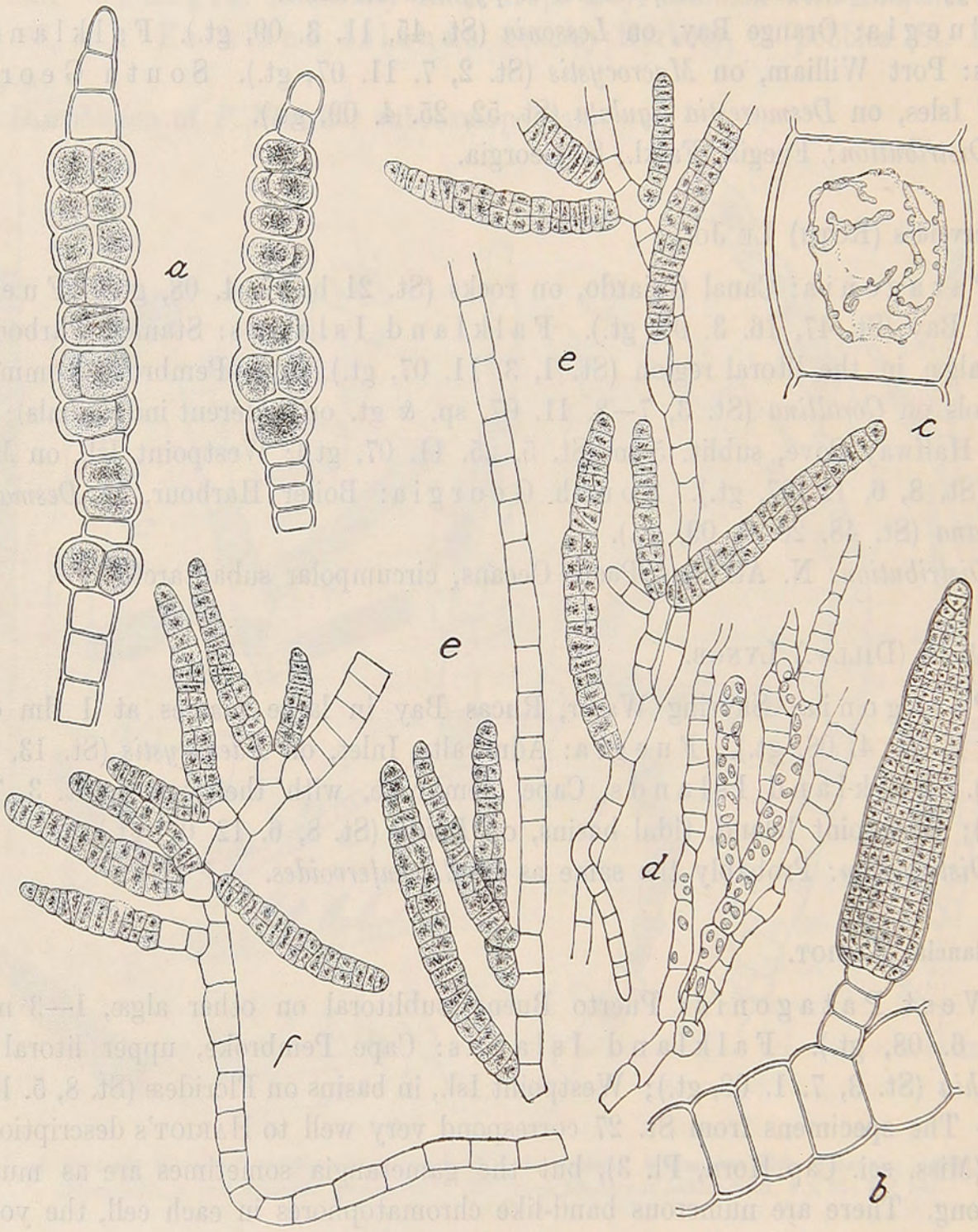

Fig. 2. **a** *Pylaiella litoralis* f. *rigidiuscula*, chains of sporangia, × 180. **b—c** *Ectocarpus falklandicus:* **b** gametangium, × 360; **c** veg. cell showing chromatophores, × 360. **d—f** *Gononema ramosum:* **d** basal part, showing chromatophores and empty gametangia, × 360; **e** lower parts with gametangia, × 360, **f** cluster of gametangia on upper part of filament, × 360.

120—190 × 24—36 μ. The main filaments attain 80 μ across. The chromatophores are narrow, bandlike and branched and several in each cell. This species should be compared with *E. fasciculatus*, from which, however, it seems to differ considerably.

Distribution: Falkl.

E. tomentosus (HUDS.) LYNGB.

Patagonia: Canal Gajardo, on *Adenocystis* (St. 21 b, 27. 4. 08, sp., gt.); Arauz Bay, on *Chætangium* (St. 23, 3. 5. 08, gt.). Fuegia: Orange Bay (St. 45, 11. 3. 09). — Very characteristic and quite like northern specimens. The filaments are often not more than 15 μ thick. The plants from 21 b bear very numerous gametangia, 60—90 × 10—18 μ, and also some sporangia, 36—45 × 24—30 μ, sometimes three or four together on the same branch, sometimes a single one close to a gametangium. There is a distinct basal disc, as described by KJELLMAN, Handb. p. 72.

Distribution: Arct., N. Atlant., Subantarct. Amer.

Geminocarpus[1] SKOTTSB.

(Syn. Gonimocarpus (sic!), REINBOLD, Deutsche Südpolar-Exp. p. 190.)

G. geminatus (HOOK. FIL. et HARV.) SKOTTSB.

This species is extremely characteristic of the subantarctic marine flora and generally found fertile, but seldom with sporangia. I have never observed both kinds of reproductive organs on the same plant; probably there is a regular alternation of generations. — Fuegia: Beagle Channel, plentiful on the beach in Ventisqueros Sound (St. 43, 5. 3. 09, gt.); Ushuaia (St. 46, 14. 3. 09, gt.). Falkland Islands, Cape Pembroke, in basins on other algæ, common (St. 3, 7. 11. 07, 7. 1. 08, sp., gt.); West Falkl., Halfway Cove, on *Macrocystis* (St. 5, 25. 11. 07, gt.); Westpoint Isl. on rocks in the litoral region (St. 8, 5. 12. 07, gt.). South Georgia: Boiler Harbour, sublit. on *Adenocystis*, 5 m (St. 48, 20. 4. 09, gt.); Bay of Isles, on *Leptosarca*, 8 m (St. 52, 25. 4. 09, gt.).

Distribution: Subant.-antarct. circumpolar.

Gononema KUCK. et SKOTTSB. nov. gen.

Pars basalis plus minusve stratosa — elachistoidea, plerumque parum evoluta, interdum stolones repentes intertextos emittens. Fila verticalia ectocarpoidea, monosiphonea, inferne plus minusve ramosa, dein simplicia, sat longe penicillata. Sporangia in filis erectis basalia. Gametangia basalia (et saepe majora) vel in filamentis erectis lateralia et numerosissima, uni- vel pauciseriata. Pili basales vel laterales nec non terminales. Crescentia suprabasalis et intercalaris.

While studying my new and good material of *Ectocarpus pectinatus* SKOTTSB. with Prof. KUCKUCK on Heligoland, I found that it differs more from most species of that genus than I had thought before. There were the two kinds of gametangia, larger basal and smaller lateral ones; lateral hairs were discovered, and we observed that the cell carrying a lateral gametangium is sometimes fertilized (fig 3 b). This made me suggest a relation to the small radial species of *Desmotrichum*, and I became

[1] An unfortunate bastard name, Didymocarpus being the correct form; but, according to the Vienna Rules, this cannot justify an alteration.

inclined to remove *E. pectinatus* from *Ectocarpus*, and to make a new genus for it. I also noted a great likeness between this plant and my *Elachista(?) ramosa*. After I had been obliged to give up my algological work, Professor KUCKUCK continued to study the two species, and I supplied him with material, notes and drawings. His notes were again handed over to me after his death, when I found that he had united the two species into one genus, for which he proposed the name *Myriochæte* KUCK. et SKOTTSB. I guess that the numerous seriate gametangia were considered to resemble small bristles. But as there are no real bristles at all, I do not accept the name, for which reason another was proposed, suggesting the extreme fertility of the filaments.

KUCKUCK placed the new genus very near the *Elachistaceæ*. There is a certain resemblance to *Leptonema*, but I think the likeness to *Ectocarpus* is greater in the ramification, the shape of gametangia, the position of the hairs, etc. *E. pectinatus* could not very well be brought near *Elachista*, and *E.* (*?*) *ramosa* was, from the very first, a stranger in the Elachistaceæ. I shall quote KUCKUCK's words: »Ich meine, alles drängt dazu, Ect. pectinatus und El. ramosa zu einem neuen Genus zusammenzufassen, das eine Vorstufe zu Elachista darstellt und durch seine ectocarpoiden Merkmale charakterisiert ist. Die scharfe Umgrenzung ist freilich nicht leicht, aber auch zwischen Symphoricoccus, Elachista und Leptonema sind die Grenzen nicht scharf.«

A renewed study of the two plants convinced me that they must belong to the same genus. They are, in fact, sometimes very like each other. The main difference is that *El. ramosa* is much more branched in its lower parts and has larger gametangia, which never are so regularly seriate as in the other. No sporangia have been observed in *E. pectinatus*, no lateral hairs in *El. ramosa*. The dimensions of the filaments are much the same in both, but the cells are shorter in the former.

KUCKUCK proposed to remove two other Ectocarpi to the new genus. One of these, *E. tomentosoides* FARLOW was recognized by the writer in 1907 as a near relative of his *E. pectinatus*. No hairs or sporangia have been described in the former. The second species, *E. ellipticus* SAUNDERS, has only basal gametangia. To judge from BÖRGESEN's supplementary description and figure of *E. elachistæformis* HEYDR. (Mar. alg. Dan. W. Ind. Vol. II p. 435) also this species belongs to *Gononema*.

G. pectinatum (SKOTTSB.) KUCK. et SKOTTSB. — Fig. 3.

Syn. *Ectocarpus pectinatus* SKOTTSB. Ant. Meeresalg. I p. 11.

Cells short, often square in outline, with few chromatophores. Zones of division here and there in the filaments, which are about 10 μ thick. Hairs 8—10 μ thick, sometimes lateral on upper parts of the erect filaments. Sporangia unknown. Basal gametangia rare or missing, 60×12 μ, upper pectinate, $25-36 \times 8-15$ μ. The vertical filaments bear a remarkable likeness to *Myrionema speciosum* BÖRGESEN, Mar. Alg. Færoes p. 423, fig. 78. — Falkland Islands: Stanley Harbour, in and about the cryptostomata of *Adenocystis* (St. 1, 1. 11. 07, gt.).

Distribution: Falkl.

G. ramosum (SKOTTSB.) KUCK. et SKOTTSB. — Fig. 2 d-f, 4.

Syn. *Elachista (?) ramosa* SKOTTSB. Ant. Meeresalg. I, p. 54.

Cells rectangular in outline, the lower ones long and narrow (c. 45 × 9 μ); chromatophores more numerous than in the former. Hairs basal, 6—9 μ thick. Sporangia basal, 75—80 × × 21—24 μ. Lower gametangia 90—165 × 11—15 μ forming a more or less distinct zone, followed by a sterile zone; upper irregularly arranged, 50—80 × × 12—15 μ or rarely shorter and then much like those in the former. — Patagonia: Skyring Water, Puerto Altamirano on stipes of *Adenocystis* (St. 18, 22. 4. 08, gt.). Fuegia: Puerto Barrow, in cryptostomata of *Adenocystis* (St. 43, 4. 3. 09, sp. & gt., also on the same plant). Falkland Islands: Port Louis, on the »Chordaria»-shoots of *Cæpidium* (St. 11, 7. 2. 08, gt.)

On *Cæpidium*, St. 11, also occurs a small epiphytic alga, which I at first took to be a *Myriactis:* fig. 4 g—h. KUCKUCK, in his notes, also brought it to that genus. Further researches, however, have convinced me that it is young *G. ramosum*. The basal parts are plainly visible. The erect filaments are much shorter than in the adult plant and the longest cells only 25 × 9 μ; the hairs are 9 μ thick, the gametangia (all basal) measure 60 × × 12 μ. Otherwise the two plants are quite like each other. The same species was observed at Cape Pembroke (St. 3, 7. 11. 07) on *Scytosiphon*.

Distribution: Subantarct. Amer., Falkl.

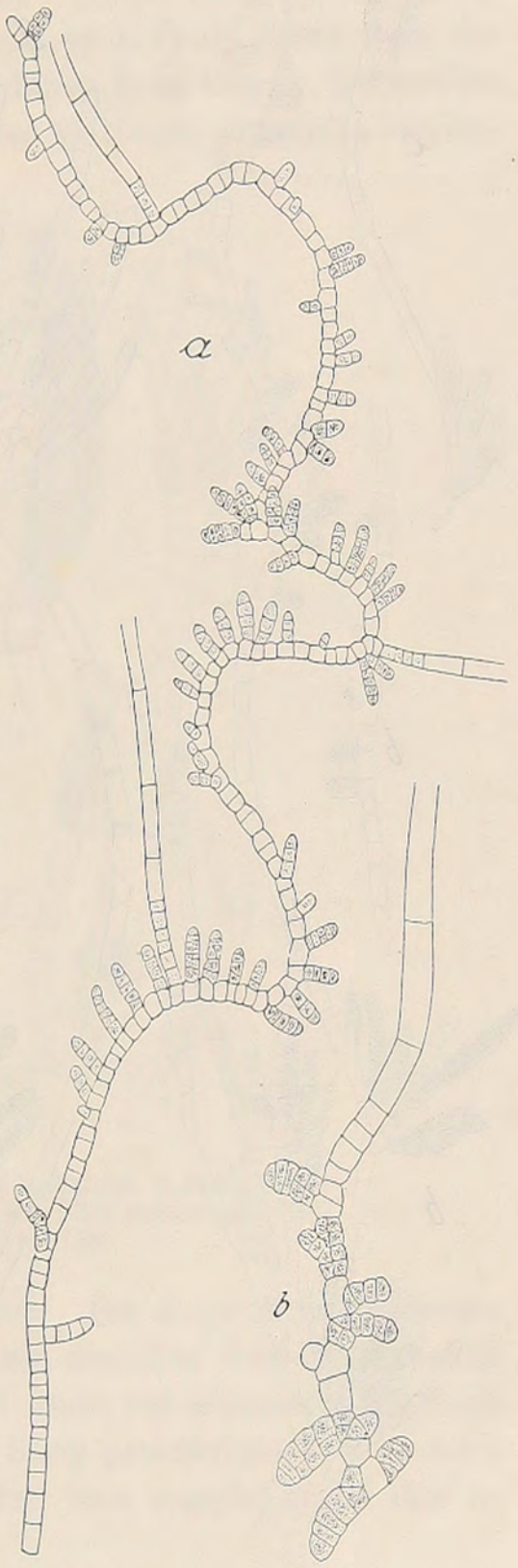

Fig. 3. *Gononema pectinatum:* a filament, × 180; b part of filament, × 400.

Streblonema DERB. et SOL.

S. patagonicum nov. spec. — Fig. 5.

In *Castagnea Zosterae*. Fila endophytica irregulariter ramosa, inter cellulas longitudinales hyalinas hospitis repentia, rhizoideis hyalinis, longissimis, ramosis, apice attenuatis, 9—12 μ crassa, cellulis usque ad duplo longioribus quam latioribus, interdum longitudinaliter divisis. Fila suberecta—erecta, inter paraphyses *Castagneae* abscondita, brevissima, ad 300 μ alta (interdum subnulla), circ. 12—15 μ lata, cellulis chromatophoris paucis disciformibus instructis, haud raro longitudinaliter divisis, omnia

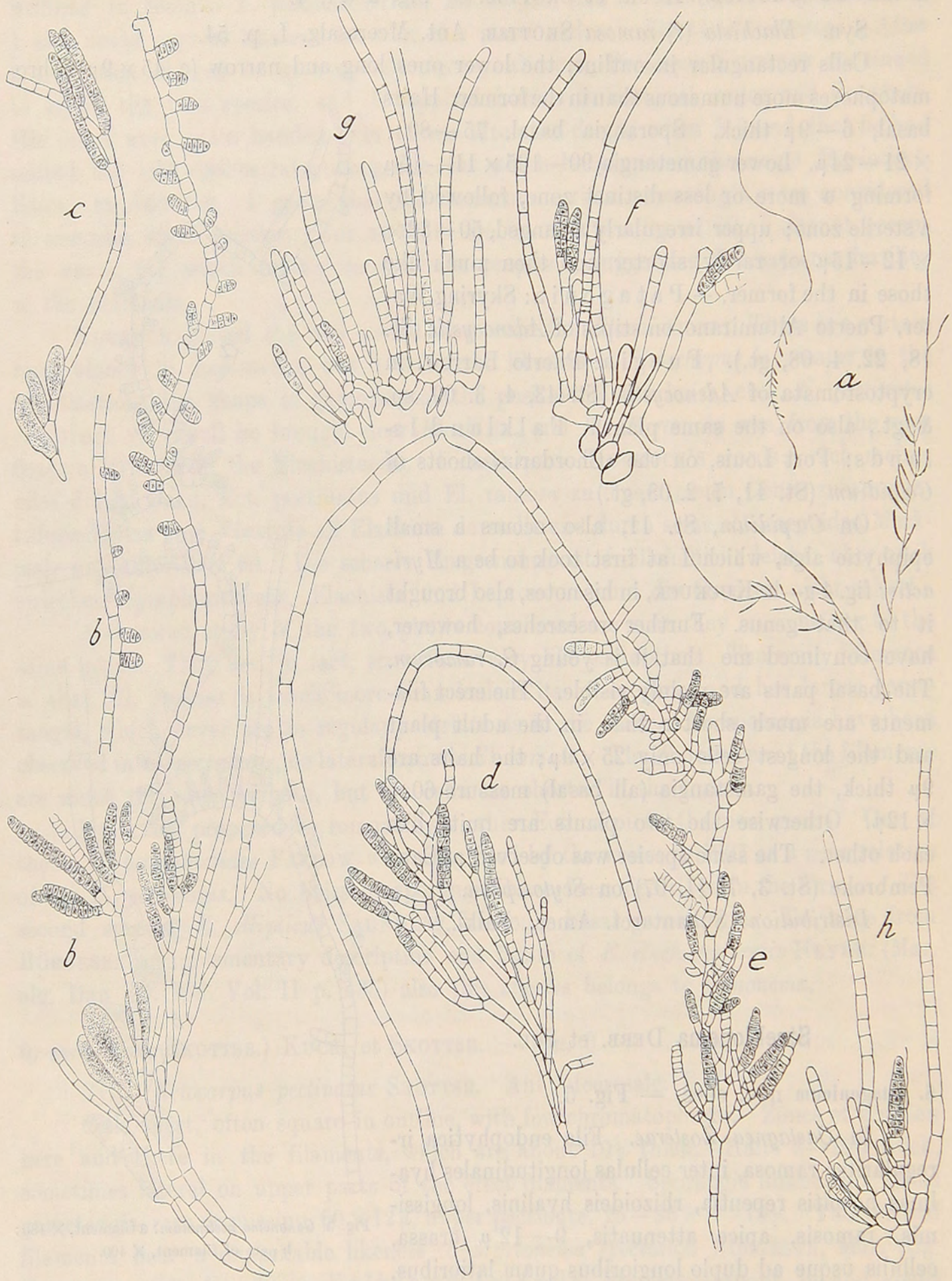

Fig. 4. *Gononema ramosum:* **a**—**c** from St. 42; **a** part of tuft, with spor., × 55; **b** id. also with gametangia, × 200; **c** base of filament, × 180; **d**—**f** from St. 11, typical filaments with gametangia, in **f** some cells of the host visible, × 180; **g**—**h** *Myriactis*-like plants from St. 11, × 180.

fertilia. Gametangia siliquiformia, apicalia (saepe bina) vel lateralia, 40—125 × × 18—32 μ, pluriseriata. Sporangia non visa. Pili 6—7 μ diam.

Patagonia: Skyring Water, Puerto Altamirano, in the sublitoral region, 5—10 m, on *Castagnea Zosterœ* (St. 19, 23. 4. 08, gt.).

Of all species known this seems to come nearest to *S. Cooki* Howe from the Peruvian coast (Alg. of Perú p. 48, Plate 11). It differs from this by the smaller dimensions, by the absence of long external filaments, by longer, sometimes longitu-

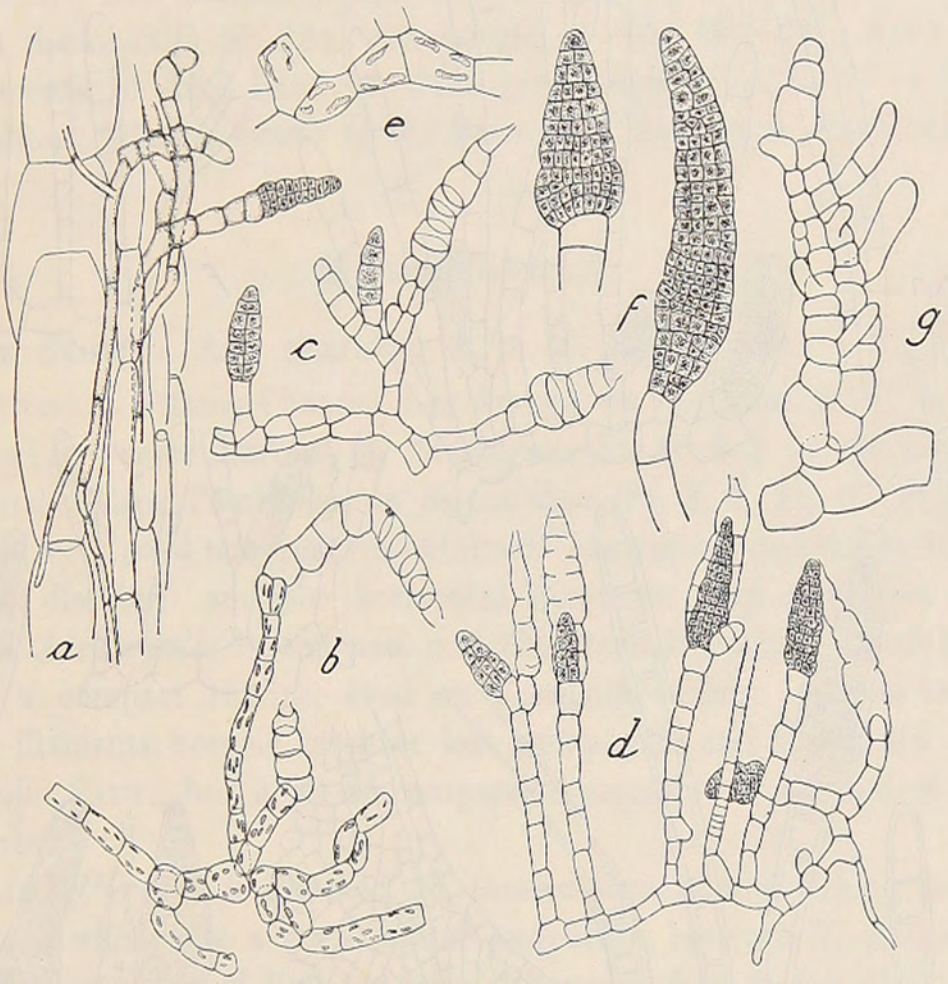

Fig. 5. *Streblonema patagonicum:* **a** portion of host with endophytic filaments, × 180; **b—d** plants with gametangia, × 180; **e** chromatophores, × 360; **f** two gametangia, × 360; **g** anomalous germination in gametangium, × 360.

dinally divided cells and also by the presence of hairs. The shape of the chromatophores is also different. It is the first *Streblonema* described from Subantarctic waters. In several instances gametangia were found where the contents of the locelli had germinated, comp. fig. 5 g. These gametangia being pauciseriate, it is probable that germination took place before the divisions had been completed and that no gametes had been formed.

Myrionemataceæ.

Under this heading a number of genera of rather doubtful position have been joined. *Hecatonema*, placed near *Myrionema* by Sauvageau, was removed to the Ectocarpaceæ by Svedelius in Engl. & Prantl. But then, it will be difficult to

separate *Myrionema*, taken in its present sense, from that order; there are species such as *M. subglobosum* KYLIN Algenfl. Schwed. Westk. p. 37, fig. 8, *M. globosum* (RKE) FOSL. (comp. BÖRGESEN, Mar. Alg. Færoes p. 420, fig. 76), *M. speciosum* BÖRG. l. c. p. 421, fig. 78, *M. færoense* BÖRG. l. c. p. 424, fig. 79, where the erect filaments are long, branched and bear numerous gametangia, so that they do not show much

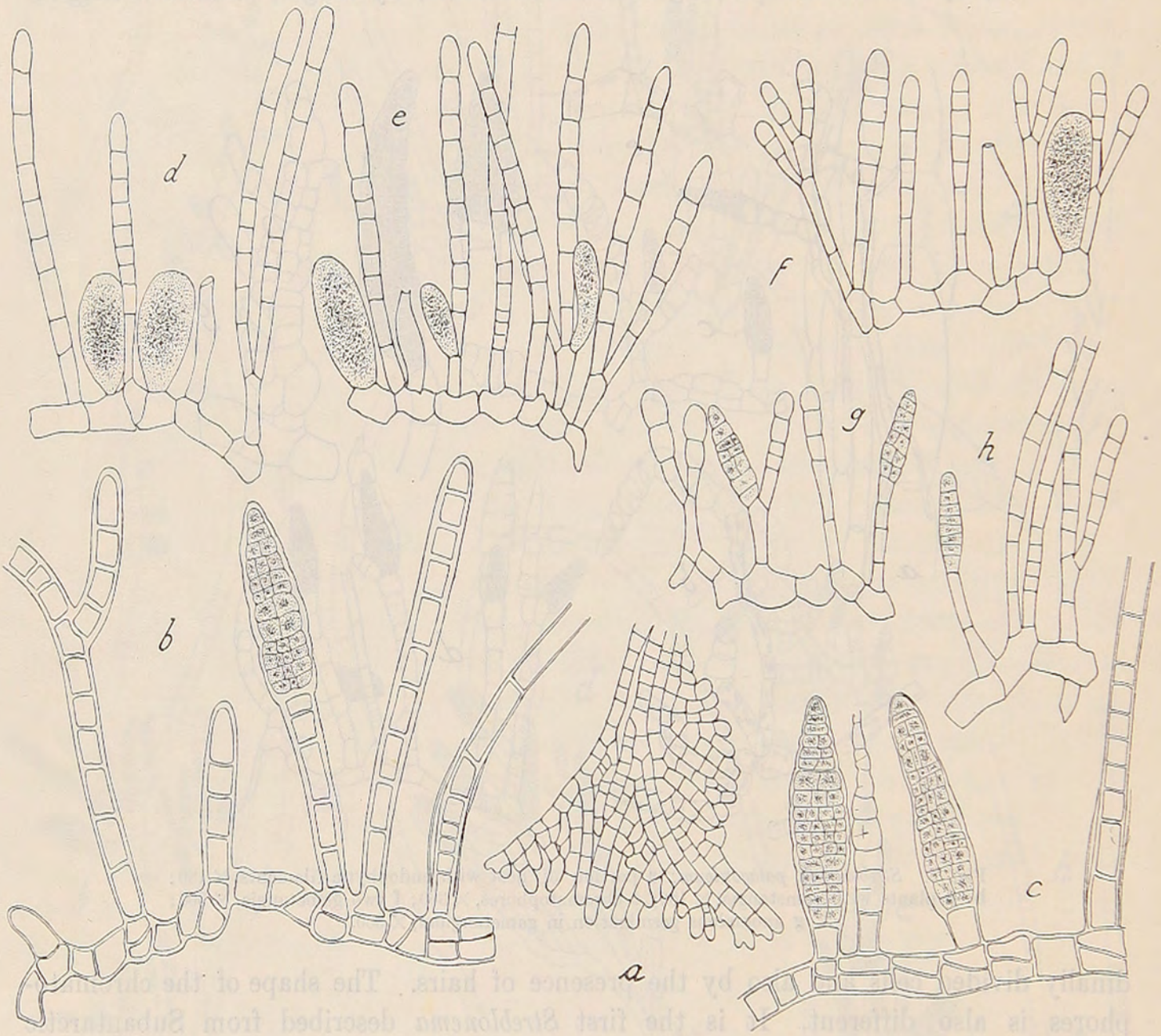

Fig. 6. **a**—**c** *Hecatonema maculans:* **a** part of disc × 180; **b**—**c** plants with gametangia and hairs, × 360. **d**—**h** *Myrionema incommodum*, **d**—**f** with sporangia, **g**—**h** with gametangia, all × 360; **d** from St. 17 b, the others from S. 42.

likeness to the short assimilators of a *M. vulgare* THUR., etc. To judge from the comparative studies of SAUVAGEAU, it does not seem possible to separate such species as those mentioned above from *Myrionema*. The difficulty of finding the best systematic position for some of these plants is shown by the fact that COTTON (Clare Isl. Surv., p. 121) found it necessary to transfer *Hecatonema reptans* SAUV. to *Myrionema* and *M. speciosum* BÖRG. to *Hecatonema*. I follow these authors in placing *Petroderma*, *Lithoderma* and *Ralfsia* with *Myrionema*.

Hecatonema Sauv.

H. maculans (Collins) Sauv. — Fig. 6 a—c.

Patagonia: Skyring Water, beach drift near Punta Rocallosa, on leaves of *Macrocystis* (29. 4. 08, gt.). — The occurrence of this northern species is perhaps unexpected, but I am unable to discover any distinctive characters. The plant was first described from North America, but has later been found in many places along the coasts of Europe. It is variable, and Sauvageau described three forms, of which our specimens agree with no. 1. The dimensions are: cells of basal disc 10—15 μ across, erect filaments c. 12 μ thick, hairs 10—13 μ, gametangia 65—80 × 20—25 μ; Sauvageau's figures are: filaments 10—16 μ, hairs 10—14 μ, gametangia 50—75 × 17—26 μ.

Distribution: Atlantic coasts of N. Amer. and Europe, S. Patagonia.

Myrionema Grev.

M. incommodum Skottsb. Ant. Meeresalg. I, p. 52, Fig. 56—60. — Fig. 6 d—h.

Patagonia: Fitzroy Channel, Los Amigos, on *Leathesia* (St. 17 b, 19. 4. 08, sp. & gt.). Fuegia: Puerto Barrow, on *Adenocystis* (St. 42, 4. 3. 09, sp. & gt.). Falkland Islands, Cape Pembroke, on *Scytosiphon* (St. 3, 7. 11. 07, gt.). — Of this species new and very good material was obtained. As was pointed out by the writer, the basal disc gets dissolved and the horizontal filaments creep quite free between the assimilators of *Adenocystis;* in the new material there is nothing at all that deserves the name of a compact thallus, even on a smooth surface. In the loose tissue of *Leathesia* the filaments become more or less endophytic and the whole plant resembles *Strepsithalia* Sauv., but a closer comparison seems to show that it must be the same as the rest.

If Foslie's *Ulonema* is retained, *M. incommodum* should belong to that genus But Sauvageau, who made a very careful comparison between *U. rhizophorum* Fosl. and *M. vulgare* Thur., could find no other difference than in the disc. A tendency to a dissolution of the margin may be observed in other species as well, and it should not be forgotten that there is a forma *soluta* Collins of *Hecatonema maculans* (Rhodora, 1906).

M. incommodum is very like certain forms of *M. vulgare*, especially the »Ulonema». But the length of the erect filaments (assimilators) is generally greater in my species, 150—175 μ or even more; they are more club-shaped (compare, however, Sauvageau, fig. 7 A on p. 201), with the basal cells long, slender and poor in chromatophores. Very often two assimilators are borne by a common stipe. They are 9—10 μ thick as are also the hairs. The sporangia measure 40—65 × 25—30 μ, the gametangia 20—35 × 10—12 μ; they are 1—2-seriate. Both assimilators and reproductive organs appear to have been rather poorly developed in my former material, and the original description is incomplete. There is, however, no doubt about the identity.

I strongly believe that *M. incommodum* is the same plant that was found by Kjellman on *Adenocystis* from Port Arthur, Tasmania, and spoken of as *Myrionema*

or *Streblonema*. It happens that the epiphyte is so profusely developed as to conceal the reproductive layer of the host. This, as also KJELLMAN was inclined to believe, must be the explanation of HARVEY'S wrong illustration of *Adenocystis* (Phycol. Australis. tab. 48).

Distribution: S. Patag., Fuegia, Falkl., S. Georgia, Tasman.

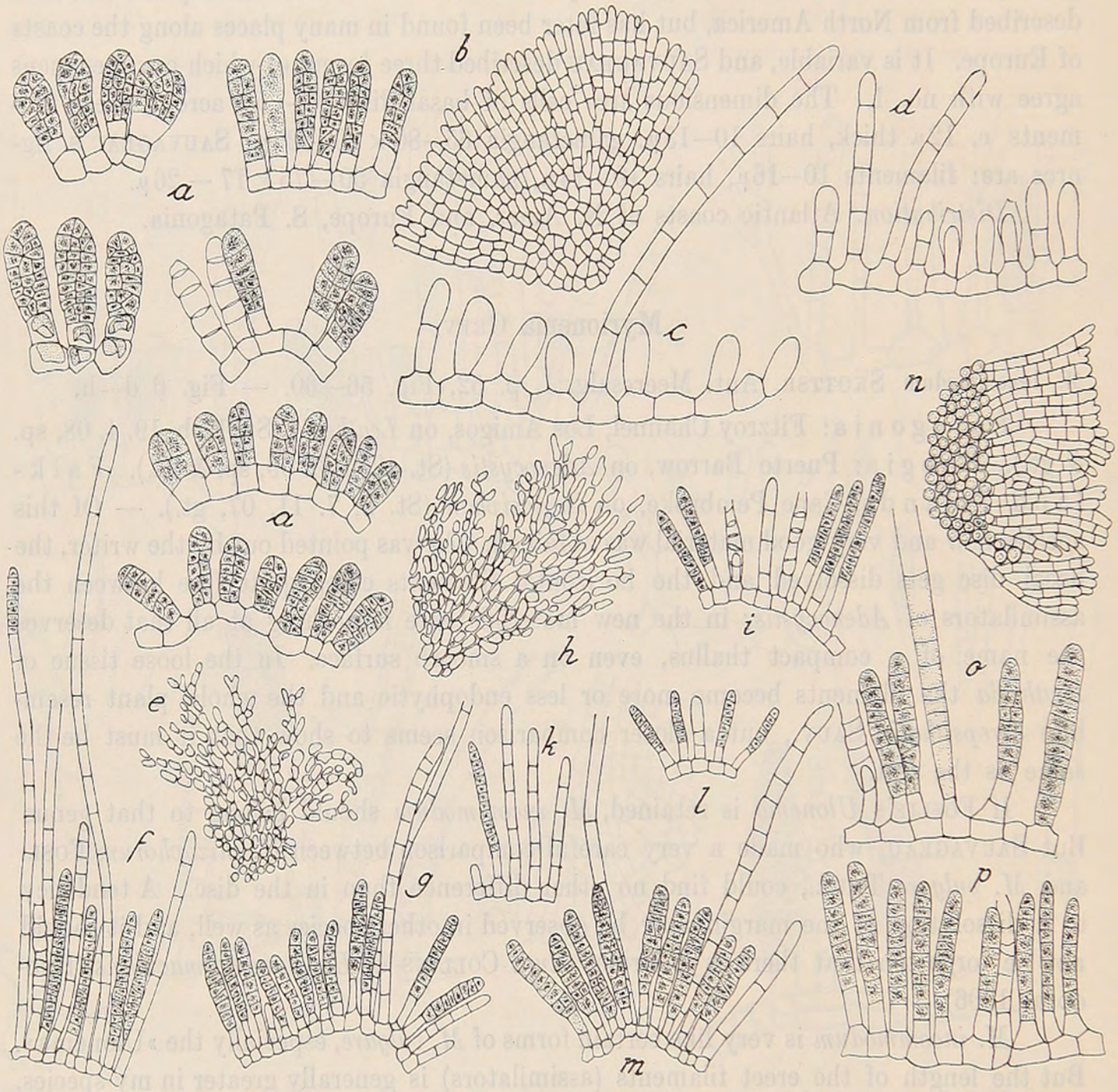

Fig. 7. **a** *Myrionema macrocarpum*, × 360, typical; **b—d** doubtful form from St. 8: **b** basal disc, × 180; **c** top of horizontal filament × 360; **d** empty sporangia?, × 360. **e—g** *M. densum* from St. 45: **e** basal disc, × 180; **f—g** gametangia etc., × 360. **h—l** *M. densum* from St. 52: **h** basal disc, × 180, **i—l** gametangia etc., × 360, **m** *M. fuegianum*, × 360. **n—p** *M. patagonicum:* **n** basal disc, × 180; **o—p** gametangia etc., × 360.

M. vulgare THUR.

Falkland Islands: West Falkl., near Halfway Cove, on *Enteromorpha* sp. in pools (St. 4, 21. 11. 07, sp.). — Prof. KUCKUCK considered this to be *M. vulgare*, and I can find no better name for it.

Distribution: Coasts of Europe and N. Amer., Dan. West Ind., Falkl.

M. macrocarpum SKOTTSB. Ant. Meeresalg. I, p. 49, fig. 48—51. — Fig. 7 a, b—d.

South Georgia: Bay of Isles, on drifted specimens of *Desmarestia ligulata* (25. 4. 09, gt.). Falkland Islands: Westpoint Isl. on *Macrocystis* (5. 12. 07, sp.?).

This seems to be a characteristic species. The new material is quite satisfactory; it differs in the scarceness of sterile filaments, which are not longer than the gametangia. No hairs were observed. There is only one large chromatophore in each cell, not several as indicated before. The gametangia are large, often more or less club-shaped, with rather irregular divisions, the ripe ones measure 60—108 × 18—36 μ. Fig. 7 a gives an idea of the variation in shape and size.

The plant from Westpoint (fig. 7 b-d) is doubtful. Of all the species observed by the writer it agrees best with *M. macrocarpum.* The disc produces long assimilators with long cells, each containing a single chromatophore, and numerous ovoid sporangia (?); but not a single ripe one was found. Some, however, seem to be empty. The cells of the disc are different in outline from those in *macrocarpum.*

Distribution: Falkl., S. Georgia.

M. densum SKOTTSB. Ant. Meeresalg. I, p. 50. — Fig. 7 e—l.

Discus basalis margine irregulariter soluto cellulis 9—12 (—18) × 4—6 (—8) μ, chromatophoris ut videtur singulis. Fila erecta ad 400 μ longa et 4—6 μ crassa, interdum nulla. Pili 4—6 μ crassi. Sporangia non visa. Gametangia 40—75 × (4—) 6—7 μ, uniseriata.

Fuegia: Orange Bay, on *Lessonia nigrescens* (St. 45, 11. 3. 09, gt.). South Georgia: Bay of Isles, on *Desmarestia ligulata* (St. 52, 25. 4. 09, gt.).

Having studied my new material, I am inclined to believe that *M. densum* of 1907 comprised two species, one with broader gametangia, biseriate in the central parts. I retain the name *densum* for the plant described and figured here. The specimens from St. 45 are a trifle smaller, with the cells of the disc not more than 6 μ across. I have not found any hairs on the sp. from St. 52. As limited here, *M. densum* very much resembles *M. Corunnae* SAUV.: the gametangia measure 25—100 × 4.5—7 μ and the hairs 4—5.5 μ in that species. The shorter or almost missing pedicel of the gametangia and the irregular margin of the disc are characteristic of *M. densum.* It is possible that *M. inconspicuum* REINSCH, Südgeorg. p. 405, pl. XVI fig. 1, from South Georgia, is the same, but this cannot be decided. *M. paradoxum* Reinsch l. c. fig. 2 is even more dubious.

Distribution: Fuegia, Falkl., S. Georgia.

M. fuegianum nov. spec. — Fig. 7 m.

Discus basalis cellulis brevibus sat irregularibus, 6 μ diam., chromatophoris ut videtur singulis. Fila erecta sat longa et numerosa, ad 9 μ diam. Pili 6—7 μ diam. Sporangia ignota. Gametangia numerosissima, breviter pedicellata, 30—75 × 7—10 μ, medio fere semper biseriata.

Fuegia: Orange Bay, on *Lessonia* with the preceding (St. 45, 11. 3. 09, gt.). — In the microscopic slides this was discovered mixed with the former, which it

closely resembles. Still I am convinced that they are two distinct species: *M. fuegianum* differs in the shape of the disc-cells, in the gametangia being more or less biseriate, etc. Of European species, it resembles *M. foecundum* STRÖMF., but this seems to have shorter and thicker gametangia (35—40 × 8—12 μ) and has no erect filaments. According to COTTON, Clare Isl. Surv. p. 122, the latter belongs to *Ascocyclus*.

M. patagonicum nov. spec. — Fig. 7 n—p.

Discus basalis cellulis sat magnis, 15—20 × 6—9 μ, chromatophoris 1—3. Fila erecta nulla. Pili sat numerosi, 8—9 μ crassi, basi angustati. Gametangia valde numerosa, linearia, 30—60 × 8—10 μ, uniseriata, sessilia vel breve pedicellata. Sporangia ignota.

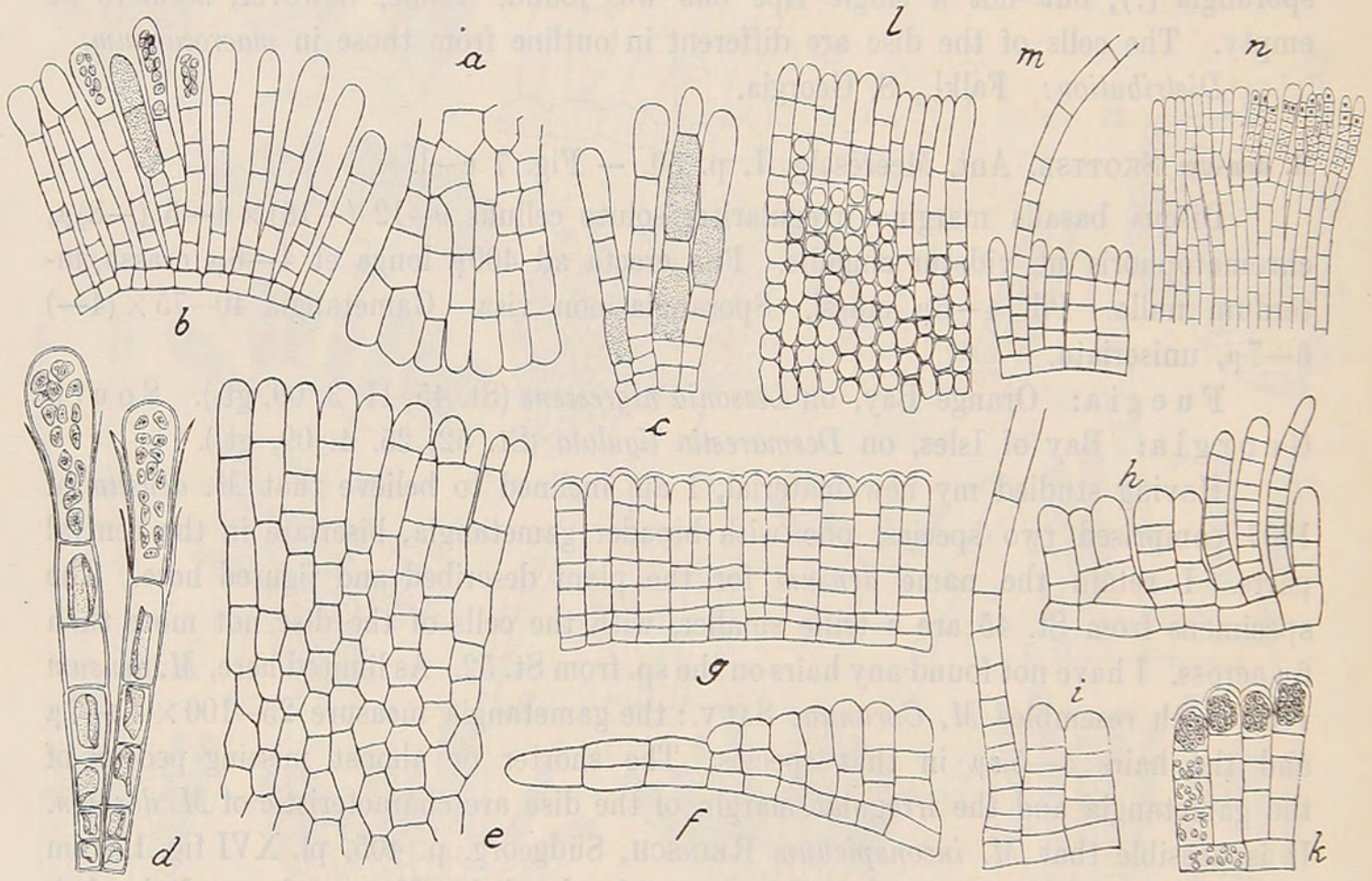

Fig. 8. **a—d** *Petroderma maculiforme:* **a** part of horizontal thallus, × 360; **b** erect filaments with sporangia, × 360; **c** do with anomalous cells, × 360; **d** two filaments with ripe sporangia, × 575; **e—m** *Lithoaerma piliferum*, × 360: **e—k** of the larger, **l—m** of the smaller form; **e** horizontal thallus, **f** section of margin, **g** section of thicker part, **h** three young hairs, **i** old hair, **k** sporangia and chromatophores, **l** horizontal thallus, **m** erect filaments and hair. **n** *Ralfsia australis*, section with gametangia, × 250.

Patagonia: Skyring Water, Punta Rocallosa on drifted pieces of *Macrocystis*, mixed with *Hecatonema* (29. 4. 08, gt.). — This differs largely from the preceding species by the form and size of the basal cells and by the larger but uniseriate gametangia. In outline these resemble those of *M. foecundum* f. *seriata*. The narrowed base of the hairs in the new species may offer a good character.

Petroderma Kuck.

P. maculiforme (Wollny) Kuck. — Fig. 8 a—d.

South Georgia: Bay of Isles, in the sublit. region on rocks, 8 m (St. 52, 25. 4. 09, sp.). — Known before from the North Atlantic. My specimens seem to agree with Kuckuck's description and figures in almost every respect (Beiträge II, p. 282). There are peculiar swollen cells in my plants, with yellowish brown, strongly refractive contents. They look abnormal.

Distribution: Færoes, Ireland, Heligoland, S. Georgia.

Lithoderma Aresch.

L. piliferum nov. spec. — Fig. 8 e—m.

Maculas orbiculares minutas, 1—3 mm diam., centro 60—90 μ crassas formans. Cellulæ strati basalis in centro subhexagonæ, versus marginem magis rectangulares, chromatophoris disciformibus sat numerosis instructæ. Plantulæ a l i æ cellulis majoribus, centralibus 9—12 μ diam., submarginalibus 15—30 × 12 μ, filis erectis (semper arcte cohærentibus) 12—14 μ latis, sporangiis terminalibus (raro inventis) subglobosis, circ. 15 μ diam., pilis 8—9 μ crassis; a l t e r æ cellulis minoribus, centralibus 6—9 μ diam., submarginalibus 12—15 × 6—8 μ, filis erectis 8—10 μ crassis, sporangiis nullis inventis, pilis 6—7 μ diam.; sed adsunt etiam nonnullæ typi secundi sed aliquantulum majores, veræ intermediæ autem non observatæ. Gametangia ignota.

Falkland Islands: Port Louis, on a piece of bottle glass picked up in a tide-pool (St. 11, 7. 2. 08, sp.). — The growth takes place exactly as described by Kjellman, Handb. p. 17. A comparison with the illustrations of *L. fatiscens* in Hauck, Meeresalg. p. 403, fig. 177 will show the extreme likeness between the two plants: the cells in the vertical rows are 8—17 μ across according to Hauck, 12—17.5 μ according to Areschoug Observ. phyc. III p. 23. The presence of hairs seems to forbid an identification with the northern species. Another question is if the new species really belongs to *Lithoderma* Aresch. His genus was characterized by possessing lateral gametangia seated on free ends of the filaments, while Kuckuck considered that specimens with terminal gametangia belonged to *L. fatiscens*. Svedelius made a new genus, *Pseudolithoderma* Sved. for Kuckuck's gametangium-form (Engler & Prantl, Nachtr. zum I. Teil, 2 Abt. p. 176). There are no good vegetative characters that help to a distinction of the two genera, and of sporangia only one type has been found. To judge from Kuckuck's figures (Bemerk. p. 237—240 and Beiträge Nr. II Taf. VII) the anatomical structure is the same in plants with sporangia and with gametangia; still, Kylin thinks the former belong to the true *Lithoderma* (Algenflora Schwed. Westk. p. 46). The position of *L. piliferum* will remain unsettled until the gametangia have been discovered. Gain, Flore algol. p. 50 found a sterile *Lithoderma* on the coast of Graham Land. He does not mention if hairs occur. The plants figured by Kjellman in Alg. Arct. Sea, Pl. 26 fig. 6 differ from *Lithoderma* in some respects but very much resemble *Petroderma*.

Ralfsia Berk.

R. australis nov. spec. — Fig. 8 n.

Crustæ dilute vel obscure olivaceo-brunneæ, aliæ aliis superpositæ, adultæ sat magnæ, ambitu irregulari, superficie sicut squamosa, a substrato facile separandæ. Species *R. verrucosæ* similis sed ut videtur differt soris planis non elevatis nec non absentia pilorum. Gametangia raro inventa, plerumque uniseriata, 5—6 μ crassa. Sporangia ignota.

Falkland Islands, shallow basins in Low Bay (St. 10 b, 18. 1. 08); Westpoint Island (St. 8, 5. 12. 07, gt.). — Very like *R. verrucosa* J. Ag., but with a more scaly appearance. It is quite possible that *R. australis* is a poor species, but as hairs are missing and the appearance is somewhat different, it seems better to give it a special name. According to Hauck, Meeresalg. p. 402, the supposed gametangia of *R. verrucosa* measure 8 μ across, but other authors regard these organs as altogether doubtful. It is also possible that my plant ought to be named *R. expansa* J. Ag., a West Indian species lately treated by Börgesen, Mar. Alg. Dan. West Ind. Pt. 2, p. 189 etc. The size of the gametangia is the same as in my plant, but groups of hairs are abundant. The sporangium-plant of *R. australis* must be sought for: if found, the position of the species will probably become better known.

Desmarestiaceæ.

Desmarestia Lamx.

D. Willii Reinsch.

Fuegia: Orange Bay, common in the sublit. 15—20 m (St. 44, 11. 3. 09). Falkland Islands: tide-pools, Cape Pembroke (St. 3, 7. 11. 07), Westpoint Isl. (St. 8, 6. 12. 07); sublit., 8 m, Halfway Cove (St. 5. 25. 11. 07). South Georgia, sublit.: Boiler Harbour, 5 m (St. 48, 20. 4. 09), Stromnæs Bay, 8—9 m (St. 50, 24. 4. 09).

It is possible that the doubtful *Trinitaria confervoides* Bory (Voy. p. 216, tab. 24, fig. 2) is identical with *D. Willii;* J. Agardh, Sp. Alg. I p. 166, identified it with his *D. Menziesii*, but Bory's figure is much more like D. Willii.

Distribution: Subantarct.-circumpolar, antarct.

D. Harveyana Gepp.

Syn. *D. compressa* (Reinsch) Skottsb. Ant. Meeresalg. I, p. 19.

South Georgia: Boiler Harbour, 5—10 m (St. 48, 49, 20. 4. 09). — According to the Vienna Rules *D. Harveyana* is the right name and not *D. compressa*. But most likely both have to give room for *D. Menziesii* J. Ag. Sp. Alg. I, p. 165, founded on specimens collected by Menzies at the South Shetlands, but never recorded again. The type in Herb. Agardh is quite like *D. Harveyana*, a common Antarctic species. I had, however, no opportunity to study the anatomy of Menzies' specimens.

Distribution: S. Georgia, Graham Land, Victoria Land.

D. Rossii HOOK. FIL. et HARV.

In the sublitoral region, on exposed coasts. Fuegia: Slogget Bay, large drifted specimens (St. 47 b, 16. 3. 09). Falkland Islands, Cape Pembroke (St. 3, 8. 11. 07).

Distribution: Subantarct. Amer., Falkl., Kerg., Heard. I., S. Orkn., Victoria Land.

D. ligulata (LIGHTF.) LAMX.

Syn. *D. firma* (AG.) SKOTTSB. Ant. Meeresalg. I, p. 21.

Sublitoral; small specimens not rare in tide-pools. — Fuegia: Slogget Bay, drifted (St. 47 b, 16. 3. 09); Orange Bay (St. 45, 11. 3. 09). Falkland Islands: Cape Pembroke (St. 3, 8. 11. 07). South Georgia: Bay of Isles (St. 52, 24. 4, 09). — GAIN, Flore algol., p. 38, does not think it advisable to regard *D. firma* as a separate species. He may be right in this, and I admit that my material is less homogeneous this time. The specimens from S. Georgia belong to the true *firma* in the sense of the writer. I suspect that *D. distans* J. AG. is another form of the same species. I have seen the type in Herb. AGARDH (Isles Malouines, FREYCINET); it is very flat, thin and narrow. The same form har never been recorded a second time.

Distribution: N. Atl. to coast of Afr., S. Atl.-subantarct., Graham Land, Pacif. coast of N. Amer.

D. herbacea (L.) LAMX.

Fuegia: Slogget Bay, drifted, but quite fresh and intact (St. 47 b, 16. 3. 09). — This is generally regarded as a form of the preceding, but GRUNOW (Novara p. 51) and GAIN (Flore algol. p. 39) apologize for its validity as a species.

Distribution: Pacif. coasts of Amer. to Fuegia, Cape of Good Hope.

Elachistaceæ.

Elachista DUBY.

E. rosarioides nov. spec. — Fig. 9 a—b, 10 a—c.

Pusilla dense cæspitosa sat expansa, parum gelatinosa, parte basali endophytica. Cellulæ basales magnæ, hyalinæ, e quibus egrediunt fila erecta moniliformia assimilantia, breviora 350—500 μ longa et 10—12 μ crassa, cellulis basalibus longis angustis, 5—7 μ solum latis, longiora vel longissima crescentia suprabasali, ad 1 600 μ longa et 16 μ crassa. Pili basales, 12—18 μ crassi. Sporangia basalia, clavata, 90—130 × 36—42 μ. Gametangia semel solum inventa, 30—60 × 6—7 μ, uniseriata. Adsunt specimina verosimiliter hinc pertinentia, filis omnibus brevioribus ad 400 μ longis et 15 μ crassis, basi angustis circ. 6—8 μ latis, gametangiis e superficie strati basalis fasciculatis, lanceolato-linearibus, uniseriatis, 45—50 × 7—9 μ.

Falkland Islands, on the »Chordaria»-shoots of *Cæpidium*: Cape Pembroke (St. 3, 7. 1. 08. sp.); Westpoint Island (St. 8, 5. 12. 07, sp. & gt.); Port Louis (St. 11, 7. 2. 08, sp.). South Patagonia: Fitzroy Channel, Los Amigos, on drifted *Chordaria* (18. 4. 08, gt.).

During my visit to the Biological Station on Heligoland I had much discussion with Prof. KUCKUCK on this species and the following. All the specimens from the Falklands have two kinds of assimilators, shorter of definite growth, with prolonged basal cells, and longer ones, where cell divisions take place above the base. There is, however, no such sharp difference between long and short filaments as between the latter and the paraphyses in *E. fucicola*. My plants are all provided with hairs, which do not occur in »typical» Elachistas according to KUCKUCK. Further, the basal parts of *E. rosarioides* are more or less endophytic. We came to the conclusion that it might be compared with *E. stellulata* GRIFF. BATTERS brought all the endophytic species to *Myriactis* KÜTZ. KUCKUCK did not believe in this distinction but was inclined to bring the hair-bearing species with short assimilators to the latter genus. The type is *M. pulvinata* KÜTZ., which has a large central nucleus of hyaline cells, from which the assimilators radiate; habitually, it differs from the species later added to *Myriactis*. Even if this genus is retained in its modified sense I cannot very well unite *E. rosarioides* with it, though it must be admitted that the plants from Los Amigos are very like such a species as *M. moniliformis* (FOSL.) KYLIN Algenfl. norw. Westk., p. 13, fig. 3, for they have only shorter assimilators (Fig. 10 c). A comparison with the illustrations of the Falkland plants shows that there is much in favour of my belief that all belong to the same species. Also among the specimens from St. 8 I have observed some where the long filaments are few or almost none. Fig. 9 b shows a fragment of a plant with both sporangia and gametangia. The drawing was made on Heligoland; I have never been able to discover a second instance of this kind, nor to find the original, from which the figure was drawn, but according to my notes there was no room for a mistake.

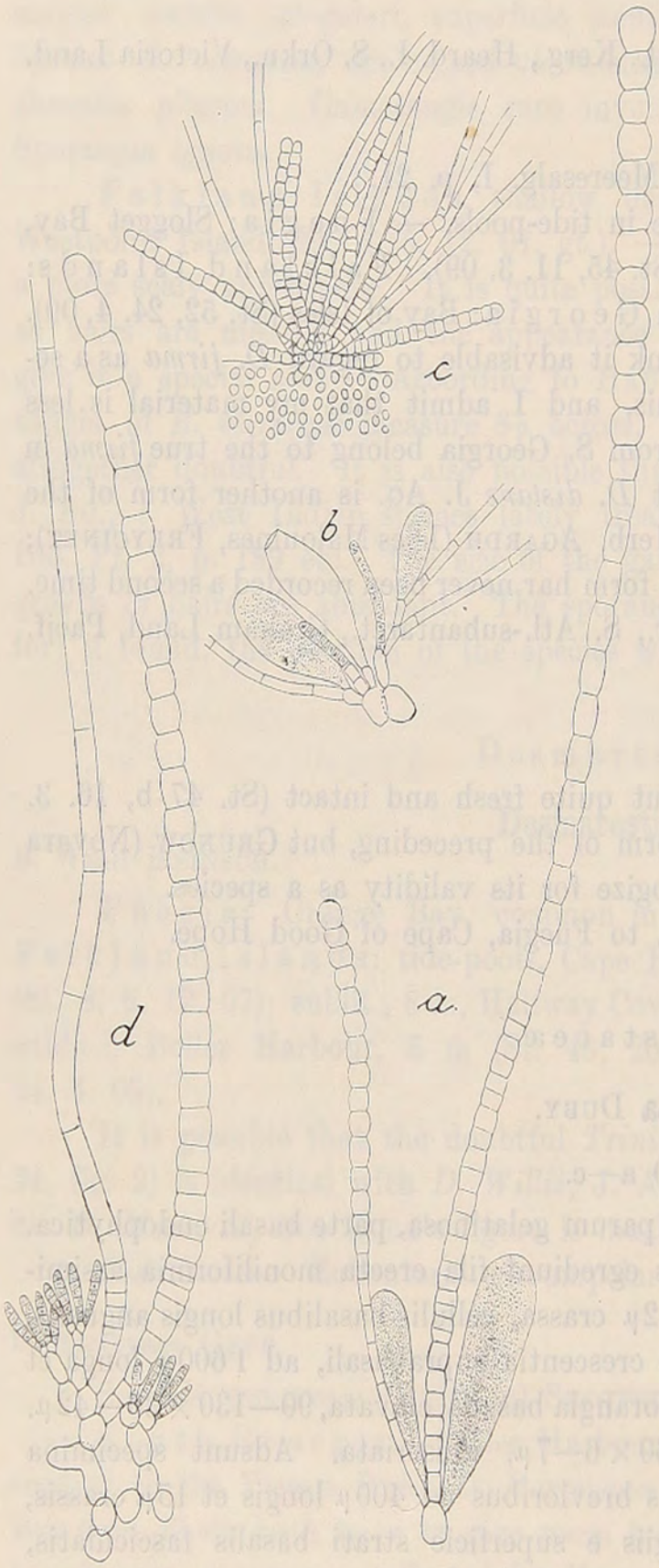

Fig. 9. **a—b** *Elachista rosarioides* from St. 8; **a** with sporangia and two kinds of filaments, × 200; **b** base of plant with sporangia and gametangia, × 200. **c—d** *E. pusilla*, **c** small plant from St. 4, × 100; **d** part of plant with gametangia, × 200.

E. pusilla nov. spec. — Fig. 9 c—d, 10 d—e.

Epiphytica, minutula subhemisphærica, ad 0,7 mm diam., cellulis interioribus basalibus parvis subhyalinis, nucleum parum conspicuum formantibus. Fila assimilantia omnia æqualia, juniora breviora et adultiora longiora commixta, apice et præsertim versus basin subiter attenuata, crescentia basali distincta, ad 600 μ longa et 18—21 μ crassa, ad septa leviter constricta, cellulis maturis paulum latioribus quam longioribus vel diametro æquilongis, chromatophoris disciformibus sat numerosis. Pili numerosi,

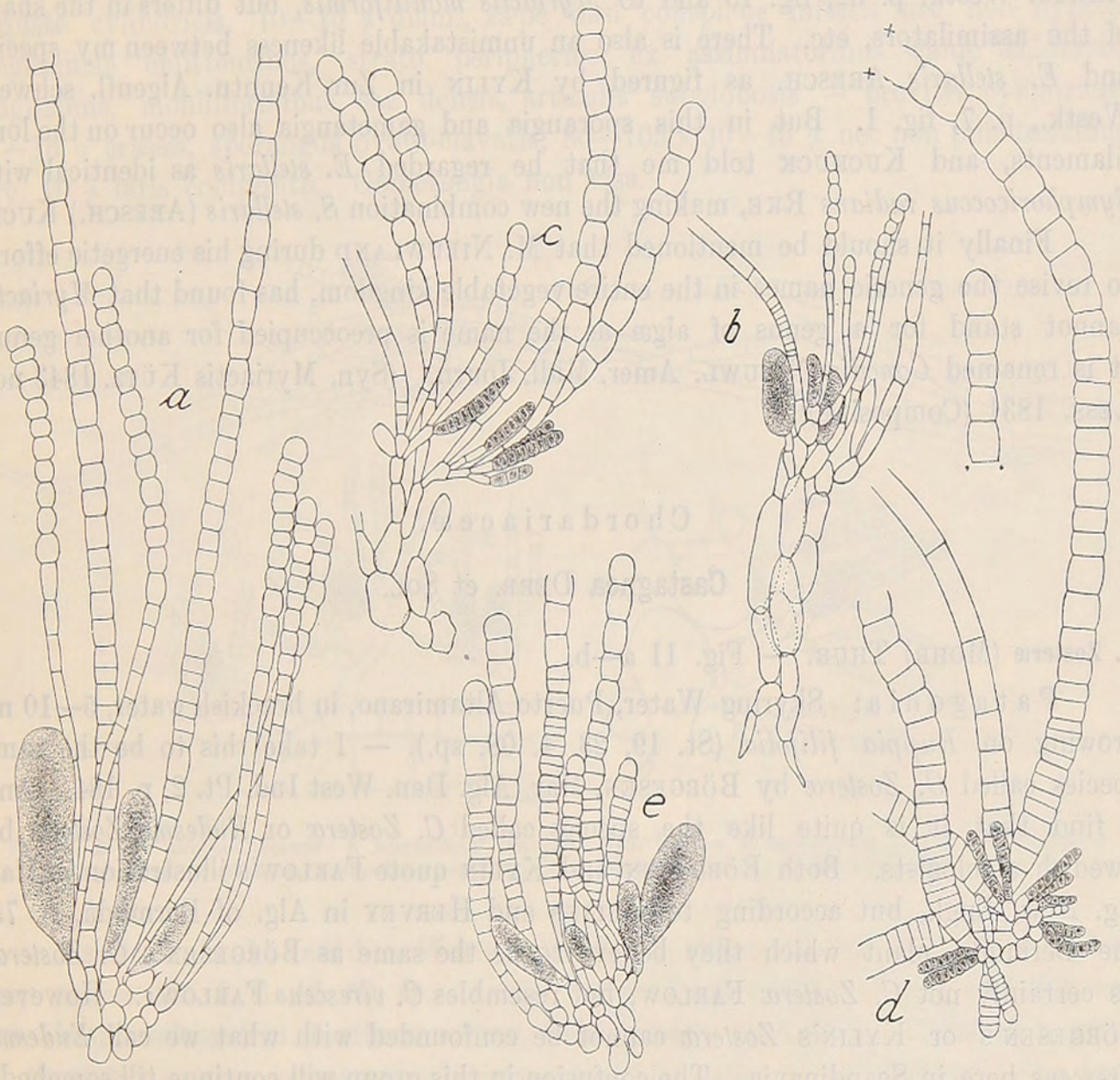

Fig. 10. **a—c** *Elachista rosarioides;* **a** with sporangia from St. 8, only lower parts of long filaments visible, × 240; **b** basal endophytic cells etc., from St. 11, × 120; **c** doubtful plant from St. 17 b, × 240. **d—e** *E. pusilla;* **d** with gametangia from St. 4, × 240; **e** somewhat dubious plant from St. 47, × 240.

15—20 μ diam. Gametangia ad superficiem strati basalis fasciculata, anguste lanceolata, apice obtusa, 30—45 × 5—7 μ, uniseriata. Adsunt plantæ paulum minores, sporangiferæ, verosimiliter ad eandem speciem pertinentes; fila verticalia ad 400(—600) μ longa, 15—18 μ diam., basi minus subiter angustata; pili rarissime inventi, 12—15 μ crassi. Sporangia matura pauca visa, 75—114 × 21—42 μ.

Falkland Islands: West Falkl., near Halfway Cove, in tide-pools on *Enteromorpha* sp. (St. 4, 21. 11. 07, gt.). Fuegia: Slogget Bay, on *Scytothamnus fasciculatus* (St. 47, 16. 3. 09, sp.).

This species has only one kind of assimilators; it is strictly epiphytic and is provided with hairs. KUCKUCK found that it was intermediate between *Elachista* and *Myriactis*. It is of course quite impossible to prove that the plant from St. 47 is the same species, but I do not think it wise to describe it under another name only because it bears sporangia instead of gametangia, for otherwise it is too like the specimens from St. 4.

E. pusilla seems to be related to *E. Chordæ* (ARESCH.) KYLIN, Stud. Algenfl. schwed. Westk. p. 62, fig. 15 and to *Myriactis moniliformis*, but differs in the shape of the assimilators, etc. There is also an unmistakable likeness between my species and *E. stellaris* ARESCH. as figured by KYLIN in Zur Kenntn. Algenfl. schwed. Westk., p. 7, fig. 1. But in this sporangia and gametangia also occur on the long filaments, and KUCKUCK told me that he regarded *E. stellaris* as identical with *Symphoricoccus radians* RKE, making the new combination *S. stellaris* (ARESCH.) KUCK.

Finally it should be mentioned that M. NIEUWLAND during his energetic efforts to revise the generic names in the entire vegetable kingdom, has found that *Myriactis* cannot stand for a genus of algæ as the name is preoccupied for another genus. It is renamed *Gonodia* NIEUWL. Amer. Midl. Journ. (Syn. Myriactis KÜTZ. 1843 non LESS. 1831 (Compositæ)).

Chordariaceæ.

Castagnea DERB. et SOL.

C. Zosteræ (MOHR) THUR. — Fig. 11 a—b.

Patagonia: Skyring Water, Puerto Altamirano, in brackish water, 5—10 m, growing on *Ruppia filifolia* (St. 19, 23. 4. 08, sp.). — I take this to be the same species called *C. Zosteræ* by BÖRGESEN, Mar. Alg. Dan. West Ind. Pt. 2, p. 184. And I find that it is quite like the species called *C. Zosteræ* or *Eudesme Zosteræ* by Swedish algologists. Both BÖRGESEN and KYLIN quote FARLOW's illustration in Mar. alg. New Engl., but according to COLLINS and HERVEY in Alg. of Bermuda, p. 75, the Bermuda plant which they believe to be the same as BÖRGESEN's *C. Zosteræ*, »is certainly not *C. Zosteræ* FARLOW, but resembles *C. virescens* FARLOW». However, BÖRGESEN's or KYLIN's *Zosteræ* cannot be confounded with what we call *Eudesme virescens* here in Scandinavia. The confusion in this group will continue till somebody finds the necessary time for a general revision.

My plant attains a length of 13 cm and a thickness of 1—2 mm; it is simple or sparingly branched, gelatinous, rather firm, solid or finally hollow. In structure and mode of growth it seems to agree with BÖRGESEN's plant. The assimilators are 150—200 μ long, their segments 10—12 μ thick, the hairs 11—12 μ. The sporangia measure 50—75 × 30—45 μ. In some instances I found the outer cells of the assimilators divided by a longitudinal wall, suggesting the first stage towards the formation of gametangia, which have been found together with the sporangia by BÖRGESEN and KYLIN.

Mesogloea (Ag.) J. Ag.

M. falklandica nov. spec. — Fig. 11 c, 13 a.

Frons in speciminibus nostris ad 7 cm alta, sat crassa, ad 3 mm diam., valde mucosa, vage et parum ramosa ramis simplicibus, e stratis tribus composita, strato centrali filis longitudinalibus 15—30 μ crassis, cellulis diametro 4—6-plo longioribus, strato pericentrali valido, e filis angulo subrecto exeuntibus, di-trichotomis, cellulis anguste cylindricis, 10—15 μ diam., sæpe basi conspicue inflatis nec non hyphas longissimas emittentibus, strato peripherico ex assimilatoribus valde coloratis, longissimis, moniliformibus, sat densis, articulis subglobosis — breviter cylindricis, 12—15 μ crassis, sporangiis ovato-clavatis, 80—105 × 30—45 μ nec non pilis tenuibus circ. 10 μ latis composito. Gametangia non visa.

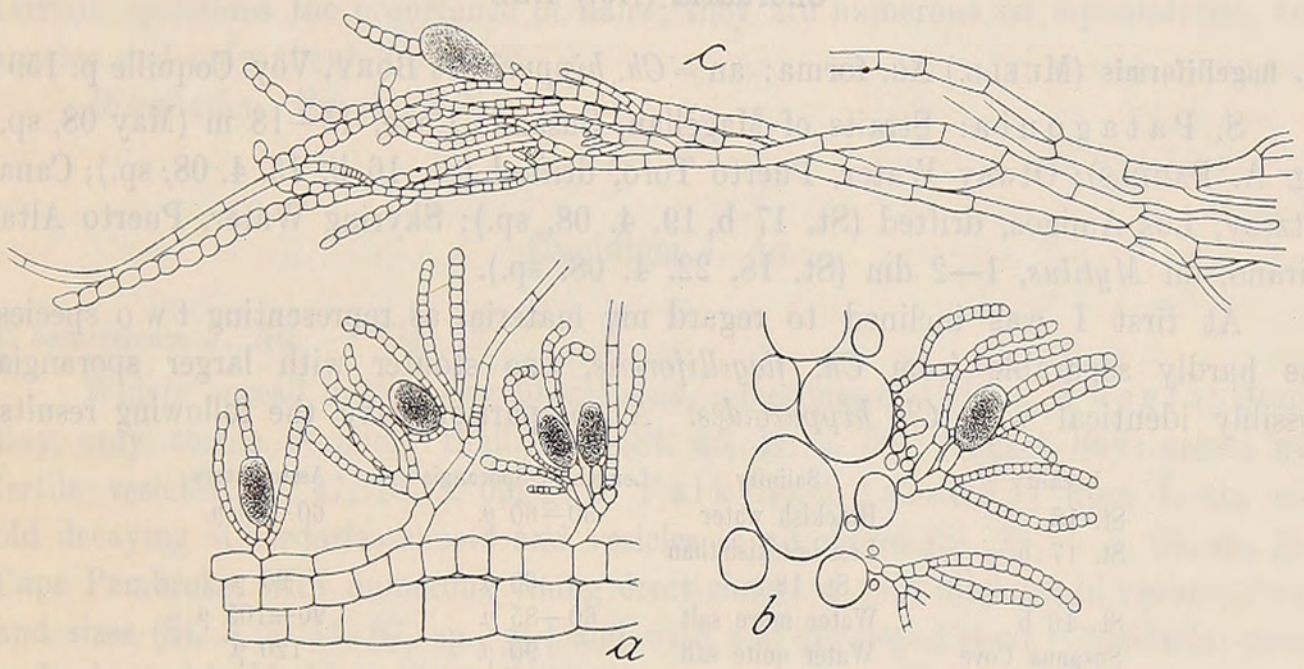

Fig. 11. **a—b** *Castagnea Zosteræ:* **a** longitudinal filaments with bundles of assimilators, etc., **b** part of section through frond. **c** *Mesogloea falklandica:* horizontal filaments with assimilators and sporangia. All × 120.

Falkland Islands: Westpoint Island, tide-pools in the litoral region, very scarce (St. 8, 6. 12. 07, sp.). — As far as I am aware, nothing like this has ever been collected in Southern waters. The generic position must remain a point of discussion until a monographic treatment of the entire group appears. The long external filaments give to the plant almost the habit of a *Myriocladia*, but in this genus a considerable portion of the assimilators protrude through the mucus, what is not the case in *Mesogloea*. To judge from the description and figures of Suringar, Ill. Alg. du Japon, *M. falklandica* is nearly related to *M. crassa* Sur. from Japan, but this has shorter central cells, not much longer than the diameter, which is 38—77 μ; the assimilators are thinner, measuring only 3,8—7,7 μ across, and less constricted at the septa. Suringar compared *M. crassa* with *Myriocladia sciurus* Harv. and *Mesogloea natalensis* Kütz. and proposed to unite those three species under one genus, *Tinocladia* Sur.

Leathesia (Gray) J. Ag.

L. difformis (L.) Aresch.

On *Ruppia filifolia* in brackish water. Patagonia: Fitzroy Channel, Los Amigos, drifted (S. 17 b, 19. 4. 08, gt.); Skyring Water, near Mina Magdalena, 5—6 m (St. 22, 29. 4. 08, gt.).

I have seen specimens from Sweden, Heligoland, California and the Cape: a comparison shows that all belong to the same species, and I am unable to separate the Patagonian plant from the others.

Distribution: N. Atl. Ocean, Pacif. coast of N. Amer., Japan, Cape of Good Hope, S. Patagonia.

Chordaria (Ag.) Rke

Ch. flagelliformis (Muell.) Ag. forma: an = *Ch. hippuriodes* Bory, Voy. Coquille p. 159?

S. Patagonia: Straits of Magellan, Susanna Cove, 15—18 m (May 08, sp., leg. A. Pagels); Otway Water, Puerto Toro, drifted (St. 16 b, 15. 4. 08, sp.); Canal Fitzroy, Los Amigos, drifted (St. 17 b, 19. 4. 08, sp.); Skyring Water, Puerto Altamirano, on *Mytilus*, 1—2 dm (St. 18, 22. 4. 08, sp.).

At first I was inclined to regard my material as representing two species, one hardly separable from *Ch. flagelliformis*, one stouter with larger sporangia, possibly identical with *Ch. hippuroides*. A comparison gave the following results:

Locality	Salinity	Length of Sporangia	Assimilators
St. 18	Brackish water	30—60 μ.	60—90 μ.
St. 17 b	Less brackish than St. 18	60 μ.	90 μ.
St. 16 b	Water more salt	60—85 μ.	90—105 μ.
Susanna Cove	Water quite salt	90 μ.	120 μ.

There seems to be a relation between the salinity of the water and the size of sporangia and assimilators. The salt water plants from the Magellan Straits are decidedly coarser and have larger sporangia and longer assimilators than the *Chordaria* growing at Heligoland, where I studied these plants. If this is a character of importance, the southern form might be regarded as a good species; I guess this is what Bory described as *Ch. hippuroides*, but his diagnose is very incomplete. At present it is better to leave it under *Ch. flagelliformis*, to which species Hariot, Miss. sci. Cap Horn, referred the Magellanic plant.

Cotton, Crypt. Falkl, p. 169 records *Ch. capensis* Kürz. from the Falklands, collected by Vallentin and Hennis. He says that »the five specimens brought home by Mrs. Vallentin agree with the Cape species rather than with *C. flagelliformis*, and it is probable that all the records of the latter from Fuegia refer to this species».

In 1907, I recorded *Ch. capensis* from Fuegia, and I did not collect anything like *Ch. flagellaris* during the Antarctic Voyage. I have no reason to doubt the

determination of COTTON as to the specimens seen by him, but my material from Patagonia proves that *Ch. capensis* is not the only species in the Magellan waters, but that there is another, identical with or very near *Ch. flagelliformis*.

Distribution: N. Atl. Ocean, Pacif. coast of Amer., Subantarct. Amer., Falkl., ?Campbell Isl.

Ch. linearis (HOOK. FIL. et HARV.) COTTON. — Fig. 13 b.

Falkland Islands: Cape Pembroke, in tide-pools (St. 3, 7. 1. 08, sp.); Westpoint Island, uppermost sublitoral, fine plants growing on calcareous algæ (St. 8, 5—6. 12. 07, sp.). — This is certainly the *Ch. linearis* of COTTON: externally it is very like the »Chordaria»-shoots of *Cœpidium*, but a horizontal thallus is entirely missing and there is a small conical holdfast. The anatomical structure is different: comp. fig. 13 b and 12 b, and note the shape of the endcells of the assimilators. COTTON questions the occurrence of hairs; they are numerous on my material, very slender and only about 5 μ thick.

Distribution: Fuegia, Falkl.

Cæpidium J. AG.

C. antarcticum J. AG. — Fig. 12.

Widely spread in the lower litoral zone, sometimes abundant. Fuegia: Orange Bay, only sterile coralloid thalli seen (St. 45, 11. 3. 09); Slogget Bay: crusts with fertile vesicles (St. 47, 16. 3. 09, gt.). Falkland Islands: Port Louis, with old decaying »Chordaria»-shoots and vesicles in all stages (St. 11, 7. 2. 08, sp., gt.); Cape Pembroke, with numerous young erect shoots or with bladders of various shapes and sizes (St. 3, 7. 11. 07, sp., gt.) and with well developed erect »Chordaria»-shoots and also with bladders (St 3, 7. 1. 08, sp., gt.); West Falkl., near Halfway Cove, crusts with young bladders (St. 4, 21. 11. 07, gt.); Westpoint Isl., as in St. 3 in Nov. (St. 8, 5. 12. 07, gt., no ripe sp.). South Georgia: Stromnæs Bay, in tide-pools, coralloid crusts without ripe gametangia (St. 51 b, 24. 4. 09).

Notwithstanding my detailed description in Ant. Meeresalg. I p. 40 etc. several questions concerning *Cœpidium* remain to be answered. AGARDH brought the plant to the Chordariaceæ on account of the structure of the upright shoots, which were clothed with assimilators of the well-known type. My material, very large and from many places, showed just the same thing. Neither of us could find any trace of sporangia. I came to the conclusion that sporangia were not formed, but in this I was entirely wrong. A marked periodicity in the subantarctic seaweeds seems to be a rather uncommon feature, but from this rule *Cœpidium* makes an exception. During the winter we find horizontal thalli, sometimes with small cups, from which very short, simple upright shoots arise. Bladders of all sizes are also found. But later these upright shoots develop into large branched fronds like a typical *Chordaria* and with typical sporangia. There is no doubt that *Cœpidium* belongs to the Chor-

dariaceæ. Large fertile fronds were gathered from November to February; later they decay and disappear. There is no trace of them during the winter, but in July new ones begin to appear; such were figured by the writer in 1907.

The »Chordaria»-shoots are upright in the water, but not rigid, and prostrate when uncovered. They attain 16 cm. The main axis is 1—1,5 mm thick, but thinner at the base. Except the basal part it bears numerous branches, generally not over 3,5 cm long, very thin and nearly always simple. Young specimens show that the branches are developed in basipetal order: the zone of more vivid secondary growth is suprabasal, but not too strictly localized, as young branches also spring from between the older ones. Sometimes they are fasciculate. In a couple of specimens the main axis was found to be forked.

The horizontal thallus, where the fertile »cups» and the vesicles are formed, at first consists of a thin crust or cushion with a more or less lobed margin, the lobes forming processes, which branch repeatedly, often di-trichotomously but also rather irregularly. New branches spring from above these and various thalli meet and become fused, so that finally very large, flat or more coralloid crusts are formed, with the innumerable branches quite inseparable without getting torn to pieces. The branches are flat or cylindrical. The cups are situated at or near the end of the branches; in any case, the cup represents the end of a small branch, which, after the circular wall has been formed, becomes transformed into the fertile »Chordaria»-shoot. The structure of this is typical, as will be seen from my figure 12 b. The axis is solid or becomes hollow with age. The assimilators are about 75 μ long, generally three-celled with swollen endcell, measuring 15 to 18 μ across. Hairs were rare but found in all plants examined. The sporangia are obovate, 30—45 × 15—18 μ and contain numerous spores.

An examination of the young tip of a branch in the act of forming a fertile frond shows that growth is arrested in a central circular area, from what results the formation of a depression, surrounded by a thick margin. From the centre of the depression springs the »Chordaria»-shoot. I have searched my material for the young stages: it seems that a group of firmly joined filaments arises, with swollen end-cells, and bearing a superficial coat of Chordaria-assimilators. A longitudinal section through a young fertile branch shows that the whole plant has the monosiphonous, ectocarpoid structure, essential to all members of the Chordariaceæ.

If the bladders, the »Colpomenia-Sprosse» as I called them in 1907, really belong to *Cæpidium*, they must show the same structure. And they do. I arrived at the conclusion that the bladders were swollen and hollow protuberances on the horizontal thallus, and not another alga, intimately connected with *Cæpidium*. The bladders bore gametangia and resembled *Colpomenia* in most points. For this reason I transferred *Cæpidium* to the Punctariaceæ, for we must remember that the mature »Chordaria»-shoots were unknown. In my new material the development of the bladders could be followed with, as far as I can see, absolute certainty. They originate as small solid warts. The greater part of a lobed and branched crust is not seldom transformed into a large bladder, covering the still solid parts, which

remain attached to the substratum if the bladder is torn loose, as they adhere firmly by means of numerous rhizoids. I have also observed young thalli, hardly more than a few mm across, transformed into a bladder, which may explain the

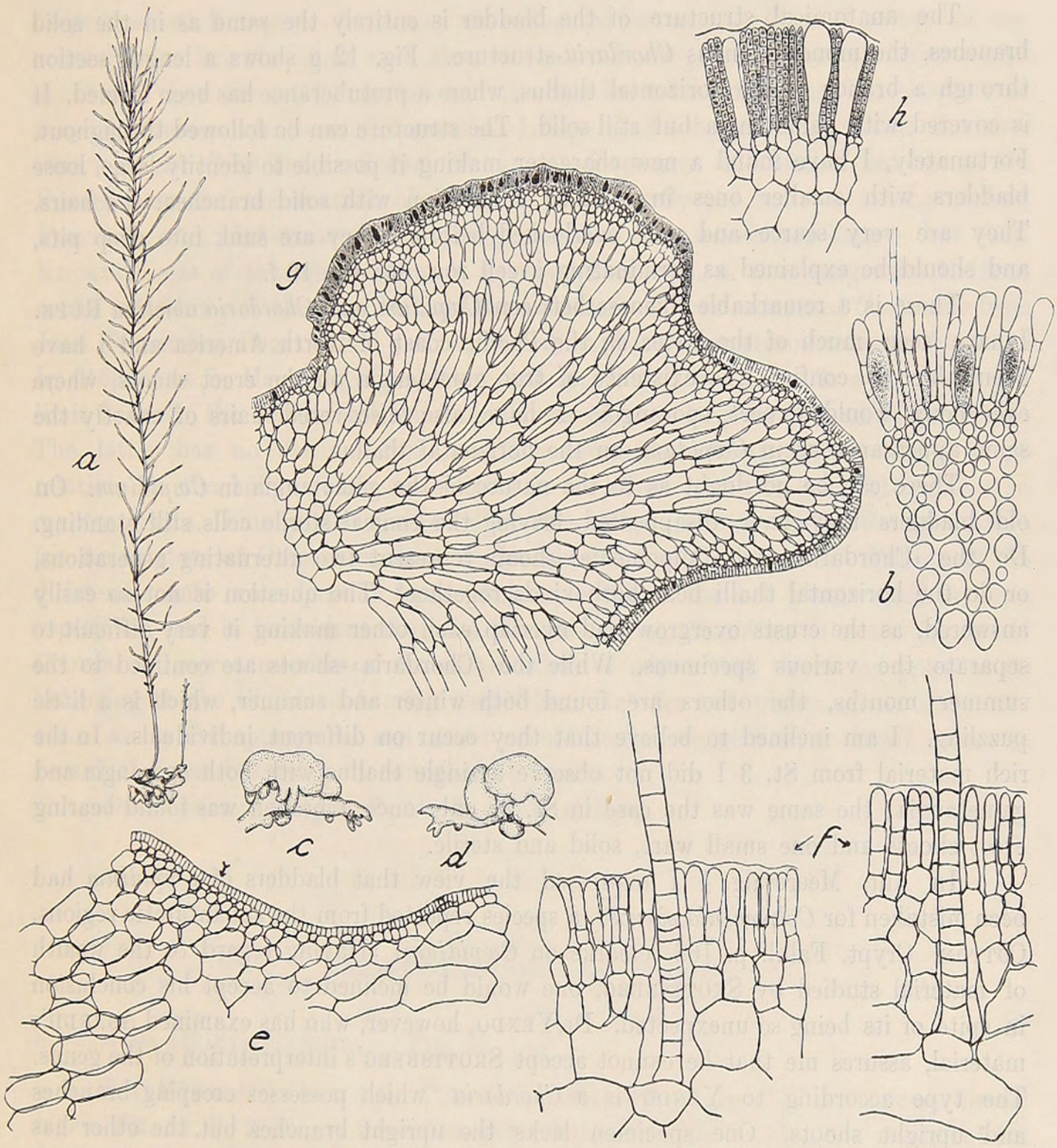

Fig. 12. *Cœpidium antarcticum:* **a** part of horizontal thallus with erect fronds, nat. size; **b** cross section of erect frond (»Chordaria»-shoot), × 180; **c** bladder, × 2, **d** same from the other side; **e** transition zone (↓) between solid branch and bladder, × 75; **f** hairs, × 400; **g** gametangia-bearing, still solid frond, × 30; **h** ripe gametangia and large sterile cells; × 400.

occurrence of free bladders without any visible connection with the normal cylindrical branches. The structure of the transition zone between a solid branch and a bladder does not allow of any other explanation than that the latter originates on the former and is not a separate organism; see fig. 12 e!

The bladders bear gametangia in large irregular sori that sometimes cover nearly the entire surface. Even a still solid wart may produce gametangia, fig. 12 g. With the gametangia occur large sterile cells, conical sacs filled with a dark brown mass of unknown composition.

The anatomical structure of the bladder is entirely the same as in the solid branches, the monosiphonous *Chordaria*-structure. Fig. 12 g shows a length section through a branch of the horizontal thallus, where a protuberance has been formed. It is covered with gametangia but still solid. The structure can be followed throughout. Fortunately, I have found a new character making it possible to identify large, loose bladders with smaller ones in obvious connection with solid branches: the hairs. They are very scarce and were overlooked before. They are sunk into deep pits, and should be explained as terminating a cell row, see fig. 12 f.

There is a remarkable likeness between *Cæpidum* and *Chordaria abietina* RUPR. I have seen much of the latter on the Pacific coast of North America and I have been able to confirm the existence of true gametangia on the erect shoots, where everybody would expect sporangia. I have also discovered hairs of exactly the same appearance as in *Cæpidum*, on the horizontal thallus.

There can be no doubt as to the nature of the gametangia in *Cæpidium*. On old bladders they have disappeared, leaving the conical sterile cells still standing. Do the »Chordaria»-and »Colpomenia»-shoots represent two alternating generations, or do the horizontal thalli bear both kinds together? The question is not so easily answered, as the crusts overgrow and overlap each other making it very difficult to separate the various specimens. While the »Chordaria»-shoots are confined to the summer months, the others are found both winter and summer, which is a little puzzling. I am inclined to believe that they occur on different individuals. In the rich material from St. 3 I did not observe a single thallus with both sporangia and gametangia; the same was the case in St. 8; only once a branch was found bearing erect shoots and one small wart, solid and sterile.

In Ant. Meeresalg. I I expressed the view that bladders of *Cæpidium* had been mistaken for *Colpomenia sinuosa*, a species reported from the subantarctic regions. COTTON, Crypt. Falkl. p. 168 remarks on *Cæpidium*: »Having regard to the wealth of material studied by SKOTTSBERG, one would be inclined to accept his conclusion in spite of its being so unexpected. Dr. YENDO, however, who has examined AGARDH's material, assures me that he cannot accept SKOTTSBERG's interpretation of the genus. The type according to YENDO is a *Chordaria* which possesses creeping branches and upright shoots. One specimen lacks the upright branches but the other has several and resembles very much an old and nearly decayed plant of *Chordaria abietina*. YENDO maintains that the bladder-like fronds are quite distinct from the so-called fertile axis, and that they consist of young plants of *Colpomenia sinuosa* or an allied species. In view of Dr. YENDO's intimate knowledge of the life history of both *Chordaria* and *Colpomenia* in the North Pacific, I feel bound to accept his conclusion, and believe that Dr. SKOTTSBERG must have been misled, as have other observers in similar cases, by the intimate connection of host and epiphyte. As it

has not been possible to identify the *Chordaria*, the alga here is left under the old name *Cœpidium.*» But, under *Colpomenia* sp. COTTON remarks l. c. p. 179: »The forked basal branches described by SKOTTSBERG would appear to be part of the *Colpomenia* plant (and not of the *Chordaria*), and these are unlike anything found in the ordinary *Colpomenia* of Europe». Further: »Pending further investigation of preserved material I have left the plant as *Colpomenia* sp.» Thus, COTTON here seems to accept my view that the solid branches and the vesicles belong together, but thinks that they represent a species of *Colpomenia.* I hope that I have made it clear this time that it is not *Colpomenia sinuosa*, nor an allied species. *Colpomenia* belongs to the Encoeliaceæ, and the anatomical structure is essentially the same as in *Scytosiphon*, *Punctaria*, etc. Unfortunately, no young stages of *Colpomenia* are known, but Prof. KUCKUCK was of the opinion that it is polysiphonous, i. e. that tangential divisions occur, which is not the case in the Chordariaceæ. I have examined *C. sinuosa* from Juan Fernandez, Puget Sound and Ceylon; all have the same structure, well illustrated by BÖRGESEN in Mar. Alg. Dan. West Ind. Pt 2, p. 176. There is a much sharper limit between the cortex and the inner layers of very large cells than in *Cœpidium.* The latter has no distinct sori, and the formation of gametangia stands in no relation to the hairs, which are solitary in *Cœpidium* and not grouped together in cryptostomata. Finally, the sterile cells in *Cœpidium* are rather unlike the paraphyses (or assimilators of OLTMANNS, Biol. u. Morph, Meeresalg. II p. 375). Taking all the differences into consideration, the likeness between the two plants appears quite superficial, and it is evident that the bladder-bearing *Cœpidium* is not a species of *Colpomenia*, nor a member of the same order. I admit that this is no proof of its belonging to the Chordaria-bearing *Cœpidium.* But the two plants are so absolutely alike as to the appearance and structure of the horizontal thallus that I refuse to regard them as belonging to two distinct genera.

Distribution: Fuegia, Falkl., S. Georgia, Kerg.

Stereocladon HOOK. FIL. et HARV.

S. rugulosus (BORY) HARIOT. — Fig. 13 c—g.

Falkland Islands: Port Louis, frequent on *Mytilus* in the lower litoral region (St. 11, 7. 2. 08, sp.). — The expanded crusts carry numerous stumps of old erect shoots in the centre and younger ones nearer to the margin, new ones developing during the summer months.

HARIOT, Miss. sci. Cap Horn p. 41 places *Stereocladon* among the Chordariaceæ without further discussion. Most authors have referred it to *Scytothamnus.* In the external appearance of the erect fronds there is no great difference, but a closer examination clearly justfies the reestablishment of the genus *Stereocladon.* It possesses a large horizontal thallus, from which spring the erect fronds, a dimorphism

not uncommon in the Chordariaceæ. The horizontal thallus is very firm and has marginal growth; the oldest stumps of erect fronds are found in the centre, every year a new zone being added. The old surface is rough from remains of old upright fronds while the fresh marginal parts are smooth and of a lighter colour. There is nothing like this in *Scytothamnus*. The structure of the crust is monosiphonous, see fig. 13 d. The erect fronds are solid; there is, even in the youngest stages, no apical cell nor one central filament, but a bundle of longitudinal filaments (fig. 13 e). Sections of old fronds show numerous hyphæ, most of them running longitudinally,

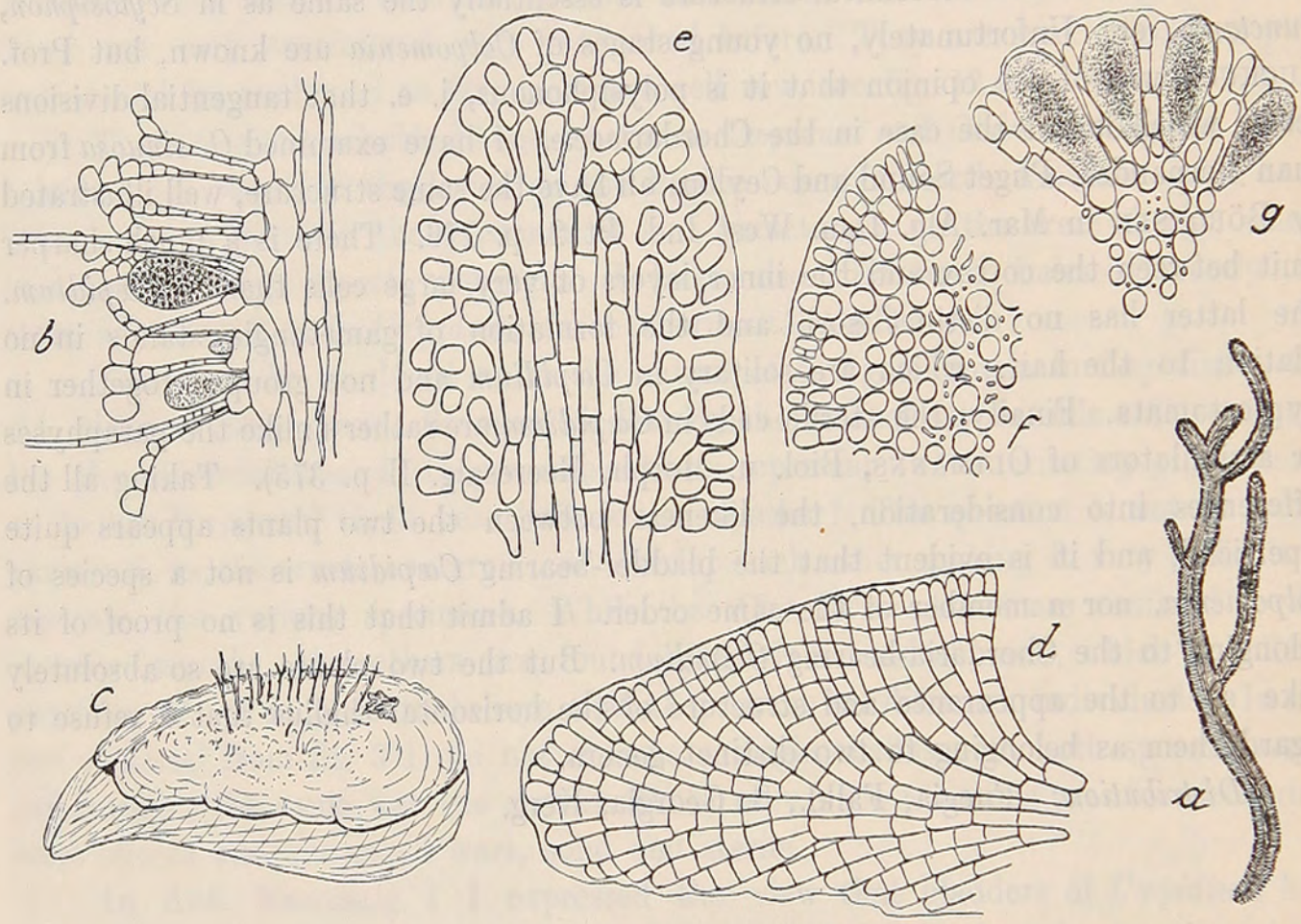

Fig. 13. **a** *Mesogloea falklandica*, nat. size; **b** *Chordaria linearis*, part of long. section, × 180; **c**–**g** *Stereocladon rugulosus*; **c** horizontal thallus on *Mytilus*, with stumps of erect fronds, nat. size; **d** section through margin of horizontal thallus, × 180; **e** long. section of growing apex, × 360; **f** cross section of erect fond, × 180; **g** id. with ripe sporangia, × 180.

making the medulla very solid and unlike the structure of *Scytothamnus*. The mode of growth also separates *Stereocladon* from *Scytothamnus* or *Dictyosiphon*, and it cannot be placed in the same order with them. I think that HARIOT was right in removing it to the Chordariaceæ, even if he does not tell us why he did so; the structure, on the whole, seems to defend its new position. The assimilators, I admit, are unlike the common type in that order, but it is difficult to find a better position for it.

Distribution: Subantarct. Amer., Falkl., S. Orkn. Isl.

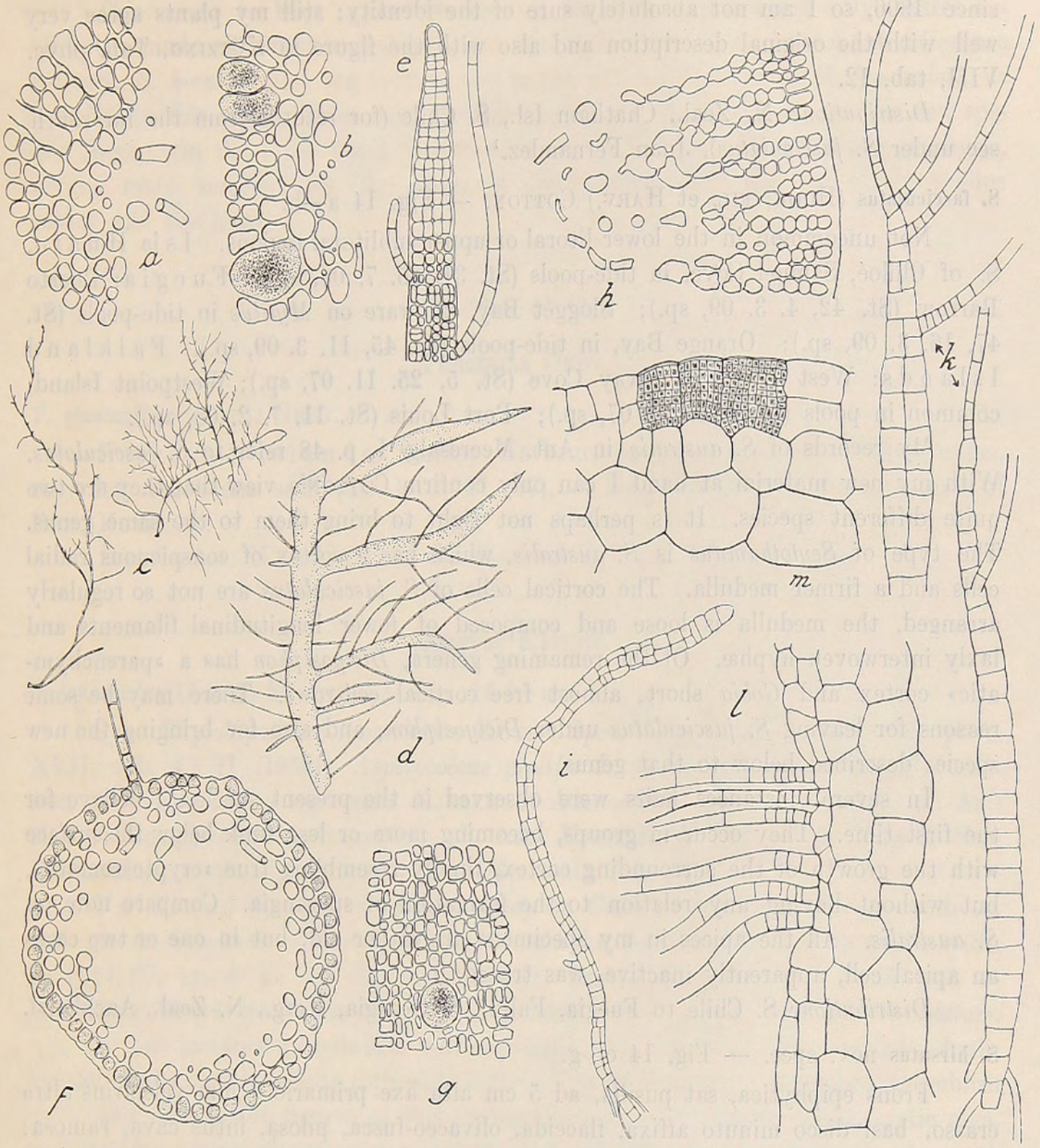

Fig. 14. **a—b** *Scytothamnus fasciculatus:* parts of cross sections with ripe (**b**) and empty (**a**) sporangia, × 180. **c—g** *Sc. hirsutus:* **c** large plant and numerous small ones, growing on *Adenocystis*, nat. size; **d** part of specimen, × 25; **e** growing apex, × 180; **f** cross section of sterile frond, × 180; **g** surface view of a piece with sporangia, × 180. **h** *Sc. australis*, part of cross section, × 180; **i—m** *Corycus lanceolatus:* **i** young plant, × 75; **k** one entire seedling and upper part of another, × 200; **l** group of hairs, × 200; **m** gametangia in section, × 200.

Dictyosiphonaceæ.

Scytothamnus Hook. fil. et Harv.

S. australis (J. Ag.) Hook. fil. et Harv. — Fig. 14 h.

Chiloé: Ancud Harbour, Anal, scarce in the litoral region (St. 29, 12. 7. 08, sp.). — Originally described from New Zealand. I have not seen any material from there

since 1906, so I am not absolutely sure of the identity; still my plants agree very well with the original description and also with the figure in KÜTZING, Tab. phyc. VIII, tab. 12.

Distribution: N. Zeal., Chatham Isl., S. Chile (for records from the far south see under *S. fasciculatus*), Juan Fernandez.[1]

S. fasciculatus (HOOK. FIL. et HARV.) COTTON. — Fig. 14 a—b.

Not uncommon in the lower litoral or upper sublitoral regions. Isla Huafo, S. of Chiloé, Samuel Cove, in tide-pools (St. 31, 25. 7. 08, sp.). Fuegia: Puerto Barrow (St. 42, 4. 3. 09, sp.); Slogget Bay, not rare on *Mytilus* in tide-pools (St. 47, 16. 3. 09, sp.); Orange Bay, in tide-pools (St. 45, 11. 3. 09, sp.). Falkland Islands: West Falkl., Halfway Cove (St. 5, 25. 11. 07, sp.); Westpoint Island, common in pools (St. 8, 6. 12. 07, sp.); Port Louis (St. 11, 7. 2. 08, sp.).

My records of *S. australis* in Ant. Meeresalg. I, p. 48 refer to *S. fasciculatus*. With my new material at hand I can only confirm COTTON's view that they are two quite different species. It is perhaps not right to bring them to the same genus. The type of *Scytothamnus* is *S. australis*, which has a cortex of conspicuous radial cells and a firmer medulla. The cortical cells of *S. fasciculatus* are not so regularly arranged, the medulla is loose and composed of fewer longitudinal filaments and laxly interwoven hyphæ. Of the remaining genera, *Dictyosiphon* has a »parenchymatic» cortex and *Gobia* short, almost free cortical cell-rows. There may be some reasons for leaving *S. fasciculatus* under *Dictyosiphon*, and also for bringing the new species described below to that genus.

In several instances hairs were observed in the present species, I believe for the first time. They occur in groups, becoming more or less sunk below the surface with the growth of the surrounding cortex, finally resembling true »cryptostomata», but without having any relation to the formation of sporangia. Compare note on *S. australis*. All the apices in my specimens are rather old, but in one or two cases an apical cell, apparently inactive, was traced.

Distribution: S. Chile to Fuegia, Falkl., S. Georgia, Kerg., N. Zeal., Auckl. Isl.

S. hirsutus nov. spec. — Fig. 14 c—g.

Frons epiphytica, sat pusilla, ad 5 cm alta axe primario 1 mm vel rarius ultra crasso, basi disco minuto affixa, flaccida, olivaceo-fusca, pilosa, intus cava, ramosa; rami interdum fasciculati, longiusculi vel brevissimi, basi et apice distincte attenuati, pilis longissimis 10—12 μ diam. vestiti. Structura anatomica fere ut in *S. fasciculato*, sed tenuior, stratis cellularum perpaucis. Sporangia in speciminibus nostris sat raro obvenientia, cortice immersa, 35—45 μ diam.

Falkland Islands: West Falkl., near Halfway Cove on *Adenocystis* and *Cladochroa* (St. 4, 21. 11. 07, sp.); East Falkl., Port Darwin, on *Adenocystis* (St. 10, 16. 1. 08, sp.).

[1] While no hairs were known to occur in this plant nor were observed in my specimens from Chiloé, all the plants from Juan Fernandez collected by the writer have typical cryptostomata. This is remarkable, as no other difference was found.

This seems to be a typical member of the Dictyosiphonaceæ. My figures exhibit the mode of growth and the distinct top-cell. There is of course much difference between *S. hirsutus* and the type of the genus, *S. australis*, but if S. *fasciculatus* is included in this genus, I can see no other possibility than to bring also the new species there. On the other hand, it differs from the last mentioned in being epiphytic, in the much smaller size, the shape of the branches, the thin wall of the thallus cavity and the hairs.

Encoeliaceæ.

Punctaria Grev.

P. plantaginea (Roth) Grev.

Falkland Islands: Stanley Harbour, on pebbles in the litoral region, only few specimens seen (St. 1, 1. 11. 07). — Determined with the assistance of Prof. Kuckuck.

Distribution: N. Atl. Ocean, W. coast of N. Amer., Fuegia, Falkl.

Corycus Kjellm.

C. lanceolatus (Kütz.) Skottsb. — Fig. 14 i—m.

Syn. *Phycolapathum lanceolatum* Kütz. Spec. Alg. (1849) p. 484, Tab. phyc. XVII, tab. 47 II (1856); *Asperococcus prolifer* J. Ag. in Hohenacker's Alg. mar. sicc. n. 215; *Corycus nigrescens* Kjellman, Adenocystis (1889); *C. prolifer* (J. Ag.) Hariot Compl. (1892); *C. prolifer* (J. Ag.) Kjellm. in Engler & Prantl, Nat. Pflanzenfam. (1893), Skottsberg, Ant. Meeresalg. I p. 31.

Falkland Islands: Port Stanley on *Codium*, drifted (1. 11. 07, with sp. and gt. on the same specimens); Cape Pembroke, common, mostly on *Codium* (St. 3, 7. 11. 07, sp. & gt. on different indiv.); Port Louis (St. 11, 7. 2. 08, gt.). — Kützing's figure leaves no doubt of the identity of his *Phycolapathum lanceolatum*.

In one instance gametangia and sporangia were found on the same individuals, but otherwise they belong to different plants. I have thought it convenient to publish some new and better figures of this interesting and characteristic subantarctic alga. Several very young plants were collected in November, showing the mode of growth (fig. 14 i—k).

Distribution: S. Chile to Fuegia, Falkl., S. Georgia.

Ilea Fries.

I. fascia (Muell.) Fr.

Fuegia: Ushuaia, in the litoral region, on *Patella* (St. 46. 14. 3. 09, gt.).

Distribution: Arct. — Mediterr., N. Amer., E. Asia, Subantarct. Amer., Falkl., S. Georgia.

Scytosiphon (Ag.) Thur.

S. lomentaria (Lyngb.) J. Ag.

Chiloé: Quemchi (St. 30, 19. 7. 08). W. Patagonia: Puerto Bueno, sublit. on *Mytilus*, 1—3 m. (St. 27, 3. 6. 08, gt.); Puerto Riofrio (St. 28, 13. 6. 08.); Isla Atalaya, lower litoral, common (St. 25, 25. 5. 08, gt.); Islas Evangelistas, in pools, a very narrow form (St. 26, 26. 5. 08, gt.). Fuegia: Ushuaia, litoral, very narrow fronds (St. 46, 14. 3. 09, gt.). Falkland Islands: Stanley Harbour, litoral on pebbles (St. 1, 1. 11. 07, gt.); Cape Pembroke, common on *Mytilus* in tide-pools (St. 3, 7. 1. 08, gt.); Port Louis (St. 11, 7. 2. 08, gt.); West Falkl., near Halfway Cove (St. 4, 21. 11. 07). — Groups of hairs, sometimes sunk below the surface, resembling those figured in fig. 14 l (Corycus) occur in various plants. I have not seen any real cryptostomata, such as mentioned in Ant. Meeresalg. I, p. 34.

Distribution: Arct. — Mediterr., Pacif. Ocean, Circump.-subantarct.

Cladothele Hook. fil. et Harv.

C. Decaisnei Hook. fil. et Harv. — Fig. 15 a—f.

Falkland Islands: Cape Pembroke, in tide-pools, scarce (St. 3, 7. 11. 07, sp. gt.)

In Journ. of Botany XXIX *Cladothele* was reduced to *Stictyosiphon* by G. Murray. He pointed out the conformity in anatomical structure and referred to Reinke's excellent figures of the latter. In 1907, I was unable to form an independent opinion on the subject, but with new and well preserved material at hand I have arrived at the conclusion that the genus *Cladothele* must be restored. My specimens are much more in accordance with the original figures of Hooker than with those of Murray, which is the more remarkable as Murray regarded the former as less accurate. The attention of the authors in »Flora Antarctica» was especially drawn to the peculiar »papillæ» that cover the whole surface of *Cladothele*. Murray did not get a good view of them and concluded that numerous empty gametangia had suggested the idea of the papillæ or »Codium-like cells». In my material these papillæ, i. e. the strongly vaulted assimilatory cells, the development of which may be understood from my figures, are very prominent, being free to $^1/_2$ or even $^3/_4$ of their length. This difference from *Stictyosiphon* is, however, not sufficient to justify the generic separation. But a study of the young apices revealed another difference. In the latter, each branch terminates in a hair, the growth is trichothallic. In *Cladothele* every branch ends in an apical cell (fig. 15 a). If we follow Kjellman's principles, as they were exposed in Nat. Pflanzenfam., this difference brings the two plants not only to different genera, but to different orders. As the apical cell is not an initial in the true sense, but becomes less active at an early date, *Cladothele* might well find a place with the Dictyosiphoneæ of Oltmanns (Morph. und Biol. II, p. 367), as the resemblance to *Delamarea* is unmistakable. However, it deserves to be mentioned that Kjellman described his *Phlœospora* (Stictyosiphon) *pumila*

Algenveg. Murman. Meer. p. 46, fig. 17 without hairs and with an apex much like that in *Cladothele*. The position of this genus has become rather uncertain through

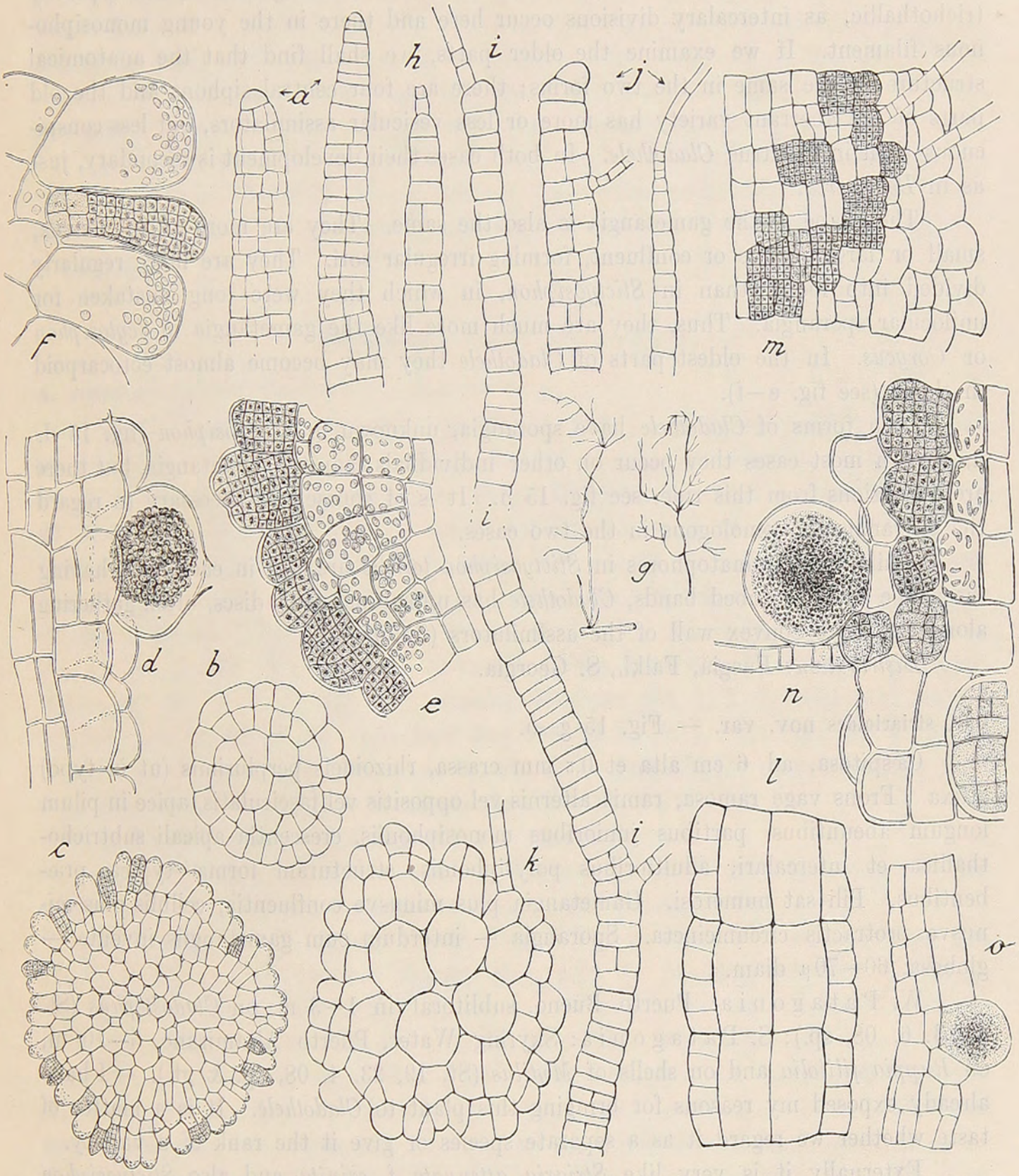

Fig. 15. **a**—**f** *Cladothele Decaisnei:* **a** two apices, × 180; **b** section through young frond, × 200, and **c** through old, fertile frond, × 75; **d** sporangium, × 360; **e** gametangium sorus, × 360; **f** gametangium and two vesicular cells, × 400. **g**—**o** var. *striarioides:* **g** two plants, nat. size; **h**—**j** growing apices, × 180; **k** cross section of frond, × 180; **l** long. section of young frond, × 180; **m** gametangium sori, seen from surface, × 180; **n** id. and sporangium, × 360; **o** sporangium on young part of frond, × 180.

the discovery of a small alga, which I took to be a *Stictyosiphon* or *Striaria*, but which, after a careful examination and comparison, I am unable to distinguish from

Cladothele, though it must be described as a variety or a new species. It grows in more or less brackish water. The growing apex presents a notable feature, being crowned, in most cases at least, by a terminal hair, but the growth is not typically trichothallic, as intercalary divisions occur here and there in the young monosiphonous filament. If we examine the older parts, we shall find that the anatomical structure is the same in the two forms; there are four central siphons and the old parts of the aberrant variety has more or less vesicular assimilators, but less conspicuous than in the true *Cladothele*. In both cases their development is secondary, just as in *Delamarea*.

The shape of the gametangia is also the same. They are more or less convex, small or large, single or confluent, forming irregular sori. They are more regularly divided into locelli than in *Stictyosiphon*, in which they were long mistaken for unilocular sporangia. Thus, they are much more like the gametangia in *Scytosiphon* or *Corycus*. In the oldest parts of *Cladothele* they may become almost ectocarpoid in shape (see fig. e—f).

Both forms of *Cladothele* have sporangia, unknown in *Stictyosiphon* (fig. 15 d, n, o). In most cases they occur on other individuals than the gametangia, but there are exceptions from this rule, see fig. 15 n. It is of course not necessary to regard the sporangia as homologous in the two cases.

While the chromatophores in *Stictyosiphon tortilis* are few in each cell, having the shape of short lobed bands, *Cladothele* has numerous small discs, often gathering along the outer convex wall of the assimilators (fig. 15 f).

Distribution: Fuegia, Falkl., S. Georgia.

var. **striarioides** nov. var. — Fig. 15 g—o.

Cæspitosa, ad 6 cm alta et 0,5 mm crassa, rhizoideis perplurimis (ut in typo) affixa. Frons vage ramosa, ramis alternis vel oppositis vel fasciculatis, apice in pilum longum abeuntibus, partibus junioribus monosiphoniis, crescentia apicali subtrichothallica et intercalari, adultioribus polysiphoniis, structuram formæ typicæ præbentibus. Pili sat numerosi. Gametangia plus minusve confluentia, cellulis plus minusve protractis circumcincta. Sporangia — interdum cum gametangiis inventa — globosa, 60—70 μ diam.

W. Patagonia: Puerto Bueno, sublitoral in 1—3 m, on *Cladostephus* (St. 27, 3. 6. 08, sp.); S. Patagonia: Skyring Water, Puerto Altamirano, 5—10 m, on *Ruppia filifolia* and on shells of *Mytilus* (St. 19, 23. 4. 08, sp. & gt.). — I have already exposed my reasons for bringing this plant to *Cladothele*. It is a matter of taste whether we regard it as a separate species or give it the rank of a variety.

Externally it is very like *Striaria attenuata* f. *crinita* and also *Stictyosiphon tortilis*. But the sporangia, which do not form sori as in *Striaria*, nor are accompanied by »paraphyses», serve to distinguish them. Of 15 specimens, 12 bore sporangia, 3 gametangia and one of these also, in the younger parts, a few sporangia. The hairs are sometimes grouped together; the few plants obtained in St. 27, where the water is less saline than normally but much more salt than in Skyring Water,

almost lack hairs. It lies near at hand to suspect that the salinity stands in some relation to the formation of hairs in this special case, a theory to be confirmed or rejected on the basis of experiments. I have examined a number of small *Cladothele* plants from St. 3; there were some with only sporangia, others with only gametangia, and again some with both kinds of reproductive organs. But in no case the slightest trace of a hair was found. Otherwise many of these small plants were quite like var. *striarioides*, having a much smoother, less papillose surface than the larger ones.

To judge from the description, ROSENVINGE's *Coelocladia* (Grönl. Havalger, p. 866) is very like *Cladothele*, but it shows a much more pronounced difference in the size of the central and peripheral cells and becomes hollow with age. The growth is trichothallic.

Adenocystis HOOK. FIL. et HARV.

A. utricularis (BORY) SKOTTSB. — Fig. 16 a—f.

Very common in the upper sublitoral and lower litoral region, especially in tide-pools. West Patagonia: Puerto Bueno, on *Mytilus*, 1—3 m (St. 27, 3. 6. 08, sp.). S. Patagonia: Canal Gajardo, Puerto Témpanos (St. 21 b, 27. 4. 08, sp.); Otway Water, Puerto Pomar (St. 15, 14. 4. 08, sp.); Canal Jerónimo, Cutter Cove (St. 14, 13. 4. 08, sp.); Arauz Bay (St. 23, 3. 5. 08, sp.); Susanna Cove (leg. A. PAGELS), 15—18 m. Fuegia: Ushuaia (St. 46, 14. 3. 09); Slogget Bay (St. 47, 16. 3. 09, sp.); Puerto Barrow (St. 42, 4. 3. 09); Admiralty Inlet, Hope Bay (St. 13, 25. 3. 08). Falkland Islands: Port Louis (St. 11, 7. 2. 08, sp.); Cape Pembroke (St. 3, 7. 11. 07, sp.); Stanley Harbour (St. 1, 1. 11. 07, sp.); Darwin Harbour (St. 10, 16. 1. 08, sp.); Low Bay (St. 10 b, 18. 1. 08); Port North (St. 7, 2. 12. 07); Westpoint Isl. (St. 8, 5. 12. 07, sp.). South Georgia: Boiler Harbour (St. 48, 20. 4. 09, sp.); Stromnæs Bay (St. 51, 24. 4. 09).

f. *longissima* nov. form. An = *Chorda rimosa* MONT.?

A typo differt frondibus linearibus longissimis, ad 20 cm longis et 5—10 mm solum latis, plus minusve tortuosis et irregulariter subconstrictis.

S. Patagonia: Otway Water, Puerto Pomar, with the ordinary form (St. 15, 14. 4. 08, sp.). Fuegia: Slogget Bay, with the ordinary form (St. 47, 16. 3. 09, sp.); Tekeenika, drifted (10. 3. 09, sp.). Falkland Islands: Port Louis, with the ordinary form (St. 11, 7. 2. 08, sp.); Cape Pembroke, with the ordinary form (St. 3, 7. 1. 08, sp.); West Falkl., near Halfway Cove, uppermost sublitoral (St. 4, 21. 11. 07, sp.). — This curious form is rather puzzling: externally it agrees with *Scytosiphon lomentaria*, but the structure is entirely that of *Adenocystis*. It generally grew together with typical plants, sometimes even springing from the same basal disc, which may, however, be the result of a fusion between holdfasts of several specimens. I have not seen any real transitional forms. In cross section it is quite like ordinary *Adenocystis*, while the longitudinal section, as could be expected, exhibits more elongated subcortical cells. It is not impossible that *Chorda rimosa* MONT. from the Auckland Islands (see KÜTZ. Tab. phyc. VIII p. 7 tab. 15) is the same. Accord-

ing to the original description in Prodr. Phyc. Ant. p. 12 the superficial stratum is formed by »filis clavatis simplicibus et articulatis basi sporam obovatam gerentibus». Nothing is said of cryptostomata. The articulated filaments probably belong to an epiphyte (compare under *Myrionema incommodum*); the obovate spores are the sporangia. KÜTZING's figure shows the structure of *Adenocystis*. Later (Voy. pôle sud., p. 44) MONTAGNE wrote that the spores were situated at the base of cylindrical, bifurcate and articulate filaments. There is nothing like this in KÜTZING's figure, which was prepared from type material; on the other hand, such a description answers well to *Myrionema incommodum*.

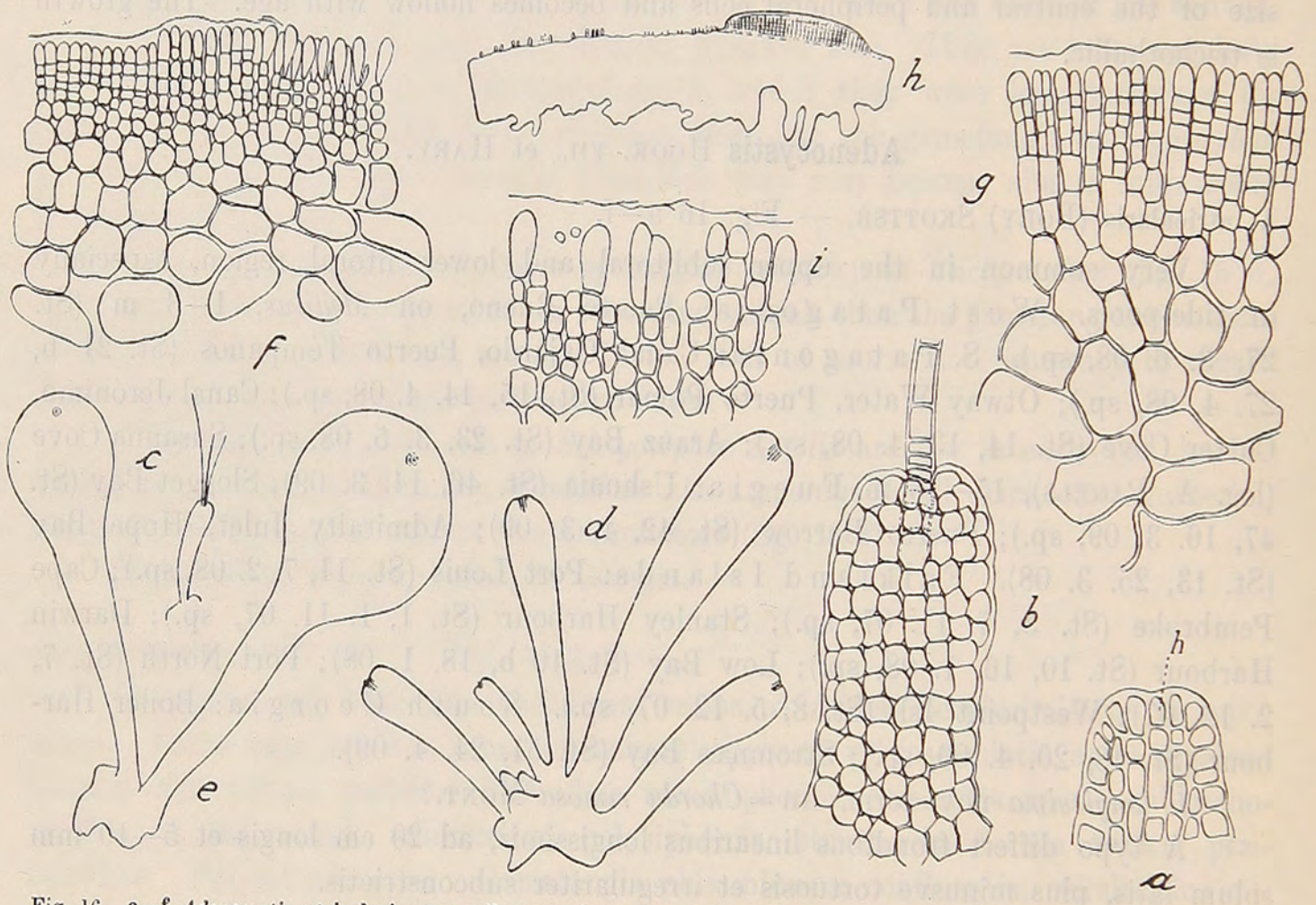

Fig. 16. **a**—**f** *Adenocystis utricularis:* **a** smallest specimen found, in optical section, × 360; **b** another very young plant, × 360; **c**—**e** young plants with terminal hairpits, × 25; **f** long. section through wall of large frond, showing formation of assimilators and sporangia, × 180. **g**—**h** *Utriculidium Durvillei:* **g** origin of gametangia, × 360; **h** cross section, showing sori and remaining sterile cells, × 55; **i** part of cortex with traces of gametangia, × 360.

The f. *longissima* cannot be due to external conditions as it grows mixed with the ordinary form. Its genetic relations to this are obscure. At present I do not feel inclined to give it the rank of a species. The identity with *Chorda rimosa* cannot be ascertained without an examination of the latter.

Different writers have assigned to *Adenocystis* a very different systematic position. OLTMANNS, Morph. und Biol. II p. 374 placed it in the vicinity of *Colpomenia*, etc., while I preferred to let it form a suborder »Adenocystideæ», what of course did not say more on the affinity than we knew before. GAIN, Flore algol. p. 43, has again removed it to the Laminariaceæ, where it had been placed before, ranging next to *Chorda*.

I have examined a number of very small plants, measuring only 0,5 to 1,5 mm in length. The smallest are cylindrical and solid, the somewhat older ones have a swollen and a little hollow distal end. The holdfast is formed by a multitude of rhizoids. Fig. 16 a shows the smallest plant in optical section. There is no initial: the cell *h* is perhaps an »apical cell», and I think that it gives rise to a terminal hair, the beginning of the terminal cryptostoma, for in other plants we find an apical hair (fig. 16 b), apparently a continuation of a central row (?) and sunk into a narrow pit by the growth of the surrounding tissue (fig. 16 c). Later, other cells are prolonged into hairs and a terminal hair-pit is formed, which is present in every frond examined. Possibly there is at first a subapical meristem soon replaced by intercalary divisions. New fronds spring from the basal disc (fig. 16 d). In fig. 16 e, where the frond has attained its pear-shape, there is still only the primary hair-pit, and no trace of other cryptostomata. The longitudinal growth is, at first, rather uniform: later, a differentiation in stipe and vesicle takes place and the growth of the former becomes much slower.

If we compare *Adenocystis* with *Chorda* (see KYLIN, Entwickelungsgesch. der Phæophyc.) we shall find a certain likeness between them. Unfortunately the earliest stages of the former are unknown. It is probable that it starts as a monosiphonous filament and develops into a short, polysiphonous body. In the young sporophyte of *Chorda* an apical hair is found, but no cryptostoma. There is also, if my interpretation is correct, no principal difference between *Adenocystis* and a young *Laminaria* (see f. inst. YENDO, Development).

If *Utriculidium* is the sexual generation of *Adenocystis*, this has, of course, nothing to do with the Laminariaceæ. And *Adenocystis* might equally well be compared with *Scytosiphon* or other members of the same assemblage; there is not much difference between the young sporophyte of *Chorda* and the young gamophyte of a *Scytosiphon pygmæus* (REINKE, Atlas Taf. 14). From the comparison of such stages alone no safe conclusions on the affinity can be drawn.

The structure of the cortex in the mature frond of *Adenocystis* seems to be variable. KJELLMAN (Adenocystis-former) pointed out the difference between plants from New Zealand and from Tasmania, the latter having a thicker cortex with the cells arranged in regular radial rows. KÜTZING's *A major* from Kerguelen does not show such conspicuous cell-rows (Tab. phyc. VIII tab. 16). GAIN's illustration (Flore algol. p. 46) agrees very well with KJELLMAN's fig. 10, of a New Zealand plant. For comparison, I have added fig. 16 f of a Falkland specimen, where also the development of sporangia and assimilators is seen. Cultures of the spores will reveal whether *Adenocystis* belongs to the Laminariaceæ, or rather to the Chordaceæ of KYLIN, or if *Utriculidium* and *Adenocystis* are two generations of the same species, which ranges with the somewhat heterogeneous Encoeliaceæ.

Distribution: Subantarct. Amer., Falkl., S. Georgia, Kerg., Tasm., N. Zeal., Auckl. and Campbell Isl., S. Orkn. Isl., Graham Land.

Utriculidium Skottsb.

U. Durvillei (Trévisan, Hariot; Hook. fil. et Harv. solum p. p.?) Skottsb. Ant. Meeresalg. I p. 36. — Fig. 16 g—i.

Falkland Islands: Cape Pembroke with *Adenocystis*, rare (St. 3, 7. 1. 08, gt.).

In view of the fact that the cortex in the lower sterile portions of *Adenocystis* is composed of radial cell-rows and that such cell-rows often are very distinct also in the fertile parts, the suspicion might arise that the gametangia of *Utriculidium* only represent a thick cortex and that the epidermal cells later develop into assimilators and sporangia. This is not the case. For among the numerous specimens of *Adenocystis* examined I never found a fullgrown plant without assimilators, and nearly all also bear sporangia. There are also patches on the surface of old *Utriculidium* where the gametangia have disappeared, leaving some stray sterile cells standing, not unlike what we have found in *Cœpidium* (see fig. 16 h—i). Hairs were not observed on the material of 1902. This time I have found traces of old hair-pits. This makes it the more probable that *Utriculidium* is the sexual generation of *Adenocystis*. No young fronds were seen. While *Utriculidium* was collected in several places from April to August in 1902, I only found it in one place this time. It is perhaps better developed during the winter.

Distribution: Fuegia, Falkl., S. Georgia.

Cladochroa[1] nov. gen.

Frons disco basali pusillo affixa, filiformis, teres, tubulosa, irregulariter vel subdichotome nec non flagellatim ramosa, ramis longis vel brevibus, ultimis tenuissimis apice cryptostomate instructis; structura anatomica parenchymatica ut in *Adenocystide*, strata autem solum 4—5 præbens, 2—3 interiora cellulis longioribus (filamenta longitudinalia formantibus), 2 externa corticalia cellulis subcubicis; sporangia ovoidea; assimilatores simplices clavati, illis *Adenocystidis* simillimi. Cryptostomata passim occurentia, pilis numerosis valde longis. Chromatophora disciformia.

C. chnoosporiformis nov. spec. — Fig. 17.

Frons ad 25 cm longa, 2 mm solum crassa, sat flaccida, colore obscure brunneo. Sporangia $30 \times 12\,\mu$, assimilatores $50 \times 12\,\mu$. Pili $6—9\,\mu$ diam.

Falkland Islands: West Falkl., near Halfway Cove, on slate in the litoral region (St. 4, 22. 11. 07, sp.).

The external appearance of this plant does not suggest an affinity with *Adenocystis* and hardly with any other member of the Encœliaceæ except *Chnoospora*, but this genus, quite unknown from the regions visited by the writer, has gametangia round the hairpits. The anatomical structure is like that of *Adenocystis*, and it is

[1] *Chroa* Reinsch, a synonym of *Adenocystis*.

noteworthy that every branch has a terminal hair-pit. The hair-pits are quite shallow, which is easy to understand as the cortex never attains any considerable thickness. I do not know if the sori are originally formed round the hair-pits; in the old plants — the only kind observed — they do not form distinct areas but cover all the adult parts of the frond. As far as my experience goes nothing like *Cladochroa* has been described before.

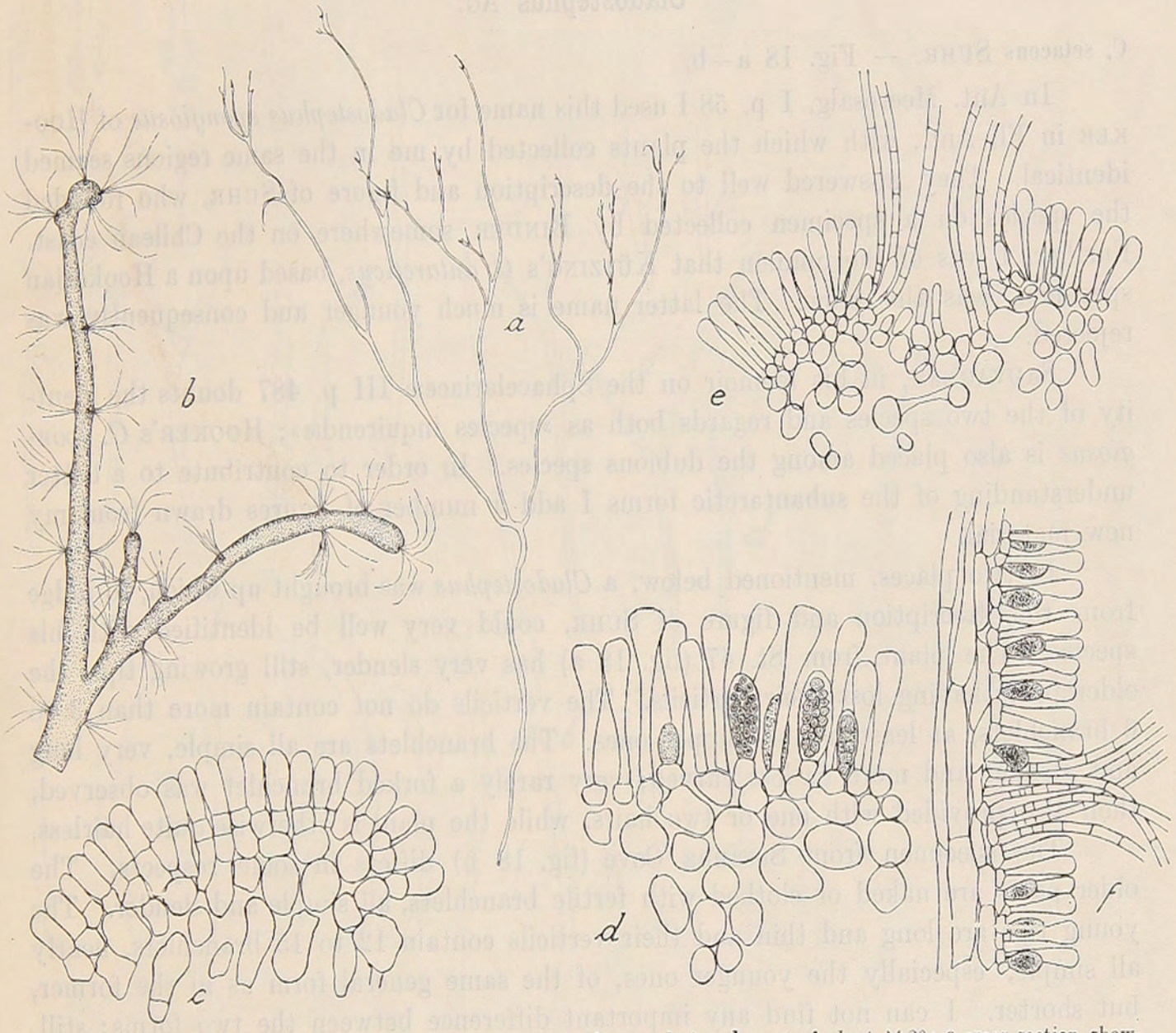

Fig. 17. *Cladochroa chnoosporiformis:* **a** entire specimen, half natural size; **b** part of plant, × 20; **c** cross section, showing development of assimilators, × 360; **d** id. with assimilators and sporangia, × 360; **e** id. through hair-pit, × 180; **f** long. section through fertile frond, × 180.

Sphacelariaceæ.

Halopteris Kütz.

H. obovata (Hook. fil. et Harv.) Sauv.

S. Patagonia: Otway Water, Puerto Toro on drifted specimens of *Cladostephus* (15. 4. 08, sp.); Canal Fitzroy, Los Amigos, drifted (St. 17 b, 19. 4. 08).

Distribution: Subantarct. Amer., Falkl., S. Georgia.

H. funicularis (MONT.) SAUV.

Falkland Islands: Cape Pembroke, not uncommon in tide-pools (St. 3, 7. 1. 08); West Falkl., Halfway Cove, sublitoral 8 m, fragments (St. 5, 25. 11. 07). *Distribution:* Circumpolar-subantarct., Austral., N. Zeal.

Cladostephus AG.

C. setaceus SUHR. — Fig. 18 a—b.

In Ant. Meeresalg. I p. 58 I used this name for *Cladostephus spongiosus* of HOOKER in Fl. Ant., with which the plants collected by me in the same regions seemed identical. They answered well to the description and figure of SUHR, who founded the species on a specimen collected by BINDER somewhere on the Chilean coast. Further, I was of the opinion that KÜTZING's *C. antarcticus*, based upon a Hookerian specimen, was the same. The latter name is much younger and consequently was rejected.

SAUVAGEAU, in his memoir on the Sphacelariaceæ III p. 487 doubts the identity of the two species and regards both as »species inquirendæ»; HOOKER's *C. spongiosus* is also placed among the dubious species. In order to contribute to a better understanding of the subantarctic forms I add a number of figures drawn from my new material.

In two places, mentioned below, a *Cladostephus* was brought up which, to judge from the description and figure of SUHR, could very well be identified with his species. The plant from St. 47 (fig. 18 a) has very slender, still growing tips, the older parts having lost their verticils. The verticils do not contain more than 3 to 6 branchlets, at least not the upper ones. The branchlets are all simple, very long and slender and more or less curved; very rarely a forked branchlet was observed, then also provided with one or two hairs, while the plant is otherwise quite hairless.

The specimen from Susanna Cove (fig. 18 b) differs in some respects. The older parts are naked or clothed with fertile branchlets, all simple and slender. The young tips are long and thin and their verticils contain 12 to 15 branchlets, nearly all simple, especially the younger ones, of the same general form as in the former, but shorter. I can not find any important difference between the two forms; still, the former must resemble *C. Harioti* SAUV., a very little known species. Differences such as between this and *C. setaceus* may result from seasonal or other external conditions.

Straits of Magellan: Susanna Cove, sublitoral 16—18 m (May 08, sp., leg. A. PAGELS). Fuegia: Slogget Bay, in tide-pools (St. 47, 11. 3. 09, sp.).

C. antarcticus KÜTZ. — Fig. 18 c—d.

To this species I refer plants from two other stations. Those from St. 16 (fig. 18 c) have very few branchlets left except on the tips; the lower ones are forked or simple, the upper simple. The verticils contain about 10 branchlets. The fertile

branchlets are simple or sometimes forked at apex; in several instances hairs were observed.

The material from St. 27 (fig. 18 d) differs in the more numerous verticils left. The number of branchlets is about the same. While most are simple, forked ones

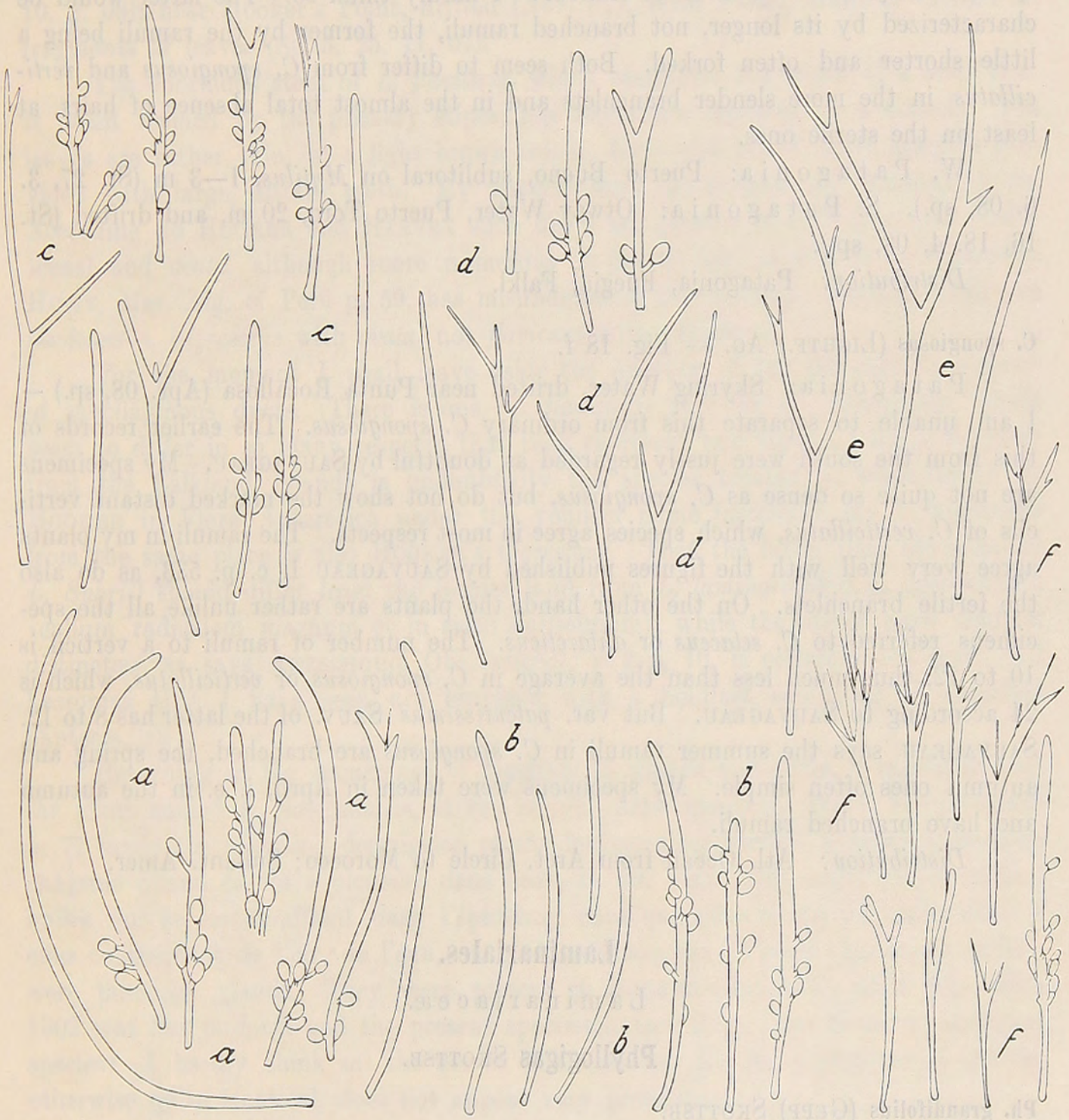

Fig. 18. Ramuli from verticils, × 25 and fertile branchlets, × 55 of: **a—b** *Cladostephus setaceus*, **a** from St. 47 and **b** from Susanna Cove; **c—d** *C. antarcticus*, **c** from St. 16 and **d** from St. 27; **e** »*C. spongiosus*» from one of HOOKER's specimens; **f** *C. spongiosus* from Punta Rocallosa.

are not uncommon, but hardly restricted to a definite zone. No hairs were observed. The basal disc agrees with that in *C. verticillatus*.

For comparison I have examined a fragment of HOOKER's *C. spongiosus*, which I had interpreted as *C. antarcticus* KÜTZ. In this (fig. 18 e) the ramuli are forked

or rarely simple; according to SAUVAGEAU, who examined the type in Herb. KÜTZING, the simple ramuli were more or less confined to adult parts. This is not the case in my specimens from St. 16 and 27. But I cannot see any valid specific character in this, and I still believe that my plants represent *C. antarcticus*. Is this species really different from *C. setaceus*? I hardly think so. The latter would be characterized by its longer, not branched ramuli, the former by the ramuli being a little shorter and often forked. Both seem to differ from *C. spongiosus* and *verticillatus* in the more slender branchlets and in the almost total absence of hairs, at least on the sterile ones.

W. Patagonia: Puerto Bueno, sublitoral on *Mytilus*, 1—3 m (St. 27, 3. 6. 08, sp.). S. Patagonia: Otway Water, Puerto Toro, 20 m, and drifted (St. 16, 18. 4. 08, sp.).

Distribution: Patagonia, Fuegia, Falkl.

C. spongiosus (LIGHTF.) AG. — Fig. 18 f.

Patagonia: Skyring Water, drifted near Punta Rocallosa (Apr. 08, sp.) — I am unable to separate this from ordinary *C. spongiosus*. The earlier records of this from the south were justly regarded as doubtful by SAUVAGEAU. My specimens are not quite so dense as *C. spongiosus*, but do not show the marked distant verticils of *C. verticillatus*, which species agree in most respects. The ramuli in my plants agree very well with the figures published by SAUVAGEAU l. c. p. 533, as do also the fertile branchlets. On the other hand, the plants are rather unlike all the specimens referred to *C. setaceus* or *antarcticus*. The number of ramuli to a verticil is 10 to 12, thus much less than the average in *C. spongiosus* or *verticillatus*, which is 24 according to SAUVAGEAU. But var. *patentissimus* SAUV. of the latter has 8 to 12. SAUVAGEAU says the summer ramuli in *C. spongiosus* are branched, the spring and autumn ones often simple. My specimens were taken in April, i. e. in the autumn and have branched ramuli.

Distribution: Atl. Ocean from Arct. Circle to Morocco; Subant. Amer.

Laminariales.

Laminariaceæ.

Phyllogigas SKOTTSB.

Ph. grandifolius (GEPP) SKOTTSB.

South Georgia: Cumberland Bay, Moraine Fiord, drifted (20. 4. 09); Boiler Harbour, c. 5—10 m (St. 48, 49, 20. 4. 09); Bay of Isles, drifted (25. 4. 09). — Unfortunately, the material is sterile, so I have nothing to add to my previous notes in Ant. Meeresalg. I p. 63. The species was probably collected in South Georgia as early as in 1882, for *Laminaria saccharina* var. *angustata* REINSCH, Meeresalg. Südg. p. 414 very likely refers to *Phyllogigas*.

Distribution: S. Georgia, Graham Land, Victoria Land.

Lessonia Bory.

L. flavicans Bory; Skottsb. Ant. Meeresalg. I p. 73.

In the sublitoral region. — Fuegia: Slogget Bay, drifted (St. 47 b, 16. 3. 09, sp.). Falkland Islands: Port William, 5 m, stones and shells (St. 12, 10. 2. 08); near Hooker's Point, drifted (Nov. 07); West Falkl., Halfway Cove, 8 m, fragments of leaves (St. 5, 25. 11. 07).

The enormous stem of *L. flavicans*, which resembles the trunk of a small tree, is often formed by the primary stipes, but sometimes replaced by a branch. The leaves are rather thin, of a light brown colour, large and broad, their margins provided with large, distant teeth. My material does not possess any mucilage ducts. According to Hooker and Harvey such ducts are present in both *flavicans* (fuscescens) and *ovata*, although more numerous in the former, as well as in *nigrescens*. Howe, Mar. Alg. of Perú p. 59, has misunderstood this passage; Hooker compares *flavicans* + *nigrescens* with *ovata*, not *flavicans* with *nigrescens*.

For the moment I shall leave aside the question of the presence or absence of mucilaginous ducts. There is one »*L. flavicans*» and one »*L. nigrescens*», which seem to differ in so many respects that they represent two species. My *L. flavicans* from the Falkland Islands is undoubtedly the species treated at some length by Hooker in Flora Antarctica under the younger name *fuscescens*, my *L. nigrescens* from the same place is also Hooker's *nigrescens*. That the latter (and the so-called *L. Suhrii*) should differ from the former (and from *L. laminarioides*) in possessing a »callum radicalem magnum et in sicco durissimum», while the others have »radices distinctæ», as says Areschoug, Obs. phycol. V: 2 p. 10, is certainly not true. All Lessonias that I have seen are provided with a holdfast composed of branched hapteres.

Returning to the occurrence of mucilage in glands and ducts, it is evident that the plant named *L. flavicans*, is, in this respect, heterogeneous. Bory, Voy. Coquille p. 77 made the following description of the leaves: »leur surface a quelque chose de chagriné quand on les a plongées dans l'eau, ce qui vient d'un multitude de petites bulles qui se boursoufflent dans l'épiderme, sans que nous ayons pu reconnaître si elles contiennent de l'air, de l'eau, ou quelque mucosité». I guess that these »bulles» were mucilage glands. They were present in Hooker's material, while mine from 1902 was less uniform and the present specimens lack them. Are there two different species? I hardly think so: the use of this character for the separation of species, otherwise quite identical, does not appear very promising.

Distribution: Subant. Amer., Falkl., Kerg., Heard I. — Drifted pieces have been observed along the coast of S. Georgia, where according to my experience this plant does not grow. Regarding the variety *linearis* Reinsch, see under *Ascoseira*.

L. nigrescens Bory; Skottsb. Ant. Meeresalg. I p. 69.

In his work on Peruvian marine algæ, Howe remarks that among the specimens examined by him there are some with and others without mucilage ducts but

otherwise alike (p. 89) and finds it possible that there are two closely allied species confounded under one name. GUIGNARD made the same observation. HOOKER's material as well as the plants collected by the writer in 1902 had numerous mucilage canals. BORY did not observe them, at least he does not mention any. J. AGARDH, Anal. Algol. contin. 2 p. 88, discusses the possibility of subdividing the genus into two sections corresponding to *Hafgygia* and *Laminaria* of ARESCHOUG; he considered the true *L. nigrescens* to lack mucilage ducts.

No »true» *L. nigrescens* has been found in the Falkland Islands. Still, from reasons given under *L. flavicans*, I retain the Falkland plant under the old name, adding »f. lacunifera» for convenience sake.

The specimens I brought from the coast of Chile (Valparaiso, Chiloé) have much narrower blades than all I have seen in the south. Further, they are quite destitute of mucilage ducts, and the leaves have a parenchyma of small and very close cells. Externally they are very like HOWE's plants from Perú, which he called *L. nigrescens*. On the other hand, they seem to represent BORY's *Himanthalia Montagnei*, Voy. Coquille p. 135 and AGARDH's *L. Suhrii*, Sp. Alg. I p. 150. We might do well in distinguishing this form under the name f. *Montagnei*. The specimens from Chiloé have strongly flattened branches and stipes, gradually passing into blades not much broader than the latter. The primary stem is hardly developed at all, just as in HOWE's figure on plate 17.

f. *Montagnei:* Chile: Valparaiso, rocks near Playa Ancha (St. 41, 2. 9. 08); Chiloé, Morro Vilcun (2. 8. 08). Forming associations in the upper sublitoral in both places.

f. *lacunifera:* Fuegia: San Felix Island, pure stands in the upper sublitoral (St. 24, 24. 5. 08, sp.). Falkland Islands: common on exposed coasts, forming extensive associations in the uppermost part of the sublitoral region and partly uncovered during a short while at low tide, although washed by the surf; also in rock-pools higher up, f. inst. at Cape Pembroke (St. 3, Nov. 07—Feb. 08, sp.). — It seems to be the rule here that the primary stipe remains short and gradually becomes hidden under the hapteres while stems are formed by the branches; it is also common that of the two twin branches one becomes elongated, while the other remains short. If this is repeated, a kind of sympodium results, as shown in BORY's figure on plate 5 A. The width of the blade varies a great deal but seldom exceeds 3 cm; the margin becomes thickened with age and shows some small obtuse teeth.

Distribution: Perú—Fuegia, Falkl., Heard I.

L. frutescens SKOTTSB. Ant. Meeresalg. I p. 78.

Falkland Islands: Cape Pembroke, in the lower litoral region (St. 3, 7. 11. 07, 7. 1. 08); Westpoint Isl., tide-pools (St. 8, 5. 12. 07). — Only reported from the Falklands.

The plants described as *L. frutescens* were so unlike ordinary *nigrescens* from the same habitat that I was unable to refer them to that species. What I have collected this time is in part exactly like my old material, but partly approaches

L. nigrescens in the shape of the leaves. The anatomical structure is not quite like that in the latter, as the cortical cells are larger and the medulla more dense in *L. frutescens*. Mucilage ducts are present. Still, it is possible that *L. frutescens* is nothing but a local form of *L. nigrescens*, quite destitute of a prolonged stem and with smooth leaf-margins, characters also observed in the narrow-leaved northern form of the latter.

Macrocystis Ag.

M. pyrifera (L.) Ag. — Skottsb. Ant. Meeresalg. I p. 80.

I have little to add to my old description, but it may be mentioned that small plants were observed in tide-pools in some stations and that fertile plants with sori on the normal floating leaves were collected at South Georgia in April.

Further, two forms of a very remarkable appearance were observed.

1. A form from the narrow strait between Westpoint Island and the main West Falkland Island.

Table of measurements in mm.

Vesicle				Lamina			Length of internodes
Length	Diam.	L:D	Width of pedicel	Length	Width	L:W	
148	24,6	6,1:1	10	835	59	14,1:1	230

The length of the measured branch was almost 20 metres, the diameter of the stem about 1 cm. The internodes (not fully developed ones not counted) were 83 in number; 75 vesicles were left, of which 59 bore more or less intact laminæ. The leaves were thick and firm, with an absolutely smooth surface and quite lacking the longitudinal wrinkles otherwise so characteristic; they bore long, slender marginal teeth.

If we compare this form with the plants measured in 1902 (l. c. p. 115), we shall find that it surpasses every one of them in the size of the vesicles. The leaves are very narrow in comparison with their length, being about 14 times as long as broad, while among the previously measured forms the relation 7,3: 1 comes nearest. The length of the internodes is surpassed only by the form from the entrance to Moraine Fiord in South Georgia, where there is a heavy surf on the submarine bank. The present form with its thick, smooth leaves differed greatly from anything I had seen before and certainly would have been described as a good species by the old authors. Probably no form from such as locality as the Westpoint Passage, where the tidal currents rush through with a velocity of 6 to 7 knots an hour, had been examined before.

2. Just on the south side of Angostura de los Témpanos, the narrows in Canal Gajardo between the Xaultegua Gulf and Skyring, where the tidal current is very strong, probably stronger still than in the case just mentioned, there grows a *Macro-*

cystis with leaves narrower than any I have seen before. Unfortunately it was completely impossible to obtain a specimen, for all our attention was fixed on the dangerous passage and all hands busy saving the boat.

According to my opinion, which is based on some experience, the plants from these two localities represent the current-form of *Macrocystis*, and I believe that the special characters of this form are due to direct action of the extreme external factors.

Distribution: N. Pacif. Ocean down to the coast of California; Galápagos Isl. to Cape Horn; circump.-subant. Other localities probably refer to drifted specimens.

Fucales.

Ascoseiraceæ.

This order was established by the writer in Ant. Meeresalg. I. SVEDELIUS (Nachtrag zu ENGLER und PRANTL, Die natürl. Pflanzenfam. 1: 2 p. 184) does not admit the order, remarking that it cannot be better characterized than the genus. This is of course true, but we know sufficient of *Ascoseira* to conclude that it cannot be placed in any of the other orders of brown algæ.

Ascoseira SKOTTSB.

A. mirabilis SKOTTSB. Ant. Meeresalg. I p. 149.

Syn. *Lessonia fuscescens* var. *linearis* REINSCH Meeresalg. Südg. p. 416. *Urvillæa* spec.? SKOTTSB. Veget. Antarct. Sea p. 254, Ant. Meeresalg. I. p. 142; *Lessonia dubia* GAIN, Flore algol. p. 48.

South Georgia: Cumberland Bay, Moraine Fiord (18. 4. 09); Bay of Isles (25. 4. 09). Drifted specimens only, but some quite intact and one fixed to a pebble.

I am convinced that REINSCH's var. *linearis* of *Lessonia fuscescens* is my *Ascoseira*, and evidently *L. dubia* GAIN is the same, what is shown by his description and illustrations. On the other hand my so-called *Urvillæa* (incorrectly for *Durvillea*) from Graham Land is nothing but *Ascoseira*. It is curious that this did not occur to me until I became acquainted with GAIN's *Lessonia;* my notes from 1902 clearly describe the fronds as covered with conceptacles just as in *Durvillea*. All the material was lost in the ship-wreck. I found the plant growing on rocks in the upper sublitoral region, hanging down in the water and swinging to and fro with the surf. The loss of this material is greatly to be regretted as it was collected in the beginning of January, while all the specimens from South Georgia were gathered in April. Thus it is quite possible that other stages in the development of the conceptacles would have been found in the antarctic material.

Unfortunately, no younger specimens than the large sterile ones described by GAIN are known. The stipe is dichotomous but hardly so regularly divided as in *Lessonia*. We do not know if the divisions take place in the same manner; by its lighter colour and its anatomical structure, the transitional zone between stipes and

lamina appears rather like the intercalary meristematic zone in the Laminariaceæ. The holdfast is solid and hooflike and very unlike the mass of hapteres in *Lessonia*.

During my visit to South Georgia in April, 1909, I had not enough alcohol at my disposal for the preservation of such large sea-weeds as *Ascoseira*, a complete mature specimen measuring several feet in length. Unfortunately, I did not simply dry the plants but put them into formaline. On my return home, all the other material treated in this manner was found to be in very good condition, but *Ascoseira* had been entirely spoilt, its tissue getting so brittle that the plants could not be

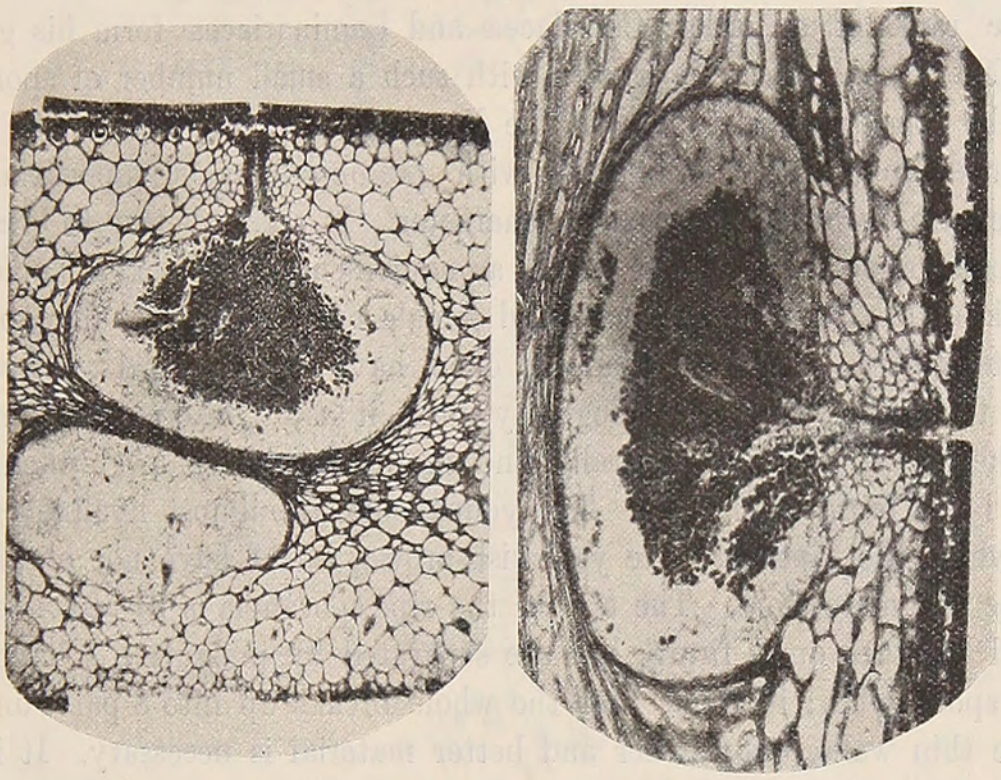

Fig. 19. *Ascoscira mirabilis;* a cross section × 60; b length section, × 85. — Photo. Prof. O. Juel.

handled without falling to pieces. Some material was treated with fixing solutions. The result is not very good, and all the conceptacles are mature. Still, I am able to complete my earlier observations. The long hairs found in the conceptacle (see fig. 20 a, f) are not grouped together in the centre but scattered along the bottom and walls. I still believe that the conceptacle starts as a hair-pit—sterile cryptostomata have not been observed—gradually getting deeper and larger; the final enlargement is due to the enormous production of »sporangia», which fill the conceptacle pressing together the surrounding tissue, the cell-walls becoming stretched in tangential direction and much torn. If two conceptacles stand opposite each other, what frequently happens, the tissue between them becomes quite squeezed (fig. 19 a).

Some new observations were made on the reproductive bodies. By searching the basal parts of the long chains some younger stages were observed, which show the origin af the 8 »spores» better than before. The nucleus and protoplasm of the mother cell are divided three times, resulting in 8 portions, each with its nucleus (fig. 20 c, d). Such stages remind us of the oogonia in the Fucaceæ, where, in some cases, distinct plasma lamellæ separate the eggs. But in *Ascoseira* a simultaneous

formation of thin walls takes place, which stain with Lichtgrün like the other walls. I have seen them clearly enough in some cases (fig. 20 d). This formation of cell walls, as well as the rapid division of the cell content, makes it rather improbable that we have to do with gametangia. My hypothesis is that we have chains of sporangia and that when the eight spores are formed there is a reduction of chromosomes. But we cannot tell whether the spores are asexual as in the Laminariaceæ or sexual as in the Fucaceæ. In the former case we must expect a microscopic sexual generation. The number of spores is certainly very small, but in *Chorda* there are only 16 (KYLIN, Entwickelungsgesch.). KYLIN, on good reasons, assigns to *Chorda* the rank of an order; Chordaceæ and Laminariaceæ form his group Laminariales. No Laminariacea is known with such a small number of spores, while 8 eggs may be considered as typical in the Fucaceæ. The mode of growth in *Ascoseira* has remained unknown; the likeness with *Lessonia* may be superficial, while the conceptacles are decidedly fucacean in character. It seems better to bring *Ascoseira* to the Fucales and to regard the spores as equivalent to the sexual bodies of *Fucus*. Only one kind has been found; male and female ones may be all alike, or there may exist plants with another kind than the one I have found. If *Ascoseira* has sexual spores of two kinds, but morphologically alike, it as an interesting primitive type.

In the conceptacles we generally find the sporangial chains broken up and the sporangia lying loose (fig. 20 f). The young ones are almost hyaline on unstained material, while the ripe ones are yellowish-brown, but I have not obtained a good view of the chromatophore. The size of the ripe sporangia is 15—21 × 8—12 μ. The spores hold together quite firmly but are separated by pressure. I have never seen an empty sporangium; it seems that the whole breaks up into 8 parts under dissolution of the thin walls, but further and better material is necessary. It is even possible that the entire sporangium passes out of the narrow canal, though it must remain unsettled by what means such a movement is effected. The arrangement of the spores in the sporangium is illustrated in fig. 20 e.

New researches are urgently needed before we shall be able to understand *Ascoseira*.

Distribution: S. Georgia, Graham Land.

Fucaceæ.

Durvillea BORY.

In his »Phyceæ novæ vel minus cognitæ» ARESCHOUG dealt with *Durvillea* in some detail. All the south american forms were included under one species. Among the numerous specimens examined by ARESCHOUG eight forms were distinguished which we shall discuss briefly. *a* is apparently a young *D. antarctica; b* and *c* are like *D. Harveyi*, but *c* is partly inflated; to this ARESCHOUG brings *Laminaria cæpestipes* MONT. = *D. Montagnei* KÜTZ.; *d* is typical *D. antarctica; e* is a transitional form, *f* and *g* belong to *D. antarctica; h* is *D. Harveyi*.

Since I have had ample opportunity to study these algæ in their natural surroundings, I shall propose that we make a distinction between the two extremes, which we call *D. antarctica* and *Harveyi*. *D. antarctica* grows on exposed, rocky coast, on steep cliffs, often in narrow crevices where the surf is very violent. During dead low water it hangs down from the rocks, with the long whip-like segments washed by the spray or, in calm weather, almost dry for a short while. At high

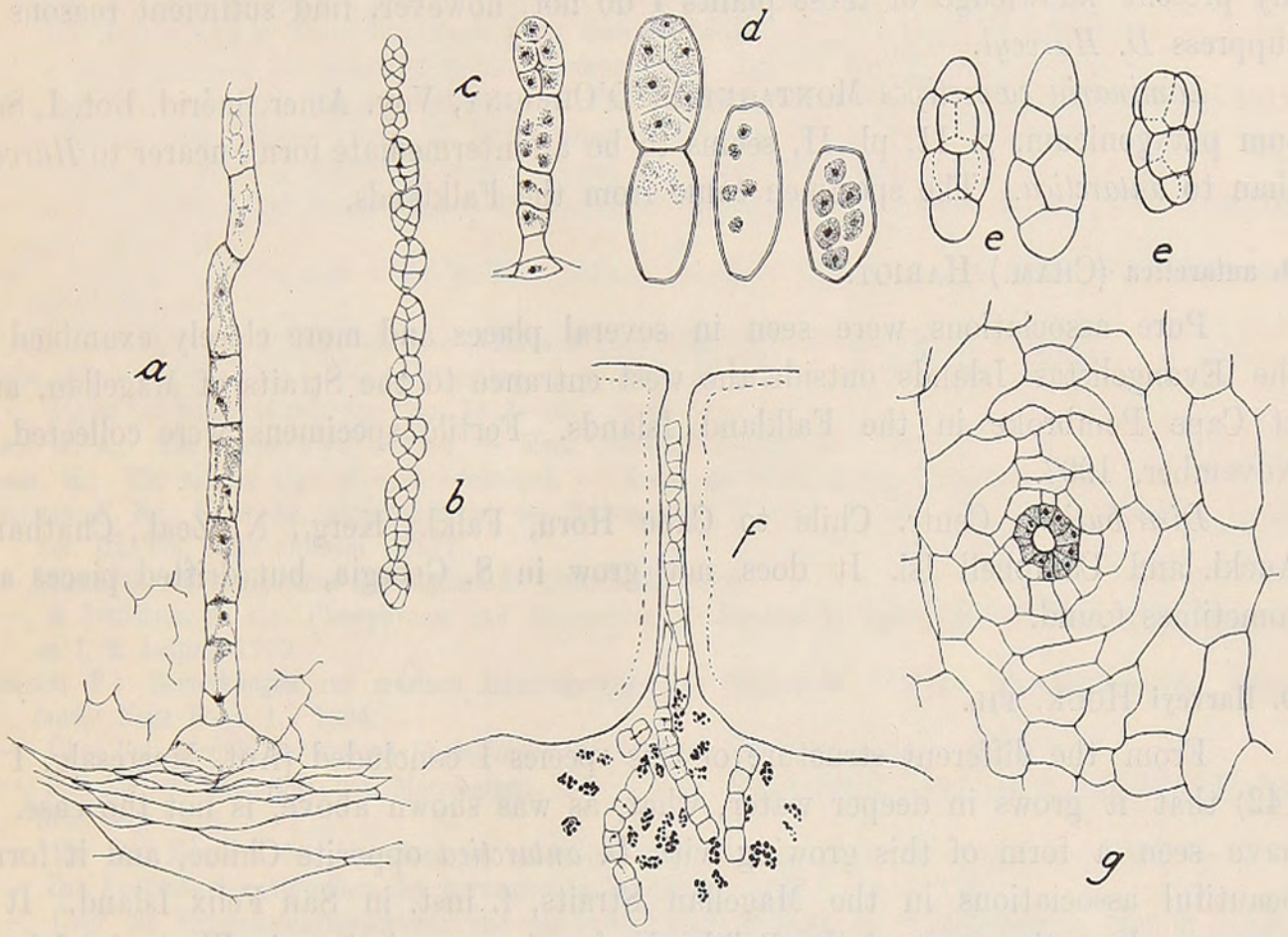

Fig. 20. *Ascoseira mirabilis:* **a** hair, × 360; **b** chain of sporangia, × 360; **c** base of sporangium-chain, × 900; **d** formation of spores, × 900; **e** three sporangia, × 900; **f** length section through conceptacle canal, × 180; **g** mouth of conceptacle seen from surface, × 180.

water the whole plant is violently tossed about in the breakers, in stormy weather with a tremendous force, that would tear the strongest frond to pieces were it not split up into numerous laciniæ, elliptical or circular in section. The colour of the strongly »inflated» frond is dark greenish brown in living specimens and reddish brown in the dead and dried ones.

D. Harveyi is also an inhabitant of the exposed coast but grows in places where the force of the breakers is checked as they have to pass over a more or less broad shelf with shallow water before reaching the place where *Durvillea* grows. At low water it is more or less exposed to the air and slowly washed by the waves or even dry for a short while. It also occurs in the lower tide-pools. The frond is compact, leathery and entire or nearly so; the colour of the living plant is yellowish brown, that of the dead and dried almost black; thence the unnatural colour in Flora Antarctica.

I have also observed an intermediate form, growing in more agitated water.

It differs from typical *D. Harveyi* in having the frond split up into long, linear segments, but leaving an ample part above the stipe entire; the segments are flat, not whip-like, the colour a shade darker. Typical *D. Harveyi* is so utterly unlike *antarctica* that nobody would be inclined to unite them under the same specific name. Still, we must consider the possibility of regarding all the forms as belonging to one species, adapted to various external conditions. Or, there may be hybrids. With my present knowledge of these plants I do not, however, find sufficient reasons to suppress *D. Harveyi*.

Laminaria cæpestipes MONTAGNE in D'ORBIGNY, Voy. Amer. mérid. Bot. I, Sertum patagonicum, p. 11, pl. II, seems to be an intermediate form, nearer to *Harveyi* than to *antarctica*. The specimen came from the Falklands.

D. antarctica (CHAM.) HARIOT.

Pure associations were seen in several places and more closely examined in the Evangelistas Islands outside the west entrance to the Straits of Magellan, and at Cape Pembroke in the Falkland Islands. Fertile specimens were collected in November, 1907.

Distribution: Centr. Chile to Cape Horn, Falkl., Kerg., N. Zeal., Chatham, Auckl. and Campbell Isl. It does not grow in S. Georgia, but drifted pieces are sometimes found.

D. Harveyi HOOK. FIL.

From the different structure of this species I concluded (Ant. Meeresalg. I p. 142) that it grows in deeper water, what, as was shown above, is not the case. I have seen a form of this growing with *D. antarctica* opposite Chiloé, and it forms beautiful associations in the Magellan Straits, f. inst. in San Felix Island. It is common along the coast of the Falklands, forming associations in Westpoint Island, along the coast between Westpoint and Hill Cove, in Low Bay, round Cape Pembroke, etc.

Distribution: Subantarct. Amer. with the former, Falkl., Kerg., Crozet Isl. It has not been reported from New Zealand.

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KUNGL. SVENSKA VETENSKAPSAKADEMIENS HANDLINGAR. Band 63. N:o 8.

BOTANISCHE ERGEBNISSE

DER

SCHWEDISCHEN EXPEDITION NACH PATAGONIEN

UND DEM FEUERLANDE 1907—1909

IX.

MARINE ALGAE 2. RHODOPHYCEAE

BY

CARL SKOTTSBERG

WITH 29 TEXT FIGURES

COMMUNICATED MARCH 8th 1922 BY G. LAGERHEIM AND C. A. M. LINDMAN

STOCKHOLM

ALMQVIST & WIKSELLS BOKTRYCKERI-A.-B.

1923

My botanical survey in 1907—09 covered only a part of the area I had visited during the Antarctic cruise five years earlier, but was extended much farther north, where very little algological work had been done before. From the region between the western entrance to the Magellan Strait and Valparaiso my material is, however, rather scanty. While the coast of Peru on one side, and Fuegia on the other, are tolerably well known in this respect, the enormous intermediate region has been neglected, a region most important from a geographical point of view. It is recommended to future explorers to collect as much as possible along the coast of Chile (in West Patagonia not only in the inner, but also in the outer channels), so that the connection between the marine floras of Peru and Fuegia will become firmly established.

In the present paper I have followed the arrangement of genera and species etc. in the memoir by KYLIN and the writer, with exception of the Delesseria family. Last time I had to leave the species of that family under current names, until a detailed study of all my new material and an examination of a number of AGARDH's and other authors' types could be undertaken. I have done my best to supply this need, and some of the results are laid down in this treatise. My thanks are due to Professor KYLIN for kind assistance on various occasions, and to the museums at Kew, Stockholm and Upsala for the loan of material.

Botanic Gardens, Gothenburg, February 1922.

Explanations: St. = station, collecting place. ♂ = specimen with spermatanges, ♀ with cystocarps, ⊕ with tetraspores.

Rhodophyceae.

Bangiaceae.

Porphyra Ag.

P. umbilicalis (L.) Kütz. — Kylin & Skottsb. p. 3.

Chiloé: Quemchi, in the litoral region, on dead branches of overhanging trees, abundant (St. 30 c, 19. 7. 08, ♀). Falkland Islands: Westpoint Island, in the litoral region, common (St. 8 a, b, 5. 12. 07, ♀); Cape Pembroke, on uncovered rocks and in tide-pools (f. laciniata, 7. 11. 07, ♀).

Distribution: Colder seas in both hemispheres.

P. Woolhousiae Harv. Phycol. Austral. tab. 265.

Falkland Islands: Westpoint Island, on *Macrocystis pyrifera* in beach drift (5. 12. 07, ♂, ♀).

The numerous specimens of this extremely delicate plant were quite intact and had not travelled very far, and the *Macrocystis* belongs to the peculiar form growing in the Westpoint Passage (see author's paper, Bot. Ergebn. VIII p. 49). This *Porphyra* is known before from Tasmania and is well figured by Harvey l. c. The Falkland specimens agree perfectly well with description and figures. In both places it grows exclusively on the marginal teeth of the kelp leaves, not on the margin between the teeth or on the surface of the leaf. The base of my plants is slightly pouch-shaped (as in many other species); this is not shown by Harvey's figures, which were prepared from dried material. The serial arrangement of the cell groups is more regular than in most other species and is well exhibited by Harvey's figures 3 and 4. It is, however, not equally conspicuous in all parts of the frond. My specimens are monoecious with submarginal sori of ♂ of irregular elongated shape, sometimes interspersed by small patches of ♀, the latter otherwise forming large, pure sori. Thickness of sterile frond 21—24 μ, of sori 29—30 μ.

Distribution: Tasmania, Falkl. (first record).

Helminthocladiaceae.

Acrochaetium Naeg.

A. fuegiense Kylin in Kylin & Skottsb. p. 5, f. 3.

Falkland Islands: Westpoint Island, in tide-pools on *Ballia scoparia* (St. 8 b, 5. 12. 07, monosp.); Stanley Harbour, on drifted *Corycus* (1. 11. 07, monosp.).

Distribution: Fuegia, Falkl. (first record).

Chaetangiaceae.

Chaetangium Kütz.

Ch. fastigiatum (Bory) J. Ag. — Kylin & Skottsb. p. 6.

On rocks, stones and shells in the litoral region, common in many places and extending from the upper litoral to the deeper tidepools. Chiloé: Quemchi, among large boulders in the *Bostrychia* carpet (St. 30 b, 19. 7. 08, ♀). West Patagonia: Puerto Charrua (St. 28 B, 14. 6. 08); Atalaya Island, with *Bostrychia* (St. 25, 25. 5. 08, ♀). South Patagonia: Arauz Bay (St. 23, 3. 5. 08). Fuegia: Orange Bay, upper litoral with *Hildenbrandia*, very well developed (St. 45, 11. 3. 09, ♀). Falkland Islands: Westpoint Island, a small, much less divided form (St. 8 a, 5. 12. 07); near Halfway Cove (St. 4, 21. 11. 07); Cape Pembroke, common on rocks and on *Mytilus* (St. 3, 8. 11. 07, ♀).

I have seen two small pieces of Bory's type material: »Halymenia nr. 23, Malouines» in Herb. Agardh (no. 32591). *Ch. chilense* J. Ag. seems to belong to the same species.

Distribution: S. Chile to Fuegia, Falkl., S. Georgia, Kerg., Auckl. I.

Gelidiaceae.

Gelidium Lamx.

G. crispum M. A. Howe, Mar. Alg. of Peru p. 94, Pl. 33, 34 f. 1—6. — Fig. 1 a.

? Syn. *G. filicinum* Mont. ex Gay, Hist. de Chile, Bot. VIII, p. 331, tab. 16, fig. 3, non Bory?

Chile: Valparaiso, on rocks near Playa Ancha, forming tufts on barnacles (St. 41, 2. 9. 08, ⊕).

My largest specimens are 2,5 cm high and sterile, but sporophylls occur in some of the smaller plants. Apparently the fronds are young, new ones arising from the stolons or from old basal portions of erect fronds, the species being perennial. My specimens agree very well with Howe's description and figures, but are smaller and less branched. It is possible that *G. crispum* is a broad-leaved form of *G. filicinum* Mont. from the

coast of Chile, that seems to be distinct from *G. filicinum* of BORY, Voy. Coq. p. 162, the native country of the latter being unknown — see also HOWE, l. c. p. 95.

Distribution: Peru, Central Chile (first record).

? G. intricatum KÜTZ. Spec. Alg. p. 767.

Chiloé: Quemchi, among litoral boulders, forming dense mats together with *Catenella* and *Bostrychia* (St. 30 b, 19. 7. 08).

Only sterile material. The structure is that of *Gelidium* rather than of any other genus. It is a small, almost terete, irregularly branched species, as shown by KÜTZING's figure in Tab. phyc. XVIII, p. 35; my specimens have a creeping stem, attached to the rock with numerous hapteres and sending forth more or less pinnately branched fronds.

Distribution: »Ad insulas Franciae, Sandwich et Ravuk» (KÜTZING). MONTAGNE, Hist. de Chile Bot. VIII, p. 331 quotes *G. intricatum* from Chile.

Gigartinaceae.

Iridaea BORY.

After I have examined a large material I still find it very difficult to draw any fixed limits between *I. cordata*, *laminarioides*, *micans* and *Augustinae*; but extreme types are so unlike each other that nobody would like to unite them under one and the same specific name. According to COTTON, Crypt. Falkl. p. 177, Professor SETCHELL proposed to separate *I. Augustinae* on account of its rough surface, but »at times it is smooth except very near the base». The plants I have named *Augustinae* have a ciliated margin, small processes sometimes present also on the surface, making it rough. Under *I. laminarioides* proper I retain plants corresponding with BORY's type material (young specimens in Herb. AGARDH, no. 23257!) and with his figures in Voy. Coq. tab. 11. The margin is smooth, the stipe well developed, the texture thick, coriaceous or cartilaginous. This appears to be the same form as called *laminarioides* s. str. by Western American algologists. The remaining forms are brought together under *I. cordata*. Among them are some plants exactly matching TURNER's figure, Hist. Fuc. II tab. 116, and others clearly corresponding to *I. micans* of BORY, l. c. tab. 13, all with a short stipe and a cordate base; but some have the frond gradually narrowed into a cuneate base, very much resembling *I. micans* β *obovata* KÜTZ. Tab. phyc. XVII t. 9, or *I. micrococca* KÜTZ. l. c. t. 12. Finally, there are specimens with a more or less dissected frond, included under var. *dichotoma* HOOK. FIL. et HARV. Fl. Ant. II, p. 485, but different from the true *I. dichotoma*, which is, perhaps, an ultimate link of the series.

I. cordata (TURN.) J. AG.; HOHENACKER, Alg. mar. sicc. VII no. 334 (*micans*). — KYLIN & SKOTTSB. p. 7.

In smooth or slightly agitated water, common in tide-pools or in the upper sublitoral, one of the more important species of subantarctic America. South Pata-

gonia: Fitzroy Channel, 13—14 m, pebbles, large and beautiful *micans* (St. 17, 18. 4. 08, ⊕). Fuegia: Slogget Bay, enormous fronds (some of *obovata*-type) washed ashore (St. 47 b, 16. 3. 09); Tekeenika, Allen Gardiner Bay, numerous large fronds drifted, typical *micans* (10. 3. 09, ♀). Falkland Islands: Westpoint Island, abundant in the middle litoral (St. 8 b, 5. 12. 07); near Halfway Cove, in tide-pools, small, of *obovata*-type (St. 4 c, 21. 11. 07, ♀); Cape Pembroke, sheltered inner pools, two forms, one at the waters edge, typical *micans*, another submerged, several dm long, like *obovata* (St. 3 b, 7. 11. 08), and in the outer, deeper basins, a very large form corresponding to *micrococca* (St. 3 c, 7. 11. 07). South Georgia: Cumberland Bay, Boiler Harbour, 5 m (*micans*, St. 48, 20. 4. 09, ⊕); Bay of Isles, Rosita Harbour, 8 m, stones, approaching *I. heterococca* Kütz. (St. 52, 25. 4. 09, ♀).

Distribution: W. coast of N. Amer., Chile, Fuegia, Falkl., S. Georgia, Crozet I., Auckl. I., Graham and Victoria Land.

I. laminarioides Bory; Hohenacker, Alg. mar. sicc. VII no. 335.

On exposed coast in the litoral region, sometimes found growing in very strong surf. Chile: Valpariaso, rocks near Playa Ancha (St. 41, 2. 9. 08); Chiloé, Punta Talcán, in the surf, old worn specimens (St. 29 B, 12 (7. 08), Quemchi, lower litoral, small and branched (St. 30 b, 19. 7. 08, ♀, ⊕); Huafo Island, Samuel Cove, two forms, a larger one in tide-pools, a smaller on the exposed reefs, both much worn, the latter with cystocarps (St. 31, 25. 7. 08, ♀). West Patagonia: Evangelistas Islands, on rocks in the surf (St. 26, 26. 5. 08, ⊕). South Patagonia: Arauz Bay (St. 23 a, 3. 5. 08). Falkland Islands: Westpoint Island, in the *Durvillea Harveyi*-belt, the same as the larger form from Huafo (St. 8 c, 5. 12. 07).

Distribution: W. coast of N. Amer., Peru?, Chile to Fuegia, Falkl., Kerg., Auckl. I.

I. Augustinae Bory. — Kylin & Skottsb. p. 8.

Syn. *I. micans* β *ciliolata* Hook. Fil. et Harv. in Lond. Journ. Bot. 4 (1845) p. 263, Fl. Ant. II p. 485.

South Patagonia: Gajardo Channel, Témpanos Cove in litoral basins, ciliated all round and with a rough surface (St. 21 B, 27. 4. 08); Magellan Strait, Susanna Cove, sublit. 15 m, one large plant (May 08, ⊕). Falkland Islands: Westpoint Island, middle litoral pools (St. 8 b, 5. 12. 07); Cape Pembroke, upper tide-pools (St. 3, 7. 11. 07, 7. 1. 08).

To this belongs *I. laminarioides* in Kylin & Skottsb. p. 7 (Fuegia), with a cuneate and ciliolate base. Fronds springing from the same holdfast vary in this respect. Some of the specimens mentioned l. c. from Falkland, St. 35, should rather be classified with *cordata*.

Distribution: Centr. Chile (? *I. ciliata* Kütz. Tab. phyc. XVII, t. 10) to Fuegia, Falkl.

I. dichotoma HOOK. FIL. et HARV. Lond. Journ. Bot. 4 (1845) p. 262.

Syn. *I. cordata* γ *dichotoma* HOOK. FIL. et HARV. Fl. Ant. II, p. 485, p. p. *I. dentata* KÜTZ. β *minor* Sp. Alg. p. 729.

South Patagonia: Fitzroy Channel, 13—14 m, on *Mytilus* (St. 17, 18. 4. 08). Falkland Islands: Low Bay on *Mytilus* (St. 18 B, 18. 1. 08); Westpoint Island, in tide-pools (St. 8 a, 5. 12. 07); Cape Pembroke, upper litoral basins (St. 3 b, 7. 11. 07, ♀).

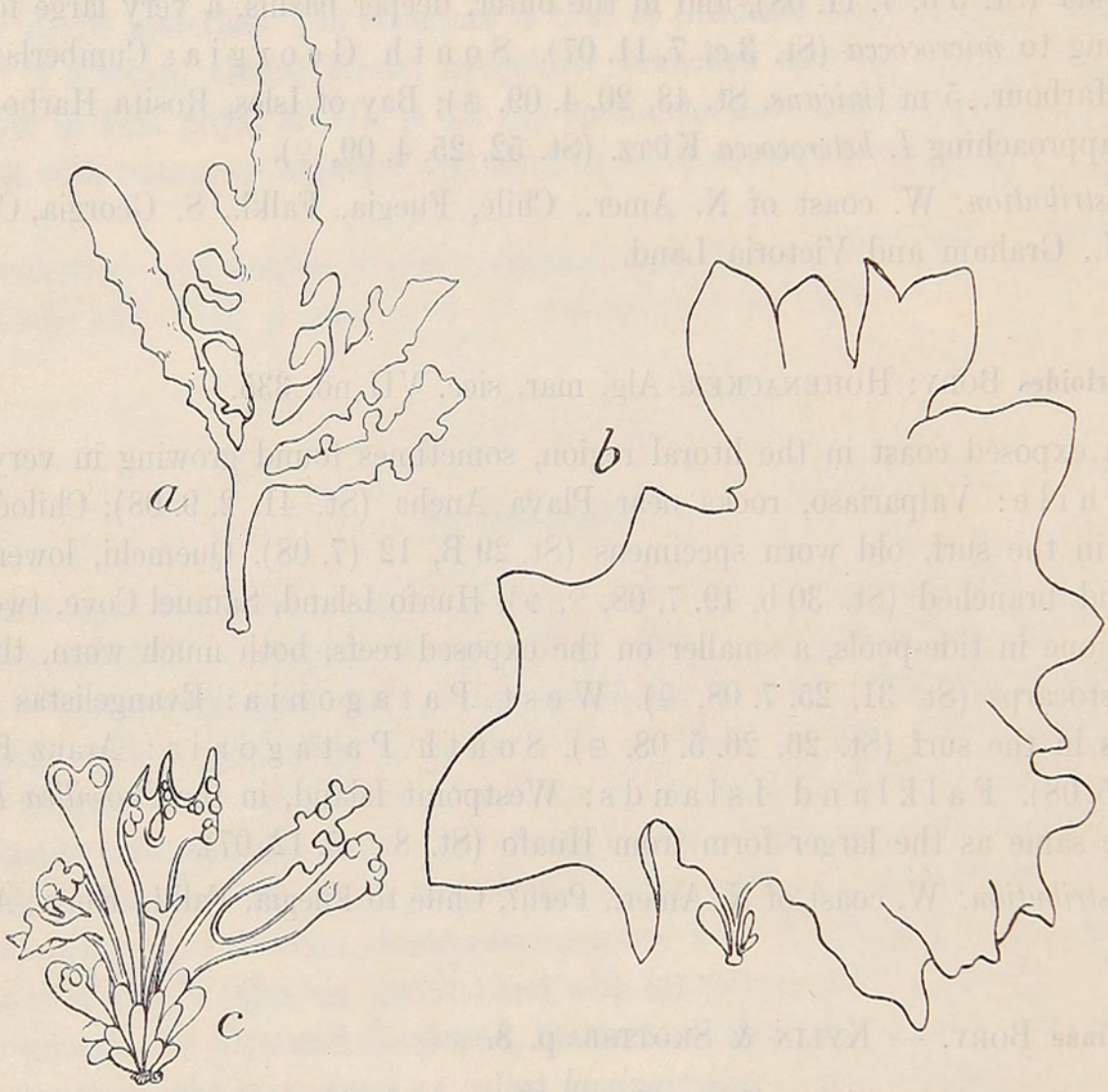

Fig. 1. **a** = *Gelidium crispum*, × 3. **b** *Iridaea macrodonta*, $\frac{3}{4}$ nat. size. **c** *Gigartina glomerata*, × 1 $\frac{1}{3}$.

HOOKER and HARVEY are not sure whether there be any exact limits between this form and *I. micans*. It comes nearer to *I. laminarioides*, but the habit is so different that I prefer to keep them distinct. The cystocarps are more protruding than in other species from the south. HOOKER's type material, which I have seen, includes specimens rather referable to *cordata*.

Distribution: S. Patag. (first record), Falkl.

I. macrodonta nov. spec. — Fig. 1 b.

Frondes plurimae e disco basali minuto caespitosae, breviter stipitatae; lamina molliter membranacea, suborbicularis, in speciminibus nostris circ. 11 cm longa ac lata, integra sed margine circumcirca grosse dentato-lobata, dentibus aliis majoribus usque

ad 2 cm longis et latis, aliis minoribus, basi cordata, in stipitem cuneatum subiter angustata. Structura anatomica sat typica (vide infra). Spermatangia ignota. Cystocarpia immersa, 90—135 μ diam., carposporis 8—10 μ. Tetrasporangia ut in sect. Rhodoglossum, late ovoidea-ellipsoidea-cylindrica, matura 25—70 μ longa et 20—35 μ lata. Crassitudo laminae c. 400 μ. Color obscure ruber.

South Georgia: Cumberland Bay, Moraine Fiord, drifted (18. 4. 09, ⊕); »Pinguin Bay, nördl. Strand der Landzunge», 3. 7. 1883 (♀, Dr. Will.).

I possess three specimens, only one being complete:

	Lamina		Length of stipe	Size of larger lobes
	Length	Width		
1	11,5 cm	11 cm	—	4×5 mm
2	—	5 cm	9 mm	3—4×3—5 mm
3	11 cm	11,5 cm	8 mm	10—20 mm

No. 3 is figured.

The most obvious feature in the external appearance of this species are the triangular lobes. The small sori are scattered over the entire frond. They are not so deeply immersed as in other species: they arise from subcortical, regular cell-chains and present a more regular appearance than in *I. cordata* or allied forms, while the same arrangement is found in *Rhodoglossum* (comp. J. Agardh, Florid. Morphol. t. 11, fig. 2), but the habit of other Rhodoglossa is different. In Will's collection (Herb. Hamburg) I found one cystocarpic frond, irregularly lobed and without stipe; the largest diameter is 17 cm (dry). There is, as far as I can see, nothing in Reinsch's paper that corresponds to this *Iridaea*.

The anatomical structure does not offer anything very peculiar, but differs somewhat from other species examined by the writer. There is, in *I. macrodonta*, a central medullary lamella of longitudinal cell-rows, and the radial cortex filaments contrast sharply with the medulla, while in *I. cordata* etc. we find a broad transition zone of reticulate hyphae connecting cortex and medulla, which is much less distinct. The sterile cortex of *I. macrodonta* is very like the figure of *I. latissima* in Grunow, Alg. Novara t. 9.

Distribution: S. Georgia.

Gigartina Stackh.

G. radula (Esp.) J. Ag. — Kylin & Skottsb. p. 8.

Sublitoral, only found in beach drift. Fuegia: Slogget Bay (St. 47 b, 16. 3. 09, ⊕); Tekeenika, Allen Gardiner Bay, enormous fronds, that bear root-like hapteres on one surface (11. 3. 09, ⊕). Falkland Islands: Port Philomel, Halfway Cove (21. 11. 07, ♀).

Distribution: Calif., Fuegia, Falkl., the Cape, Kerg., New Zeal. and subant. islands, Graham Land.

G. Chamissoi (Mert. ined., Ag.) J. Ag. Alg. Medit. et Adriat. (1842) p. 104.

Chiloé: Ancud Harbour, in beach drift, growing on *Patella* (10. 7. 08).

For the discrimination of this and allied species, see HOWE, Mar. Alg. of Peru p. 99 etc. My plants are sterile but typical and agree very well with AGARDH's description Sp. Alg. II: 2 p. 266.

Distribution: Peru, Chile.

G. glomerata M. A. HOWE, Mar. Alg. of Peru p. 104, pl. 39, 40 f. 1—11. — Fig. 1 c.

Chiloé: Ancud Harbour, litoral (St. 29 a, 10. 7. 08, ♀).

It is with some hesitation that I bring my specimens to this and not to the following, but as far as I can find they fall within the limits of HOWE's species. The branching is irregular dichotomous, the segments often acute; the cystocarps occur in the larger segments or on small ramuli. It should be observed that with identical treatment the material of *G. glomerata* remains much more rigid, almost corneous, while *G. tuberculosa* is soft.

Distribution: Peru, Chile (first record).

G. tuberculosa (HOOK. FIL. et HARV.) GRUN. — KYLIN & SKOTTSB. p. 8.

South Patagonia: Otway Water, Puerto Pomar (St. 15, 14. 4. 08, ♀); Arauz Bay, litoral (St. 23, 3. 5. 08). Fuegia: Slogget Bay, in tide-pools (St. 47, 16. 3. 09).

Distribution: Peru, S. Chile to Fuegia, New Zeal., Auckl. I.

Ahnfeltia FR.

The material collected by the writer in 1902 at the Falklands is rather like the European form, but is more densely branched with very thin branches. The same form from the same locality lies in Herb. Upsala as *A. plicata* var., Herb. LENORMAND. A less branched Falkland form was distributed by HOHENACKER under no. 555 as *Gymnogongrus plicatus* KÜTZ. var. *longior* KÜTZ.

The collection from 1907—09 does not contain any form exactly like the plants from 1902, and there are many specimens of a much more coarse plant, identical with *A. elongata* MONT. ex GAY, Hist. de Chile, Bot. VIII p. 333; this is retained as a species by DE TONI and FORTI, Contrib. p. 684. Extreme forms of *elongata* are very unlike our common *plicata*, being 3—4 times as thick and regularly forked, and correspond to *Gymnogongrus comosus* KÜTZ. Tab. phyc. XIX t. 67 or *G. filiformis* l. c. t. 68 (authentic material in HOHENACKER no. 376). There are other forms less regular than *elongata* but stouter than typical *plicata*, referable to *A. setacea* (KÜTZ.) SUHR, described as *Gymnogongrus* by KÜTZING l. c. t. t. 67 and distributed by HOHENACKER as *G. furcellatus* (no. 180). I cannot make any safe distinction between *plicata* and *setacea*, or between *setacea* and *elongata*, for which reason all are listed here under *plicata*.

A. plicata (HUDS.) FR. — KYLIN & SKOTTSBERG p. 9. — Exsicc., besides numbers already referred to: HOHENACKER no. 191 (as *Gymn. plicatus*), 550 (as *G. implicatus*). HARIOT,

Miss. sci. V p. 71, identifies no. 550 with *A. concinna* J. Ag.; this is wrong as also his statement that no. 181 (*G. implicatus*) is the same, for no. 181 is *Gracilaria aggregata* (q. v.), a species incorrectly referred to *A. plicata* by Hariot.

South Patagonia: Fitzroy Channel, sublit. 13—14 m, gravel, rather typical *plicata* and large specimens of *setacea* (St. 17, 18. 4. 08); Otway Water, Puerto Pomar, rather typical (St. 15, 14. 4. 08). Fuegia: Admiralty Inlet, a coarse *plicata* (St. 13, 25. 3. 08); Slogget Bay, in tide-pools, a very proliferous *plicata* (St. 47, 16. 3. 09), and drifted (St. 47 b), attached to a stone and quite like *elongata*.

Distribution: Northern, Arct. and Temp. seas; Chile to Fuegia, Falkl., Kerg., Graham Land.

Sterrocolax Schmitz.

S. decipiens Schmitz, Actinococcus p. 394.

South Patagonia: Fitzroy Channel, on *Ahnfeltia setacea* (St. 17, 18. 4. 08). Fuegia: Admiralty Inlet, on *A. plicata* (St. 13, 25. 3. 08).

The type came from Chile (Chiloé), growing on *A. setacea*, but Schmitz reports the same on European *plicata*.

Distribution: Probably the same as of the host; Cotton, Crypt. Falkl. p. 178 records the parasite from Falkland as proved by Hohenacker's *A. plicata* (no. 555). I have also found it on no. 180 (good *A. setacea* from Corral), with »monosporangia» as described by Schmitz; the latter specimens are more spherical and the attached area smaller, suggesting *S. crassior* Schmitz.

Gymnogongrus Mart.

G. disciplinalis (Bory) J. Ag. Sp. Alg. II p. 319.

Fuegia: Slogget Bay, in tide-pools on rocks and stones, a luxuriant form with broad segments (St. 47, 16. 3. 09). Falkland Islands: Cape Pembroke, large tufts in shallow pools (St. 3 b, 7. 11. 07, ♀).

My specimens are identical with others from Cape Horn, comm. by Lenormand (Herb. Upsala). Howe, Mar. Alg. of Peru p. 107 finds it difficult to distinguish this from *G. furcellatus*; I have observed some slight differences in the anatomical structure: *G. furcellatus* has a more compact medulla of smaller cells and a thicker, less sharply defined cortex, but such differences are probably of little real value.

Distribution: Peru, Chile to Fuegia, Falkl. (first record).

G. furcellatus (Ag.) J. Ag. l. c. 218.

Syn. *Gigartina ancistroclada* »Mont.» in Hohenacker, no. 381 (Chiloé; the true species came from Akaroa, leg. D'Urville); *G. filiformis* Kütz., Hohen. No. 565 (Chiloé); *Chondrus violaceus* Sond., Hohen. no. 549 (Chiloé).

Chiloé: Punta Talcan, upper litoral (St. 29 A, 12. 7. 08, ♀).
Distribution: Peru, Chile.

Phyllophora Grev.

Ph. ahnfeltioides Skottsb. in Kylin & Skottsb. p. 9, f. 4 a—c, 5 a—b.

South Georgia: Cumberland Bay, Boiler Harbour, 5—10 m (St. 48, 49, 20. 4. 09, ♀).
Distribution: S. Georgia.

Ph. appendiculata Skottsb. l. c. p. 10, f. 4 d—e, 5 c—d.

South Georgia: Cumberland Bay, Boiler Harbour, 5 m (St. 48, 20. 4. 09, ♀). Some specimens differ from the rest in being broader and more regularly forked.
Distribution: S. Georgia.

Callophyllis Kütz.

C. fastigiata J. Ag. — Kylin & Skottsb. p. 12.

Syn. *C. antarctica* Kütz. Tab. phyc. XVII t. 93 fig. h. non Sp. Alg. p. 747.
Falkland Islands: Sparrow Cove, 11—13 m, shell fragments and gravel (St. 9, 10. 1. 08).
Distribution: Fuegia, Falkl., Kerg.

C. tenera J. Ag. — Kylin & Skottsb. p. 12.

Falkland Islands: Cape Pembroke, in tide-pools, rare (St. 3 b, 7. 11. 07).
Distribution: Fuegia, Falkl., Kerg., N. Zeal., S. Shetl. I.

C. multifida (Reinsch) Kylin in K. & Skottsb. p. 13.

South Georgia: Cumberland Bay, Boiler Harbour, sublit. 5 m (St. 48, 20. 4. 09).
Distribution: S. Georgia.

C. variegata (Ag.) J. Ag. — Kylin & Skottsb. p. 13.

South Patagonia: Fitzroy Channel, sublit. 13—14 m, coarse gravel (St. 17, 18. 4. 08). Fuegia: Slogget Bay, drifted (St. 47 b, 16. 3. 09); Tekeenika, Allen Gardiner Bay, drifted (10. 3. 09, ♀). Falkland Islands: Westpoint Island, in tide-pools (St. 8 b, 5. 12. 07); Cape Pembroke, drifted (8. 11. 07).
Distribution: Peru, Chile to Fuegia, Falkl., Kerg., S. Orkn. I., Graham Land.

C. atrosanguinea (Hook. Fil. et Harv.) Hariot. — Kylin & Skottsb. p. 13.

South Patagonia: St. 17, with the former. Fuegia: Slogget Bay,

drifted (St. 47 b, 16. 3. 09, f. latissima, ♀). Falkland Islands: Sparrow Cove, 11—13 m, shells and gravel (St. 9, 10. 1. 08).

Distribution: S. Patagonia (first record), Fuegia, Falkl., Kerg.

C. linguata Kylin in K. & Skottsb. p. 14, fig. 6 a.

South Georgia: Cumberland Bay, Boiler Harbour, sublit. 5 m (St. 48, 20. 4. 09). — Four small specimens of the same general outline as the single specimen examined by Kylin, but with more numerous proliferations.

Distribution: S. Georgia.

Callymenia J. Ag.

C. antarctica Hariot, 1e Exp. Ant. franc. Algues p. 7? Cotton, Crypt. Falkl. p. 179.

Falkland Islands: Westpoint Island, in tide-pools, rare (St. 8 b, 5. 12. 07); Cape Pembroke, numerous small plants forming dense tufts on coralline algae (St. 3 b, 7. 11. 07).

I do not know if this really is Hariot's antarctic species, but it certainly is the same as referred here by Cotton, and he seems to be sure of the identity.

Distribution: Falkl., Graham Land.

Rhodophyllidaceae.

Catenella Grev.

C. fusiformis (J. Ag.) Skottsb. comb. nov. — Fig. 2 a.

Syn. *C. opuntia* (Good. et Woodw.) Grev., Kylin & Skottsb. p. 16; var. *fusiformis* J. Ag. Sp. Alg. III p. 588.

Frondes e filis repentibus rosulatae, lineari-filiformes, basi et apice capillaceae, integrae vel furcatae, simplices seu parce ramosae, non vel saltem haud distincte articulatae. Tetrasporangia ut in *C. opuntia*. Color fusco-violaceus.

In the upper litoral, common. Chiloé: Quemchi, with *Bostrychia* (St. 30 b, 19. 7. 08); San Pedro Island, with *Hildenbrandia* (St. 30 B, 22. 7. 08). West Patagonia: Puerto Riofrio (St. 28, 13. 6. 08). South Patagonia: Arauz Bay, with *Bostrychia* (St. 23 a, 3. 5. 08, ⊕). Falkland Islands: Westpoint Island, abundant (St. 8 a, 5. 12. 07); Cape Pembroke, with *Bostrychia* (St. 3 a, b, 7. 11. 07).

Var. *fusiformis* was established by Agardh on Hohenacker no. 280, and this is exactly what I understand by my species; besides, Agardh suspected that his variety was worthy of specific rank. As far as my experience goes the European plant belongs to one type, and the subantarctic to another, the differences being illustrated in fig. 2.

Distribution: Chile to Fuegia, Falkl., N. Zeal.?

Acanthococcus Hook. Fil. et Harv.

A. antarcticus Hook. Fil. et Harv. — Kylin & Skottsb. p. 16.

Fuegia: Slogget Bay, in beach drift (St. 47 b, 16. 3. 09, ♀); Orange Bay, in tide-pools on *Ballia* (St. 45, 11. 3. 09, ♀). Falkland Islands: Cape Pembroke, in pools (St. 3 b, 7. 11. 07).

Distribution: Fuegia, Falkl., Kerg.

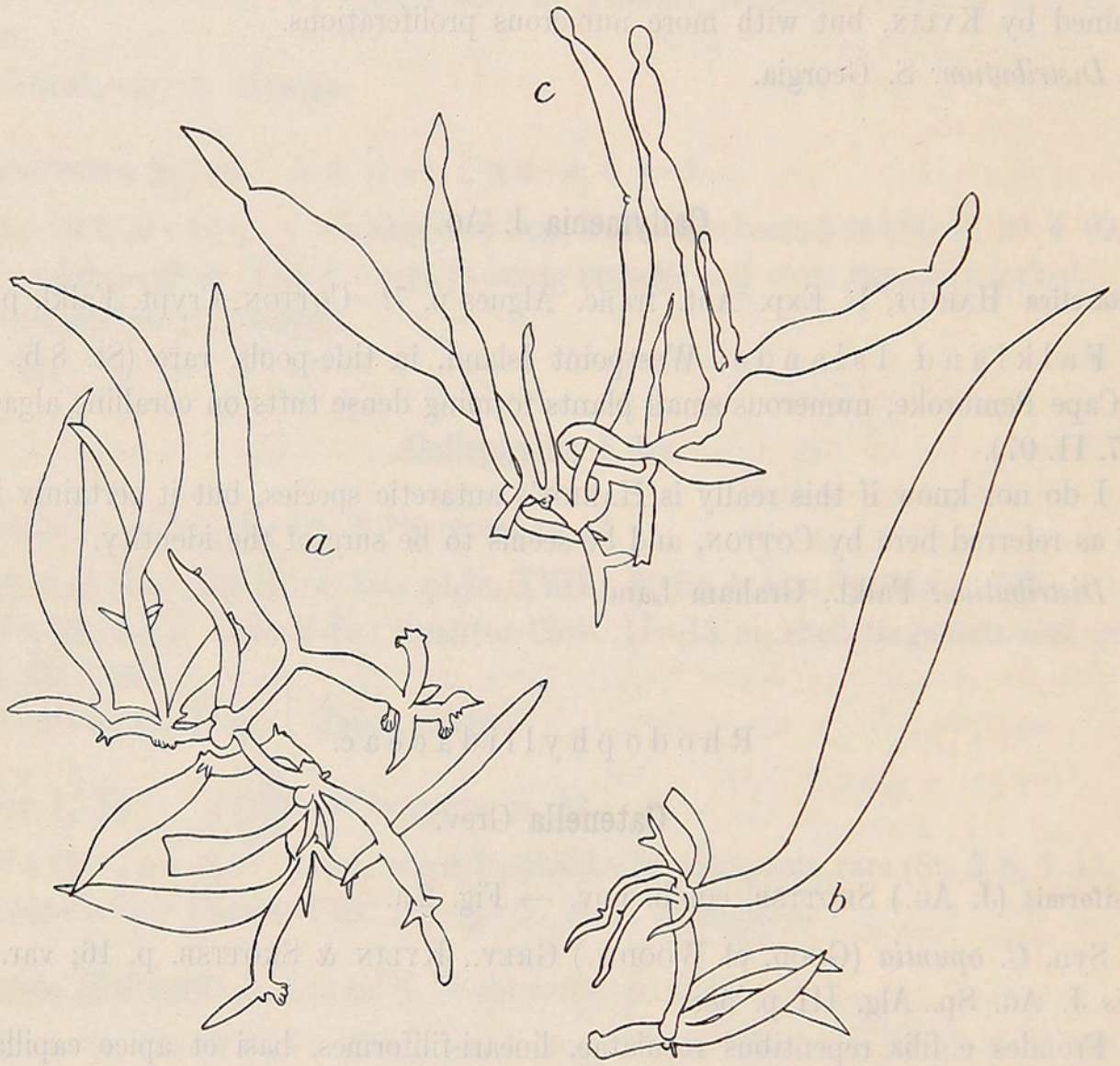

Fig. 2. **a—b** *Catenella fusiformis*; **c** *C. opuntia*. × 10.

A. spinuliger J. Ag. — Kylin & Skottsb. p. 17.

South Patagonia: Fitzroy Channel, 13—14 m, gravel (St. 17, 18. 4. 08). Fuegia: Tekeenika, large intact specimens washed ashore (St. 47 B., 10. 3. 09). — This species has never been collected with reproductive organs of any kind.

Distribution: S. Patag. (first record), Fuegia, Falkl., S. Orkn. I.

Sphaerococcaceae.

Sarcodia J. Ag.

S. Montagneana (Hook. Fil. et Harv.) J. Ag. — Kylin & Skottsb. p. 17 f. 8.

South Georgia: probably common in the sublitoral region. Cumberland Bay, Boiler Harbour, 5—10 m (St. 48, 49, 20. 4. 09, ♀); Moraine Fiord, drifted (18. 4. 09); Strömnaes Harbour, 8 m, stones (St. 50, 24. 4. 09, ⊕); Bay of Isles, Rosita Harbour, 8 m, gravel (St. 52, 25. 4. 09, ♀, ⊕).

Distribution: N. Zeal., S. Georgia.

Curdiea Harv.

C. reniformis Skottsb. ia Kylin & Skottsb. p. 18 f. 9.

South Georgia: Bay of Isles, Rosita Harbour, 8 m, rocks and gravel (St. 52, 25. 4. 09, ♀).

The cystocarps of this species and of the closely related *C. Racovitzae* Hariot are scattered over the frond and not at all confined to the margin as is the case in all other Curdieae (I have gone through the rich material in Herb. Agardh), where they are also much more protruding. According to the customary subdivision of the subfam. Melanthalieae (*vide* De Toni, Sylloge 4: 2 p. 412), the Antarctic species cannot belong to that genus nor to the same group, but come near *Sarcodia*; however, they have not the anatomical structure of this, but of *Curdiea*.

In the fronds *Entocolax Rhodymeniae* Reinsch, Meeresalg. Südgeorg. p. 399, T. XV, f. 7—8, is plentiful. I think the male conceptacles of *C. Racovitzae*, described by Gain, Fl. Algol. p. 61, f. 54—59 are perithecia of this same *Entocolax*.

Distribution: S. Georgia.

Gracilaria Grev.

G. aggregata Hook. Fil. et Harv. Lond. Journ. Bot. 4 (1845) p. 261, Fl. Ant. II p. 478. Cotton, Crypt. Falkl. p. 180.

Falkland Islands: Cape Pembroke, on small stones in tide-pools (St. 3 b, 7. 11. 07).

There has been some uncertainty about this, but I believe Cotton has removed all doubts as to its position. He refers *Gymnogongrus implicatus* of Hohenacker, Exs. no. 181 to this with some doubt; I have examined the specimen in the Upsala set, and I find that Cotton's identification is quite correct.

On some of my specimens there are small scutate discs suggesting some parasitic species, but they are only young horizontal thalli of the *Gracilaria*, small erect fronds arising from some of them.

Distribution: Falkl.

G. pulvinata nov. spec. — Fig. 3 a—c.

Syn: *Dumontia fastigiata* Bory var. *minor*, Hohenacker Exs. no. 282 (Port Stanley); *Chaetangium fastigiatum* v. *minor* J. Ag. Hariot Miss. Sci. p. 96.

Pusilla caespitosa, 1—2 cm alta, sat mollis. Discus basalis magnus tenuis, frondes dense caespitosas emittens. Frons ambitu cuneata, repetiter nec non fastigiatim vel irregulariter di-polychotome pinnata, teretiusculo-complanata, segmentis simplicibus vel lobatis et furcatis, linearibus vel anguste cuneatis vel (saltem tetrasporiferis) anguste lanceolatis, acutis, 0,3—1, majoribus usque ad 1,5 mm latis. Structura anatomica generis. Cortex sterilis monstromaticus, cellulae subcorticales 1—3-stratosae, majores, arcte repletae, medullares maximae, plerumque 1—2-stratosae, subhyalinae. Sporangia in segmentis junioribus crassioribus numerosissima, filis sterilibus (cellulis corticalibus radiatim seriatis) cincta. Cystocarpia et spermatangia ignota.

South Patagonia: Arauz Bay, abundant together with *Bostrychia* and *Catenella* in the litoral region (St. 23 a, 3. 5. 08, ⊕). Falkland Islands: Cape Pembroke, on *Mytilus* in tide-pools (St. 3 a, 7. 11. 07).

Owing to the present state of confusion in the genus *Gracilaria*, it is indeed no pleasure to describe a new species, the more as no cystocarps have been found. Nothing in the structure or general habit speaks against placing it with *Gracilaria*, and I do not think it is identical with any other species of that genus. There is of course a possibility that it has been described as *Gymnogongrus*, a genus including a considerable number of obscure forms. In any case, *Gracilaria pulvinata* has long been hidden in herbaria under a wrong name. Hohenacker's *Dumontia fastigiata* var. *minor* from Port Stanley (no. 282) is identical with my plant. J. Agardh mentions these specimens in Sp. Alg. III, p. 540, adding that the small form differs from Bory's plant and has cruciate tetraspores, and there is a specimen in his herbarium (no. 32592), on which he has written: »vix est planta Boryi». In spite of Agardh's statement Hariot registered no. 282 under *Chaetangium fastigiatum*, with the remark that he had seen the same from Kerguelen in Hooker's collection. I do not know the latter plant. Cotton Crypt. Falkl. p. 176 writes: »Hohenacker's *Dumontia fastigiata* var. *minor* Exsicc. 282, from the East Falklands, is, in the British Museum set, a small specimen only, but clearly not referable either to *Dumontia* or *Chaetangium*».

Distribution: S. Patagonia (first record), Falkl.

Rhodymeniaceae.

Dendrymenia nov. gen.

Thallus sympodialis e stipitibus teretibus et laminis expansis compositus, sed adparenter caulis percurrens folia flabelliformia lateralia sessilia primo disticha gerens. Hapterae valde ramosae more Lessoniarum nidum formantes. Structura anatomica ut in Rhodymenia. Cystocarpia in foliis sparsa, ± distincte apiculata vel subcoronulata.

D. flabellifolia (Bory) Skottsb. comb. nov. ± Fig. 3 d—f.

Syn *Rhodymenia flabellifolia* (Bory) Mont. Voy. Bonite p. 105, Howe, Mar. Alg. of Peru p. 124, pl. 49.

Chile: Valparaiso, on rocks exposed to strong surf, near Playa Ancha, young specimens (St. 41, 2. 9. 08). Other specimens examined: Orig. BORY, Herb. AGARDH no. 26935; Callao, leg. HUMBOLDT, Herb. AGARDH no. 26937, ♀.

In Spec. Alg. II p. 380 AGARDH puts *R. flabellifolia* at the end of the genus with the remark: »caule evidenti haec species a prioribus differt». HOWE l. c. gives an ex-

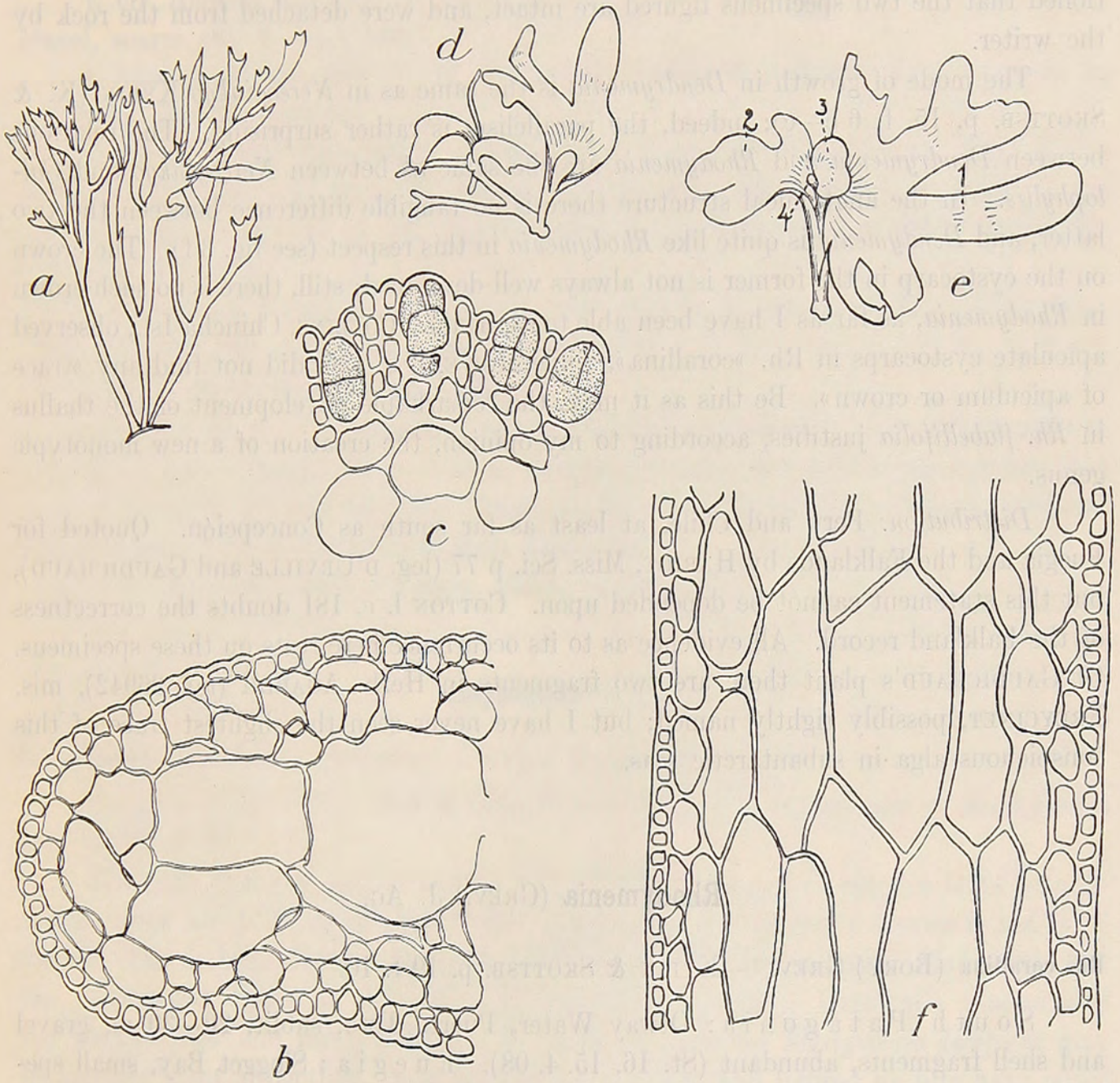

Fig. 3. **a**—**c** *Gracilaria pulvinata:* **a** frond, × 3; **b** cross section of sterile frond, × 270; **c** tetrasporangia, × 270. **d**—**f** *Dendrymenia flabellifolia:* **d**—**e** small plants, × 1 ½; **f** length section of lamina, × 270.

cellent photograph of a large complete specimen. He regards it as a very distinct species, but his material did not, perhaps, allow him to get a clear idea of the morphology. By an examination of young plants (fig. 3 d—e), the mode of growth is easily explained. The young lamina develops a terete stipe, attached to the rock with a basal disc. Later, strong hapteres grow out, finally forming a »bird's nest» quite unlike the basal parts in *Rhodymenia* proper. From the transition zone between stipe and blade a new leaf grows out, becoming differentiated into stipe and lamina. Gradually the new stipe attains the thickness of the first one and appears to form a continuation of it; this process

is repeated again, resulting in the adult plant seemingly possessing a percurrent stem with distichous leaves. If more than one innovation arises, the stem becomes branched. Proliferations from the stem may obscure the regular scheme, and as the stipes and branches get twisted the distichous arrangement of the leaves is lost. It appears from fig. 3 c that hapteres may act as stolons and give rise to new fronds. It should be mentioned that the two specimens figured are intact, and were detached from the rock by the writer.

The mode of growth in *Dendrymenia* is the same as in *Nereoginkgo* KYLIN (K. & SKOTTSB. p. 15, f. 6 b—c); indeed, the parallelism is rather surprising. The relations between *Dendrymenia* and *Rhodymenia* are the same as between *Nereoginkgo* and *Callophyllis*. In the anatomical structure there is no tangible difference between the two latter, and *Dendymenia* is quite like *Rhodymenia* in this respect (see fig. 3 f). The crown on the cystocarp in the former is not always well developed; still, there is no such crown in *Rhodymenia*, as far as I have been able to ascertain. COLLINS, Chincha Isl., observed apiculate cystocarps in Rh. »corallina», while HOWE, l. c. 126, did not find any »trace of apiculum or crown». Be this as it may, the remarkable development of the thallus in *Rh. flabellifolia* justifies, according to my opinion, the creation of a new monotypic genus.

Distribution: Peru and Chile, at least as far south as Concepción. Quoted for Fuegia and the Falklands by HARIOT, Miss. Sci. p 77 (leg. D'URVILLE and GAUDICHAUD), but this statement cannot be depended upon. COTTON l. c. 181 doubts the correctness of the Falkland record. All evidence as to its occurrence here rests on these specimens. Of GAUDICHAUD's plant there are two fragments in Herb. AGARDH (no. 26942), mis. FREYCINET, possibly rightly named; but I have never seen the slightest trace of this conspicuous alga in subantarctic seas.

Rhodymenia (GREV.) J. AG.

Rh. corallina (BORY) GREV. — KYLIN & SKOTTSB. p. 19 f. 10.

South Patagonia: Otway Water, Puerto Toro, sublit. 20—30 m, gravel and shell fragments, abundant (St. 16, 15. 4. 08). Fuegia: Slogget Bay, small specimens in tide-pools (St. 47, 16. 3. 09) and large ones in beach drift (St. 47 b). Falkland Islands: Westpoint Island, in tide-pools, small and scarce (St. 8 a, 5. 12. 07); Halfway Cove, sublit. 8 m, stones, scarce (St. 5, 25. 11. 07); additional locality from 1902: St. 53, 3. 9. 02.

L. c. I expressed my opinion that HOWE's *Rh. corallina* from Peru is different from BORY's species. Of the latter I have examined authentic material in Herb. AGARDH (no. 26893), mis. D'URVILLE, showing that my southern species is, in any case, the true *corallina*. Further, Dr. HOWE kindly sent me a good set of specimens of his species. Truly, the anatomical structure is almost the same in both, the Peruvian plant being more delicate, with slightly smaller, more thinly walled cystocarps, but the habit is very

different, the branching less regular in *corallina*, also notable for its pedicellate proliferations (see COTTON, Crypt. Falkl. Pl. 7, under »Phyllophora cuneifolia»).

Distribution: Chile to Fuegia, Falkl.

Rh. palmatiformis SKOTTSB. in KYLIN & SKOTTSB. p. 21, fig. 11—12.

f. cfr. *linearis* SKOTTSB. — Falkland Islands: Sparrow Cove, 11—13 m, gravel, scarce (St. 9, 10. 1. 08).

f. *basiramosa* SKOTTSB. — Falkland Islands: Port Louis, common in the litoral (St. 11, 7. 2. 08).

f. *austrogeorgica* SKOTTSB. — South Georgia: Cumberland Bay, Boiler Harbour, 10 m (St. 49, 20. 4. 09); Strömnaes Bay, 1 m, rocks, with transitions to the following (St. 51, 24. 4. 09, ⊕). Bay of Isles, Rosita Harbour, 8 m, rocks (St. 52, 25. 4. 09).

f. *sublitoralis* SKOTTSB. — South Georgia: Cumberland Bay, Boiler Harbour, 5—10 m (St. 48, 49, 20. 4. 09, ⊕); Strömnaes Bay, 8 m, stones (St. 50, 24. 4. 09, ⊕). Drifted, Moraine Fiord (18. 4. 09), ⊕).

Specimens from St. 49 show that the seasonal development, at least of the South Georgia forms, is about the same as in *Leptosarca*, what strengthens my opinion that these plants have much in common. Probably *Rh. palmatiformis*, as well as the northern *Rh. palmata*, ought to be removed from *Rhodymenia*.

Distribution: S. Chile to Fuegia, Falkl., S. Georgia.

Leptosarca GEPP.

L. decipiens (REINSCH?) SKOTTSB. — KYLIN & SKOTTSB. p. 26.

South Georgia: Bay of Isles, Rosita Harbour, 8 m, common on small stones (St. 52, 25. 4. 09).

With the new material at hand I feel inclined to regard *L. simplex* GEPP as conspecific with my L. *decipiens*, but if this is the same as REINSCH's species is not at all certain. The habitus figure (Meeresalg. Südgeorg. Taf. 10) suggests *Leptosarca*, but the anatomical figure is different (polystromatic medulla). REINSCH's illustrations are always poor and rarely accurate, so for all we know his *Rhodymenia decipiens* may be another plant altogether. Not few species described and figured by him have never been identified.

Distribution: S. Georgia.

Plocamium (LAMX) LYNGB.

P. Hookeri HARV. — KYLIN & SKOTTSB. p 29 f. 15.

South Georgia: sublitoral, Cumberland Bay, Boiler Harbour, 5 m (St. 48, 20. 4. 09); Bay of Isles, Rosita Harbour, 8 m, rocks and gravel (St. 52, 25. 4. 09, ⊕).

Distribution: S. Georgia, Kerg.

P. coccineum LYNGB. — KYLIN & SKOTTSB. p. 30.

Chiloé: San Pedro Island, 10 m, sand and gravel (St. 32, 28. 7. 08). Falkland Islands: Sparrow Cove, 11—13 m, gravel (St. 9, 10. 1. 08).

Distribution: Almost cosmopolitan (?)

P. secundatum KÜTZ. — KYLIN & SKOTTSB. p. 31 f. 16.

A common sublitoral species. Fuegia: Slogget Bay, in tide-pools (St. 47, 16. 3. 09, ⊕) and drifted (St. 47 b, ♀, ⊕); Orange Bay, 15—20 m, small stones (St. 44, 11. 3. 09). Falkland Islands: Cape Pembroke, in tide-pools (St. 3 b, 7. 11. 07). South Georgia: Cumberland Bay, Boiler Harbour, 5—10 m (St. 48, 49, 20. 4. 09, ♀, ⊕); Strömaes Bay, c. 8 m (St. 50, 24. 4. 09, ⊕).

Distribution: Fuegia, Falkl., S. Georgia.

Delesseriaceae.

While preparing, together with Professor KYLIN, the report on my collection of red algae from the Antarctic voyage, I soon became convinced that it was impossible to arrive at a satisfactory arrangement of the Delesseriaceae on the basis of J. G. AGARDH's monograph, Sp. Alg. II: 3 (1898), which left the family in a state of serious confusion. Ill-defined genera and tribes were created, species, that had little or nothing to do with each other, were brought to the same genus, while others of close relationship became widely separated. As AGARDH did not pay any attention to the structure of the growing apex, a better result could, perhaps, not be expected, but it should be noted that his new classification, in which he pretends to express the true systematic position of the various types, is inferior to his earlier treatment of the family.

Quite a number of authors have occupied themselves with an analysis of the young *Delesseria* frond. NIENBURG, who made a comparative study of numerous species, revealed to us the great value of the growth modus as a systematic character. It was only because I did not want to delay the publication of our paper that I resolved to leave the Delesseriae under current names, and to take up their study afterwards on fresh material. To pull down and rebuild AGARDH's system is a serious undertaking. Practically every species must be studied as to anatomy, mode of apical growth, type of branching, position, development and structure of the reproductive organs. I began this study in Uppsala, using the material in the Museum and the collections in Stockholm, later also the types in Herb. AGARDH and numerous of HOOKER's original specimens in the collections at Kew and in the British Museum. A changed position in life has made it difficult for me to proceed much further, at least at present. Thus, while I am able to place most of the species belonging to the flora treated in this paper, I cannot draw any far-reaching conclusions on the natural system of the family as a whole.

NIENBURG distinguished two main types of apical growth, one *sanguinea* (Hypoglossum-) type and one *sinuosa*-type; it is of minor importance here that his analysis of the latter is unsatisfactory. Before him, other authors have discovered this difference,

and among them PHILLIPS deserves special attention. In Ann. of Bot. XII (1898) p. 177 he pointed out that the cells of the central axis in *D. sanguinea* a. o. never divide by transverse intercalary walls, contrary to *D. sinuosa*. Further, he pays attention to the position of the procarps: on the costa in *D. sanguinea*, *ruscifolia*, *alata*, etc., spread over the frond, without primary relation to the costa or nerves in *D. sinuosa*, just as in *Nitophyllum*; he is inclined to restore KÜTZING's genus *Phycodrys* for *sinuosa*, and says that it is more related to *Nitophyllum* than to *Delesseria* (p. 191, 195). NIENBURG does not quote PHILLIPS, and several of the *Nithopylla* examined by the former are compared with the growth-type of *sanguinea*, not of *sinuosa*. But all genera and species with the apex of *sinuosa* have the anatomical structure of the frond as in *Nitophyllum*, without the inner rhizoids or hyphae characteristic of *D. sanguinea* and its relatives (see my paper on the Californian »*D. quercifolia*»). Among the species with the apical growth of *sanguinea* I have only met with two exceptions from this rule: *Apoglossum ruscifolium* and *Montagneanum*. J. AG., where no internal hyphae are developed; still, their costa is not built after the regular fashion of *Phycodrys* or *Nitophyllum*.

These differences in growth, position of procarps and anatomy are important enough to justify the establishment of two subfamilies or tribes, Delesserieae and Nitophylleae. From what I have seen of this subfamily I should like to distinguish two assemblages, the *Phycodrys* group and the *Nitophyllum* group, as a provisional arrangement only.

Delesserieae.

Delesseria LAM.[1]

D. salicifolia REINSCH. — KYLIN & SKOTTSB. p. 45, Taf. 1, f. 3. — Fig. 4.

South Georgia: Cumberland Bay, Boiler Harbour, sublit. 5 m (St. 48, 20. 4. 09).

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[1] HOWE, Mar. Alg. of Peru p. 136, retains this name with much reservation, remarking that it was put on the list of nomina conservanda by the Brussels Congress, and adds: »inasmuch as *Delesseria* was originally based upon thirty seven species, representing several genera and several families of modern writers, it offers a good illustration of the futility of »conserving» a generic name unless it is specified for what it shall be »conserved», or in other words, unless it is fastened to a certain species as »type». *Delesseria sanguinea*, the first species of LAMOUROUX's first section of the genus, might fairly be considered as the type of *Delesseria*, but this is also the evident type of *Hydrolapatha* Stackh., which (altered to Hydrolapathum) has been maintained as generically distinct from other »Delesserias» by Ruprecht, Le Jolis, J. Agardh and others». This criticism hits a weak point in the list of nomina conservanda, and HOWE is of opinion that *Delesseria* is an untenable name and that it is undesirable to conserve it. But in this I do not agree with him. If we want to use *Hydrolapathum*, we have to fix this name to a species as type, and this type will be *H. sanguineum*. Then, nothing prevents us, from agreement, to adopt *Delesseria* instead of *Hydrolapathum* in spite of the younger date of the former. The combination *D. sanguinea* is universally known, the plant is mentioned under this name in innumerable floristic papers, and its cytological etc. features were described under the same name. I find it more desirable to conserve *Delesseria* than to use *Hydrolapathum*. But of course no list of nomina conservanda ought to be proposed by any committee unless it associates itself with specialists able to fasten a type to every genus. If not, uncertainty and confusion are sure to follow.

Belongs to *Delesseria*, with *sanguinea* as type, and is near this; see figures of apex and costa.

Distribution: S. Georgia.

D. fuegiensis nov. spec. — Fig. 5, 6 a—c.

Callus radicalis crassus hemisphaericus. Lamina primaria breviter stipitata, simplex, saltem ad 30 cm longa et 3 cm lata, valide costata et opposite nervosa, costa saltem ad 4 mm lata et 1,75 mm crassa, in fronde adulta ± denudata et e margine distiche

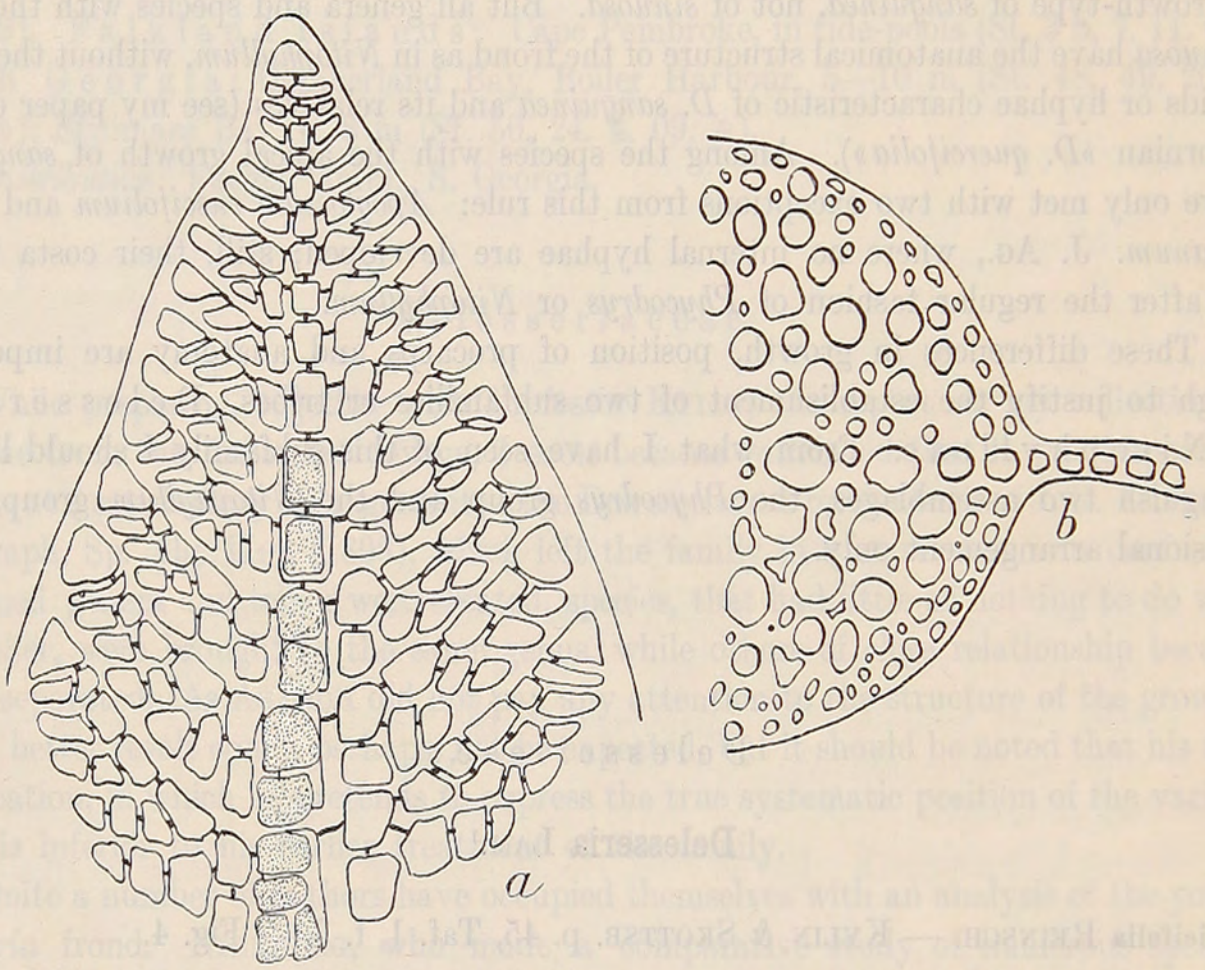


Fig. 4. *Delesseria salicifolia*: **a** apex, × 400; **b** cross section of costa, × 70. Cortex cells dotted.

pinnatim ramosa. Pinnae laminae simillimae, lineari-lanceolatae, dense opposite nervosae, saltem ad 12,5 cm longae, maximae jam denudatae et e costa prolificantes, ceterae minores, ad 1 cm latae, foliis fertilibus e costa pullulantibus. Cystocarpophylla ovato-lanceolata, 2—10 mm longa, obtusiuscula, interdum e stipite brevi crassoque ramosa sicut caespitosa, crasse costata, latere uno cystocarpium singulum costale circ. 1 mm diam. gerentia. Tetrasporophylla eodem modo in plantis tetrasporiferis evoluta, 2—12 mm longa, utrinque secus costam sorifera, sed sporangia etiam in pinnis majoribus versus apicem secus costam orta, tunc sporophylla in hac specie haud semper a pinnis sterilibus certe distinguenda. Planta mascula ignota. Crescentia apicis nec non structura anatomica ut in *D. sanguinea*.

F u e g i a: Slogget Bay, washed ashore (St. 47 b, 16. 3. 09, ♀, ⊕).

A large and striking species of the »crassinervia-type». It seems distinct from *D. crassinervia* Mont., Laing (Auckland Islands); this is narrower, the leaflets are more

acuminate, and no secondary nerves are visible (LAING in Subant. Isl. p. 521, pl. 21). Specimens of *D. crassinervia* from Auckland Isl., collected by HOOKER (Brit. Mus.), are very like *fuegiensis* in habit, but COTTON, who has examined them, has written on the sheet: »transverse veins microscopic, anastomosing, inconspicuous, visible only on main wings». I cannot tell if KÜTZING's *crassinervia* from Kerguelen (Tab. phyc. XVI, t. 12) is the same as MONTAGNE's, but it is not *D. fuegiensis*.

I found five specimens of *D. fuegiensis*, three with tetraspores (fig. 5 a) and two

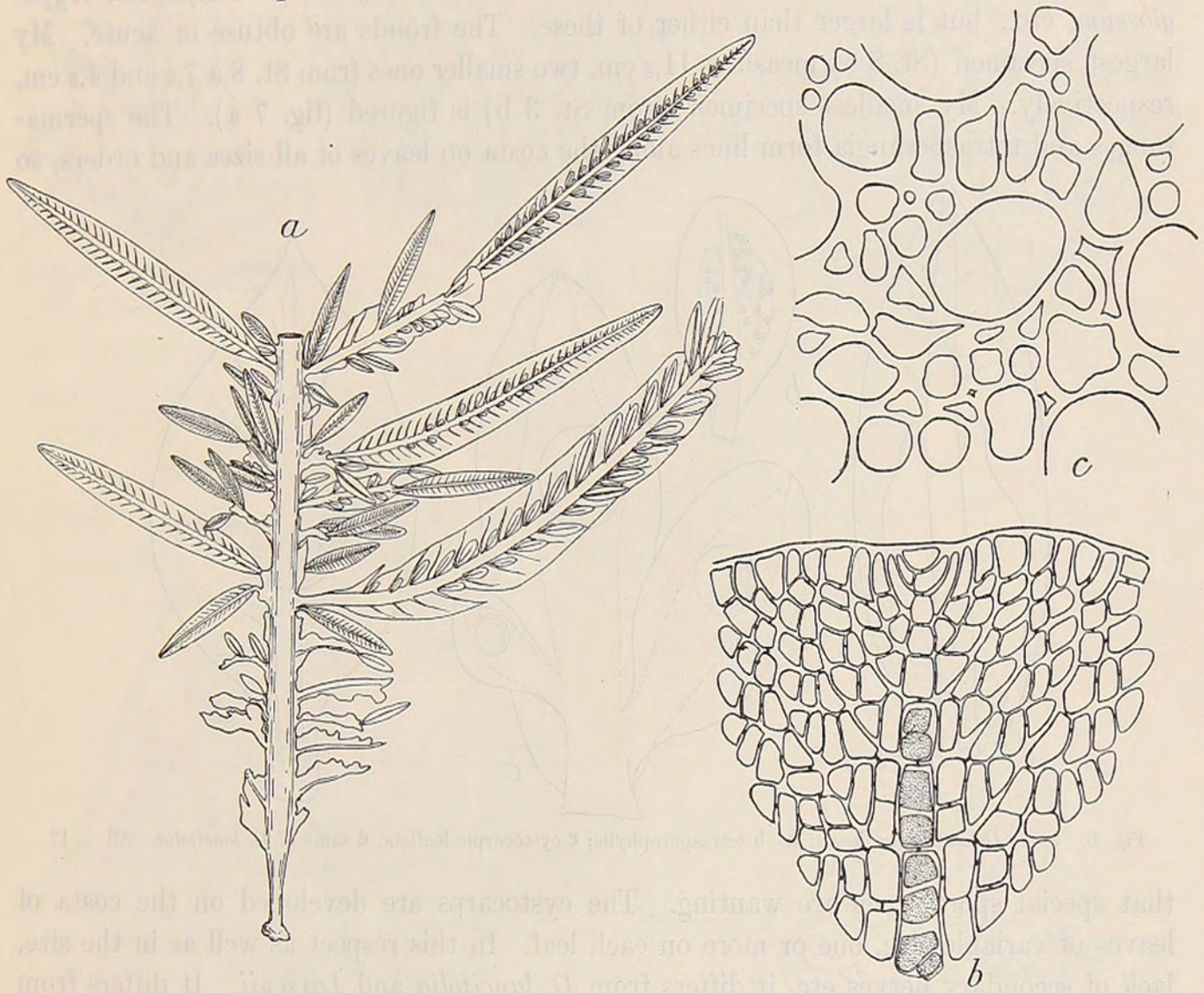


Fig. 5. *Delesseria fuegiensis:* **a** lower part of a tetrasporic specimen, nat. size; **b** apex of a tetrasporophyll, × 360; **c** part of cross section through old costa, × 180. Cortex cells dotted.

with cystocarps. As a rule, the sporophylls are borne by lateral pinnae of the first order. They vary considerably in size and shape (fig. 6 a, b). A large sporophyll may carry minute sporophylls along the midrib, and, on the other hand, larger pinnae sometimes produce sori. The female leaflets (fig. 6 c) are of a more uniform size than the tetrasporophylls. They are simple or carry new cystocarpophylls on the base of the midrib. It also happens that larger pinnae of first order bear a cystocarp, so that the variation found in the position of the sori is repeated. Fig. 5 b shows that the apical growth takes place as in *D. sanguinea*, and fig. 5 c that numerous hyphae develop in the costa. *D. fuegiensis* is, to judge from the habit, an annual species.

Distribution: Fuegia.

D. epiglossum J. Ag. Sp. Alg. III, p. 496. — Fig. 7 a—b.

Syn. *D. crassinervia*, Hook. Fil. et Harv. Fl. Ant. II, p. 471 p. p.; *Paraglossum epiglossum* J. Ag. Sp. Alg. III: 3 p. 217.

Falkland Islands: Westpoint Island, in tide-pools on algae, scarce (St. 8 a, 5. 12. 07, ♂, 8 b — one large specimen ♀). Cape Pembroke, in tide-pools (St. 3 b, 7. 11. 07, ⊕).

D. epiglossum bears a superficial resemblance to *Apoglossum ruscifolium*, *Hypoglossum*, etc., but is larger than either of these. The fronds are obtuse or acute. My largest specimen (St. 8 b) measures 11,5 cm, two smaller ones from St. 8 a 7,5 and 4,5 cm, respectively. My smallest specimen (from St. 3 b) is figured (fig. 7 a). The spermatanges and tetrasporangia form lines along the costa on leaves of all sizes and orders, so

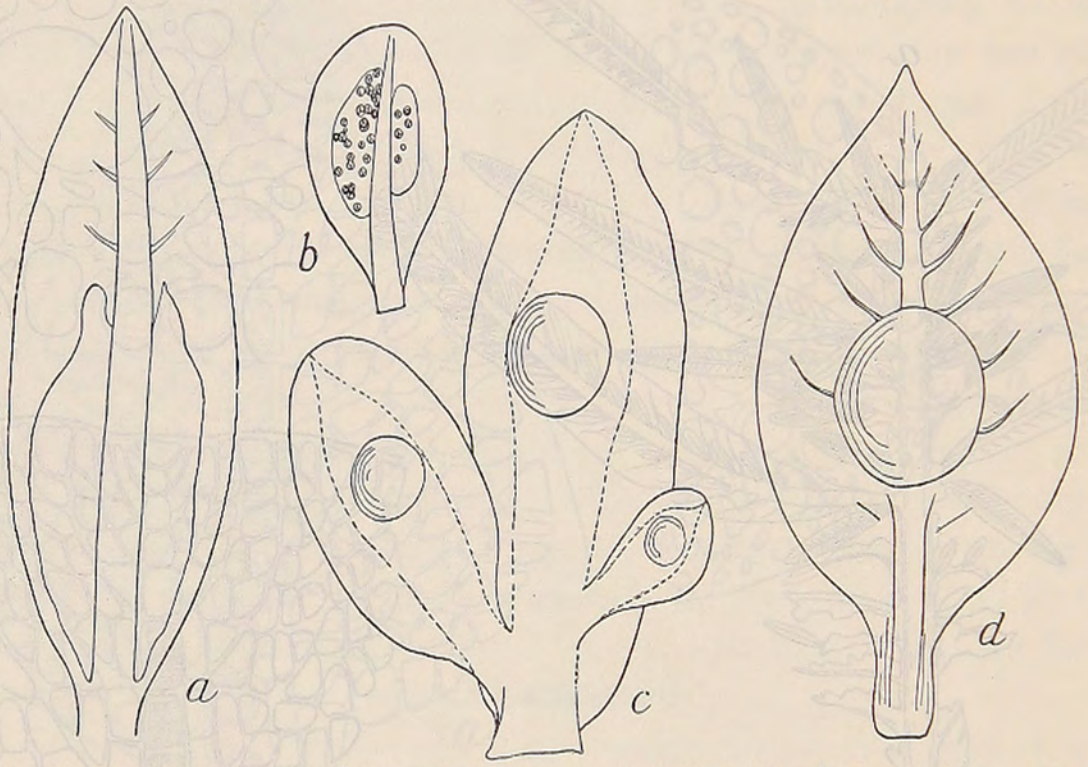


Fig. 6. **a**—**c**: *Delesseria fuegiensis*: **a**—**b** tetrasporophylls; **c** cystocarpic leaflets; **d** same of *D. lancifolia*. All × 17.

that special sporophylls are wanting. The cystocarps are developed on the costa of leaves of variable size, one or more on each leaf. In this respect as well as in the size, lack of secondary nerves etc. it differs from *D. lancifolia* and *Larsenii*. It differs from *Apoglossum* (ruscifolium as type) in the formation of the veins and in the anatomical structure; from *Hypoglossum* in the structure of the apex, which is the same as in *D. sanguinea* (fig. 7 b), as is also the anatomical structure.

Agardh quotes Falkland (Herb. Gray) as type locality. There are three specimens in his herbarium. No. 31753 (Falkland Isl. 1859, Capt. Abbott) bears the remark »abnormal state of D. Davisii». It is a bad specimen, possibly belonging to *Nitophyllum condensatum*. No. 31754, also collected by Abbott 1859 at Falkland (named »D. crassinervia»), is the same as I have called *D. epiglossum* and a good specimen of this, which served Agardh for his description, though he seems to have regarded no. 31753 as an old state of the same. No. 31754 is the type specimen of *D. epiglossum*. No. 31755, Gaudichaud no. 26, is only a fragment and must be left out of consideration. It bears the name »*D. ruscifolia*». Another specimen of Abbott's (all these came from

Herb. GRAY) is in Brit. Mus.; it is identical with the type of *epiglossum*. To this belongs *D. crassinervia* leg HOOKER, Port Williams, Falkl. 1842, Herb. Kew.

Distribution: Fuegia (?), Falkl., Kerg. (?).

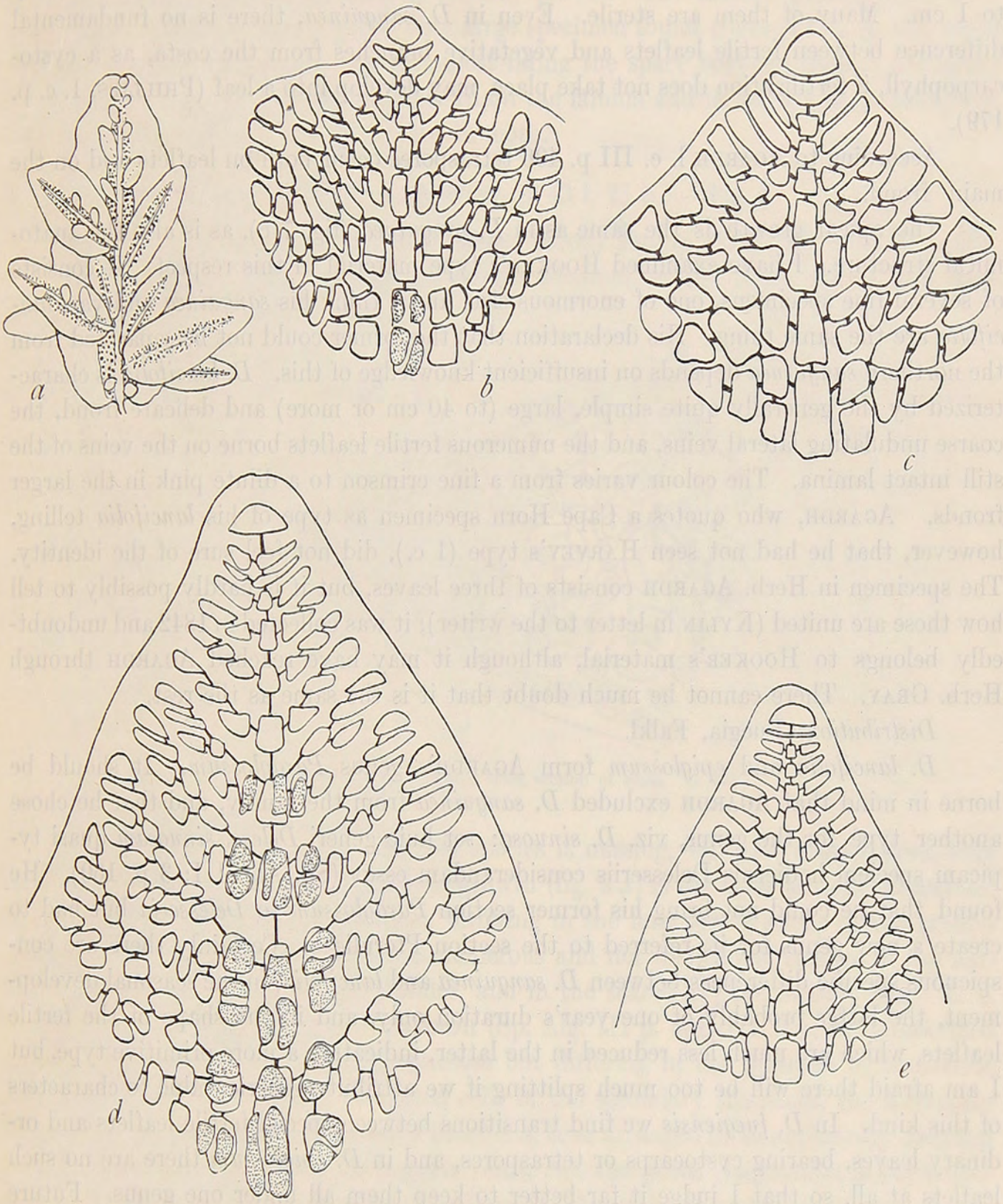


Fig. 7. **a**—**b** *Delesseria epiglossum:* **a** small tetrasporic specimen, × 7 ½; **b** apex, × 540. **c** *D. lancifolia*, apex, × 540. **d**—**e** *D. Larsenii*, two apices, × 270. Cortical cells dotted.

D. lancifolia (HOOK. FIL. et HARV.) J. AG. — KYLIN et SKOTTSB. p. 41. — Fig. 6 d, 7 c.

Syn. *D. sanguinea* cum var. *lancifolia*, HOOK. FIL. et HARV. Fl. Ant. II. p. 183; *Paraglossum lancifolium* J. AG. Sp. Alg. II: 3 p. 217.

F u e g i a: Slogget Bay, drifted (St. 47 b, 16. 3. 09, ♀).

Only a part of a medium-sized leaf. The cystocarps are situated as described by COTTON, Crypt. Falkl. p. 184, on a multitude of very small proliferations from the veins. One of these cystocarpophylls is figured, fig. 8 d, but there are others much larger, up to 1 cm. Many of them are sterile. Even in *D. sanguinea*, there is no fundamental difference between fertile leaflets and vegetative branches from the costa, as a cystocarpophyll, if fertilization does not take place, may develop into a leaf (PHILLIPS, l. c. p. 179).

According to AGARDH l. c. III p. 496 tetraspores occur both on leaflets and on the main frond.

The apical growth is the same as in *D. sanguinea* (fig. 7 c), as is also the anatomical structure. I have examined HOOKER's type material in this respect. It consists of several fine specimens, one of enormous size, and I think his *sanguinea* and var. *lancifolia* are the same thing. His declaration that the former could not be separated from the northern *sanguinea* depends on insufficient knowledge of this. *D. lancifolia* is characterized by the generally quite simple, large (to 40 cm or more) and delicate frond, the coarse undulating lateral veins, and the numerous fertile leaflets borne on the veins of the still intact lamina. The colour varies from a fine crimson to a dilute pink in the larger fronds. AGARDH, who quotes a Cape Horn specimen as type of his *lancifolia* telling, however, that he had not seen HARVEY's type (l c.), did not feel sure of the identity. The specimen in Herb. AGARDH consists of three leaves, but it is hardly possibly to tell how these are united (KYLIN in letter to the writer); it was collected in 1842 and undoubtedly belongs to HOOKER's material, although it may have reached AGARDH through Herb. GRAY. There cannot be much doubt that it is the same as the rest.

Distribution: Fuegia, Falkl.

D. lancifolia and *epiglossum* form AGARDH's genus *Paraglossum*. It should be borne in mind that AGARDH excluded *D. sanguinea* from the family, and that he chose another type for the genus, viz. *D. sinuosa*: »et huic generi *Deless. sinuosam* quasi typicam speciem hodiernis Delesseriis considerandam esse» (Sp. Alg. III: 3 p. 160). He found that he could not bring his former section *Paraglossum* to *Delesseria* but had to create a new genus for it, referred to the section Pteridieae. Certainly there are conspicuous specific differences between *D. sanguinea* and *lancifolia*, in the seasonal development, the latter probably of one year's duration only, and in the shape of the fertile leaflets, which are much less reduced in the latter, indicating a more primitive type, but I am afraid there will be too much splitting if we attribute generic value to characters of this kind. In *D. fuegiensis* we find transitions between special fertile leaflets and ordinary leaves, bearing cystocarps or tetraspores, and in *D. epiglossum* there are no such leaflets at all, so that I judge it far better to keep them all under one genus. Future investigations comprising all the species involved will show whether we shall be able to establish natural sections.

D. Larsenii SKOTTSB. in KYLIN & SKOTTSB. p. 41, f. 20, 21 a. — Fig. 7 d—e, 8.

Unfortunately, I did not obtain any fresh material of this. It seems to come close to *D. lancifolia*. The mode of growth and the structure of the costa are the same, as

shown by my illustrations. It differs in the colour of the adult lamina, being dark brownish red, in the thicker frond, much less adhering to the paper, and in the much richer development of anastomosing tertiary nerves. The minute proliferations look alike in both, but are sterile in the only large specimen found (figured l. c. p. 42), while the sori form lines along the nerves almost filling the space between them. According to AGARDH l. c. p. 496 sori are found both on the lamina and in leaflets in *D. lancifolia*. The cystocarps occupy the same site in both.

D. macloviana SKOTTSB. in KYLIN & SKOTTSB. p. 43 f. 21 b. — Fig. 9.

Syn. *D. crassinervia* β costa angustiore, HOOK. FIL. et HARV. Fl. Ant. II p. 471.

Additional locality: F u e g i a: Beagle Channel, sublit. 8 m, gravel and shell fragments (St. 10 b, 15. 3. 1902).

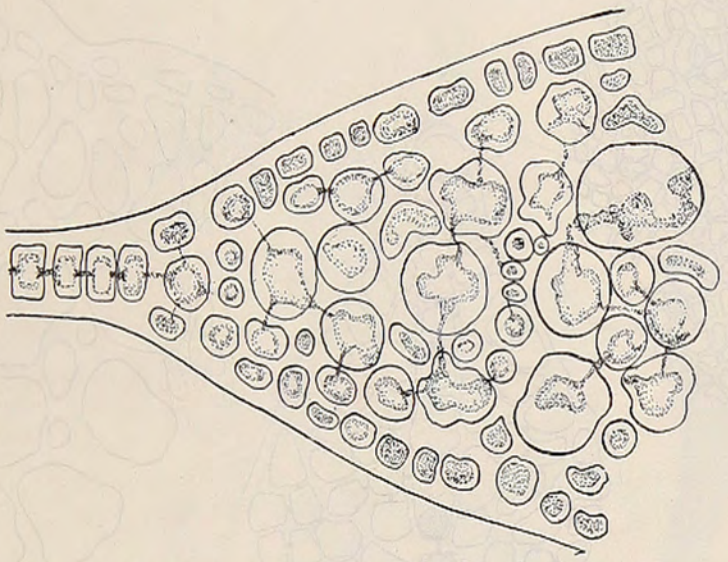


Fig. 8. *Delesseria Larsenii*, cross section of costa, × 180.

In the collection of 1907—09, this species is missing, but new observations were made on the old material. The mode of growth (fig. 9 a) is the same as in *D. sanguinea*. The species comes near *D. epiglossum*, differing in the long terete stipes of the proliferations, which are, besides, much less numerous and not distichous, further in the narrower leaves, in the microscopic venules, and in the scarce hyphae in the costa. L. c. I brought it to *Apoglossum* of J. AGARDH (Sp. Alg. III p. 491, III: 3 p. 190), described as having the ramification of *Hypoglossum* but differing in the presence of transverse microscopic veins, formed by elongated cells of the secondary filaments, the interspace being filled by the cells of the tertiary filaments, later arranged in an apparently irregular manner and contrasting with the regular veins. But the genus *Apoglossum* is not homogeneous. I cannot tell which of AGARDH's species should be regarded as »type». In the common European *A. ruscifolium* the old costa has a central medulla of larger cells without any hyphae and a thick cortex of very small cells, resembling what we find in *Phycodrys* and its allies, although the regular radial position of the cells is missing. AGARDH seems to have observed hyphae — »velut minus conspicuae» — also in this species. *A. Montagneanum* J. AG. (New Zealand, BERGGREN) agrees with *ruscifolium* in most respects. In *D. macloviana*, the microscopic veins are much less conspicuous and,

above all, very irregular, see fig. 9 b. And in the stipe I do not find the marked difference between medulla and cortex, while some hyphae seem to occur (fig. 9 c). One of AGARDH's Apoglossa, *A. decipiens*, possesses the regular veins of *A. ruscifolium*, but has the costa built exactly as in *D. sanguinea* and cystocarps and sori on smaller leaflets as in *D. fuegiensis*. As long as we do not know what we have to understand with a true *Apoglossum* (I doubt that the microscopic veins are a character of generic value), it seems better to list *D. macloviana* under *Delesseria*. The few specimens collected by the writer are small and very narrow. *D. crassinervia* β costa angustiore of HOOKER and HARVEY is better developed. There is one specimen in Brit Mus., Falkl., Berkeley Sound, leg. LYALL, and COTTON has written on the sheet: »transverse veins

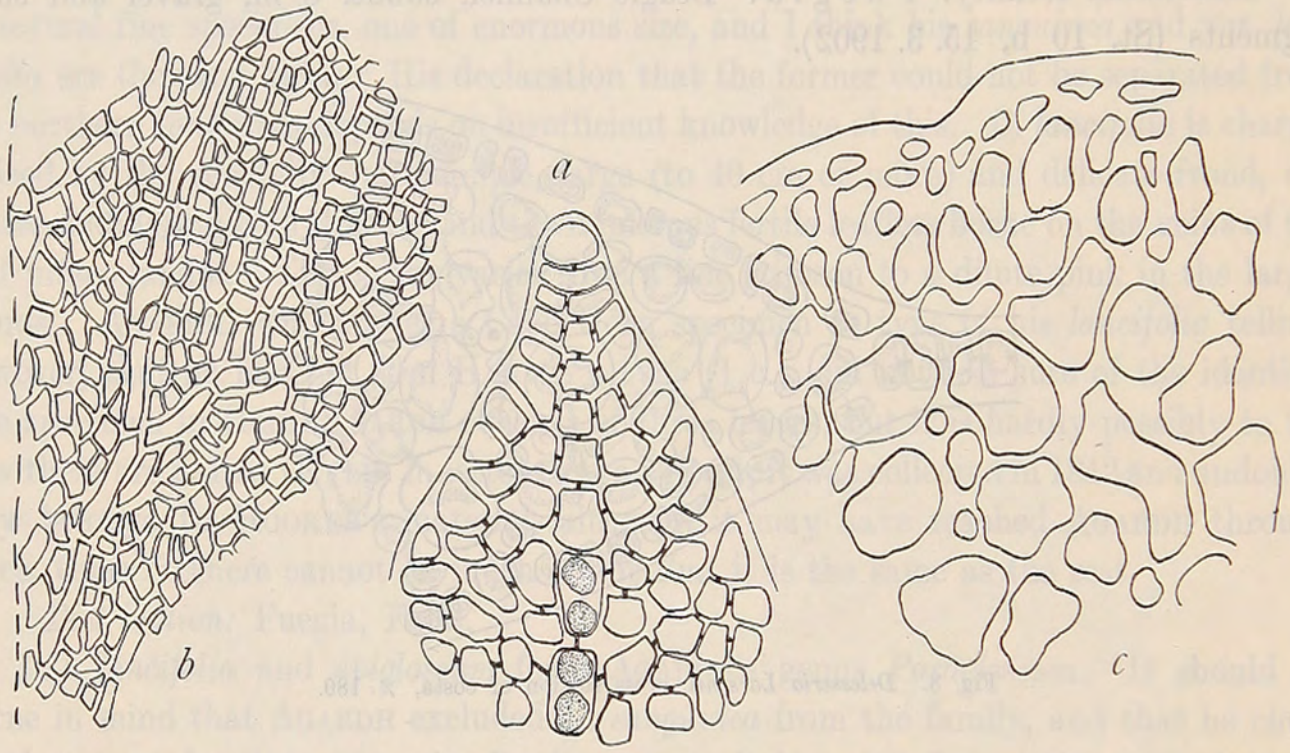


Fig. 9. *Delesseria macloviana:* **a** apex, × 360; **b** part of wing from surface, showing microscopic veins; the dotted line indicates edge of corticated midrib, × 180; **c** part of cross section through stipe, × 180.

microscopic, opposite, branched, anastomosing»; another sample of this plant is at Kew; see below under *Pseudophycodrys phyllophora*.

Distribution: Fuegia (first record), Falkl.

Microrhinus nov. gen.

Frons callo radicali affixa, inferne caulescens, superne foliacea, late costata, ubique (apicibus crescentibus exceptis) polystromatica, carnosa, e stipite nec non e margine laminae sat irregulariter pinnata. Crescentia apicalis ut in *Delesseria*. Lamina strato centrali e cellulis majoribus, cortice pleiostromatico parvicellulari; costa hyphas numerosissimas praebens. Organa fructificationis in foliolis marginalibus vel submarginalibus caespitosis evoluta. Cystocarpia in foliolis lateralia et solitaria, costam insidentia, structura Delesseriae, sed orificio tubuliformi protracto sursum curvato instructa. Tetrasporangia utroque latere evoluta, foliola minora omnino, majorum apicem solum

occupantia, triangule divisa. Spermatangia ignota. Color pulchre ruber usque atro-rubescens.

Genus insigne Pantoneurae ut videtur affinis. Nomen ob forma cystocarpii, rostrum elephantis marini, Austrogeorgiae incola (Macrorhinus leoninus) in mentem revocante.

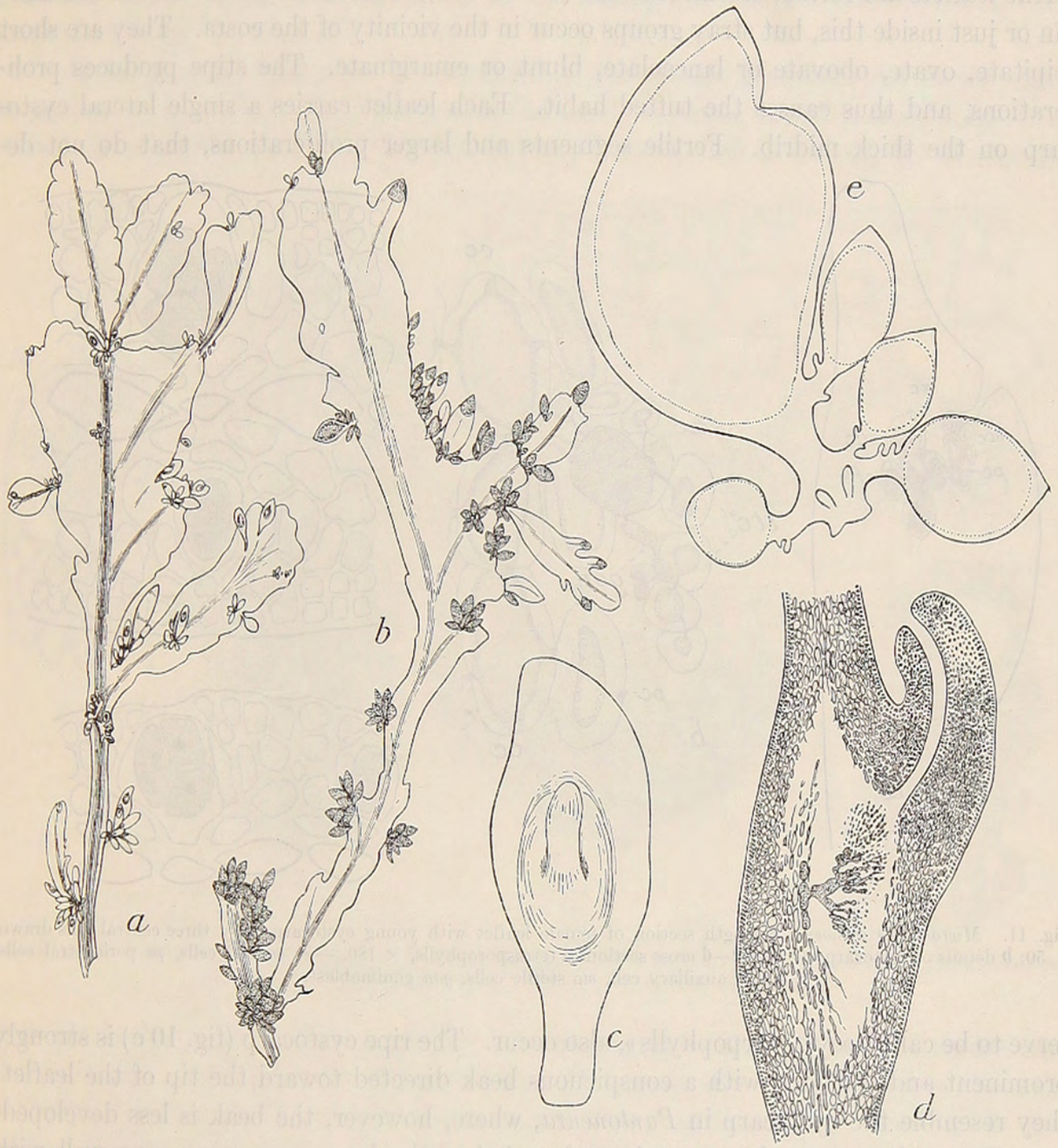


Fig. 10. *Microrhinus carnosus:* **a** cystocarpic, **b** tetrasporic frond, nat. size; **c** cystocarpic leaflet, × 12; **d** sagittal length section through cystocarp, × 25; **e** cluster of tetrasporophylls, × 12.

M. carnosus (Reinsch) Skottsb. — Fig. 10—12.

Syn. *Delesseria carnosa* Reinsch, Meeresalg. Südgeorg. p. 384 t. 7,8 (malae); *Chauvinia carnosa* Skottsb., Kylin & Skottsb. p. 47.

South Georgia: Cumberland Bay, Boiler Harbour, 5 m (St. 48, 20. 4. 09); Bay of Isles, Rosita Harbour, 8 m, rocks and stones (St. 52, 25. 4. 09, ⊕).

L. c. I brought *D. carnosa* to *Chauvinia*, which it resembles in several characters.

But *Chauvinia* has costal proliferations, costal fertile leaflets, a cystocarp without a beak, and, above all, an apex built after the fashion of *Hypoglossum Woodwardii*. It is not possible to refer *D. carnosa* to this, nor to any other already described genus.

Female plant and cystocarp. Fig. 10 a represents a piece of a female specimen. The fertile leaflets are tufted, of variable size (2—10 mm), situated in the sinuses of the margin or just inside this, but stray groups occur in the vicinity of the costa. They are short stipitate, ovate, obovate or lanceolate, blunt or emarginate. The stipe produces proliferations, and thus causes the tufted habit. Each leaflet carries a single lateral cystocarp on the thick midrib. Fertile segments and larger proliferations, that do not de-

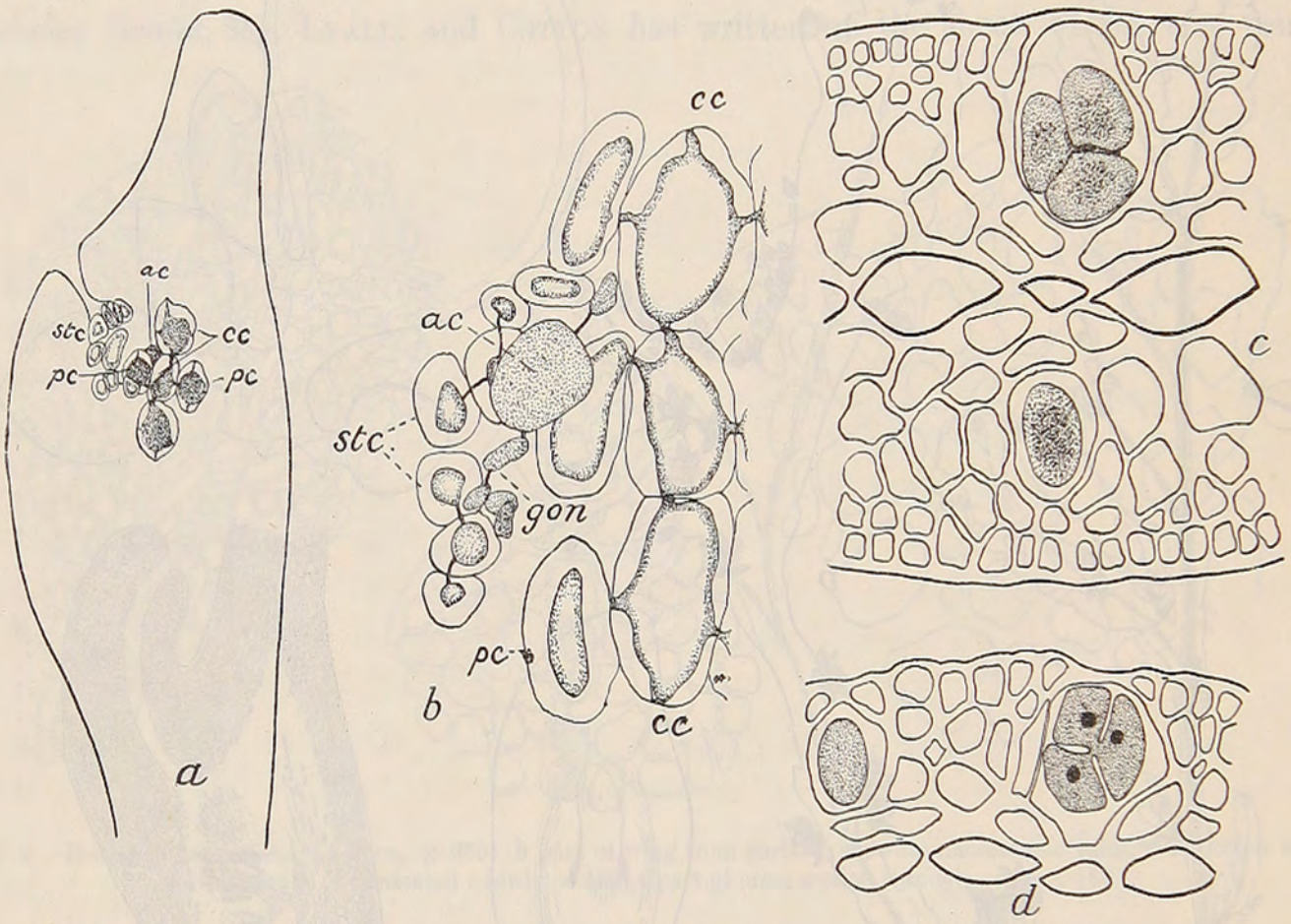


Fig. 11. *Microrhinus carnosus:* **a** length section of female leaflet with young cystocarp, only three central cells drawn, × 50; **b** details of cystocarp, × 180; **c—d** cross section of tetrasporophylls, × 180. — *cc* central cells, *pc* pericentral cells, *ac* auxiliary cell, *stc* sterile cells, *gon* gonimoblast.

serve to be called »cystocarpophylls», also occur. The ripe cystocarp (fig. 10 c) is strongly prominent and provided with a conspicuous beak directed toward the tip of the leaflet; they resemble the cystocarp in *Pantoneura*, where, however, the beak is less developed.

The earlier stages have not been found, but the later ones agree very well with KYLIN's description and figures of *Pantoneura*, making a repetition superfluous (see fig. 11 a, b, 10 d). I shall only add that the chamber of the cystocarp undergoes a secondary enlargement by the loosening of the surrounding tissue. The large fusion cell and the open connection between this and the central cell are in accordance with *Pantoneura* (comp. fig. 10 d with KYLIN fig. 24 d—e). The ripe carpospores are ovoid or slightly obovoid.

Tetrasporic plant. The tetrasporophylls occupy the same position as the female leaflets (fig. 10 b). Generally they are broadly ovate and acute. From the stipes of

larger ones new sporophylls arise, and this process may become repeated, resulting in a dense tuft of leaflets (fig. 10 e). Transitions between proper sporophylls and fertile segments of the frond, each with an apical sorus, are not uncommon. The average size of the sporophylls is 4—5 × 3 mm. The sori occupy the surface on both sides, leaving a narrow sterile brim. The formation of the tetraspores does not offer anything very particular; se fig. 11 c—d.

Apical growth. This must be examined on the minute proliferations, as the rapid formation of cortex very quickly obscures the view. A young leaflet is seen in fig. 12 a. It is built after the scheme of *Delesseria*, but as yet no top-cells of 3. order are developed;

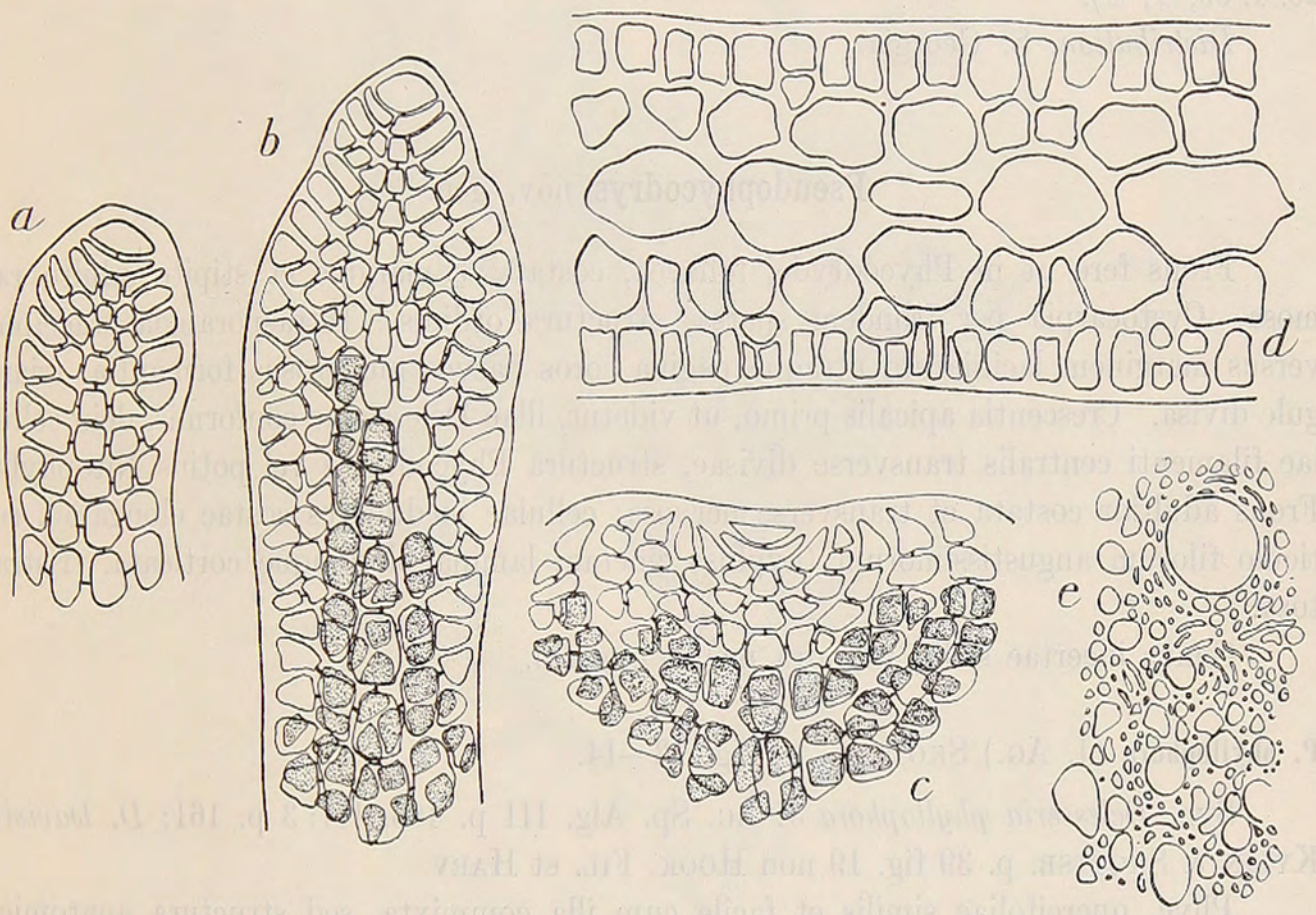


Fig. 12. *Microrhinus carnosus:* **a**—**b** small proliferations, showing growth modus; **c** older apex; **d** cross section of lamina near margin, **e** of old stipe; a—d × 240, e × 70. — Cortex cells dotted.

these are visible in fig. 12 b, a somewhat later stage, where the formation of cortex has already begun. Such top-cells do not, as far as I can see, ever become active, the cells of the central filament do not get much elongated, so that little space is left for the development of branches of 2. order. Fig. 12 c shows an older apex.

Formation of cortex and anatomical structure. The frond of *Microrhinus* is polystromatic throughout, also the margin of the lamina, save for the very tip. In this it agrees with *Pantoneura*. The formation of cortex is illustrated in fig. 12 b—c. The cross section through the marginal parts (fig. 12 d) counts about five cell layers. The formation of hyphae begins early in the costa; in the old midrib the original elements are separated by a thick tissue of hyphal filaments, most of them running longitudinally (fig. 12 e). Hyphae are numerous in the »wings» also, making the midrib less prominent and less defined than in many other members of the family.

Microrhinus is more closely related to *Pantoneura* than to any other genus. It differs considerably in the outline of the frond, in the clustered fertile leaflets etc.

Distribution: S. Georgia.

Pantoneura Kylin

P. plocamioides Kylin in K. & Skottsb. p. 47, fig. 23—24.

South Georgia: Cumberland Bay, Boiler Harbour, sublit. 5 m (St. 48, 20. 4. 09, ♀, ⊕).

Distribution: S. Georgia.

Pseudophycodrys nov. gen.

Frons fere ut in Phycodryde, foliacea, costata, e margine et stipite adulto ramosa. Cystocarpia per frondem sparsa, structura ordinis. Tetrasporangia praecipue versus marginem laciniarum utraque pagina soros parvos numerosus formantia, triangule divisa. Crescentia apicalis primo, ut videtur, illae Delesseriae conformis, dein cellulae filamenti centralis transverse divisae, structura Phycodrydis vel potius Nitophylli. Frons adultior costata et transverse nervosa; cellulae medullares costae elongatae, reticulo filorum angustissimorum (hyphis) cinctae; lamina plerumque corticata, tristratosa.

Genus incertae sedis, ut infra melius exposui.

P. phyllophora (J. Ag.) Skottsb. — Fig. 13—14.

Syn. *Delesseria phyllophora* J. Ag. Sp. Alg. III p. 486, III: 3 p. 161; *D. Davisii*, Kylin & Skottsb. p. 39 fig. 19 non Hook. Fil. et Harv.

Phyc. quercifoliae similis et facile cum illa commixta, sed structura anatomica nec non crescentia apicalis diversa. Specimina adulta sat magna, ad dm vel ultra longa. Lamina inciso-lobata et laciniata, irregulariter denticulata, crasse costata et opposite vel alterne nervosa nervis plerumque furcatis, stipitata nec non e stipite prolifera. Cystocarpia in nervis vel inter illos sparsa, valde conica, orificio incrassato.

South Patagonia: Fitzroy Channel, sublit. 13—14 m, gravel (St. 17, 18. 4. 08, ♀). Fuegia: Slogget Bay, drifted (St. 47 b, 16. 3. 09, ⊕). Falkland Islands: Westpoint Island, tide-pools, in dark corners (St. 8 a, 5. 12. 07); Sparrow Cove, sublit. 11—13 m, shells and gravel (St. 9, 10. 1. 08). — The following specimens mentioned by the writer l. c. must be referred here: Falkland Islands: Port William, 40 m, sand and stones (St. 33, 4. 7. 02, ⊕, s. n. *D. Davisii*); Port Louis, 2 m, stones (St. 40, 28. 7. 02, ⊕), 7 m, gravel (St. 41, 28. 7. 02) and 1 m, sand, probably drifted (St. 44, 9. 8. 02), all s. n. *D. quercifolia*.

Pseudophycodrys presents a remarkable likeness to *Phycodrys quercifolia*, and some specimens also resemble *D. Davisii*, but the characters indicated show that from either

it is widely distinct. The smallest proliferation, such as illustrated in fig. 14 a, strongly recalls the tip of a true *Delesseria*. But in this and allied genera the cells of the central row never divide transversely, while, in *Phycodrys* and its allies, intercalary cross walls appear early, and the cell thus cut off carries fewcelled lateral branchlets, inserted between the ordinary branches of 1. order (see below, fig. 15 c). In fig. 14 b, a marginal tooth of *Pseudophycodrys*, the analysis is still easy enough, and here o n e intercalary cross wall (*i-i*) is observed, and fig. 14 c of a growing apex presents a structure distinct from that of *D. sanguinea* but also from *Phycodrys*. Still I believe that a type like

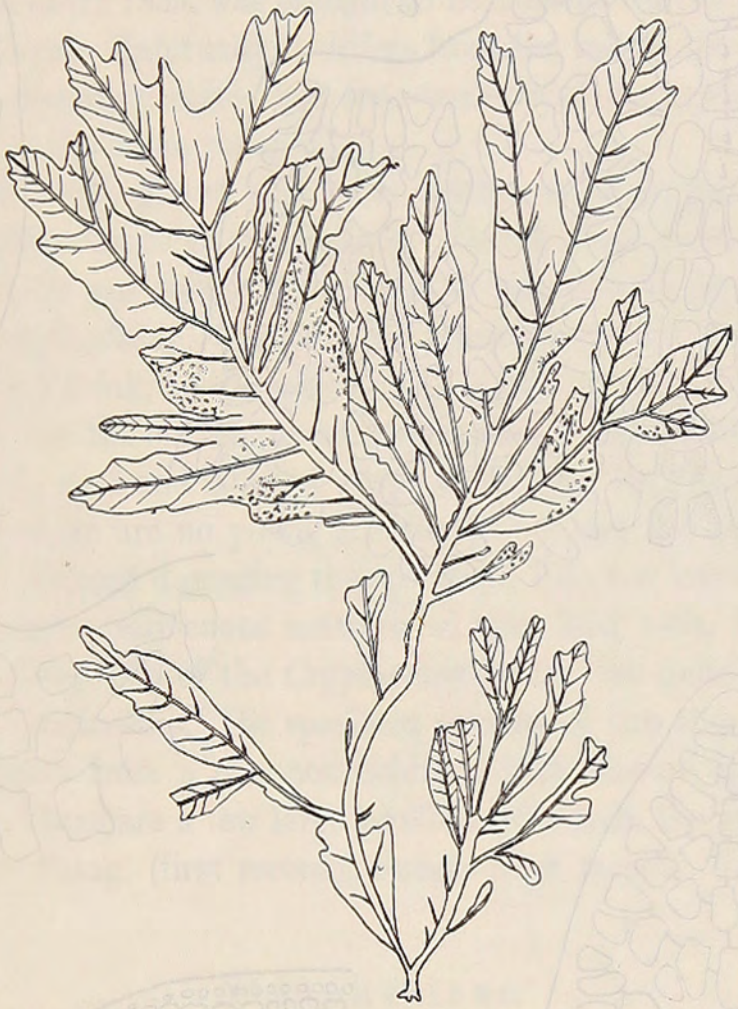


Fig. 13. *Pseudophycodrys phyllophora:* tetrasporic specimen, nat. size.

Pseudophycodrys may be derived from *Delesseria* or rather *Membranoptera* STACKH., becoming nitophylloid by intercalary divisions. The cells of the central region elongate and form the costa, and lateral veins are developed in the same manner, directed towards marginal top-cells: this formation of veins is, so to say, secondary, what explains that they are not strictly opposite but quite as often alternate.

The occurence of hyphae in costa and larger veins is a character of the Delesserieae (fig. 14 d), never found in the *Phycodrys* or *Nitophyllum* assemblage. The young lamina is monostromatic, gradually getting corticated. Mostly there is only a single layer of cortex cells.

The procarps are not formed on the veins, but often close to them, in which case the wall of the cystocarp appears fused with the cortex of the vein. Or, a secondary venule may be formed, joining the cystocarp with a vein. In any case, the costa or veins

are not the obligate birth-place of the procarps, as in *Delesseria*, *Hypoglossum* etc.; PHILLIPS has advanced that if a cystocarp is seated on a prominent vein in *Ph. sinuosa*, this vein has arisen after the procarp was formed (l. c. p. 190).

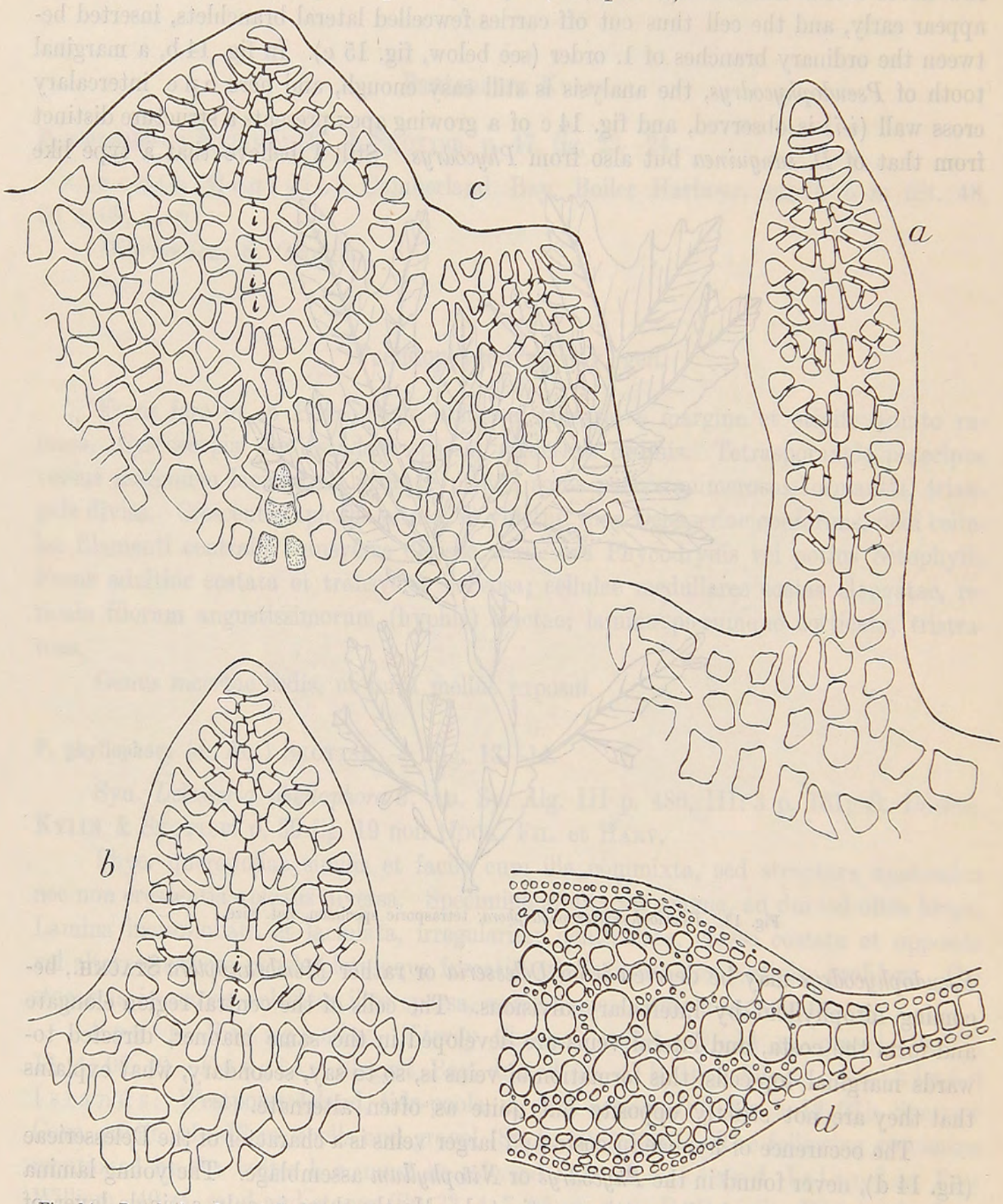


Fig. 14. *Pseudophycodrys phyllophora:* **a** minute proliferation, **b**—**c** marginal teeth, × 480; **d** cross section through old costa and wing, × 70. — i cells divided by intercalary walls. Cortex cells dotted.

Evidently *Pseudophycodrys* cannot be united with any other existing genus. It is difficult to assign the right position to it. It combines characters of *Delesseria* (the young apex, anatomy of costa), *Phycodrys* (branching, intercalary divisions, site of pro-

carps) and *Nitophyllum* (formation of veins etc.), but is not, strictly spoken, intermediate between them.

Fortunately, the identity of AGARDH's *D. phyllophora* and my *Pseudophycodrys* is well established. Herb. AGARDH contains three specimens. No. 31275 (s. n. *D. quercifolia*, named by HOOKER) bears AGARDH's remark: »an potius D. phyllophora?» It presents the typical features of *Pseudophycodrys* (KYLIN in letter to the writer). No. 31276, Falkl. 1842, HOOKER, is a good female specimen, with cystocarps scattered over the frond, generally on or near the veins. The anatomical structure is typical. No. 31277, Falkl. Capt. ABBOTT 1859, was brought to *D. crassinervia* (by HARVEY?). AGARDH named it *D. phyllophora*. Habitually it differs from the rest in the numerous proliferations from the old, denudate costa, but the structure of the apex and midrib leaves little doubt that it is the same thing.

COTTON, Crypt. Falkl. p. 183 says there are two or three plants at Kew, labelled *D. crassinervia* but referable to *D. phyllophora*. Two of these were sent to me for comparison: neither of them was collected by HOOKER (contrary to AGARDH no. 31276), nor do they belong to *phyllophora*. One labelled »Berkeley Sound Aug. 1842, LYALL, D. crassinervia β», must, I think, be the same as a specimen in Brit. Mus. mentioned above under *D. macloviana*, but the old lamina is broader than in any of my plants. The other, also called *D. crassinervia* β and labelled »Cape Horn sept. 1842 Capt. CROZIER», differs from all others. As there are no young growing points and the anatomy of the costa cannot be made out without damaging the specimen, I do not know what it is, but the lamina presents a most conspicuous network of very long cells, forming microscopic veins as in certain *Nitophylla* of the *Cryptoneura*-group, but quite unlike the veins in *Apoglossum* or in *D. macloviana*. The specimen consists of two stipitate, narrow oblong (10 × 1—1,5 cm) fronds from a common holdfast, with obscure opposite nerves, lined by tetrasporic sori. There are a few large proliferations from the stipe and costa.

Distribution: S. Patag. (first record), Fuegia (first record), Falkl.

Nitophylleae.

Phycodrys-group.

Phycodrys KÜTZ.

Ph. antarctica SKOTTSB. comb. nov.

Syn. *Delesseria antarctica* SKOTTSB. in KYLIN & SKOTTSB. p. 39 pl. 1. f. 2.

Nearly related to *Ph. sinuosa*. Structure of apex and frond typical.

Ph. quercifolia (BORY) SKOTTSB. comb. nov.

Syn. *Delesseria quercifolia* BORY, KYLIN & SKOTTSB. p. 44; *Schizoneura quercifolia* J. AG. Sp. Alg. III: 3 p. 161.

Falkland Islands 1908, without further locality.

In Sp. Alg. II AGARDH brought this to the *Phycodrys* section, later transferring it to *Schizoneura* J. AG. 1898 (not *Schizoneura* SCHIMP. 1844, a fossil genus). I have tried

in vain to extract from AGARDH's lengthy discussion any features distinguishing *Schizoneura* from other genera. His so-called twin sori, i e. that tetrasporangia are found opposite each other on both surfaces of the frond or leaflet, is nothing peculiar to *Schizoneura* but was observed in other genera as well. AGARDH was aware that his genus included two types of anatomical structure. I have little experience of some of his species, but as far as I can judge, *S. subcostata* and *Davisii* belong to *Nitophyllum*; the affinities of *S. Hookeri* and *laurifolia* are unknown, but they are hardly congeneric. Finally, *S. quercifolia* is, in all essential characters, a true *Phycodrys*. It differs from the type of the genus, *Ph. sinuosa* KÜTZ. Sp. Alg. p. 784, in the tetraspores forming numerous sori on the main frond, but I shall not venture to separate it from *Phycodrys* for this reason only. It is nearly related to *Ph. Setchellii* SKOTTSB. from California and has been confounded with this. Figures of both species were published in my paper on the latter.

Distribution: Chiloé (acc. to GAY); W. Patag., San Rafael Bay (acc. to DE TONI and FORTI); Fuegia; Falkl.; Kerg. (acc. to ASKENASY).

Ph. austrogeorgica nov. spec. — Fig. 15.

Frons lanceolata, membranacea, permanifeste costata et penninervia, margine regulariter denticulata, parce inciso-lobata, ad 20 cm alta et 1 cm lata, adulta e stipite et costa pinnigera, pinnis numerosissimis acutis, majoribus et minoribus commixtis. Cystocarpia in foliis 1—5 cm longis per frondem inter nervos sparsa, pusilla, hemisphaerica, structuram generis praebentia. Sori in phyllis subteretibus angustis acutis, 1—2 mm solum longis, secus costam pullulantibus, vel in dentibus marginalibus incrassatis evoluti. Tetrasporangia utroque latere stratum efficientia, cellulis sterilibus arcte cincta, triangule divisa. Crescentia apicis pro genere typica. Lamina monostromatica, costa nervique incrassati, medulla cellulis majoribus, cortice valde polystromatico cellulis pulchre radiatis minoribus, structura igitur pro genere omnino typica. Planta mascula non inventa.

South Georgia: Bay of Isles, Rosita Harbour, sublit. circ. 8 m, rocks and stones (St. 52, 25. 4. 09, ⊕). Also in the collection of the German Expedition 1882—83: 1) »South Georgia» 2) »Pinguin Bay, nördl. Strand der Landzunge», 3. 7 1883, ♀.

Not like any other species that I know of and differing from the typical species in the copious proliferations, not only from the margin of the old denudate costa, but also from the midrib of the lamina (fig. 15 a). The lobes of the frond sometimes grow out to form segments as in *Ph. sinuosa* or *quercifolia*. The sporophylls are very like the marginal ciliae in *sinuosa*, but are as a rule seated on the midrib, while sometimes marginal teeth bear tetrasporangia, both kinds occuring on the same leaflet as seen in fig. 15 b. Thus I find strong reasons to refer the new species to *Phycodrys*, with which it agrees in apical growth (fig. 15 c) and structure of the costa (fig. 15 d—f).

Distribution: S. Georgia.

Cladodonta nov. nom.

Syn. *Glossopteris* J. AG. Sp. Alg. III: 3 p. 194 (1898) non BRONGN. 1828 (genus fossile).

Frons a margine ramosa, crassa, omnino polystromatica, costata et opposite venosa, margine ubique dentibus stellatim ramosis ornato. Cystocarpia per frondem inter venas

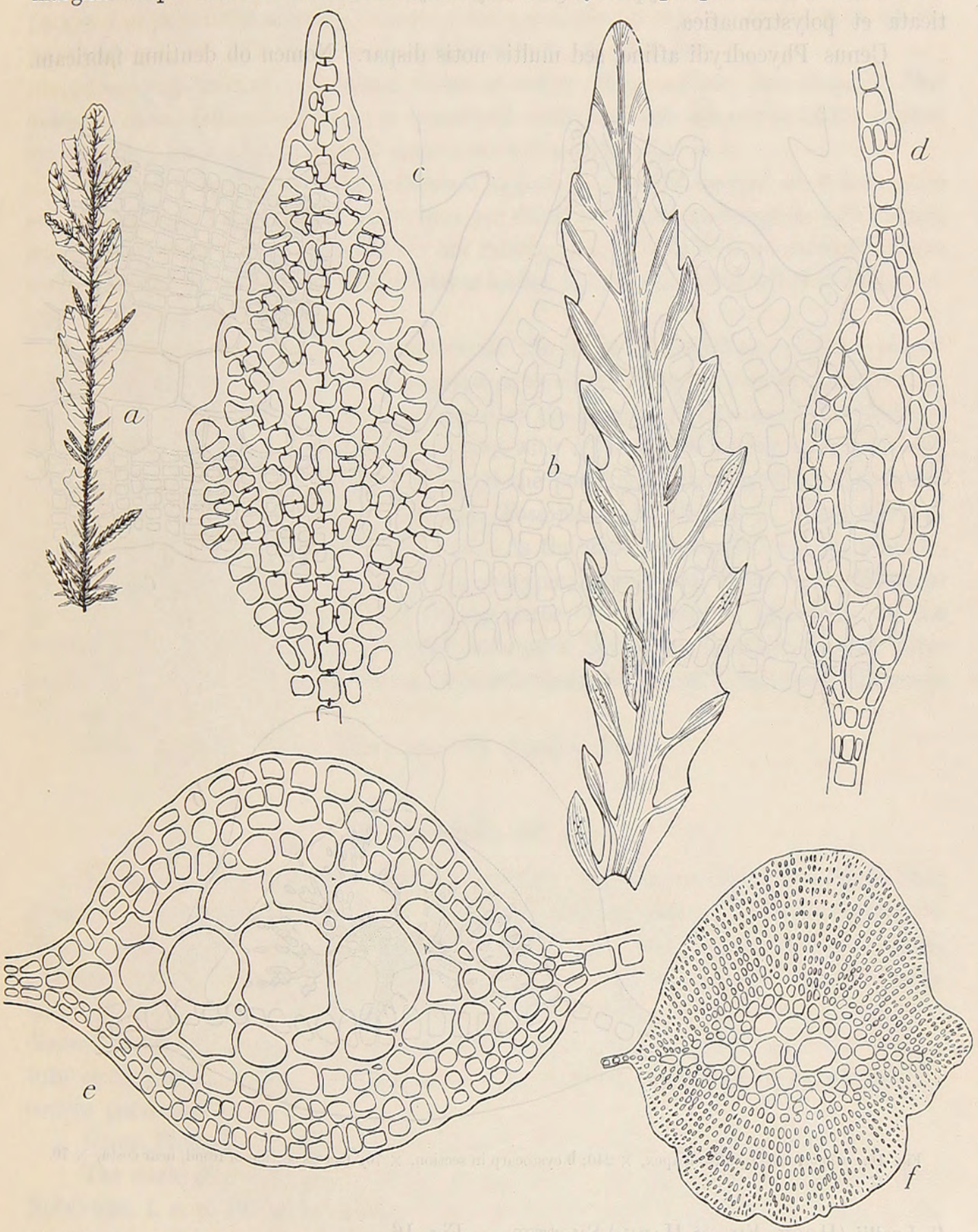


Fig. 15. *Phycodrys austrogeorgica:* **a** part of specimen, nat. size. **b** pinna with tetrasporangia, × 15; **c** growing apex, × 360; **d**—**e** cross sections through younger and older costa, × 180; **f** through old stipe, × 50.

sparsa, obtuse conica, structura Nitophylli. Tetrasporangia in lamina laciniisque inter nervos soros formantia, triangule divisa. Crescentia apicalis ut in gen. Phycodrys, sed

e cellulis apicalibus secundariis generantur dentes regulariter oppositi, mox virgati. Structura anatomica cum typo illo gen. Phycodrys congruens, sed tota frons mox corticata et polystromatica.

Genus Phycodrydi affine, sed multis notis dispar. Nomen ob dentium fabricam.

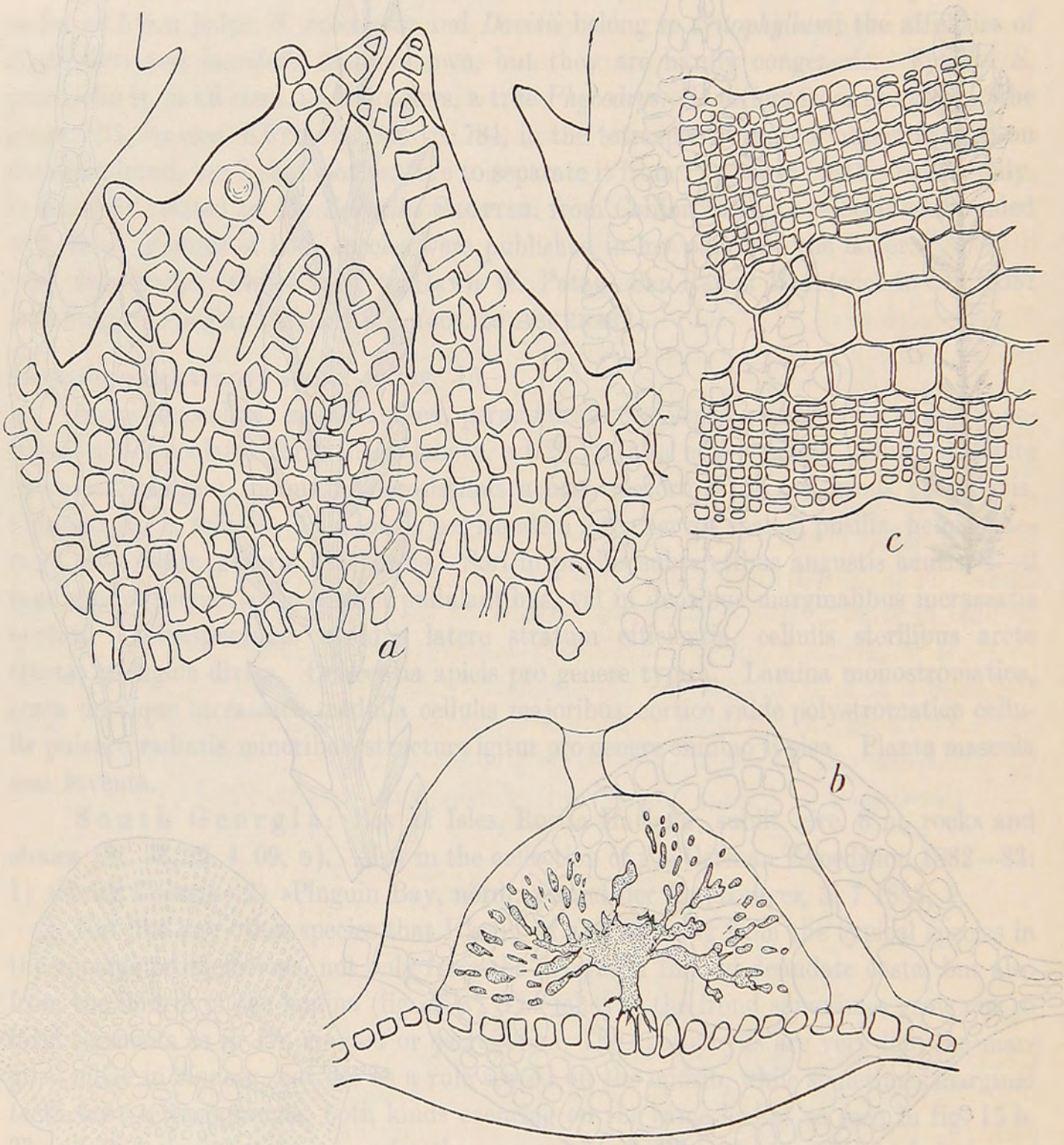


Fig. 16. *Cladodonta Lyallii:* **a** apex, × 240; **b** cystocarp in section, × 70; **c** cross section of frond, near costa, × 70.

C. Lyallii (Hook. Fil. et Harv.) Skottsb. — Fig. 16.

Syn. *Delesseria Lyallii* Hook. Fil. et Harv.; Kylin & Skottsb. p. 43; *D.* (Odontophora) *Lyallii* J. Ag. Sp. Alg. III p. 482; *Glossopteris Lyallii* J. Ag. l. c. III: 3 p. 194 (nomen Odontophorae ab ipso Agardh rejectum).

South Patagonia: Fitzroy Channel, sublit. 13—14 m, gravel (St. 17, 18. 4. 08, ♀). Fuegia: Slogget Bay, in beach drift (St. 47 b, 16. 3. 09, ⊕). Falkland Islands: Westpoint Island, small specimens in tidal pools (St. 8, 5. 12. 07, ⊕); Sparrow Cove, 11—13 m, shells and gravel (St. 9, 10. 1. 08).

The cystocarps have not been observed before: they are very like those of *Phycodrys* or *Nitophyllum*, with a large fusion cell connected with some cells of the central lamella, and horizontal, pectinate sporogenous filaments (fig. 16 b).

AGARDH's opinion that the branched appendages of the margin are transformed into sporophylls is not correct; truly, they are dwarf segments, homologous with normal marginal lobes, but proper sporophylls are missing, and I have seen no example of one of these teeth developing into a larger lobe or leaflet, in fact, the apical cell of these appendages soon becomes inactive.

AGARDH based his genus *Glossopteris* on the mode of branching, position of sori (called »single») etc., but in his long description we shall not find any valid reason for the creation of a new genus, if not the presence of the appendages, to which he paid but little attention. As he compares *Glossopteris* with *Hypoglossum* rather than with any other genus, it is obvious that he misjudged the position of these genera. NIENBURG l. c. pointed out the close relations between *Glossopteris* and *Phycodrys*. They have all the more important characters in common. As the name *Glossopteris* cannot be used, *Cladodonta* was proposed above. It is a monotypical genus and differs from *Phycodrys* by the polystromatic lamina (fig. 16 c), the shape of the marginal branches, and the peculiar appendages (fig. 16 a). Similar structures have been found in certain Nitophylla, as *N. erosum* HARV., and also in *Delesseria denticulata* HARV., the type of the genus *Heterodoxia* J. AG.

Distribution: S. Patag. (first record), Fuegia, Falkl.

Anisocladella nov. gen.

Frons e margine distiche decomposito-pinnata, angusta, costata, nervis lateralibus nullis, margine eximie nec non alterne serrata, dentibus pro latitudine frondis majusculis. Plantae sexuales ignotae. Tetrasporangia soros supra costam confluentes formantia, triangule divisa. Crescentia apicalis ut in gen. Phycodrys, sed segmenta lateralia cellularum centralium inaequalia, uno (dextro vel sinistro regulariter alternante) excrescente, dentem vel ramum formante, altero valde reducto; margo igitur alterne serratus. Structura costae polystromatica, medulla cellulis maximis stratum singulum formantibus, cortice parvicelluloso radiato.

Genus Phycodrydi affine, crescentia singulari diversum: ex eo nomen.

The mode of growth presented by *Anisocladella* has been described and figured by NIENBURG, l. c. p. 197 under *Neuroglossum Andersonianum* J. AG. His analysis of the apex is not satisfactory, but his conclusion that the type is, in all important points, like *Phycodrys sinuosa* is quite correct. *Neuroglossum* (type: *N. Binderianum* KÜTZ.) is a widely different genus, and *N. Andersonianum* must be removed from this and referred to *Anisocladella*.

Two growing tips are illustrated in fig. 17 a—b. The structural principle is the same as in *Phycodrys*, but in the new genus we find a marked difference between the lateral branches, as of each pair only one, alternately right and left, develops into a marginal tooth, while the other appears reduced. The slight difference in the anatomy is, perhaps, of less importance, although the monostromatic medulla (fig. 17 c) is quite conspicuous. The anatomy of *Neuroglossum Andersonianum* seems to be the same as in my species. The cystocarps are unknown in both. NOTT, Nitophylla of California p. 32,

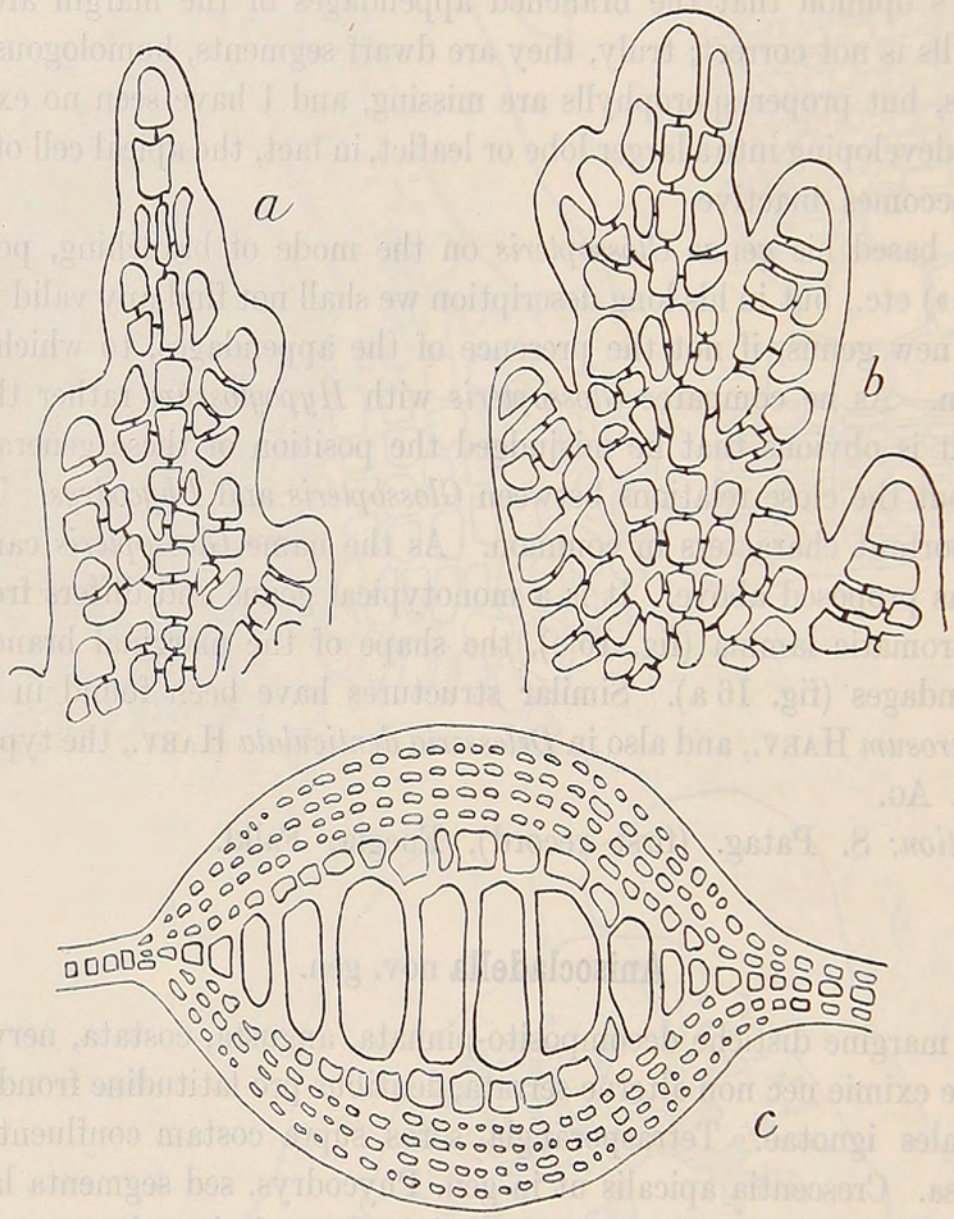


Fig. 17. *Anisocladella serratodentata:* **a**—**b** growing tips, × 480; **c** cross section through frond, × 70.

brought *Neur. Andersonianum* to *Nitophyllum*, without an examination of the apex. His figure (pl. 9 f. 45) shows that it is not conspecific with my species. The prostrate part of the frond spoken of by NOTT is absent in the latter, where I observed the erect frond springing from a small basal disc, that also emits a few hapters.

A. serratodentata SKOTTSB. nov. comb. — Fig. 17.

Syn. *Delesseria* (Erythroglossum) *serratodentata* SKOTTSB. in KYLIN & SKOTTSB. p. 45 f. 22.

L. c. I compared this species with *Erythroglossum bipinnatifidum* (MONT.) J. AG.

I have seen authentic material of this; it has the structure of *Phycodrys* and very likely belongs to that genus. In Sp. Alg. III *Erythroglossum* formed the section *Stenoglossum* of *Delesseria* s. l. The first species mentioned is *E. Schousboei* J. Ag., figured in Florid. Morphol. t. 26, f. 12—17. This is perhaps a *Phycodrys*, but no safe conclusion can be drawn from Agardh's figures. I know very little about the other species; the brief descriptions do not allow me to locate any of them as belonging to *Anisocladella*. Agardh compared *Erythroglossum* with *Hypoglossum* and *Apoglossum*, two quite different types.

Distribution: S. Georgia.

Nitophyllum-group.

Platyclinia J. Ag.

P. fuegiensis nov. spec. — Fig. 18.

Syn. *Nitophyllum Grayanum*, Kylin & Skottsb. p. 32 non J. Ag. Sp. Alg. III p. 449, III: 3 p. 42.

Frons habitu Nitophylli sect. Aglaophylli, breviter sed distincte stipitata (stipite 4—6 mm longo), elliptica-suborbicularis, margine saepe plicata et lacerata nec non profunde et irregulariter fissa, 6—7 cm longa ac fere lata (vel angustior), basi cuneata, ima basi conspicue costata, nervo simplici vel ramoso supra basin mox evanescente et interdum haud distincto. Proliferationes e stipite et lamina adulta ortae, minimae crescentiam apicalem distincte monstrantes. Cystocarpia per frondem sparsa, valde prominentia, structuram Nitophylli praebentia. Tetrasporangia soros ambitu maxime irregulares subconfluentes supra frondem sparsos formantia, 60—75 μ diam. Planta mascula ignota. Structura anatomica frondis ut pro genere descripsit nec non depinxit J. Agardh. Color carneus.

North of Staten Island, near Observatory Islet, sublit. on calcareous algae, 36 m, gravel and pebbles (St. 1, 6. 1. 1902, ♀, ⊕).

As my specimens agree with the description of *N. Grayanum*, they were identified with this. Later I have seen Agardh's type (Falkl., Capt. Abbott 1859); this is different and seems to belong to *Nitophyllum*. Probably it is the same as one of Hooker's species, but as all the material consists of one small frond, I leave this question open. Agardh brought it to sect. *Myriogramma* (l. c. III: 3): »fronde . . . . soris vix rite limitatis fere diversiformibus, nec ordine certo per paginas sparsis, quasi litteris, inscripta». This description fits my plant very well, but the original diagnose of *N. Grayanum* does not speak of any irregular sori, looking like letters, but simply »soris minutis rotundatis per totam frondem sparsis», exactly as they are in Agardh's type specimen. I cannot explain this discrepance.

The tip of the smallest proliferation that I have seen (fig. 18 a) suggests the *Delesseria*-type, but the activity of the top-cell is not of very long duration, and the regular arrangement of the cells cannot be traced very far down (fig. 18 b). Still, the difference from *Nitophyllum* is not to be overlooked, and the anatomy of the frond is decidedly

distinct. As a rule there are three, in older parts as many as five, layers, a central one of very large cells (fig. 18 c), clearly visible also in surface view (fig. 18 d—e). In the younger lamina (18 d), 2 to 4, in the older (18 e) as many as 10 cortical cells correspond to one central cell. I have not met with this structure in *Nitophyllum*, where the cortical cells, in the lamina if not in the costa, are of the same size and shape as the central cells from which they are cut off, while, in *Hemineura*, we find a structure approaching that of *Platyclinia*.

Platyclinia was described by AGARDH in Sp. Alg. III: 3 p. 103 and brought to Neuroglosseae; in anatomical characters, it shows a superficial likeness to *Neuroglossum*.

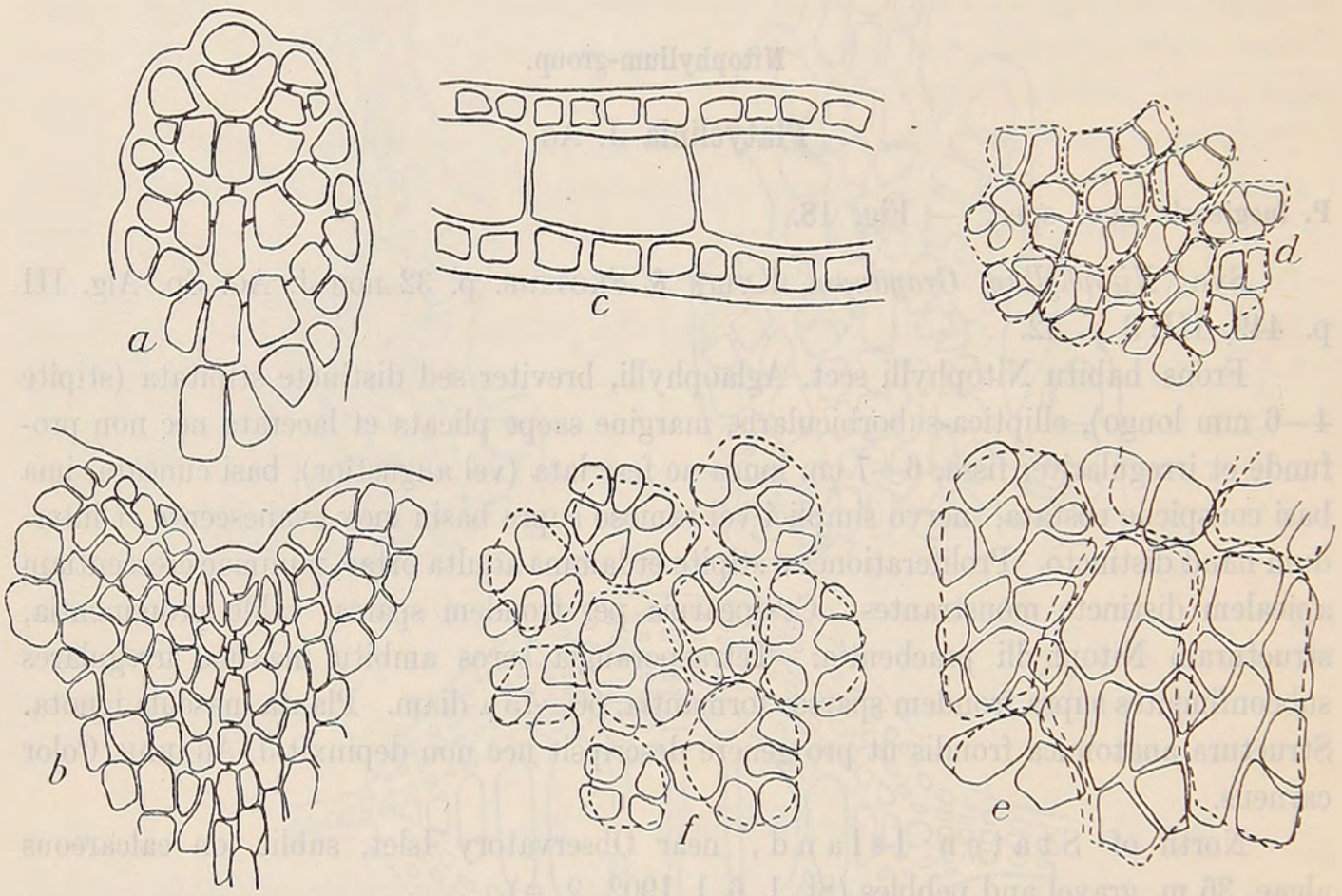


Fig. 18. *Platyclinia;* **a**—**c** *P. fuegiensis* **a** minute proliferation, **b** older tip, **c** frond in section and **d**—**e** seen from surface, cells of central lamella with dotted outlines; **f** *P. Crozieri* Herb. AGARDH no. 31109, surface view. **a**—**b** × 360, **c**—**f** × 180.

P. stipitata (HARV?) is the species mentioned first, but *P. Crozieri* should rather be regarded as the generic type (comp. AGARDH l. c. p. 107). The type specimen of *P. stipitata* was collected by Miss HUSSEY on the coast of Australia and bears tetraspores. The figure in Anal. Algol. Cont. V, t. 3 f. 9 represents a cross section of this plant. Under the same name lies another specimen, collected by MEREDITH in Tasmania (no. 31098), and this has ripe cystocarps. It is no *Platyclinia*, but a monostromatic *Nitophyllum* (stipitatum HARV.?). Regarding *P. Crozieri*, I have shown l. c. p. 31 that AGARDH identified *Nitophyllum Crozieri* HOOK. FIL. et HARV. from Cape Horn with a plant from Australia showing *Platyclinia*-structure, that they are altogether different and that the former is a true *Nitophyllum* in every respect. Indeed, the binomial *Platyclinia Crozieri* is absurd and ought to disappear, because it arose from a wrong identification of two very distinct

species, and Capt. CROZIER had nothing whatever to do with the Australian plant. The latter was collected by B. WILSON; a fragment of the frond, seen from the surface, is illustrated in fig. 18 f (Port Phillips, Herb. AGARDH no. 31109). The material is cystocarpic and homogeneous (KYLIN in letter to the writer). But then, how are we to explain the peculiar figure published by AGARDH in Anal. Alg. Cont. V t. 3 f. 7? The description says it is a section through a cystocarp. In his diagnose of the genus AGARDH described the branches of the gonimoblast as decumbent along the bottom of the cystocarp, bundles of spore-producing filaments arising in tufts, and this he pretends to show in the figure cited. I can not understand this figure: it is no cystocarp, but looks like a fold of the thallus, embracing tufts of moniliform chains and long sterile threads (of an epiphyte?) growing out of a very anomalous orifice. And in the figure the frond does not show the structure of *Platyclinia*, but of a typical *Nitophyllum*, while I can assure that WILSON's plant is a *Platyclinia*.

The cystocarp of *P. fuegiensis* has the structure of *Nitophyllum*, and the radiating filaments of the gonimoblast do not become connected with cells of the central lamella.

Distribution: In the sea E. of Fuegia.

Neuroglossum KÜTZ.

N. ligulatum (REINSCH) SKOTTSB., KYLIN & SKOTTSB. p. 37. — Fig. 19.

South Georgia, sublitoral: Cumberland Bay, Boiler Harbour 5 m (St. 48, 20. 4. 09); Bay of Isles, Rosita Harbour, 8 m (St. 52, 25. 4. 09, ♀); Moraine Fiord, in beach drift (18. 4. 09, ⊕), small specimens epiphytic on *Phyllogigas*, and one larger plant (60 cm long), intact and broad-leaved, attached to a small stone, with strong flattened hapteres forming a large holdfast.

Already in small leaflets, with a length of a few mm, the strictly apical growth has become suspended and there is no trace of a top-cell. Only by searching the almost microscopic proliferations arising in tufts on the old stipe and midrib the active top-cell was found. The youngest stages resemble *Polycoryne*: the lamina starts as a monosiphonous filament, the cells soon cutting off pericentral cells. The semiterete body thus formed is the stipe; the tip expands to a lamina, where, at first, a top-cell may be traced (fig. 19 a). The divisions do not follow the *Delesseria*-type, but perhaps *Phycodrys* or rather *Nitophyllum Gmelini* as figured by NIENBURG l. c. p. 190, but top-cell action soon ceases, and intercalary and diffuse marginal divisions become responsible for the enlargement of the frond (fig. 19 b). As the formation of cortex is extremely rapid (the greater part of the small lamina in 19 a is already corticated), it is very difficult to trace the cell connections and analyze the growth.

In Phyc. gener. t. 65 II KÜTZING has given good figures of the anatomy in *N. Binderianum*, the type species, showing the difference between *Neuroglossum* and *Nitophyllum*. In a polystromatic lamina of the latter the cells are isomorphous. *Neuroglossum* has a much thicker cortex than any *Nitophyllum* that I know — it should be noted that we are speaking of the lamina, not of the stipe and costa — and there is a

gradual decrease in the size of the cells from the centre to the surface: in a section two cells belonging to the layers next to the central one correspond to one of the latter, and so forth (fig. 19 c). *Botryoglossum* has a polystromatic frond as *Neuroglossum*, but with strictly isomorphous cells as in *Nitophyllum*.

Unfortunately, I have not seen any young cystocarps in *Neuroglossum*; in my specimens of *N. ligulatum* there are large mature carpospores filling the broad and low chamber, and the gonimoblast is indistinct. According to SCHMITZ, Nat. Pflanzenfam. I: 2 p. 412 the sporogenous branches are radiating and prostrate, and fusions are established with the cells of the central lamella, as in *Gonimophyllum*, q. v. AGARDH's figure, Anal. Algol. Cont. V t. 2 f. 7 a, shows nothing of this, but we have no reason to doubt

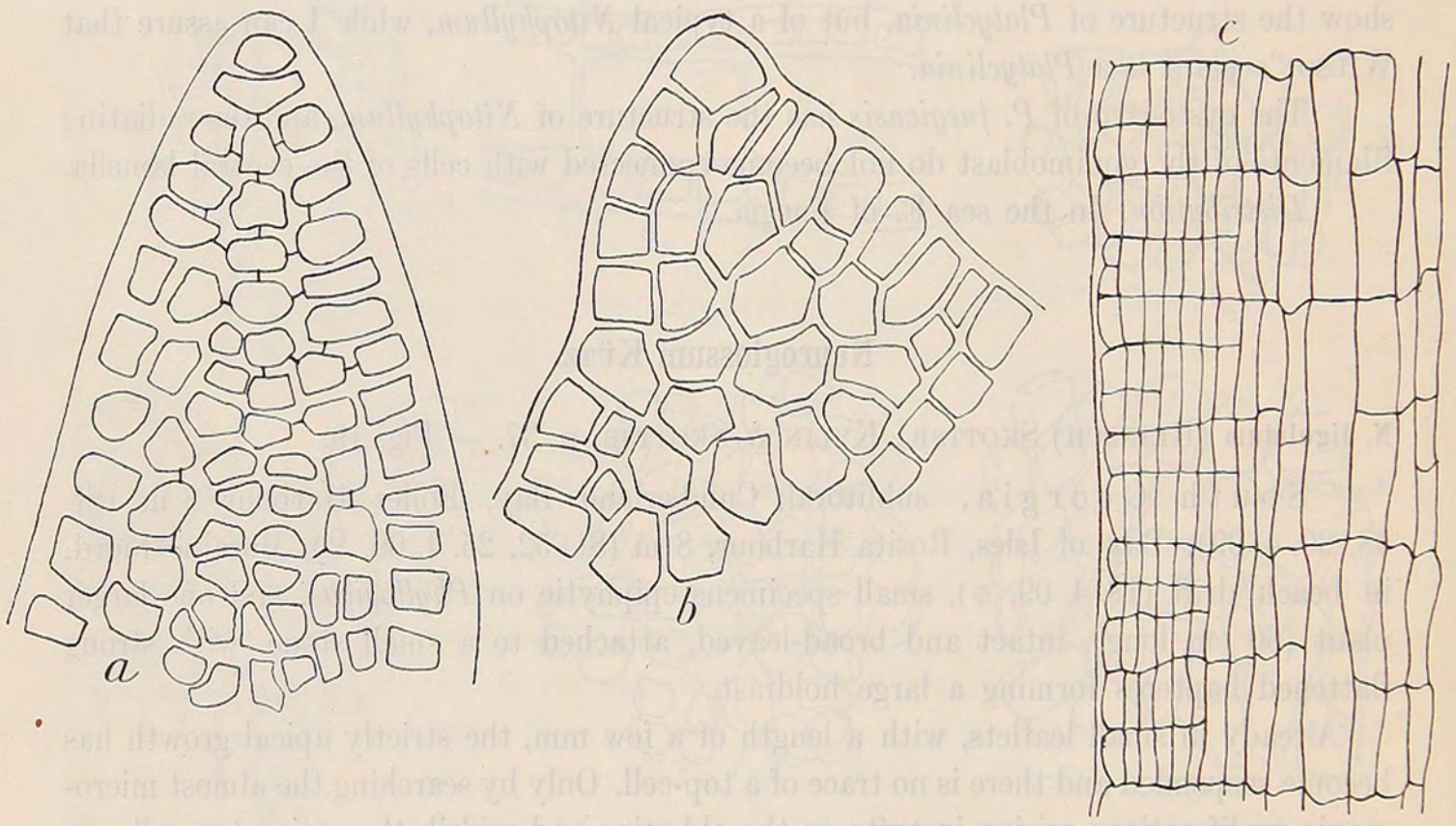


Fig. 19. *Neuroglossum ligulatum:* **a**—**b** very small proliferations (of b tip only), ×480; **c** length section through stipe, ×70.

the correctness of SCHMITZ' statement. This structure does not seem to have been observed in *Nitophyllum*. Another feature of some interest is the thick crown on the cystocarp, present in both species of *Neuroglossum*.

The tetrasporic sori are described by KÜTZING l. c. as spread along the margin of the leaf on both sides of the midrib. SCHMITZ found them »in den oberen Thallusabschnitten und auf proliferierenden Blättchen zwischen Mittelrippe und Blattrand». I have not seen them on very small leaves in *N. ligulatum*. DE TONI, Syll. Alg. 4: 2 p. 678 writes: »sori in foliolis exterioribus evoluti . . .», and in the key to the genera he has placed *Neuroglossum* in the division with special sporophylls. This is not correct, and it should be remembered that NOTT l. c. refers *Neuroglossum lobuliferum* J. AG., where the sori are developed in marginal lobes, to *Nitophyllum violaceum* J. AG.

Distribution: S. Georgia.

Nitophyllum Grev.

N. Crozieri Hook. Fil. et Harv. — Kylin & Skottsb. p. 31.

Fuegia: Slogget Bay, drifted (St. 47 b, 16. 3. 09, ♀, ⊕). Falkland Islands: Port William, on *Macrocystis* (St. 2, 7. 11. 07, ♂); Cape Pembroke, in tide-pools, small, perhaps doubtful specimens (St. 3 b, 7. 11. 07, ♂, ⊕); Halfway Cove, sublit. 8 m (St. 5, 25. 11. 07, ♀).

Distribution: Fuegia, Falkl.

N. lividum Hook. Fil. et Harv. — Kylin & Skottsb. p. 32.

Chiloé: San Pedro Island, 10 m, sand and gravel (St. 32, 28. 7. 08, ♀, ⊕). South Patagonia: Fitzroy Channel, 13—14 m, gravel (St. 17, 18. 4. 08, ⊕). Falkland Islands: Westpoint Island, in tide-pools (St. 8 a, 5. 12. 07); Cape Pembroke, in tide-pools (St. 3 b, 7. 11. 07, ♂, ♀).

Distribution: S. Chile to Fuegia, Falkl.

N. Smithii Hook. Fil. et Harv.; Cotton, Crypt. Falkl. p. 182. — Kylin & Skottsb. p. 33.

After an examination of Hooker's type material I bring the following specimens, left unnamed in the collection of 1902, to *N. Smithii*: Falkland Islands: Stanley Harbour, drifted (St. 47 b, 18. 8. 02, ♀), a good specimen growing on *Codium mucronatum*, with a branched stipe and cuneate-flabellate segments, veined in their lower portions; Hooker's Point, in tide-pools on sponges (St. 48, 18. 8. 02, ♂), one small but complete specimen, strongly ribbed.

Kützing and Agardh refer *N. Smithii* to *Cryptopleura*, where the frond has a network of microscopic veins, but these are missing in the type of Hooker, as defined by Cotton. Of the specimens from Graham Land, St. 95, named *Smithii*, one agrees very well with the type; in the other, the corticated nerves are continued by monostromatic veins, 2 or 3 cells wide.

I shall add a remark on the plant I called *N. fuscorubrum* in 1919, collected by me in South Georgia. It bears a strong external resemblance to this species, but a comparison with the type of Hooker (Kerguelen) shows a notable difference, for in *N. fuscorubrum* the superficial cells measure 25—35 μ against 45 to 80 μ in my plant. The former is thicker in section, and of a deeper almost brownish red colour, as the name indicates. A comparison with the type of *N. Smithii* shows that the South Georgian specimens approach this species more than any other. I have some pieces in alcohol, with coarse, distinct ribs, while the two dried specimens, each with an old branched stipe and numerous cuneate-oblong fronds, have no nerves at all. In the type specimen of *Smithii* there are several fronds from a common substratum, that hides the lower part of the stipes and cannot be removed without damage, and one of these fronds, about 6 cm long, is veinless. *N. fuscorubrum* from West Patagonia (De Toni and Forti

Contrib. p. 688) requires further study, as the species is known hitherto only from Kerguelen.

Distribution: Falkl., ? S. Georgia, ? Graham Land.

N. multinerve HOOK. FIL. et HARV. — KYLIN & SKOTTSB. p. 32.

Falkland Islands: Westpoint Island, in deep basins (St. 8, 5. 12. 07); Port North, drifted (St. 7 2. 12. 07, ⊕); Cape Pembroke, in tide-pools, scarce (St. 3 b, 7. 11. 07). South Georgia: Strömnaes Bay, 8 m, stones (St. 50, 24. 4. 09, ⊕).

Distribution: S. Chile to Fuegia, Falkl., S. Georgia (first record), Kerg., N. Zeal.

N. laciniatum HOOK. FIL. et HARV. — KYLIN & SKOTTSB. p. 33. — Fig. 20 a.

South Patagonia: Fitzroy Channel, on shells 13—14 m, common (St. 17, 18. 4. 08, ⊕). Fuegia: Slogget Bay, small specimens in tide-pools (St. 47, 16. 3. 09) and large ones washed ashore (St. 47 b, ♀, ⊕). Falkland Islands: Westpoint Island, in tide-pools (St. 8 a, 5. 12. 07); Cape Pembroke, in tide-pools (St. 3 b, 7. 11. 07).

Part of the material from St. 47 b, 1902 (with tetraspores) should be referred to this and not to *N. Durvillei*. The specimens from St. 34, 1902, are typical in every respect and in perfect accordance with the type of HOOKER (Herb. Kew). A young lobe is figured, 20 a.

Distribution: S. Patagonia, Fuegia, Falkl.

N. Durvillei (BORY) J. AG. — KYLIN & SKOTTSB. p. 34. — Fig. 20 b—c.

South Patagonia: Fitzroy Channel, 13—14 m, one small specimen on *Callophyllis* (St. 17, 18. 4. 09). Fuegia: Slogget Bay, numerous fine and very large plants in beach drift (St. 47 b, 16. 3. 09, ♀).

L. c. I expressed the view that COTTON's identification of *Delesseria platycarpa* in Fl. Ant. with *N. Durvillei* was correct. Since that I have seen a good set of HOOKER's plants at Kew, and they are identical with *N. Durvillei*, as I understand this. AGARDH had not seen *N. Durvillei* and left it among the dubious species. In his herbarium is a plant of HOOKER's *D. platycarpa* from Cape Pembroke, Falkl., no. 31073, and this is labelled *N. falklandicum* J. AG., but the name was not published.

N. Durvillei is characterized by the dichotomic ramification, the long, regular forked stipe of older specimens, the linear segments with their broad and short marginal lobes and conspicuous costa. As long as I have not seen BORY's type, my identification remains uncertain, but there is no doubt that my plants belong to *N. Durvillei* of COTTON, *Delesseria platycarpa* of HOOKER and *N. falklandicum* of J. AGARDH. My largest specimens, from Slogget Bay, come very near *N. semicostatum* J. AG. from New Zealand. The cystocarps are strongly prominent, conical with incrassate apex.

NIENBURG has described and figured a growing tip of *N. Durvillei*, resembling the type of *Pseudophycodrys* (see above). He does not tell where his material came from, but I cannot find anything like his figure in the material examined by me, although I

have seen a great number of young proliferations and lobes. Fig. 20 b—c illustrate the mode of growth as I have found it.

Distribution: S. Chile to Fuegia, Falkl.

N. condensatum (REINSCH) SKOTTSB. comb. nov. — Fig. 21.

Syn. *Delesseria condensata* REINSCH, Meeresalg. Südgeorg. p. 385, t. 7 f. 1—5; *D. laciniata* KÜTZ. Tab. phyc. XVI t. 19, KYLIN & SKOTTSB. p. 40; *D. propinqua* J. AG. in HOHENACKER, Alg. mar. sicc. no. 250; *D. pleurospora* HARV. p. p., J. AG. Sp. Alg. III, p. 483; *Pteridium* (?) *pleurosporum* (HARV.) J. AG. l. c. III: 3 p. 226 p. p.; *P. Bertrandii* COTTON Crypt. Falkl. p. 184 t. 8; ?*Nithophyllum affine* REINSCH l. c. p. 391 t. 5 f. 7—9.

Fuegia: Slogget Bay, old plants with densely proliferous stipe, in tide-pools (St. 47, 16. 3. 09, ⊕) and in beach drift (St. 47 b). Falkland Islands: West-

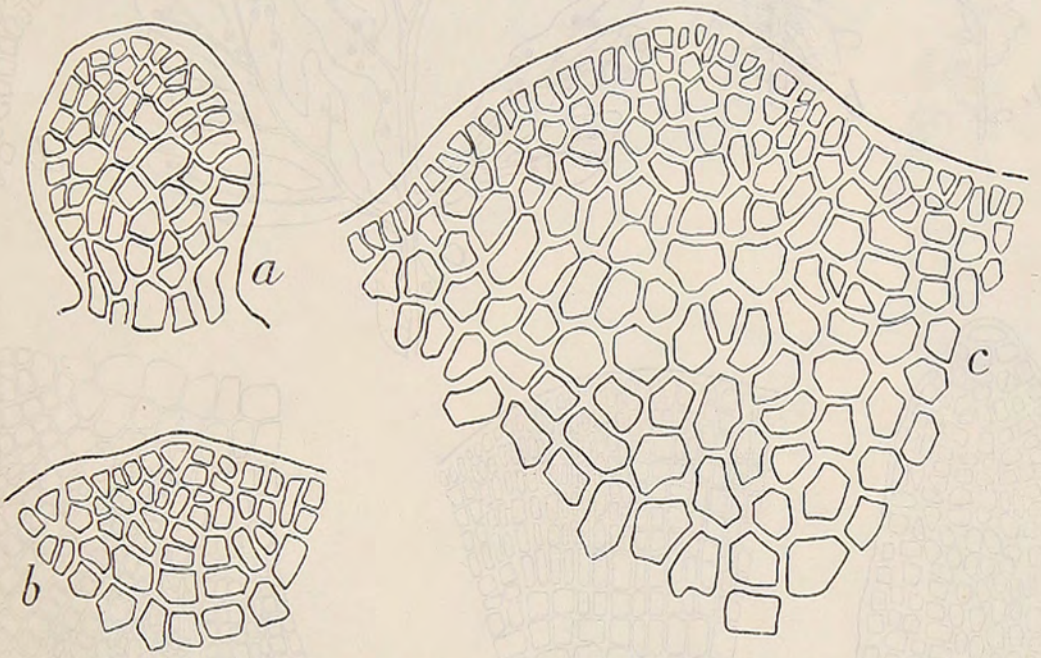


Fig. 20. Growing tips of a *Nitophyllum laciniatum*, **b**—**c** *N. Durvillei*, X 240.

point Island, in deeper pools (St. 8 a, 5. 12. 07, ⊕). South Georgia, sublitoral: Cumberland Bay, Boiler Harbour, 5 m (St. 48, 20. 4. 09); Bay of Isles, Rosita Harbour, very dissected fronds, 8 m (St. 52, 25. 4. 4. 09, ♀).

Younger specimens have a thin, flabellate frond with a short semiterete stipe; the lamina is split up into cuneate-falcate segments, with very conspicuous costa and irregular secondary veins not reaching the margin. Fig. 21 a—c gives a good idea of the habit, and other young specimens were figured by COTTON. Old plants are very much dissected, the ultimate segments being linear and often quite narrow, as in REINSCH's figure; the stipe is long, terete and completely hidden under the innumerable proliferations. There is not the slightest doubt that all the specimens in the collections of 1902 and 1907—09 that I have named *N. condensatum* really belong together; further, the South Georgian *Delesseria quercifolia* in my collection of 1902 also belongs here. It should be mentioned that I possess all sorts of transitions between the intact, young fronds and the old proliferating ones, and that fronds of very different habit may be found growing from the same disc.

The tetrasporic sori form patches on both sides of the veins, being confluent over the veinless end-lobes. The cystocarps are dispersed over the frond, on or between the veins as in other Nitophylla. They are conical with a thickened tip.

A conspicuous feature, observed in all specimens, are the small marginal papillae, illustrated in fig. 21 d.

The growing tip, fig. 21 e, shows that our species must be removed from *Delesseria*; neither can it be placed with *Phycodrys*. The apical cell is present in the smallest proliferations only as is the case in most Nitophylla. It shows about the same kind of growth

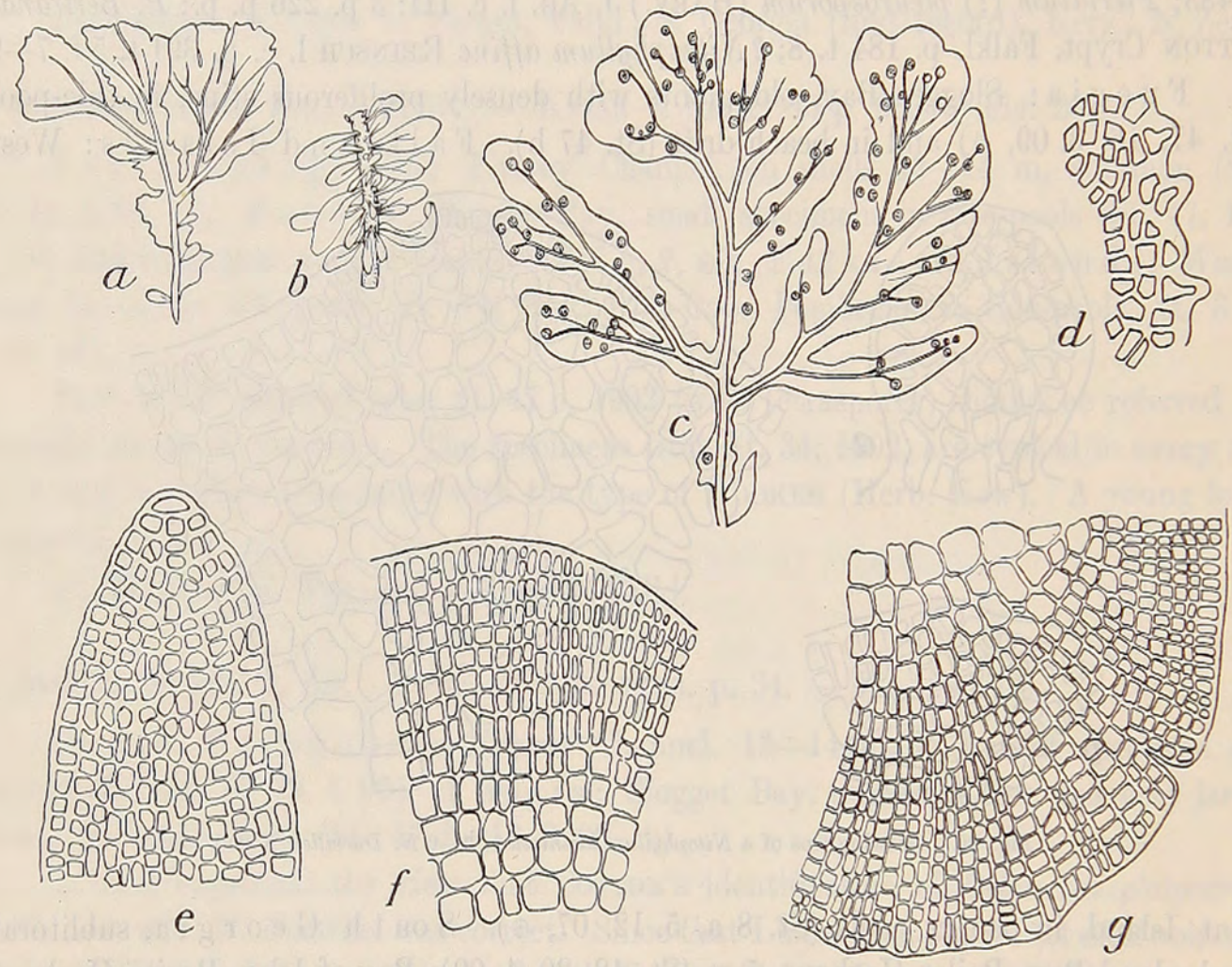


Fig. 21. *Nitophyllum condensatum:* **a**—**b**, top and basal part of one and the same frond, and **c** part of female plant, × 1 ⅓; **d** marginal papillae, × 240; **e** top of small proliferatoin, × 240; **f**—**g** cross sections of stipes, **f** of *Delesseria condensata* orig. REINSCH, **g** of *Pteridium Bertrandii* oig. COTTON, × 70.

as described for *N. punctatum* by NIENBURG, l. c. p. 186—188. The anatomical structure is entirely nitophylloid, see fig. 21 f. Nor can I find that the venation or branching speaks against referring *D. condensata* to *Nitophyllum*, in the wide sense that this genus is taken at present.

I have not seen the type of *D. laciniata* KÜTZ., but it may be the same: in any case, the combination *N. laciniatum* is preoccupied. *N. affine* REINSCH is, to judge from the figure, a young frond of *N. condensatum*. *D. propinqua* J. AG. has not been described; the specimens distributed by HOHENACKER clearly show that it is the same as *condensata*. AGARDH reduced both *propinqua* and *laciniata* to *D. pleurospora* HARV. from New Zealand, but type specimens of the latter in Herb. Kew look quite different. And a section through the stipe of *propinqua* has no likeness whatever to the figure of *D.*

pleurospora in Anal. Algol. Cont. V t. II f. 14 c, this having a structure unlike everything I have seen in the family. In his latest treatment of this he removed *D. pleurospora* to *Pteridium*, but with this it has little in common; AGARDH's opinion, however, caused COTTON to describe *Delesseria Davisii* of DICKIE, not HOOK. FIL. et HARV., as *Pteridium Bertrandii*. I have seen all the material upon which this species was based, and I find it identical with my *N. condensatum*. For comparison a section of the stipe is figured, 21 g.

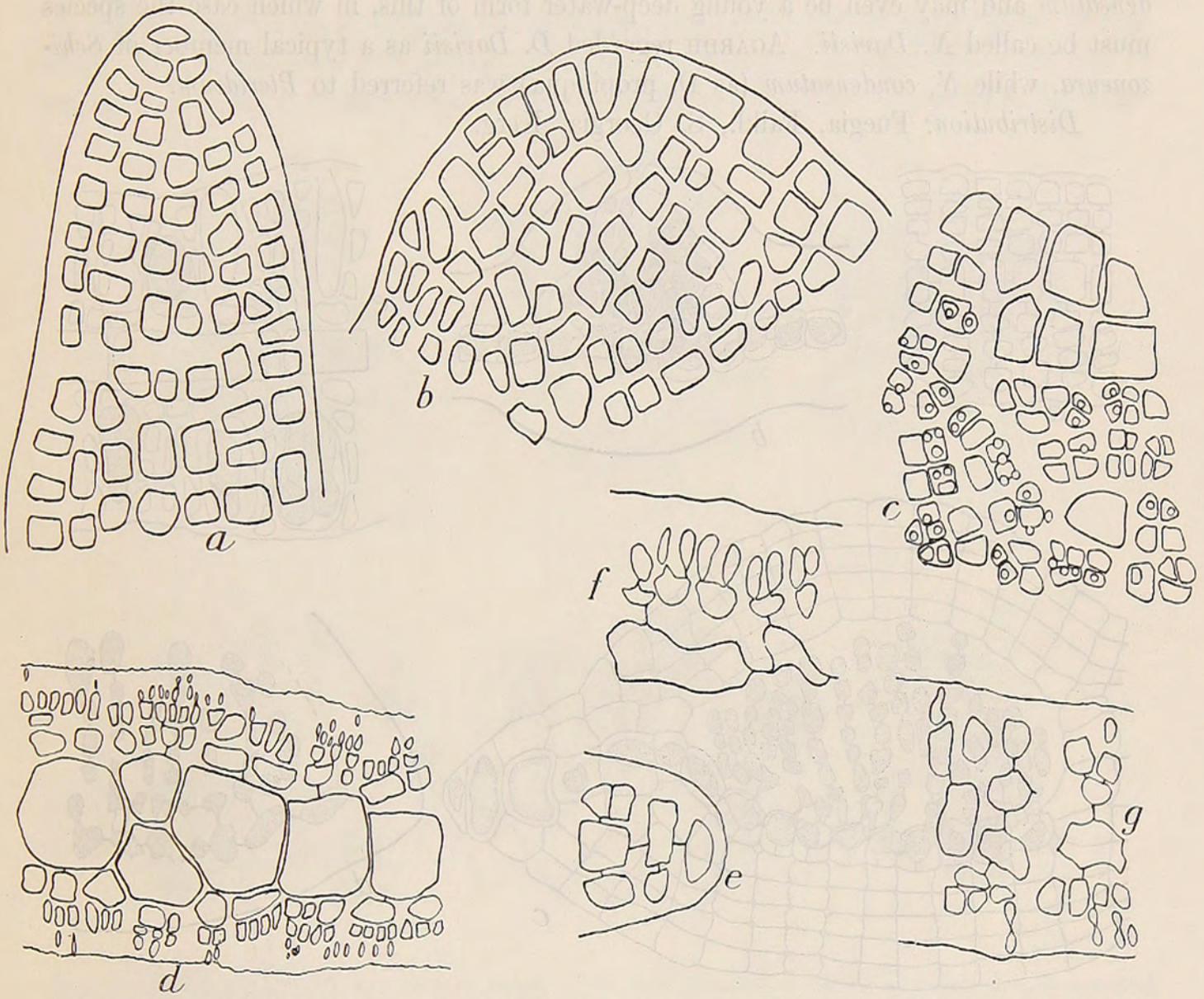


Fig. 22. *Gonimophyllum australe:* **a** minute frond, **b** apex of older frond, **c** male frond with spermatia, surface view, **d**—**e** section of male frond (**d** thickest part, **e** margin); **f** spermatange mother-cells, **g** formation of spermatia. d × 240, other figures × 480.

I am not sure that DICKIE was mistaken as he named the Kerguelen specimens *D. Davisii*. Truly, at a superficial glance they seem very distinct. *D. Davisii* is well figured in Fl. Ant. II t. 175 from a Cape Horn specimen, representing the type. In Herb. Kew are a couple of specimens from Falkland, named *D. Davisii* by HOOKER. One of them, from Berkeley Sound, is retained with hesitation under that species by COTTON. It is more densely branched than the Cape Horn specimens and more like *N. condensatum*. Another from »outer sea coast, Cape Pembroke», named *D. dichotoma*?, has the old midrib covered by leaflets. Both have the same structure as *N. condensatum* or *P. Bertrandii*.

Returning to the Cape Horn plant, the true *D. Davisii*, we shall find that it approaches *N. condensatum* very close. I have examined three Kew specimens and one in Brit. Mus. All the essential characters are present: mode of growth, marginal papillae, anatomical structure. But the habit is different, thanks to the broad, less dissected frond, the large veinless lobes and the few branches of the nerves. Unfortunately, the specimens are sterile. But *D. Davisii* is a *Nitophyllum*, it certainly comes near *N. condensatum* and may even be a young deep-water form of this, in which case the species must be called *N. Davisii*. AGARDH regarded *D. Davisii* as a typical member of *Schizoneura*, while *N. condensatum* (as D. propinqua) was referred to *Pteridium*.

Distribution: Fuegia, Falkl., S. Georgia, Kerg.

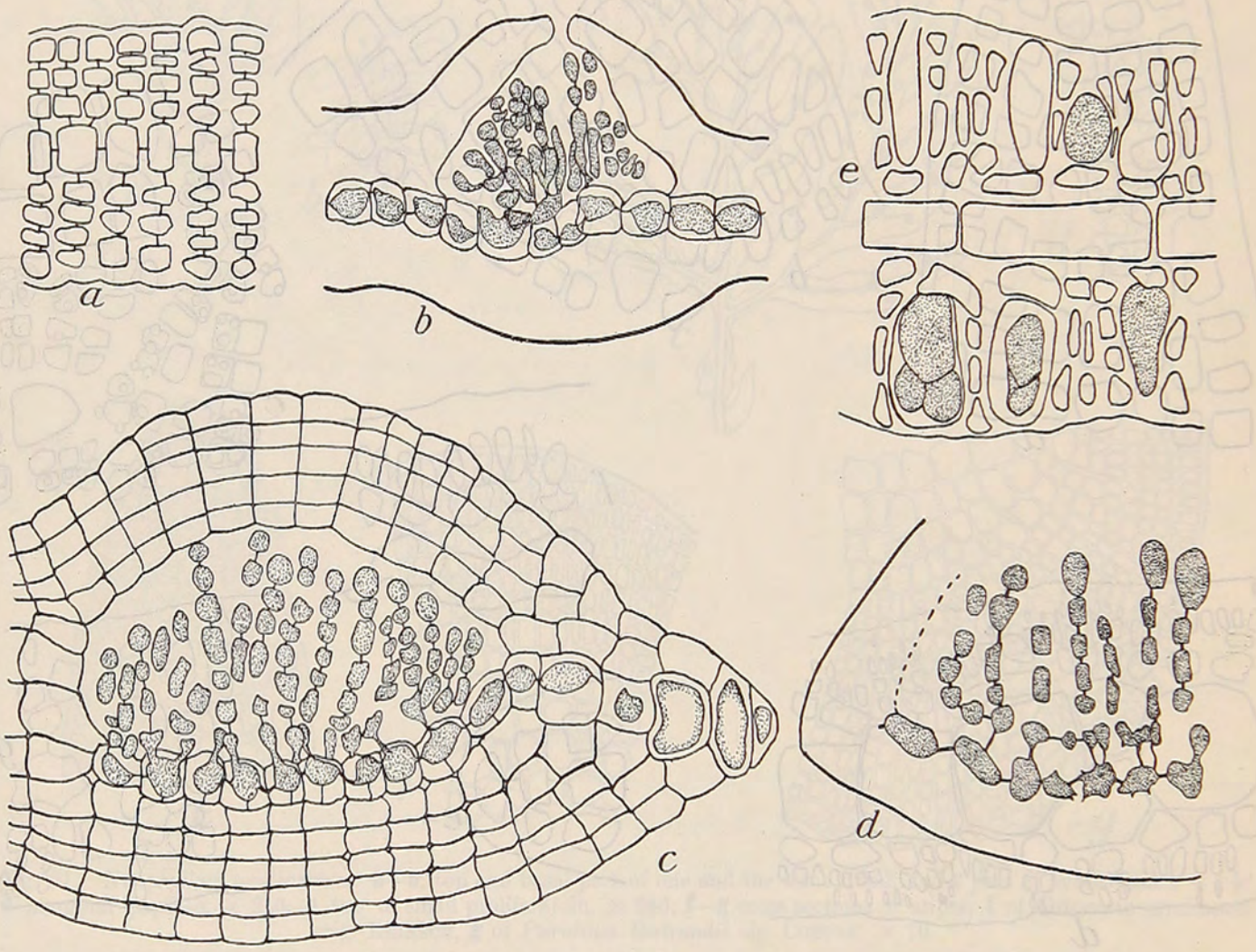


Fig. 23. *Gonimophyllum australe:* **a** cross section of female frond, **b** section through young cystocarp, **c** excentric section through older cystocarp, **d** marginal part of cystocarp in section, both diagrammatic; **e** length section of tetrasporophyll. All × 240.

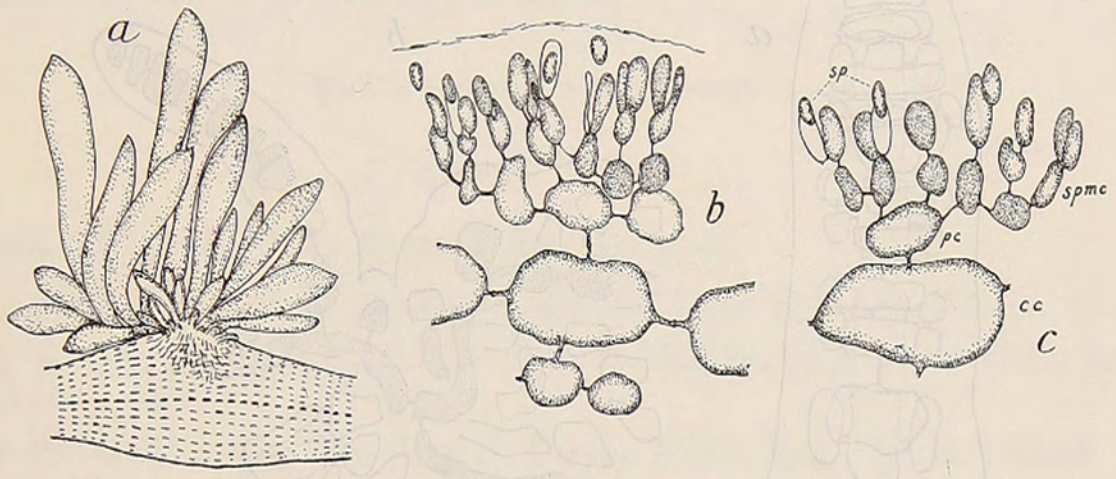
Gonimophyllum BATTERS Journ. Bot. 1892, p. 65.

G. australe SKOTTSB. in KYLIN & SKOTTSB. p. 35, f. 17 b—d. — Fig. 22—23.

To the short description of this parasite some remarks are added here. In the smallest fronds a top-cell is present, but in the segments cut off from this intercalary divisions quickly disturb the regular arrangement of cells, just as in *Nitophyllum* (fig. 22 a). In older fronds the top-cell is divided by more or less oblique walls (fig. 22 b,

comp. NIENBURG, l. c.). The male frond is, at first, monostromatic, but soon becomes 3-stratose, as in *Martensia* acc. to SVEDELIUS. In this the surface cells become spermatange mother-cells, while, in *G. australe*, the frond becomes polystromatic before spermatanges are formed (fig. 28 c—g). In the production of spermatia it seems to follow *Martensia*. In *G. Buffhami* BATTERS the monostromatic frond seems to produce spermatia directly on both sides, to judge from the imperfect figure.

The female leaflets are polystromatic (fig. 23 a) and carry 1—4 cystocarps, seldom more. Fig. 23 b shows a section of a young cystocarp with part of the fusion cell. Later, the spore-producing filaments become prostrate on the bottom of the chamber, and pore-



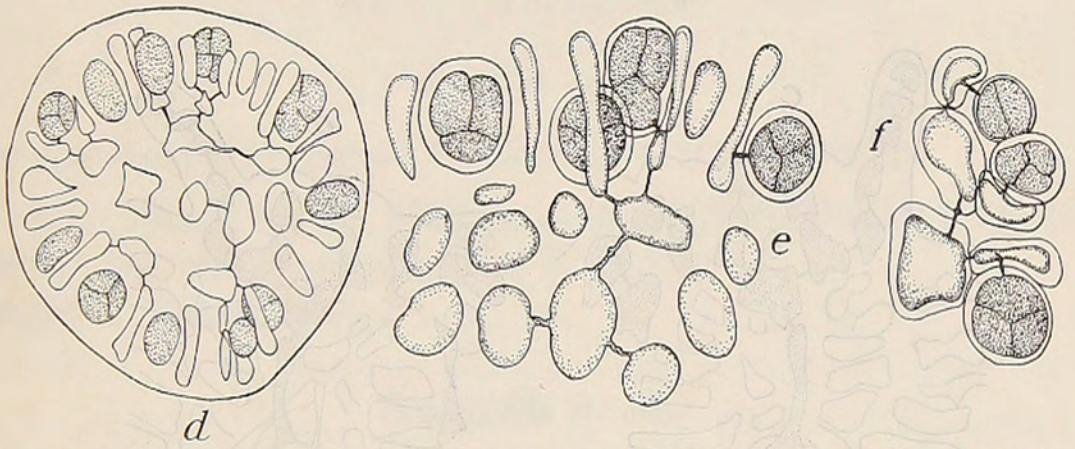


Fig. 24. *Polycoryne radiata:* **a** tuft of male fronds, × 25; **b—c** formation of spermatia, × 360; **d** cross section of tetrasporic frond, × 180; **e—f** formation of tetrasporangia, × 360, **e** cross section, **f** from a crushed length section. — *cc* central cells, *pc* pericentral cells, *spmc* spermatange mother cells, *sp* spermatia.

connections are established with the cells of the central lamella as in *Neuroglossum* (fig. 23 c—d). BATTERS' figure shows a cystocarp of the ordinary *Nitophyllum*-type. It is possible that this character is of generic value and that *G. australe* should be made the type of a new genus, but further studies of the cystocarp in the Delesseriaceae are necessary, and the two species of *Gonimophyllum* from California, mentioned by SETCHELL, Parasitism p. 165, have not yet been described.

The tetrasporic frond (fig. 23 e) does not present any features of special interest.

Polycoryne SKOTTSB. in KYLIN & SKOTTSB. p. 36, f. 17 e, 18; t. 1 f. 4.

P. radiata SKOTTSB. l. c. — Fig. 24—25.

The male plant of this curious parasite was discovered on a piece of *Nithophyllum* (probably *N. Smithii*, see above) from South Georgia, St. 18, 1902. The fronds are terete or elliptical in section, and resemble the sporophyte, fig. 24 a. The formation of spermatanges and spermatia are illustrated fig. 24 b—c; there is considerable likeness with the figures of *Delesseria sanguinea* in SVEDELIUS' paper pl. 5, f. 6—12.

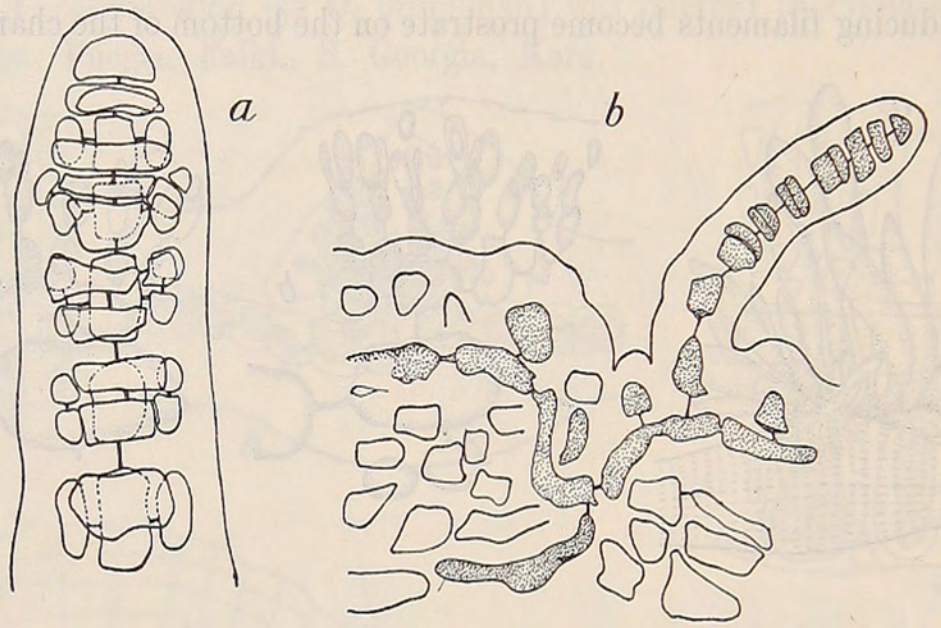


Fig. 25. *Polycoryne radiata:* **a** tip of small sterile shoot, showing formation of cortex, × 360: **b** section of host and parasite (dotted); **c—d** another section, seen from both sides; all × 180.

Of the sporophyte, new microtome sections were prepared, fig. 24 d—g. The sporophylls are terete or flattened. The tetrasporangia are borne laterally on sterile cells, at least in most cases (fig. 24 d—f), but I cannot see anything very remarkable in this feature.

As an intimate knowledge of the mode of growth would help us to understand the affinities of this strongly reduced parasite, I have examined a great number of young shoots, but their microscopic size and the rapid formation of cortex makes it difficult to obtain good results. To judge from fig. 25 a the central cells do not divide by inter-

calary walls, thus suggesting the *Delesseria*-type, but in other cases I am less sure of this. It cannot be denied that the female frond in Polycoryne bears a certain resemblance to the »pedicellate» cystocarp of *Delesseria sanguinea*, and the formation of spermatanges does not speak against a possible affinity with *Delesseria*, rather than with *Nitophyllum*.

New microtome sections give a better idea of the parasitic habit of Polycoryne; as the pore connections are quite distinct, it has been possible to trace the hypha-like filaments that penetrate deep into the tissue of the host, fig. 25 b—d, so as to leave little doubt about the true parasitic character; but new and better preserved material is necessary if we want to know the histological details.

Bonnemaisoniaceae.

Ptilonia J. Ag.

P. magellanica (Mont.) J. Ag. — Kylin & Skottsb. p. 51.

South Patagonia: Fitzroy Channel, 13—14 m, gravel (St. 17, 18. 4. 08, ♀). Fuegia: Slogget Bay, beach drift (St. 47 b, 16. 3. 09, ♀); Magellan Strait, Susanna Cove, 15—18 m.

Distribution: S. Patag. (first record), Fuegia, Falkl., Kerg., Graham Land.

Rhodomelaceae.

Chondria Ag.

Ch. angustata (Hook. Fil. et Harv.) Kylin in K. & Skottsb. p. 52.

Fuegia: Slogget Bay, on *Ahnfeltia* in beach drift (St. 47 b, 16. 3. 09); Tekeenika, Allen Gardiner Bay, washed ashore (St. 47 B, 10. 3. 09).

Distribution: Fuegia, Falkl.

Lophurella Schmitz

L. Hookeriana (J. Ag.) Falkenb. — Kylin & Skottsb. p. 53. — Fig. 26 a—b.

South Patagonia: Fitzroy Channel, 13—14 m, gravel (St. 17, 18. 4. 08, ♀, ⊕). Fuegia: Slogget Bay in tide-pools on *Mytilus* (St. 47, 16. 3. 09) and washed ashore (St. 47 b, ⊕). Falkland Islands: Westpoint Island, common on calcareous algae in the litoral region (St. 8 b, 5. 12. 07); Cape Pembroke, in the same kind of station (St. 3 b, 7. 1. 08, ⊕).

The lateral branches originate as described by Falkenberg, Rhodomel. p. 159 for *L. comosa*. The segmentation is clearly visible in *L. Hookeriana*, less so in *comosa* and rather indistinct in *patula*, see fig. 26; in *comosa* also the cortex shows the segmentation.

Regarding the identity of *Rhodomela Gaimardi* Bory, I have not been more successful than earlier authors who have tried to solve this question. According to Bory and

AGARDH it stains the paper violet, and so do my specimens of *L. Hookeriana*, while HOHENACKER's plant (no. 292) does not seem to possess this quality, the difference between them perhaps being due to the mode of preparation. It lies near at hand to assume that one of the *Lophurella* species collected in the Falklands must be identical with *L. Gaimardi*, but it should be remembered that the cortex figured by BORY, Voy. Coq. t. 22 hardly suggests *Lophurella*.

Distribution: S. Patag. (first record), Fuegia, Falkl., Kerg., Austral., N. Zeal.

L. patula (HOOK. FIL. et HARV.) DE TONI. — KYLIN & SKOTTSB., p. 53. — Fig. 26 c—d.

South Patagonia: Skyring Water, washed ashore near Punta Rocallosa 29. 4. 08; Fitzroy Channel, near the entrance to Skyring, drifted (St. 17 B, 19. 4. 08, ♀). Falkland Islands: Darwin Harbour, drifted (St. 10, 16. 1. 08, ⊕).

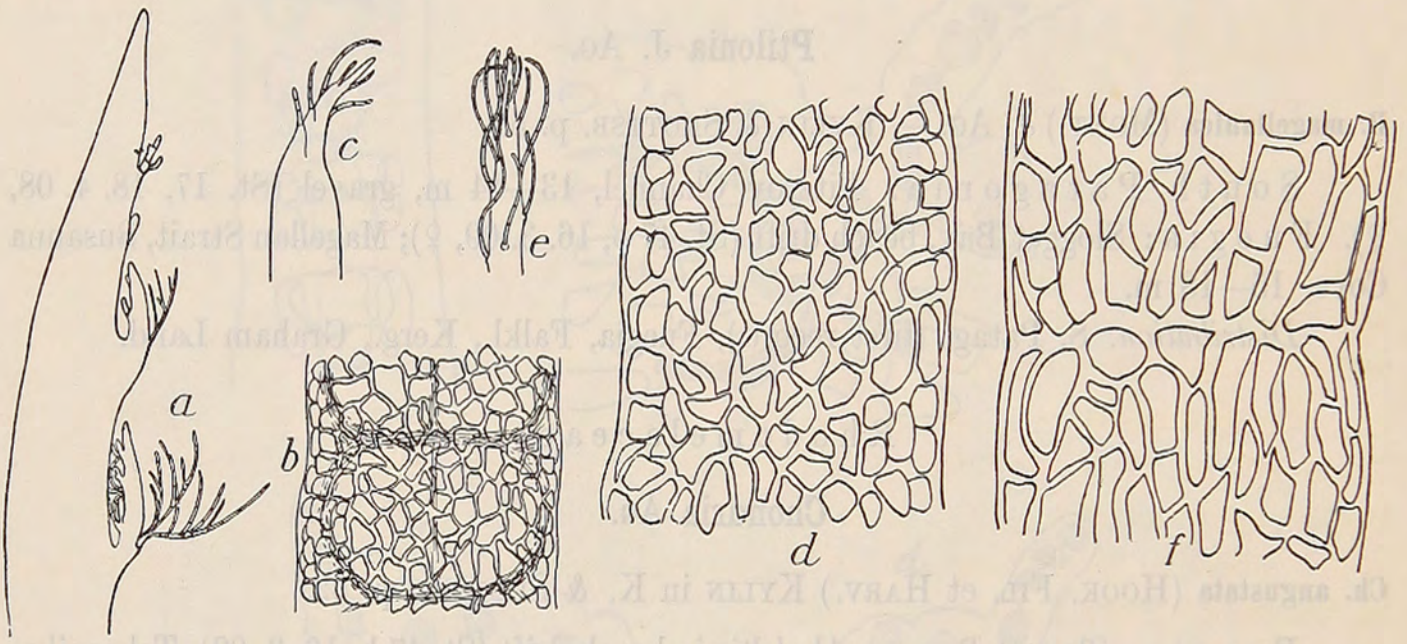


Fig. 26. *Lophurella*, tips, × 25, and surface view of younger branches, × 180: **a—b** of *L. Hookeriana*, **c—d** of *L. patula*, **e—f** of *L. comosa*.

KYLIN did not find any hairs on the material examined by him; I have observed them on my plants, but they are scarce and not persistent (fig. 26 c). The 1902 collection was made during the winter.

Distribution: S. Patag. (first record), Fuegia, Falkl., Kerg.

L. comosa (HOOK. Fil. et HARV.) FALKENB. l. c. p. 158, t. 19 f. 31. — Fig. 26 e—f.

West Patagonia: Puerto Bueno, 1—3 m, sand with stones and shells (St, 27, 3. 6. 08). South Patagonia: Skyring Water, near Mina Magdalena, 5—6 m, sand and stones (St. 22, 29. 4. 08); Fitzroy Channel, 13—14 m, gravel (St. 17, 18. 4. 08). Falkland Islands: Darwin Harbour (St. 10, 16. 1. 08 ⊕).

L. comosa has been collected but a few times before. The specimens from St. 22 are well developed and agree perfectly with the figure in Fl. Ant. II t. 185. In habit it approaches *L. patula*, but is more densely branched. The fibrillose shoots with their more persistent hairs (fig. 26 e) also serve to distinguish it, and the cortex is different. Var. β *fibrillifera* of HOOKER and HARVEY l. c. is a normal state of *L. comosa*.

Distribution: Patag. (first record), Falkl.

Polysiphonia Grev.

P. microcarpa Hook. Fil. et Harv. Lond. Journ. Bot. 4 p. 265.

Syn. *P. abscissa* l. c. p. 266, Kylin & Skottsb. p. 53.

South Patagonia: Skyring Water, Ventisqueros Sound, 15 m, mud with shells (St. 21, 27. 4. 08). Fuegia: Slogget Bay, in tidepools (St. 47, 16. 3. 09). Falkland Islands: Westpoint Island, densely matted in the deeper basins (St. 8, 5. 12. 07).

The name *microcarpa* has priority.

Distribution: S. Patag. (first record), Fueg., Falkl., Kerg., N. Zeal, Tasm., Graham Land.

P. anisogona Hook. Fil. et Harv. — Kylin & Skottsb. p. 53.

West Patagonia: Puerto Bueno, sand and stones, 1—3 m (St. 27, 3. 6. 08). South Patagonia: Skyring Water, Ventisqueros Sound, 15 m, mud with shells (St. 21, 27. 4. 08, ⊕), Falkland Islands: Darwin Harbour, litoral, on stones with *Adenocystis* (St. 10, 16. 1. 08); Cape Pembroke, abundant in places, on rocks below low-water mark and in pools (St. 3 b, 7. 11. 07, ♀, ⊕). South Georgia: Cumberland Bay, Boiler Harbour, 5 m (St. 48, 20. 4. 09, ♀).

My tetrasporic specimens from St. 3 have the swollen joints of *P. tenuistriata* Hook. Fil. et Harv., but the ramification of *P. anisogona*. The tufts become very intricate by numerous hooked branches, and resemble the samples from South Georgia in my collection of 1902, referred here with some doubt by Kylin. My specimens from St. 48 are very like normal *anisogona*.

Distribution: W. Patag. to Fuegia, Falkl., S. Georgia, Kerg.

Pteronia Schmitz

P. pectinata (Hook. Fil. et Harv.) Schmitz. — Kylin & Skottsb. p. 54, f. 26.

Falkland Islands: Halfway Cove, 8 m, stones (St. 5, 25. 11. 07, ⊕).

Distribution: Fuegia, Falkl., S. Orkn. I.

P. plumosa Kylin in K. & Skottsb. p. 55 f. 27.

South Georgia: Cumberland Bay, Boiler Harbour on *Euptilota confluens*, 10 m (St. 49, 20. 4. 09); Strömnaes Harbour, 8 m, stones (St. 50, 24. 4. 09).

Distribution: S. Georgia, Graham Land.

Sporoglossum Kylin

S. Lophurellae Kylin in K. & Skottsb. p. 57 f. 28—29.

South Patagonia: Fitzroy Channel, 13—14 m, on *Lophurella Hookeriana* (St. 17, 18. 4. 08, ♂, ♀).

Distribution: S. Patag. (first record), Falkl.

Herposiphonia Naeg.

H. Sulivanae (Hook. Fil. et Harv.) Falkenb. — Kylin & Skottsb. p. 60.

Falkland Islands: Cape Pembroke, in tide-pools, on *Corallina* (St. 3 b, 7. 11. 07, ⊕).

Fertile specimens are reported here for the first time, but only with tetraspores. The stichidia occur on the main axis or on the larger branches and resemble those in *H. tenella*, as described by Falkenberg, Rhodomel. p. 303.

Distribution: Fuegia, Falkl.

Bostrychia Mont.

B. Hookeri Harv. — Kylin & Skottsb. p. 60.

One of the commonest litoral algae, forming almost pure associations in the upper litoral region, on rocks, stones and *Mytilus* shells, and remaining uncovered during some hours at low tide. Chiloé: Ancud Harbour (St. 29 a, 10. 7. 08); Quemchi (St. 30 b, 19. 7. 08, ⊕). West Patagonia: Puerto Charrua, on old trunks of trees (St. 28 B, 14. 6. 08); Puerto Riofrio (St. 28, 13. 6. 08, ⊕); Atalaya Island (St. 25, 25. 5. 08). South Patagonia: Otway Water, Puerto Pomar (St. 15, 14. 4. 08); Arauz Bay (St. 23, 3. 5. 08). Fuegia: Slogget Bay (St. 47, 16. 3. 09); Tekeenika, Allen Gardiner Bay (St. 47 B, 10. 3. 09). Falkland Islands: near Halfway Cove (St. 4, 21. 11. 07); Port North (St. 7 a, 2. 12. 07); Cape Pembroke (St. 3 a, 7. 11. 07).

Specimens from St. 47 growing on *Mytilus* are provided with numerous haptere-like branchlets, otherwise characteristic of *B. Harveyi* acc. to Falkenberg l. c. p. 517.

Distribution: Chiloé to Fuegia, Falkl.

B. Harveyi Mont. ex Gay, Hist. de Chile, Bot. VIII p. 307, t. 16 f. 4.

West Patagonia: Puerto Riofrio, on stones in the uppermost litoral, in brackish water and mixed with mosses (St. 28, 13. 6. 08).

An interesting record. Reported from the coast of Chile by Montagne and described as growing in brackish water accompanied by a species of *Philonotis*. Said to thrive in fresh water in New Zealand — if really the same species (comp. J. Agardh, Anal. Algol. Cont. IV p. 80)?

Distribution: S. Chile, W. Patag. (first record), ?N. Zeal.

B. vaga Hook. Fil. et Harv. — Kylin & Skottsb. p. 61.

Falkland Islands: Cape Pembroke, uppermost litoral with *B. Hookeri* and *Catenella* (St. 3 a, 7. 11. 07).

Distribution: Falkl., S. Georgia, Kerg.

Colacopsis De Toni

C. Lophurellae Kylin in K. & Skottsb. p. 61, f. 30—31.

South Patagonia: Fitzroy Channel, 13—14 m, on *Lophurella Hookeriana* (St. 17, 18. 4. 08, ♂, ♀, ⊕).

Distribution: S. Patag. (first record), Fuegia, Falkl.

Heterosiphonia Mont.

H. Berkeleyi Mont. — Kylin & Skottsb. p. 63, f. 32 c.

Fuegia: Slogget Bay, on *Plumaria Harveyi* in beach drift (St. 47 b, 16. 3. 09, ♂). Falkland Islands: Halfway Cove, 8 m, rocks (St. 5, 24. 11. 07).

Distribution: W. Patag., Fuegia, Falkl., Kerg., Marion I., Auckl. I.

H. punicea (Mont.) Kylin in Kylin & Skottsb. p. 65, f. 32 b.

West Patagonia: Puerto Bueno, 1—3 m, sand with shells (St. 27, 3. 6. 08). Fuegia: Slogget Bay, washed ashore attached to *Ahnfeltia* and *Acanthococcus* (St. 47 b, 16. 3. 09). Falkland Islands: Cape Pembroke, in tide-pools on calcareous algae (St. 3 b, 7. 11. 07).

Distribution: W. Patag. (first record), Fuegia (first record), Falkl., Auckl. I.

H. merenia Falkenb. — Kylin & Skottsb. p. 65, f. 32 a.

South Georgia: Cumberland Bay, Boiler Harbour, 5 m (St. 48, 20. 4. 09).

Distribution: S. Georgia.

Ceramiaceae.

Griffithsia Ag.

G. antarctica Hook. Fil. et Harv. Fl. Ant. II p. 488. — Fig. 27—29.

Syn. *Bornetia? antarctica* De Toni, Syll. Alg. p. 1297; Cotton, Crypt. Falkl. p. 189; Kylin & Skottsb. p. 66.

Falkland Islands: Cape Pembroke, in tide-pools, scarce (St. 3 b, 7. 11. 07, ♂, ♀, ⊕).

As there has been much uncertainty regarding the generic position of this species, only sterile specimens being known before, and as I possess good material of both generations, I shall give a brief description of each kind. In the male plant (fig. 27 a) the fertile branchlets arise round the top of a subterminal cell (fig. 28 a—c); it is more swollen than the rest and becomes more or less pear-shaped. The terminal joint may or may not continue to grow and divide again. The development of spermatanges is

illustrated in fig. 29 a—b, it is the same as in *G. corallina* (comp. KYLIN, Entwicklungsgesch. p. 113 f. 9), but the male branchlets are more compound. Their surface is covered with innumerable spermatanges (fig. 29 a). A small part of a lobe is seen in optical section in fig. 29 b. The involucre develops early from the same joint that carries the male branchlets; it counts about 12 unicellular rays.

The cystocarps are borne laterally on the branches (fig. 27 b), but the procarp is terminal as in *G. corallina*, pushed aside by a sterile branch. Fig. 29 c shows the first stage of the procarp (F. b.). As in *G. corallina* it becomes three-celled (fig. 29 d),

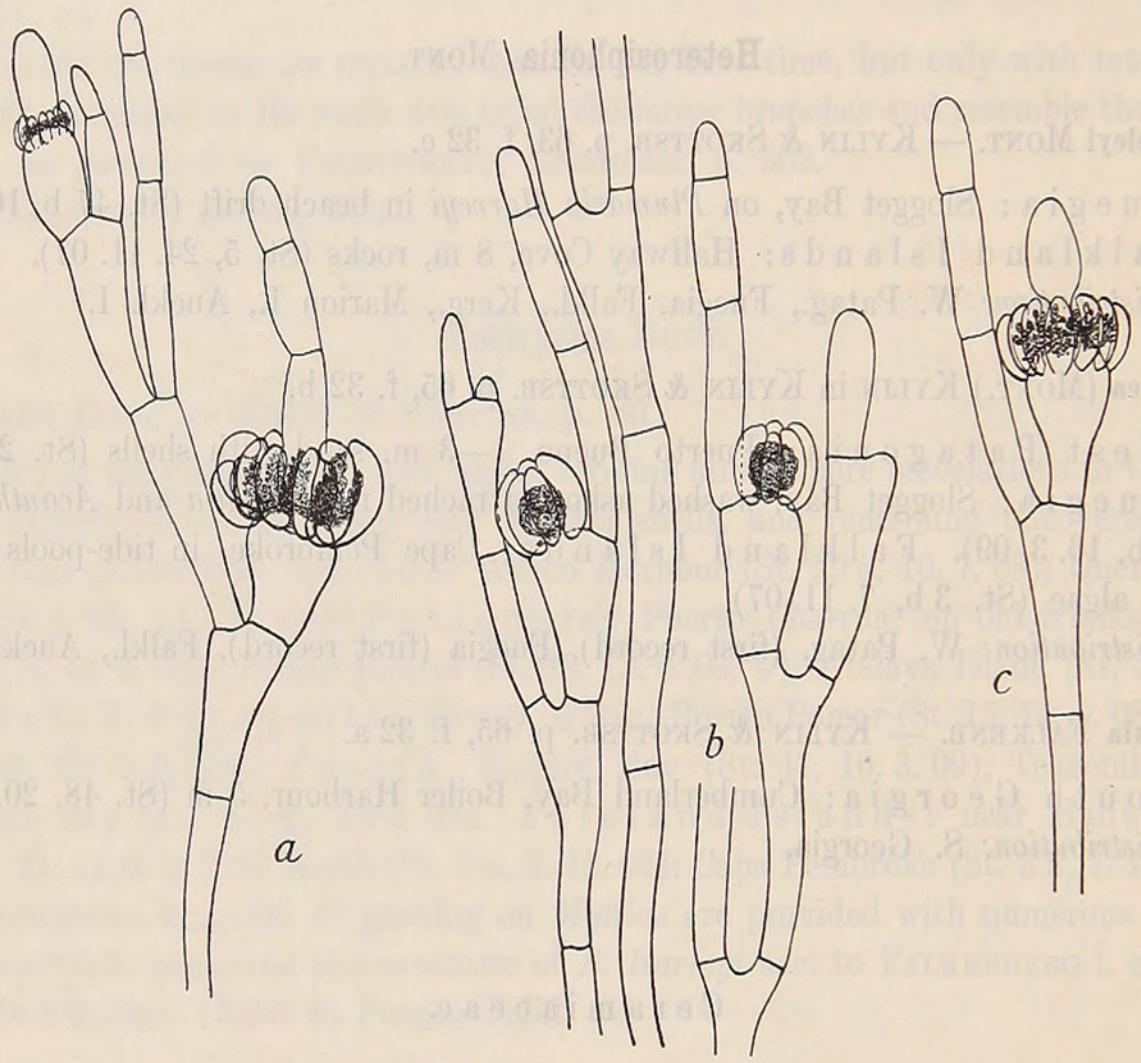


Fig. 27. *Griffithsia antarctica:* branches of **a** male, **b** female and **c** tetrasporic specimens, × 12.

these are the three central cells of KYLIN, whose terminology is adopted here. From the second central cell a dorsal pericentral cell (fig. 29 e, *pc*) is cut off, followed by one lateral pericentral cell (not two as in *G. corallina*); the latter is the supporting cell of KYLIN (fig. 29 f, *sup c*). The supporting cell gives birth to a sterile cell (*stc*) and to the four-celled carpogenic branch, which is curved inward-upward. After fertilization the auxiliary cell is cut off (fig. 29 g, *aux*). The formation of the gonimoblast (*gon*) is seen in fig. 29 h—i. In 29 g the carpogone lies alongside the auxiliary cell, but apparently not in contact with this, and the fusion of nuclei was not observed by the writer, so I can only guess that it takes place as in *G. corallina*.

In *G. Bornetiana*, the supporting cell assumes the character of auxiliary cell and is supposed to fuse with the carpogone, although the actual process of fusion was not ob-

served; then, the auxiliary cell cuts off a placental cell, giving rise to the sporogenous lobes — all acc. to LEWIS, Life hist. of G. Bornetiana. KYLIN doubts the correctness of LEWIS' observations in this case, and I find it more probable that the placental cell of LEWIS corresponds to the auxiliary cell of KYLIN and the writer. The carpospores of *G. antarctica* are formed as in the other species, not as in *Bornetia*.

The involucral rays are 5 to 8 (rarely more) in number and formed by the first

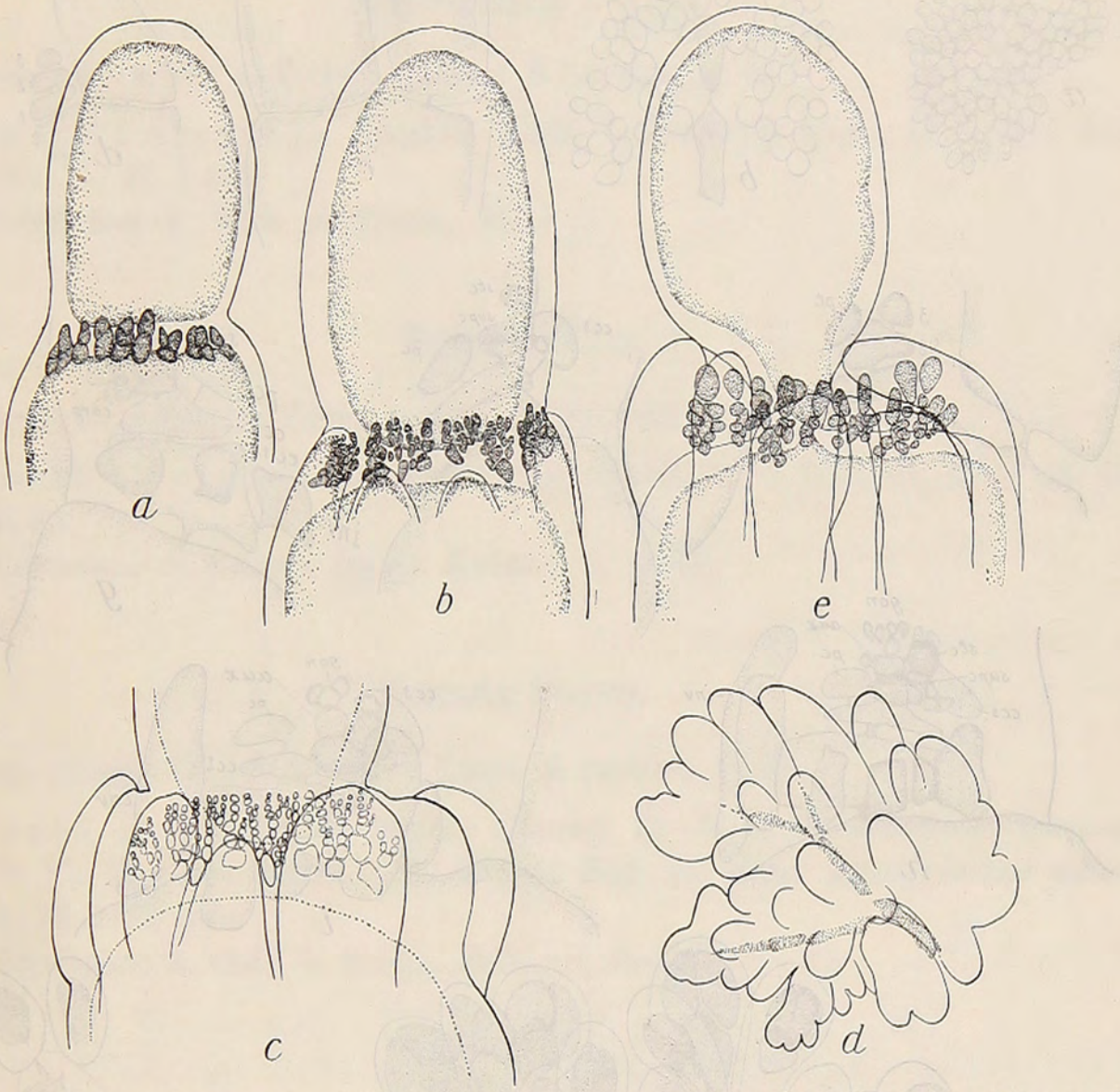


Fig. 28. *Griffithsia antarctica:* **a**—**c** tops of male plants with spermatangial branchlets in various stages; **d** lobe of male branchlet, **e** top of tetrasporic branch. All × 120.

(basal) central cell as in *G. corallina*. In *G. antarctica* they are unicellular, not two-celled as in the other.

The tetrasporic branchlets are formed round the apex of a subapical cell, encircling the node (fig. 27 c); the terminal cell is abruptly narrowed at the base and does not undergo any further development (comp. fig. 28 e). In the formation of sporangia *G. antarctica* agress with *G. corallina* and *Bornetiana*; there is a stalk cell producing numerous sporangia, so numerous that already on early stages it is rather difficult to obtain a good view of their arrangement. Fig. 29 k shows three stalk cells with sporangia in various degress of development, fig. 29 l one stalk cell, where all mature sporangia have been removed. The involucre, of 12 to 15 unicellular rays, originates as

in the male plant (and as in *G. Bornetiana*); in *G. corallina* one ray is cut off from each stalk cell.

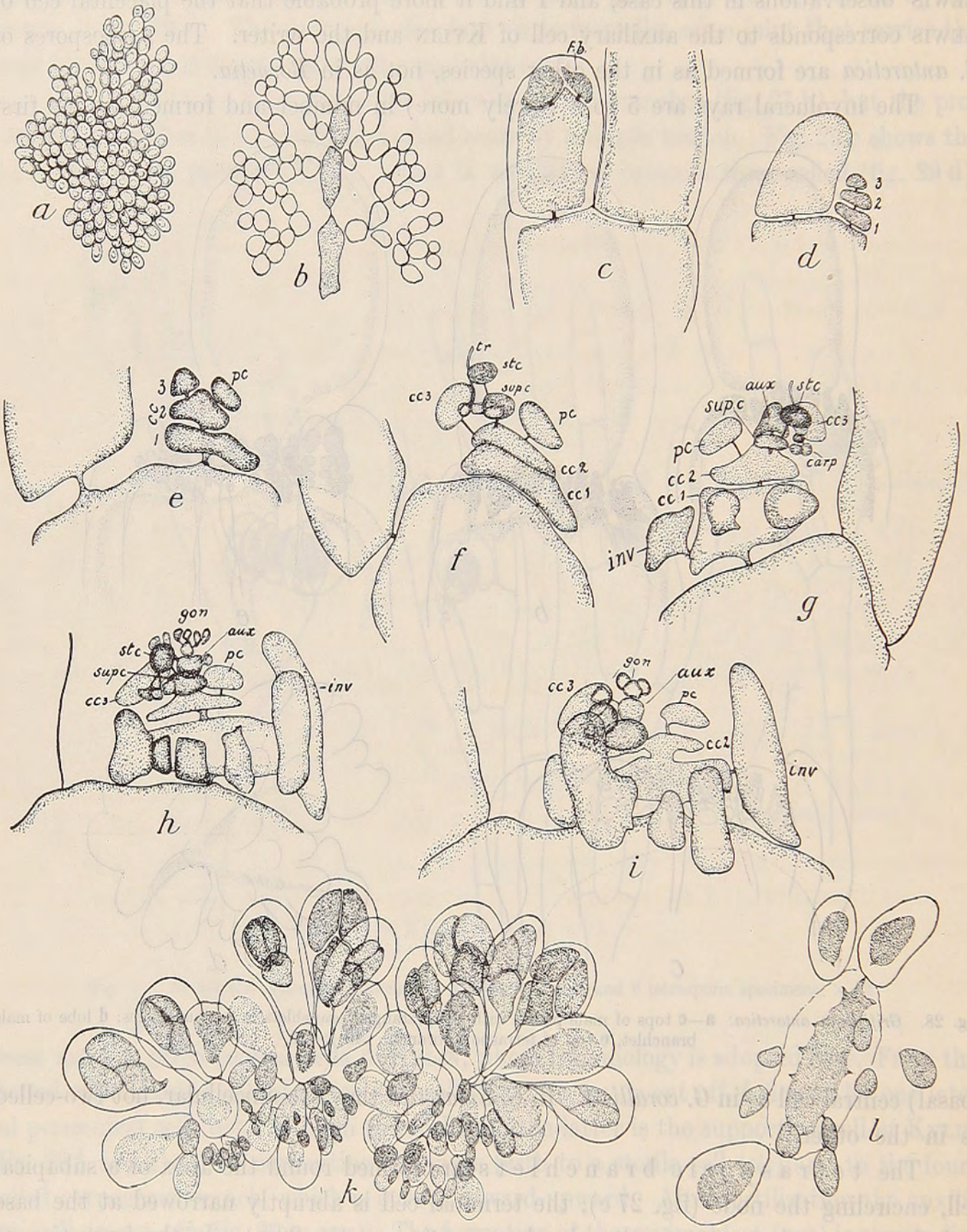


Fig. 29. *Griffithsia antarctica:* **a** male lobule from surface, × 360; **b** optical section through top of male lobule, × 360; **c—i** development of cystocarp, **c** procarp (F. b.), × 90, **d** 3-cell stage of same, × 90; **e—i** later stages ×180; **k** three stalk cells with tetrasporangia, × 190; **l** stalk cell, mature sporangia removed, × 360. — F. b. procarp, *cc 1, 2, 3* central cells, *pc* pericentral cells, *supc* supporting cell, *stc* sterile cell, *aux* auxiliary cell, *carp* carpogenic branch, *tr* trichogyne, *inv* involucre.

Hooker and Harvey regarded *G. antarctica* as »allied to G. secundiflora, but smaller in all its parts». *G. secundiflora* became the type of *Bornetia* Thur., and there-

fore *G. antarctica* was supposed to belong to the same genus. My examination shows that it must remain with *Griffithsia*, probably near *G. flabelliformis* HARV. (tasmanica KÜTZ.). In *Bornetia*, only the end cell of each sporogenous lobe becomes a carpospore.

Distribution: Fuegia, Falkl., Kerg.

Callithamnion LYNGB.

C. Montagnei HOOK FIL. et HARV. — KYLIN & SKOTTSB. p. 66.

South Patagonia: Skyring Water, Ventisqueros Sound, 15 m, mud with shells (St. 21, 27. 4. 08).

Distribution: S. Chile to Fuegia, Falkl.

Euptilota KÜTZ.

E. confluens (REINSCH) DE TONI. — KYLIN & SKOTTSB. p. 66, f. 33—34.

South Georgia: Cumberland Bay, outside Boiler Harbour, 10 m (St. 49, 20. 4. 09, ⊕).

Distribution: S. Georgia (comp. KYLIN l. c. p. 69).

Plumaria STACKH.

P. Harveyi (HOOK. FIL.) SCHMITZ. — KYLIN & SKOTTSB. p. 69.

South Patagonia: Fitzroy Channel, 13—14 m, on *Acanthococcus spinuliger* (St. 17, 18. 4. 08). Fuegia: Slogget Bay, on larger algae, washed ashore St. 47 b, 16. 3. 09, ⊕).

Distribution: S. Chile to Fuegia, Falkl., S. Georgia.

Ballia HARV.

B. callitricha (AG.) MONT. — KYLIN & SKOTTSB. p. 70.

A common sublitoral species. South Patagonia: Fitzroy Channel, 13—14 m, gravel, abundant (St. 17, 18. 4. 09, a slender form) and washed ashore near the entrance to Skyring Water (St. 17 B, 18. 4. 09). Fuegia: Slogget Bay, common in beach drift (St. 47 b, 16. 3. 09); Orange Bay, in tide-pools on kelp-roots (St. 45, 11. 3. 09). Falkland Islands: Westpoint Island, in tide-pools and below low-water mark, abundant (St. 8 b, c, 5. 12. 07); Cape Pembroke, common (St. 3 b, 7. 11. 07). South Georgia: Cumberland Bay, Boiler Harbour, 5 m (St. 48, 20. 4. 09).

Distribution: Circumpolar-subantarctic and antarctic.

B. scoparia (HOOK. FIL. et HARV.) HARV. Phycol. Austral. t. 168.

A much rarer species, and not in the collection of 1902. Falkland Islands: Westpoint Island, in deeper tide-pools and below low-water mark, rare (St. 8 b, c, 5. 12. 07).

Distribution: S. Chile to Fuegia, Falkl., Austral, N. Zeal., Auckl. I.

Ceramium (Roth) Lyngb.

C. rubrum (Huds.) Ag. — Kylin & Skottsb. p. 73.

A common litoral and sublitoral species. Chile: Valparaiso, rocks near Playa Ancha (St. 41, 2. 9. 08); Chiloé, Ancud Harbour, washed ashore (July 1908, ♀, ⊕). South Patagonia: Gajardo Channel, rock pools (St. 21 B, 27. 4. 08); Skyring, Puerto Altamirano, 5—10 m, mud, bad specimens (St. 19, 23. 4. 08); near Mina Magdalena, 5—6 m, sand and stones (St. 22, 29. 4. 08). Fuegia: Slogget Bay in tide-pools and in beach drift on *Ahnfeltia* (St. 47, 16. 3. 09); Ushuaia, litoral (St. 46, 14. 3. 09, ⊕); Orange Bay, 15—20 m, small stones (St. 44, 11. 3. 09). Falkland Islands: Westpoint Island, litoral (St. 8 a, b, 5. 12. 07); Port Louis, litoral (St. 11, 7. 2. 08, ♀, ⊕); Cape Pembroke, abundant on *Mytilus* (St. 3 b, 7. 11. 07, ⊕).

Distribution: Almost cosmopolitan.

C. involutum Kütz. — Kylin & Skottsb. p. 74, t. 1 f. 5.

West Patagonia: Puerto Bueno, 1—3 m, on *Mytilus* (St. 27, 3. 6. 08). Fuegia: Orange Bay, upper sublitoral on roots of *Lessonia* (St. 45, 11. 3. 09). South Georgia: Cumberland Bay, Boiler Harbour, 5 m (St. 48, 20. 4. 09); Strömnaes Bay, 1 m (St. 51, 24. 4. 09).

Distribution: Centr. Chile to Fuegia, Falkl., S. Georgia.

C. Dozei Hariot. — Kylin & Skottsb. p. 74, f. 38.

Chiloé: Punta Talcan, on *Gymnogongrus furcellatus* (St. 29 B, 12. 7. 08, ⊕). Magellan Strait, Susanna Cove. Fuegia: Slogget Bay, in rock pools (St. 47, 16. 3. 09, ⊕). Falkland Islands: Westpoint Island, on *Mytilus* (St. 8 a, 5. 12. 07, ⊕).

The description of *C. radicans* Ardissone, Alghe Terra d. Fuoco, suggests a small *C. Dozei*, to which species it is referred by Hariot, Notarisia VII (1892) p. 1433. As both species were described in 1888, it is hard to tell which name has priority.

Distribution: Chiloé (first record), Fuegia, Falkl. (first record).

C. diaphanum (Lightf.) Roth. — Kylin & Skottsb. p. 75.

Falkland Islands: near Halfway Cove, with *Bostrychia* and *Catenella* (St. 4 a, b) and luxuriant in pools, on *Codium* (St. 4 c, 21. 11. 07, ⊕). Port Louis, on *Mytilus* (St. 11, 7. 2. 08).

Distribution: Almost cosmopolitan (?)

Centroceras Kütz.

I have followed Howe, Mar. Alg. of Peru, in regarding this genus as distinct from *Ceramium*.

C. clavulatum (Ag.) Mont.

Chile: Valparaiso, abundant on rocks near Playa Ancha, washed by the surf also at low tide (St. 41, 2. 9. 08).

Distribution: Widely spread in warmer seas.

Grateloupiaceae.

Grateloupia Ag.

G. Cutleriae (Mont.) Kütz. Phycol. gener. p. 398, t. 77.

Fuegia: Slogget Bay, washed ashore (St. 47 b, 16. 3. 09, ⊕).

One incomplete frond, very long and narrow (73 × 3 cm), closely approaching f. *procera* Howe, Mar. Alg. of Peru p. 166 t. 59. As the basal parts are missing, the possibility remains that my specimen is a lobe of a large dissected frond of *G. schizophylla* Kütz. This is perhaps not specifically distinct from *G. Cutleriae*, comp. Howe l. c. p. 168. The former was reported from Fuegia by Ardissone, Alghe Terra d. Fuoco p. 213, and he is inclined to unite it with *G. Cutleriae*.

Distribution: Pacific coasts of America.

Cryptonemia J. Ag.

C. obovata J. Ag. Sp. Alg. III p. 681.

Chiloé: Queilen, 6 m, sand and stones (St. 33, 30. 7. 08, ♀).

The first record from Chile and not found on the Peruvian coast. The only notable difference between my specimens and the type in Herb. Agardh is that the former have a rather distinct, basal midrib, which seems to be wanting or at least more feebly developed in the latter (»stipitibus complanatis nervo fere nullo conspicuo continuatis», Agardh l. c.), but this difference may be due to the circumstance that Agardh had dried material, while my specimens were preserved in alcohol.

Distribution: W. coast of N. Amer., Chile.

Hildenbrandiaceae.

Hildenbrandia Nardo

H. Lecannellieri Hariot. — Kylin & Skottsb. p. 75.

One of the commonest litoral species, often forming a pure association on rocks above high-water mark. Chiloé: Quemchi (St. 30 b, 19. 7. 08, ⊕); San Pedro Island (St. 30 B, 22. 7. 08). West Patagonia: Puerto Riofrio (St. 28, 13. 6. 08); Atalaya Island (St. 25, 25. 5. 08, ⊕). South Patagonia: Cutter Cove (St. 14, 13. 4. 08). Fuegia: Puerto Barrow (St. 43 a, 4. 3. 09, ⊕); Orange Bay (St. 45, 11. 3. 09, ⊕). Falkland Islands: Westpoint Island (St. 8 a, 5. 12. 07); Port North (St. 7 a, 2. 12. 07, ⊕); Cape Pembroke (St. 3 a 7. 1. 08, ⊕).

Distribution: Chiloé (first record), Patag. (first record), Fuegia, Falkl., Graham Land.

Corallinaceae.

The non-articulate Corallines are quoted from Lemoine, Mélobésiées, Pt. 7 of the present series.

Lithothamnion Phil.

L. validum Fosl. — Lemoine, l. c. p. 4, t. 1, f. 4—6.

South Chile: Cape Alman, 20 m, sand and pebbles (St. 34, 1. 8. 08, ⊕).

Distribution: California, S. Chile.

L. pauciporosum Lem. l. c. p. 5, f. 1, t. 1 f. 4, 6, 7.

South Chile: Cape Alman, with the former; Huafo Island, Samuel Cove, abundant on litoral reefs (St. 31, 25. 7. 08); Reñihué Sound, Buill Cove, 20 m, sand and pebbles (St. 35, 3. 8. 08, ⊕).

Distribution: S. Chile.

L. Caroli Lem. l. c. p. 6, t. 1 f. 6.

South Chile: Cape Alman, with *L. validum* and *pauciporosum* (St. 34, 1. 8. 08, ⊕).

Distribution: S. Chile.

L. Schmitzii (Hariot) Heydr. — Lemoine l. c. p. 11.

Fuegia: Orange Bay, in tide-pools (St. 45, 11. 3. 09), and 15—20 m, small stones (St. 44, 11. 3. 09).

Distribution: S. Patag., Fuegia, Falkl., S. Georgia, S. Orkn. I.

L. antarcticum (Hook. Fil. et Harv.) Heydr. — Lemoine l. c. p. 15.

Falkland Islands: Westpoint Island, on *Ballia callitricha* (St. 8 b, 8. 12. 07, ♀ ⊕); Cape Pembroke (St. 3 b, 7. 11. 07).

Distribution: Patag., Fuegia, Falkl., S. Georgia, Kerg., Austral., Tasman., Auckl. I., S. Orkn. I.

L. patena (HOOK. FIL. et HARV.) HEYDR. — LEMOINE l. c. p. 11, 15.

Fuegia: Orange Bay, on *Ballia callitricha* (St. 45, 11. 3. 09). Falkland Islands: Port William, 12 m (St. 2, 7. 11. 07).

Distribution: Fuegia (first record), Falkl., the Cape, Austral., N. Zeal., Auckl. I.

L. fuegianum FOSL. — LEMOINE l. c. p. 15.

Falkland Islands: Sparrow Cove, 11—13 m, shells and gravel (St. 9, 10. 1. 08, fert.)

Distribution: Fuegia, Falkl.

L. neglectum FOSL. — LEMOINE l. c. p. 12, 15.

Fuegia: Orange Bay, in tide-pools (St. 45, 11. 3. 09). Falkland Islands: Cape Pembroke, litoral (St. 3 b, 7. 11. 07); Low Bay (St. 10 B, 19. 1. 08).

Distribution: Fuegia (first record), Falkl., Kerg.

Lithophyllum PHIL.

L.(?) Skottsbergii LEM. l. c. p. 7, t. 1 f. 3, 8.

Chiloé: San Pedro Island, rocks on the shore, scarce (St. 30 B, 27. 7. 08, fert.).

Distribution: Chiloé.

L.(?) almanense LEM. l. c. p. 8, t. 1 f. 4, 7.

South Chile: Cape Alman, 20 m, sand and pebbles (St. 34, 1. 8. 08, fert.).

Distribution: S. Chile.

L. fetum FOSL. — LEMOINE l. c. p. 8.

South Chile: Huafo Island, Samuel Cove, on litoral reefs (St. 31, 25. 7. 08, fert.).

Distribution: S. Chile.

L. falklandicum FOSL. — LEMOINE l. c. p. 12.

Not uncommon in tide-pools. Fuegia: Orange Bay (St. 45, 11. 3. 08, fert.). Falkland Islands: Port North (St. 7 b, 2. 12. 07, fert.); near Halfway Cove, upper sublitoral (St. 4 c, 21. 11. 07, fert.); Cape Pembroke (St. 3 b, 7. 11. 07).

Distribution: Fuegia (first record), Falkl.

L. atalayense LEM. l. c. p. 13, f. 3, t. 1 f. l.

West Patagonia: Atalaya Island, litoral (St. 25, 25. 5. 08, fert.).

Distribution: W. Patag.

Pseudolithophyllum Lem.

P. discoideum (Fosl.) Lem. l. c. p. 12, 16.

Not rare in tide-pools. Fuegia: Orange Bay (St. 45, 11. 3. 09). Falkland Islands: Port North (St. 7 b, 2. 12. 07); near Halfway Cove, upper sublitoral (St. 4 c, 21. 11. 07); Cape Pembroke (St. 3 b, 7. 11. 07).

Distribution: Patag., Fuegia, Falkl., S. Georgia.

Amphiroa Lamx

A. Orbignyana Dcne, Ann. sci. nat. 2. sér. XVIII p. 124.

South Chile: Huafo Island, Samuel Cove, litoral (St. 31, 25. 7. 08, ♀).

The opinions on this species are divergent: Yendo, Rev. list p. 20 calls it *Cheilosporum Orbignyanum;* Setchell and Gardner, Alg. NW. Amer. p. 362 bring it to *A. tuberculosa* as a form. As it is impossible for the writer to make a special study of the group, it is left here under the old current name. My specimens agree with Harvey's figure, Ner. Aust. t. 38, and with material from California, but is more branched and has less regular joints.

Distribution: W. coast of America, Chile.

A. cretacea (Post. et Rupr.) Endl. f. *tasmanica* (Sond.) Yendo, Corall. verae of Port Renfr. p. 714 t. 51 f. l.

South Chile: Cape Alman, 20 m, sand and pebbles, only one specimen (St. 34, 1. 8. 08).

Distribution: W. coast of N. Amer., Chile, Tasman.

Corallina (L.) Lamx

C. chilensis Dcne; Harvey, Ner. Austr. p. 103; Montagne ex Gay, Hist. de Chile, Bot. VIII p. 319.

Syn. *C. officinalis* L. f. *chilensis*, Kütz., Tab. phyc. VIII t. 66; Yendo, Corall. verae of Port Renfr. p. 718, t. 54 f. 1, 56 f. 15.

Falkland Islands: Cape Pembroke, in tide-pools (St. 3 b, c, 7. 11. 07).

It is quite possible that this is only a form of *C. officinalis*, but further studies of the southern Corallines are necessary to settle this and other questions. The ramification is dense, almost every joint carrying lateral branches, all of about equal length and branched again in the same feather-like fashion.

Distribution: Japan, NW. Amer., Peru, Chile, Falkl. (first record).

f. delicatula nov. f.: Pusilla, inferne simplex, moniliformis, dein semel pinnatim ramosa; conceptacula saepius acuminata. — West Patagonia: Evangelistas Islands, tide-pools in the *Porphyra* belt (St. 26, 26. 5. 08, ♀).

This form is little more than half as coarse as *C. officinalis* or *chilensis*; it agrees with the latter in the shape of the conceptacles.

C. officinalis L. forma.

Chiloé: Punta Talcan, litoral (St. 29 B, 12. 7. 08); Huafo Island, Samuel Cove, abundant (St. 31, 25. 7. 08).

Another doubtful form, hardly separable from *C. officinalis*. It is distinguished by the great length of the lower primary pinnae, that reach to the top of the upper ones, by the comparative scarcity of normal secondary pinnules and the abundance of long, hair-like, curved branchlets, but similar forms have been reported from European waters.

Distribution of *C. officinalis:* Arctic, N. and S. temp. seas.

C. pilulifera Post. et Rupr. Illustr. Alg. p. 20 t. 40, *f. arbuscula* (Post. et Rupr.) Yendo, Rev. list p. 30.

Falkland Islands, in tide-pools: Westpoint Island (St. 8 a, 5. 12. 07); Cape Pembroke (St. 3 b, c, 7. 11. 07).

This is the *C. pilulifera* as reported by Cotton, Crypt. Falkl. p. 192; and Cotton's specimens were named by Yendo.

Distribution: Japan, W. coasts of Amer. to Fuegia, Falkl.

Additional list of literature.

Compare »Zur Kenntnis der subantarktischen und antarktischen Meeresalgen I (C. Skottsberg) and II (H. Kylin und C. Skottsberg), Wiss. Ergebn. der Schwed. Südpolar-Exped. Bd. IV.

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Index.

Synonyms in italics.

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BOTANISCHE ERGEBNISSE

DER

SCHWEDISCHEN EXPEDITION NACH PATAGONIEN UND DEM FEUERLANDE 1907—1909

X.

LES MOUSSES

PAR

J. CARDOT ET **V. F. BROTHERUS**

AVEC 4 PLANCHES

COMMUNIQUÉ LE 7 JUIN 1922 PAR C. LINDMAN ET O. ROSENBERG

STOCKHOLM
ALMQVIST & WIKSELLS BOKTRYCKERI-A.-B.
1923

De retour de sa seconde expédition aux Terres Magellaniques et à l'Antarctide, le Professeur C. Skottsberg présenta, comme il le fit après sa première expédition, les récoltes bryologiques pour l'élaboration scientifique à M. Jules Cardot; celui-ci avait pu achever avant la guerre la détermination de tout le riche matériel, mais les événements de la guerre le forcèrent à quitter sa maison à Charleville, en 1914. Pendant les quatre ans de guerre, il lui fut impossible de s'occuper de travaux scientifiques. A son retour, il ne put que constater la destruction de son mobilier ainsi que d'une partie de ses collections. Affligé par ce malheur, il ne se sentit plus disposé à continuer son travail sur le domaine de la bryologie, études auxquelles il s'était voué avec tant de succès, et qu'il considérait, lui même, comme le vrai but de sa vie. C'est pour cela que M. Skottsberg m'exprima le désir de me charger de la rédaction du matériel que M. Cardot avait étudié, ainsi que de la description des nouvelles espèces. M. Cardot n'a pas exigé qu'il soit nommé comme l'un des auteurs du travail en question, mais il y consentit après que je lui en eus exprimé mon désir.

La collection principale qui appartient au Musée de botanique d'Upsala et laquelle a été recuellie par les Professeurs T. Halle et C. Skottsberg contient 334 espèces et 59 variétés, parmi lesquelles 59 espèces et 42 variétés sont nouvelles pour la science. Puis il n'y a pas moins de 4 genres nouveaux. On trouve facilement sur la carte des »Botanische Ergebnisse I.» (K. Sv. Vet. Ak. Handl. Bd. 46. No. 3) comment la plupart des lieux de trouvailles se partagent sur les différentes zones de longitude et outre cela des renseignements sont donnés dans le Bd. 46, No. 9, p. 4 relatifs aux places qui manquent sur la carte. Bd. 50, No. 3 contient des renseignements sur les lieux de trouvailles dans les îles Falkland.

Dans son œuvre importante «La Flore bryologique des Terres Magellaniques, de la Géorgie du Sud et de l'Antarctide» M. Cardot a traité d'une manière approfondie la bryogéographie de ce vaste territoire. Je puis donc me resteindre aux renseignements correspondants sur les espèces qui manquent dans la dite œuvre.

J'ai la satisfaction d'accompter mon devoir en adressant mes remerciements à M. le Docteur Hj. Möller, qui a bien voulu surveiller l'exécution des figures qui se trouvent sur les planches ci-jointes.

V. F. Brotherus.

Sphagnales.

Sphagnaceae.

Sphagnum Ehrh.

S. medium Limpr.

var. *virescens* Warnst.

Patagonia andina: Largo de Grey, Rio del Hielo (70). Fuegia: Cami, Expedition Bay (Lago Fagnano) (69).

var. *congestum* (Schimp.) Schlieph. et Warnst.

Fuegia: Sero Almirantazgo, Puerto Gomez (78); Rio Fontaine. E. Falkland: Port Stanley, Sapper Hill (92).

var. *roseum* Warnst.

Fuegia: Rio Fontaine.

var. *purpurascens* (Russ.) Warnst.

Ins. Guaitecas: Melinca (74). Patagonia occ.: Canal Baker, Puerto Cuericueri (73); Canal Messier, Puerto Grappler (fo. *bicolor*) (76). Patagonia austr.: Skyring, Puerto Pinto (fo. *bicolor*). E. Falkland: Port Stanley, prope Hearden Water (fo. *bicolor*) (93).

var. *violascens* Warnst.

Fuegia: Lago Fagnano, Expedition Bay (71).

S. fimbriatum Wils.

Fuegia: Lago Fagnano (79). W. Falkland: Rio Warrah (94).

var. *validius* Card.

Fuegia: Rio Azopardo (82); Lapataia (81); Seno Almirantazgo, Hope Bay (80). E. Falkland: Port Stanley (95).

var. *robustum* Braithw.

Fuegia: Lago Fagnano (83); Expedition Bay (85); Rio Fontaine.

var. *molluscoides* Card. n. var.

Mollissimum, pallide lutescens. Rami vix ultra 5 mm longi, arcuatuli, breviter attenuati. Folia ramea breviter acuminata. Habitu *S. mollusco* Bruch. simillimum.

Fuegia: Cami, Expedition Bay, in sphagneto (86).

S. trinitense (C. MÜLL,) WARNST.

Fretum magellanicum: Arch. Reine Adelaide, Isla Pacheco, in palude raro (91). E. Falkland: Port Stanley—Port Harriet (99).

Area: Am. bor. atlant. et Am. trop.

S. falcatulum BESCH.

Patagonia austr.: Canal Jeronimo, Cutter Cove (89).

Fuegia: Seno Almirantazgo, Rio Fontaine (88); Lago Fagnano, Expedition Bay (90).

S. cuspidatum (EHRH. emend.) RUSS. et WARNST.

Guaitecas: Melinca.

S. nanoporosum WARNST.

E. Falkland: Port Stanley, in rivulo (97).

var. *Skottsbergii* CARD. var. nov.

Minus, rigidius, sordide pallide viride. Folia ramulina brevius acuminata.

E. Falkland: Stanley, Sapper Hill, loco humido (98).

Andreaeales.

Andreaeaceae.

Acroschisma (HOOK. FIL. et WILS.) JAEG.

A. Wilsonii (HOOK. FIL. et WILS.) JAEG.

Patagonia occ.: Peel Inlet, prope glaciem, ad rupes irroratas (102). Patagonia austr.: Skyring, Estero Ventisqueros. Fuegia: Lago Fagnano, Expedition Bay, ad saxa rivuli (100).

Andreaea EHRH.

A. appendiculata SCHIMP.

Fuegia: Rio Olivia prope Ushuaia, ad rupes irroratas pr. cataractam (353).

A. regularis C. MÜLL.

Georgia australis: Cumberland Bay, Moraine Fiord (2).

A. leiophylla CARD. et BROTH. n. sp.

Gracillima, pulvinata, pulvinulis laxis, parvis, rubescenti-fuscis, opacis. Caulis vix ultra 1 cm altus, erectus vel adscendens, dense foliosus, dichotome ramosus. Folia erecto-patentia, concava, ovato-lanceolata, acuta, usque ad 0,8 mm longa et 0,3

mm lata, integerrima, enervia, cellulis valde incrassatis, lumine angusto, omnibus laevissimis. Caetera ignota. — Tab. I. f. 1 a–c.

Fuegia: Lago Fagnano, ca. 950 m. s. m. parce (106). Species praecedenti valde affinis, sed cellulis valde incrassatis, lumine angusto dignoscenda.

A. pygmaea CARD.

Fuegia: Lago Fagnano, alt. ca. 950 m. s. m. (746).

A. grimmioides DUS.

E. Falkland: Stanley Harbour, ad rupes arenaceas (119).

A. acutifolia HOOK. et WILS.

Patagonia occ.: Archip. Adelaide, Isla Pacheco, Puerto San Ramón, alt. ca. 250 m. s. m., frequentissime (110). Fuegia: Lago Fagnano, alt. ca. 950 m. s. m. (111). W. Falkland: Mt. Adam, alt. 700 m. s. m. (118).

A. petrophila EHRH.

Patagonia andina: Lago Azara, Cerro Aspero, ad saxa reg. alp., alt. 1400 m. s. m. (352). Falkland: Weddell Island.

A. Willii C. MÜLL.

Georgia austr.: Cumberland Bay, Moraine Fiord (3).

A. viridis C. MÜLL.

Georgia austr.: Cumberland Bay, Moraine Fiord (4).

A. patagonica DUS.

Fuegia: Lago Fagnano, in valle fl. Rio Azopardo, in reg. alp., alt. 600 m. s. m. (108).

A. mutabilis HOOK. FIL. et WILS.

W. Falkland: Warrah River (117).

var. *microphylla* C. MÜLL.

Patagonia andina: Lago Azara, Cerro Aspero, ad saxa reg. alp. (107).

A. lanceolata DUS.

Patagonia andina: Valle Frias, Cerro Cáceres, alt. 900 m. s. m. (105). Fuegia: Rio Olivia prope Ushuaia, ad rupes irroratas pr. cataractam (354). W. Falkland: Mt. Adam, alt. 675–700 m. s. m. (114). E. Falkland: Mt. Usborne, in cacumine (115).

A. loricata DUS.

Fuegia: Lago Fagnano, ad rupes siccas reg. alp. (103).

A. (Enerviae) opaca CARD. et BROTH. n. sp.

Gracilescens, caespitosa, caespitibus densis, nigris, opacis. Caulis usque ad 5 cm. altus, inferne nudus, dein dense foliosus, dichotome ramosus, ramis fastigiatis. Folia plus minusve patentia, sicca flexuosula, concava, supra basim brevem valde

contracta, dein in laminam late lanceolato-subulatam attenuata, usque ad 1,5 mm longa et 0,45 mm lata, integra vel basi indistincte crenulata, enervia, cellulis laminalibus superioribus et externis usque ad basim minutis, quadratis, internis usque ad basim subulae elongatis, incrassatis, lumine lineari, omnibus laevissimis. Caetera ignota. — Tab. I. f. 2 a—c.

Georgia austr.: Cumberland Bay, Moraine Fiord (1).

Species *A. marginatae* HOOK. FIL. et WILS. valde affinis, sed statura graciliore, foliis siccis flexuosulo-patentibus, integris vel basi indistincte crenulatis, cellulis quadratis minoribus dignoscenda.

A. rupestris ROTH.

W. Falkland: Weddell Island.

Area: Eur., Am. bor.

A. pseudosubulata C. MÜLL.

Patagonia occ.: Archip. Adelaide, Isla Pacheco (112). E. Falkland: Port Stanley, Sapper Hill (120).

Neuroloma CARD. gen. nov. in Rev. bryol 1911, p. 50.

»Caespites densi, robusti, atrofusci, usque 5 cm alti. Caulis erectus, subsimplex vel parce divisus. Folia caviuscula, patentia, elliptica lanceolatave, late et obtuse acuminata vel apice contractulo subapiculata, integerrima, nervis binis lateralibus, vel si mavis limbo intramarginali incrassato, rufo, e cellulis angustis, elongatis, incrassatis, 2—3 stratosis composito et apicem versus evanido praedita, cellulis inferioribus linearibus, lutescentibus, mediis et superioribus ovatis oblongisve, subangulosis vel fere quadratis, parietibus inaequaliter incrassatis, illis inter nervos et margines sitis quadratis vel breviter rectangulis, omnibus laevibus. Perichaetium et capsula Andreaearum subgeneris Chasmocalyx. Inflorescentia dioica videtur (planta mascula ignota).» CARD. l. c.

N. fuegianum CARD. sp. nov. l. c. Tab. I. f. 3 a—k.

Fuegia: Lago Fagnano, ad margines rivuli in regione alpina (113).

Bryales.

Seligeriaceae.

Blindia Bryol. eur.

B. tenuifolia (HOOK. FIL. et WILS.) MITT.

Patagonia occ.: Archip. Adelaide, Isla Pacheco, Puerto San Ramon (244).

B. curviseta MITT.

Patagonia occ.: Skyring, Estero de los Ventisqueros. Fuegia: Lago Fagnano, Isla Lagrelius (245).

B. praticola CARD. et BROTH. n. sp.

Dioica; gracilis, caespitosa, caespitibus densis, atroviridibus, intus nigrescentibus, subopacis. Caulis erectus, usque ad 7 cm altus, dense foliosus, dichotome ramosus. Folia erecto-patentia, comalia tantum plus minusve distincte secunda, canaliculato-concava, lanceolato-subulata, obtusiuscula, usque ad 2,6 mm longa, marginibus incurvis, integerrimis vel summo apice denticulis paucis indistinctis instructis; nervo tenui, continuo; cellulis superioribus minutis, subquadratis, chlorophyllosis, dein sensim longioribus, basilaribus elongatis, angustis, alaribus numerosissimis, laxis, angulato-subrotundis, teneris, fuscis, pro parte decoloratis, in ventrem valde excavatum dispositis. Caetera ignota. — Tab. I. f. 6 a—e.

Fuegia: Port Barrow (259). Georgia austr.: Cumberland Bay, Moraine Fiord, in pratis (18).

Species praecedenti valde affinis, sed foliis nervo multo angustiore, cellulis alaribus numerosissimis, teneris, in ventrem valde excavatum dispositis dignoscenda.

B. pseudolygodipoda CARD.

Fuegia: Lago Fagnano, reg. alp. W. Falkland: Mt. Adam, 700 m. s. m. (257). Weddell Island, ad rupes quarziticas (743).

B. magellanica SCHIMP.

Patagonia andina: Lago San Martín (250). Patagonia austr.: Skyring, Estero de los Ventisqueros (247); Canal Gajardo, ad Inga-glaciem (248); Mina Marta (249). Fuegia: Lago Fagnano, Isla Lagrelius (251).

B. consimilis CARD.

W. Falkland: Roy Cove (254); Port Philomel, Halfway Cove (255). E. Falkland: Port Louis (256).

B. dicranellacea C. MÜLL.

Georgia austr.: Cumberland Bay, Moraine Fiord (8, 9).

B. torrentium CARD. et BROTH. n. sp.

Dioica; robusta, caespitosa, caespitibus densis, submersis, sordide fuscis, intus nigrescentibus, opacis. Caulis usque ad 6 cm altus, dense foliosus, simplex vel ramosus. Folia falcata, e basi oblonga lanceolata, longissime aristata, c. 5 mm longa, nervo rufo, basi tertiam partem laminae latitudinis occupante, in aristam longissimam, crassam, integram vel summo apice denticulis paucis instructam excedente; cellulis angustissime linearibus, incrassatis, alaribus numerosis laxis, teneris, hyalinis, in ventrem excavatum dispositis. Caetera ignota. — Tab. I. 7 a—f.

W. Falkland: Westpoint Island, ad saxa submersa cataractae (258).

Species *B. inundatae* (CARD.) CARD. valde affinis, sed statura robustiore, foliis falcatis, lamina e basi oblonga lanceolata dignoscenda.

Dicranoweisia LINDB.

D. antarctica (C. MÜLL.) PAR.

Patagonia occ.: Canal Gajardo, prope Inga-glaciem et prope Estero-glaciem (123).

fo. *elata* CARD. in sched. (*D. jugellifera* DUS. monente CARDOT in sched.)

Fuegia: Lago Fagnano, in alpinis (232).

var. *nigricans* CARD. et BROTH. n. var.

Caespites densi, late extensi, nigricantes, superne tantum virides. Folia e basi lata raptim longe et anguste lanceolato-subulata. Fertilis.

Patagonia austr.: Punta Arenas, Rio de las Minas. Fuegia: Lago Fagnano, ad saxa in alpinis (233).

D. funiculipes CARD. et BROTH. sp. nov.

Autoica; gracilis, caespitosa, caespitibus densis, superne lutescenti-fuscescentibus, intus atrofuscis, opacis. Caulis erectus, vix ultra 2 cm altus, inferne fusco-radiculosus, dense foliosus, dichotome ramosus. Folia sicca flexuosula, humida subsecunda, canaliculato-concava, e basi oblonga sensim lanceolato-subulata, usque ad 2,3 mm longa, integerrima vel apice indistincte crenulata; nervo tenui, cum apice evanido vel breviter excedente, dorso superne scaberulo; cellulis superioribus minutis, quadratis vel rhombeis, pellucidis, basilaribus linearibus, haud incrassatis, alaribus numerosis, laxis, quadratis, fuscis, haud in ventrem dispositis, omnibus laevissimis. Seta c. 1 cm alta, sicca flexuosula, tenuissima, lutescenti-rubra. Theca erecta, deoperculata oblongo-cylindrica, curvatula, fuscidula. Caetera ignota. — Tab. I. f. 8 a—f.

Fuegia: prope ost. fl. Rio Azopardo, ad saxa, alt. 400—500 m. s. m. (126).

Species praecedenti affinis, sed foliis duplo brevioribus, cellulis basilaribus laxioribus, haud incrassatis, alaribus haud in ventrem dispositis dignoscenda.

D. austrocrispula (C. MÜLL.) PAR.

Patagonia andina: Valle Frias, Cerro Cáceres, alt. 900 m. s. m. (128); Lago Azara, Cerro Aspero, reg. alp., alt. c. 1200 m. s. m. Fuegia: inter Lago Fagnano et Lago Deseado in silva (127); Ushuaia, Rio Olivia, ad cataractam.

D. subinclinata (C. MÜLL.) BROTH.

Patagonia andina: Lago Azara, Cerro Aspero, 1400 m. s. m. (130). Fuegia: Ushuaia, Rio Olivia (129). E. Falkland: Mt. Usborne, alt. 680 m. s. m. (144). Georgia austr.: Cumberland Bay, Moraine Fiord ad rupes (10); Bay of Isles, Rosita Harbour.

D. breviseta CARD.

Fuegia: Lago Fagnano, ca. 1000 m. s. m. (234); Expedition Bay (236); Rio Azopardo, alt. c. 700 m. s. m.

var. *atrata* CARD. et BROTH. var. nov.

A typo caespitibus usque ad 2 cm altis, atratis differt. Fertilis.

Fuegia: ad fontes fl. Rio Mascarello in valle fl. Rio Azopardo, 900 m. s. m. (237).

D. grimmiacea (C. MÜLL.) BROTH.

Georgia austr.: Bay of Islas, Rosita Harbour (12).

Hymenoloma DUS.

H. Nordenskjöldii DUS.

Patagonia occ.: Canal Gajardo, prope Inga-glaciem (239).

H. turpe (CARD.) Card.

Fuegia: Ushuaia, Rio Olivia, ad rupes irroratas prope cataractam (238).

Dichodontium SCHIMP.

D. persquarrosum (DUS.) CARD.

Patagonia andina: Territ. Chubut, Valle Koslowsky, Brookes, alt. 650 m. s. m.; Valle Carrenleufú ad Arroyo Carbon (132); Canal Fitzroy, Los Amigos (134). Patagonia occ.: Canal Gajardo, prope Inga-glaciem (136). Patagonia austr.: Punta Arenas, Rio de los Minas (131). Fuegia: Lago Fagnano, Isla Lagrelius (135). E. Falkland: Pt. Philomel, Halfway Cove. W. Falkland: Port Howard (145); Halfway Cove (146, 147).

Dicranella SCHIMP.

D. Hookeri (C. MÜLL.) CARD.

Patagonia andina: Territ. S:ta Cruz, ad fl. Rio Zeballos, ca. 1200 m. s. m. (138); Lago Buenos Aires, ad rivulum (137). Fuegia: Villamonte (749).

var. *flexisubulata* CARD. et BROTH. var. nov.

Caespites usque ad 8 cm alti, superne laete virides. Folia lamina patentissima, c. 2,5 mm longa, flexuosula, laxius areolata. Sterilis.

Patagonia: Isl. Guaitecas, Melinca.

D. (Anisothecium) **Skottsbergii** CARD. et BROTH. sp. nov.

Dioica; planta mascula tenella, caespitosa, caespitibus mollibus, laxis, laete viridibus, opacis. Caulis erectus, vix ultra 1 cm altus, infima basi fusco-radiculosus,

laxe foliosus, innovando-ramosus vel simplex. Folia decurrentia, infima minuta, dein sensim majora, e basi vaginante, superne haud dilatata subsensim in laminam siccam flexuosam, humidam strictam, patulam, canaliculato-concavam, lanceolato-subulatam, usque ad 1 mm vel paulum ultra longam, obtusissimam attenuata, marginibus erectis, superne denticulatis; nervo infra apicem folii evanido; cellulis laminalibus minutis, quadratis, chlorophyllosis, eisdem partis vaginantis multo majoribus, laxis, elongate rectangularibus, omnibus laevissimis. Bracteae androecii e basi vaginante, rufescente in laminam patulam, lanceolato-subulatam, c. 1,9 mm longam, acutiusculam, distinctius denticulatam attenuatae. Caetera ignota. — Tab. I. f. 12 a—e.

Patagonia austr.: Seno Otway, Ins. Riesco haud procul Rio Grande, in declivi argilloso litoris marini (140).

Species praecedenti valde affinis, sed foliis obtusissimis, cellulis laminalibus minutis, quadratis dignoscenda.

D. perpusilla (Dus.) Card.

Patagonia austr.: Skyring, Punta Eulojio (748).

D. Paludella (Besch.) Dus.

Fuegia: Lago Fagnano, reg. alp. (143).

D. (Anisothecium) pseudorufescens Card. et Broth. n. sp.

Dioica; tenella, gregarie crescens, rufescens, opaca. Caulis erectus, vix ultra 3 mm altus, infima basi fusco-radiculosus, simplex. Folia inferiora minuta, remota, superiora raptim multo majora, conferta, subsecunda, lanceolato-subulata, acuta vel obtusa, usque 2,5 mm longa, marginibus erectis, integris vel subintegris; nervo angusto, infra apicem folii evanido; cellulis elongatis, teneris. Seta c. 7 mm alta, rubra. Theca erecta, regularis, ovalis vel obovata, fuscescenti-rubra, laevis. Operculum longe rostratum. Planta mascula ignota. — Tab. I. f. 11 a—e.

Patagonia austr.: Seno Otway, haud procul Rio Grande in declivi argilloso ad rivulum (141).

Species *D. rufescenti* (Dicks.) Schimp. affinis, sed foliis lanceolato-subulatis, nervo tenuiore, cellulis longioribus operculoque longius rostrato dignoscenda.

var. *leptoclada* Card. et Broth. n. var.

Dense caespitosa. Caulis usque ad 1 cm alta. Folia minuta, homomalla, lanceolata, comalia tantum elongata, lanceolato-subulata. Seta usque ad 1 cm alta. Theca ut in typo.

Patagonia austr.: Seno Otway, Rio Grande, barranca ad oram maris (142).

D. (Dicranella sens. strict.) flexipes Card. et Broth. n. sp.

Dioica; gracilis, caespitosa, caespitibus densis, sordide fuscescenti-viridibus, opacis. Caulis erectus, usque ad 1 cm altus, infima basi fusco-radiculosus, dense foliosus, simplex. Folia sicca laxa adpressa, inferiora minuta, dein sensim majora, humida e basi subvaginante, oblonga subsensim in laminam patentem, lanceolato-subulatam, strictam usque ad 1,5 mm longam, obtusam, dense serrulatam, dorso

scaberrimam attenuata; nervo basi c. 0,6 mm lato, infra summum apicem folii evanido; cellulis laminalibus minutis, quadratis, chlorophyllosis, subobscuris, eisdem partis vaginantis elongate rectangularibus, teneris, lutescentibus, pellucidis. Seta 10—12 cm alta, tenuissima, sicca flexuosa, humida superne arcuata, lutea. Theca regularis, ovalis, c. 1,15 mm longa et 0,57 mm crassa, laevis, fusca, opaca, cellulis exothecii parenchymaticis, haud incrassatis. Caetera ignota. — Tab. I. f. 9 a—f.

Patagonia occ.: Rio Mañiuales prope Rio Aysen (961).

Species foliis superne dorso scaberrimis necnon seta superne arcuata facillime dignoscenda.

D. (Dicranella sens. strict.) **fuegiana** CARD. et BROTH. sp. nov.

Dioica; gracilis, caespitosa, caespitibus densis, viridibus, opacis. Caulis erectus, usque ad 2 cm altus, inferne nudus, dein dense foliosus, simplex vel superne ramosus. Folia sicca flexuoso-erecta, inferiora minuta, dein sensim majora, humida e basi brevi, semivaginante sensim vel subsensim in laminam erecto-patentem, canaliculatam, lanceolato-subulatam, strictam, obtusiusculam, dorso laevissimam attenuata, usque ad 2 mm longa, marginibus erectis, integerrimis vel summo apiculo denticulis paucis instructis; nervo basi usque ad 0,10 mm lato, continuo vel subcontinuo; cellulis laminalibus breviter et anguste rectangularibus, chlorophyllosis, subobscuris, eisdem basilaribus longioribus, angustissimis. Caetera ignota.

Fuegia: Sierra Valdivieso, in trajectu Paso de las Lagunas, alt. c. 700 m. s. m. (747).

Species a praecedente foliis integris, dorso laevibus, cellulis laminalibus breviter et anguste rectangularibus, basilaribus angustissimis dignoscenda.

Dicranoloma REN.

D. robustum (HOOK. FIL. et WILS.) PAR.

Patagonia austr.: Canal Jerónimo, Cutter Cove (172). Patagonia occ.: Peel Inlet, Puerto Témpanos, ad glaciem (173). Fuegia: Seno Almirantazgo, Puerto Gomez; Lago Fagnano; Rio Betbeder.

D. australe (BESCH.) PAR.

Patagonia occ.: Canal Messier, Hale Cove (175). Fuegia: Seno Almirantazgo, Puerto Gomez, in silva (174, fo. seta ca. 2 cm longa). W. Falkland: Weddell Island, loco sicco (203).

var. *condensatum* BROTH. n. var. Dicranum australe var. condensatum Card. in sched. Dense caespitosum. Caulis vix ultra 3 cm altus, dense foliosus; folia plus minusve subsecunda, vix ultra 7 mm longa. Sterile.

W. Falkland: Weddell Island (204).

D. Harioti (C. MÜLL.) Par.

Patagonia occ.: Archip. Adelaide, Isla Pacheco, Puerto San Ramon. Fuegia: Rio Fontaine (180); Lago Fagnano, loco paludoso (179). W. Falkland: Mt. Maria, 400—500 m. s. m. (205).

var. *laxum* DUS,

Patagonia occ.: Skyring, Ens. Rodriguez, in silva (181).

D. capillifolium (Broth.).

Patagonia occ.: Port Chacabuco, ad truncos (194). Patagonia austr.: Otway, Puerto Pomar (195). Fretum magellanicum: Ins. Dawson, Bahia Harris (193).

D. imponens (MONT.).

Patagonia austr.: Skyring, Puerto Pinto, in sphagneto (176).

D. subimponens (CARD.).

Fuegia: in valle fl. Rio Azopardo, in sphagneto (177).

D. Billardierii (SCHWÆGR.) PAR.

Ins. Guaitecas: Melinca. Patagonia occ.: Smyth Channel, Connor Cove (187); Canal Messier, Hale Cove (188); Canal Inocentes, Puerto Rayo. Patagonia austr.: Skyring, Puerto Pinto.

var. *compactum* (CARD.). — *Dicranum Billardieri* var. *compactum* Card. in Fl. bryol. terr. Magell., p. 70.

Ins. Guaitecas: Melinca (192). Patagonia austr.: Skyring, Puerto Pinto (191).

D. falklandicum (CARD.) BROTH.

E. Falkland: Port Stanley, Sapper Hill (207); Arrow Harbour.

D. nigricaule (ÅNGSTR.) PAR.

Patagonia austr.: Skyring, Estero de los Ventisqueros. W. Falkland: Mt. Adam, ca. 700 m. s. m. (206).

fo. *peruncinatum* (DUS. sub *Leucoloma*).

Patagonia austr.: Penins. Brunswick, Rio Colorado (185).

D. fuegianum (DUS.).

E. Falkland: Mt. Usborne (205 b).

Dicranum HEDW.

D. inerme MITT.

Fuegia: Lago Fagnano, alt. ca. 900 m. s. m. (148); Sierra Valdivieso, Paso de las Lagunas, alt. 700 m. s. m. (230).

D. pumilum MITT.

Fuegia: Lago Fagnano, ca. 1,000 m. s. m. (240, 242). W. Falkland: Mt. Adam, alt. 700 m. s. m. (742).

Blindia churuccana BESCH. et *B. humilis* C. MÜLL. monente Card. in sched.

D. laticostatum CARD.

Patagonia andina: Territ. Chubut, Meseta Chalia, alt. 1200 m. s. m. (150); Coyaike bajo (149); Valle Frias, Cerro Cáceres, 900 m. s. m. Georgia austr.: Cumberland Bay, Moraine Fiord (17).

D. aciphyllum HOOK. FIL. et WILS.

Patagonia occ.: Canal Messier, Puerto Grappler (153); Skyring, Estero Excelsior (152 b) et Puerto Pinto. Fuegia: in valle fl. Rio Fontaine; in valle fl. Rio Azopardo, reg. alp. (161); Seno Almirantazgo, Puerto Gomez (154); Sierra Valdiviesa, Paso de las Rayos, 700 m. s. m. (155). Ins. Wollaston, I. Otter. W. Falkland: Mt. Adam, 675—700 m. s. m. (199). E. Falkland: Port Stanley, Sapper Hill.

D. rigens BESCH.

E. Falkland; Arrow Harbour.

D. scaberrimum DUS.

E. Falkland: Arrow Harbour.

Formae ad *D. leucopterum* vergentes:

Fuegia: Rio Azopardo, Hope Harbour (158); ins. Wollaston, ins. Otter (159).

D. tenuicuspidatum C. MÜLL.

Patagonia austr.: Canal Jerónimo, Cutter Cove. W. Falkland: Mt. Hornby. E. Falkland: Mt. Usborne, alt. 680 m.

D. leucopterum C. MÜLL.

Fuegia: prope ost. fl. Rio Azopardo, 350—400 m. s. m. (160). W. Falkland: Mt. Adam, alt. 650—700 m. s. m. (200).

D. perhorridum (DUS.) CARD.

Fuegia: prope ost. fl. Rio Azopardo, alt. 560 m. s. m. (208).

D. dicranellatum Dus.

Patagonia andina: Lago Azara, in silva (260).

D. lanigerum (BESCH.) C. MÜLL.

Patagonia occ.: Smyth Channel, Connor Cove (243). Patagonia andina: Lago San Martín (167). Patagonia austr.: Canal Jerónimo, Cutter Cove (166); Skyring, Puerto Pinto. Fuegia: Lago Fagnano (168); Rio Fontaine (165); Seno Almirantazgo, Puerto Gomez et Bahia Hope haud procul fl. Rio Azopardo.

D. macropus KUNZ.

Patagonia andina: Coyaike bajo, in silva (154).
Area: Chile.

D. magellanicum CARD.

Fuegia: Rio Fontaine (170).

D. Nordenskjöldii CARD.

Georgia austr.: Cumberland Bay, Moraine Fiord (7). Area: S. Orkney et Graham Land.

Campylopus BRID.

C. modestus CARD.

E. Falkland: Stanley Harbour (219).
var. *deciduus* CARD. et BROTH. n. var.
Caespites humillimi. Folia angustiora, vix ultra 1,5 mm longi, pilo brevissimo.
E. Falkland: Hearnden Water (220).

C. introflexus (HEDW.) MITT.

W. Falkland: Rabbit Island (221); in valle fl. Rio Warrah, ad saxa (225 fo. ad *C. perincanum* vergens); Roy Cove. E. Falkland: Port Stanley (223); Sapper Hill (224).

C. canescens SCHIMP.

E. Falkland: Port Stanley, Sapper Hill (226, 227 fo. ad *C. introflexum* vergens).

C. perincanus (C. MÜLL.) PAR.

W. Falkland: Rabbit Island (228).

C. Saddleanus BESCH.

E. Falkland: Port Stanley.

C. flavonigritus DUS.

Patagonia occ.: Archip. Adelaide, Isla Pacheco (210).

C. Birgeri CARD.

E. Falkland: Port Stanley, Sapper Hill (229).

C. Guaitecae DUS.

Patagonia occ.: Archip. Adelaide, Isla Pacheco (211); Peel Inlet, ad rupes irroratas pr. glaciem.

C. fuegianus DUS.

Patagonia occ.: Peel Inlet, Puerto Témpanos, ad rupes irroratas pr. glaciem (213).

C. purpureocaulis Dus.

Patagonia occ.: Canal Messier, Isla Hale (216); Canal Inocentes, Puerto Rayo; Archip. Adelaide, Isla Atalaya, Puerto Cuerenta Dias.

C. Spegazzinii (C. Müll.) Par.

Fuegia: Seno Almirantazgo, Bahia Hope haud procul Rio Azopardo, ad truncos (217).

C. curvatifolius Card.

E. Falkland: Port Stanley.

Hygrodicranum Card. in Rev. bryol. 1911, p. 51.

Gracilescens, caespitosum, caespitibus densis, sordide viridibus, intus nigrescentibus, opacis. Caulis erectus vel adscendens, 8—10 cm altus, haud radiculosus, laxiuscule foliosus, plus minusve divisus. Folia mollia, laxe patula, praecipue superiora homomallo-subfalcata, lanceolata, sensim in subulam flexuosam, canaliculatam, crassam, integerrimam et laevissimam producta, c. 5 mm longa et c. 0,45 mm lata; nervo lato, depresso, in subula vix vel parum distincto, e 3 vel 4 eurycystis depressis, utraque pagina stereidis vel substereidis tectis cellulisque epidermicis distinctis composito; cellulis viridibus, mollibus, elongate rectangulis, fere ubique bistratosis, alaribus haud diversis. Caetera ignota.

H. falklandicum Card. sp. nov. l. c. — Tab. I. f. 13 a—d.

W. Falkland: Westpoint Isl., ad cataractam (196).

Ditrichaceae.

Ditrichum Timm.

D. conicum (Mont.) Par.

Patagonia occ.: Skyring, Estero de los Ventisqueros, ad glaciem (261); Canal Smyth, Muñoz Gamero, Puerto Ramirez (262). Fuegia: Canal Beagle, ad Darwin-glaciem (263).

var. *glaciale* Card. et Broth. n. var.

Caespites in arena sepulti, innovationibus emersis, gracillimis, laxe foliosis, laete viridibus. Theca deoperculata nigricans.

Patagonia occ.: Peel Inlet, Puerto Témpanos, loco arenoso ad marginem glaciei copiose (267). Fuegia: Canal Beagle, ad Darwin-glaciem (264, 265).

D. Hookeri (C. Müll.) Hamp.

Patagonia occ.: Peel Inlet, Puerto Témpanos, ad rupes irroratos pr. glaciem copiose (268, 272); Skyring, Estero Excelsior (269) et Estero de los Ventisqueros;

Archip. Adelaide, Isla Pacheco (273). Fuegia: Lago Fagnano, Expedition Bay (271). W. Falkland: Mt. Adam, alt. ca. 700 m. s. m. (288).

D. hyalinocuspidatum CARD.

Patagonia occ.: Archip. Adelaide, Isla Pacheco, Puerto San Ramon. Fuegia: Lago Fagnano, 1,000 m. s. m. (274). E. Falkland: Mt. Usborne (289).

D. homomallum (HEDW.) HAMP.

Fuegia: Lago Fagnano, ad rivulum (276).

var. *leptocladum* CARD. et BROTH. n. var.

Caulis innovationibus numerosis, gracillimis, usque ad 1 cm longis instructus. Fertile.

Fuegia: Canal Beagle, prope Darwin-glaciem (298).

D. (Euditrichum) Hallei CARD. et BROTH. n. sp.

Autoicum; gracile, caespitosum, caespitibus densiusculis, viridibus, vix nitidiusculis. Caulis erectus, vix ultra 1 cm altus, infima basi fusco-radiculosus, densiuscule foliosus, simplex. Folia sicca suberecta, humida erecto-patentia, stricta, e basi subvaginante in subulam obtusiusculam, integram vel summo apice denticulis paucissimis, indistinctis subsensim attenuata, usque ad 2 mm longa et 0,5 mm lata; nervo basi c. 0,8 mm lato, continuo; cellulis laminalibus breviter rectangularibus, eisdem partis vaginantis elongate linearibus. Bracteae perichaetii internae e basi alte vaginante raptim in subulam integram attenuatae. Seta vix ultra 1 cm alta, tenuissima, lutea. Theca erecta vel suberecta, oblonga, asymmetrica vel subsymmetrica, haud arcuata, c. 2 mm longa, ore haud angustata, rubescenti-fusca. Caetera ignota. Tab. I. f. 4 a—c.

Fuegia: in pratis alpinis haud procul Lago Deseado (277); Rio Azopardo, alt. 720 m. s. m. (278).

Species *D. stenostomo* CARD. valde affinis, sed foliis brevioribus, cellulis laminalibus breviter rectangularibus, seta breviore nec non theca minore, haud arcuata, ore haud angustata dignoscenda.

Ceratodon BRID.

C. purpureus (L.) BRID.

Patagonia occ.: Peel Inlet, Puerto Tempanos, ad glaciem (751). Patagonia andina: Coyaike bajo, Pampa Chica, alt. c. 950 m (283); Valle Futaleufú (286); Valle Aysen, Coyaike alto, alt. c. 750 m. Patagonia austr.: Skyring, Punta Eulojio (285). E. Falkland: Port Louis. W. Falkland: Port Philomel, Halfway Cove (294); Weddell Island et Rabbit Island.

var. *falklandicus* CARD. et BROTH. n. var.

A typo foliis nervo usque ad 0,10 mm lato recedit.

W. Falkland: Rabbit Island, in prato (293).

Philibertiella Card. in Rev. bryol. 1914, p. 37.

Dioica; habitu *Ditricho tortili* vel *D. homomallo* similis, dense caespitosa, fusco-lutescenti-viridis. Caulis 5—10 mm altus, simplex vel furcatus. Folia sicca erecto-flexuosa, e basi dilatata, oblonga, subamplexicauli sat abrupte in subulam crassiusculam, canaliculatam, mamillosam vel tuberculosam, integram aut summo apice denticulatam contracta, costa lata, depressa, quartam vel tertiam partem basis occupante, excurrente, in sectione transversali eurycystas centrales utrinque stereidis et substereidis tectas exhibente, cellulis inferioribus angustis, linearibus, laevibus, alaribus teneris, hyalinis, caeteris parietibus firmis, crassis, lutescentibus, ascendendo brevioribus et sensim in cellulas minutas, subquadratas, papillosas, obscuras subulae transeuntibus, papillis maximis, depresse mamillosis, in parietibus transversalibus sitis. Folia perichaetialia intima e basi longe vaginante convoluta, tubulosa, fere sensim subulata, in axillis propagulis ovatis vel oblongis, 2—3 cellularibus, viridibus instructa. Capsula in pedicello tenui, rubello, 8—12 mm longo erecta, anguste cylindrica, laevis, operculo alte conico-rostrato, dimidiam capsulam aequante. Peristomii dentes 16, e membrana basilari sat distincta oriundi, inaequales, crassiuscule filiformes, haud nodosi, obtusi, integri, valde papillosi, lutescentes. Annulus latus, duplex, secedens. Calyptra longa, usque ad basin capsulae producta, cucullata, laevis. Planta mascula ignota.

Ph. ditrichoidea Card. l. c. — Tab. I. f. 5 a—e.

Chiloe: Ancud et Quellon, ad rupes litoreas.

Distichium Bryol. eur.

D. capillaceum (Sw.) Bryol. eur.

Patagonia andina: Territ. S^{ta} Cruz, in alpinis prope fl. Rio Tarde (282); Lago San Martín (279); Sierra Baguales, ca. 1,400 m. s. m. (280). Fuegia: Rio Azopardo, ca. 600 m. s. m. (281).

var. *brevifolium* Bryol. eur.

E. Falkland: Port Harriet (292).

Pseudodistichium Card.

P. austrogeorgicum Card.

Georgia austr.: Cumberland Bay, Moraine Fiord (5).

var. *longifolium* Broth. n. var. — *P. falklandicum* Card. n. sp. in sched.

A typo foliis usque ad 5 mm longis recedit.

W. Falkland: Roy Cove, ad rupes litoreas; Mt. Maria.

Pottiaceae.

Weisia Hedw.

W. patagonica Card. et Broth. n. sp.

Autoica; gracilis, caespitosa, caespitibus densis, viridibus, opacis. Caulis erectus, usque ad 1,5 cm altus, inferne fusco-radiculosus, dense foliosus, dichotome ramosus. Folia sicca crispula, humida erecto-patentia, canaliculato-concava, e basi vix latiore linearia, acuta, mucronata, usque ad 2 mm longa, marginibus incurvis, integris; nervo in mucronem excedente; cellulis laminalibus minutissimis, quadratis, inferioribus breviter rectangularibus, chlorophyllosis, minutissime verrucosis, subobscuris, basilaribus multo majoribus, breviter rectangularibus, hyalinis. Seta c. 1 cm alta, tenuissima, lutescens. Theca oblonga, c. 1,3 mm longa, sicca deoperculata leniter sulcata, pallida. Peristomium destructum. Caetera ignota. — Tab. I. f. 14 a—b.

Patagonia andina: Lago San Martin, peninsula Cancha Rayada (121).

Species *W. viridulae* (L.) Hedw. valde affinis, sed foliorum forma dignoscenda.

Hymenostylium Brid.

H. longopulvinatum Dus. — *Barbula(?) ripicola* Card. n. sp. in sched.

Fuegia: Lago Fagnano, ad ripam (302).

Area: Chile.

Tortella Limpr.

T. tortuosa (L.) Limpr.

Patagonia andina: Lago San Martin, Cancha Rayada.

Didymodon Hedw.

D. Dusenii Card.

Fuegia: Ushuaia, ad fl. Rio Olivia (962); Lago Fagnano (755).

D. rigidulus Hedw.

E. Falkland: Port Harriet (344, forma).

D. andreaeoides Card. et Broth. n. sp.

Dioicus; tenellus, caespitosus, caespitibus densis, fuscis. Caulis vix ultra 2 cm altus, parce radiculosus, dense foliosus, simplex vel ramosus. Folia sicca adpressa, humida erecto-patentia, carinato-concava, e basi lata anguste lanceolata, acuta vel obtusiuscula, 0,85—0,90 mm longa et usque ad 0,35 mm lata, marginibus integris, inferne recurvis; nervo tereti, crasso, rufescente, continuo vel subcontinuo; cellulis laminalibus quadratis, incrassatis, marginalibus transverse latioribus, basilaribus in-

ternis breviter rectangularibus, omnibus laevissimis. Caetera ignota. — Tab. I. f. 15 a—e.

Patagonia andina: Lago Azara, ad rupes in silva unacum *Rhacomitrio rupestri*.

Species praecedenti valde affinis, sed foliis nervo validiore dignoscenda.

Barbula Hedw.

B. fusca C. Müll.

Patagonia andina: Territ. Chubut, Valle 16. de Octubre, Estancia Miguens (303).

B. depressa Sull. in U. S. Expl. Exp. (Wilkes) p. 5 t. 2 B. (1859). — *B. flagellaris* Auct. plur. nec Schimp.

Patagonia andina: Valle Frias (306); Territ. Chubut, Valle 16. de Octubre (430); Valle Futaleufú, Casa Rees. Fretum magellanicum: Isla Dawson, Harris Bay (304). Fuegia: Ushuaia ad fl. Rio Olivia (305); Lago Fagnano.

B. oliviensis Card.

Patagonia andina: Valle Frias, Cerro Cáceres, c. 900 m. s. m.

Calyptopogon Mitt.

C. mnioides (Schwægr.) Mitt.

Fuegia: Seno Almirantazgo, Hope Bay.

Pottia Ehrh.

P. Heimii (Hedw.) Bryol. eur.

Patagonia andina: Territ. S^{ta} Cruz, in alpinis ad Rio Zebellos, 1000 m. s. m. (309); Meseta Chalía, c. 1500 m. s. m. Fuegia: Canal de Beagle, Yandagaya (310).

var. *maxima* Card.

Patagonia austr.: Skyring Water, Pt. Allamirans (312). Fuegia: Seno Almirantazgo, Puerto Gomez (313); Bahia Slagget.

var. *eurystoma* Card. et Broth. n. var.

Folia superne plerumque argute serrata. Seta vix 1 cm alta,tenuissima. Theca minuta, macrostoma, sicca turbinata.

Patagonia andina: Valle Koslowsky, Brookes, in arena humida, alt. 650 m. s. m. (315).

P. magellanica Schimp.

Patagonia andina: Territ. Chubut, Rio Pecten ad Lago Pueyrredon (317); Valle Carrenleufú; Arroyo Carbón, c. 750 m. s. m.

P. chubutensis CARD. et BROTH. n. sp.

Autoica; robustiuscula, caespitosa, caespitibus laxiusculis, parvis, pallide viridibus. Caulis vix ultra 5 mm altus, inferne fusco-radiculosus, superne dense foliosus, propagulis axillaribus, gemmaeformibus, viridibus, obovatis, foliolis paucis, obtusiusculis, incurvis instructus, simplex. Folia comalia patentia, concava, oblonga, breviter et anguste acuminata, c. 3 mm longa, marginibus erectis, apice ± distincte serrulatis; nervo rufescente, subcontinuo, rarius brevissime excedente; cellulis superioribus angulato-rotundatis, papillosis, 0,015—0,020 mm, marginalibus minoribus, quadratis, supremis rhombeis, basilaribus elongate rectangularibus, pellucidis, laevissimis, marginalibus angustioribus. Seta c. 1,5 cm alta, tenuis, flexuosula, lutescenti-rubra. Theca macrostoma, c. 1,7 mm longa et c. 0,9 mm crassa, pallide fusca. Spori c. 0,025 mm, fusci, verrucosi. Operculum longe et oblique subulatum.

Patagonia andina: Territ. Chubut, Valle 16. de Octubre, Estancia Underwood (318).

Species praecedenti valde affinis.

P. Güssfeldtii SCHLIEPH.

Patagonia andina: Lago San Martin, Penins. Cancha Ragada (319).

P. austrogeorgica CARD.

var. *microphylla* CARD. et BROTH. n. var.

A forma typica foliis minoribus recedit.

Georgia austr.: Bay of Isles, Rosita Harbour (29).

Tortula HEDW.

T. densifolia (HOOK. FIL. et WILS.) MITT.

Patagonia austr.: Otway Water, Isla Riesco, in declivi riparia (320). E. Falkland: Port Louis (345).

T. polycarpa DUS.

Patagonia occ.: Rio Mañiules prope Rio Aysen, in silva (758).

T. robusta HOOK et GREV.

Patagonia andina: S^{ta} Cruz, haud procul fl. Rio Carbón (321). Fuegia: Lago Fagnano. E. Falkland: Choiseul Sound, Arrow Harbour (885). Georgia austr.: Cumberland Bay, Moraine Fiord, in paludosis (23).

var. *runcinata* (C. MÜLL.) BROTH.

Patagonia andina: Laguna de los Patos haud procul fl. Rio Carbón, ca. 700 m. s. m. Fuegia: Lago Fagnano, Expedition Bay, in prato alpino (322). E. Falkland: Choiseul Sound, Arrow Harbour (348).

T. pseudorobusta DUS.

Patagonia andina: Valle Futaleufú (323); Valle 16. de Octubre, Henry (759).

T. rivularis Dus.

Patagonia occ.: Peel Inlet, Puerto Témpanos, ad rivulum (760).

T. rubra Mitt.

Fuegia: Rio Fontaine haud procul ost. fl. Rio Azopardo (324). E. Falkland: Port Harriet, in litore (349, fo. ad *T. robustam* vergens).

T. leptosyntrichia (C. Müll.) Broth.

Fuegia: ad ost. fl. Rio Azopardo, in pratis alpinis, alt. 550—600 m. s. m. (325).

T. robustula Card.

W. Falkland: Port Philomel, Halfway Cove (350); Spring Point.

T. stenophylla Card. et Broth. n. sp.

Dioica; robustiuscula, caespitosa, caespitibus densiusculis, sordide viridibus vel fuscescentibus. Caulis erectus, vix ultra 1,5 cm altus, basi fusco-radiculosus, dense foliosus, dichotome ramosus vel simplex. Folia sicca laxe incurvo-adpressa, humida recurvulo-patentia, carinato-concava, e basi ovali elongate ligulata, obtusiuscula, aristata, 4—5 mm longa et 0,75—0,85 mm lata, marginibus erectis vel inferno anguste revolutis, apice serrulatis; nervo rufescente, crassiusculo, superne tenuiore, in aristam brevem, rufam, serrulatam vel sublaevem excurrente, dorso papilloso; cellulis laminalibus minutis, haud incrassatis, quadratis, papillosis, marginalibus in pluribus seriebus minoribus, basilaribus elongate et anguste rectangularibus, teneris, hyalinis, inferioribus laevissimis, marginalibus in pluribus seriebus lutescentibus. Caetera ignota. — Tab. II. f. 3 a—c.

Patagonia andina: Valle Frias, Cerro Cáceres, in declivi meridionali, 900 m. s. m. (964). Fuegia: Ushuaia, Rio Olivia, ad rupes irrigatas pr. cataractam (335). Specimina ibidem a cl. Skottsberg anno 1902 lecta (n. 66) et a cl. Cardot olim sub *T. serrulata* Hook. et Grev. memorata (Fl. bryol. terr. magell. p. 99) teste ejusdem in sched. ad *T. stenophyllam* pertinent.

Species a *T. serrulata* foliorum forma et nervo dorso papilloso differt.

T. lingulaefolia Card. et Broth. n. sp.

Dioica; gracilis, caespitosa, caespitibus densiusculis, superne viridibus, intus fuscescentibus. Caulis erectus, c. 2 cm altus, basi fusco-radiculosus, dense foliosus, simplex vel furcatus. Folia sicca adpressa, humida erecto-patentia, comalia recurvulo-patentia, carinato-concava, lingulaeformia, angulo obtusiusculo terminata, mucronata, 2,5—3 mm longa et 1—1,1 mm lata, marginibus erectis, superne serratis; nervo rufescente, crassiusculo, superne tenuiore, in mucronem brevem, robustum excedente, dorso laevi; cellulis laminalibus subrotundis, papillosis, superioribus internis c. 0,012 mm, marginalibus in pluribus seriebus multo minoribus, rufescentibus, basilaribus rectangularibus, internis longioribus, teneris, hyalinis, laevibus. Caetera ignota. — Tab. II. f. 1 a—d.

Georgia austr.: Cumberland Bay, Moraine Fiord (22).

Species *T. fontanae* (C. MÜLL.) BROTH. affinis, sed foliis multo minoribus, cellulis duplo minoribus dignoscenda.

T. Anderssonii ÅNGSTR.

Patagonia andina: Territ. Chubut, Valle Frias, Cerro Cáceres, 900 m. s. m. (327); Lago San Martin (328). Patagonia austr.: Peninsula Brecknock inter P^ta^ Carrera et Rio Amarillo (326); Punta Arenas, Rio de las Minas. Fretum magellanicum: Isla Dawson, Bahia Harris. Fuegia: Estancia Bridges (331); Lago Fagnano, Isla Lagrelius (333); in valle fl. Rio Azopardo, alt. 480—500 m. s. m. (329); Seno Almirantazgo, Hope Bay (330).

T. litorea CARD. et BROTH. n. sp.

Dioica; gracilescens, caespitosa, caespitibus densis, faciliter dilabentibus, fuscescenti-viridibus. Caulis erectus, usque ad 1,5 cm altus, parce radiculosus, dense foliosus, dichotome ramosus, ramis fastigiatis. Folia sicca imbricata, apicalia ± distincte spiraliter contorta, humida recurvulo-patentia, carinato-concava, elongate oblonga, breviter acuminata, mutica vel mucronata, c. 3 mm longa et c. 0,6 mm lata, marginibus integerrimis, ± distincte angustissime revolutis; nervo crassiusculo, rufescente, superne tenuiore, continuo vel in mucronem robustum brevissime excedente, dorso laevi; cellulis laminalibus minutis, rotundato-quadratis, dense verrucosis, subobscuris, basilaribus elongate rectangularibus, teneris, hyalinis, marginalibus in pluribus seriebus lutescentibus. Caetera ignota.

W. Falkland: Port Philomel, Halfway Cove (346). E. Falkland: Darwin Harbour (347).

Species *T. saxicolae* CARD. valde affinis, sed foliis muticis vel nervo in mucronem robustum brevissime excedente dignoscenda.

T. antarctica (C. MÜLL.) PAR.

W. Falkland: Spring Point (351).

T. monoica CARD.

E. Falkland: Port Louis. Georgia austr.: Cumberland Bay, Moraine Fiord (26).

T. campestris DUS.

Patagonia andina: Territ. Chubut, Estancia Lelej (336); Pampa Chica, ad fontes fl. Ñirehuao alt. c. 950 m. s. m. (337).

T. grossiretis CARD.

Fretum magellanicum: Isla Dawson, Bahia Harris (328).

T. pusilla ÅNGSTR.

Fuegia: Rio Fontaine, in arenosis (339).

T. subpapillosa CARD. et BROTH. n. sp.

Dioica; robustiuscula, caespitosa, caespitibus densis, ferrugineis, foliis supremis tantum virescentibus. Caulis erectus, vix ultra 1 cm altus, infima basi fusco-radiculosus, dense foliosus, simplex. Folia sicca laxe imbricata, humida patentia vel erecto-patentia, concava, inferiora minora, superiora sensim majora, e basi angustata elongate oblonga vel superne paulum latiora, obtusiuscula vel obtusa, pilifera, usque ad 3,5 mm longa et 1,1 mm lata, marginibus erectis, integerrimis; nervo crassiusculo, superne tenuiore, in pilum usque ad 0,57 mm longum, hyalinum, laevem excedente, dorso laevi, ventro propagulis numerosis, pluricellularibus, demum fuscis instructo; cellulis laminalibus superioribus subrotundis, c. 0,015 mm, minutissime papillosis vel laevibus, marginem versus minoribus, laevibus, inferioribus quadratis, basilaribus elongate rectangularibus, hyalinis, externis brevioribus. Caetera ignota. — Tab. II. f. 4 a—d.

Patagonia austr.: Skyring, Punta Eulojio (431).

Species *T. papillosae* WILS. valde affinis, sed foliorum forma, pilo longiore cellulisque minoribus dignoscenda.

T. pygmaea DUS. — *T. lithophila* DUS. monente Card. in sched.

Patagonia andina: Pampa Chica ad fontes fl. Ñirehuao, ad rupes, alt. 950 m. s. m.; Territ. Chubut, Rio Pichileufú (341); Arroyo Temenhuao, ca. 1050 m. s. m.

T. curta CARD. et BROTH. n. sp.

Dioica; gracilescens, caespitosa, caespitibus parvis fuscoviridibus. Caulis erectus vix ultra 5 mm altus, inferne rhizoideis numerosis, elongatis, fuscis instructus, dense foliosus, simplex vel furcatus, apice propagulis foliiformibus, viridibus, grosse papillosis, oblongis, obtusis, muticis vel apiculatis instructus. Folia sicca arcte imbricata, comalia spiraliter contorta, humida erecto-patentia, comalia patentia, carinato-concava, panduraeformia, obtusiuscula, mucronata, usque ad 2 mm longa, marginibus erectis, integerrimis; nervo crassiusculo, rufescente, superne paulum tenuiore, in mucronem brevem, apice hyalinum excedente, dorso minute papilloso; cellulis laminalibus minutis, subrotundis, haud incrassatis, papillosis, marginalibus in pluribus seriebus rufescentibus, basilaribus breviter rectangularibus, teneris hyalinis, laevibus, marginalibus in pluribus seriebus multo minoribus, quadratis, parce chlorophyllosis et papillosis. Caetera ignota. — Tab. I. f. 16 a—d.

Patagonia andina: Territ. Chubut, Valle 16. de Octubre (356); Valle Futaleufú, Casa Rees.

Cette espèce remarquable est probablement très proche à *T. scabrinervis* C. MÜLL., mais paraît différer par la forme des feuilles et par la nervure. N'ayant pas en l'occasion d'examiner les exemplaires originaux de celui-ci, je ne puis dire si les gemmes s'y trouvent qui sont si caractéristique pour *T. curta*.

Encalyptaceae.

Encalypta Schreb.

E. austrociliata Broth.

Patagonia andina: Lago San Martín, Cancha Rayada (343).

Area: Patagonia.

E. (Rhabdotheca) obtusata Card. et Broth. n. sp.

Autoica; glaucoviridis, inferne fuscescens. Caulis vix ultra 5 mm altus, basi fusco-radiculosus, dense foliosus, dichotome ramosus, ramis fastigiatis. Folia sicca incurva, humida erecto-patentia, carinato-concava, oblongo-ligulata, rotundato-obtusa, usque ad 2,5 mm longa, marginibus erectis, integerrimis; nervo valido, superne tenuiore, infra apicem folii evanido; cellulis laminalibus rotundato-hexagonis, 0,020—0,025 mm, valde chlorophyllosis, dense verrucosis, basilaribus internis breviter rectangularibus, hyalinis, teneris, externis angustis, limbum pluriseriatum, hyalinum efformantibus. Bracteae perichaetii ovato-oblongae, rotundato-obtusae. Seta c. 3 mm alta, rubra. Theca cylindrica, pallide fusca, ore rubescente, sicca plicata. Peristomium O. Calyptra lutea, basi irregulariter laciniata, minute papillosa, rostro asperrimo. — Tab. I. f. 17 a—d.

Patagonia andina: Territ. S^{ta} Cruz, Rio Tarde (965).

Species *E. tasmanicae* Hamp. et C. Müll. affinis, sed foliis brevioribus, rotundato-obtusis, nervo breviore cellulisque majoribus dignoscenda.

Grimmiaceae.

Grimmia Ehrh.

G. apocarpa (L.) Hedw.

E. Falkland: Port Louis.

G. conferta Funck.

Patagonia andina: Territ. Chubut, Valle 16. de Octubre, in silva *Libocedri* (361); Valle Futaleufú, Casa Rees. E. Falkland: Darwin Harbour (419).

Area: Eur., Asia occ., Abyss., Am. bor.

G. alpicola Sw.

Fuegia: Lago Fagnano (357); Rio Fontaine, ad saxa riparia.

var. *rivularis* (Brid.).

Fuegia: Rio Olivia prope Ushuaia (360).

Area: Eur., Japan, Am. bor.

G. occulta C. Müll.

Patagonia andina: Lago San Martin (364). Patagonia austr.: Punta Are-

nas, Rio de las Minas (362). Fuegia: Lago Fagnano (363); Rio Fontaine, ad saxa irrorata, Rio Olivia prope Ushuaia (365, 366). Georgia austr.: Cumberland Bay, Moraine Fiord (25).

G. celata CARD.

Fuegia: Rio Olivia prope Ushuaia (367).

G. (Schistidium) macrotyla CARD. et BROTH. n. sp.

Robustiuscula, pulvinata, pulvinulis densis, facillime dilabentibus, atrofuscis. Caulis adscendens, usque ad 3 cm altus, dense foliosus, dichotome ramosus, ramis fastigiatis. Folia sicca imbricata, humida erecto-patentia, carinato-concava, ovato-lanceolata, mutica, plus minusve obtusa, c. 1,5 mm longa et c. 0,5 mm lata, marginibus integris, erectis vel uno latere revolutis; nervo rufescente, continuo, dorso prominente, rotundato laevi; lamina unistratosa, cellulis incrassatis, haud sinuosis, lumine subrotundo, marginalibus superioribus bistratosis, basilaribus internis elongatis. Caetera ignota. — Tab. II. f. 5 a—e.

Patagonia andina: Territ. Chubut, Meseta Chalía frequentissime, alt. 12—1300 m. s. m. (382).

Species praecedenti valde affinis, sed lamina unistratosa, cellulis marginalibus superioribus tantum bistratosis dignoscenda.

G. hyalinocuspidata C. MÜLL.

Patagonia: Punta Arenas, Rio de las Minas, ad saxa (368).

var. *mutica* CARD. et BROTH. n. var.

A typo foliis omnibus muticis differt. Fertilis.

Georgia austr.: Bay of Isles, Rosita Harbour (38 p. p.).

G. grisea CARD.

Patagonia andina: Territ. S^{ta} Cruz, in alpibus ad Rio Tarde (369). Georgia austr.: Cumberland Bay, Moraine Fiord (32).

G. (Schistidium) chubutensis CARD. et BROTH. n. sp.

Robustiuscula, rigida, superne fuscescenti-viridis, inferne atrofusca. Caulis adscendens vel erectus, usque ad 1 cm vel paulum ultra altus, dense foliosus, simplex vel superne dichotome ramosus. Folia sicca arcte imbricata, humida recurvo-patentia, dein erecto-patentia, carinato-concava, late ovato-lanceolata, breviter acuminata, 2 mm vel paulum ultra longa et usque ad 1,1 mm lata, inferiora mutica, superiora pilo brevi, lato, serrato terminata, marginibus integerrimis, ultra medium folii anguste revolutis; nervo rufescente, continuo, laevi; lamina unistratosa, cellulis laminalibus minutissimis, incrassatis, haud sinuosis, lumine rotundato, marginalibus bistratosis, basilaribus haud incrassatis, internis elongate et anguste rectangularibus, externis quadratis. Caetera ignota. — Tab. II. f. 6 a—e.

Patagonia andina: Territ. Chubut, Valle 16. de Octubre, ad saxa: Futaleufú, Casa Rees.

Species praecedenti affinis, sed foliorum forma nec non cellulis minutissimis, haud sinuosis dignoscenda.

G. crassiretis CARD. et BROTH. n. sp.

Gracilis, caespitosa, caespitibus rigidis, densis, facillime dilabentibus, superne laete viridibus, intus fuscescentibus. Caulis erectus vel adscendens, 1,5—2,5 cm altus, dense foliosus, simplex vel superne dichotome ramosus. Folia sicca arcte imbricata, humida recurvo-patentia, dein erecto-patentia, carinato-concava, anguste ovato-lanceolata, 1,5—1,9 mm longa, et c. 0,5 mm lata, inferiora mutica, superiora pilo tenui, usque ad 0,45 mm longo, laevi vel sublaevi terminata, marginibus uno latere revolutis, integerrimis, lamina ubique unistratosa; nervo sat tenui, infra summum apicem folii evanido, laevi; cellulis valde incrassatis, sinuosis, superioribus lumine transversim latiore vel subquadrato, dein sensim longiore, basilaribus infimis minus incrassatis, rectangularibus, haud sinuosis, marginalibus brevibus, saepe hyalinis. Caetera ignota. — Tab. II. f. 7 a—f.

Patagonia andina: Lago San Martín (380); Valle Frias, Cerro Cáceres, in declivi meridionali, alt. c. 900 m. s. m.

Species valde peculiaris, habitu *Rhacomitriis* nonnullis similis, cum nulla alia commutanda.

G. orbicularis BRUCH.

Patagonia andina: Lago San Martín (373). Fuegia: Canal Beagle, Yendagaya ad rupes maritimas (375); Rio Fontaine.

G. humilis MITT.

Patagonia andina: Pampa chica ad fontes fl. Ñirehuao, alt. 950 m. s. m. (376); Valle Fenix pr. Lago Buenos Aires (377).

G. consobrina KUNZ.

Patagonia andina: Territ. Chubut, in valle 16. de Octubre, ad saxa in silva *Libocedri* (379); Valle Futaleufú, Casa Rees.

Area: Chile.

G. fastigiata CARD.

Fuegia: Lago Fagnano (370); Rio Fontaine, ad saxa irrigata.

G. syntrichiacea C. MÜLL.

Fuegia: Lago Fagnano, Expedition Bay (373); Rio Fontaine, ad saxa irrigata. Georgia austr.: Cumberland Bay, Moraine Fiord (30 p. p.).

G. Nordenskjöldii CARD.

Patagonia andina: Lago Azara, Cerro Aspero (371). Georgia austr.: Cumberland Bay, Moraine Fiord (30 p. p.).

Rhacomitrium Brid.

Rh. rupestre (Hook. fil. et Wils.) Hook. fil. et Wils.

Patagonia andina: Lago Azara (383); Lago Belgrano copiose. Fuegia: Lago Fagnano, Isla Lagrelius, ad saxa riparia (385).

Rh. lamprocarpum (C. Müll.) Jaeg.

W. Falkland: ad saxa rivuli in valle fl. Warrah (421); Port Philomel, Halfway Cove (420).

Rh. subnigritum (C. Müll.) Par.

Patagonia occ.: Isla Pacheco, Puerto San Ramón (392); Islas Evangelistas; Skyring, Ventisqueros Sound (391). Fuegia: Rio Olivia pr Ushuaia (390). W. Falkland: Westpoint Island (422).

Rh. nigritum (C. Müll. Jaeg.

Fuegia: Rio Olivia prope Ushuaia (387). Georgia austr.; Cumberland Bay, Moraine Fiord (37).

Rh. austrogeorgicum Par.

Georgia austr.: Cumberland Bay, Moraine Fiord (30 p. p.).

Rh. ptychophyllum Mitt.

Patagonia andina: Lago Belgrano copiose. W. Falkland: Mt. Adam, alt. c. 700 m. s. m.

Area: New Zealand.

Rh. subulifolium Card.

Fuegia: Lago Fagnano, 1,000 m. s. m. (403), Rio Azopardo, alt. 700—750 m.

Rh. heterostichoides Card.

Fuegia: supra ost. fl. Rio Azopardo, alt. c. 700 m. s. m. (407). W. Falkland: Mt. Adam, alt. c. 700 m. s. m. (424). Georgia austr.: Cumberland Bay, Moraine Fiord (35).

Rh. striatipilum Card.

Patagonia occ.: Peel Inlet, Puerto Témpanos, prope glaciem (411). Patagonia austr.: Skyring, Canal Gajardo, ad Inga-glaciem. W. Falkland: Mt. Adam, alt. 680 m. s. m. (425).

Rh. Willii (C. Müll.) Par.

Fuegia: Seno Almirantazgo, Bahía Hope, Rio Azopardo, alt. 6—700 m. s. m.

Rh. lanuginosum (Hedw.) Brid.

Patagonia occ.: Peel Inlet (416). Patagonia austr.: Skyring, Puerto Pinto, in sphagneto (417).

fo. ad *Rh. glaciale* (C. Müll.) Par. vergens.

Patagonia andina: Territ. Chubut, Valle Carrenleufú, Day, ad rupes, 600 m. s. m. (415); Valle Futaleufú, Casa Rees. Fuegia: Sierra Valdivieso, Paso de las Lagunas, alt 700 m. s. m. (413); Lago Fagnano. W. Falkland: Mt. Adam (426). E. Falkland: Pt. Stanley.

fo. *chrysablasta* (C. MÜLL.) CARD.

Patagonia occ.: Archip. Adelaide, Isla Atalaya, loco lapidoso (418). W. Falkland: Weddel Island (427). E. Falkland: Port Stanley.

Rh. loriforme DUS.

Patagonia occ.: Canal Smyth, Muñoz Gamero, Puerto Ramirez (412).

Rh. pachydictyon CARD.

Patagonia occ.: Isla Pacheco; Skyring, Canal Gajardo, ad Inga-glaciem (403). Patagonia andina: Valle Frias, Cerro Cáceres, c. 900 m. s. m. (401). Fuegia: supra ost. fl. Rio Azopardo, 518 m. s. m. (400).

Rh. symphyodontum (C. MÜLL.) JAEG.

Patagonia occ.: Peel Inlet, ad glaciem (396); Skyring, Ventisqueros Sound (395); Patagonia andina: Lago Azara, Cerro Aspero, alt. c. 1200 m. s. m. (394). Fretum magallanicum: Ins. Dawson, Harris Bay (397). Fuegia: Lago Fagnano, Expedition Bay, ad saxa rivuli (393); Ushuaia.

fo. *flavescens* (CARD.) CARD.

Patagonia occ.: Archip. Adelaide, Isla Atalaya (399). Fuegia: Rio Olivia prope Ushuaia (398).

Rh. Skottsbergli CARD. et BROTH. sp. nov.

Gracilescens, caespitosum, caespitibus densis, faciliter dilabentibus, superne lutescenti-viridibus, intus fuscescentibus. Caulis adscendens, usque ad 5 cm altus, dense foliosus, dichotome ramosus, ramis supremis brevibus, simplicibus. Folia sicca adpressa, humida raptim recurvata, dein erecto-patentia, carinato-concava, anguste lanceolata, sensim longe acuminata, 2 mm vel paulum ultra longa, pilo 0,28—0,38 mm longo, serrulato terminata, unistratosa, marginibus integerrimis, uno latere revolutis; nervo basi c. 0,6 mm lato, dorso prominente et applanato; cellulis incrassatis, valde sinuosis, laevibus, superioribus abbreviatis, dein sensim longioribus, basilaribus elongatis, alaribus vix diversis. Caetera ignota.

Fuegia: Lago Fagnano, Expedition Bay (fo. minor, nigrescens). Georgia austr.: Cumberland Bay, Moraine Fiord.

Species praecedenti affinis, sed foliis piliferis, cellulis superioribus abbreviatis jam dignoscenda. — Tab. IV. f. 3 a—e.

Rh. substenocladum CARD. in Rev. bryol. 1911, p. 127.

Gracile, caespitosum, caespitibus densis, rigidis, faciliter dilacentibus, pallide fuscescenti-viridibus. Caulis erectus vel adscendens, usque ad 4 cm altus, fragilis, dense foliosus, ± ramosus, ramulis abbreviatis. Folia sicca adpressa, humida raptim recurvata, dein erecto-patentia, carinato-concava, anguste lanceolata, sensim acumi-

nata, c. 1,7 mm longa, pilo lato, 0,28–0,38 mm longo, serrulato terminata, unistratosa, marginibus integerrimis, uno latere revolutis; nervo basi c. 0,6 mm lato, dorso prominente et applanato; cellulis incrassatis, valde sinuosis, superioribus transversim dilatatis, dein sensim longioribus, basilaribus elongatis, alaribus vix diversis. Caetera ignota. Tab. II. f. 8 a—d.

Graham Land: Cap Tuxen (Gain). Fuegia: supra ost. fl. Rio Azopardo, 600 m. s. m. (fo. nigrescens).

Species *Rh. stenoclado* Dus. affinis, sed lamina ubique unistratosa, cellulis superioribus transversim dilatatis jam dignoscenda.

Orthorichaceae.

Anoectangium (Hedw.) Bryol. eur.

A. patagonicum Card. et Broth. n. sp.

Gracillimum, caespitosum, caespitibus densissimis, superne sordide viridibus, intus fuscescentibus. Caulis erectus, usque ad 2 cm altus, fusco-radiculosus, laxiuscule foliosus, dichotome ramosus. Folia e basi erecta, breviter oblonga sensim in laminam subsquarroso-patulam, siccam erectiorem, lineari-lanceolatam, acutam vel obtusiusculam attenuata, marginibus erectis, integerrimis; nervo continuo vel subcontinuo, dorso ubique scabro; cellulis laminalibus paulum incrassatis, quadratis, c. 0,010 mm, dense et alte papillosis, basilaribus breviter rectangularibus, magis pellucidis, infimis laevibus. Caetera ignota. — Tab. II. f. 9 a—e.

Patagonia occ.: Skyring, Estero Excelsior, in silva ad saxa (434).

Eustichia (Brid.) Mitt.

E. Poeppigii (C. Müll.) Par.

Patagonia occ.: Can. Messier, Puerto Simpson.

Amphidium Nees.

A. cyathicarpum (Mont.) Broth.

Georgia austr.: Cumberland Bay, Moraine Fiord (fo., 33 p. p.).

Zygodon Hook. et Tayl.

Z. Hyadesii Besch.

Patagonia occ.: in valle fl. Rio Aysen (764). Patagonia andina: Lago San Martín (436). Patagonia austr.: Otway, Puerto Pomar (436). Fuegia: Lago Fagnano (776); Seno Almirantazgo, Bahia Hope (437); Rio Betbeder.

Z. intermedius Bryol. eur.

Patagonia andina: Lago San Martín, peninsula Cancha Rayada, 200 m. s. m.

Z. curvicaulis Dus.

Patagonia occ.: Canal Messier, Puerto Simpson (471).

Stenomitrium (Mitt.) Broth.

S. pentastichum (Mont.) Broth.

Patagonia occ.: Puerto Chacabuco.

Orthotrichum Hedw.

O. crassifolium Hook. fil. et Wils.

Patagonia occ.: Peel Inlet, Puerto Témpanos (441); Islas Evangelistas, Isla del faro (442). Patagonia austr.: Otway, Puerto Pomar (440). W. Falkland: Fox Bay (472). E. Falkland: Low Bay (474, fo. brevifolia); Rabbit Cove. Georgia austr.: Bay of Isles, Rosita Harbour (38).

O. (Gymnoporus) **anaglyptodon** Card. et Broth. n. sp.

Autoicum; robustiusculum, laxiuscule pulvinatum, rigidum, superne sordide viride, intus fuscescens. Caulis erectus vel adscendens, usque ad 2 cm. altus, dense foliosus, dichotome ramosus. Folia sicca imbricata, humida recurvo-patula, carinato-concava, e basi oblonga sensim lanceolata, breviter acuminata, obtusiuscula vel acuta, 3—3,5 mm longa et c. 0,9 mm lata, marginibus integris, late revolutis; nervo infra summum apicem folii evanido; cellulis laminalibus incrassatis, rotundatis, 0,007—0,010 mm, dense et alte papillosis, basilaribus internis elongatis, angustis, externis quadratis, hyalinis, laevibus. Seta brevissima. Theca immersa, ovalis, c. 1,9 mm longa et c. 0,85 mm crassa, leptodermis, laevis, sicca deoperculata infra orem indistincte costata, pallida; cellulis exothecii breviter rectangularibus, superioribus minoribus, quadratis, supremis in seriebus paucis transverse latioribus; stomatibus superficialibus. Peristomium simplex; exostomii dentes 16, sicci conniventes, c. 0,25 mm longi, rimosi vel inferne divisi, hyalini, grosse papillosi. Spori c. 0,015 mm, ferruginei, papillosi. Operculum e basi depresse convexo, margine rubro breviter obtuse rostratum. Calyptra campanulata, nuda vel pilis singulis instructa. Tab. II. f. 10 a—f.

Patagonia andina: Valle 16. de Octubre, in silva *Libocedri* (446); Valle Futaleufú, Casa Rees.

O. elegantulum Schimp.

Patagonia aust.: Skyring, Punta Eulojio (748). Patagonia andina: Lago Azara (449). Fuegia: Yendagaia (447).

Ulota Mohr.

U. fuegiana Mitt.

Patagonia occ.: Canal Messier, Canal Rayo (455); Skyring, Puerto Rodriguez (453). Fretum magellanicum: Isla Dawson, Bahia Harris (451).

U. pygmaeothecia (C. Müll.) Besch.

Fuegia: Seno Almirantazgo, ad ost. fl. Rio Azopardo (460).

U. Savatieri Besch.

Patagonia occ.: Peel Inlet, Puerto Témpanos (457). Patagonia austr.: Canal Jerónimo, Cutter Cove (458). Fuegia: Seno Almirantazgo, Rio Fontaine (456); Hope Bay.

U. phyllantha Brid.

Patagonia austr.: Skyring, Punta Eulojio (461).

Macromitrium Brid.

M. Hariotii Besch.

Patagonia occ.: Can. Smyth, Connor Cove (467); Archip. Adelaide, Isla Atalaya, Puerto Cuarenta Dias. Patagonia austr.: Otway, Puerto Pomar, ad rupes maritimas (465). Fretum magellanium: Isla Dawson, Bahia Harris. Fuegia: Seno Almirantazgo, Puerto Gomez (468).

M. Saddleanum Besch.

Patagonia occ.: Isla Evangelistas, Isla del Faro (464).

M. tenax C. Müll.

Patagonia occ.: Canal Inocentes, Puerto Rayo. Fuegia occ.: Isla Felix ad ramulos (471).

M. bifasciculatum C. Müll.

Patagonia occ.: Archip. Adelaide, Isla Atalaya, Puerto Cuarenta Dias, ad rupes (463).

M. hymenostomum Mont.

Patagonia occ.: Skyring, Ventisqueros Sound, ad saxa (462).

Splachnaceae.

Tayloria Hook.; emend. Mitt.

T. magellanica (Brid.) Mitt.

Patagonia austr.: Canal Jerónimo, Caleta Cutter, in silva turfosa (480). Patagonia occ.: Canal Messier, Puerto Gray (479). Fretum magellanicum: Archip. Adelaide, Isla Atalaya, Puerto Cuarenta Dias (481). Fuegia: Seno Almirantazgo, Puerto Gomez, in silva (478).

T. Dubyi Broth.

Fuegia: Lago Fagnano, ad stercus Aucheniarum in silva (476).

T. mirabilis (Card.) Broth.

Fuegia: in silva inter Lago Fagnano et L. Deseado (482); Seno Almirantazgo, Bahia Hope, haud procul Rio Azopardo (483).

Oedipodiaceae.

Oedipodium Schwægr.

O. Griffithianum (Dicks.) Schwægr.

W. Falkland: Warrah River (886).
Area: Brit., Norv., Lapp.

Funariaceae.

Funaria Schreb.

F. hygrometrica (L.) Sibth.

Patagonia andina: Territ. Chubut, Valle Carrenleufú, Arroyo Carbon (487) et Valle Koslowsky (485).

F. (Entosthodon) cavifolia Card. et Broth. n. sp.

Gracilescens, caespitosa, caespitibus laxis, mollibus, pallide viridibus, siccis subvernicosis. Caulis erectus, usque ad 5 mm altus, infima basi fusco-radiculosus, dein nudus, apice dense comoso-foliosus, simplex. Folia sicca vix mutata, humida erecto-patentia, concava, e basi spathulata oblonga vel obovato-oblonga, breviter acuminata, acuta, usque ad 2,5 mm longa et 0,9 mm lata, marginibus erectis, integris; nervo tenui, rufescente, infra apicem folii evanido; cellulis laxis, oblongo-hexagonis, basilaribus elongato-rectangularibus, marginalibus angustioribus, limbum uniseriatum, indistinctum efformantibus. Seta erecta, c. 1 cm alta, flexuosa, tenuis, rubra. Theca

suberecta, regularis, cum collo sporangii longitudinis pyriformis, c. 2 mm vel paulum ultra longa et c. 1,1 mm crassa, fusca, pachydermis, laevissima, cellulis exothecii incrassatis, brevibus, superioribus valde irregularibus, ad orificium in seriebus nonnullis transverse latioribus. Annulus 0. Peristomium simplex; exostomii dentes erecti, anguste lanceolato-subulati, striolati, rubri. Spori 0,025—0,027 mm, ferruginei, verrucosi. Operculum minutum, convexum, cellulis in seriebus rectis dispositis.

Fuegia: Lago Fagnano, ad rivulum in reg. alp. (484).

Species *F. attenuatae* (Dicks.) Lindb. valde affinis, sed foliorum forma, cellulis exothecii magis incrassatis, brevioribus, superioribus valde irregularibus, exostomii dentibus erectis cellulisque operculi in seriebus rectis dispositis dignoscenda.

Bryaceae.

Mielichhoferia Hornsch.

M. (Eumielichhoferia) **fulvonitens** Card. et Broth. n. sp.

Paroica; gracilis, caespitosa, caespitibus laxiusculis, superne viridibus, intus fuscescentibus, nitidis. Caulis usque ad 1,5 cm altus, inferne fusco-radiculosus, ultra medium subnudus, dein dense foliosus. Folia sicca laxe adpressa, comalia rarius homomolla, humida erecto-patentia, carinato-concava, lanceolata, longe et anguste acuminata, acumine saepe semitorto, marginibus erectis, superne serrulatis; nervo continuo vel breviter excedente; cellulis linearibus. Seta 1—1,5 cm alta, tenuissima, rubra. Theca inclinata vel subnutans, regularis, c. 2 mm longa et c. 0,75 mm crassa, e collo sporangio subaequante breviter oblonga, fusca. Endostomium flavescens, laevissimum; corona basilaris humillima; processus fugaces, tenuissimi. Spori 0,018—0,020 mm, ferruginei, minutissime papillosi. Operculum convexum, acute apiculatum.

Fuegia: Lago Fagnano, in prato alpino supra lacum (490).

M. (Eumielichhoferia) **Skottsbergii** Card. et Broth. n. sp.

Paroica; gracilis, caespitosa, caespitibus densiusculis, c. 1 cm altis, laete viridibus, opacis. Caulis basi fusco-tomentosus, inferne subnudus, dein dense foliosus. Folia sicca adpressa, humida erecto-patentia, carinato-concava, ovato-lanceolata, anguste acuminata, marginibus erectis, superne serrulatis; nervo rufescente, infra apicem folii evanido; cellulis elongatc rhomboideis. Seta c. 2 cm alta, tenuissima, rubra. Theca ± inclinata, irregularis, c. 3,5 mm longa et c. 1 mm crassa, e collo sporangio breviore oblonga, curvatula, fuscorubra. Endostomium flavidum, laevissimum; corona basilaris humilis; processus vix ultra 0,010 mm lati, vix appendiculati, linea divisurali distincta. Spori 0,020 mm, ferruginei, minutissime papillosi. Operculum conicum, acute apiculatum. — Tab. III. 17 a—c.

Fuegia: Canal Beagle, Bahia Slogget, ad terram (492).

Species *M. campylocarpae* (HOOK. et ARN.) MITT. affinis, sed thecae forma oculo nudo jam dignoscenda.

Orthodontium SCHWÆGR.

O. australe HOOK. FIL. et WILS.

Fuegia: in valle fl. Rio Azopardo ad fl. Rio Mascarello (494); Seno Almirantazgo, Puerto Gomez (495). W. Falkland: Westpoint Island (575); Port Philomel, Halfway Cove.

var. *brevisetum* CARD. et BROTH. n. var.

Folia breviora. Seta vix ultra 5 mm alta. Theca minor.

Fuegia: Lago Deseado, in alpinis (496).

var. *sinuosifolium* CARD. et BROTH. n. var.

Folia usque ad 7 mm longa vel paulum ultra, plerumque valde sinuoso-flexuosa. Fertilis.

Patagonia austr.: Canal Jerónimo, Cutter Cove (497).

Leptobryum WILS.

L. pyriforme (L.) WILS.

Patagonia andina: Territ. Chubut, Rio Pichileufú (498). Fuegia: Canal Beagle, Slogget Bay (499).

Webera HEDW.

W. cruda (L.) BRUCH.

Patagonia andina: Territ. Chubut, Valle Carrenleufú, Ultima Esperanza, in caverna (508); Estancia Day (506); Valle Frias (507); Valle Futaleufú, Casa Rees. Patagonia austr.: Punta Arenas, Rio Minas (505). Fuegia: Seno Almirantazgo, ad margines silvae (504).

W. nutans (SCHREB.) HEDW.

Patagonia andina: Territ. S^{ta} Cruz, Rio Zeballos, alt. c. 1400 m. s. m. (510). Patagonia austr.: Canal Jerónimo, Cutter Cove (509). Fretum magellanicum: Isla Dawson, Harris Bay (511). Fuegia: in valle fl. Rio Azopardo, Rio Fontaine (514); Almirantazgo, Puerto Gomez et Bahia Hope. W. Falkland: Rabbit Island (577); Port Philomel, Halfway Cove (578); Warrah River.

W. sphagnadelphus (C. MÜLL.) BESCH.

Fuegia: Canal Beagle, Slogget Bay (515).

W. (Lamprophyllum) **leptoclada** CARD. et BROTH. n. sp.

Gracillima, caespitosa, caespitibus densis, mollibus, usque ad 4 cm altis, superne laete viridibus, intus fuscescentibus, opacis. Caulis erectus, tenuissimus, ruber, inferne parce fusco-radiculosus, densiuscule et aequaliter foliosus, simplex. Folia imbricata, carinato-concava, ovata vel ovalia, breviter acuminata, c. 0,85 mm longa et c. 0,35 mm lata, marginibus erectis, integris; nervo viridi, infra apicem folii evanido; cellulis laxis, teneris, rhombeis, chlorophyllosis, marginalibus minoribus, inanibus. Caetera ignota. — Tab. II. f. 11 a—c.

W. Falkland: Westpoint Island, in declivi argilloso (580); Port Philomel, Halfway Cove.

Species cum *W. Ludwigii* (SPRENG.) SCHIMP. comparanda, sed statura gracillima foliisque haud decurrantibus, breviter acuminatis raptim dignoscenda.

W. commutata SCHIMP.

Patagonia: Seno Peel, ad Bordes-glaciem (forma).

Area: Eur., Cauc., Altai, Am. bor.

Mniobryum (SCHIMP.) LIMPR.

Mn. albicans (WAHLENB.) LIMPR.

Patagonia occ.: Peel Inlet, ad Bordes-glaciem (519); Skyring, Can. Gajardo ad Inga-glaciem. Patagonia andina: Territ. Chubut, Rio Pichileufú (520). Patagonia austr.: Punta Arenas, Rio Minas (517). Fuegia: Villamonte (767). W. Falkland: Westpoint Island (581, 582); Northwest Bay (583); Port Philomel, Halfway Cove. E. Falkland: Port Louis.

Mn. alticaule (C. MÜLL.) BROTH.

Patagonia andina: Territ. Chubut, Carrenleufú, Rio Carbón (966). W. Falkland: Westpoint Island (585). E. Falkland: Port Louis, ad rupes litoreas (584).

var. *crassinerve* BROTH. n. var.

Webera alticaulis var. crassinervis Card. in sched.

Robustius. Folia latiora, acuta; nervo crassiore; cellulis laxioribus. Sterile.

Patagonia austr.: Punta Arenas, Rio Minas (522). W. Falkland: inter Many Branch H^r et Port Howard (697).

Mn. austroalbicans (C. MÜLL.) BROTH.

Georgia austr.: Cumberland Bay, Moraine Fiord (48).

Area: Kerguelen.

Anomobryum SCHIMP.

A. filiforme (DICKS.; LINDB.) HUSN.

Fuegia: Lago Fagnano, Expedition Bay, ad saxa riparia irrorata (523).

A. laxirete CARD. et BROTH. n. sp.

Tenellum, caespitosum, caespitibus densis, parvis, laete viridibus, opacis. Caulis erectus, 1 cm vel paulum ultra altus, parce radiculosus, dense foliosus, innovando ramosus. Folia imbricata, cochleariformi-concava, inferiora ovalia, superiora oblonga, rotundato-obtusa, usque ad 1,2 mm longa, marginibus erectis, integerrimis; nervo tenui, rufescente, infra apicem folii evanido; cellulis omnibus laxis, superioribus oblongo-hexagonis, pellucidis, basilaribus breviter rectangularibus. Caetera ignota. — Tab. II. f. 12 a—e.

Fuegia: Lago Fagnano, Expedition Bay, ad saxa riparia irrorata (524).

Species distinctissima, foliis laxe areolatis facillime dignoscenda.

Bryum DILL.; emend. SCHIMP.

Br. inclinatum (SW.) Bryol. eur.

var. *magellanicum* CARD.

Patagonia andina: Territ. Chubut, Valle Koslowsky (525). Territ. S^ta^ Cruz, ad rivulum in prato subalpino pr. fl. Rio Zeballos, ca. 1200 m. s. m.

Br. lamprochaete DUS.

Fretum magellanicum: Isla Dawson, Harris Bay (527).

Br. Spegazzinii C. MÜLL.

Patagonia andina: Territ. Chubut, Valle Carrenleufú, Arroyo Carbón, c. 750 m. s. m. (528). W. Falkland: Port Philomel, Halfway Cove (588).

Br. parvulum CARD.

Fuegia: Canal Beagle, Yendagaia, ad rupes litoreas (536).

Br. lamprocarpum C. MÜLL.

Georgia austr.: Bay of Isles, Rosita Harbour.

Br. (Cernuiformia) **sublamprocarpum** CARD. et BROTH. n. sp.

Autoicum; robustiusculum, caespitosum, caespitibus densis, mollibus, sordide viridissimis, opacis. Caulis erectus, usque ad 2 cm altus, fusco-tomentosus, simplex. Folia caulina decurrentia, inferiora remotiuscula, comalia conferta, majora, sicca adpressa, humida erecto-patentia, carinato-concava, e basi brevissime spathulata ovalia vel oblonga, breviter acuminata, acuta, usque ad 3,5 mm vel paulum ultra longa et usque ad 1,5 mm lata, marginibus inferne anguste revolutis, integris, limbata, nervo rufescente, infra apicem folii evanido; cellulis laxis, teneris, oblongo-hexagonis, basilaribus elongate rectangularibus, marginalibus elongatis, angustis, limbum biseriatum, rufescentem efformantibus. Bracteae perichaetii multo minores, lanceolatae. Seta c. 1,5 cm alta, tenuis, rubra. Theca nutans, 2,5 mm longa et c. 1,2 mm crassa, irregularis, cum collo sporangio longiore pyriformis, pachydermis, microstoma, fusca. Exostomii dentes lanceolato-subulati, c. 0,4 mm longi, fuscolutei, apice hyalini, papil-

losi, lamellis c. 12. Endostomium sordide luteum, papillosum, exostomio adhaerens; processus angusti, rimosi; cilia 0. Spori 0,030—0,035 mm, olivacei, papillosi. Operculum minutum, convexum, obtuse apiculatum.

Patagonia austr.: Skyring, Punta Eulojio, in paludosis (535).

Species *Br. lamprocarpo* C. Müll. valde affinis, sed seta breviore, theca minore, exostomii dentibus brevioribus, distinctius papillosis, lamellis paucioribus dignoscenda.

Br. (Cernuiformia) **obscurum** Card. et Broth. n. sp.

Synoicum; robustiusculum, caespitosum, caespitibus densiusculis, mollibus, sordide viridibus, opacis. Caulis erectus, vix ultra 5 mm altus, basi fusco-tomentosus, comoso-foliosus, innovando-ramosus, innovationibus brevibus, comoso-foliosis. Folia caulina flaccida, patentia, carinato-concava, e basi breviter spathulata oblonga, breviter lanceolato-acuminata, usque ad 4 mm longa et usque ad 0,9 mm lata, marginibus anguste revolutis, integris, limbata; nervo rufescente, infra apicem folii evanido; cellulis laxis, teneris, oblongo-hexagonis, basilaribus elongate rectangularibus, concoloribus vel infimis rubris, marginalibus elongatis, angustis, limbum biseriatum, rufescentem efformantibus. Bracteae perichaetii minutae, lanceolatae, marginibus suberectis. Seta c. 2 cm alta, tenuis, rubra. Theca nutans, regularis, c. 3,5 mm longa, et c. 1 mm crassa, cum collo sporangio longiore pyriformis, pachydermis, fusca, sicca deoperculata haud constricta. Exostomii dentes lanceolato-subulati, c. 0,35 mm longi, apice hyalini, papillosi, lamellis c. 12. Endostomium sordide luteum, papillosum; processus angusti, superne dentibus adhaerens; cilia 0. Spori 0,022—0,025 mm, olivacei, papillosi. Operculum minutum, alte convexum, acute apiculatum.

Fuegia: Canal de Beagle, Slogget Bay (534).

Species praecedenti forsan affinis, sed inflorescentia synoica, theca regulari et sporis minoribus jam dignoscenda.

Br. argenteum L.

Patagonia occ.: Rio Mañiules pr. fl. Rio Aysen (539). E. Falkland: Port Louis. W. Falkland: Port Philomel, Halfway Cove.

var. *subamblyolepis* Card. et Broth. n. var.

Tenerum, caespitibus densis, ad 2,5 cm usque altis, laete viridibus, intus fuscescentibus, opacis. Folia ovata, acuta, suprema tantum breviter subpiliformiter attenuata, nervo ultra medium folii evanido. Sterile.

W. Falkland: Westpoint Island (589).

Br. Arenae C. Müll.

E. Falkland: Port Stanley (590).

Br. (Doliolidium) **anomobryoides** Card. et Broth. n. sp.

Tenellum, caespitosum, caespitibus densis, laete viridibus, nitidiusculis. Caulis erectus, usque ad 1,5 cm altus, fusco-radiculosus, dense julaceo-foliosus, simplex, propagulis axillaribus, ovalibus, foliolis incurvis, rotundato-obtusis instructis. Folia sicca et humida arcte imbricata, haud decurrentia, concava, oblongo-lanceolata, c. 0,6

mm longa, mucronata, marginibus erectis, integris, elimbata; nervo in mucronem robustum excedente; cellulis oblongo-hexagonis, leptodermibus, basilaribus haud coloratis. Caetera ignota. — Tab. II. f. 13 a—f.

Patagonia occ.: Archip. Adelaide, Isla Atalaya, Puerto Cuarenta Dias (557). Fuegia: Lago Fagnano, ad saxa riparia irrorata.

Species habitu *Anomobryi* oculo nudo jam dignoscenda.

Br. (Doliolidium) **rubrinerve** CARD. et BROTH. n. sp.

Dioicum; tenellum, caespitosum, caespitibus densis, late extensis, rubris, nitidiusculis. Caulis erectus, vix ultra 5 mm altus, fusco-radiculosus, propagulis globosis, rubris, c. 0,22 mm, multicellularibus, inferne remote, superne dense foliosus, innovando ramosus, innovationibus erectis, vix ultra 2 mm longis, dense foliosis. Folia inferiora minuta, superiora multo majora, imbricata, haud decurrentia, carinato-concava, oblongo-lanceolata, usque ad 1,1 mm longa, aristata, marginibus erectis vel angustissime recurvis, integris vel apice serrulatis, elimbata; nervo crasso, rubro, in aristam usque ad 0,15 mm longam, laevem vel ± serrulatam excedente; cellulis firmis, rhombeis, supremis angustis, basilaribus breviter rectangularibus. Caetera ignota.

E. Falkland: Stanley Harbour (594).

Species caespitibus rubris foliisque nervo crasso, rubro, in aristam excedente, cellulis firmis, supremis angustis dignoscenda.

Br. (Doliolidium) **rimicola** CARD. et BROTH. n. sp.

Dioicum; tenellum, caespitosum, caespitibus mollibus, densiusculis, late extensis, viridibus, opacis. Caulis erectus, vix ultra 6 mm altus, inferne tomento fusco, propagulis numerosis, subglobosis instructo, superne comoso-foliosus, simplex vel parce ramosus. Folia comalia sicca adpressa, humida erecto-patentia, carinato-concava, e basi breviter spathulata obovata vel ovalia, breviter acuminata, usque ad 2 mm longa et usque ad 1 mm lata, mucronata, marginibus erectis, integris vel superne minute serrulatis, limbata; nervo viridi vel rufescente, subcontinuo vel breviter excedente; cellulis laxis, teneris, ovali- vel oblongo-hexagonis, basilaribus breviter rectangularibus, concoloribus vel rubris. Caetera ignota. — Tab. III. f. 1 a—e.

W. Falkland: Roy Cove (604).

Species a praecedente foliorum forma et structura jam dignoscenda.

Br. (Doliolidium) **rhizoblastum** CARD. et BROTH. n. sp.

Dioicum; tenellum, caespitosum, caespitibus mollibus, densis, laete viridibus, intus fuscescentibus, nitidiusculis. Caulis erectus vel adscendens, usque ad 1 cm altus, inferne tomento fusco, propagulis numerosis, subglobosis instructo, densiuscule foliosus, simplex. Folia sicca laxe adpressa, humida erecto-patentia, carinato-concava, subaequalia, comalia paulum majora, oblongo-lanceolata, anguste acuminata, usque ad 2 mm longa et c. 0,5 mm lata, marginibus erectis vel angustissime revolutis, integris vel subintegris; nervo viridi vel rubescente, breviter excedente; cellulis teneris, anguste oblongis, basilaribus breviter rectangularibus, concoloribus, margi-

nalibus elongatis angustis, limbum uniseriatum, hyalinum efformantibus. Caetera ignota. — Tab. III. f. 2 a—d.

W. Falkland: Westpoint Island (592).

Species praecedenti valde affinis, sed foliorum forma et areolatione dignoscenda.

Br. (Doliolidium) **microphyllum** CARD. et BROTH. n. sp.

Dioicum; tenellum, caespitosum, caespitibus rigidis, compactis, c. 1,5 mm altis, lutescenti-viridibus, nitidis. Caulis erectus, inferne tomento fusco, propagulis numerosis, subglobosis, multicellularibus instructo, dense foliosus, innovando ramosus, innovationibus vix ultra 4 mm longis, laxiuscule et aequaliter foliosis. Folia caulina aequalia, sicca imbricata, humida erecto-patentia, carinato-concava, usque ad 1 mm longa et 0,4 mm lata, marginibus inferne angustissime revolutis, integris, elimbata; nervo rubro, subcontinuo vel breviter excedente; cellulis laxis, firmis, ovali- vel oblongo-hexagonis, basilaribus rectangularibus, concoloribus. Braeteae perichaetii minores, lanceolatae. Seta 1,5 cm alta, tenuis, rubra. Theca nutans, regularis, c. 4 mm longa et 1,1 mm crassa, e collo sporangii longitudinis oblonga, fuscidula, sicca deoperculata sub ore haud constricta. Exostomii dentes lanceolato-subulati, c. 0,55 mm longi, fuscolutei, apice hyalini, papillosi, limbati, lamellis c. 25. Endostomium sordide luteum, papillosum; processus lanceolati, rimosi; cilia brevissime appendiculata. Spori 0,015—0,020 mm, fusco-virides, minutissime papillosi. Operculum alte convexum, acute apiculatum, rubrum.

Patagonia andina: Lago San Martín, in rivulo ad glaciem Schönmeyr (542).

Specia distinctissima, foliis minutis et thecae forma facillime dignoscenda, habitu *Weberam commutatem* aemulans.

Br. gemmatum C. MÜLL.

Patagonia andina: Lago San Martín, in rivulo prope Schönmeyr-glaciem (541).

Br. posthumum C. MÜLL. — *Br. pseudogemmatum* Card. in sched.

W. Falkland: Westpoint Island (591).

Area: Uruguay.

Br. miserum CARD.

W. Falkland: Spring Point (598).

Br. delitescens CARD.

Patagonia austr.: Skyring, Puerto Pinto, in litore (543).

Br. (Leucodontium) **pseudofallax** CARD. et BROTH. n. sp.

Dioicum; robustiusculum, caespitosum, caespitibus densiusculis, mollibus, usque ad 2 cm altis, pallide viridibus, opacis. Caulis erectus, fusco-radiculosus, laxiuscule foliosus, innovando-ramosus, innovationibus vix ultra 1 cm longis, laxiuscule et subaequaliter foliosis. Folia sicca contracta et flexuosula, humida patentia, carinato-concava, infima minuta, dein sensim majora, e basi longe decurrente, angustiore ovato-ovalia, breviter acuminata, acutiuscula, usque ad 4,5 mm longa et c. 2 mm

lata, marginibus inferne anguste recurvis, integris, limbata; nervo subcontinuo vel brevissime excedente, cellulis laxis, teneris, superioribus ovali-hexagonis, dein sensim longioribus, basilaribus elongatis, concoloribus, marginalibus elongatis, angustis, limbum biseriatum efformantibus, Seta 3,5 cm alta, tenuis, rubra. Theca nutans, irregularis, c. 4 mm longa et c. 1,1 mm crassa, cum collo sporangii longitudinis pyriformis, arcuata, microstoma, pallida. Exostomii dentes lanceolato-subulati, c. 0,5 mm longi, fusco-lutei, apice hyalini, minute papillosi, lamellis c. 25. Endostomium sordide luteum, minute papillosum; processus angusti, rimosi; cilia rudimentaria. Spori 0,022—0,025 mm, fuscescentes, laeves. Operculum minutum, obtuse apiculatum.

W. Falkland: Port Philomel, Halfway Cove (593).

Species *Br. fallaci* Mild. valde affinis, sed foliis longe decurrentibus, ovato-ovalibus, exostomii dentibus fusco-luteis nec non sporis majoribus fuscescentibus, laevibus dignoscenda.

Br. (Leucodontium) **laetevirens** Card. et Broth. n. sp.

Gracile, caespitosum, cespitibus densis, laete viridibus, nitidiusculis. Caulis erectus, usque ad 2 cm altus, fusco-radiculosus, dense foliosus, propagulis axillaribus, gemmaeformibus, oblongis, viridibus, foliolis nonnullis obtusiusculis, incurvis instructis, simplex vel divisus. Folia decurrentia, sicca arcte imbricata, humida erecto-patentia, concava, late ovata, obtusiuscula, usque ad 1 mm longa et 0,65 mm lata, marginibus erectis vel inferne late subrecurvis, integris, limbata; nervo sat tenui, infra apicem folii evanido; cellulis laxis, leptodermibus, ovali- vel oblongo-hexagonis, superioribus minoribus, basilaribus oblongo-hexagonis vel breviter rectangularibus, concoloribus, marginalibus angustis, limbum uniseriatum, hyalinum efformantibus. Caetera ignota. — Tab. III. f. 3 a—e.

Patagonia occ.: Peel Inlet, Puerto Témpanos, ad rupes litoreas (555).

Species distinctissima, propagulis gemmaeformibus a speciebus ceteris sectionis jam dignoscenda.

Br. (Leucodontium) **pycnotylum** Card. et Broth. n. sp.

Dioicum; gracile, caespitosum, caespitibus densissimis, rigidis, c. 3,5 cm altis, superne fuscescenti-viridibus, intus nigrescentibus, opacis. Caulis erectus, dense et aequaliter foliosus, simplex. Folia imbricata, breviter decurrentia, oblonga, breviter acuminata, acuta, usque ad 0,95 mm longa et c. 0,4 mm lata, marginibus erectis, subintegris vel apice minutissime serrulatis, limbata; nervo validiusculo, rubescente, infra apicem folii evanido; cellulis laxe rhomboideis vel oblongo-hexagonis, basilaribus breviter rectangularibus vel subquadratis, infimis rubescentibus, marginalibus elongatis, limbum uniseriatum efformantibus. Caetera ignota. — Tab. III. f. 4 a—e.

Patagonia australis: Skyring, Puerto Garay (556).

Species *Br. rutilanti* Brid. valde affinis, sed foliis oblongis, breviter acuminatis, acutis, marginibus erectis, nervo infra apicem folii evanido, limbo uniseriato dignoscenda.

Br. Schleicheri SCHWÆGR.

var. *patagonicum* BROTH. n. var. — *Br. Hallei* CARD. in sched.

Seta usque ad 3 cm alta. Theca sicca deoperculata sub ore haud constricta. Planta mascula ramulis brevissimis, microphylllinis, axillaribus instructa.

Patagonia andina: Rio Pecten prope Lago Pueyrredon (547).

Br. (Leucodontium) **cochlearifolium** CARD. et BROTH. n. sp.

Robustiusculum, molle, nigrescens, superne sordide viride, opacum. Caulis usque ad 10 cm altus, vix radiculosus, laxe foliosus, simplex. Folia decurrentia, cochleariformi-concava, erecto-patentia, late oblonga, breviter acuminata, rotundato-obtusa, usque ad 2,6 mm longa, marginibus erectis vel suberectis, integris vel subintegris; nervo tenui, infra apicem folii evanido; cellulis laxis, teneris, oblongo-hexagonis, basilaribus rectangularibus, concoloribus, marginalibus angustis, haud incrassatis, limbum pauciseriatum efformantibus. Caetera ignota. — Tab. III. f. 5 a—e.

Georgia austr.: Cumberland Bay, Moraine Fiord (46).

Species *Br. cyclophyllo* (SCHWÆGR.) Bryol. eur. affinis, sed statura multo robustiore foliorumque forma dignoscenda.

Br. (Leucodontium) **orbiculatifolium** CARD. et BROTH. n. sp.

Dioicum; gracile, rigidiusculum, aliis muscis immixtum. Caulis erectus, vix ultra 3 mm altus, basi fusco-radiculosus, comoso-foliosus, innovando-ramosus, innovationibus erectis, usque ad 1 cm longis, ultra medium subnudis, dein laxiuscule foliosis. Folia caulina suberecta, fuscescentia, concava, oblonga, rotundato-obtusa, usque ad 1,1 mm longa et usque ad 0,45 mm lata, marginibus erectis, superne indistincte crenulatis; nervo tenui, infra apicem folii evanido; cellulis laxis, firmiusculis, ovali-hexagonis, basilaribus elongate rectangularibus, marginalibus elongatis, angustis, limbum uniseriatum efformantibus. Folia innovationum inferiora remota, minuta, superiora multo majora, laxe imbricata, laete viridia, profunde cochleariformi-concava, decurrentia, orbicularia, usque ad 1 mm longa, marginibus erectis, integris; nervo tenui, infra apicem folii evanido; cellulis laxis, leptodermibus, late ovali-hexagonis, basilaribus concoloribus, breviter rectangularibus, marginalibus angustis, limbum uniseriatum efformantibus. Bracteae perichaetii minores, late lanceolati, obtusiusculi, integri, cellulis omnibus elongatis. Seta c. 1,5 cm alta, tenuis, rubra. Caetera ignota.

Patagonia occ.: Peel Inlet, ad terram glareosam, saepe irrigatam prope glaciem (540).

Species *Br. cyclophyllo* affinis, sed statura rigidiuscula foliorumque areolatione dignoscenda.

Br. (Leucodontium) **sabuletorum** CARD. et BROTH. n. sp.

Dioicum; gracile, caespitosum, caespitibus densis, mollissimis, faciliter dilabentibus, laete viridibus opacis. Caulis erectus, vix ultra 6 mm altus, inferne fusco-radiculosus, laxiuscule foliosus, simplex. Folia longe decurrentia, sicca laxe adpressa, vix contracta, humida erecto-patentia, cochleariformi-concava, subaequalia, e basi

brevissime spathulata subrotunda vel late ovalia, inferiora rotundato-obtusa, superiora brevissime acuminata, acuta, apiculo saepe recurvato, marginibus erectis, integerrimis; nervo tenui, viridi, infra apicem folii evanido; cellulis laxissimis, tenerrimis, rhombeis vel ovali-hexagonis basilaribus rectangularibus, concoloribus, marginalibus angustioribus, limbum uniseriatum, indistinctum efformantibus. Caetera ignota. — Tab. III. f. 7 a—e.

E. Falkland: Port Harriet, in arenosis humidis.

Species *Br. cyclophyllo* valde affinis, sed foliis densioribus, siccitate haud contractis, vix limbatis dignoscenda.

Br. (Pseudotriquetra) **uvidum** CARD. et BROTH. n. sp.

Dioicum; gracilescens, caespitosum, caespitibus c. 3 cm altis, densis, mollibus, superne viridibus, intus fuscescentibus, nitidiusculis. Caulis erectus, fusco-radiculosus, laxiuscule et aequaliter foliosus, innovando ramosus, innovationibus c. 5 mm longis, laxiuscule et aequaliter foliosis. Folia decurrentia, sicca adpressa, humida suberecta, carinato-concava, oblonga, breviter acuminata, acutiuscula, usque ad 2,3 mm longa et c. 0,8 mm lata, marginibus erectis, integris, limbata; nervo sat tenui, rufescente, infra apicem folii evanido; cellulis laxis, teneris, ovali- et oblongo-hexagonis, basilaribus elongate rectangularibus, concoloribus, marginalibus elongatis, angustis, limbum 1—2 seriatum, indistinctum efformantibus. Caetera ignota. — Tab. III. f. 8 a—e.

W. Falkland; Westpoint Island, in rivulo (596).

Species *Br. neodamensi* ITZIGS. affinis, sed foliis indistincte limbatis jam dignoscenda.

Br. (Pseudotriquetra) **malacophyllum** CARD. et BROTH. n. sp.

Dioicum; robustiusculum, caespitosum, caespitibus c. 4 cm. altis, mollibus, pallide viridibus, inferne nigrescentibus, opacis. Caulis ruber, erectus, inferne fusco-radiculosus, laxiuscule foliosus, simplex. Folia omnia subaequalia, decurrentia, sicca contracta et flexuoso-adpressa, humida erecto-patentia, ovato-oblonga, breviter acuminata, c. 3 mm longa et 1,5 mm lata, aristata, marginibus angustissime recurvis, integris, limbata; nervo basi rubro, in aristam usque ad 0,3 mm longam, recurvam, apice serrulatam excedente; cellulis laxis, teneris, superioribus rhombeis. dein sensim longioribus, basilaribus rectangularibus, rubescentibus, marginalibus elongatis, angustis, limbum pauciseriatum, hyalinum efformantibus. Caetera ignota. — Tab. III. f. 9 a—e.

Patagonia andina: Territ. Chubut, Meseta Chalía, alt. c. 1100 m. s. m., in rivulo (546).

Species praecedenti affinis, sed foliis aristatis jam dignoscenda.

Br. ventricosum DICKS. — *Br. yendagaianum* Card. in sched.

Fuegia: Canal Beagle, Yendagaia, in silva (569).

Br. rigochaete Dus.

Patagonia austr.: Punta Arenas, Rio Minas (564). Fretum magellanicum: Isla Dawson, Harris Bay (563). Fuegia: Seno Almirantazgo, Puerto Gomez (562).

Br. (Pseudotriquetra) **Skottsbergii** Card. et Broth. n. sp.

Synoicum; gracilescens, caespitosum, caespitibus rigidis, compactis, vix ultra 1,5 cm altis, superne pallide viridibus, intus fuscescentibus, opacis. Caulis erectus, fusco-tomentosus, superne dense foliosus, innovando-ramosus, innovationibus brevibus, dense foliosis. Folia caulina sicca adpressa, humida erecto-patentia, carinato-concava, superiora sensim majora, ovato-lanceolata, usque ad 2 mm vel paulum ultra longa et usque ad 0,5 mm lata, aristata, marginibus late revolutis, integris, limbata; nervo firmo, rubro, in aristam brevem, strictam, subintegram excedente; cellulis firmis, oblongo-hexagonis, basilaribus rubris, internis elongate rectangularibus, alaribus laxis, abbreviatis, teneris, marginalibus limbum angustum, ± distinctum efformantibus. Bracteae perichaetii minores, lanceolatae, intimae marginibus erectis. Seta 2,5—3 cm alta, tenuis, rubra. Theca nutans, c. 2 mm longa et c. 0,5 mm crassa, cum collo sporangii longitudinis pyriformis, leptodermis, sicca deoperculata sub ore haud constricta, fuscidula. Exostomii dentes lanceolato-subulati, c. 0,40 mm longi, lutei, apice hyalini, minutissime papillosi, fundo rubro, lamellis c. 15. Endostomium sordide hyalinum, papillosum; processus angusti, fenestrati; cilia non visa. Spori c. 0,015 mm, olivacei, laeves. Operculum minutum, convexum, apiculatum.

Patagonia andina: Territ. Chubut, Rio Pichileufú (560); Pampa Chica, ad Rio Tecka (561); Arroyo Temenhuao, c. 1050 m. s. m.

Species praecedenti valde affinis, sed seta breviore et tenuiore nec non theca minore dignoscenda.

Br. macrochaete Card.

Patagonia andina: Territ. Chubut, Valle Koslowsky (568); Meseta Guenguel, Estancia Brookes, c. 650 m. s. m., Lago San Martín, in rivulo pr. Schönmeyr glaciem (529). Fuegia: ad fl. Rio Fontaine, in palude turfoso (566); in valle fl. Rio Azopardo, inter Sphagna (565).

Br. (Pseudotriquetra) **zeballosicum** Card. et Broth. n. sp.

Dioicum; gracilescens, caespitosum, caespitibus densissimis, usque ad 4 cm vel paulum ultra altis, pallide viridibus, intus fuscescentibus, opacis. Caulis erectus, usque ad innovationes fusco-tomentosus, densiuscule et aequaliter foliosus, innovationibus c. 1 cm longis, laxiuscule et aequaliter foliosus. Folia decurrentia, sicca imbricata, humida erecto-patentia, ovata, breviter et anguste acuminata, usque ad 2,5 mm longa et usque ad 1,5 mm lata, marginibus anguste revolutis, integris vel summo apice serrulatis, limbata; nervo inferne rubro, continuo vel breviter excedente; cellulis laxis, leptodermibus, rhombeis, rhomboideis vel oblongo-hexagonis, basilaribus oblongo-hexagonis, rubris, marginalibus elongatis, angustis, limbum 1—2 seriatum, lutescentem efformantibus. Seta c. 3 cm alta, tenuis, rubra. Theca nutans, c. 4

mm longa et c. 1,7 mm crassa, e collo sparongio longiore oblonga, pachydermis, sicca sub ore haud constricta, pallida. Exostomii dentes lanceolato-subulati, c. 0,55 mm longi, lutei, apice hyalini, papillosi, lamellis 25—30. Cilia appendiculata. Spori 0,015—0020 mm, lutescentes, minutissime papillosi. Operculum magnum, convexum, apiculatum. — Tab. III. f. 10 a—c.

Patagonia andina: Territ. S^{ta} Cruz, ad fl. Rio Zeballos, ad rivulum in prato subalpino, c. 1200 m. s. m.

Species *Br. ventricoso* DICKS. affinis, sed foliorum forma dignoscenda.

Br. (Pseudotriquetra) **weberoides** CARD. et BROTH. n. sp.

Synoicum; gracile, caespitosum, caespitibus densis, usque ad 2 cm altis, rigidis, faciliter dilabentibus, superne viridibus, intus fuscescentibus, opacis. Caulis erectus, inferne dense fusco-radiculosus, dense foliosus, innovando-ramosus, innovationibus erectis, usque ad 6 mm longis, dense et aequaliter foliosis. Folia decurrentia, sicca arcte adpressa, comalia spiraliter contorta, humida imbricata, carinato-concava, infima minuta, dein multo majora, subaequalia, ovato- vel oblongo-lanceolata, breviter acuminata, usque ad 1,5 mm longa, aristata, marginibus erectis vel angustissime revolutis, integris vel summo apice serrulatis, limbata; nervo valido, plerumque rubro, continuo vel breviter excedente; cellulis leptodermibus rhombeis et oblongo-hexagonis, basilaribus infimis rubris, marginalibus elongatis, angustis, limbum 1—2 seriatum efformantibus. Bracteae perichaetii multo minores, lanceolatae, aristatae. Seta c. 1,5 cm alta, rubra. Caetera ignota. — Tab. III. f. 11 a—c.

Patagonia andina: Territ. S^{ta} Cruz, in alpinis ad fl. Rio Zeballos, ad saxa, c. 1500 m. s. m. (559).

Species habitu *Weberis* nonnullis, ex. gr. *W. nutanti* sat similis.

Br. (Caespitibrym) **chorizodontum** CARD. et BROTH. n. sp.

Synoicum; gracilescens, caespitosum, caespitibus densis, 1 cm vel paulum ultra altis, viridibus, intus fuscescentibus, vix nitidiusculis. Caulis erectus, fusco-tomentosus, comoso-foliosus, innovando-ramosus, innovationibus vix ultra 5 mm longis, comoso-foliosus. Folia caulina sicca adpressa, humida erecto-patentia, carinato-concava, comalia ovato-lanceolata, usque ad 2,5 mm longa et usque ad 0,9 mm lata, marginibus fere ad apicem revolutis, integris; nervo basi rubro, in aristam laevem excedente; cellulis laxis, teneris, oblongo-hexagonis, basilaribus rectangularibus, rubris, alaribus laxis, marginalibus elongatis, angustis, limbum biseriatum, lutescentem efformantibus. Bracteae perichaetii multo minores, intimae lanceolatae, longe aristatae, marginibus erectis. Seta c. 1,5 cm alta, tenuissima, rubra. Theca pendula, regularis, c. 2 mm longa et c. 0,75 mm crassa, e collo sporangii longitudinis ovalis, leptodermis, sicca deoperculata sub ore haud constricta, fusca. Exostomii dentes anguste lanceolato-subulati, c. 0,35 mm longi, lutei, apice hyalini, sublaeves, lamellis c. 15, humilibus. Endostomium hyalinum, minutissime papillosum; corona basilaris humilis; processus angusti, rimosi; cilia fugacia, appendiculata. Spori c. 0.015 mm, fusco-virides, minutissime papillosi. Operculum minutum, conicum, obtuse apiculatum.

Patagonia austr.: Skyring, Punta Eulojio, in paludosis (538).

Species *Br. cirrato* HOPPE et HORNSCH. valde affinis, sed theca sicca sub ore haud constricta, peristomio breviore, lamellis paucioribus, humilibus, corona basilari humili operculoque minute dignoscenda.

Br. (Caespitibryum) **heteroblepharum** CARD. et BROTH. n. sp.

Synoicum; gracilescens, caespitosum, caespitibus densis, c. 1 cm altis, fuscescenti-viridibus, vix nitidiusculis. Caulis erectus, fusco-tomentosus, comoso-foliosus, innovando-ramosus, innovationibus vix ultra 5 mm longis, comoso-foliosis. Folia sicca contracta, adpressa, comalia humida suberecta, carinato-concava, oblongo-lanceolata, longe acuminata, usque ad 2,5 mm longa et 0,7 mm lata, aristata, marginibus revolutis, integris; nervo inferne rubro, in aristam integram excedente; cellulis elongate oblongo-hexagonis, basilaribus rectangularibus, rubris, alaribus laxis, marginalibus elongatis, angustis, limbum angustum, lutescentem efformantibus. Folia innovationum minora, brevius acuminata, marginibus erectis vel angustissime revolutis, indistincte limbatis. Bracteae perichaetii multo minores, lanceolatae, longe acuminatae, aristatae, marginibus erectis. Seta 1,5 cm alta, tenuis, flexuosula, rubra. Theca nutans, regularis, c. 3 mm longa et c. 1,5 mm crassa, e collo sporangii longitudinis ovalis, sicca deoperculata sub ore haud contracta, pachydermis, fusca. Exostomii dentes lanceolato-subulati, c. 0,5 mm longi, fusco-lutei, apice lutescentes, papillosi, limbati, lamellis c. 15. Endostomium papillosum; processus late perforati; cilia longe appendiculata. Spori 0,022—0,025 mm, lutescenti-virides, minutissime papillosi. Operculum minutum, plano-convexum, obtuse apiculatum.

W. Falkland: Spring Point (587); Roy Cove, ad rupes litoreas (586).

Species *Br. caespiticio* L. habitu valde similis, sed inflorescentia synoica aliisque notis dignoscenda.

Br. (Caespitibryum) **heterophyllum** CARD. et BROTH. n. sp.

Heteroicum (♀ + ♂); gracilescens, caespitosum, caespitibus compactis, c. 2,5 cm altis, superne viridibus, intus fuscescentibus, nitidiusculis. Caulis erectus, fusco-tomentosus, comoso-foliosus, innovando ramosus, innovationibus brevibus, comoso-foliosis. Folia comalia contracta, adpressa, humida erecto-patentia, carinato-concava, oblonga vel obovato-oblonga, lanceolato-acuminata, c. 3 mm longa et c. 0,95 mm lata, aristata, marginibus revolutis, integris; nervo rubescente, in aristam c. 0,57 mm longam, tenuem, integram excedente; cellulis oblongo-hexagonis, basilaribus rectangularibus, rubris, marginalibus elongatis, limbum c. 3 seriatum, lutescentem efformantibus. Bracteae perichaetii multo minores, lanceolatae, longe aristatae, intimae marginibus erectis. Seta 2—3,5 cm alta, tenuissima, rubra. Theca nutans, regularis, c 3 mm longa et c. 1 mm crassa, e collo sporangii longitudinis ovalis, sicca deoperculata sub ore haud contracta, fusca. Exostomii dentes lanceolato-subulati, c. 0,35 mm longi, lutei, apice hyalini, minutissime papillosi, fundo rubro, lamellis c. 15, humilibus. Endostomium destructum. Spori 0,025—0,030 mm, olivacei, papillosi. Operculum ignotum.

Fretum magellanicum: Isla Dawson, Harris Bay (533).

Species *Br. pallescenti* SCHLEICH. affinis, sed foliorum forma, peristomio breviore sporisque majoribus dignoscenda.

Br. perlimbatum CARD.

Patagonia austr.: Skyring, Punta Eulojio (570). Fretum magellanicum: Isla Dawson, Bahia Harris. E. Falkland: Duperrey Harbour (605); Port Stanley et Port Louis.

Br. (Trichophora) **orthothecium** CARD. et BROTH. n. sp.

Dioicum; gracilescens, caespitosum, caespitibus densis, c. 5 cm altis, superne viridibus vel fuscescenti-viridibus, intus fuscescentibus, nitidiusculis. Caulis erectus, fusco-tomentosus, inferne remote, superne dense et comoso-foliosus, innovando ramosus, innovationibus usque ad 1 cm longis, inferne remote, superne laxiuscule foliosis. Folia caulina inferiora minuta, comalia multo majora, erecto-patentia, carinato-concava, e basi spathulata oblonga, breviter acuminata, mucronata, externa breviora, interna c. 3,5 mm longa et usque ad 1 mm lata, marginibus inferne anguste revolutis, summo apice minutissime serrulatis, limbata; nervo valido, rubro, in mucronem brevem, strictam, integram excedente; cellulis laxis, leptodermibus, oblongo-hexagonis, basilaribus rectangularibus, coloratis, marginalibus elongatis, angustis, limbum 3 seriatum, rufescentem efformantibus. Bracteae perichaetii minores, lineari-lanceolatae, marginibus fere ad apicem revolutis. Seta 2—2,5 cm alta, tenuissima, rubra. Theca suberecta, c. 5 mm longa et c. 1 mm crassa, irregularis, e collo sporongii longitudinis subcylindrica, fusca, sicca deoperculata sub ore vix contracta. Exostomii dentes lanceolato-subulati, c. 0,45 mm longi, rufescentes, apice hyalini, minutissime papillosi, limbati, lamellis c. 25. Endostomium sordide lutescens, minutissime papillosum; processus fenestrati; cilia longe appendiculata. Spori 0,010—0,015 mm, lutescenti-virides, laeves. Operculum convexum, acute apiculatum.

Patagonia austr.: Skyring, Mina Magdalena, ad terram (573).

Br. (Trichophora) **brachychaete** CARD. et BROTH. n. sp.

Dioicum; gracilescens, caespitosum, caespitibus densis, mollibus, usque ad 1,5 cm altis, pallide viridibus, intus fuscescentibus, vix nitidiusculis. Caulis erectus, tomentosus, comoso-foliosus, innovando ramosus, innovationibus vix ultra 5 mm longis, comoso-foliosis. Folia caulina sicca contracta, adpressa, rarius spiraliter contorta, humida erecto-patentia, carinato-concava, e basi breviter spathulata obovata vel obovato-oblonga, usque ad 2 mm longa et usque ad 0,9 mm lata, aristata, marginibus inferne revolutis, integris, limbata; nervo rubro, in aristam brevem integram, strictam excedente; cellulis laxis, teneris, ovali- et oblongo-hexagonis, basilaribus breviter rectangularibus, rubris, marginalibus elongatis, angustis, limbum biseriatum efformantibus. Folia innovationum marginibus erectis, limbo minus distincto. Bracteae perichaetii multo minores, ovato-lanceolatae, marginibus erectis, nervo longius excedente. Seta c. 1 cm alta, tenuis, rubra. Theca immatura nutans, c. 2 mm

longa, paulum irregularis, e collo sporangio longiore ovalis, leptodermis, pallida. Operculum minutum, conicum, obtuse apiculatum.

Fretum magellanicum: Isla Dawson, Harris Bay (530).

Br. laevigatum HOOK. FIL. et WILS.

Patagonia austr.: Skyring, Punta Eulojio (551) et Estero Excelsior. Fuegia: ad fl. Rio Fontaine, in paludosis (550); Lago Roca. W. Falkland: Mt. Maria, in paludosis, 4—500 m. s. m. (600). E. Falkland: Port Stanley (601).

Br. (Rosulata) **litoris** CARD. et BROTH. n. sp.

Dioicum; gracile, caespitosum, caespitibus rigidis, compactis, viridibus, nitidiusculis. Caulis erectus, vix ultra 1 cm altus, fusco-tomentosus, dense foliosus, innovando ramosus, innovationibus erectis, brevibus, clavatis. Folia imbricata, cochleariformi-concava, infima minuta, dein sensim majora, oblonga, obtusiuscula vel obtusa, usque ad 0,9 mm longa et 0.30 mm lata, marginibus erectis, integris, elimbata, nervo rufescente, infra apicem folii evanido; cellulis laxis, firmis, ovali- et oblongo-hexagonis, marginalibus minoribus, rhombeis, basilaribus breviter rectangularibus, concoloribus. Sprogonia ignota. Planta mascula brevis, comoso-foliosa. Folia comalia ovato-oblonga, obtusa, usque ad 1,3 mm longa et 0,5 mm lata, cellulis marginalibus elongatis, anguste rectangularibus, limbum uniseriatum efformantibus.

W. Falkland: Port Philomel, Halfway Cowe, ad rupes litoreas (597).

Species *Br. microlaevigato* C. MÜLL. affinis, sed statura multo minore foliisque elimbatis, integris jam dignoscenda.

Br. (Rosulata) **submicrolaevigatum** CARD. et BROTH. n. sp.

Dioicum; gracilescens, caespitosum, caespitibus laxis, viridibus, opacis. Caulis erectus, c. 1 cm altus, basi fusco-radiculosus, dense foliosus, simplex. Folia imbricata, cochleariformi-concava, infima minuta, dein sensim majora, oblonga, obtusa, mutica vel apiculata, usque ad 2,8 mm longa et 0,95 mm lata, marginibus erectis, integris vel superne minutissime serrulatis; nervo subcontinuo; cellulis superioribus rhombeis, dein ovali-hexagonis, basilaribus breviter rectangularibus, concoloribus, marginalibus angustis, limbum indistinctum efformantibus. Caetera ignota.

Fuegia: Lago Fagnano, in ripa.

Species *Br. microlaevigato* affinis, sed statura multo robustiore oculo nudo jam dignoscenda; a *Br. laevigato*, habitu simili, foliis vix limbatis, cellulis basilaribus haud rubris diversa.

Br. Lechleri C. MÜLL.

Patagonia andina: Valle Futaleufú, ad confines chilenses (572). E. Falkland: Choiseul Sound, Arrow Harbour (887).

Area: Chile.

Br. (Rosulata) **macrophyllum** CARD. et BROTH. n. sp.

Robustum, caespitosum, caespitibus laxis, sordide fuscescenti-viridibus, opacis. Caulis erectus, usque ad 6 cm altus, inferne fusco-radiculosus, dense et aequaliter

foliosus, foliis inferioribus destructis, dichotome ramosus. Folia sicca contracta, humida patentia vel patula, carinato-concava, oblonga vel obovato-oblonga, breviter acuminata, usque ad 5 mm longa et usque ad 1,7 mm lata, marginibus erectis vel inferne anguste revolutis, superne minute serrulatis, limbata; nervo basi latiusculo, superne sensim angustiore, plerumque breviter excedente; cellulis firmis, ovali- vel oblongo-hexagonis, basilaribus breviter rectangularibus, rubris, marginalibus elongatis, angustis, limbum usque ad 5 seriatum efformantibus. Caetera ignota.

W. Falkland: Port North (603). E. Falkland: Duperrey Harbour, in rivulo (602).

Species *Br. eximio* MITT. valde affinis, sed foliis brevius acuminatis, nervo continuo vel breviter excedente dignoscenda.

var. *latifolium* BROTH. n. var. — *Br. megalophyllum* CARD. n. sp. in sched.

Folia latiora; nervo longius excedente; cellulis paulum majoribus, marginalibus incrassatis. Sterile.

E. Falkland: Choiseul Sound, Arrow Harbour, ad terram humidam.

Leptostomaceae.

Leptostomum R. BR.

L. Menziesii (HOOK.) R. BR.

Patagonia occ.: Peel Inlet, Puerto Témpanos (633); Canal Gajardo (632). Fuegia: Seno Almirantazgo, Bahía Hope haud procul Rio Azopardo.

Mniaceae.

Mnium (DILL.) L. emend. SCHIMP.

M. affine BLAND.

var. *magellanicum* CARD. et BROTH. n. var.

Gracilescens. Caulis usque ad 2 cm altus. Folia ovalia vel ovato-ovalia, cuspidata, usque ad 4 cm longa et 2,5 mm lata, limbo 3—4 seriato, dentibus minutis, unicellularibus, obtusis instructo. Sterile.

Patagonia andina: Terr. S^{ta} Cruz, Laguna de los Patos haud procul Rio Carbón, in prato paludoso (609).

Mnium (Integerrimae) **subpunctatum** CARD. et BROTH. n. sp.

Gracilescens, caespitosum, caespitibus densis, sordide et pallide viridibus, inferne nigrescentibus, opacis. Caulis erectus, usque ad 5 cm altus, haud tomentosus, laxe foliosus, simplex. Folia sicca paulum mutata, humida patentia, planiuscula, e basi breviter et anguste spathulata subrotunda, brevissime cuspidata vel mutica, usque

ad 5 mm longa et 3 mm lata, marginibus basi revolutis, dein erectis integerrimis; nervo rubescente, basi lato, dein sensim angustiore, infra summum apicem folii evanido; cellulis in seriebus obliquis dispositis, angulato-ovalibus, ad nervum laxioribus, usque ad 0,075 mm longis et 0,035 mm latis, apicalibus et externis multo minoribus, marginalibus linearibus, limbum unistratosum, triseriatum efformantibus. Caetera ignota.

Patagonia andina: Terr. S^{ta} Cruz, Laguna de los Patos haud procul Rio Carbón, alt. c. 700 m. s. m., copiose in aqua (610); ad fontes fl. Rio Bagnales, in prato paludoso.

Species *M. punctato* (L., Schreb.) Hedw. affinis, sed statura graciliore, foliis cellulis minoribus, limbo unistratoso, e cellulis minus incrassatis instructo dignoscenda.

Cinclidium Sw.

Cinclidium stygium Sw.

Fuegia: in valle fl. Rio Fontaine, in prato paludoso (612).

Rhizogoniaceae.

Rhizogonium Brid.

Rh. mnioides (Hook.) Schimp.

Patagonia occ.: Canal Moraleda, Puerto Chacabuco (615); Rio Mañiuales prope Rio Aysen (618); Canal Inocentes, Pto. Rayo; Peel Inlet, Puerto Témpanos (617). Fretum magellanicum: Ins. Dawson, Bahia Harris, in silva (621). Fuegia: Seno Almirantazgo, Bahía Hope haud procul Rio Azopardo; Rio Fontaine (619).

Rh. Novae Hollandiae Brid.

var. *patagonicum* Card. et Broth. n. var.

Folia superne argute serrata, nervo superne tenuiore.

Ins. Guaitecas: Melinca, ad truncos arborum (613). Patagonia occ.: Connor Cove (614).

Goniobryum Lindb.

G. subbasilare (Hook.) Lindb.

Patagonia austr.: Otway, ad fl. Rio Grande (622). Fuegia: Seno Almirantazgo, Puerto Gomez (625); Lago Fagnano, in declivi abrupto reg. alp.

Aulacomniaceae.

Leptotheca Schwægr.

L. Gaudichaudii (Spreng.) Schwægr.

Patagonia andina: Lago San Martín (627). Fuegia: Seno Almirantazgo, Puerto Gomez in silva; Cerro Hope haud procul Rio Azopardo (629).

Aulacomnium Schwægr.

A. palustre (L.) Schwægr.

Patagonia andina: Terr. S^ta^ Cruz, Rio Carbón.

Meeseaceae.

Meesea Hedw.

Meesea trichodes (L.) Spruce.

var. *alpina* (Funck) Bryol. eur.

Fuegia: Lago Deseado, in pratis alpinis (634); Rio Fontaine, in prato paludoso (636).

Area: Eur. et. Am. bor., reg. alp.

Meesea hymenostoma Card. et Broth. n. sp.

Autoica; caespitosa, caespitibus densis, laete viridibus, intus nigrescentibus, opacis. Caulis erectus, usque ad 5 cm altus, fusco-tomentosus, dense foliosus, simplex vel ramosus. Folia sicca adpressa, humida erecto-patentia, comalia rarius homomallula, e basi ovali, paulum latiore lanceolato-ligulata, rotundato-obtusa, usque ad 3 mm vel paulum ultra longa, marginibus revolutis, integerrimis; nervo basi lato, dein sensim angustiore, infra summum apicem folii evanido; cellulis rectangularibus, superioribus brevioribus, dein sensim longioribus, basilaribus elongatis. Seta 2,5—3 cm alta, tenuis, sicca flexuosula, rubra. Theca e collo erecto arcuato-pyriformis, pallide fusca, nitida, cellulis exothecii minutis. Exostomii dentes vix ultra 0,075 mm longi, fusci, laevissimi; processus lineares, fusci, laeves, marginibus integris. Spori 0,050 mm, lutescenti-virides, minutissime papillosi. Operculum minutum obtusum.

Patagonia andina: Sierra de los Baguales, in trajectu Centinela-Baguales, alt. 1350 m. s. m., in prato paludoso (638).

Species praecedenti foliorum forma et structura omnino similis, sed cellulis exothecii minoribus, exostomii dentibus minoribus processibusque margine integris dignoscenda.

Bartramiaceae.

Bartramia Hedw.

B. Mossmanniana C. Müll.

Patagonia occ.: Canal Moraleda, Puerto Chacabuco, ad truncos (643). Patagonia andina: Lago S. Martín (644). Patagonia austr.: Punta Arenas, Rio Minas (639). Fretum magellanicum: Almirantazgo, Bahía Hope haud procul Rio Azopardo.

B. patens Brid.

Patagonia occ.: Peel Inlet, ad rupes irroratas (646). Patagonia andina: Lago San Martín (647). Patagonia austr.: Rio de las Minas pr. Punta Arenas. Fretum magellanicum: Ins. Dawson, Harris Bay (645). Fuegia: Rio Olivia prope Ushuaia (648). W. Falkland: Port Philomel, Halfway Cove (699); Roy Cove. E. Falkland: Port Louis (698); Choiseul Sound, Arrow Harbour (888).

fo. *austrogeorgica* (Par.) Card.

Georgia austr.: Cumberland Bay, Moraine Fiord (51).

var. *Arenae* (Besch.) Card.

Fuegia: Rio Olivia, Ushuaia (652); prope Lago Deseado (651). E. Falkland: Camilla Creek (702).

B. leucocolea Card.

Patagonia andina: Sierra de los Baguales, ca. 1400 m. s. m. (654). Georgia austr.: Cumberland Bay, Moraine Fiord (49).

var. *brevifolia* Broth. et Card. n. var.

Gracilis, caespitibus compactis, superne saturate glauco-viridibus. Caulis usque ad 6 cm altus. Folia arcte adpressa, vix ultra 2 mm longa, lamina anguste subulata. Sterilis.

Georgia austr.: Cumberland Bay. Moraine Fiord (50).

var. *glaucoflava* Broth. et Card. n. var.

Gracilescens, caespitibus densis, superne glauco-viridibus, intus flavescenti-fuscescentibus. Caulis usque ad 6 cm altus. Folia erecto-patentia, c. 4 mm longa, parte vaginante flava. Sterilis.

Fuegia: Lago Fagnano, Expedition Bay, ad rupes, reg. alp. (655).

B. pycnocolea C. Müll.

Fuegia: Sierra Valdivieso, Paso de las Lagunas, reg. alp. (653). Georgia austr.: Cumberland Bay, Moraine Fiord (53).

B. (Vaginella) leptophylla Card. et Broth. n. sp.

Gracilescens, caespitosa, caespitibus densis, glaucescenti-viridibus. Caulis erectus, usque ad 4 cm altus, fusco-tomentosus, simplex vel ramosus. Folia e basi

vaginante, plerumque flavescente, c. 0,95 mm longa, et 0,35 mm lata, superne dilatata ibidemque rotundata subito in laminam patentem, strictam, anguste subulatam, c. 3 mm longam, serrulatam attenuata; nervo in aristam serratam excedente, dorso scabro; cellulis partis vaginantis elongate et anguste linearibus, supremis externis brevibus, laxis, teneris, laminalibus breviter rectangularibus, papillosis. Caetera ignota.

Patagonia austr.: Skyring, Mina Magdalena (659).

Species *B. leucocoleae* affinis, sed foliis angustioribus, nervo in aristam longiorem excedente dignoscenda.

B. (Vaginella) **scaberrima** CARD. et BROTH. n. sp.

Gracilis, caespitosa, caespitibus densis, molliculis, superne viridibus, vix glaucescentibus, intus fuscescentibus. Caulis erectus, vix ultra 1 cm altus, fusco-tomentosus, simplex. Folia e basi vagninante, plerumque flavescente. superne dilatata ibidemque rotundata, c. 0,75 mm longa et c. 0,3 mm lata subito in laminam erecto-patentem, anguste subulatam, c. 2 mm longam, argute serratam attenuata; nervo in aristam serratam excedente, dorso scaberrimo; cellulis partis vaginantis elongate et anguste linearibus, supremis externis brevibus, laxis teneris, laminalibus breviter rectangularibus, alte papillosis. Caetera ignota.

Patagonia andina: Territ. Chubut, Valle Carrenleufú, Day, 600 m. s. m. (661); Territ. S^{ta} Cruz, Rio Zeballos, ad saxa, 1500 m. s. m. (660).

Species precedenti affinis, sed mollitie, colore vix glaucescente foliisque argute serratis, cellulis scaberrimis dignoscenda.

B. (Vaginella) **abbreviata** CARD. et BROTH. n. sp.

Dioica; gracilis, caespitosa, caespitibus compactis, superne glaucescenti-viridibus, intus fuscescentibus. Caulis erectus, usque ad 2,5 cm altus, fusco-tomentosus, simplex vel ramosus. Folia sicca arcte imbricata, humida erecto-patentia, e basi vaginante, hyalina vel flavescente, superne dilatata ibidemque rotundata, usque ad 0,75 mm longa et 0,75 mm lata subito in laminam lanceolato-subulatam, usque ad 2 mm longam attenuata, marginibus erectis, serrulatis; nervo in aristam serrulatam breviter excedente, dorso scabro; cellulis partis vaginantis elongate et anguste linearibus, supremis externis brevioribus sed vix laxioribus, laminalibus breviter rectangularibus, papillosis. Caetera ignota.

Patagonia andina: Territ. S^{ta} Cruz, ad fontes fl. Rio Zeballos, ca. 1550 m. s. m. (656); Sierra de los Baguales, ca. 1400 m. (657).

Species distinctissima, inflorescentia dioica, statura gracili, caespitibus compactis foliisque brevibus, siccis adpressis dignoscenda.

B. ambigua MONT.

Patagonia andina: in valle fl. Rio Futaleufú haud procul Casa Rees, ca. 300 m. s. m.; Valle 16. de Octubre, Estancia Miguens (663).

Area: Peru et Chile.

var. *horrida* CARD. et BROTH. n. var.

Glaucoviridis. Folia horride patula. Sterilis.

Patagonia andina: Valle 16. de Octubre, Estancia Miguens (665).

Conostomum SW.

C. australe SW.

Patagonia occ.: Peel Inlet (667). Patagonia andina: Cerro Aspero ad Lago Azara, alt. c. 1200 m. s. m. Fuegia: Rio Azopardo. W. Falkland: Mt. Adam, 700 m. s. m. (704). E. Falkland: Mt. Usborne, 683 m. s. m. (705). Georgia austr.: Cumberland Bay, Moraine Fiord (55).

var. *piliferum* CARD. et BROTH. n. var.

A forma typica foliis longe piliferis differt.

Fuegia: Lago Fagnano, in ripa paludosa (668).

var. *microphyllum* CARD. et BROTH. var. nov.

A forma typica foliis minoribus, 1,35—1.50 mm longis differt.

Patagonia andina: Territ. S^{ta} Cruz, Lago Azara, Cerro Aspero (670). Fuegia: Lago Fagnano, Expedition Bay (669). W. Falkland: Mt. Adam, 700 m. s. m. (704 b).

C. perpusillum CARD. et BROTH. n. sp.

Tenellum, caespitosum, caespitibus parvis, densis, rigidis, glaucoviridibus. Caulis erectus, vix ultra 1 cm altus, fusco-radiculosus, ramosus. Folia arcte imbricata, in seriebus quinque distinctissimas subspiraliter disposita, lanceolata, breviter acuminata, breviter aristata, vix ultra 1 mm longa et 0,3 mm lata, marginibus erectis, integris vel superne minutissime serrulatis; nervo crasso, in aristam brevem, rigidam, integram excedente; cellulis superioribus angulato-oblongis, basilaribus longioribus, rectangularibus, omnibus laevissimis. Caetera ignota,

Fuegia: Sierra Valdevieso, Paso de las Lagunas, reg. alp. (671).

Species distinctissima, foliis marginibus erectis, cellulis laxis, laevissimis jam dignoscenda.

C. perangulatum CARD.

var. *majus* CARD. et BROTH. n. var.

Caulis c. 7 cm altus, adscendens. Folia c. 2,3 mm longa. Sterile.

Fuegia: Lago Fagnano, ad cataractam (672).

Philonotis BRID.

Ph. scabrifolia (HOOK. FIL. et WILS.) BROTH.

Patagonia andina: Territ. Chubut, Valle Carrenleufú, Day (675); Valle Futaleufú, Casa Rees. Patagonia austr.: Punta Arenas, Rio de las Minas (674). Fuegia: in viciniis fl. Rio Azopardo, alt. 720 m. s. m. (676).

Ph. varians CARD.

Georgia austr.: Cumberland Bay, Moraine Fiord (47).

Ph. parallela DUS.

Patagonia occ.: Rio Aysen, Coyaike bajo (677).

Ph. nigroflava C. MÜLL.

Patagonia andina: Territ. S^{ta} Cruz, Laguna de los Patos haud procul fl. Rio Carbón, in palude, alt. ca. 700 m. s. m. (673).

Ph. (Euphilonotis) **litorea** CARD. et BROTH. n. sp.

Dioica; planta mascula gracillima, caespitosa, caespitibus mollibus, densis, lutescenti-viridibus, ferrugineo-tomentosis. Caulis erectus, c. 3 cm altus, densiuscule foliosus, simplex. Folia sicca et humida erecto-patentia, carinato-concava, lanceolata, longe acuminata, lamina c. 0,95 mm longa et c. 0,27 mm lata, marginibus erectis, serrulatis; nervo sat tenui, in aristam longam, serratam excedente, dorso scabro; cellulis superioribus linearibus, papilla apicali instructis, basilaribus latioribus, laevibus. Flores masculi disciformes, bracteis e basi erecta genuflexe patentissimis, lanceolato-subulatis, marginibus erectis, serrulatis; nervo tenui, haud excedente; cellulis anguste linearibus, laevibus. Planta feminea ignota.

W. Falkland: Port Howard, ad rupes litoreas (706).

Species mollitie et statura gracillima oculo nudo jam dignoscenda.

Ph. vagans (HOOK. FIL. et WILS.) MITT.

Patagonia austr.: Punta Arenas ad fl. Rio de las Minas (678). Fuegia: Sierra Valdivieso, Paso de los Lagunas, reg. alp., alt. c. 700 m. s. m. (682); Acigami (Lago Roca) (683); Lago Fagnano, reg. alp,, alt. 800 m. s. m. (680).

var. *inundata* CARD. et BROTH. n. var.

Glauco-viridis. Folia brevius acuminata, laxius areolata, nervo infra summum apicem folii evanido. Sterilis.

Georgia austr.: Cumberland Bay, Moraine Fiord (41).

Breutelia SCHIMP.

B. integrifolia (TAYL.) JÆG.

var. *patagonica* CARD. et BROTH. n. var.

Folia e basi brevi, superne dilatata lanceolato-subulata, nervo longo piliformiter excedente. Fertilis.

Patagonia occ.: Canal Gajardo, ad Inga-glaciem (685). Patagonia andina: Lago San Martín, in silva (686); Valle Frias, Cerro Cáceres, alt. ca. 900 m. s. m.

B. Skottsbergii CARD.

var. *horrida* CARD. et BROTH. n. var.

Folia e basi erecta, superne paulum dilatata in laminam horride patulam, lanceolato-subulatam attenuata. Sterilis.

Patagonia occ.: Skyring, Estero Rucas, ad rivulum (687).

B. graminicola (C. MÜLL.) BROTH.

Patagonia occ.: Skyring, Estero Ventisqueros, ad rupes substrato turfoso (688); Estero Excelsior. Patagonia andina: Valle Frias, Cerro Cáceres, in declivi meridionali, alt. ca. 900 m. s. m. (690). Fuegia: Lago Fagnano, Isla Lagrelius, ad rupes humidas (689). E. Falkland: Port Stanley, in rivulo (707). Georgia austr.: Cumberland Bay, Moraine Fiord (56).

B. dumosa MITT.

Fuegia: Lago Fagnano, Expedition Bay, in silva humida (691).

B. brachycoma BESCH.

Fuegia: Lago Fagnano, loco paludoso (692); Rio Betbeder.

B. areola BESCH.

Patagonia occ.: Peel Inlet, ad rupes irroratas prope Bordes-glaciem (693).

B. plicata MITT.

Fuegia: Rio Fontaine, loco argilloso humido (695).

B. Hariotiana BESCH.

Patagonia occ.: Skyring, Estero Excelsior, in silva humida (696).

B. rupestris (MITT.) JÆG.

Patagonia occ.: Skyring, Estero de los Ventisqueros (694).

Hedwigiaceae.

Rhacocarpus LINDB.

Rh. Humboldtii (HOOK.) LINDB.

Patagonia andina: Archip. Adelaide, Isla Pacheco, Puerto San Ramon, solo glareoso (768); Peel Inlet, Puerto Témpanos (769); Skyring, Canal Gajardo (770).

Ptychomniaceae.

Ptychomnium Hook. fil. et Wils.

P. subaciculare Besch.

Fretum magellanicum: Isla Dawson, Bahia Harris (946).

P. cygnisetum (C. Müll.) Besch.

Ins. Guaitecas: Melinca (941). Patagonia occ.: Archip. Adelaide, Isla Atalaya, Puerto Cuarenta Dias (940); Skyring, Puerto Pinto (942); Canal Messier, Puerto Simpson.

P. ptychocarpum (Schwægr.) Mitt.

Ins. Guaitecas: Melinca (950). Patagonia occ.: Canal Messier, Hale Cove (952); Canal Moraleda, Puerto Chacabuco (951).

P. densifolium (Brid.) Jæg.

Fuegia: Isla Wollaston, Isla Otter (947).

var. *gracile* Card. et Broth. n. var.

Gracilescens, pallide viride. Rami c. 10 cm longi, simplices. Folia acumine longiore terminata. Sterile.

Patagonia austr.: Canal Jerónimo, Caleta Cutter. Fuegia: Seno Almirantazgo, Hope Bay, in silva Nothofagi antarctici (649).

P. horridum Card. et Broth. n. sp.

Dioicum; robustiusculum, lutescenti-viride, nitidiusculum. Rami c. 9 cm longi, plerumque simplices. Folia e basi longa, erecta, amplexante, pluries plicata in laminam reflexam, oblongo-lanceolatam, in acumen elongatum, anguste lanceolatum attenuatam producta, marginibus in parte superiore laminae minute serrulatis, in acumine argute serratis; enervia; cellulis laminalibus linearibus, incrassatis, inter se porosis, lumine angustissimo, basilaribus infimis brevioribus et laxioribus, alaribus vix diversis. Bracteae perichaetii internae e basi alte vaginante raptim in subulam patulam, integram attenuatae. Seta c. 2,5 cm alta, tenuis, flexuosa, nigrescens. Theca horizontalis, anguste cylindrica, c. 2,5 mm longa, arcuata, sicca profunde plicata, fusca. Caetera ignota. — Tab. III. f. 12 a–d.

Patagonia: austr.: Skyring, Estuario de la Pera, in silva (945).

Species *P. densifolio* (Brid.) Jæg. affinis, sed foliis longe acuminatis, acumine argute serrato jam dignoscenda.

Lepyrodontaceae.

Lepyrodon Hamp.

L. lagurus (Hook.) Mitt.

Patagonia andina: Valle Frias, Co. Caceres; Territ. Chubut, Meseta Chalía, alt. 1200 m. s. m. (777); Lago Belgrano, alt. c. 780 m. s. m.; Lago San Martín (778). Patagonia austr.: Las Minas pr. Punta Arenas. Fretum magellanicum: Isla Dawson, Bahia Harris (775). Fuegia: Rio Olivia prope Ushuaia (771); inter Lago Fagnano et Lago Deseado (773); Estancia Bridges (774).

var. *laxior* Card. et Broth. n. var.

Caespites laxiusculi. Caulis parcius ramulosus. Fertilis.

Fuegia: Seno Almirantazgo, Hope Bay, in silva (781).

L. tomentosus (Hook.) Mitt.

var. *patagonicus* Card. et Broth. n. var.

A typo caule minus dense folioso foliisque angustioribus differt. Sterilis.

Patagonia occ.: Canal Messier, Puerto Simpson (969).

var. *minor* Card. et Broth. n. var.

A typo statura multo minore foliisque raptim in acumen piliforme contractis, cellulis superioribus brevioribus et laxioribus. Cum setis.

Patagonia occ.: Canal Smyth, Connor Cove (782).

Neckeraceae.

Weymouthia Broth.

W. mollis (Hedw.) Broth.

Islas Guaitecas: Melinca, ad truncos (784). Patagonia occ.: Canal Moraleda, Puerto Chacabuco (783, 785).

W. Billardieri (Hamp.) Broth.

Patagonia occ.: Canal Moraleda, Puerto Chacabuco, ad truncos (786).

Leptodon Mohr.

L. Smithii (Dicks.) Mohr.

Patagonia andina: Lago San Martín, Penins. Cancha Rayada.

Porothamnium Fleisch.

P. Valdiviae (C. Müll.) Fleisch.

Patagonia occ.: Canal Moraleda, Puerto Chacabuco, ad truncos (788).

P. arbusculans (C. Müll.) Fleisch.

Patagonia occ.: Canal Moraleda, Puerto Chacabuco; Canal Messier, Puerto Gray (784).

var. *complanatum* (C. Müll.) Card.

Patagonia occ.: Canal Moraleda, Puerto Chacabuco, ad truncos (790).

Thamnium Bryol. Eur.

Th. panduraefolium (C. Müll.) Broth.

Patagonia occ.: Canal Smyth, Connor Cove (967).

Area: Chile.

Hookeriaceae.

Distichophyllum Doz. et Molk.

D. cavifolium Card.

var. *montanum* Card. n. var.

Fuegia: Lago Fagnano, in alpinis (792).

N'ayant pas vu le type, je ne puis dire, comment cette var. se diffère, et je le mentionne donc comme un nomen nudum. — V. F. B.

D. Dicksoni (Hook.) Mitt.

W. Falkland: Roy Cove, ad rupes litoreas (813).

D. rotundifolium (Hook. fil. et Wils.) Broth.

Patagonia occ.: Puerto Chacabuco. Fuegia: Lago Fagnano (792).

Area: Chile, New Zealand, Tasmania, Nov. Holl. or.

Eriopus (Brid.) C. Müll.

E. apiculatus (Hook. fil. et Wils.) Mitt.

var. *platyloma* Card. et Broth. n. var.

Dense caespitosa. Caulis usque 3 cm altus. Folia vix 2 mm longa et 1,1 mm lata. Sterilis.

W. Falkland; Roy Cove, in paludosis (814).

E. flexicollis (MITT.) JÆG.

Patagonia occ.: Puerto Chacabuco (822).
Area: New Zeeland.

Pterygophyllum BRID.

P. denticulatam (HOOK. FIL. et WILS.) MITT.

Patagonia occ.: Puerto Chacabuco (794). Fuegia: in valle fl. Rio Azopardo (795). W. Falkland: Port Philomel, Halfway Cove (815).

P. anomalum (SCHWÆGR.) MITT.

var. *pallidum* CARD. et BROTH. n. var.
A typo colore pallide viridi foliisque majoribus differt.
Patagonia occ.: Canal Messier, Puerto Hale (796).

Lamprophyllum SCHIMP.

L. splendidissimum (MONT.) SCHIMP.

Patagonia occ.: Puerto Chacabuco, prope ost. fl. Rio Aysen, ad truncos (797).

Hypopterygiaceae.

Lopidium HOOK. FIL. et WILS.

L. plumarium (MITT.) FLEISCH.

Patagonia occ.: Canal Moraleda, Puerto Chacabuco prope ost. fl. Rio Aysen (960).

Hypopterygium BRID.

H. didictyon C. MÜLL.

Ins. Guaitecas: Melinca, ad truncos (953). Fuegia: Rio Betbeder.

H. Thouini (SCHWÆGR.) MONT.

Patagonia occ.: Canal Messier, Isla Hale; Canal Smyth, Muñoz Gamero, Puerto Ramirez (957). Patagonia aust.: Otway, Puerto Pomar (956).

Leskeaceae.

Pseudoleskea Bryol. eur.

P. fuegiana (Besch.) Card.

Patagonia austr.: Skyring, Puerto Pangue (800). Patagonia andina: Territ. Chubut, Valle 16. de Octubre, Henry; Valle Frio (802) et Rio Pichileufú (803); Lago San Martín (804); Sierra Baguales, 1400 m. s. m. (801). W. Falkland: Port Philomel, Halfway Cove; Westpoint Island. E. Falkland: Choiseul Sound, Arrow Harbour (889); Port Louis (816, fo. ad var. *Skottsbergii* vergens); Arrow Harbour.

var. *Skottsbergii* Card.

Patagonia andina: Territ. Chubut, Valle 16. de Octubre, Estancia Miguens (805). W. Falkland: Halfway Cove, ad rivulum (818).

var. *gracilis* Card. et Broth. n. var.

A typo statura graciliore, rigiditate foliisque siccitate adpressis nec homomallis differt.

Islas Guaitecas: Melinca, ad truncos (806).

P. lurida Card.

Fuegia: Ushuaia, Rio Olivia (809).

P. calochroa Card.

Patagonia andina: Territ. Chubut, Meseta Chalía, alt. c. 1100 m. s. m., ad rivulum (808 b). Fuegia: Lago Fagnano, in ripa (808). W. Falkland: Westpoint Island (819).

Area: Georgia austr.

P. sordidoviridis Card. et Broth. n. sp.

Gracilescens, caespitosa, caespitibus densis, sordide viridibus, opacis. Caulis vage ramosus, ramis elongatis, densissime ramulosis, ramulis plerumque c. 1 cm longis, dense foliosis, simplicibus vel parce ramulosis. Folia sicca imbricata, humida erecto-patentia, ovata vel ovato-lanceolata, anguste acuminata, marginibus erectis, minutissime denticulatis; nervo valido subcontinuo; cellulis anguste oblongo-hexagonis, alaribus sat numerosis, minutis, subquadratis, obscuris, omnibus laevissimis. Caetera ignota.

E. Falkland: North Arm (821); Sparrow Cove.

Species praecedenti valde affinis, sed foliis nervo crassiore cellulisque angustioribus dignoscenda.

Thuidium Bryol. eur.

Th. Dusenii BROTH. n. sp. — *Th. filare* DUS. n. sp. in sched.

Dioicum; gracillimum, caespitosum, caespitibus densis, rigidis, fuscescenti-viridibus, aetate fuscis. Caulis elongatus, repens, hic illic fusco-radiculosus, paraphylliis brevibus, simplicibus dense vestitus, bipinnatim ramosus, ramis patulis, vix ultra 1 cm longis, complanatis, vix attenuatis. Folia caulina late cordata raptim in acumen lanceolatum, recurvum attenuata, integra, pellucida; nervo tenuisculo, infra apicem folii evanido, cellulis internis et supremis angustis, externis et alaribus ovalibus, laevibus. Folia ramea et ramulina sicca incurva, humida erecto-patentia, carinato-concava, ramea ovato-lanceolata, ramulina ovata, omnia integra, obscura, cellulis subrotundis, papillosis. Caetera ignota.

Chile austr.: ad Quidico pagum ad truncos putridos (DUSÉN 304). Patagonia occ.: Puerto Chacabuco (HALLE 810).

Species *Th. filario* MITT. affinis, sed ramis et ramulis complanatis foliisque caulinis cellulis internis et supremis angustis, externis et alaribus ovalibus, omnibus laevibus dignoscenda.

Th. furfurosum (HOOK. FIL. et WILS.) JÆG. — *Th. corralense* BROTH. in Dusenii Musc. chil. 81.

Chile austr.: ad Corral portum, ad rupes litoreas (DUSÉN 81). Islas Guaitecas: Melinca, ad truncos (HALLE 811). Fretum magellanicum: Isla Dawson, Harris Bay (SKOTTSBERG 812).

Area: Nov. Holl. or., Tasmania et New Zealand.

Hypnaceae.

Amblystegium Bryol. eur.

A. serpens (L.) Bryol. eur.

W. Falkland: Roy Cove, in fissuris rupium (880).

A. tenellum CARD. et BROTH. n. sp.

Tenellum, caespitosum, caespitibus densis, viridissimis, opacis. Caulis elongatus, repens, hic illic fusco-radiculosus, densiuscule foliosus, dense ramosus et ramulosus. Folia ramea et ramulina sicca laxe adpressa, humida patentia, concaviuscula, e basi ovata longe et anguste lanceolata, minutissime serrulata; nervo valido, viridi, in medio acuminis evanido; cellulis oblongo-hexagonis, supremis longioribus, alaribus subquadratis. Caetera ignota. — Tab. III. f. 13 a—c.

Patagonia andina: Ultima Esperanza, in caverna (896).

A. excurrens CARD. et BROTH. n. sp.

Gracile, caespitosum, caespitibus densiusculis, viridibus, opacis. Caulis elongatus, repens, per totam longitudinem hic illic fusco-radiculosus, pinnatim ramosus, ramis brevibus, patulis, densiuscule foliosis. Folia ramea sicca laxe adpressa, humida erecto-patentia, concaviuscula, e basi ovata raptim elongate lanceolato-subulata, integra; nervo crasso, continuo, cellulis prosenchymaticis, alaribus numerosis, minutis, quadratis, obscuris. Caetera ignota. — Tab. III. f. 14 a—b.

Patagonia austr.: Skyring, Puerto Pinto (897).

Species *A. vario* (HEDW.) LINDB. affinis, sed foliis nervo crasso, continuo cellulisque angustis dignoscenda.

A. Kochii Bryol. Eur. *forma.*

Patagonia occ.: Islas Evangelistas, Isla del Faro (898).

Area: Eur., Asia or., Am. bor.

Sciaromium MITT.

S. conspissatum (HOOK. FIL. et WILS.) MITT.

E. Falkland: North Arm (814).

S. maritimum CARD.

Patagonia austr.: Punta Arenas, Rio de las Minas (894). Fuegia: Lago Fagnano, Expedition Bay (893). W. Falkland: Halfway Cove (879); Westpoint Island, ad rivulum (875); inter Many Branch Hr et Port Howard (878). E. Falkland: Port Louis (876).

S. departum DUS.

Fuegia: Lago Fagnano, alt. 800 m. s. m. (892, fo. ad *S. maritimum* vergens).

S. Krauseanum (C. MÜLL.) PAR.

Patagonia andina: Territ. Chubut, Arroyo Coyet, meridiem versus e Lago Fontana (890).

Area: Chile.

S. pachyloma (MONT.) PAR.

Patagonia andina: Territ. Chubut, Valle Carrenleufú, Rio Carbón (891).

Area: Chile.

Drepanocladus (C. MÜLL.) ROTH.

D. uncinatus (HEDW.) WARNST.

Patagonia occ.: Skyring, Canal Gajardo (914). Patagonia andina: Territ. Chubut, Meseta Chalía, alt. c. 1100 m. s. m., ad rivulum (919). Patagonia austr.: Punta Arenas, Rio de las Minas (917). Fuegia: Sierra Valdivieso, Paso de las La-

gunas, alt. 700 m. s. m. (913); Lago Fagnano, alt. 800 m. s. m.; in valle fl. Rio Azopardo, ad fontes fl. Mascarello, 900 m. s. m. (911). E. Falkland: Port Stanley; Choiseul Sound, Arrow Harbour, loco humido (883). Georgia austr.: Bay of Isles, Rosita Harbour; Cumberland Bay, Moraine Fiord 62, fo. *georgico-uncinatum* (C. Müll.) Card.

var. *orthothecioides* (Lindb.) Card.

Fuegia: Rio Fontaine, in declivo (915).

var. *plumulosus* (Schimp.) Warnst.

Patagonia occ.: Rio Aysen, Coyaike bajo (920 fo. *gracillima*). W. Falkland: Fox Island (884).

var. *subjulaceus* (Schimp.).

Georgia austr.: Cumberland Bay, Moraine Fiord, in paludosis (59, 61 fo. gracilis).

var. *stenocarpus* Card. et Broth. n. var.

A forma typica theca anguste cylindrica, vix vel parum arcuata differt.

Patagonia austr.: Peninsula Brunswick, inter Rio Amarillo et Rio Colorado (916).

D. symmetricus (Ren. et Card.) Card.

Patagonia austr.: Punta Arenas, Rio de las Minas, ad truncos putridos (918).

D. revolvens (Sw.) Warnst.

Fuegia: Rio Fontaine, in prato paludoso (902); Lago Fagnano, reg. alp. (903).

D. laculosus (C. Müll.) Broth.

Patagonia austr.: Canal Jerónimo, Cutter Cove, in paludosis (906).

D. fuegianus (Mitt.) Broth.

Fuegia: Seno Almirantazgo, Rio Fontaine, in paludosis (904); Lago Fagnano (905).

var. *stenophyllus* Card. et Broth. n. var.

Robustus. Folia in acumen longissimum et angustissimum attenuata, c. 7 mm longa et c. 9,95 mm lata, nervo basi c. 0,10 mm lato. Sterilis.

E. Falkland: Port Stanley, Mount William (882).

D. longifolius (Wils.) Broth.

Patagonia austr.: Skyring, Punta Eulojio, in paludosis (909). Patagonia andina: Territ. Chubut, Valle Carrenleufú, Arroyo Carbón (908). W. Falkland: Port Philomel, North West Bay (881); Halfway Cove.

D. abbreviatus Card. et Broth. n. sp.

Dioicus; gracilis, caespitosus, caespitibus densis, fuscescenti-viridibus, nitidiusculis. Caulis brevis, repens, dense foliosus, ramosus, ramis adscendentibus, brevibus, dense ramulosis. Folia falcata, ovato-lanceolata, anguste acuminata, usque ad 2 mm longa, laevia, marginibus erectis, integerrimis; nervo basi c. 0,05 mm lato, continuo vel subcontinuo; cellulis, in medio folii 0,025—0,030 mm longis et c. 0,005 mm latis,

basilaribus brevioribus et latioribus, alaribus subrotundis, teneris, in ventrem minutum, valde excavatum dispositis. Caetera ignota.

Fuegia or.: Villamonte, ad rivulum (907).

Species praecedenti affinis, sed statura gracili, foliis brevibus, nervo duplo angustiore, cellulis brevioribus et laxioribus dignoscenda.

D. austrostramineus (C. Müll.) Broth.

var. *tenuissimus* Card. et Broth. n. var.

A var. *gracillimo* (C. Müll.) statura tenella foliisque nervo tenuissimo, infra medium folii evanido, cellulis angustioribus instructis differt.

Georgia austr.: Cumberland Bay, Moraine Fiord (64).

D. polycarpus (Bland.) Warnst.

Amblystegium varium var. *patagonicum* Card. in sched.

Patagonia andina: Rio Zeballos, in alpinis (895).

Area: Eur., Asia, Am. bor.

Calliergon (Sull.) Kindb.

C. sarmentosum (Wahlenb.) Kindb.

Fuegia: Lago Fagnano, alt. c. 800 m. s. m. (931) et »in montibus» (929).

Acrocladium Mitt.

A. auriculatum (Mont.) Mitt.

Patagonia occ.: Canal Smyth, Connor Cove (852). Patagonia andina: Territ. Chubut, Meseta Chalía, alt. 1200 m. s. m. (850); Lago Belgrano, alt. c. 780 m. s. m., Lago San Martín (851); Skyring, Isla Escarpada (849). Patagonia austr.: Punta Arenas, Rio Minas (853). Fretum magellanicum: Isla Dawson, Harris Bay (854). Fuegia: Seno Almirantazgo, Hope Bay (855).

Campylium (Sull.) Bryhn.

C. polygamum (Bryol. eur.) Bryhn.

Patagonia andina: Rio Carbón, c. 700 m. s. m.

Area: Eur., Sibir., Jap., Am. bor.

Hypnum Dill., emend.

H. cupressiforme L.

Islas Guaitecas: Melinca, ad truncos (935). Patagonia austr.: Skyring, Puerto Pinto (934).

var. *tectorum* Bryol. eur.

Fuegia: ad ostium fl. Rio Azopardo (936); Almirantazgo, Bahia Hope.

H. pallens SCHIMP.

Fretum magellanicum: Isla Dawson, Harris Bay (fo. *gracilis* 939). Fuegia or.: Estancia Bridges (938).

H. Lechleri C. MÜLL.

Guaitecas: Melinca.

Isopterygium MITT.

I. fuegianum BESCH.

Fuegia: Seno Almirantazgo, Hope Bay, in silva (867).

I. elegans (HOOK.) LINDB.

var. *nanum* (JUR.).

W. Falkland: Warrah River.

Area: Eur.

Plagiothecium Bryol. eur.

P. lucidum (HOOK. FIL. et WILS.) PAR.

Fuegia: Seno Almirantazgo, Puerto Gomez (865).

P. ovalifolium CARD.

Fuegia: ad ostium fl. Azopardo, in dumetis (866).

P. Roeseanum Bryol. eur.

var. *falklandicum* CARD. et BROTH. n. var.

Robustius, rigidius. Caulis turgide teretifoliosus. Folia subsymmetrica, e basi breviter oblonga elliptica, apiculo brevi, angusto. Sterile.

W. Falkland: Mt. Adam (872).

Catagonium C. MÜLL.

C. politum (HOOK. FIL. et WILS.) DUS.

Patagonia occ.: Canal Messier, Puerto Gray (856). Fretum magellanicum: Isla Dawson (859, fo. ad var. *phyllogonium* vergens). Fuegia: Seno Almirantazgo, Hope Bay (858).

var. *phyllogonium* (C. MÜLL.) CARD.

Patagonia austr.: Punta Arenas, Rio Minas (861).

var. *filescens* CARD. et BROTH. n. var.

A typo statura gracillima foliisque minutissimis differt. Sterile.

Patagonia austr.: Skyring, Isla Escarpada parce inter *Acrocladium auriculatum* (862).

Calliergonella Card.

C. nitida (Hook. fil. et Wils.) Card.

Fuegia: Rio Fontaine, in paludosis (863).

C. complanata Card. et Broth. n. sp.

Robustiuscula, viridis, nitida. Caulis complanate et laxiuscule foliosus, cum foliis c. 2,5 mm latus, vage ramosus. Folia lateralia erecto-patentia, dorsalia et ventralia erectiora, cymbiformi-concava, ovato-oblonga, raptim in acumen breviter piliforme contracta, usque ad 1,8 mm longa et c. 0,67 mm lata; enervia; cellulis angustissime linearibus. Caetera ignota.

Fuegia: ad ostium fl. Rio Azopardo, in prato, *Hepaticis* immixtum (864); Almirantazgo, Bahia Hope, in ripa.

Species praecedenti affinis, sed caule laxius et complanate folioso, foliis angustioribus, brevius piliferis dignoscenda.

Rhaphidostegiaceae.

Rhaphidostegium (Bryol. eur.) De Not.

Rh. patagonicum Card.

Patagonia occ.: Rio Mañiuales pr. Rio Aysen (847 b, fo. depauperata). Patagonia austr.: Skyring, Ensenada de las Rucas (847); Estero de los Ventisqueros (846).

Rh. callidum (Mont.) Jæg.

Patagonia occ.: Canal Moraleda, Puerto Chacabuco (848).

Brachytheciaceae.

Brachythecium Bryol. eur.

B. subplicatum (Hamp.) Jæg.

Patagonia andina: Territ. Chubut, Meseta Chalía, alt. ca. 900 m. s. m. (824); Valle Koslowsky, Brookes, alt. c. 650 m. s. m.; Territ. S^{ta} Cruz, ad fl. Rio Tarde (825). W. Falkland: Port Philomel, Halfway Cove. E. Falkland: Choiseul Sound, Arrow Harbour (868); Port Stanley.

var. *minus* CARD. et BROTH. n. sp.

A typo statura graciliore foliisque angustioribus recedit.

W. Falkland: Port Philomel, Halfway Cove (869).

B. (Salebrosa) **patagonicum** CARD. et BROTH. n. sp.

Dioicum; gracilescens, caespitosum, caespitibus faciliter dilabentibus, pallide fuscescenti-viridibus, vix nitidiusculis. Caulis elongatus, parce fusco-radiculosus, dense et tereti-foliosus, irregulariter ramosus, ramis brevibus, attenuatis. Folia sicca et humida laxe adpressa, decurrentia, plicata, ovato-lanceolata, subito vel subsensim in acumen elongatum, subulatum vel subpiliforme attenuata, marginibus basi late recurvis, integris; nervo tenui, ad vel paulum ultra medium folii evanido, cellulis anguste linearibus, alaribus numerosis, quadratis, obscuris. Caetera ignota.

Patagonia austr.: Canal Fitzroy, Los Amigos, in paludosis calcareis (827).

Species *B. albicanti* (NECK.) Bryol. eur. valde affinis, sed foliorum forma cellulisque angustioribus dignoscenda.

B. austro-salebrosum (C. MÜLL.) PAR.

Fuegia: Rio Fontaine (826). E. Falkland: Port Harriet (870).

Area: Kerguelen.

B. rutabulum (L.) Bryol. eur.

Fuegia: Isla Wollaston, Isla Otter (828).

B. subpilosum (HOOK. FIL. et WILS.) JÆG.

W. Falkland: Mt. Adam, alt. 675—700 m. s. m. (871). Georgia austr.: Cumberland Bay, Moraine Fiord (68).

B. Skottsbergii CARD.

Georgia austr.: Cumberland Bay, Moraine Fiord (67).

B. (Julacea) **arenarium** CARD. et BROTH. n. sp.

Autoicum; gracile, caespitosum, caespitibus densis, mollibus, turgescentibus, viridibus, nitidiusculis, caulibus valde intertextis. Caulis elongatus, arcuatus, per totam longitudinem hic illic fusco-radiculosus, laxiuscule foliosus, dense ramosus, ramis erectis vel adscendentibus, brevibus, vix ultra 1 cm longis, dense foliosis, simplicibus, obtusis. Folia breviter decurrentia, concaviuscula, sicca laxe imbricata, humida erecto-patentia, caulina ovato-lanceolata, in acumen elongate subulatum attenuata, marginibus erectis, ubique serrulatis, nervo tenui, ultra medium folii evanido, cellulis anguste linearibus, alaribus numerosis, minutis, quadratis. Folia ramea brevius acuminata, marginibus inferne recurvis, argute serratis. Caetera ignota.

Patagonia andina: Territ. S^{ta} Cruz, ad fl. Rio Tarde (829); Lago San Martín, Cancha Rayada.

Species distinctissima, *B. collino* (SCHLEICH.) Bryol. eur. forsan affinis.

B. paradoxum (HOOK. FIL. et WILS.) JÆG.

Patagonia occ.: Canal Gajardo (831). Patagonia andina: Lago San Martín (830); Territ. Chubut, Valle 16. de Octubre, Estancia Miguens (922); Valle Frio (924) et Rio Carrenleufú (923); Valle Futaleufú, Casa Rees, Lago San Martín (830). Fretum magellanicum: Isla Dawson, Bahia Harris. Fuegia: Almirantazgo, Bahia Hope, in valle fl. Rio Azopardo ad fl. Rio Fontaine (925); Estancia Bridges in Fuegia or. (927).

Eurhynchium Bryol. eur.

E. fuegianum CARD.

Fuegia: Ushuaia, ad fl. Olivia (832); Lago Fagnano, Isla Lagrelius (833).

Rigodium KUNZ.

R. implexum KUNZ.

Patagonia occ.: Canal Moraleda, Puerto Chacabuco (837, 838).

R. Tamarix C. MÜLL. — *R. elegantulum* CARD. in sched.

Chile: ad fl. Rio Maullin (Herb. DESSAUER); ins Chiloé, Ancud (CUNNINGHAM 227). Patagonia occ.: Canal Moraleda, Puerto Chacabuco, ad truncos (HALLE 840).

R. hylocomioides CARD. et BROTH. n. sp.

Dioicum; robustiusculum, caespitosum, caespitibus laxis, rigidis, viridibus, aetate fuscescentibus, opacis. Caulis elongatus, dense foliosus, dense pinnatim ramosus, ramis plerumque vix ultra 1,5 cm longis, arcuatulis, dense foliosis, attenuatis, simplicibus vel ± distincte pinnatim ramulosis, singulis usque ad 6 cm longis, dense pinnatim ramulosis. Folia caulina patula, late ovata, raptim in acumen lanceolato-subulatum, recurvum attenuata, marginibus inferne late recurvis, minutissime serrulatis; enervia; cellulis valde incrassatis, lumine angusto, alaribus numerosis, minutis, obscuris. Folia ramea erecto-patentia, minora, angustiora, breviter acuminata; nervo distincto, ad vel ultra medium folii evanido. Caetera ignota. — Tab. III. f. 12 a—d.

Patagonia austr.: Skyring, Puerto Pinto (841). Fretum magellanicum: Isla Dawson, Harris Bay (843). Fuegia: Seno Almirantazgo, Hope Bay (842).

Species *R. pseudo-Thuidio* DUS. valde affinis, sed foliorum forma dignoscenda.

var. *gracilius* CARD. et BROTH. n. var.

A forma typica statura graciliore, caule minus dense ramoso, ramis omnibus simplicibus. Sterile.

Islas Guaitecas: Melinca, ad truncos arborum (844). Patagonia occ.: Canal Smyth, Connor Cove (845).

Polytrichaceae.

Atrichopsis Card. n. gen. in Rev. bryol. 1912, p. 95.

Dioica, habitu *Atricha* nonnulla similans. Caulis erectus, simplex vel parce divisus, nunc e basi laxe et regulariter foliosus, nunc inferne plus minus longe denudatus et superne comoso-foliosus, 2—5 cm altus. Folia madore erecto-patentia, siccitate crispula, e basi haud vel parum dilatata lineari-lingulata, late acuminata, apice acuto paululum cucullato, costa saepius excurrente breviter mucronata, marginibus planis, superne dentatis, cellulis in tertia parte inferiore folii pellucidis, subhyalinis rectangulis, margines versus linearibus, parietibus tenuiter punctulatis, ascendendo sensim minoribus, illis laminae viridis quadratis vel subrotundatis, chlorophyllosis, densissime et minutissime papillosis, juxta costam et fere in tota parte superiore folii bistratosis, margines versus tamen unistratosis, cellulis marginalibus diversis, pluriseriatis, rectangulis vel sublinearibus, minus papillosis, parietibus incrassatis et lutescentibus, limbum sat distinctum efformantibus, costa valida, depressa, dorso tamen rotundata, lutescente vel rufescente, plerumque breviter excedente, apicem versus dorso dentibus nonnullis instructa, in sectione transversali ab eurycystis centralibus, stenocystis comitatis, utraque pagina stereidis numerosis tectis, et cellulis epidermicis distinctis formata. Folia perichaetialia longiora, superne sensim angustata et obtuse acuminata, marginibus sinuoso-denticulatis, reti vix papilloso. Pedicellus firmus, crassus, 12—15 mm longus. Capsula ut videtur inclinata vel horizontalis. Calyptra anguste cucullata, fusca, apice breviter hispida. Caetera desiderantur.

A. magellanica Card. n. sp. l. c. — Tab. IV. f. 1 a—g.

Patagonia austr.: Skyring, Estero de los Ventisqueros prope glaciem (754). Fuegia: Lago Fagnano, Expedition Bay, in pratis alpinis, 7—800 m. s. m. (753); Hermite Island (J. D. Hooker). W. Falkland: Mt. Hornby, loco humido (745).

Psilopilum Brid.

P. compressum (Hook. fil. et Wils.) Mitt.

Fuegia: Lago Fagnano, solo paludoso (710).

P. angulatum Card. et Broth. n. sp.

Robustiusculum, caespitosum, caespitibus rigidis, densiusculis, fusco-viridibus. Caulis erectus, vix usque ad 1 cm altus, inferne nudus, dein dense foliosus, simplex. Folia sicca flexuosula, apice incurva, humida plus minusve patentia, infima squamaeformia, dein raptim multo majora, lanceolato-linearia, breviter acuminata, mucrone robusto, brevi, rubro terminata, usque ad 5 mm longa et c. 1,2 mm lata, marginibus anguste incurvis, e medio ad apicem minutissime serrulatis; nervo dorso superne

dentibus paucis instructo; lamellis usque 27, e cellulis 3—5 seriatis instructis; cellulis laminalibus cellula terminali vix majore, rotundata, papillosa minutis, quadratis, pellucidis, basilaribus multo majoribus, rectangularibus, hyalinis. Seta 1,5—2 cm alta, crassa, lutescenti-rubra. Theca horizontalis, magna, ovata, microstoma, valde complanata, deoperculata nigrescens. Operculum conicum. Tab. III. f. 16 a—f.

Fuegia: Lago Fagnano (711).

Species praecedenti affinis, sed theca majore, valde complanato operculoque alte conico dignoscenda.

P. antarcticum (C. MÜLL.) PAR.

E. Falkland: Mt. Usborne, 680 m. s. m.

var. *densifolium* CARD. et BROTH. n. var.

Caulis 1—2 cm altus, simplex vel superne ramis brevibus instructus, dense foliosus. Folia arcte imbricata, c. 3 mm longa et c. 1,3 mm lata. Sterile.

Fuegia: Lago Fagnano, Expedition Bay, in pratis alpinis (713). W. Falkland: Mount Usborne, 683 m. s. m. (736).

P. tapes (C. MÜLL.) PAR.

var. *apiculatum* CARD.

Fuegia: Lago Fagnano, reg. alp. (712).

Oligotrichum LAM. et DE CAND.

O. (Euoligotrichum) **magellanicum** CARD. et BROTH. n. sp.

Gracile, caespitosum, caespitibus densiusculis, sordide viridibus. Caulis erectus, usque ad 2 cm altus, dense foliosus, simplex. Folia sicca flexuosa, humida erecto-patentia, stricta, inferiora squamaeformia, dein raptim multo majora, comalia e basi erecta, oblonga sensim lanceolata, acuta, c. 4 mm longa, marginibus superne irregulariter serratis, nervo infra apicem folii evanido, lamellis ventralibus 8, e cellulis 4 seriatis instructo, apicali ovali, laevissimo; cellulis laminalibus quadratis, basilaribus breviter rectangularibus. Seta c. 1,5 cm alta, rubra. Caetera ignota — Tab. IV. f. 2 a—g.

Patagonia occ.: Peel Inlet, Puerto Témpanos, prope Bordes-glaciem (708). Fuegia: Canal Beagle; prope Darwin-glaciem (709).

Dendroligotrichum (C. MÜLL.) BROTH.

D. dendroides (BRID.) BROTH.

Patagonia occ.: Canal Messier, Puerto Simpson (716). Patagonia austr.: Otway, Puerto Toro (Isla Riesco) (715). Fuegia: Seno Almirantazgo, Puerto Gomez (718).

D. squamosum (HOOK. FIL. et WILS.) BROTH.

Patagonia occ.: Skyring Water, Ventisqueros Sound, ad glaciem (719). Fuegia: pr. ost. fl. Rio Azopardo, alt. 680 m. s. m. (720). W. Falkland: Mt. Adam, 680 m. s. m.

Polytrichadelphus (C. MÜLL.) MITT.

P. magellanicus (L.) MITT.

Patagonia occ.: Peel Inlet, Puerto Témpanos, ad Bordes-glaciem (723). Fretum magellanicum: Isla Dawson, Bahia Harris. Fuegia: Canal Beagle, ad Darwin-glaciem (723). W. Falkland: Mt. Adam, alt. 680 m. s. m, (737).

P. robustus (LINDB.) BROTH.

Patagonia austr.: Punta Arenas, Rio de las Minas (724).

Polytrichum DILL.

P. alpinum L.

fo. *austrogeorgicum* (C. MÜLL.).

Georgia austr.: Cumberland Bay, Moraine Fiord.

var. *integrifolium* CARD. et BROTH. n. var.

A typo foliis integris dignoscenda.

Fuegia: Lago Fagnano (726).

P. piliferum SCHREB.

W. Falkland: Mt. Adam (741); Port Howard (740). E. Falkland: Port Stanley.

P. juniperinum WILLD.

Patagonia andina: Valle Futaleufú (727).

var. *alpinum* SCHIMP.

Patagonia andina: Meseta Chalía, alt. c. 1100 m. s. m.; Coyaike alto ad fontes fl. Rio Aysen (729). Patagonia austr.: Punta Arenas, Las Minas.

P. strictum BANKS.

Patagonia andina: Meseta Chalía, alt. c. 1100 m. s. m. (731); Lago San Martín, Penins. Cancha Rayada. Georgia austr.: Cumberland Bay, Moraine Fiord (60).

var. *alpestre* RAB.

Patagonia austr.: Las Minas pr. Punta Arenas (732). Fuegia: ad ostium fl. Rio Azopardo, alt. 600 m. s. m. (733); in valle fl. Rio Fontaine; Seno Almirantazgo, Hope Bay. W. Falkland: Weddell Island (739). E. Falkland: Port Stanley, Sapper Hill (738).

Explicatio tabularum.

Tab. I.

Fig. 1 a—c. *Andreaea leiophylla* n. sp.; a, b. folia ($^{25}/_{1}$); c. pars inf. fol. ($^{170}/_{1}$). — 2 a—c. *A. opaca* n. sp.; a, b. folia ($^{25}/_{1}$); pars inf. fol. ($^{150}/_{1}$). — 3 a—k. *Neuroloma fuegianum* Card., a—d. folia ($^{13}/_{1}$); e pars basilaris ($^{135}/_{1}$); f. pars superior ($^{270}/_{1}$); g. pars media ($^{270}/_{1}$); h. apex ($^{270}/_{1}$); i. sectio transversa partis inf. ($^{60}/_{1}$); k. pars sectionis ($^{270}/_{1}$). — 4 a—c. *Ditrichum Hallei* n. sp. a. pl. fert. ($^{1}/_{1}$); b. folia ($^{12}/_{1}$); c. apex ($^{170}/_{1}$). — 5 a—e. *Philibertiella ditrichoidea* Card., a. pl. fert. ($^{1}/_{1}$); b—c. folia ($^{12}/_{1}$); d. apex ($^{170}/_{1}$); e. pars basilaris ($^{170}/_{1}$). — 6 a—e. *Blindia praticola* n. sp., a. pl. ster. ($^{1}/_{1}$); b, c. folia ($^{24}/_{1}$); d. apex ($^{150}/_{1}$); e. pars basilaris ($^{150}/_{1}$). — 7 a—f. *Blindia torrentium* n. sp., a. pl. ster. ($^{1}/_{1}$); b, c. folia ($^{25}/_{1}$); d, e. apex ($^{380}/_{1}$); f. pars basilaris ($^{150}/_{1}$). — 8 a—f. *Dicranoweisia funiculipes* n. sp., a. pl. fert. ($^{1}/_{1}$); b, c. folia ($^{25}/_{1}$); d, e. apex ($^{170}/_{1}$); f. pars basilaris ($^{150}/_{1}$). — 9 a—f. *Dicranella flexipes* n. sp., a. pl. fert. ($^{1}/_{1}$); b—d. folia ($^{15}/_{1}$); e. apex ($^{150}/_{1}$); f. sporog. ($^{25}/_{1}$). — 10 a—e. *Dicranella fuegiana* n. sp., a. pl. ster. ($^{1}/_{1}$); b, c. folia ($^{25}/_{1}$); d. apex ($^{150}/_{1}$); e. pars basilaris ($^{150}/_{1}$). — 11 a—e. *Dicranella pseudorufescens* n. sp., a. pl. fert. ($^{1}/_{1}$); b, c. folia ($^{25}/_{1}$); d. apex ($^{150}/_{1}$); e. theca ($^{25}/_{1}$). — 12 a—e. *Dicranella Skottsbergii* n. sp., a. pl. ster. ($^{1}/_{1}$); b, c. folia ($^{25}/_{1}$); d, e. apex ($^{150}/_{1}$). — 13 a—d. *Hygrodicranum falklandicum* Card., a, b. folia ($^{13}/_{1}$); c. pars basilaris ($^{270}/_{1}$); d. sectio transversa partis inf. ($^{270}/_{1}$). — 14 a, b. *Weisia patagonica* n. sp., a. pl. fertilis ($^{1}/_{1}$); b. fol. ($^{12}/_{1}$). — 15 a—e. *Didymodon andreaeoides* n. sp., a. pl. ster. ($^{1}/_{1}$); b. eadem ($^{6}/_{1}$); c, d. folia ($^{12}/_{1}$); e. sectio transversa ($^{170}/_{1}$). — 16 a—d. *Tortula curta* n. sp., a. pl. ster. ($^{1}/_{1}$); b. fol. ($^{25}/_{1}$); c. apex ($^{150}/_{1}$); d. sectio transversa ($^{170}/_{1}$). — 17 a—d. *Encalypta obtusata* n. sp., a. pl. fert. ($^{1}/_{1}$); b, c. folia ($^{12}/_{1}$); d. apex ($^{150}/_{1}$).

Tab. II.

Fig. 1 a—d. *Tortula lingulaefolia* n. sp., a. pl. ster. ($^{1}/_{1}$); b. folia ($^{12}/_{1}$); c. apex ($^{150}/_{1}$); d. sectio transversa ($^{150}/_{1}$). — 2 a—e. *Tortula litorea* n. sp., a. pl. ster. ($^{1}/_{1}$); b, c. folia ($^{25}/_{1}$); d. apex ($^{150}/_{1}$); e. sectio transversa ($^{150}/_{1}$). — 3 a—c. *Tortula stenophylla* n. sp., a. pl. ster. ($^{1}/_{1}$); b. fol. ($^{25}/_{1}$); c. apex ($^{150}/_{1}$). — 4 a—d. *Tortula subpapillosa* n. sp., a. pl. ster. ($^{1}/_{1}$); b. fol. ($^{25}/_{1}$); c. apex ($^{150}/_{1}$); d. sectio transversa ($^{380}/_{1}$). — 5 a—e. *Grimmia macrotyla* n. sp., a. pl. ster. ($^{1}/_{1}$); b, c. folia ($^{25}/_{1}$); d. apex ($^{150}/_{1}$); e. pars basilaris ($^{150}/_{1}$). — 6 a—e. *Grimma chubutensis* n. sp., a. pl. ster. ($^{1}/_{1}$); b, c. folia ($^{12}/_{1}$); d. apex ($^{150}/_{1}$); e. pars basilaris ($^{150}/_{1}$). — 7 a—f. *Grimmia crassiretis* n. sp. a. pl. ster. ($^{1}/_{1}$); b, c. folia ($^{25}/_{1}$); d. apex ($^{150}/_{1}$); e. pars basilaris ($^{150}/_{1}$); f. rete cell. part. super. ($^{170}/_{1}$). — 8 a—d. *Rhacomitrium substenocladum* n. sp., a. pl. ster. ($^{1}/_{1}$); b. fol. ($^{25}/_{1}$); c. apex ($^{380}/_{1}$); d. sectio transversa ($^{170}/_{1}$). — 9 a—e. *Anoectangium patagonicum* n. sp., a. pl. ster. ($^{1}/_{1}$); b. fol. ($^{12}/_{1}$); c. fol. ($^{83}/_{1}$); d. apex ($^{170}/_{1}$); e. rete cell. ($^{380}/_{1}$). — 10 a—f. *Orthotrichum anaglyphodon* n. sp., a. pl. fert. ($^{1}/_{1}$); b, c. folia ($^{12}/_{1}$); d. theca ($^{12}/_{1}$); e. calyptra ($^{12}/_{1}$); f. perist. ($^{170}/_{1}$). — 11 a—c. *Webera leptoclada* n. sp., a. pl. ster. ($^{1}/_{1}$); b. fol. ($^{12}/_{1}$); c. apex ($^{150}/_{1}$). — 12 a—e. *Anomobryum laxirete* n. sp., a. pl. ster. ($^{1}/_{1}$); b. eadem ($^{6}/_{1}$); c, d. folia ($^{12}/_{1}$); e. apex ($^{150}/_{1}$). — 13 a—f. *Brym anomobryoides* n. sp., a. pl. ster. ($^{1}/_{1}$); b. eadem ($^{12}/_{1}$); c. pars apicalis ($^{12}/_{1}$); d. fol. ($^{12}/_{1}$); e, f. apex ($^{170}/_{1}$).

Tab. III.

Fig. 1 a—e. *Bryum rimicola* n. sp., a. pl. ster. ($^{1}/_{1}$); b. eadem ($^{10}/_{1}$), c. d. folia ($^{12}/_{1}$); e. apex ($^{150}/_{1}$). — 2 a—d. *Bryum rhizoblastum* n. sp., a. pl. ster. ($^{1}/_{1}$); b. eadem ($^{10}/_{1}$); c. fol. ($^{13}/_{1}$); d. apex ($^{150}/_{1}$). — 3 a—e. *Bryum laetevirens* n. sp., a. pl. ster. ($^{1}/_{1}$); b. eadem ($^{10}/_{1}$); c—d. fol. ($^{12}/_{1}$); e. apex ($^{200}/_{1}$). — 4 a—e. *Bryum pycnotylum* n. sp., a. pl. ster. ($^{1}/_{1}$); b. eadem ($^{10}/_{1}$); c—d. fol. ($^{12}/_{1}$); e. apex ($^{200}/_{1}$). — 5 a—e. *Bryum*

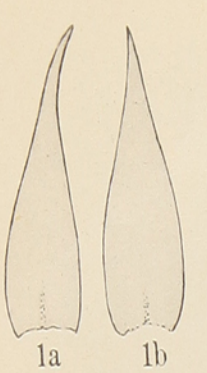
cochlearifolium n. sp., a. pl. ster. (1/1); b. eadem (4/1); c—d. fol. (12/1); e. apex (170/1). — 6 a—d. *Bryum orbiculatifolium* n. sp., a. pl. ster. (1/1); b—c. fol. (12/1); d. apex (150/1). — 7 a—e. *Bryum sabuletorum* n. sp., a. pl. ster. (1/1); b. eadem (10/1); c—d. fol. (12/1); e. apex (170/1). — 8 a—e. *Bryum uvidum* n. sp., a. pl. ster. (1/1); b. eadem (12/1); c—d. fol. (12/1); e. apex (200/1). — 9 a—e. *Bryum malacophyllum* n. sp., a. pl. ster. (1/1); b. eadem (5/1); c—d. fol. (12/1); e. apex (170/1). — 10 a—c. *Bryum zeballosicum* n. sp., a—b. fol. (12/1); c. apex (200/1). — 11 a—c. *Bryum weberoides* n. sp., a—b. fol. (12/1); c. apex (200/1). — 12 a—d. *Ptychomnium horridum* n. sp., a. pars pl. fert. (1/1); b—c. folia (12/1); d. apex (150/1). — 13 a—c. *Amblystegium tenellum* n. sp., a. pl. ster. (1/1); b—c. fol. (150/1). — 14 a—b. *Amblystegium excurrens* n. sp., a. pl. ster. (1/1); b. fol. (150/1). — 15 a—c. *Rigodium hylocomioides* n. sp., a. pl. ster. (1/1); b. fol. ram. (12/1); c. fol. caul. (12/1). — 16 a—f. *Psilopilum angulatum* n. sp., a. fol. (1/1); b. idem (12/1); c. apex (150/1); d. basis (150/1); e. sectio transversa (170/1); f. theca (5/1). — 17 a—c. *Mielichhoferia Skottsbergii* n. sp., a. pl. fert. (1/1); b. theca (5/1); c. pars perist. (170/1).

Tab. IV.

Fig. 1 a—g. *Atrichopsis magellanica* n. g. et sp., a. pl. ster. (1/1); b—c. fol. (12/1); d. apex (150/1); e. basis (150/1); f. sectio transversa (170/1); g. sect. transv. fol. (450/1). — 2 a—g. *Oligotrichum magellanicum* n. sp., a. pl. fert. (1/1); b—d. fol. (25/1); e. apex (150/1); f. basis (150/1); g. sectio transversa (170/1). — 3 a—e. *Rhacomitrium Skottsbergii* n. sp., a. pl. ster. (1/1); b—c. fol. (25/1); d. apex (170/1); e. sectio transversa (380/1).

Tryckt den 7 februari 1923.

Uppsala 1923. Almqvist & Wiksells Boktr.-A.-B.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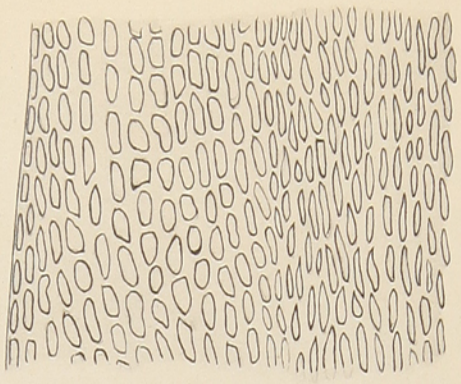
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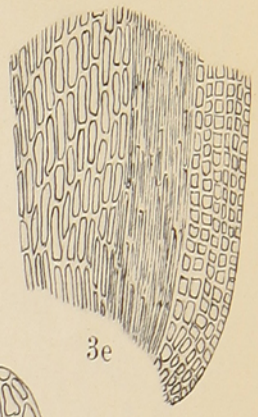
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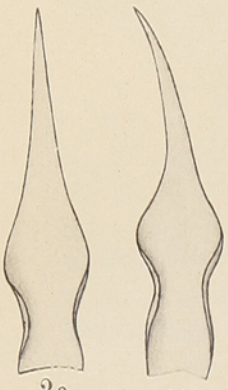
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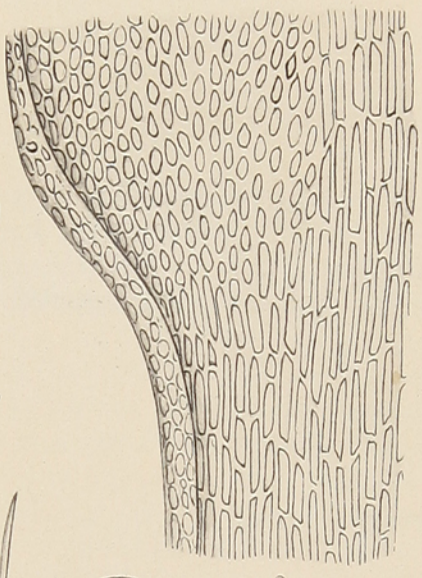
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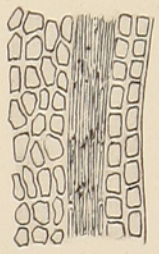
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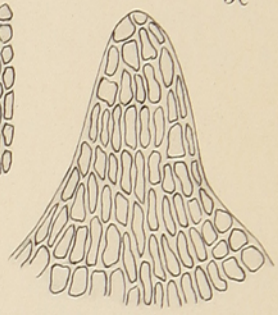
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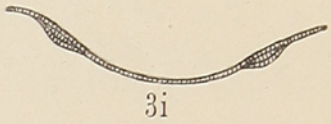
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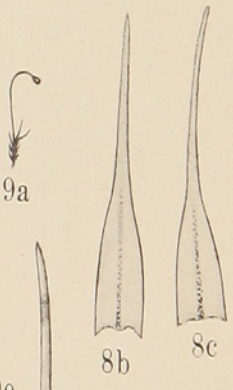
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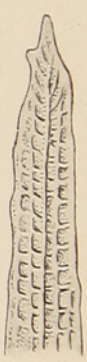
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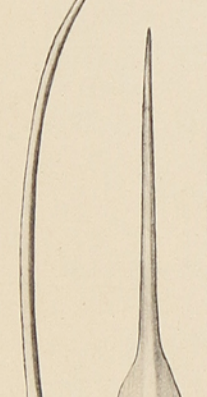
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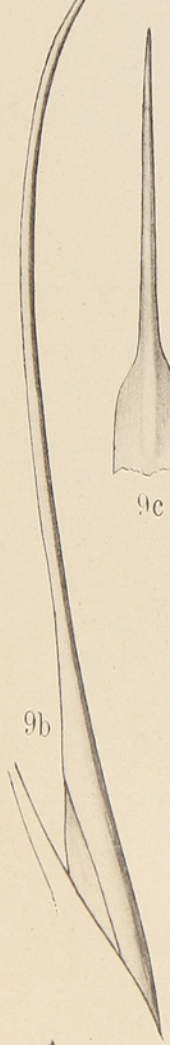
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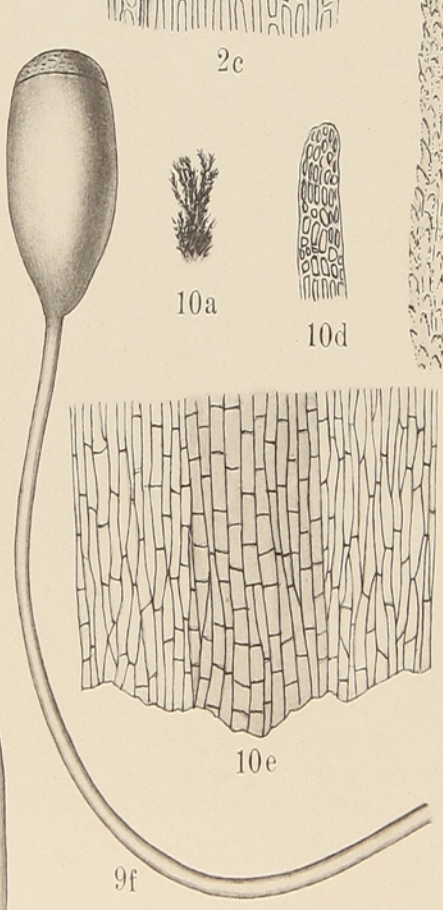
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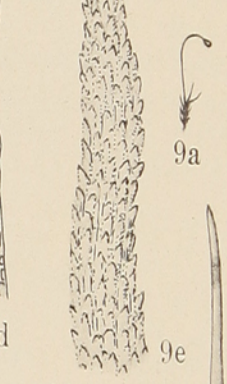
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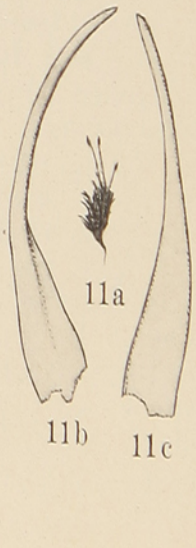
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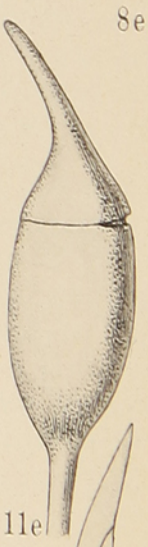
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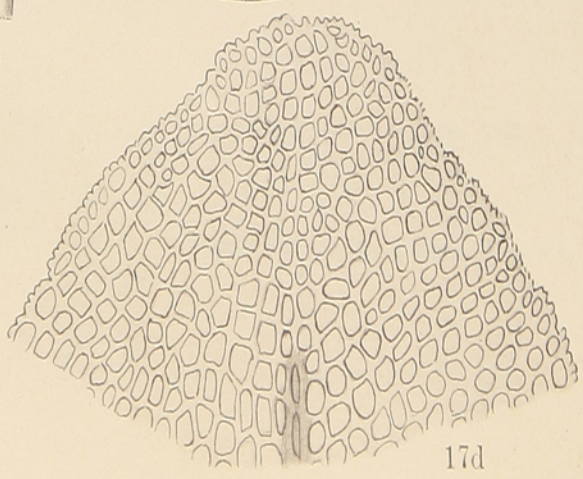
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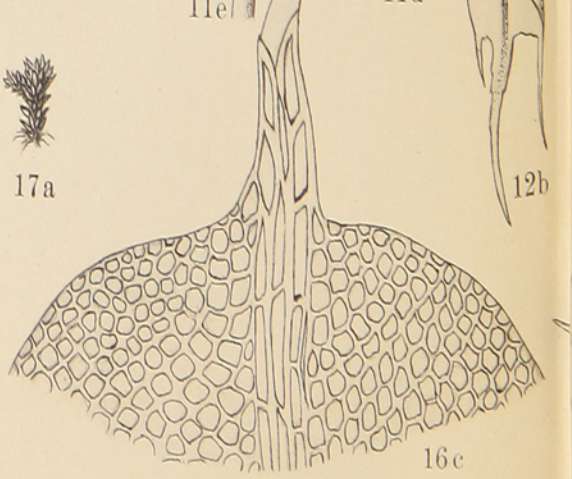
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Thérése Ekblom del.


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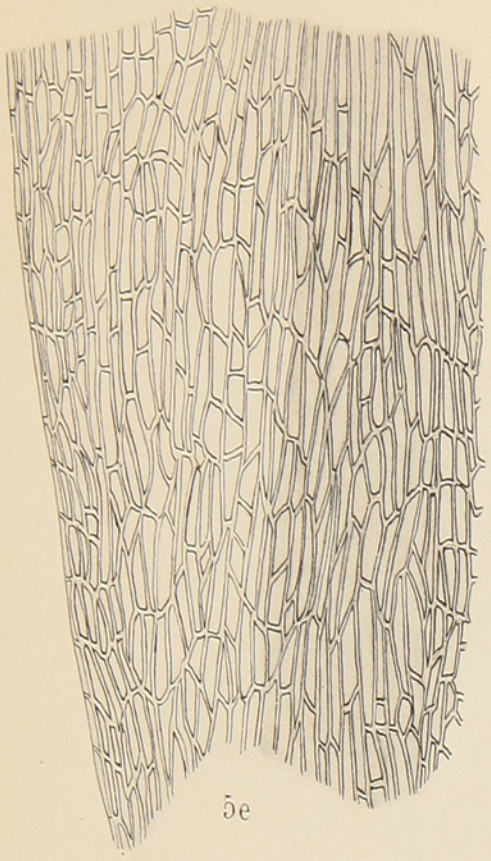
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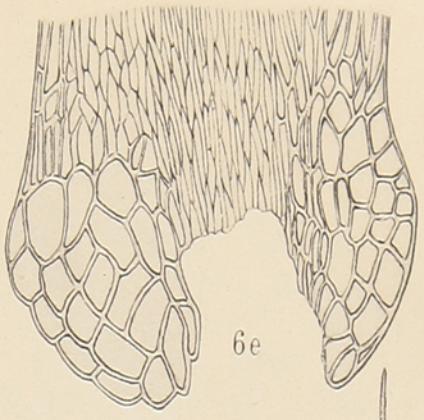
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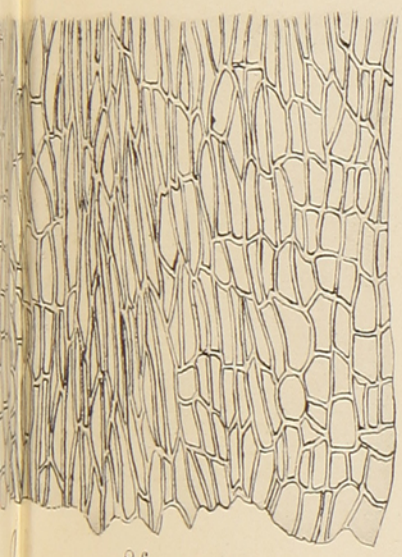
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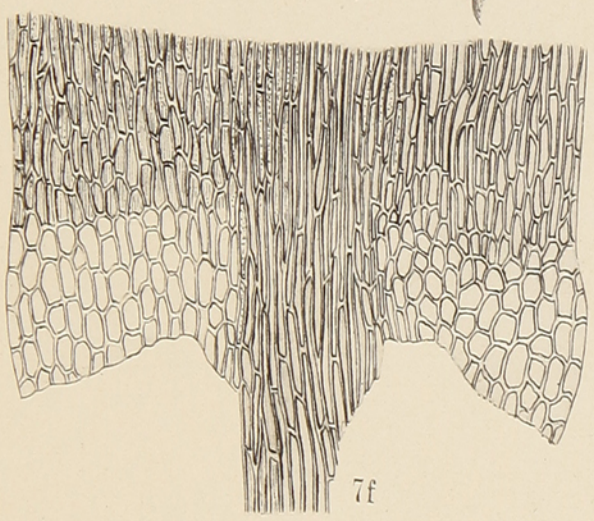
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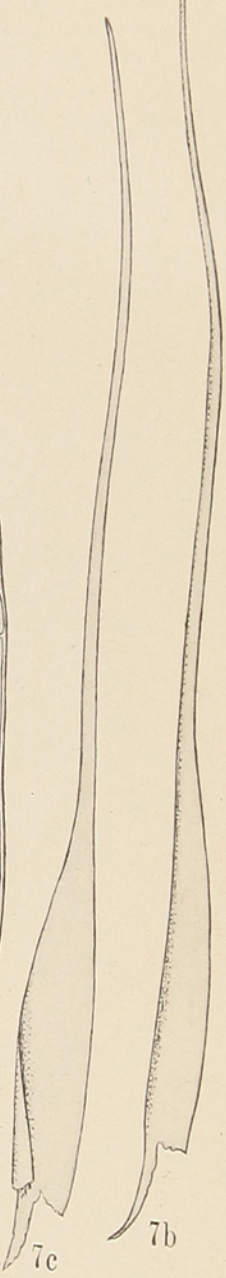
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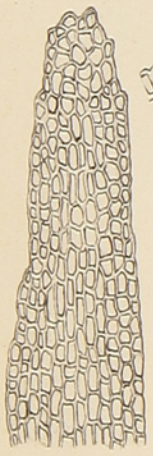
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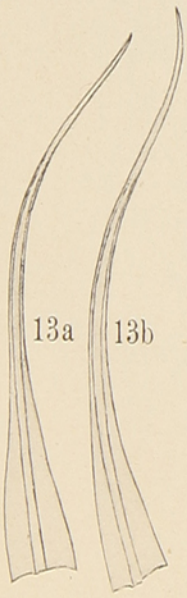
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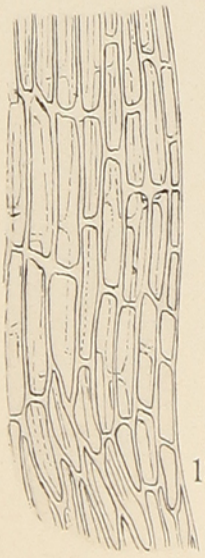
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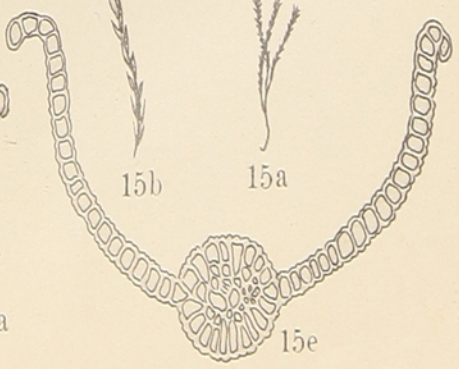
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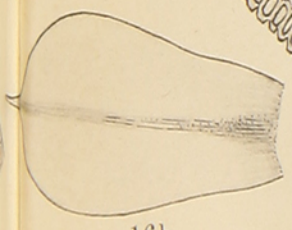
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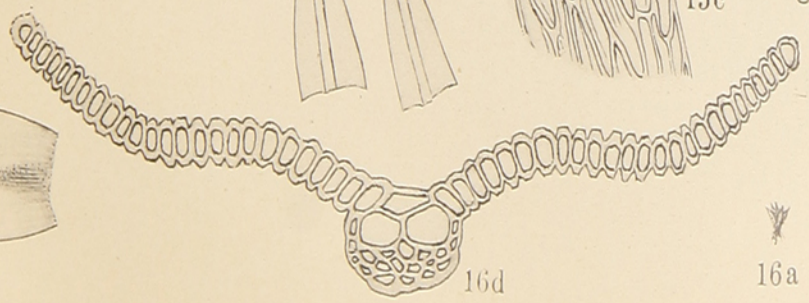
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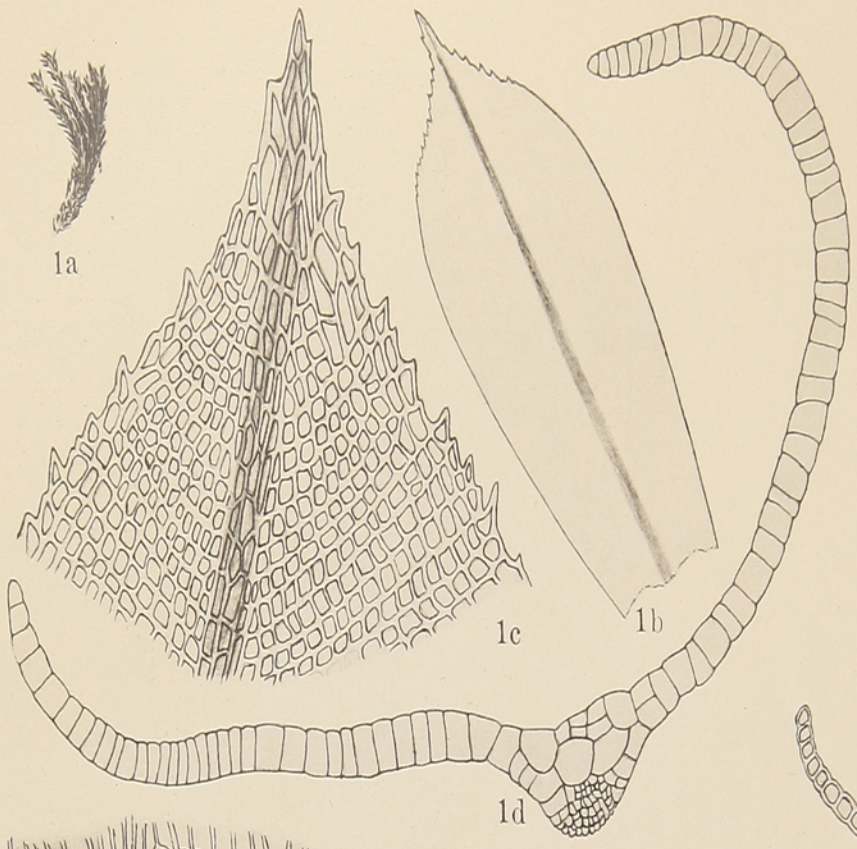
Ljustr. A. B. Lagrelius & Westphal, Stockholm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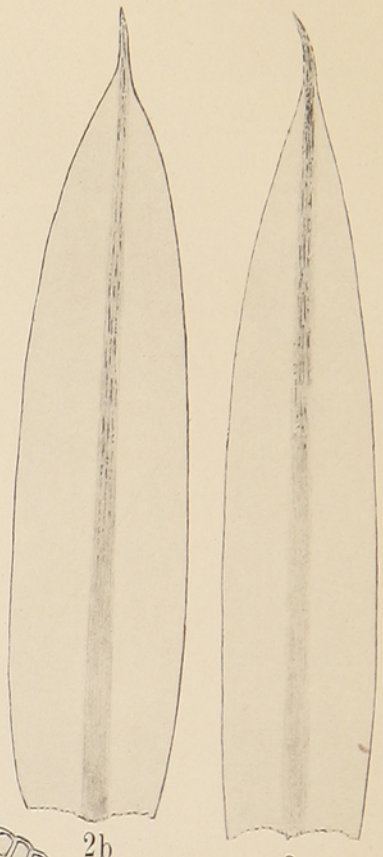
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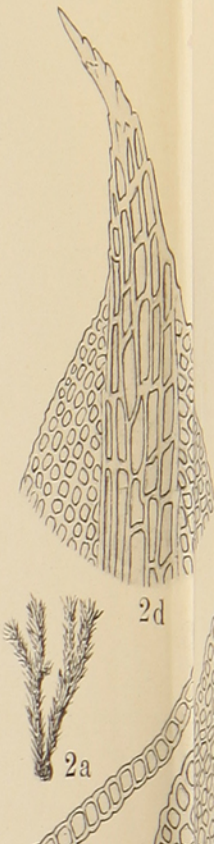
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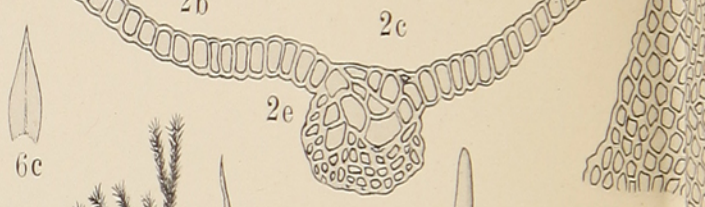
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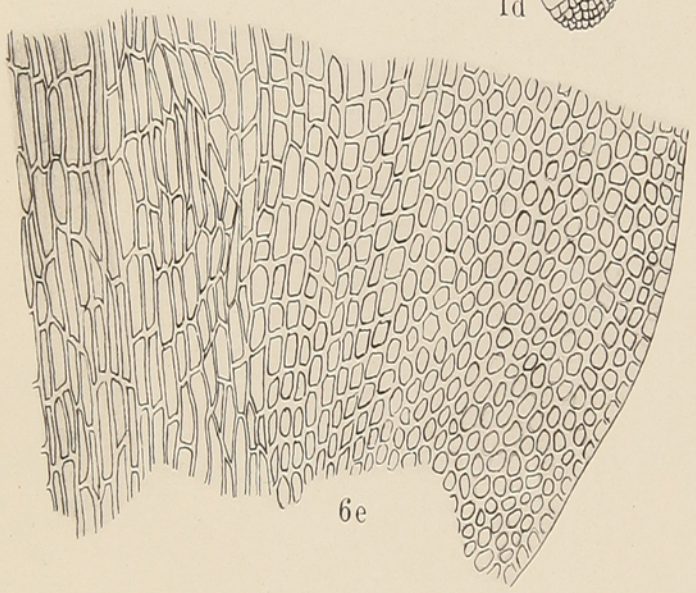
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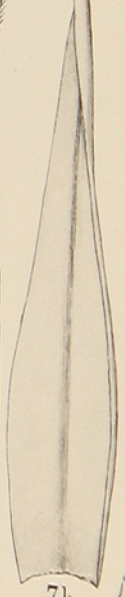
6d


7a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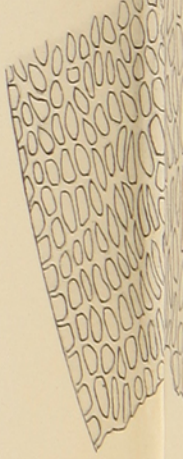

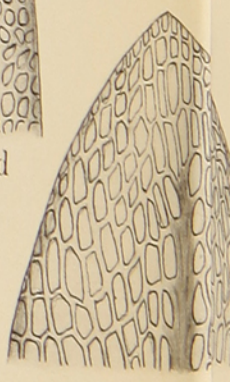
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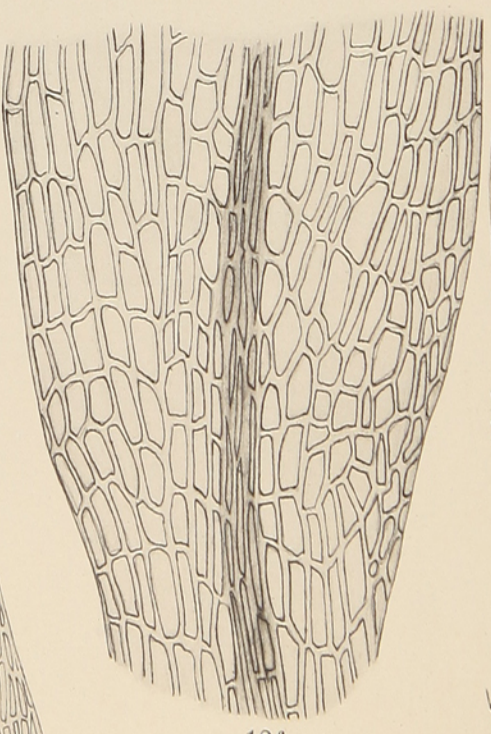
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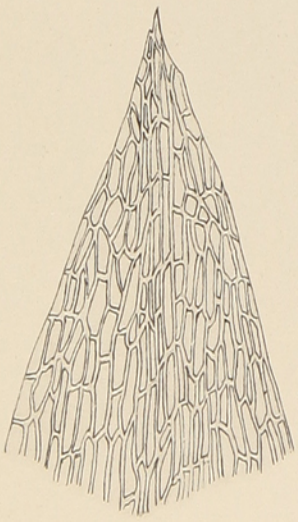
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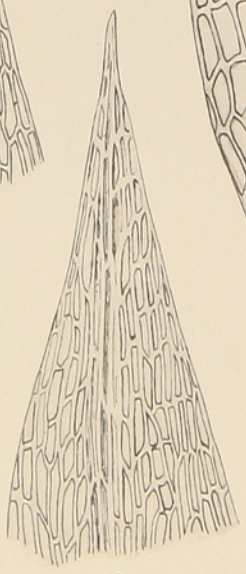
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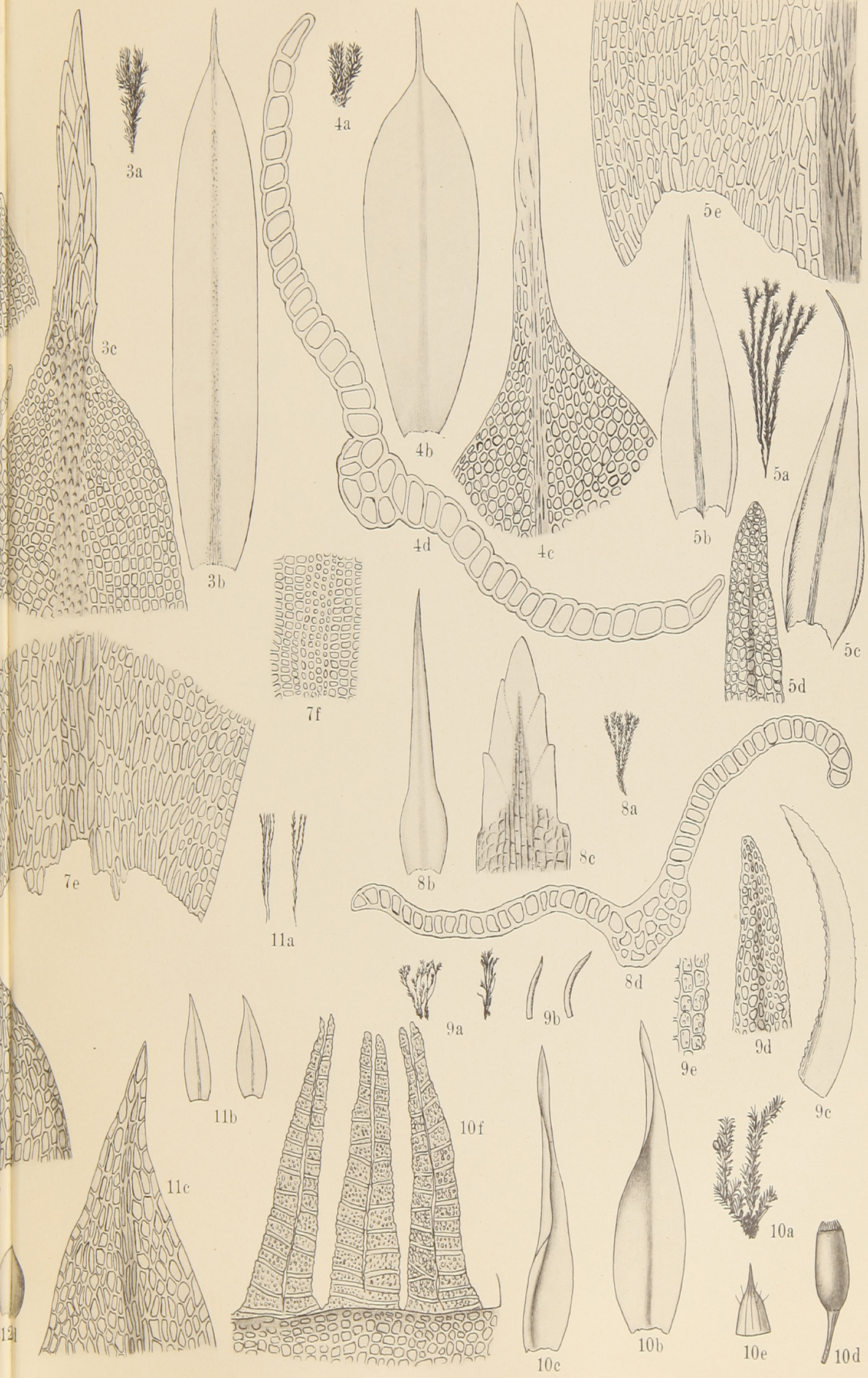
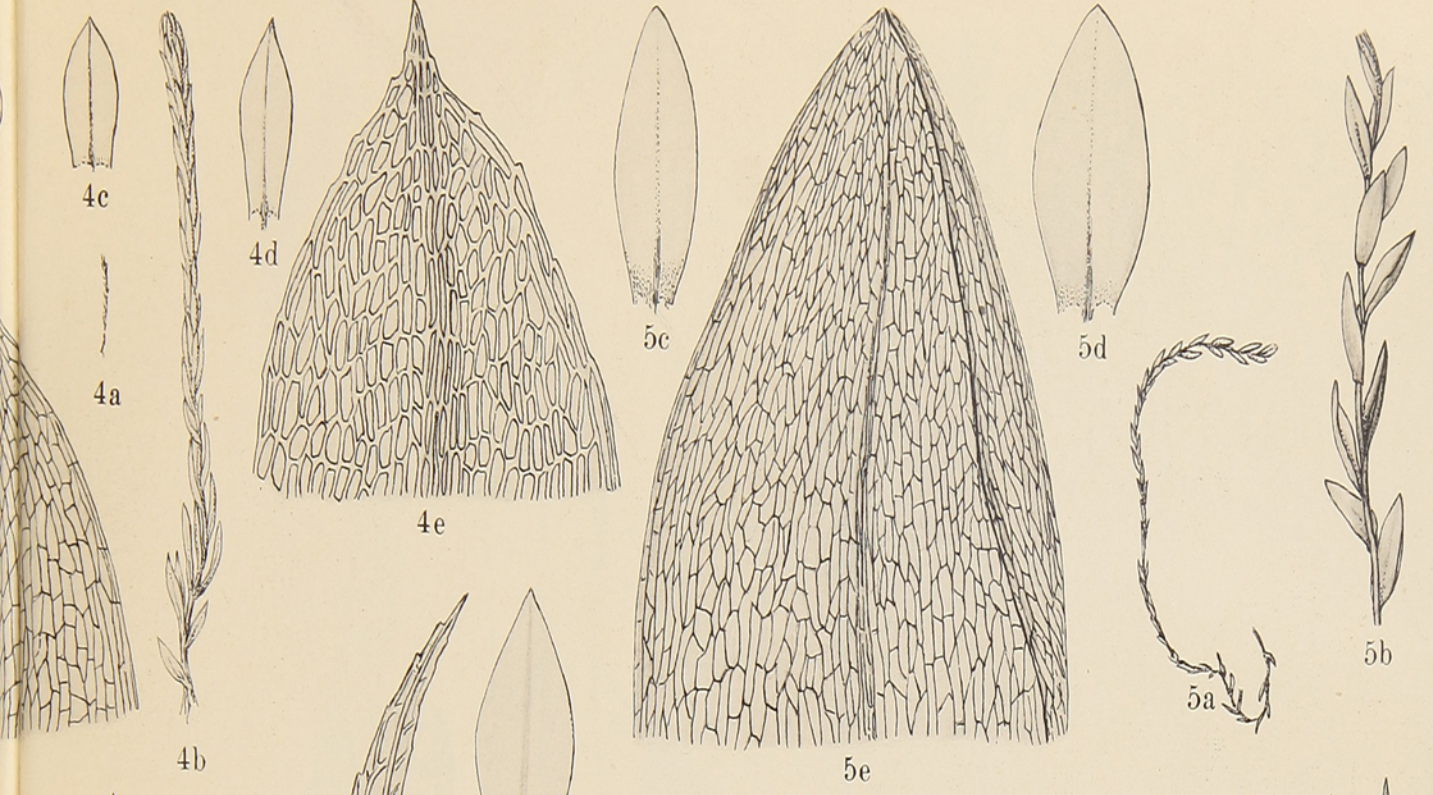
Thérése Ekblom del.

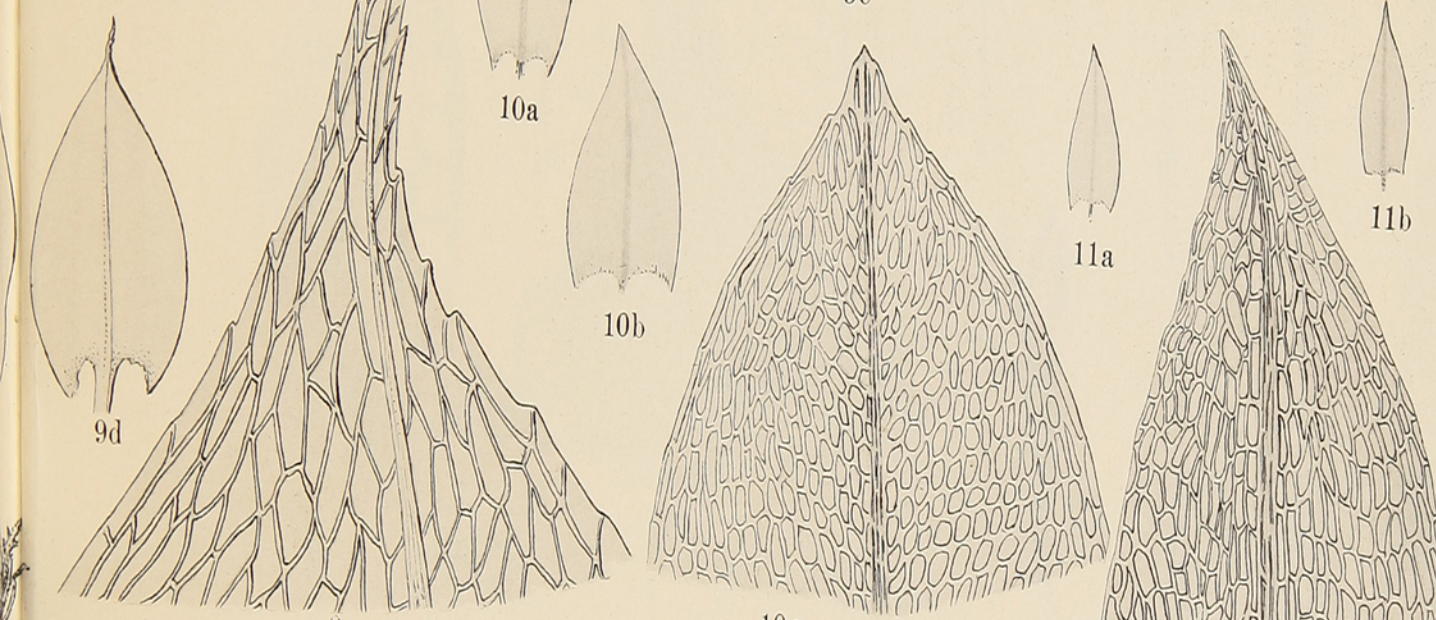
Pl. 2.

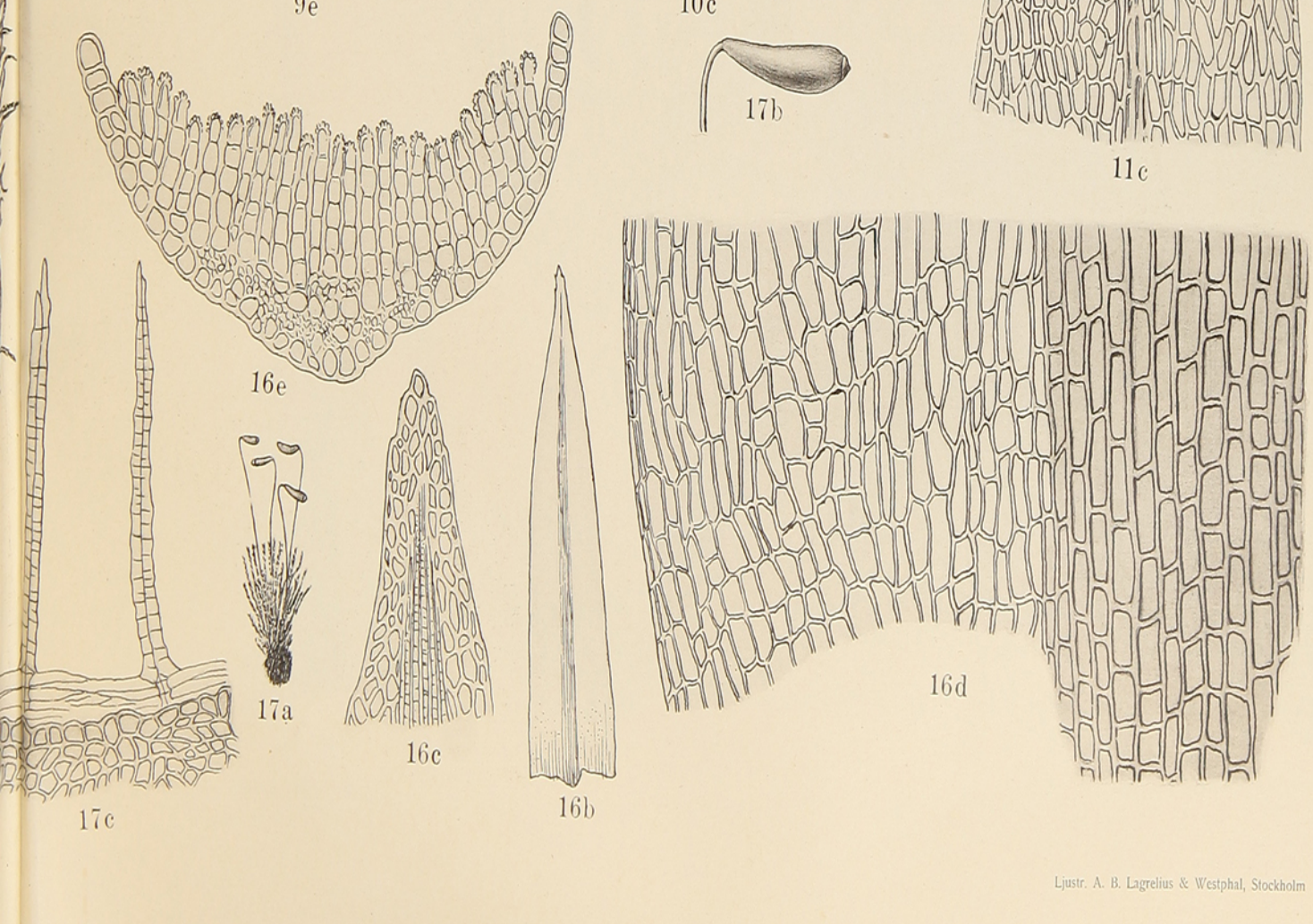


Ljustr. A. B. Lagrelius & Westphal, Stockholm

Thérése Ekblom del.







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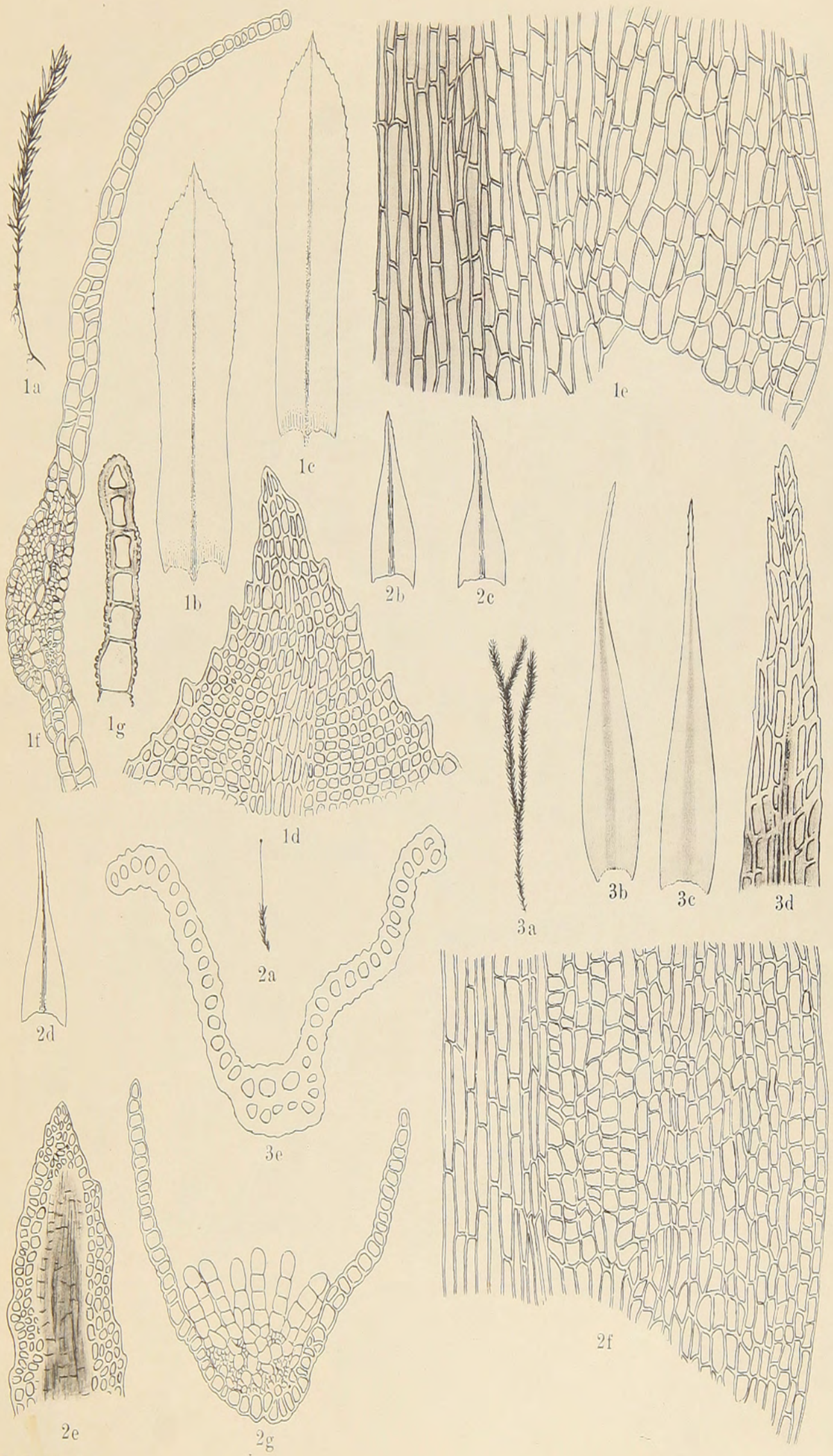

Thérése Ekblom del.

Ljustr. A. B. Lagrelius & Westphal, Stockholm

KUNGL. SVENSKA VETENSKAPSAKADEMIENS HANDLINGAR
TREDJE SERIEN. BAND 17. N:O 1.

BOTANISCHE ERGEBNISSE DER SCHWEDISCHEN EXPEDITION NACH PATAGONIEN UND DEM FEUERLANDE 1907–1909

XI.

MEERESALGEN 3. CHLOROPHYCEAE

VON

D. E. HYLMÖ

MIT 5 FIGUREN IM TEXT

MITGETEILT AM 9. FEBRUAR 1938 DURCH ROB. E. FRIES UND C. SKOTTSBERG

STOCKHOLM
ALMQVIST & WIKSELLS BOKTRYCKERI-A.-B.

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Fam. **Protococcaceae.**

Chlorochytrium Cohn.

Chl. Sarcophyci (Whitting) G. E. West.

West Falkland: Port North, Crooked Inlet 2.1.07, reichlich in angetriebener *Durvillea antarctica*; East Falkland: Cape Pembroke, in wachsender *Durvillea Harveyi* 8.11.07, spärlich.

Die Art stimmt völlig mit Whitting's Beschreibung und Abbildung überein. Grösse der Zellen 27—46×21—30 μ (=Whitting). In der mit reifen Oogonien reichlich versehenen *Durvillea Harveyi* war der Schmarotzer grösstenteils fortgeschwärmt, hatte aber als Beweis seines früheren Daseins verschiedene Missbildungen hinterlassen.

Verbreitung: Indischer Ozean: Nova Hollandia Geelong (SSW von Melbourne).

Fam. **Ulvaceae.**

Ulva (L).

U. lactuca L. f. *rigida* (Ag.) — Hylmö 1919, S. 1.

Mittl. Chile: Valparaiso (St. 41, 2.9.08, litoral, starke Brandung, Sandflecken mit *Enteromorpha*).

Chiloé: San Pedro (St. 32, 10 m, 28.7.08, spor.; St. 30 B, oberstes Litoral, Schiefer, 22.7.08, spor.); Queilen, 6 m, Sand (St. 33, 30.7.08, spor.). West-Patagonien: Estero Reñihue, Buill Cove, c. 20 m, Sand und kleine Steine (St. 35, 3.8.08); Puerto Bueno, 1—3 m, Sand und Mytilus (St. 27, 3.6.08, zwei Proben). Süd-Patagonien: Fitzroy Channel, 13—14 m, grober Kies (St. 17, 18.4.08). Feuerland: Orange Bay, 15—20 m, kleine Steine, ebenso »oberstes Litoral mit *Monostroma*» (St. 44, 11.3.09); ebenda »in tide pools on kelproots» (St. 45, 11.3.09); Beagle Channel, Ushuaia, litoral (St. 46, 14.3.09); Beagle Channel, Slogget Bay, trockengelegte Strandfelsen (St. 47, 16.3.09). Falkland: West Falkland, im innersten Teil von Port North, in litoralen Tümpeln (St. 7, 2.12.07).

Die Exemplare waren teils festsitzend, aus der litoralen Region, teils losgerissen, aus tieferem Wasser gedredscht.

Der Thallusrand war oft ganz eben, zuweilen aber (z.B. St. 27 und 46) einfach bis doppelt gezähnt. Von der Fläche gesehen messen die Zellen

meistens 7—18 (selten bis 30) μ im grössten Durchmesser; sie sind unregelmässig verteilt oder zu zweien oder vieren einander genähert.

Der Thallus ist im Querschnitt gewöhnlich 45—60 μ dick mit den Zellen 16—25 μ hoch und 7—21 μ breit und mit den äusseren Zellwänden 3—7 μ dick. Doch gab es Exemplare, wo der Thallus eine Dicke von 101 μ und die Zellen eine Höhe von 30—33 μ (St. 44 und 47) oder von 112 μ, resp. 36—43 μ (St. 32) erreichen konnten (=Svedelius 1900). Die drei Proben von Chiloé (Juli) waren alle fertil mit den in den Zellen noch eingeschlossenen Zoosporen oder Gameten c. 3—4 μ breit.

Verbreitung: »Ausserordentlich häufig in allen wärmeren Meeren. Ausserdem bekannt von der Magellanstrasse» (Svedelius 1900, S. 285).

Enteromorpha Link.

E. bulbosa (Suhr) Kütz. Sp. Alg. S. 482. — J. G. Ag. 1882, S. 139. — Svedelius 1900, S. 288. — Hylmö 1919, S. 3, Fig. 4—10.

Wahrscheinlich auch = »*E. flexuosa* Wulf.», Svedelius 1900, S. 286.

West-Patagonien: Puerto Bueno 3.6.08 (St. 27, 1—3 m, Sand und *Mytilus*). Chiloé: Ancud-Bucht, Anal 10.7.08 (St. 29 a, oberes Litoral, St. 29 b, unteres Litoral); Quemchi 19.7.08 (St. 30 a und b, litoral, feinkörniger Sandstein und Steinblöcke). Mittl. Chile: Valparaiso 2.9.08. (St. 41, litoral, starke Brandung, am Sandufer). Süd-Patagonien: Skyring Water, Puerto Altamirano 22.4.08 (St. 18, oberes Sublitoral 1—2 dm, grober Kies). Feuerland: Almirantazgo 25.3.08 (St. 13, litoral); Orange Bay 11.3.09 (St. 45, »in tide pools on kelproots»); Beagle Channel, Ushuaia 14.3.09 (St. 46, litoral); Beagle Channel, Slogget Bay 16.3.09 (St. 47, trockengelegte Uferfelsen). West Falkland: Westpoint-Island 5.—6.12.07 (St. 8 b_2, Tümpel im unteren Litoral, inter Schizonemam ad Monostromam endiviaefolium); Südküste von Dunnose Head 21.11.07 (St. 4 a, oberes Litoral, zwischen Steinblöcken; St. 4 b, litoral, an Steinen und Grünalgen, den Sandstrand bedeckend; St. 4 c, unterstes Litoral, in seichten Tümpeln); innerster Teil von Port North 2.12.07 (St. 7 b, litorale Tümpel). East Falkland: Cape Pembroke 7.—8.11.07, 6.—7.1.08 (St. 3 a: an Felsen, oberes Litoral; St. 3 b.: innere, geschützte Tümpel; St. 3 c: äussere Tümpel; Port Louis 7.2.08 (St. 11, litoral).

Unter dem Namen *E. bulbosa* vereinige ich fast alles von mir untersuchte *Enteromorpha*-Material der Expedition. Da die Art sehr variierend ist und da verschiedene Verfasser ihre Grenzen nicht richtig ziehen, finde ich es notwendig, mich darüber näher zu äussern.

Der Thallus ist einfach (St. 3 a, 7 b, 11, 13, 27, 29 a, 30 b, 46), mit einzelnen, einfachen, gewöhnlich groben Ästen (St. 3 b, 4 c, 7 b, 13, 41, 46), mit zahlreichen, einfachen Ästen (St. 3 a, 4 a, 4 b, 4 c, 11, 45) oder mit einmal verzweigten Ästen versehen (St. 4 a, 4 b, 45, 47). Oft besass der Thallus kurze Prolifikationen, die entweder völlig polysiphon (St. 29 a, b), mit einer einzigen Initialzelle versehen (St. 30 b, 41, 46) oder in ihrer ganzen Länge monosiphon waren (St. 7 b). An einigen Exemplaren (St. 29 b, 30 b) waren

die Prolifikationen so zahlreich, »dass sie fast den Eindruck einer Haarbekleidung erwecken» (SVEDELIUS, westpatagonisches Material). Derartige Exemplare sind von der australischen Art *E. acanthophora* KÜTZ kaum zu trennen. Vielleicht ist diese Art mit *E. bulbosa* zu vereinigen. Ein Exemplar (St. 29 a) besass kurze, breite, in der Spitze offene und eingebogene »*cornucopiae*»-Zweige, die ihrerseits mit gewöhnlichen polysiphonen Prolifikationen ausgestattet waren.

Die Zellen liegen in den schmäleren Thallusteilen (z. B. im Stipes, in den feinen Ästen etc.) oft in Längsreihen, in den breiteren dagegen gewöhnlich ungeordnet (J. AGARDH 1882, S. 140: »cellulae in partibus inferioribus quodammodo seriatae adparent, superne potius inordinatae.») Ich möchte deshalb glauben, dass die von SVEDELIUS (a. a. O.) mit Zögern zu *E. flexuosa* gestellten feuerländischen Exemplare lieber zu *E. bulbosa* gehören. Wie SVEDELIUS selbst bemerkt, stimmen sie mit jener Art nicht überein, da sie nicht einfach sind, sondern wenige, nach oben erweiterte Zweige besitzen, und weil die Zellen im Querschnitt vertikal gestreckt sind. In diesen Hinsichten stimmen die Pflanzen gut mit *E. bulbosa* überein. Dass die Zellen in regelmässigen Reihen »über grosse Partien des Sprosses» (also wahrscheinlich nicht über den ganzen Spross) verteilt sind, stimmt zwar mit *E. flexuosa* gut überein, passt aber, wie oben gezeigt, genügend gut auch für *E. bulbosa*. Die amerikanische Form von *E. flexuosa* (von J. AGARDH nur mit grossem Zögern zu dieser Art geführt) ist wie COLLINS (1909, S. 203: »Warmer waters generally») betont und mir auch brieflich mitgeteilt hat, eine Pflanze der wärmeren Gewässer und gedeiht in den Vereinigten Staaten nur in Florida und Süd-Californien. SVEDELIUS' Pflanze ist wohl dieselbe wie die von HARIOT (1888, S. 28) erwähnte »*Ulva Enteromorpha* LE JOLIS Var. β *compressa*», welche Form nach HARIOT's Ansicht mit »*Ulva bulbosa* MONTAGNE» (= *Solenia bulbosa* SUHR) zu vereinigen ist.

Auch unter dem von mir untersuchten Material liegen Formen mit besonders regelmässiger Anordnung der Zellen vor. Einige dieser Proben (St. 4 a, 4 b, 7 b) besitzen einreihige Ästchen und ungewöhnlich grosse (11—25 μ d.) Zellen mit geringem Inhalt und mit zarten Wänden. Sie ähneln *E. plumosa*, sind doch sicher nur unter ungünstigen Verhältnissen lebenden *E. bulbosa*-Individuen (sie kommen in den Sandstrand bedeckenden *Ectocarpus*-Matten vor, in welchen sie wahrscheinlich zu wenig Licht und Nahrung erhalten). Dass sie dieser Art gehören wird dadurch noch wahrscheinlicher, dass ganz in der Nähe normal ausgebildete *E. bulbosa*-Exemplare leben und dass nur die erste Zweiggeneration gut ausgebildet ist (zweite Zweiggeneration: kurze, einreihige Prolifikationen). (J. AGARDH, S. 141: Specimina, quibus suam *Ent. Hookerianam* condidit KÜTZING, ex. ins. Falkland provenientia, sunt densius et vage ramosa»).

Die Zellen der von mir untersuchten Pflanzen waren gewöhnlich 7—15 μ lang, abgerundet quadratisch-polygonal-rektangulär. In gewissen Thallusteilen (wahrscheinlich in solchen, wo das Breitenwachstum das Längenwachstum übertrifft) sind die Zellen bedeutend breiter als lang, eine Eigenschaft, durch

welche sich *E. bulbosa* von den meisten bekannten *Enteromorpha*-Arten unterscheidet (vgl. aber die Ästchen von *E. crinata*!).

Die von SVEDELIUS (S. 287, unten) erwähnte *intestinalis*-Form mit kleinen dornartigen Auswüchsen und »mehrmals so breiten als hohen Zellen» gehört wahrscheinlich auch zu E. *bulbosa*.

Im Querschnitt war der Thallus gewöhnlich etwa 22 μ hoch, die Zellen 14 μ hoch und die äussere Zellwand 4 μ dick.

Verbreitung: Südlicher Teil Südamerikas; Kap; Tasmanien; Chatham-Inseln.

E. Linza (L. Spec. pl. p. 1633). J. G. AGARDH 1882, p. 134.

Chile: Valparaiso 2.8.08 (St. 41, litoral, starke Brandung, »Sandflecke mit *Enteromorpha*»).

Das wenige hierhergehörende Material stimmt mit der europäischen *Linza* gut überein. Vom hohen Stipes geht ein Kanal längs jeder Kante des sonst von zwei zusammenhängenden Schichten bestehenden Thallus! Dieses Aufblasen der Kanten ist fast makroskopisch erkennbar. — Thallusrand kraus. Der Querschnitt einer einzelnen Thallusschicht zeigte oben: Thallus 16 μ, Zellen 10 μ (quadratisch oder horizontal verlängert, Zellwand der Aussenseite 3 ½ μ; im Stipes: Thallus 31—33 μ, Zellen 18—20 μ (vertikal verlängert), Zellwand der Aussenseite 7 (5—10) μ, der Innenseite 6 μ. — Zoosporen 3½—5½ μ breit. Entleerte Sporangien 14—25 μ im grössten Durchmesser mit den Zwischenwänden dünn (etwa 1 μ). Diese Art wird jetzt von verschiedenen Verfassern wieder in die Gattung *Ulva* versetzt.

Verbreitung: Europa, Nord- und Südamerika, wahrscheinlich auch die Ostindischen Inseln und Tasmanien.

E. Gunniana J. AGARDH 1882, S. 122.

Süd-Georgien: Strömnäs-Bucht 24.4.09 (St. 50, 8 m, Stein).

Stimmt mit AGARDH's Beschreibung völlig überein. Die Art ist, wie AGARDH hervorhebt, ein südliches Gegenstück zu *E. micrococca*, unterscheidet sich jedoch von dieser Art u. a. dadurch, dass die Zellen im Stipes längsgeordnet sind und im Querschnitt vertikal verlängert. Das Material besteht aus 1—2 cm langen, einfachen (nur bei einem einzigen Exemplar wurde ganz unten ein einfacher Zweig beobachtet), nach oben gewöhnlich erweiterten und oben zuweilen offenen Pflanzen, dessen Zellen im erweiterten Teil 4—7 μ lang sind (Zellenabstand etwa 1 μ) und gewöhnlich in kleinen, hin- und herlaufenden Reihen stehen. Im Stipes waren die Zellen oft etwas grösser (8—12 μ im längsten Durchmesser), in Längsreihen geordnet und mit grösserem Abstand (2—3 μ) zwischen einander. Der Querschnitt vom Stipes und von einem schmalen Thallusteile oberhalb des Stipes (die Ziffern in Klammern) gaben folgende Werte: Thallus 32—34 (47), Am 7 (10), Zellen 15—17 (29 μ hoch und 3—5 μ breit, Länge : Breite also 6—9), Im 7—9 (7) μ.

Was die Verwandschaft zwischen *E. Gunniana* und anderen *Enteromorpha*-Arten betrifft, deuten viele Umstände darauf hin, dass sie mit *E. bulbosa* nahe

verwandt ist und dass sie keine so selbständige Stellung wie ihre nördliche Schwestern-Art einnimmt.

In welchen Hinsichten sich das südgeorgische Material durch seinen längeren oder kürzeren Aufenthalt unter ungünstigen Verhältnissen (8 m tief, losliegend?) verändert hat, ist schwer zu sagen.

Verbreitung: Tasmanien, Süd-Georgien.

E. percursa (A.) J. AG. HYLMÖ 1916, S. 19.

Patagonien: Magellans-Strasse, Adelaide-Inseln, Isla Atalaya (Stat. 25, 25.5. 1908, litorale Felsen). Zwischen *Rhizoclonium*.

Fäden immer zweireihig, 27—32 μ breit, den europäischen also ganz gleich, doch etwas dicker als die von mir gemessenen Exemplare aus Öresund. Rektanguläre Zellen 18—22 μ lang und 11—12 μ breit, quadratische 11—12 μ breit und lang. Ein Pyrenoid in jeder Zelle; schöne Längs- und Querordnung der Zellen.

Verbreitung: Nördl. Eismeer. Atl. Ozean; bekannt von der Ostküste Feuerlands (SVEDELIUS S. 289).

Monostroma THUR.

M. splendens (RUPR.) WITTR. S. 50, Tafla III, fig. 12 a, b; J. AG. Till Alg. Syst. VI, p. 112; HYLMÖ 1919, S. 7, Fig. 22—26.

Feuerland: Beagle Channel, Slogget Bay (St. 47 b, 16.3. 09, angeschwemmtes Material). West Falkland: Westpoint Island (St. 8, 5—6.12. 07, a_2 oberstes Litoral »in horizontaler *Hildenbrandia*-Formation», a_3 oberste Tümpel »mit *Cladophora-Ulva*-Formation»); East Falkland: Stanley Harbour (St. 1, unteres Litoral, 1—3.11. 07, an *Mytilus*), Cape Pembroke (St. 3 b, in geschützten Tümpeln, 7—8. 11. 07)

Die gewöhnlich 1—$2^1/_2$ cm langen Exemplare zeigten am Querschnitt einen 25—35 μ dicken Thallus mit den Zellen 21—27 μ hoch, also den von WITTROCK und mir erwähnten Massen unterlegen. Einen wirklichen Grund, die antarktische Art von der arktischen *M. splendens* zu trennen, habe ich jedoch nicht gefunden.

Verbreitung: Arktische Meere, Falkland, Feuerland.

M. (?)endiviaefolium GEPP, A. and E. S. in Journal of Botany XLIII, 1905, p. 105, tab. 470, figs. 1—5; 1912, S. 73, Plate I, figs. 1—5. COTTON 1915. HYLMÖ 1919, S. 6, Fig. 21. — Fig. 1.

Süd-Georgien: Bay of Isles, Rosita Harbour (St. 52, 25.4. 1909, 8 m, wahrscheinlich losliegend.)

Diese noch ungenügend untersuchte und betreffs der systematischen Stellung unsichere Art zeigte an Stat. 52 folgende Verhältnisse:

Der Thallus bestand aus krausen, zerfressenen kleinen Stückchen, höchstens 5 cm im Durchmesser. An kleinen (beschädigten?) Partien waren die Zellen gross und mit dünner Zellwand. An allen anderen Thallusteilen dagegen hatten sich die Mutterzellen durch zwei durcheinander senkrechte Wände in

vier sehr hohe, aber schmale »Tetrasporen» (LAGERHEIM S. 372) geteilt. Die Zellwände nehmen in Dicke bedeutend zu, verschleimen aber, wodurch die »Tetrasporen» frei werden. — Der Querschnitt zeigt einen 84—91 μ hohen Thallus mit den Zellen (»Tetrasporen») 38—47 × 5½—11 μ hoch und mit den Wänden der Innen- und Aussenseite 17—26 μ dick. — Die tetrasporführenden Thallusstücke waren recht schön in Areolen und »Areas» gemustert (= verschiedene *Prasiola*-Arten). — Das Chromatophor war in den spärlichen und beschädigten vegetativen Zellen nicht zu erkennen. In den Tetrasporen schien es ein langgestreckter Schild zu sein, der die konvexe Aussenseite der Zelle völlig deckte, an den Enden umgebogen und am Rande etwas gekerbt war.

Die Exemplare stimmen also in allen Hinsichten mit GEPP's Art überein und sind mit dieser identisch. In Fig. 5 a zeigt GEPP die von mir erwähnten »Tetrasporen» noch in den Mutterzellen liegend. Der Speziesname *endiviaefolium* GEPP ist also für den Fund aus Süd-Georgien klar. Betreffs der Gattung

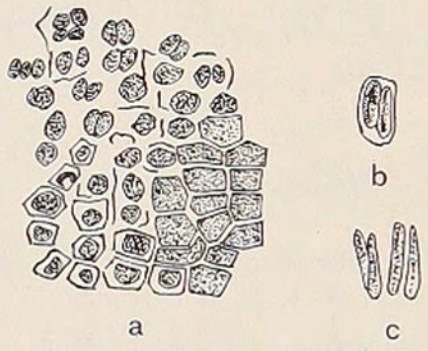

Fig. 1. *Monostroma* (?)*endiviaefolium*. St. 52.
a rechts unten eine Partie vegetativer Zellen, links und oben in »tetraspor»-bildende Zellen mit undeutlichen, verschleimten Wänden übergehend;
b »tetraspor»-bildende Mutterzelle, die aus dem Zellverband losgeraten ist; »Tetrasporen», durch das Zerfliessen der Wand der Mutterzelle frei geworden; ihre konvexe Seite ist von einem scheibenförmigen Chromatophor bedeckt. Vergr. 92.

ist es dagegen gar nicht sicher, wohl aber möglich, dass die Art ein *Monostroma* sei. REINKE (1878) erwähnt bei *Monostroma* ein Losmachen einzelner Zellen oder kleiner Zellkomplexe vom Rande des Thallus, welche sofort wieder auswachsen. Bei *Prasiola* hat LAGERHEIM (1892) elegante »Tetrasporangien» beschrieben und abgebildet. Mit *Porphyra* zeigt unsere Art überraschende Ähnlichkeit. Doch sind Tetrasporen etwas sehr Seltenes bei dieser Gattung. Ein Fehlen des roten Farbstoffes kann bei *Bangiaceen* vorkommen (z. B. bei *Asterocytis*). Ehe eventuell vorkommende Carposporen beobachtet sind, ist es aber besser, die Art unter *Monostroma* zu behalten.

In Süd-Patagonien (St. 21 b, April 08) und an Falkland (St. 8 b_2, Dez. 07) wächst eine Alge, die der obigen sehr ähnlich ist, nur bedeutend dünner (Thallus z. B. 31—36 μ dick, Zellen 14—23 μ hoch, Aussen- und Innenmembran 5—11 μ dick). Möglicherweise ist sie eine Jugendform von *M. endiviaefolium*. Die Zellen zeigten dieselbe Neigung, sich in vier hohe, schmale Tochterzellen zu teilen, nur waren diese noch nicht im Stand sich aus dem Zellverbande loszumachen und als selbständige Fortpflanzungskörper zu fungieren.

Verbreitung: Süd-Orkney-Inseln, Süd-Georgien, Falkland.

M. Lactuca (L.?, Roth, C. Ag.) J. Ag. Hylmö 1916, S. 23.

Syn. *M. Grevillei* (Thur.) Wittr. B *Lactuca* (Ag.) J. Ag. bei Hauck, S. 425. Fortasse=*M. Grevillei* Wittr. (*Ulva Lactuca* Hook. f. et Harv.) bei Hariot, S. 26.

Falkland: Cape Pembroke (Stat. 3 b, 7.—8.11.1907, innere Bassins).

Unter obigem Namen erwähne ich einige dünne Algenschläuche, die gewöhnlich in schmalen Zipfeln zerteilt sind. Die Exemplare sind *M. Harioti* Gain in vielen Hinsichten ähnlich: dieselbe Dicke des Thallus (z. B. 36 μ), dieselbe Form und Ordnung der Zellen etc. Sie sind aber bedeutend winziger (3—6 cm; *M. Harioti* 30—35 cm) und von weicherer Konsistenz. Während bei *M. Harioti* die Zellen sehr hoch sind (bis 28 μ) und den grössten Teil des Thallusquerschnittes einnehmen, sind sie bei *M. Lactuca* sehr niedrig (etwa 9 μ und mehr oder weniger quadratisch. Die Interzellularsubstanz ist aber bei den obigen falkländischen Exemplaren sehr kräftig entwickelt (bis 23 μ).

Die noch etwas unklare *M. endiviaefolium* Gepp ist mit ihrem festeren und dickeren Thallus (60—67 μ) und ihren überwinternden, Basalteilen von *Porphyra umbilicalis* ganz ähnlichen Büscheln sehr verschieden von unserer Art. *M. Grevillei* Wittr. besitzt dagegen einen bedeutend dünneren Thallus, der als jung kugelige Säckchen bildet und nach dem Bersten unregelmässig breitzipfelig wird. Auf Querschnitten ist die Interzellularsubstanz an der Aussen- und Innenseite des Thallus' kaum entwickelt.

Mit Wittrocks Beschreibung und Abbildung von *Monostroma undulatum* (=*M. Lactuca*) stimmt unsere Art ganz gut überein.

Verbreitung: Nord- und Ostsee. Falkland.

Fam. **Blastosporaceae.**

Prasiola Ag.

P. Skottsbergii n. sp.

Thallus bullato-crispatus, 1—2 dm longus, 2—9 cm latus et 12—13 μ crassus; cellulae longitudinaliter et transversaliter seriatae, in areolas distinctas vel confluentes ordinatae, quadratae (3—5 μ diam.) vel oblongo-quadrangulares (5—7 μ longae), in sectione thalli transversa 8 μ altae, utrinque strato substantiae intercellularis 2 μ crasso cohibitae.

Hab. in rivulis Falklandiae.

West Falkland: Westpoint Island, in rivulo, 9.12.07.

In einem Bach hat Dr. Skottsberg eine *Monostroma*-ähnliche Alge mit für *Prasiola* bedeutende Dimensionen (11×6, 17×2,5 cm) gefunden. Wahrscheinlich bildet die Art lange, stellenweise eingeschnürte Schläuche mit ringförmig faltiger und buckliger Oberfläche. Die Zellen waren in Längs- und Querreihen schön geordnet, quadratisch (4—5 μ) bis rektangulär (6 μ lang) mit einem Pyrenoid in jeder Zelle. »Viae interstitiales areas cellularum principales separantes» sind mehr weniger parallel und höchstens 1 μ breit. In

Thallusteilen mit dichtstehenden Zellen, besonders in den zur Akinetenbildung reifen Randpartien, sind sie deutlich, in anderen Teilen, z. B. im Inneren des Thallus, dagegen schwach oder gar nicht ausgebildet.

Verwandschaft: Betreffs Form und Grösse der Zellen wie auch betreffs der oft eintretenden Undeutlichkeit der Areolen stimmt *P. Skottsbergii* mit *P. crispa* (Lightf.) Ag. gut überein. Zum Vergleich habe ich Proben von *P. crispa* aus Halland, Norwegen und Bayern untersucht. Sie zeigten alle quadratische Zellen mit einer Grösse von 3,5 bis 5 µ, sowie 7=9,5 µ lange noch ungeteilte rektanguläre Zellen (den von De Toni, S. 142 erwähnten Minimalmassen ziemlich gleich). Mit Svedelius' Taf. XVI, Fig. 6 (Oberflächenbild von *P. crispa*, Wittr. et Nordst. Algae exsiccatae, N:r 147) ist *P. Skottsbergii* völlig übereinstimmend.

Die nur terrestrische *P. crispa* ist allerdings in Form und Grösse sehr variabel, wechselt aber in Europa gewöhnlich zwischen einreihigen Fäden und wenige mm breiten Flächen. Eine Wasserform oder eine Form mit einem ein paar Decimeter langen Thallus ist bei *P. crispa* nicht zu erwarten. Ich muss deshalb diese kleinzellige *Prasiola* als eine von *P. crispa* verschiedene Art ansehen. (Ob die von Collins S. 221 erwähnte, bis 10 cm lange und breite, grosszellige (8—3 µ) nordamerikanische Form wirklich zu *P. crispa* gehört, muss dahingestellt bleiben, ist allerdings kaum anzunehmen.)

Grosswüchsig sind dagegen die wasserbewohnenden *P. fluviatilis* und *P. mexicana*. Jene ist bis 25 mm lang (nach Collins bis 10×2 cm), hat fast dieselbe Zellengrösse (4—6 µ) wie *P. Skottsbergii*, ist aber in Amerika nicht südlich von Grönland und Alaska gefunden. Die in kalten Wildbächen Bolivias und der Vereinigten Staaten wachsende *P. mexicana* ist bedeutend grosszelliger (Lagerstedt 6—10 µ, Lagerheim 10—16 u, Collins 6—16 µ, Aplanosporen 14×6—8 µ) als *P. Skottsbergii*. Über die anderen Eigenschaften von *P. mexicana* sind die Verfasser ziemlich uneinig (Kützing Sp. Alg. S. 473: »areolis distinctissimis»; Collins: »the areolate character not so conspicious as in some other species»), so dass der Unterschied zwischen *P. mexicana* und *P. Skottsbergii* nur von der Zellengrösse bedingt wird.

Die terrestrische *P. antarctica* Kütz besitzt etwas grössere Zellen (6 µ) als *P. Skottsbergii* und vor allem dickere Zellwände und grössere Areolenabstände (Svedelius, S. 290: 3—4 µ). Der Thallus ist nur 3—4×2—3 mm (»thallo parvulo»; nach Svedelius dagegen »fronde majuscula», was jedoch ohne Massangabe wenig aussagt).

Eine von Hooker gesammelte falkländische *Prasiola* wurde von Kützing, Spec. Alg. S. 473, als *P. Rothii* Kütz subsp. *falklandica* beschrieben, von der Hauptart durch gerade »Viae» und durch 4,5 µ lange »Gonidien» verschieden. Da aber die Hauptart *P. Rothii* nur eine gewöhnliche terrestrische (ostfriesische) *P. crispa* mit unbedeutendem Thallus (4—6,5×2—4 mm) ist, hat subsp. *falklandica* wahrscheinlich nichts mit unserer Art zu tun.

Die *P. cristata* oder *tesselata* von Kap Horn und Kerguelen ist eine kleine aber reichlich zerschnittene marine Brandungsform, die kaum mit *P. Skottsbergii* identisch sein kann.

Fam. **Valoniaceae.**

Subfam. **Boodleae** BØRGESEN 1933, S. 42.

Cladophoropsis BØRGESEN 1905.

Cl. brachyartrus (SVED.) BØRG.
Siphonocladus brachyartrus SVED. S. 304, Taf. XVIII.

Chiloé: Quemchi, an litoralen, fast vertikalen Felswänden (St. 30 a, 19.7. 08). West-Patagonien: Albatrosskanal, Heinrichsfjord, litoral (St. 27 B, 12.6. 08); Pt. Charrua litoral (St. 28 B, 14.6. 08). Süd-Patagonien: Otway Water, Mündung von Ensenada Rodriguez, litoral (St. 20 b, 25.4. 08).

Die Exemplare von den oben erwähnten Fundorten waren in Dicke den Exemplaren SVEDELIUS' oft weit überlegen. Normale zylindrische oder tonnenförmige Zellen zeigten einen Durchmesser von 241—464 μ (12.6. 08), bis 602 μ (Pt. Charrua), bis 665 μ (Otway Water). Birnförmige Zellen konnten an der breitesten Stelle bis 722, 757 und 791 μ anschwellen. Deshalb soll das Maximum in SVEDELIUS' Diagnose der Art von 300 auf 800 erhöht werden.

Die an der Basis breiteren (z. B. 180 μ), allmählich dünner werdenden Würzelfäden waren oft verästelt und immer mit Querwänden versehen, was aus SVEDELIUS' Abbildungen nicht genügend hervorgeht.

Die von BØRGESEN (1913, S. 44) bei *Cladoropsis membranacea* erwähnte »segregative celldivision» habe ich nicht beobachtet, wenn nicht in einer sehr modifizierten Form. Die Astspitzen sind »*Acrosiphonia*- oder *Sphacelaria*-artig», mit dunklem Plasma gefüllt. Dieses verdickte Plasma geht aber nicht allmählich in den helleren unteren Teil über, sondern bildet an seiner Unterseite eine scharfe Grenze und setzt hier mit der Zeit eine Querwand ab. Wahrscheinlich kann auch in interkalären Zellen eine ähnliche Verdickerung des Plasmas am Ende der Zelle stattfinden und in einer Verzweigung des Fadens resultieren.

Die Zellwand ist gewöhnlich ziemlich dünn (3—7, selten bis 12 μ), in den Wurzelfäden noch etwas dünner.

Verbreitung: Patagonien.

Fam. **Cladophoraceae.**

Cladophora KÜTZ.

Subgenus **Aerosiphonia** J. AG.

Cl. pacifica (MONT.) KÜTZ. Sp. Alg. S. 419. DE TONI Sylloge I, S. 339. HARIOT S. 22. COTTON S. 163. HYLMÖ S. 11. — Fig. 2.

Spongomorpha pacifica KÜTZ. Tab. Phyc. Bd IV, Tab. 78, II. — *Acrosiphonia pacifica* SVEDELIUS S. 295. — *Cladophora (Spongomorpha) Hookeriana* KÜTZ. Sp. Alg. S. 418, Tab. Phyc. IV, Tab. 77, I. DE TONI S. 340. HARIOT S. 22. ASKENASY S. 5. COTTON S. 163. — *Cladophora arcta* HOOK. fil. Crypt. ant. HARIOT S. 21. ASKENASY S. 4. GAIN S. 31. COTTON S. 163. — *Cladophora (Spongomorpha) Aegiceras,* ASKENASY S. 4.

West-Patagonien: Puerto Riofrio, litoral an Steinen und Muscheln (St. 28, 13.6.08).

Süd-Patagonien: Canal Gajardo, litorale Felstümpel, (St. 21 b, 27.4.08, spor.); Otway Water, Puerto Pomar, litorale Felsen (St. 15, 14.4.08); Fitzroy Channel (die Meerenge zwischen Otway und Skyring), 13—14 m, grober Kies (St. 17, 18.4.08, ohne Dornzweige und Hakentriebe); Jerome Channel an der Magalhãesstrasse, Bahia Arauz, an litoralen Felsen (St. 23, 3.5.08, spor., ohne Dornzweige und Hakentriebe).

West-Falkland: Westpoint Island, litorale Tümpel, z. T. an *Lithothamnion* (St. 8 b_2 und c, 5.—6.12.07 spor.); East Falkland, Cape Pembroke, in inneren, ziemlich geschützten Tümpeln (St. 3 b, 8.11.07, steril); Port Louis, litoral (St. 11, 7.2.08, spor.); Feuerland: Brecknock Sound Puerto Barrow (St. 42, 4.3.09, spor.), Beagle Channel, Ventisqueros Sound, litoral, Brackwasser (St. 43, 5.3.09, spor.); Orange Bay, »in tide-pools on kelproots» (St. 45, 11.3.09, spor.); Süd-Georgien: Cumberland Bay, 5 m (St. 48, 20.4.09, spor.)

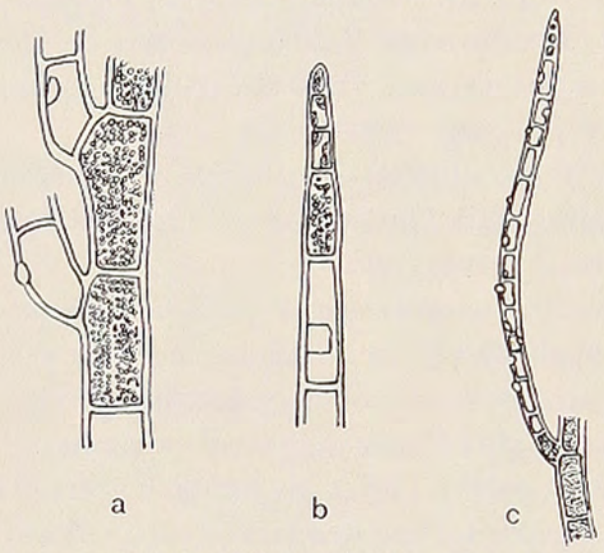

Fig. 2. *Cladophora pacifica*. St. 42.
a Fadenteil mit gefüllten und entleerten Sporangien;
b Ast- oder Ästchenspitze mit 3 vegetativen Zellen, einem gefüllten und einem entleerten Sporangium;
c Ästchen mit einer vegetativen Zelle unten, vier teilweise verkümmerte Zellen an der Spitze und dazwischen 13 entleerten Sporangien. Vergr. *a* und *b* 92, *c* 20.

Die Original-Exemplare von *Cl. Hookeriana* stammen aus Falkland, diejenigen von *Cl. pacifica* dagegen von den Auckland-Inseln südlich von Neuseeland. Es wäre daher lieber anzunehmen, dass die von den verschiedenen schwedischen Expeditionen am Feuerland und an den Falklandsinseln eingesammelte *Acrosiphonia Cl. Hookeriana* darstellt. Es ist mir aber unmöglich, in den Originalbeschreibungen und -abbildungen der Arten *Hookeriana* und *pacifica* wirkliche spezifische Unterschiede zu finden, weshalb ich die beiden vorläufig unter dem älteren Namen *pacifica* vereinige. Vielleicht wird eine künftige Untersuchung der Auckland-Pflanze zeigen, dass sie doch zwei Arten darstellen.

Cl. arcta in Hook. fil. Crypt. ant. wurde von De Toni als synonym zu *Cl. Hookeriana* aufgeführt; auch die von verschiedenen anderen Verfassern erwähnte subantarktische *Cl. arcta* gehört wohl hierher, wenn auch bis jetzt keine scharfen Unterschiede zwischen jener und der nördlichen *Cl. arcta* nachgewiesen worden sind.

Dass die von Askenasy erwähnte Art aus Kerguelen mit der aus der tropischen Torres-Strasse beschriebenen *Cl. Aegiceras* identisch sein sollte, ist unwahrscheinlich. Nach der Beschreibung zu urteilen gehört sie zu *Cl. pacifica*.

Zu der guten und ausführlichen Beschreibung dieser Art durch Svedelius will ich nur folgendes hinzufügen.

Die Aussenseite der untersten Astzelle ist gewöhnlich nicht gerade, son-

dern bildet einen Kreisbogen (Fig. 2 a). Das von SVEDELIUS erwähnte und abgebildete (Taf. XVII, Fig. 7 u. 12) Verhältnis, dass »die fertilen Zellen zerstreut, d. h. durch vegetative Zellen von einander getrennt sind und nur manchmal zwei, höchstens drei nebeneinander liegen» ist nur ein vorübergehendes Stadium. Im Gegenteil werden mit der Zeit alle oder fast alle Zellen »im oberen Teil des Sprosssystems» fertil, die etwa vier reduzierten Zellen in den Spitzen der Äste und Ästchen ausgenommen, welche sehr inhaltsarm sind und fast nur aus der Zellwand bestehen. In Fig. 2 ist eine Reihe von 14 Zellen fertil (das eine Sporangium ist noch nicht entleernt); auch würde die noch vegetative Basalzelle ohne Zweifel auch einmal fertil werden können. In den Hauptästen habe ich Reihen von mehr als 20 fertilen Zellen beobachtet. Die Art gehört deshalb nicht, wie SVEDELIUS meint, der KJELLMAN'schen Sectio *Speirogonicae* wie auch nicht der Sectio *Zoniogonicae* an, da in dieser die Sporangienketten »jam ab initio» von 10—30 oder mehr fertilen Zellen bestehen sollen. Grösserer Kummer für das Einordnen der *Cl. pacifica* in das Schema von KJELLMAN ist doch kaum nötig, da wohl alle oder die meisten seiner Arten 1—18 mit *Cl. arcta* zu vereinigen sind. — Auch die Hakenäste werden fertil.

Die für das Austreten der Schwärmer gebildeten, etwa 25—47 μ weiten Löcher befinden sich in beliebiger Höhe der betreffenden Zellen; sie sind in den untersten Teilen der Ästchen an der Aussenseite, in den mittleren Teilen und in den Ästen dagegen allseitig gelegen. Die Fortpflanzungskörper sind, wie SVEDELIUS erwähnt und abgebildet hat, sehr klein (etwa 3,5 μ im Durchmesser). Ihre Anzahl schätze ich auf etwa 4,000 bis 6,000 in jedem Sporangium.

Die Wurzelfäden bestehen an der Basis aus etwa 35—54 μ breiten, an Chromatophoren und Pyrenoiden reichen Zellen, werden aber allmählich schmäler (15—20 μ) und inhaltsärmer.

Die Zellwände der Fäden sind 4—7 μ dick. Die Äste sind öfters gegenständig. Die junge Astanlage wird oft ziemlich spät von der Mutterzelle durch eine Querwand abgetrennt, welche zuweilen ein kurzes Stück oberhalb der Basis des Astes angelegt wird. — Die Pyrenoide wechseln oft bedeutend an Grösse; sie messen in gewöhnlichen vegetativen Zellen z. B. 6—8 μ, in bald fertil werdenden Zellen z. B. 11—12 μ.

Hakenförmiges Einrollen kommt nicht nur an Ästchen, sondern zuweilen auch in den Astspitzen vor, wodurch, wenn auch selten, zusammengesetzte Haken entstehen können.

Verbreitung: Wahrscheinlich im ganzen subantarktischen Gebiet: Auckland, Kerguelen, Süd-Georgien, Falkland, Feuerland.

Subgenus **Pectinaria,** n. subgen.

Ein einziger Kern in jeder Zelle. Pyrenoide undeutlich. Kammförmige Dornäste. Hakenzweige wahrscheinlich nicht vorhanden. Fortpflanzung mir unbekannt. Übrigens wie *Acrosiphonia*.

Cl. oxyclada (MONT.) KÜTZ. Sp. Alg. S. 419. HARIOT S. 22. DE TONI S. 340. — Fig. 3.

Spongomorpha oxyclada KÜTZ. Tab. Phyc. IV, Tab. 79, I. — *Cladophora aculeata* (MONT.) KÜTZ. Sp. Alg. S. 419.

West Falkland: Westpoint Island, litoral (St. 8 b_2 und c, 5—6.12.07).

Die Art ist von KÜTZING gut abgebildet, die Beschreibung muss aber etwas ergänzt werden.

Thallus bei vorliegenden Exemplaren etwa 8 cm. hoch. Rhizoiden verästelt, z. B. 18—23 μ dick; ihre Zellen sehr langgestreckt und inhaltsarm. Gröbere Fäden 70—80 μ dick. Die Basis der Äste ist abgerundet (wie bei *Cl. pacifica*). Die Stämme sind von Rhizoiden ganz umhüllt. Hakenförmige Einrollung der Zweige habe ich nicht beobachtet. Wie bei *Acrosiphonia* sind zweierlei Sprösse vorhanden: 1) zylindrische, z. B. 54—64 μ breite, mit einer dunklen, inhaltsreichen, zylindrischen oder schwach keulenförmigen Endzelle (Länge: : Breite 2—3); kammförmige Äste, welche mit kurzen, ein- bis wenigzelligen, einreihig geordneten, stacheligen Ästchen mit oft schiefen Querwänden versehen sind. In sämtlichen Zellen gibt es nur einen einzigen Kern mit einem einzigen Kernkörperchen; alle beiden waren auf sowohl gefärbtem wie ungefärbtem Material deutlich zu erkennen. Der Kern ist fast immer etwa zentral gelegen. Nur in Zellen, die sich zur Teilung vorbereiten, habe ich zwei Kerne beobachtet. Das nach Jodfärbung ziemlich gut sichtbare Chromatophor ist fein netzförmig mit weiten Maschen und mehreren undeutlichen Pyrenoiden. Zellwand z. B. 5—8 μ dick.

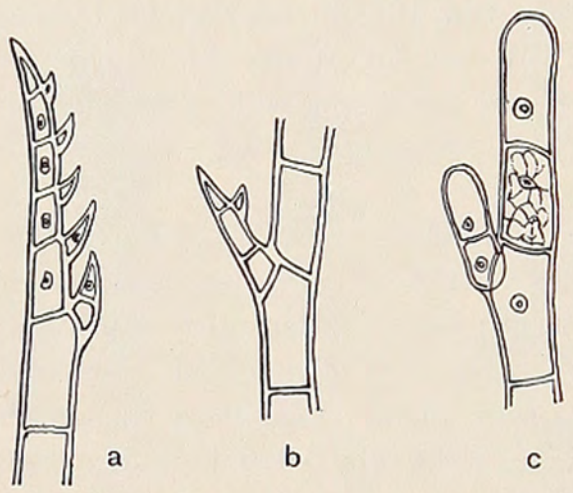

Fig. 3. *Cladophora oxyclada*. St. 8 b_2 und c. Astspitzen. Vergr. 92.

In vielen Hinsichten zeigt also die Art eine von dem gewöhnlichen *Cladophora*-Typus abweichende Beschaffenheit. Solange aber die Fortpflanzung unbekannt ist, ist ihre nähere systematische Stellung kaum zu ermitteln; vorläufig bleibt sie eine *Cladophora*. Um aber ihre Selbständigkeit innerhalb der Gattung hervorzuheben, wurde für sie eine besondere Untergattung geschaffen.

Verbreitung: Patagonien, Falkland (zum ersten Mal).

Subgenus **Eu-Cladophora.**

Cl. falklandica HOOK. f. et HARV. Lond. Journ. Bot. IV, 294: Fl. Ant. 490, T. 193, F. 1. DE TONI Sylloge I, S. 304. HYLMÖ 1919, S. 9.

West-Patagonien: Puerto Bueno, 1—3 m, Sand und Mytilus (St. 27, 3.6.08). Süd-Patagonien: Skyring Water, Punta Altamirano (St. 18, oberes Sublitoral, grober Kies, 22.4.08; St. 19, 5—10 m, 23.4.08); Jerome-Channel an der Magalhãesstrasse, Bahia Arauz (St. 23, 3.5.08). Feuerland: Orange

Bay, »in tide pools on kelproots» (St. 45, 11.3.09); East Falkland: Stanley Harbour, Ufer mit kleineren Steinen, litoral (St. 1, 4.11.7, fertil); Port Louis, litoral (St. 11, 7.2.08, reich fertil); Cape Pembroke, innere, geschützte Tümpel (St. 3 b, 7.—8.11.07, 6.—7.1.08).

f. *tortilis*: Fäden unten *Ectocarpus tomentosus*-ähnlich seilartig gewunden. Vielleicht nur eine Entwicklungsform der Art.

Feuerland: Beagle Channel, Slogget Bay, litorale Felsen (St. 47, 16.3.09, reich fertil). East Falkland: Cape Pembroke, in Tümpeln (St. 3 b, c, 7.1.08).

Das Material war in einigen Fällen zu knapp um mit völliger Sicherheit die Art zu bestimmen.

Verbreitung: Patagonien, Feuerland, Falkland.

Subgenus **Lychaete** Ag., J. Ag. ex parte (als Genus) De Toni p. 331.

»Caespite decumbente radicante, filamentis infimis subdecumbentibus, radicantibus, superioribus simplicibus capillaribus» (J. Ag. De Alg. Nov. Zel. mar., pag. 2, sub *Lychaete Novae-Zelandiae* et *Lych. longe-articulata*). Rhizoideis unicellularibus.

Die beiden Arten *Cl. incompta* und *Cl. subsimplex* sowie die Agardh'schen Arten *Lychaete Novae-Zelandiae* und *Lych. longe-articulata* scheinen durch ihre kriechenden, wurzelnden Äste und ihre Rhizoide, die gewöhnlich nur eine Ausstülpung ihrer respektiven Mutterzellen darstellen, als eine besondere Subgenus zusammenzufassen zu sein. Ob noch andere »*Cladophorae flagelliformes*» Kütz. zu dieser Subgenus zu ziehen sind, muss dahingestellt werden, da kriechende, wurzelnde Äste und einzellige Rhizoide nur bei den obengenannten Arten erwähnt sind.

Bei *Cl. incompta* sind die aufrechten Sprosse noch mehr reduziert als bei *Cl. subsimplex*, weshalb die Art ein mehr *Rhizoclonium*-ähnliches Aussehen bekommt und möglicherweise ein Bindeglied zwischen dieser Gattung und *Lychaete* darstellt.

Cl. subsimplex Kütz. Spec. Alg. p. 411. De Toni, Sylloge I, S. 331. Hylmö S. 10.

Cl. simpliciuscula Hook. fil. et Harv. Crypt. antarct. p. 190. Fl. ant. p. 496, T. 192, Fig. IV.

West-Patagonien: Puerto Bueno, Sand und Mytilus, 1—3 m, (St. 27, 3.6.08); Puerto Riofrio, an litoralen Steinen (St. 28, 13.6.08); Pt. Charrua (St. 28 B, 14.6.08); Süd-Patagonien: Otway Water, Puerto Pomar, litorale Felsen (St. 15, 14.4.08); Jerome Channel an der Magalhãesstrasse, Bahia Arauz, litorale Felsen (St. 23 und 23 a_2, 3.5.08); West Falkland: Westpoint Island, Tümpel an der Hochwassergrenze (St. 8 a_3, 5.—6.12.07); East Falkland: Stanley Harbour, kleinsteiniges Litoral (St. 1, 1.—3.11.07).

Der Beschreibung von Hooker und Harvey will ich folgendes hinzufügen.

Die Hauptform der Art ist ein niedriger, oft reich verästelter, *Cl. flexuosa*-ähnlicher Büschel mit oft bogenförmigen Ästen und 1- oder 2-seitig geordneten

Ästchen. Die Äste und Ästchen werden aber bald peitschenförmig verlängert und können sehr lange Strecken unverästelt bleiben. So habe ich im südpatagonischen Material (St. 23) Zellreihen mit z. B. 136 Zellen, im falkländischen (St. 8) solche von nicht weniger als 188 Zellen beobachtet. Diese peitschenförmigen Ästchen legen sich gewöhnlich an die Unterlage und verwandeln sich in kriechende Fäden, die an ihrer Oberseite zuweilen eine Reihe von vertikalen Ästchen und an der Unterseite gewöhnlich Rhizoide erzeugen. Diese von mir zum ersten Mal erwähnten Rhizoide sind von demselben Bau wie diejenigen bei *Cl. incompta* und scheinen mir samt einigen anderen Eigenschaften eine Verwandschaft der beiden Arten anzudeuten. Sogar an der Spitze eines Astes habe ich einmal ein Rhizoid gesehen. Von der Mutterpflanze abgerissene Ästchen können sich festsetzen und als *Rhizoclonium*-ähnliche Fäden fortleben.

Die Spitzen der Ästchen sind, wie schon aus der Abbildung in Flora antarctica hervorgeht, nicht so stumpf wie es bei den meisten *Eu-Cladophora*-Arten der Fall ist, sondern etwas verengt, ohne doch die Gestalt der Dornäste bei *Acrosiphonia* zu besitzen.

Das Abtrennen der Astanlagen durch eine Querwand tritt später ein als im allgemeinen bei *Eu-Cladophora* der Fall ist, wodurch oft ein *Cladophoropsis*-ähnliches Bild entsteht.

Die von Kützing (l. c.) angegebene Dicke der Fäden (37—45 μ) passt etwa auf die peripherischen Äste und auf die Ästchen. Die vertikalen Hauptstämme — wo sie vorkommen — werden oft bedeutend gröber (bis 100 μ).

Verbreitung: Patagonien, Feuerland, Falkland, Kerguelen.

Cl. incompta (Hook. f. et Harv.). J. D. Hooker, Fl. antarctica, tab. CXCII, fig. III. Hariot, S. 21. Svedelius S. 292. Hylmö, S. 10.

Conferva incompta Hook. fil. et Harv. Lond. Journ. of Bot. vol. IV, S. 294. — *Rhizoclonium pachydermum* Kjellm. **maclovianum* Carlson, S. 53. Cotton, S. 162.

West-Patagonien: Puerto Riofrio, litoral an Steinen (St. 28, 13.6. 08, spärlich); Pt. Charrua (St. 28 B, 14.6. 08). Süd-Patagonien: Skyring Water, Mündung von Ensenada Rodriguez, litoral (St. 20 b, 26.4. 08); Jerome Channel an der Magalhãesstrasse, Bahia Arauz, litorale Felsen (St. 23 a_1 und a_2, 3.5. 08, spor.); Otway Water, Puerto Pomar, litorale Felsen (St. 15, 14.4. 08). Feuerland: Orange Bay »in tide water pools on kelproots» (St. 45, 11.3. 09). West Falkland: Westpoint Island, glattgeschliffene Felsen an der Hochwassergrenze, f. *tenuis* Reinb. (St. 8 a, 5.—6.12. 07).

Zu Svedelius' guter Beschreibung der Art will ich nur folgendes hinzufügen. Nur ein einziges Mal beobachtete ich eine Querwand zwischen einem Rhizoid und seiner Mutterzelle. Die vertikalen Sprösse der Fäden können (selten) ihrerseits mit einfachen Ästchen versehen sein, wodurch die Pflanzen mehr *Cladophora*-ähnlich werden. Die Dicke der Fäden wechselt zwischen 41 und 258 μ, diejenige der Rhizoide zwischen 61 und 150 μ.

Die Exemplare aus Falkland gehörten zur f. *tenuis* Reinb. (S. 187) und

sind in Dicke den mächtig entwickelten südpatagonischen Pflanzen weit unterlegen.

Verbreitung: West- und Südpatagonien, Falkland, Kerguelen.

Rhizoclonium Kütz.

Rh. riparium (Roth) Harv. — *Rhizoclonium* sp. Hylmö 1919, S. 9.

Chiloé: Ancud Bay, Anal, im oberen Litoral rasenbildend, 10.7.08 (St. 29 a); Quemchi, litoral, sowohl an senkrechten Felsenwänden wie rasenbildend auf feinkörnigem Sandstein, 19.7.1908 (St. 30 a). West-Patagonien, Puerto Riofrio, an litoralen Steinen in einer Mischung verschiedener Algen, 12.—13.6. 1908 (St. 28). Süd-Patagonien: Magalhäesstrasse, Adelaid-Inseln, Isla Atalaya, litorale Felsen, 25.5.1908 (St. 25). East Falkland: Stanley Harbour, auf litoralem Kies, 1.—3.11.1907 (St. 1).

Die Pflanze ist dem nördlichen *Rh. riparium* so ähnlich, dass ich sie von diesem nicht unterscheiden kann. Die Fäden sind einfach, 15—25 (31) μ breit; Länge : Breite der Zellen 1—3; Chromatophoren grob netzförmig. Die gewöhnlich vorkommenden Rhizoiden sind nur Ausbuchtungen der Fadenzellen (ein einziges Mal habe ich eine Querwand beobachtet), 47—119 μ lang und 7—18 μ breit. Zoosporen (St. 30 a) etwa 7 μ in Durchmesser.

Von den südlichen Meeren sind zwei marine *Rhizoclonium*-Arten bekannt, nämlich die 54—64 μ breite *Rh. Hookeri* Kütz. und *Rh. ambiguum* (Hook. f. et Harv.) Kütz., welche letztere von Kützing und De-Toni fälschlicherweise als »in aqua dulci» vorkommend angegeben wird. Wie Hooker et Harvey selbst sagen, ist die Art eine marine Alge (»in the sea»). Auch Askenasy hat sie bei Kerguelen marin gefunden und Hariot an den Ufern des Feuerlandes. Diese Art ist unvollständig bekannt (»species inquirenda»), wird wohl eine grobe »*Chaetomorpha Linum*»- oder »*Cladophora incompta*»-ähnliche Alge sein (»fluitans», »vix differre videtur *Rhizoclonium Hookeri*»).

Fam. **Bryopsidaceae.**

Bryopsis Lam.

B. australis Sond., Kütz. Sp. Alg. 492; J. Ag. Till Alg. Syst. VIII, 26; Hylmö 1919, S. 15—16, Fig. 31—32.

East Falkland: Cape Pembroke (St. 3 b, c; 7.1.08; innere und äussere Bassins).

Äste allseitig geordnet. Die Pflanzen sind den oben zitierten Abbildungen völlig gleich. Fig. 31—32.

Verbreitung: Feuerland, Falkland, Australien.

Fam. **Codiaceae.**

Codium Stackh.

C. fragile (Suringar 1870) Hariot 1888, De Toni 1889, Collins 1918, Schmidt 1923.

C. mucronatum J. Ag. 1886, De Toni 1889, Kjellman 1897, Reinhold 1899, Svedelius 1900, Collins 1909, Cotton 1915, Hylmö 1919, Rosenvinge 1920, van Goor 1923.

West Falkland: Westpoint Island (St. 8 b_2, 5.—6.12.07 in der litoralen »*Iridaea*-Formation» sowie in Tümpeln im unteren Litoral); Südküste von Dunnose Head, (St. 4 c, 21.11.07, in seichten litoralen Tümpeln).

Die Art wurde früher gewöhnlich *C. mucronatum* J. Ag. genannt. Doch wies schon 1888 Hariot nach, dass sie mit der von Suringar beschriebenen Art *Acanthocodium fragile* identisch ist. Da das von Suringar untersuchte Material nur aus ein paar eingetrockneten Stückchen besteht (»fragmenta tantum pauca aderant eaque parva et manca — —»; »tellement friables et en si mauvais état, que — —»), wurden die von ihm angegebenen Masse (Thallus 2 mm dick, Blasen 0,57 mm lang und 0,076—0,115 mm breit) zu klein. Auch die von ihm »in chloreti calcici solutione» aufgeweichten Blasen erreichten nicht die tatsächlichen Minimalmasse der Art.

Das an Westpoint Island gesammelte Exemplar besitzt einen 21 cm langen, wiederholt gabelteiligen Thallus, dessen Hauptstamm 7 mm und äusserste Verzweigungen 3 mm breit sind. Jüngere Äste waren oft mit niedrigen Büscheln von *Ceramium rubrum* versehen.

Die Gametangien sind 390—495 µ lang und 85—130 µ breit. Sie springen meistens von der Mitte der Blase vereinzelt aus und kommen nur in den Endverzweigungen vor. In den älteren Thallusteilen waren sie schon abgefallen. Entwickelte Blasen sind 1,200—1,350 µ breit, jüngere bedeutend schmäler. Mucrospitze (vom Gipfelpunkt der inneren Blasenhöhle gerechnet) 42—46 µ lang und 47—49 µ breit. In jüngeren Blasen ist der Mucro solid, in älteren durchlöchert. Die älteren Blasen an gröberen und älteren Stammteilen haben gewöhnlich den Mucro verloren und waren oft mit Epiphyten bekleidet, vor allem mit *Gononema ramosum*.

Verbreitung: Grosser Ozean, Südliches und (bis jetzt sehr spärlich) nördliches Atlantisches Meer.

C. difforme Kütz. 1843 und 1856, Askenasy 1888, S. 10, Hariot 1888, S. 32, Borgesen 1913, S. 115, Collins 1909, S. 387, Cotton 1915, S. 164, Hylmö 1919, S. 12, Fig. 27, Schmidt 1923, S. 31.

C. adhaerens (Cabr.) Ag. 1823, S. 457, partim. Kütz 1849, S. 502, partim. Hauck 1885, S. 479.

West Falkland: Westpoint Island (St. 8 a_3 und b, b_2, c 5.—6.12.07, in der litoralen »*Iridaea*-Formation», wie auch an glatten Felsen an der Hochwasserlinie in der horizontalen »*Hildenbrandia*-Formation»; East Falkland; Cape Pembroke (St. 3 b, 8.11.07, innere Tümpel).

Da die Abgrenzung der Art gegen *C. adhaerens* noch etwas unscharf ist, füge ich einige Grössenangaben bei.

Thallus 1 cm dick, mit lobiertem Rande, schwammig-locker (Thallussaum *adhaerens*-artig fester). Die jungen Rindenschläuche des hellen Thallussaumes sind plasmareich, zylindrisch und mit einem etwas dickeren und an der Oberseite mehr oder weniger abgeplatteten Kopf versehen, einstöckig, 576—791 × 56—72 µ, ohne nennenswerte Membranverdickung der Blasenspitze (3½—7 µ; Seitenwand 1½ µ dick.) Die Rindenschläuche sind also im Jugendstadium denjenigen von *C. adhaerens* völlig gleich sowohl betreffs Grösse und Gestalt (vgl. SCHMIDT Fig. 6, links!) als Membranverdickung der Blasenspitze (SCHMIDT Fig. 7, mittlere Blasenspitze). Ältere Rindenschläuche sind gewöhnlich zweistöckig, 1620—2752 µ × 210—420 µ (Wand z. B. 2½ µ dick; Spitze nie verdickt). Jüngere Verbindungsfäden 20—24 µ dick, ältere 34—78 µ. Haare fehlend oder spärlich, zylindrisch, plasmaarm, 328—1307 × 36—43 µ. Gametangien einzeln, selten zwei seriat geordnet, 338—486 × 76—108 µ.

Verbreitung: Atlantisches Ozean, französ.-spanische Küsten, Mittelmeer, Westindien, Bahamas, Kerguelen, Falkland-Inseln (West- und Ost-Falkland). Indischer Ozean, Malayisches Archipel.

Da *C. difforme* und *adhaerens* ziemlich dieselbe geographische Verbreitung haben und die scheidenden Merkmale — wie ich oben gezeigt habe — ganz zusammenfliessen, wäre eine erneute Prüfung ihrer eventuellen Zusammengehörigkeit erwünscht.

C. cf. **arabicum** KÜTZ. Tab. Phyc. VI (1856) 35, Tab. 100, II. SCHMIDT S. 30. — Fig. 4.

Chile: Valparaiso (St. 41, 2.9.08).

Das an St. 41 gesammelte *Codium* besitzt einen ziemlich festen bis lockeren, 3 mm starken Thallus. Einzelne Randlappen biegen sich oft kammförmig zusammen (Kämme also etwa 6 mm im Durchmesser). Die normalen Rindenschläuche sind 407—596 µ lang und 89—168 µ breit, reich chlorophyllhaltig, zylindrisch oder schwach keulenförmig mit einer köpfchenförmig erweiterten Spitze. Ihre Seitenwand war 1—2½ µ dick, die Wand der Blasenspitze ebenso dick oder höchstens 3½—5½ µ. Einige (ältere?) Rindenschläuche waren blass und chlorophyllarm, wurstförmig angeschwollen, bis 2¼ mm lang und 370 µ breit. — Breite der Verbindungsfäden sehr variabel, 25—72 µ breit. — Haare in gewissen Thallusteilen häufig, 201—644 × 17—28 µ. — Gametangien 248—301 × 70—77 µ, also ziemlich kurz und breit, in anderen Thalluspartien aber schmal lanzettlich, z. B. 348 × 48 µ.

Das Feststellen der chilensischen Art als *C. arabicum* ist nur als vorläufig zu betrachten. Von den zu der *adhaerens*-Gruppe gehörenden Arten wären das westpatagonische *C. dimorphum* und das californische *C. Setchellii* zu gedenken. Sie unterscheiden sich jedoch alle beide allzu sehr von der Pflanze aus Valparaiso, beide haben einen stärkeren Thallus, aber dünnere Blasen mit viel weniger verdickten Membran der Blasenspitze (bei *C. dimorphum* an den Randschläuchen ganz kolossal) und entbehren der Haare. — Das australische

C. spongiosum ist in vielen Hinsichten der chilensischen Art sehr ähnlich, so betreffs Form der Rindenblasen, Dünnheit der Membran, Blasenspitze etc., zeigt aber bedeutend grössere Masse, so dass sie ausgeschlossen werden muss. — Die zwei Arten aber, von denen am allermeisten die Rede sein könnte, sind *C. arabicum* und *C. difforme*. Jene kommt im Indischen Ozean vor und ist auch von Japan bekannt; diese ist eine atlantische Art, welche bis nach den Falklandsinseln geht und auch (mit Recht?) von den Ostindischen Inseln erwähnt ist. Ich kann aber die chilensische *Codium*-Art nicht als mit *C. difforme* zusammengehörend betrachten auf jeden Fall nicht mit der falkländischen Form derselben. Die jungen Rindenschläuche sind bei *C. difforme* schmäler als bei der Art aus Chile, die Gametangien und der Thallus selbst bedeutend gröber. Auch die Verteilung der Blasen von *C. difforme* aus Falkland auf verschiedene Etagen sah ich nicht an der chilensischen Pflanze. Diese ruckweise Verlängerung der Blasen dürfte vielleicht klimatisch bedingt sein und nur in kälteren Gewässern vorkommen, wo im Winter ein relativer Stillstand des Zuwachses eintritt. Bei SCHMIDT Fig. 13 kommt diese »Zweietagigkeit» nur undeutlich zum Vorschein (subtropische Form?).

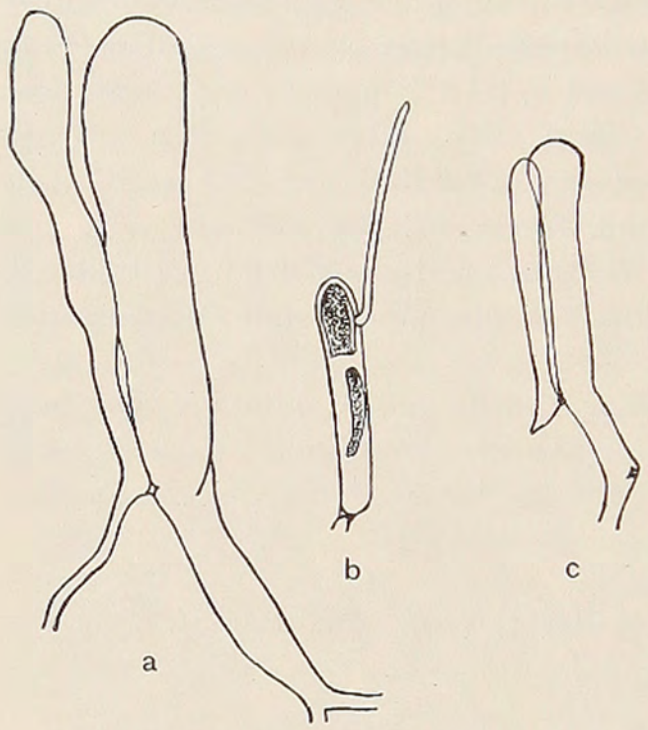

Fig. 4. *Codium cf. arabicum*. St. 41. *a* und *c* Blase mit Tochterblase; *b* Blase mit Haar. Vergr. 38.

C. arabicum KÜTZ. ist also die einzige beschriebene Art, gegen welche keine wiegenden Gründe angeführt werden können. Dass sie noch nicht südöstlich von Singapore—Japan gefunden wurde, braucht nicht zu viel zu bedeuten. Wie BØRGESEN (1934, S. 60) hervorhebt, bewohnen viele Meeresalgen — besonders die wärmeliebenden — oft sehr ausgedehnte und weit entfernte Areale. Von den Arten von Karachi sind z. B. 48 % auch in Japan gefunden, 52,6 % in Australien, 59,6 % im Mittelmeer und im Atlant. Ein Vordringen einer ostindischen und japanischen litoralen Grünalge über die ganze Südsee bis nach Chile wäre deswegen nicht unwahrscheinlich. Übrigens könnte die Art nach dem Hafengebiet in Valparaiso mit der Schiffahrt gekommen sein, z. B. von der Hafenstadt Singapore, wo sie gefunden wurde, oder von Japan. Das u. a. in Australien und Japan wachsende *C. fragile* ist ja in Dänemark eingewandert.

Verbreitung: Indischer Ozean, Pazifischer Ozean, Japan.

Fam. **Vaucheriaceae.**

Vaucheria DC.

V. patagonica n. sp. — Fig. 5.

Dioica; thallus parcissime ramosus, 75—110 μ latus, membrana tenuissima (1—2 μ crassa) cinctus, interdum septis in cellulas divisus; oogonia lateralia v. interdum terminalia stipitata v. sessilia, ovoidea v. subglobosa, 375—342 μ

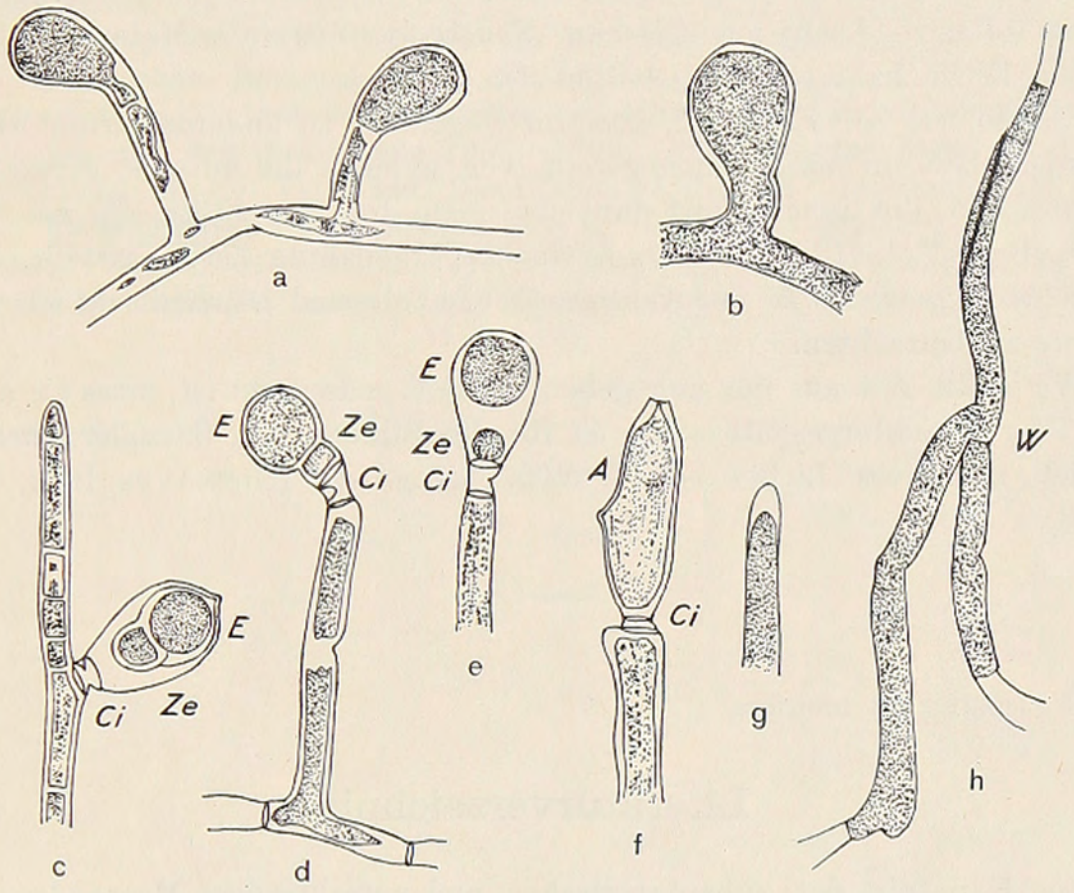

Fig. 5. *Vaucheria patagonica.* St. 17.

a und *b* Oogonienanlagen, von dem Mutterfaden noch nicht durch eine Wand abgetrennt; *c*—*e* reife Oogonien; *f* Antheridium; *g* vegetative Fadenspitze, Zellinhalt etwas zurückgezogen; *h* vegetativer Faden mit Querwand. A Antheridium, Ci Cellula inanis, E Ei, Ze Zwergei, W Querwand. — Das Endochrom des Fadens ist in *a*, *c* und *d* durch die Konservierungsflüssigkeit in mehrere Teile zerrissen worden. Vergr. 92.

longa et 235—248 μ lata, e thallo per cellulam inanem discreta, membrana oogonii 3 μ crassa; endochroma oogonii in duas partes divisum, in oosporam et in cellulam antipodalem; antheridia acrogena, cylindracea, apice et processubus 1—3 lateralibus brevissimis, conicis et poro fecundationis praedita, e cetero thallo cellula inani discreta.

Süd-Patagonien: Skyring Water, Punta Altamirano, 5—10 m, Schlamm (St. 19, 23.4. 08).

Wie aus der Diagnose und den Abbildungen hervorgeht, steht *V. patagonica* der europäischen Art *V. litorea* sehr nahe. Die Oogonien jener Art sitzen gewöhnlich gerade oder nur leicht gekrümmt, während sie bei dieser hakenförmig gekrümmt sind. Die patagonische Art besitzt auch das Vermögen,

nicht nur wie andere *Vaucheria*-Arten an den Oogonien, Antheridien, Zoosporangien und in den inhaltsarmen Tragzellen der Antheridien und Oogonien, sondern auch in anderen Teilen der Fäden Querwände zu bilden. Diese waren zuweilen nur dicke Ringe (=Dichotomosiphon), oft aber vollständige Scheidewände, wie sie BENNET beschrieben hat. Mit Chlorzinkjod sowohl als mit Jod und Schwefelsäure wurden sie teilweise bläulich oder rotviolett gefärbt.

Für Zoosporangienbildung erweiterte Fadenenden beobachtete ich nur sehr spärlich. In gewissen Zellen war der Inhalt als kleine runde Bälle ausgebildet, die vielleicht als eine besondere Art von Aplanosporen der Fortpflanzung dienen sollen. (Auch am frischen *Vaucheria intermedia*-Material von der hiesigen Küste habe ich ähnliche gesehen.)

Ebenso wie bei *V. litorea*, aber im Gegensatz zu anderen Arten wird der Oogonieninhalt in zwei Zellen geteilt, von welchen die äussere, grössere, die Oospore und die innere, mit dunkelbraunem Inhalt gefüllte, die von NORDSTEDT (Bot. Not. 1879, S. 182) Antipodzelle genannte Zelle darstellt. Diese rundet sich genau wie die Oospore schön ab und ist vielleicht als sterile Oospore zu betrachten.

Wenn die Art aus der angegebenen Tiefe gedredscht ist, muss sie neulich vom Ufer hinuntergespült sein, da für die Bildung von Sexualorganen »ein ziemlich intensives Licht» eine Voraussetzung ist. (OLTMANNS 1922, Bd. I, S. 428).

Ergänzung zu meinem

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