

NAT. ORD. CIII. ALGÆ, L.

By *W. H. Harvey, M.D. etc. etc.*

SERIES I. MELANOSPERMEÆ.

TRIBE I. FUCACEÆ.

Gen. I. SARGASSUM, *Ag.*

(*J. Ag. Sp. Alg.* vol. i. p. 268. *Kütz. Sp. Alg.* p. 636. *Anthophycus*, *Kütz.* l. c. p. 605. *Pterocaulon*, *Kg.* l. c. p. 606. *Carpacanthus*, *Kg.* l. c. p. 621. *Stichophora*, *Kg.* p. 627. *Spongocarpus*, *Kg.* p. 631. *Halochloa*, *Kg.* p. 632.)

1. *Sargassum bacciferum*, *Ag.*, *J. Ag. Sp. Alg.* v. 1. p. 344. *Kütz. Sp.* p. 609. *Hook. et Harv. Lond. J. Bot.* v. 4. p. 522. *Fucus bacciferus*, *Turn.* t. 47.

HAB. New Zealand, *D'Urville, Lesson, Sinclair.*

DISTRIB. Found floating in the Atlantic and Pacific Oceans. (Gulf-weed.)

2. *Sargassum vulgare*, *Ag.*, *J. Ag. Sp. Alg.* v. 1. p. 342. *Hook. et Harv. in Lond. J. Bot.* v. 4. p. 522. *Fucus natans*, *Turn. Hist.* t. 46.

HAB. New Zealand, *Banks, Lesson.*

DISTRIB. Shores of the Atlantic and Pacific Oceans.

3. *Sargassum granuliferum*, *Ag.*, *l.c. t. 11.* *J. Ag. Sp. Alg.* v. 1. p. 309. *Hook. et Harv. Lond. J. Bot.* v. 4. p. 522.

HAB. Cook's Straits, *D'Urville, fide Cunningham.*

This habitat appears to us to be more than doubtful. The species was founded on specimens brought by König from the Indian Ocean.

4. *Sargassum droserifolium*, *Bory, in Duper. Voy.* p. 129. *J. Ag. Sp. Alg.* v. 1. p. 347. *Hook. et Harv. Lond. J. Bot.* v. 4. p. 522.

HAB. New Zealand, *Lesson.*

5. *Sargassum crassifolium*, *J. Ag., Sp. Alg.* v. 1. p. 326. *S. aquifolium*, *Bory, Coqu.* p. 128. (*non Ag.*)

HAB. In the sea, between New Zealand and New Ireland, *D'Urville.*

6. *Sargassum duplicatum*, *Bory, Coqu.* p. 127. *J. Ag. Sp. Alg.* v. 1. p. 347. *Hook. et Harv. in Lond. J. Bot.* v. 4. p. 523.

HAB. New Zealand, *Lesson.*

7. *Sargassum scabridum*, *Hook. fil. et Harv., Lond. J. Bot.* v. 4. p. 522. *J. Ag. Sp. Alg.* v. 1. p. 347. *Kütz. Sp. Alg.* p. 614.

HAB. Bay of Islands, *J. D. H.* Houraki Gulf, *Lyall.*

8. *Sargassum Sinclairii*, *Hook. fil. et Harv., Lond. J. Bot.* v. 4. p. 522. *J. Ag. Sp. Alg.* v. 1. p. 300. *Kütz. Sp. Alg.* p. 606.

Var. β . *obtusifolia*; foliis firmioribus, superioribus latioribus obtusisque.

HAB. Bay of Islands, *Sinclair, Lyall, etc.* Auckland, Houraki Gulf, and Port Cooper, *Lyall.* Var. β . East Coast, *Colenso.*

9. *Sargassum Raoulii*, Hook. fil. et Harv. in *Lond. J. Bot.* v. 4. p. 523. *J. Ag. Sp. Alg.* v. 1. p. 288. *Kütz. Sp. Alg.* p. 616.

HAB. Akaroa, *Raoul*.

10. *Sargassum adenophyllum*, Harv.; stipite brevi mox in ramos plures diviso, ramis compressiusculis gracilibus longissimis indivisis lævibus plus minus flexuosis, foliis distichis alternis distantibus longe petiolatis dichotomo-multifidis, infimorum laciniis latiusculis linearibus membranaceis costatis parcissime glandulosis, superiorum laciniis filiformibus glandulis magnis elevatis instructis, vesiculis in petiolo filiformi sphericis mucronulatis demum muticis, receptaculis . . . ?

HAB. New Zealand, *Lyall*.

Stipes 1–2 inches long, dividing into numerous, slender branches, 1–2 feet long, $\frac{1}{4}$ a line in diameter, terete or subcompressed, quite smooth, set at distances of 1–2 inches with distichous, dichotomo-multifid, flabelliform leaves. The root-leaves, and those of the lower part of the stem, have membranous, strongly ribbed laciniae; the upper leaves are filiform, destitute of laminæ, but furnished with several large and very prominent glands. *Vesicles* spherical, with a short mucro. *Fruit* unknown.—Allied to *S. Raoulii*, but with different root-leaves, and remarkably large glands.

11. *Sargassum plumosum*, A. Rich., *Fl. Nov. Zel.* p. 186. *J. Ag. Sp. Alg.* v. 1. p. 286. *Kütz. Sp. Alg.* p. 620. *Hook. et Harv. in Lond. J. Bot.* v. 4. p. 523. *S. pennigerum* et *S. capillifolium*, *Rich. l. c. t.* 5, 6.

HAB. Very common on the New Zealand coasts, *D'Urville*, *Colenso*, *Lyall*, *Sinclair*, *Hooker*, etc.

In Kützing's *Sp. Alg.* p. 617, a "*S. flexuosum*, Hook. fil." is described, but is unknown to us, unless it be a synonym of *S. plumosum*. It is possible that a specimen of this species may have been communicated by Dr. Hooker to Professor Kützing, accidentally inscribed "*flexuosum*."

12. *Sargassum longifolium*, Ag., *J. Ag. Sp. Alg.* v. 1. p. 283. *Hook. et Harv. in Lond. J. Bot.* v. 4. p. 522. *Anthophycus longifolius*, *Kütz. Sp. Alg.* p. 605. *Fucus longifolius*, *Turn. Hist. t.* 164.

HAB. New Zealand, *Banks*, *D'Urville*.

Gen. II. TURBINARIA, *Lamour*.

(*J. Ag. Sp. Alg.* vol. i. p. 265. *Kütz. Sp. Alg.* p. 621.)

1. *Turbinaria ornata*, *J. Ag., Sp. Alg.* v. 1. p. 266. *T. denudata (partim)*, *Bory, Coqu. p.* 117. *Kütz. Sp. Alg.* p. 621. *Fucus turbinatus*, *Auct.*

Var. β . *ornatus*, *Turn. Hist. t.* 24. f. c.–h.

HAB. New Zealand, *D'Urville*.

DISTRIB. Tropical Oceans.

Gen. III. CARPOPHYLLUM, *Grev*.

(*Grev. Syn. Alg.* p. xxxii. *J. Ag. Sp. Alg.* vol. i. p. 261. *Kütz. Sp. Alg.* p. 636.)

1. *Carpophyllum Phyllanthus*, Hook. fil. et Harv. in *Lond. J. Bot.* v. 4. p. 526. *J. Ag. Sp. Alg.* v. 1. p. 263. *C. flexuosum*, *Grev., Kütz. Sp. Alg.* p. 636 (*partim*). *Fucus Phyllanthus*, *Turn. Hist. t.* 206. *Fucus flexuosus*, *Esper. t.* 131.

HAB. New Zealand, *Banks*, *D'Urville*, *Sinclair*, *Lyall*, *Hooker*, *Colenso*, etc.; common.

2. *Carpophyllum Maschalocarpus*, Hook. fil. et Harv. in *Lond. J. Bot.* v. 4. p. 527. *C. maschalocarpum*, *Grev. J. Ag. Sp. Alg.* v. 1. p. 264. *C. flexuosum, var. maschalocarpum*, *Kütz. Sp. Alg.* p. 637. *Fucus Maschalocarpus*, *Turn. Hist. t.* 205.

HAB. New Zealand, *Sir Joseph Banks*, *D'Urville*, *Sinclair*, *Hooker*, *Lyall*, *Colenso*, etc.; common.

Gen. IV. MYBIODESMA, *Dene.*

1. *Myriodesma quercifolium*, J. Ag., *Sp. Alg. v. 1. p. 192.* M. Boryanum, *Kütz. Sp. Alg. p. 588.*
Lessonia quercifolia, *Bory, Coq. p. 79. t. 4.*

HAB. New Zealand, *Lesson.*

We only know this plant through Bory's figure, which is unlike any New Zealand Fucoid known to us.

Gen. V. LANDSBURGIA, *Harv.*

Frons heterogenea, e caule filiformi alternatim ramoso et foliis distinctis composita. Vesiculæ nullæ! Scaphidia in lamina foliorum superiorum minorum densissime aggregata, infra superficiem utramque excavata, sphaeroidea, hermaphrodita. *Sporæ* intra perisporium hyalinum ovoideum parietale nidulantes. *Antheridia* fasciculata. *Paranemata* simpliciuscula, sporas et antheridia stipantia.

1. *Landsburgia quercifolia*, *Harv. in Herb. Phyllospora quercifolia, Hook. fil. et Harv. Lond. J. Bot. v. 4. p. 525 (excl. syn.!). (TAB. CVII.)*

HAB. Bay of Islands, *D'Urville, Colenso, J. D. H., Lyall, etc.*

Root a conical, solid disc, 1-2 inches in diameter, throwing up numerous stems. *Stems* 3-4 feet long or more, terete, $\frac{1}{4}$ inch in diameter at the base, tapering upwards to the thickness of $\frac{1}{2}$ a line, alternately decompound, nearly distichous. *Branches* filiform, erect or erecto-patent; the older ones naked below, smooth, slightly torulose, furnished with short, alternate, secondary branchlets at distances of 1-2 inches, the upper nearer. *Branchlets* erecto-patent, the older ones naked at the base and torulose, distichously foliaceous near the summit; gradually developed from the petioles of closely set alternate *leaves*, of which the lower are deciduous on the lengthening of the branch, the three or four terminal ones, with the excurrent bud, alone crowning the otherwise naked branchlets. *Leaves* alternate, scarcely a line asunder, 2 inches long, linear, inciso-pinnatifid, $\frac{1}{4}$ - $\frac{1}{2}$ inch wide, tapering very much to the base, obtuse; the lacinix oblong, erecto-patent, blunt or acute, sometimes dentate; substance membranaceous, translucent; the midrib vanishing about the middle. *Scaphidia* densely crowded in the terminal leaves of the branchlets, and in superaxillary foliations of the upper leaves of the larger branches; the fertile laminae contracted to $\frac{1}{4}$ - $\frac{1}{2}$ inch in length, ovate or lanceolate, sharply serrate. *Sporos* oblong. *Colour*, when dry, a deep brownish-olive.

In our former list of New Zealand Algæ (*Lond. J. Bot. vol. iv. p. 525*), we confounded this fine plant with the *Fucus quercifolius* of Turner, now *Carpoglossum quercifolium*, J. Ag., a species with which we were then only acquainted by Turner's figure and description. We have long been aware of the incorrectness of this reference, and Dr. Harvey has for some time regarded the *Alga* now described as the type of a new genus, allied to *Phyllospora*, from which it differs in the absence of vesicles, the more perfect foliation, etc.; and to *Scytothalia*, from which the different evolution of the fruit distinguishes it. The habit is peculiar, and, with other minor differences, sufficiently distinguishes it from *Carpoglossum*. The generic name is bestowed in honour of our excellent friend the Rev. Dr. Landsborough, author of 'Popular British Seaweeds,' etc., an accomplished naturalist and most amiable man.—
 PLATE CVII. Fig. 1, part of the stem, and a branch; 2, the root and base of stems; both figures the natural size; 3, a receptacle; 4, section through the same; 5, paranemata, bearing antheridia, more or less magnified.

Gen. VI. MARGINARIA, *A. Rich.*

(A. Rich. Fl. Nov. Zel. p. 9. Mont. Pôle Sud, Bot. Crypt. p. 60. J. Ag. Sp. Alg. i. 254. Kütz. Sp. Alg. p. 637.)

1. *Marginaria Boryana*, A. Rich., *Nov. Zel. p. 128.* *Mont. Pôle Sud, t. 2 et 3. f. 2.* *J. Ag. Sp. Alg. p. 256.* *Kütz. Sp. Alg. p. 637.* *Hook. fil. et Harv. Lond. J. Bot. v. 4. p. 535.*

HAB. New Zealand, *D'Urville, Lyall, Colenso.*

2. *Marginaria Urvilleana*, A. Rich., *Fl. Nov. Zel.* p. 10. t. 3. *Mont. Voy. Pôle Sud*, p. 60. t. 3. f. 1. *Hook. fil. et Harv. Fl. Ant.* p. 176. *Lond. J. Bot.* v. 4. p. 524. *Kütz. Sp.* p. 637. *M. gigas*, A. Rich. *N. Zel.* t. 4. *Kütz. Sp. Alg.* p. 637. *Hook. fil. et Harv. l. c.*

HAB. KAU-KAU Bay, *Lesson*. Banks' Peninsula, *Lyall*. South of Castle Point, *Colenso*.

Gen. VII. PHYLLOSPORA, *Ag.*

(*Ag. Revis. Macrocyt.* p. 311. *J. Ag. Sp. Alg.* i. 252. *Kütz. Sp. Alg.* p. 592.)

1. *Phyllospora comosa*, *Ag.*, *J. Ag. Sp. Alg.* v. 1. p. 253. *Kütz. Sp. Alg.* p. 592. *Hook. fil. et Harv. Lond. J. Bot.* v. 4. p. 525. *Fucus comosus*, *Labill. Pl. Nov. Holl.* t. 258. *Turn. Hist.* t. 142. *Macrocyctis comosa*, A. Rich. *N. Zel.* p. 14, et 2. p. 142.

HAB. New Zealand, *D'Urville*, *Hooker*. (A native of New Holland.)

Gen. VIII. CYSTOPHORA, *J. Ag.*

(*J. Ag. Symb.* (1841) p. 3. *J. Ag. Sp. Alg.* i. 238. *Blossevillea*, *Dcne.* (1842) in *Arch. Mus.* ii. 147. *Hook. fil. et Harv. Lond. J. Bot.* iv. 527. *Kütz. Sp. Alg.* p. 628.)

1. *Cystophora monilifera*, *J. Ag.*, *Sp. Alg.* v. 1. p. 241. *Cystoseira retroflexa*, A. Rich. *N. Zel.* p. 12 (*vide J. Agardh*). *Fucus retroflexus*, *Turn.* t. 155 (*non Labill.*).

HAB. New Zealand, *D'Urville*.

2. *Cystophora retroflexa*, *J. Ag.*, *Sp. Alg.* v. 1. p. 242. *Blossevillea retroflexa*, *Kütz. Sp. Alg.* p. 629. *Hook. fil. et Harv. Lond. J. Bot.* p. 527. *B. caudata*, *Hook. fil. et Harv. Lond. J. Bot.* v. 6. p. 414. *Fucus retroflexus*, *Labill. N. Holl.* p. 113. t. 260 (*non Turn.*).

HAB. New Zealand, *D'Urville*, *Hombrohn*, *Colenso*, *Lyall*, etc.

A variable species in habit, generally more robust than the preceding, but only to be known with certainty by the form of the receptacles. We have not seen any New Zealand specimens of *C. monilifera*, but have from Dr. *Lyall* specimens collected in Cook's Straits, which in some respects are intermediate in character; having the dense ramification, broad stem, and strongly aculeated bases of the branches and spherical vesicles of *C. monilifera*, with the ensiform subtorulose receptacles of *C. retroflexa*.

3. *Cystophora retorta*, *J. Ag.*, *Sp. Alg.* v. 1. p. 243. *Blossevillea retorta*, *Mont.* *Hook. fil. et Harv. Lond. J. Bot.* v. 4. p. 527.

HAB. New Zealand, *Hombrohn*, *Raoul*.

This plant is included in our former list of New Zealand Algæ, but we are not certain of the correctness of the reference, and cannot now refer to the specimens then examined.

4. *Cystophora torulosa*, *J. Ag.*, *Sp. Alg.* v. 1. p. 243. *Blossevillea torulosa*, *Dcne.*, *Hook. fil. et Harv. Lond. J. Bot.* v. 4. p. 527. *Kütz. Sp. Alg.* p. 628. *Fucus torulosus*, *R. Br. in Turn. Hist.* t. 157.

HAB. New Zealand, *D'Urville*. Port Cooper, Banks' Peninsula, *Lyall*.

5. *Cystophora Lyallii*; caule parum compresso siccitate longitudinaliter sulcato flexuoso bi-tripinnato, pinnis distichis e margine egredientibus basi nudis alterne verrucatis apice pinnulatis, pinnulis planis linearibus basi attenuatis grosse dentatis, dentibus alternis in receptacula ancipitia lineari-lanceolata acuminata apicem versus sterilia abeuntibus, scaphidiis distichis oppositis, vesiculis sphaericis paucis. (TAB. CVIII.)

HAB. Foveaux Straits, *Lyall*.

Stem 2-3 feet long, nearly terete at the base, more compressed, but not at all two-edged upwards, preserving a diameter of nearly 2 lines throughout, smooth, or furrowed longitudinally (when dry), slightly angular, rather flexuous, distichously branched; bipinnate in the lower part, subtripinnate above. *Branches* alternate, an inch or more

asunder, issuing from the margin, patent but not quite horizontal, 4–6 inches long, terete below, subcompressed upwards, naked and margined with distichous wart-like projections (the bases of fallen branches) in the lower part; alternately branched above. *Ramuli* or pinnules distichous, two or three inches long, flattened, tapering to the base, alternately dentate; the barren ones with simple, blunt teeth, the fertile having each tooth prolonged into a pedicellate receptacle. *Receptacles* on short stalks, plano-compressed, two-edged and furrowed down the middle, oblong, the lower half containing a double row of opposite *scaphidia*, whose pores open distichously along the edge; the upper half prolonged into a barren, broadly subulate acumination. *Vesicles* half an inch in diameter, globose, on stalks half their own length, one or more on each of the branches. *Colour* black when dry.—A very noble species, most related to *C. Platylobium*, J. Ag., with which we have not had the opportunity of comparing it.—PLATE CVIII. Fig. 1, part of the stem, and a branch, *natural size*; 2, receptacle; 3, enlarged portion of the same, cut across, to show the opposite distichous scaphidia; 4, a spore; 5, paranemata and antheridia:—*more or less magnified*.

Gen. IX. XIPHOPHORA, *Mont.*

(Mont. Voy. Pôle Sud, p. 55. *Fucodium (partim)*, J. Ag. Sp. Alg. i. 202.)

1. *Xiphophora Billardieri*, Mont., *Pôle Sud*, t. 7. f. 1. *Hook. fil. et Harv. Fl. Ant.* p. 176. t. 69. f. 3. *Fucodium gladiatus*, J. Ag. Sp. Alg. v. 1. p. 202. *Himanthalia gladiata*, Kütz. Sp. Alg. p. 587. *Fucus gladiatus*, *Labill. Pl. N. Holl.* p. 3. t. 256. *Turn. Hist.* t. 240.

HAB. Lyall's Bay, Cook's Straits, *Lyall*. Bay of Islands, *Sinclair*, *Lyall*, *Hooker*, *Raoul*, etc.

2. *Xiphophora chondrophylla*, Mont. *Fucodium chondrophyllus*, J. Ag. Sp. Alg. v. 1. p. 203. *Fucus chondrophyllus*, *R. Br. in Turn. Hist.* t. 222. *Aresch. Iconogr.* t. 1.

HAB. New Zealand, *D'Urville*. Banks' Peninsula, *Lyall*. (Native of New Holland.)

Gen. X. HORMOSIRA, *Endl.*

(Endl. Gen. Pl. p. 10; Suppl. iii. 29. J. Ag. Sp. Alg. i. 197. Kütz. Sp. Alg. p. 586. *Moniliformia*, Lamour. Dict. Class. vii. 71. Grev. Syn. p. xxxvi. *Monilia*, A. Rich. N. Zel. p. 13.)

1. *Hormosira Labillardieri*, Mont., *Pôle Sud*, p. 62. *J. Ag. Sp. Alg.* v. 1. p. 199. *Kütz. Sp. Alg.* p. 586. *Hook. fil. et Harv. Lond. J. Bot.* v. 4. p. 528. *Fucus moniliformis*, *Labill. Pl. N. Holl.* t. 262.

HAB. Wangari Bay, *D'Urville*. Bay of Islands, etc., *Hooker*, *Lyall*, *Colenso*, etc. (Native of New Holland.)

2. *Hormosira Sieberi*, J. Ag., *Sp. Alg.* v. 1. p. 199. *Moniliformia Sieberi*, *Bory, Coqu.* p. 134. *A. Rich. N. Zel.* v. 2. p. 139.

HAB. New Zealand, *D'Urville*, *Lyall*. Parimahu, *Colenso*. (Native of New Holland.)

Gen. XI. SPLACHNIDIUM, *Grev.*

(Grev. Syn. p. xxxvi. J. Ag. Sp. Alg. i. 186. Kütz. Sp. Alg. p. 585.)

1. *Splachnidium rugosum*, Grev. *J. Ag. Sp. Alg.* v. 1. p. 186. *Kütz. Sp. Alg.* p. 585. *Hook. fil. et Harv. Lond. J. Bot.* v. 4. p. 528. *Fucus rugosus*, *Linn. Mant.* p. 311. *Turn. Hist.* t. 185. *A. Rich. N. Zel.* p. 141.

HAB. New Zealand, *Lesson*. Akaroa, *Raoul*. Cape Kidnapper, *Colenso*. Port Cooper, Banks' Peninsula, *Lyall*. (Native of South Africa and New Holland: "East Indies," *Vahl*.)

Gen. XII. NOTHEIA, *Bail. et Harv.*

(Bail. et Harv. Bot. of Wilkes' American Expl. Exp. ined.)

Frons (parasitica) filiformis, vage ramosa, prolifera, solida. *Scaphidia* per totam frondem sparsa, in

strato corticali infra superficiem excavata, sphærica, cum ostiolo superficiali per canalem communicantia. *Sporæ* intra perisporium hyalinum lineari-obovatum parietale nidulantes. *Paranemata* simplicia.—Alga parasitica, pusilla, organis nullis discretis, quasi receptaculis *Cystoseiræ* vel *Sargassi* habitu referens.

1. *Notheia anomala*, Bail. et Harv. (TAB. CIX. A.)

HAB. Parasitical on *Hormosira*, New Zealand, *Wilkes*. Port Cooper, Banks' Peninsula, *Lyall*. *Pari-mahu*, *Colenso*.

Fronde 2–3 inches high, twice as thick as hog's-bristle, filiform, slightly tapering to the base and apex, curved, undivided, set with lateral branches, which arise from all sides; each branch springing proliferously from one of the *scaphidia* of an older branch or portion of the primary frond. In this way the frond at length becomes decompound and bushy, the series of branches being successively smaller, the youngest fusiform and mostly arched. *Scaphidia* scattered abundantly through all parts of the frond, sunk in the cortical layer, spherical, opening by rather large superficial pores. *Spores* in very narrow, almost linear, parietal perispores. *Colour* a clear olive. *Substance* subcoriaceous.

A curious little plant, allied to *Splachnidium* and *Hormosira*, but differing from both in habit and parasitic attachment. It much resembles a very branching tuft of *receptacles* of some *Sargassum* or *Cystoseira*, if we can conceive those to be developed without a frond. We have received it from several correspondents; and it would seem to be of frequent occurrence, though not noticed previous to the American Exploring Expedition under *Wilkes*.—PLATE CIX. A. Fig. 1, plant, parasitic upon *Hormosira Sieberi*, *nat. size*; 2, branches of the parasite; 3, section of a branch; 4, section of a *scaphidium*, immersed in the branch, with spores and *paranemata*:—*more or less magnified*.

Gen. XIII. D'URVILLÆA, *Bory*.

(*Bory*, Dict. Class. ix. 192. *Voy. Coqu.* p. 65. *J. Ag. Sp. Alg.* i. 187. *Kütz. Sp. Alg.* p. 585.)

1. *D'Urvillæa utilis*, *Bory*, *Coqu.* p. 65. t. 1, et t. 2. f. 1. *A. Rich. Fl. N. Zel.* p. 8. *Post. et Rupr. Illustr.* t. 1. *Hook. fil. et Harv. Fl. Ant.* v. 1. p. 176. v. 2. p. 454. *Lond. J. Bot.* v. 4. p. 528. *J. Ag. Sp. Alg.* v. 1. p. 188. *Kütz. Sp. Alg.* p. 585.

HAB. New Zealand, *D'Urville*, *Hooker*, etc. (Native of Antarctic regions, and extra-tropical South America.)

TRIBE II. SPOROCHNACEÆ.

Gen. XIV. SPOROCHNUS, *Ag.*

(*Kütz. Phyc. Gen.* p. 342. *J. Ag. Sp. Alg.* i. 173. *Kütz. Sp. Alg.* p. 568.)

1. *Sporochnus stylosus*; caule filiformi indiviso lateraliter ramoso, ramis sparsis fasciculatisve simplicibus elongatis, receptaculis sessilibus v. brevissime pedicellatis elliptico-oblongis demum cylindræis mucrone stylomorpha elongato capitato coronatis. (TAB. CIX. B.)

HAB. Otago Harbour and Foveaux Straits, *Lyall*.

This has the aspect of *S. pedunculatus*, but is readily distinguished by the receptacles, which are sessile, cylindrical, and crowned by a long, filiform, style-like mucro, from half to two-thirds the length of the full-grown receptacle.—PLATE CIX. B. Fig. 1, plant, *natural size*; 2, 3, portions of a branch, with receptacles in various stages of growth; 4, sporiferous filaments from the same:—*more or less magnified*.

Gen. XV. CARPOMITRA, *Kütz.*

(*Kütz. Phyc. Gen.* p. 343. *J. Ag. Sp. Alg.* i. 177. *Kütz. Sp. Alg.* p. 569.)

1. *Carpomitra Halysæris*, *Hook. fil. et Harv.* in *Lond. J. Bot.* v. 4. p. 528. *J. Ag. Sp. Alg.* v. 1. p. 179. *Kütz. Sp. Alg.* p. 570.

HAB. Bay of Islands, *Cunningham, Sinclair, Lyall, J. D. H., etc.*

We fear this can only be regarded as a broader and more distinctly midribbed form of *C. Cabrerae*.—PLATE CX. A. Fig. 1, plant, *natural size*; 2, small portion of frond, with two terminal receptacles; 3, section of a receptacle; 4, sporiferous filaments from the same:—*more or less highly magnified.*

2. *Carpomitra Cabrerae*, Kütz., *Phyc. Gen. p. 343. J. Ag. Sp. Alg. v. 1. p. 177. Harv. Phyc. Brit. t. 14. Kütz. Sp. Alg. p. 569. Fucus Cabrera, Clem. Turn. Hist. t. 140.*

HAB. Lyall's Bay, Cook's Straits, *Lyall. Hawke's Bay, Colenso.* (Native of Atlantic shores of Spain, south of England, and south of Ireland.)

Gen. XVI. DESMARESTIA, *Lamour.*

(*Lamour. Ess. p. 23. Endl. Gen. Pl. Sup. 3. p. 28. Kütz. Sp. Alg. p. 570. Harv. Man. ed. 2. p. 23. J. Ag. Sp. Alg. i. 165. Dichloria, Grev. J. Ag. Sp. Alg. i. 164.*)

1. *Desmarestia ligulata*, *Lamour. J. Ag. Sp. Alg. v. 1. p. 169. Kütz. Sp. Alg. p. 572. Harv. Phyc. Brit. t. 115. Hook. fil. et Harv. Fl. Ant. v. 2. p. 467. Fucus ligulatus, E. Bot. t. 1636. Turn. Hist. t. 98, etc.*

HAB. New Zealand, *Colenso. Akaroa, Lyall.* (Native of shores of Europe, west coast of North America, Chili, Cape Horn, and Cape of Good Hope.)

TRIBE III. LAMINARIACEÆ.

Gen. XVII. MACROCYSTIS, *Ag.*

(*Ag. in Act. Leop. xix. i. 281. J. Ag. Sp. Alg. i. 153. Kütz. Sp. Alg. p. 582.*)

1. *Macrocystis pyriferæ*, *Ag., Hook. fil. et Harv. Fl. Ant. v. 1. p. 177, v. 2. p. 461. Macrocytidis omnes species, J. Ag. Sp. Alg. p. 155–158 (excl. M. obtusa = Phyllospora Menziesii, var.). Kütz. Sp. Alg. p. 582–584. Fucus pyriferus, Turn. Hist. t. 110.*

HAB. Shores of New Zealand, common. (Native of the Pacific and Southern Oceans.)

We have received several varieties from New Zealand; among others, that remarkable form called *M. Dubenii*, *Aresch.*, with subcylindrical vesicles, 6–8 inches long.

Gen. XVIII. LESSONIA, *Bory.*

(*Bory, Voy. Coq. p. 75. J. Ag. Sp. Alg. i. 149. Kütz. Sp. Alg. p. 581.*)

1. *Lessonia fuscescens*, *Bory, Voy. Coq. p. 75. t. 2. f. 2 et t. 3. Post. et Rupr. t. 3. Hook. fil. et Harv. Fl. Ant. v. 2. p. 457. t. 167, 168. f. A. et t. 171. f. D. J. Ag. Sp. Alg. v. 1. p. 151. Kütz. Sp. Alg. p. 581.*

HAB. New Zealand, *Colenso. Lyall's Bay, Cook's Straits, Lyall.* (Native of Antarctic shores, and coast of South Chili.)

Gen. XIX. ECKLONIA, *Hornem.*

(*Hornem. in Dansk. Vidensk. Skrift. iii. (1828) 370. Post. et Rupr. Alg. p. 2. J. Ag. Sp. Alg. i. 144. Kütz. Sp. Alg. p. 586. Capea, Mont. An. Sc. Nat. 1840. Hook. fil. et Harv. in Lond. J. Bot. iv. 528. Fl. Ant. ii. 466. Kütz. Sp. Alg. p. 578.*)

1. *Ecklonia radiata*, *J. Ag., Sp. Alg. v. 1. p. 146. Capea radiata, Endl. 3rd Suppl. p. 27. Kütz. Sp. Alg. p. 578. Hook. fil. et Harv. in Lond. J. Bot. v. 4. p. 528. Fucus radiatus, Turn. Hist. t. 134.*

HAB. New Zealand, *D'Urville.* (Native of New Holland.)

2. *Ecklonia exasperata*, *J. Ag., Sp. Alg. v. 1. p. 146. Capea biruncinata, Mont. Canar. p. 140. t. 7.*

Hook. fil. et Harv. Fl. Ant. v. 2. p. 466. Laminaria radiata, β exasperata, *Ag. Syst. p. 271.* Laminaria Cunninghamii, *Grev. MSS.*

HAB. New Zealand, *D'Urville, Cunningham, J. D. H., etc.* (Native of New Holland, Chili, Cape of Good Hope, *Zeyher*; and Canary Islands.)

3. *Ecklonia Richardiana*, *J. Ag., Sp. Alg. v. 1. p. 147.* *Capea Richardiana*, *Kütz. Sp. Alg. p. 578.*

HAB. New Zealand, *Herb. A. Rich.* Hawke's Bay, *Colenso.* (Native of New Holland.)

4. *Ecklonia flabelliformis*, *J. Ag., Sp. Alg. v. 1. p. 147.* *Capea flabelliformis*, *Hook. fil. et Harv. Lond. J. Bot. v. 4. p. 528.* Laminaria flabelliformis, *A. Rich. Fl. N. Zel. t. 1, 2.*

HAB. Wangari Bay, *D'Urville.* Bay of Islands, *J. D. H.*

Gen. XX. CHORDA, *Stackh.*

(*Lamour. Ess. p. 26.* *Lyngb. Hyd. Dan. p. 72.* *Grev. Alg. Brit. p. 46.* *Harv. Phyc. Brit. t. 107, 285.* *Kütz. Sp. Alg. p. 548.* *Scytosiphon*, *Endl. 3rd Suppl. p. 25.* *J. Ag. Sp. Alg. i. 125.*)

1. *Chorda Lomentaria*, *Lyngb., Hyd. Dan. p. 74. t. 18.* *Harv. Phyc. Brit. t. 285.* *Hook. fil. et Harv. Fl. Ant. v. 1. p. 179. v. 2. p. 468.* *Scytosiphon lomentarium*, *J. Ag. Sp. Alg. v. 1. p. 126.*

HAB. New Zealand, *Colenso.* Waitemata Harbour, *Lyall.* (Native of Atlantic and Pacific, in the temperate zone.)

Gen. XXI. ADENOCYSTIS, *Hook. fil. et Harv.*

(*Fl. Ant. i. 179.* *J. Ag. Sp. Alg. i. 124.* *Chorda* sp., *Kütz.* *Asperococci* sp., *Bory.*)

1. *Adenocystis Lessonii*, *Hook. fil. et Harv., Fl. Ant. p. 179.* *J. Ag. Sp. Alg. v. 1. p. 124.* *Asperococcus Lessoni*, *Bory, Coq. t. 2. f. 2.* *Chorda Lessonii*, *Kütz. Sp. Alg. p. 549.*

HAB. Bay of Islands, *Sinclair.* Port Cooper, Banks' Peninsula, *Lyall.* (Native of the Antarctic shores.)

TRIBE IV. DICTYOTACEÆ.

Gen. XXII. ZONARIA, *J. Ag.*

(*J. Ag. Symb. in Penn. xv. 444.* *Endl. Gen. Sup. 3. p. 25.* *J. Ag. Sp. Alg. i. 106.* *Zonarie* sp., *Ag. Stypopodii* sp., et *Phycopteria*, *Kütz. Sp. Alg. p. 563, 564.*)

1. *Zonaria interrupta*, *Ag., Sp. Alg. v. 1. p. 137.* *J. Ag. Sp. Alg. v. 1. p. 3.* *Zonaria flava*, *Hook. fil. et Harv. Lond. J. Bot. v. 4. p. 529 (excl. syn.).* *Phycopteria interrupta*, *Kütz. Sp. Alg. p. 564.* *Fucus interruptus*, *Turn. Hist. t. 245.*

HAB. Common on the shores of New Zealand, *Colenso, Lyall, etc.* (Native of New Holland and South Africa.)

The specimens formerly referred by us to *Z. flava*, *Ag.*, appear to belong to this species, but are of a pale yellow colour and probably bleached.

2. *Zonaria Sinclairii*, *Hook. fil. et Harv. in Lond. J. Bot. v. 4. p. 530.* *J. Ag. Sp. Alg. v. 1. p. 111.* *Stypopodium Sinclairii*, *Kütz. Sp. Alg. p. 564.*

HAB. New Zealand, *Sinclair.*

3. *Zonaria velutina*, *Harv.;* fronde erectiuscula, stipite brevi crasso stuposo in laminas flabelliformes subsimplices demum apice multifidas subtus nigrescenti-velutinas supra glaberrimas abeunte, soris . . . ?

HAB. East Coast, *Colenso.* Milford Haven and Port Cooper, *Lyall.*

Fronde densely tufted, 1–2 inches high, not much branched. *Stipites* scarcely half an inch long, densely stupose, widening into the base of a broadly flabelliform, undivided or vertically cleft frond; the subdivisions flabelliform. The upper surface of the lamina is quite smooth, the lower almost wholly covered, except at the apices and for a narrow space round the margin, with blackish-brown, velvety stupa.—This has the aspect of *Z. multifida*, and is of the same size; but is readily known by the dense velvety coating of the under surface. We are not acquainted with *Z. stuposa*, J. Ag., which is said to be stupose on *both* surfaces (“*utrinque*”).

Gen. XXIII. DICTYOTA, *Lamour.*—*J. Ag.*

(*J. Ag. Sp. Alg. i. 86. Kütz. Sp. Alg. p. 553. Harv. Phyc. Brit., etc.*)

1. *Dictyota Kunthii*, Ag., *Ic. Ined. t. 15. J. Ag. Sp. Alg. v. 1. p. 94. Hook. fil. et Harv. Lond. J. Bot. v. 4. p. 530. Kütz. Sp. Alg. p. 556.*

HAB. Abundant on the New Zealand coast, *Lyall, J. D. H., Colenso, etc.* (Native of Chili.)

2. *Dictyota dichotoma*, *Lamour. J. Ag. Sp. Alg. v. 1. p. 92. Kütz. Sp. Alg. p. 554. Harv. Phyc. Brit. t. 103. Ulva dichotoma, E. Bot. t. 774.*

HAB. Hawke's Bay, *Colenso.* Dredged in eight fathoms, Queen Charlotte's Sound, *Lyall.* (Native of Northern Atlantic; Mediterranean; Red Sea; Gulf of Mexico; and Cape of Good Hope.)

Gen. XXIV. ASPEROCOCCUS, *Lamour.*

(*Lamour. Ess. p. 61. Grev. Syn. p. 42. J. Ag. Sp. Alg. i. 74. Encelium, Ag. Sp. i. 144. Encelium et Haloglossum, Kütz. Sp. Alg. pp. 551–561.*)

1. *Asperococcus sinuosus*, *Bory, J. Ag. Sp. Alg. v. 1. p. 75. Hook. fil. et Harv. Fl. Ant. v. 2. p. 468. Encelium sinuosum, Ag. Syst. p. 262. Kütz. Sp. Alg. p. 552.*

HAB. Otago, *Lyall.* Cape Kidnapper and Cape Turnagain, *Colenso.* (Native of South of Europe, bays of Florida, Brazil, Cape of Good Hope, Mauritius, Red Sea, New Holland, Falkland Islands.)

TRIBE V. CHORDARIACEÆ.

Gen. XXV. SCYTOTHAMNUS, *Hook. fil. et Harv.*

(*Hook. fil. et Harv. in Lond. J. Bot. iv. 531. J. Ag. Sp. Alg. i. 63. Kütz. Sp. Alg. p. 546. Chordariæ sp., J. Ag. Symb. p. 47.*)

1. *Scytothamnus australis*, *Hook. fil. et Harv., Lond. J. Bot. p. 531. J. Ag. Sp. Alg. v. 1. p. 64. Kütz. Sp. Alg. p. 547. Chordaria australis, J. Ag. Symb. v. 1. p. 47.*

HAB. On tidal rocks, very common, *Lyall, Colenso, J. D. H., Sinclair, etc.*

A most variable plant in ramification, sometimes nearly simple, sometimes excessively branched and bushy; two to twelve inches long, or more.

Gen. XXVI. CHORDARIA, *Ag.*

(*Ag. Sp. Alg. i. 164. J. Ag. Sp. Alg. i. 64. Kütz. Sp. Alg. p. 546.*)

1. *Chordaria sordida*, *Bory*; caule indiviso brevi vel elongato lateraliter ramoso, ramis creberrime alternis sparsive elongatis simplicibus nunc alterne ramuliferis villo elongato olivaceo-virescente velatis, filis periphericis elongatis viridibus cylindræo-moniliformibus, articulis diametro vix longioribus, sporis ellipsoideis parvis.—*Chordaria sordida, Bory, Coq. p. 139? Mesogloia Brasiliensis, Mont. Pl. Cell. Exot.*

v. 4. n. 68? *Mesogloia Natalensis*, Kütz. ! *Bot. Zeit.* 1847, p. 53. *Mesogloia Vogelii*, Harv. ! *Herb. Hook. MSS.* *Myriocladia Capensis*, J. Ag. ! *Sp. Alg.* v. 1. p. 54. *Nemalion Natalense*, Hering ! *Regensb. Flora*, 1846. *Thorea Americana*, Kütz. *Phyc. Gen.* p. 326. *Sp. Alg.* p. 534. *Chordaria villosa*, Harv. in *Herb.*

HAB. On rocks : Tory Channel, Cook's Straits, *Lyall.* Parimahu, *Colenso.* (Native of east and west coast of Africa, and South America.)

Fronde 1-2 feet long, flaccid, cartilagineo-gelatinous, closely adhering to the paper in drying. Main *stem* either very short and stipitiform, throwing up numerous, long, simple branches; or elongate and laterally branched throughout, the lowest branches short, the upper long and filiform. *Branches* simple, flagelliform, either destitute of ramuli or more or less thickly furnished with short, horizontally divaricate branchlets, of various lengths. The young frond is in every part densely covered with olivaceous villosity, 1-2 lines long, composed of very slender, articulated, cylindrical filaments, with very short articulations. These villous filaments are deciduous, being thrown off in proportion as the stratum of true peripheric filaments (which are moniliform) is developed. The frond eventually becomes stripped; but as the peripheric filaments are also long and rather loosely set, it preserves in some degree a villous character. Old specimens strongly resemble *Mesogloia virescens* to the naked eye. Very old specimens, again, are completely bare, and scarcely to be known from a very robust state of *C. flagelliformis*.

A widely dispersed plant, if, as we have good reason to believe, all the above-quoted synonyms belong to it. It appears to us to be a true *Chordaria*; though referred by J. Agardh to *Myriocladia*, by Montagne to *Mesogloia*, and by Kützing to *Thorea*. We have it from Senegambia (*Vogel*); Table Bay (*W. H. H.*); Port Natal (*Krauss*); besides the above-quoted New Zealand specimens.

Gen XXVII. MESOGLOIA, Ag.

(J. Ag. *Sp. Alg.* i. 56. Kütz. *Sp. Alg.* p. 544. Harv. *Phyc. Brit.* t. 31. t. 82.)

1. *Mesogloia intestinalis*, Harv.; fronde a basi gracili sursum sensim incrassata intestiniformi subsimplici vel vage ramosa, ramis paucis similibus obtusis junioribus tomentosis, filis periphericis fasciculatis elongatis cylindraneo-clavatis subliberis, articulis diametro brevioribus v. æqualibus, sporis elliptico-oblongis aggregatis.

HAB. Blind Bay, Cook's Straits, and Auckland; also Otago Harbour, *Lyall.*

Fronde 1-2 feet long or probably more, a line in diameter at the base, gradually widening upwards, and at length nearly half an inch in diameter, which thickness is then preserved throughout. *Branches* few and very irregular in position and size, similar to the main stem, obtuse; the whole frond clothed with villous filaments extending beyond the periphery. The axial filaments are loosely bundled and branched, like those of *M. virescens*; the peripheric are fasciculate, cylindrical, slightly widened upwards, of various lengths in the same fascicle, not moniliform, and more resemble those of an *Elachista* than of a *Mesogloia*. Their lower articulations are very short, the upper gradually longer, but the uppermost alone attain a length a little exceeding their diameter. *Spores* oblong, two or more in each fascicle, sessile. *Substance* very soft. We have seen very few specimens of this seemingly well characterized species.

Gen. XXVIII. LEATHESIA, Gray.

(Gray, *Br. Pl.* i. 301. *Endl.* 3rd *Suppl.* p. 23. Harv. *Phyc. Brit.* J. Ag. *Sp. Alg.* i. 50. Kütz. *Sp. Alg.* p. 543. *Corynophlæa*, Kütz. l. c.)

1. *Leathesia Berkeleyi*, Harv., *Phyc. Brit.* t. 176. *J. Ag. Sp. Alg.* v. 1. p. 51. *Chætophora Berkeleyi*, *Grev. in Berk. Gl. Alg.* t. 1. f. 2. *Wyatt, Alg. Danm. W.* 231.

HAB. Tidal rocks, near Cape Kidnapper, *Colenso.* (Native of British seas.)

TRIBE VI. ECTOCARPACEÆ.

Gen. XXIX. SPHACELARIA, *Lyngb.*

(Lyngb. Hyd. Dan. p. 103. J. Ag. Sp. Alg. i. 29. *Sphacelaria*, *Stypocaulon*, et *Halopteris*, Kütz. Sp. Alg. pp. 462-468.)

1. *Sphacelaria paniculata*, Suhr, *Beitr. in Flora*, 1840, p. 278. *J. Ag. Sp. Alg. v. 1. p. 36.* *S. hordeacea* et *S. virgata*, *Hook. fil. et Harv. in Lond. J. Bot. v. 4. p. 530.* *Hook. Ic. Pl. t. 614.* *Stypocaulon paniculatum*, *S. hordeacum*, et *S. virgatum*, *Kütz. Sp. Alg. p. 467.*

HAB. Shores of New Zealand, abundantly. (Native of New Holland.)

A very variable plant in size, aspect, and ramification; and also in the appearance of its fructification. We have before us specimens producing the terminal spikelets of spores, as figured in *Hook. Ic. Pl. t. 614*; others which bear favelloid tubercles, filled with obconical spores, also in terminal spikelets; and lastly, others with dense tufts of grumous cells, crowded in the axils of the uppermost ramuli, but not in terminal spikes. The *S. virgata* of our former list is a slender variety, with longer, simpler, and more rod-like branches.

2. *Sphacelaria funicularis*, Mont., *Voy. Pôle Sud, t. 14. f. 1.* *Hook. fil. et Harv. in Fl. Ant. v. 1. p. 180.* *Lond. J. Bot. v. 4. p. 531.* *J. Ag. Sp. Alg. v. 1. p. 38.* *Stypocaulon funiculare*, *Kütz. Sp. Alg. p. 467.*

HAB. Akaroa, *Hombroa*, *Lyall.* East Coast, *Colenso.* (Native of Antarctic shores.)

We do not always find it easy to distinguish between the present species and some of the shorter and stouter varieties of *S. paniculata*.

3. (?) *Sphacelaria botryoclada*, *Hook. fil. et Harv.*; fronde (denudata tantum visa) inarticulata estu-
posa vage ramosa v. subdichotoma, ramis flexuosis simplicibus elongatis per totam longitudinem fasciculis
ramellorum fertiliium densissime obsessis, fasciculis sphaericis quaquaversum egredientibus, ramellis incurvis
dichotome multifidis sporas sessiles laterales ellipticas ferentibus. (TAB. CX. B.)

HAB. East Coast and Cook's Straits, *Lyall.*

Our knowledge of this plant is confined to two specimens, both evidently imperfect, and therefore, notwithstanding its apparently very distinct characters, we have considerable hesitation in proposing it as a new species. In the structure of the stem, which, in our specimens, is devoid of stuposse fibres, it accords with *Cladostephus*, and the general habit is very like that of *C. verticillatus* in its winter dress. The spherical tufts of ramelli are altogether peculiar, and are evidently special fructiferous processes; a fact made obvious by one of our specimens exhibiting at the end of one of its branches ordinary sphacelarioid ramuli; so like those of *S. paniculata*, that, preposterous though it may seem, we are not without doubts whether the plant now described be not merely a fourth state of *S. paniculata*, with another development of spores!—PLATE CX. B. Fig. 1, plant, the natural size; 2, part of a branch with clusters of sporiferous ramuli; 3, sporiferous ramuli, separated; 4, apex of one of the ramuli; 5, cross section of the stem:—more or less magnified.

4. *Sphacelaria pulvinata*, *Hook. fil. et Harv.*; parasitica, caespitibus minutis hemisphaericis densis, filis rigidis arcuatis apice sphacelatis simplicibus v. parum ramulosis, ramulis erectis saepissime secundis, sporis elliptico-oblongis pedicellatis secundis raro oppositis, articulis subtrivenosis diametro sesquilongioribus.—Ectocarpus? pulvinatus, *Harv. MSS. in Herb.* (TAB. CX. C.)

HAB. Parasitic on the margin and on the receptacles of *Carpophyllum Maschalocarpus*, *Colenso.*

Filaments a line long, arcuate, simple, forming exceedingly dense, globular tufts. *Spores* on secund, rarely opposite pedicels, usually lining the concave side of the filament. When the spore is abortive the pedicel forms a ramulus. *Articulations* once and a half as long as broad, three-tubed. *Colour* a foxy-brown.

This has the *habit*, externally, of *Elachista pulvinata*: but the structure of the rigid filaments is that of *Spha-celaria*.—PLATE CX. C. Fig. 1, plant, parasitical on *Carpophyllum Maschalocarpus*, natural size; 2, the parasite; 3, a spha-celated apex and pedicellate spore from the same:—*more or less magnified.*

Gen. XXX. ECTOCARPUS, *Lyngb.*

(*Lyngb. Hyd. Dan. p. 130. J. Ag. Sp. Alg. i. 14. Kütz. Sp. Alg. p. 449. Also Corticularia, Spongonema, and Tilo-pteris, Kütz. l. c. p. 460–462.*)

1. *Ectocarpus siliculosus*, *Lyngb. J. Ag. Sp. Alg. v. 1. p. 22. Kütz. Sp. Alg. p. 451. Harv. Phyc. Brit. t. 162. Hook. fil. et Harv. in Lond. J. Bot. v. 4. p. 531.*

HAB. Bay of Islands, *J. D. H. Port Cooper and Port William, Lyall. Tauranga, Davies. Maketu, Chapman. Cape Kidnapper, Colenso.* (Native of north and south temperate zone.)

2. *Ectocarpus granulosus*, *Ag. J. Ag. Sp. Alg. v. 1. p. 21. Harv. Phyc. Brit. t. 200. E. ochraceus, Kütz. Sp. Alg. p. 453.*

HAB. East Coast, *Colenso.* (Native of shores of Europe and North America.)

3. *Ectocarpus confervoides*, *Harv.*; cæspite 2–4-unciali, filis elongatis rigidiusculis distanter ramosis, ramis parum divisis, ramulis paucis simplicibus sparsis erectis v. erecto-patentibus, axillis acutis, propagulis elongatis cylindraceis vel filiformibus sæpius ramellos terminantibus nunc in ramis immersis.

HAB. Otago and Blind Bay, *Cook's Straits, Lyall.*

Tufts 2–4 inches long, rather coarse, dense, not closely adhering to paper, greenish-olive when dry. Filaments distantly and sparingly branched: the ramuli few, simple, very erect, or somewhat patent. Axils all very acute. Propagula elongate, generally terminating the branchlets, sometimes imbedded in the middle of the branches.

This is nearly related to *E. siliculosus*, but has the aspect and ramification of *E. crinitus*.

4. *Ectocarpus pusillus*, *Griff.?*; cæspite unciali, filis tenuibus flaccidis simpliciusculis hic illic ramulos horizontales breves emittentibus, articulis diametro subbrevioribus, propagulis . . . ? (*An E. pusillus, Griff. in Harv. Phyc. Brit. t. 153?*)

HAB. Parasitic on Corallines, *Hawke's Bay, Colenso.* (Native of England.)

Very similar in appearance to British specimens of *E. pusillus*; but, until the fructification be discovered, we are uncertain of the propriety of the above reference.

SERIES II. RHODOSPERMEÆ.

TRIBE I. RHODOMELACEÆ.

Gen. XXXI. LENORMANDIA, *Sond.*

(*Sond. in Pl. Preiss. ii. 183. Harv. Ner. Austr. p. 18. t. 2. Kütz. Sp. Alg. p. 849. (non Mont.)*)

1. *Lenormandia Chauvini*, *Harv.*; phyllodiis brevissime pedicellatis crassiusculis rigidis lato-linearibus oblongisve obtusissimis integerrimis nervo tenui evanescente percursis, e nervo proliferis, stichidiis marginalibus v. e nervo enatis simplicibus ramosisve.

Var. *β. angustifolia*; phyllodiis linearibus angustis.

HAB. Otago, *Lyall. East Coast, Colenso.* (Native of New Holland.)

Variable in size. In the larger specimens the phyllodia are three inches long and half an inch wide; in the smaller, 1½–2 inches long and 1–2 lines wide. The substance is thickish, rigid when dry, and semi-opaque. The

structure is that of *L. spectabilis*. *Stichidia* either thickly fringing the margin of fertile specimens, or springing from the nerve, lanceolate, simple or multifid. Colour "dark purple" (*Colenso*); a dark reddish-brown when dry.

Our first specimens of this plant were received from M. Chauvin, who obtained them from New Holland.

Gen. XXXII. EPINEURON, *Harv.*

(*Harv. in Lond. J. Bot. iv. 532. Ner. Austr. p. 25. t. 9, 10. Kütz. Sp. Alg. p. 848.*)

1. *Epineuron lineatum*, Hook. fil. et *Harv. in Lond. J. Bot. v. 4. p. 532. Harv. Ner. Austr. p. 27. Kütz. Sp. Alg. p. 848. Fucus lineatus, Turn. Hist. t. 201.*

HAB. New Zealand, *Banks.*

2. *Epineuron Colensoi*, Hook. fil. et *Harv., Lond. J. Bot. v. 4. p. 532. Harv. Ner. Austr. p. 26. t. 10. Kütz. Sp. Alg. p. 849.*

HAB. East Coast, *Colenso.* Bay of Islands, *Lyall.*

Gen. XXXIII. AMANSIA, *Lamour.*

(*Lamour. Ess. p. 55. Harv. Ner. Austr. p. 24. Kütz. Sp. Alg. p. 882.*)

1. *Amansia* (??) *Marchantioides*, *Harv.*; fronde horizontaliter expansa inferiore pagina radicante flabelliformi varie lobata proliferationibusque marginalibus ascendentibus extensa tenui-membranacea ecostata transversim parallele zonata striis longitudinalibus radiantibus decussata hexahedre areolata, cellulis oblongis, fructu . . ?

HAB. Cape Kidnapper and Hawke's Bay, on tidal rocks, *Colenso.*

Fronde at first prostrate, emitting rootlets from the whole of the under surface, flabelliform, excentrically expanding in patches an inch or more in diameter, deeply lacinate or pinnatifid, the lobes erecto-patent, crenate, irregularly dentate, and finally lobed at the edges, very variable in breadth and in division; the primary lobes emitting secondary flabelliform frondlets, which lie over the margins of the first, until there results an intricate stratum of imbricated fronds. In more advanced specimens the ultimate laciniae are destitute of rootlets on the under surface, probably therefore erect, linear, elongate, crenate, dentate or pinnatifid; the margin undulate, and the apices blunt. *Membrane* thin, conspicuously areolated, with diverging, longitudinal, and subconcentric transverse striae. *Cells* oblong.

Probably very different in aspect when fully grown. Our specimens are evidently immature. We think it also probable that it will eventually be made the type of a separate genus, but are unwilling to found one on such imperfect data.

Gen. XXXIV. ALSIDIUM, *Ag.*

(*J. Ag. in Linnæa, xv. 28. Harv. Ner. Austr. p. 30. Harv. Ner. Bor. Amer. pt. 2. p. 15. t. 13 A. Bryothamnion, Kütz. Sp. Alg. p. 842.*)

1. *Alsidium triangulare*, *J. Ag. in Linn. v. 15. p. 28. Harv. Ner. Austr. p. 30. Ner. Bor. Amer. pt. 2. p. 15. t. 13. f. A. Bryothamnion triangulare, Kütz. Sp. Alg. p. 842. Fucus triangularis, Gmel. Hist. t. 8. f. 4. Esper. t. 119. Turn. Hist. t. 33.*

HAB. New Zealand, *Banks, fide Turner.* (Native of the Gulf of Mexico and Caribbean Sea.)

Probably some mistake. *A. triangulare* has not of recent years been brought from the southern hemisphere; it is a common West Indian species.

Gen. XXXV. CHONDRIA, *Ag.*

(*J. Ag. ref. Harv. in Ner. Bor. Amer. pt. 2. p. 19.*)

1. *Chondria macrocarpa*, *Harv.*; fronde cylindracea filiformi alterne vel pinnatim decomposita subdis-

ticha, ramis nunc strictis virgatis confertis et crebre pinnatis nunc laxioribus curvatis et vage ramulosis, ramulis linearibus basi vix angustatis obtusissimis erecto-patentibus elongatis alternis sparsisve, ceramidiis ovatis magnis lateralibus sessilibus vel terminalibus.

Var. β ; ramis strictis virgatis crebre pinnatis.

HAB. Foveaux Straits. Var. β . East side of the Southern Island, *Lyall*.

Fronde 4–6 inches long, filiform, as thick as a sparrow's quill, irregularly much branched, most of the divisions distichous. *Branche*s alternate or secund, distant or close together, either virgate and unbranched, but closely set with alternate pinnæ, or curved and distantly alternately compounded. *Ramuli* elongated, $\frac{1}{2}$ –1 inch long, simple or alternately ramulose, filiform, very obtuse, slightly constricted at the very base. *Conceptacles* of large size, ovate, either on the ends or at the sides of the ramuli: in the latter case, sessile. Under a pocket-lens the articulated axis may readily be seen, when the branch has not been subjected to strong pressure. It soon decomposes in fresh water, and does not open well, so that the internal structure is not easily seen.

2. *Chondria flagellaris*, Harv.; fronde purpurascete setacea filiformi e basi vage ramosa vel alternatim decomposita, ramis elongatis parum divisis, ramulis sparsis inæqualibus filiformibus acutis vel attenuatis basi nec constrictis, ceramidiis ovato-globosis ore prominulo ad ramos majores sessilibus.

HAB. Port Nicholson, Cook's Straits, and Paterson's Harbour, *Lyall*.

Fronde densely tufted, as thick as a hog's bristle or thicker, branched from the base, twice or thrice alternately or irregularly decompound; the main branches elongate, subsimple, having a few lateral, erecto-patent ramuli. *Ramuli* very unequal in length, long and short intermixed, laxly set, alternate or secund, filiform, acute. *Colour* a dull, livid purple. *Substance* cartilaginous. *Ceramidia* rather large, sessile on the branches, ovate, with a prominent orifice. Structure dense, but with an evident axial circle of cells.

Gen. XXXVI. RYTIPHLÆA, Ag.

(J. Ag. in Linnæa, xv. 26. Harv. Ner. Austr. p. 31. Harv. Ner. Bor. Amer. pt. 2. p. 28. Phyc. Brit. t. 85, 170, 220, 221. Kütz. Sp. Alg. p. 844. Halopithys, Kütz. Sp. Alg. p. 840.)

1. *Rytiphlæa pinastroides*, J. Ag. Harv. Phyc. Brit. t. 85. Halopithys pinastroides, Kütz. Sp. Alg. p. 840. *Fucus pinastroides*, Turn. Hist. t. 11. E. Bot. t. 1042.

HAB. New Zealand, *Banks*, fide *Turner*. (Native of Europe and Canary Islands.)

Probably some mistake.

2. *Rytiphlæa delicatula*, Hook. fil. et Harv.; fronde setacea tereti transversim pellucide striata disticha flabelliformi in parte inferiore ramulosa sursum pinnato-decomposita, ramis corymboso-fastigiatis extra medium pinnatis bi-pinnatisve, ramulis alternis subulatis patentibus simplicibus versus apicem densioribus compositisque, interstitiis striarum diametro sesquolongioribus cellulis multangulis corticatis, axi tetrasi-phonio, ceramidiis ovatis sessilibus sparsis. (TAB. CXII. D.)

HAB. Dredged in five fathoms, D'Urville Island, and Blind Bay, Cook's Straits; also at Akaroa, *Lyall*.

Tufted, 2 inches high, flabelliform, distichously pinnate above the middle; the pinnæ corymbose, and in the larger specimens once or twice decompound. All the divisions are margined with subulate, patent ramuli, closer together towards the tips of the branches, and there alternately decompound. When examined with a pocket-lens, the stem appears, articulated (as in *Polysiphonia*), owing to the thinness and transparency of the cortical layer; but the microscope shows that every part, even the youngest ramuli, is coated with accessory cellules. There are four large tubes in the axis, surrounding a small central tube. *Conceptacles* ovate, sessile on the larger pinnæ.—PLATE CXII. D. Fig. 1, plant, natural size; 2, branch from the same; 3, a ramulus; 4, section of a branch; 5, a ceramidium:—all more or less magnified.

Gen. XXXVII. RHODOMELA, Ag.

(Ag. Syst. p. 196. Grev. Alg. Brit. p. 102. Harv. Phyc. Brit. t. 50, 264. Harv. Ner. Austr. p. 34. *Lophura*, Kütz. Sp. Alg. p. 850.)

1. *Rhodomela Gaimardi*, Ag. *Bory, Coq. p. 215. t. 22. f. 1. Hook. fil. et Harv. Fl. Ant. v. 2. p. 481. t. 184. Harv. Ner. Austr. p. 35. Lophura Gaimardi, Kütz. Sp. Alg. p. 851.*

HAB. Akaroa, Blind Bay, and Cook's Straits, *Lyall*. Hawke's Bay, *Colenso*. (Native of Antarctic shores.)

2. *Rhodomela cæspitosa*, Harv.; dense cæspitosa, bi-triuncialis, fronde tereti ultrasetacea alterne decomposita subfastigiata, ramis creberrimis arcuatis vage divisis ramulisque lineari-subulatis sparsis secundis alternisve plus minus obsessis, stichidiis lineari-subulatis densissime glomerulatis, glomerulo ad latera ramorum sessili.

HAB. On rocks near low-water mark; Ocepoto and Parimahu, *Colenso*.

Fronde one or two inches high, perhaps more, densely tufted. *Stem* naked below, once or twice forked, densely and very irregularly branched above; the outline flabelliform, and the branches subfastigate. *Branches* without order, frequently secund, sometimes spreading to all sides, irregularly twice or thrice compounded; the ultimate ramuli linear-subulate, elongate, arched, acute; coated with small cells, and quite opaque under the microscope, but the articulations of the axis visible through the cortical layer, when examined with a pocket-lens. *Axial tubes* four. *Stichidia* forming very dense glomeruli two lines in diameter, on the sides of the upper branches, linear-subulate like the ramuli, somewhat distorted, and either simple or branched, containing a wavy line of tetraspores.

"Densely cæspitose, in beds, and of a bright emerald-green colour," *Colenso*.—Allied to *R. Gaimardi*, but smaller, and more densely and irregularly branched. It differs in many respects from the description given of *R. glomerulata*, Mont.; but further we cannot say.

3. *Rhodomela concinna*, Hook. fil. et Harv.; radice discoidea stuposa, fronde elata disticha alterne pin-nato-decomposita (tri-quadrupinnata), pinnis minoribus linearibus elongatis pinnulatis, pinnulis æquilongis brevibus dichotomo-multifidis, ramulis quaquaversis subulatis sæpe furcatis, stichidiis oblongis acutis ad latera ramulorum sessilibus tetrasporas pluriseriatis foventibus. (TAB. CXI.)

HAB. Middle Island: Foveaux Straits, and Chalky Bay, West Coast, *Lyall*.

Fronde 8–12 inches high, as thick as sparrow's quill, many times distichously pinnate, ovate in outline; the lower main branches subhorizontal; the upper erecto-patent, twice or thrice pinnate-decompound. Penultimate pinnae $\frac{1}{2}$ – $1\frac{1}{2}$ inch long, set with alternate, dichotomously multifid pinnules, 1–2 lines long, and nearly of equal size throughout the rachis. These are distichously inserted along the rachis, but their own divisions branch in all directions; the apices divaricating and spine-like. On the multifid ramuli the stichidia are borne. Every part of the frond is opaque, coated with minute cortical cells.—PLATE CXI. Fig. 1, plant, *natural size*; 2, apex of a branch, with ramuli; 3, a multifid ramulus, bearing stichidia; 4, a stichidium *in situ*, enlarged:—*all more or less magnified*.

Gen. XXXVIII. BOSTRYCHIA, Mont.

(Mont. Hist. Cuba, Bot. p. 39. Harv. Phyc. Brit. t. 48. Harv. Ner. Austr. p. 58. Kütz. Sp. Alg. p. 839.

Helicothamnion, Kütz. Phyc. Gen. p. 433. *Stictosiphonia*, Fl. Ant. ii. 483. t. 186. f. 1, 2.)

1. *Bostrychia mixta*, Hook. fil. et Harv., *Lond. J. Bot. v. 4. p. 270. l. c. p. 539. Harv. Ner. Austr. p. 70. Kütz. Sp. Alg. p. 840.*

HAB. Rocks near high-water mark, Bay of Islands, *J. D. H.* Otago, *Lyall*. (Native of South Africa.)

2. *Bostrychia Harveyi*, Mont.; fronde tereti biunciali setacea dichotomo-pinnata, ramis flexuosis pin-

natis sæpe furcatis apicibusque involutis, pinnis alternis simpliciter pinnellatis, pinnellis 3-4 lineari-filiformibus gracilibus obtusis, stichidiis elongatis in medio vel apice pinnellarum evolutis.—*Mont. in Fl. Chil.*

HAB. On rocks covered by the sea at high water, Paterson's Harbour, *Iyall.* (A native of Chili.)

Fronde 2-3 inches high, as thick as a hog's bristle, three to four times irregularly forked, and set throughout with lateral, distichous, simply pinnate, patent branchlets, two or three lines long, each bearing from three to five ultimate pinnellæ; ends of the branches curled in. *Stichidia* linear-oblong, acute, sometimes formed from the middle portion, sometimes from the end of the ramuli. *Colour* a blackish-purple.—This appears the same as the *B. Harveyi*, *Mont.*, from Chiloe. At the same time it must be allowed to border very closely on the European *B. scorpioides*, with which I formerly united it; it is, however, more slender than the ordinary state of that species, and the stichidia may possibly afford a valid specific character.

3. *Bostrychia distans*, *Harv.*; fronde tereti debili bi-triunciali subsetacea vage ramosa v. pinnato-dichotoma, ramis alterne divisis apicibusque involutis pinnatis, pinnis distantibus alternis simplicibus vel pinnellatis, pinnellis 2-3 lineari-filiformibus obtusis.

HAB. In fresh-water streams near Wellington, and on Banks' Peninsula, *Iyall.* River Kowhaia, *Colenso.*

Perhaps only a straggling variety of *B. Harveyi*, but with more simple and distant ramuli, and less curled apices.

4. *Bostrychia Arbuscula*, *Harv.*; fronde unciali robusta (semilineam diametro) compressa, caule basi ramulis fractis exasperato sursum creberrime ramoso, ramis brevibus bipinnatis, pinnis approximatis, pinnulis subulatis acutis vel mucronatis erectis, axillis omnibus acutissimis apicibusque strictis, cellularibus minutissimis vix seriatis.

HAB. Otago, *Iyall.*

Fronde 1 inch high, very robust for its length, twice or thrice as thick as a hog's bristle, densely tufted, erect. *Stems* naked below, or set with the remains of broken ramuli, densely clothed with short branches beyond the middle. *Branches* erect, closely bipinnate; the pinnæ subulate, mucronulate, and very erect. *Colour* a dull brownish-purple. *Structure* dense, the surface-cells very minute, dot-like, and irregularly set. *Stem* solid, with eight primary, and several rows of secondary cells. *Fruit* unknown. All parts somewhat compressed.

Gen. XXXIX. POLYZONIA, *Suhr.*

(*Suhr*, in *Flora*, 1834, p. 739. t. 2. f. 15. *Mont. Pôle Sud*, p. 134. *Fl. Ant.* i. 181. *Harv. Ner. Austr.* p. 70. *Kütz. Sp. Alg.* p. 881.)

1. *Polyzonia cuneifolia*, *Mont. Pôle Sud, Bot.* p. 143. *Hook. fil. et Harv. in Fl. Ant.* v. 1. p. 181. t. 76. *Harv. Ner. Austr.* p. 70. *Kütz. Sp. Alg.* p. 882.

Var. β . *bifida*; foliis sæpissime profunde bifidis vel bipartitis, stichidiis ample cristatis.

HAB. Var. α , on the roots of large *Algæ*, east coast of Southern Island; and var. β , at Port Preservation, west coast, Middle Island, *Iyall.* (Native of Auckland Islands.)

Our var. β is a remarkable state of the species, less branched than usual, and, to the naked eye, more densely clothed with leaves. The leaves are very generally cleft nearly to the base into two subequal lobes, but not invariably so.

2. *Polyzonia adiantiformis*, *Dcne., Nouv. An. Sc. Nat. Ser. 2. v. 17. p. 363. Harv. Ner. Austr.* p. 71. *Kütz. Sp. Alg.* p. 881.

HAB. Parasitical on *Marginaria*, *Herb. Paris.*

3. *Polyzonia ovalifolia*, *Hook. fil. et Harv.*; surculo repente, foliis alternis horizontalibus sessilibus inæquilaterali-ovalibus obtusissimis integerrimis dentatisve. (TAB. CXII. B.)

HAB. Parasitical on *Amphiroa corymbosa*, Colenso.

Though our specimens are in a very young state, consisting merely of creeping surculi, such as are found in all the species when immature, we are unwilling to omit this little plant, whose leaves are remarkably different from those of any previously-described species.—PLATE CXII. B. Fig. 1, plant, parasitic on *Amphiroa corymbosa*; 2, portion of stem with leaves of the parasite; 3, cellular structure of the leaf of the same, both highly magnified.

4. *Polyzonia bipartita*, Hook. fil. et Harv.; surculo trisiphonio repente radicante caules erectos (demum ramosos?) distiche foliatis emittente, foliis alternis fere ad basin bipartitis, laciniis appianatis linearibus mucronatis, inferiore horizontali, superiore erecta, e cellulis triseriatis conflatis, quarum mediæ sunt angustiores oblongæ laterales fere quadratæ, stichidiis axillaribus lineari-oblongis apiculatis. (TAB. CXII. A.)

HAB. Parasitical on *Carpophyllum Maschalocarpus*, Colenso.

Our specimens are not fully grown, but evidently belong to a very distinct species, to the naked eye strongly resembling *Polysiphonia ceratoclada*, Mont., for which it may easily be overlooked. Under the microscope, however, no two plants can be more different. The leaves in our plant are divided nearly to the base into two linear, obtuse or mucronulate lobes, the lower of which is shorter, and spreads horizontally, the upper elongated and erect, each composed of three rows of rectangular cellules, those of the middle row (or midrib?) about twice as long as broad, those of the side rows nearly square. *Stichidia* of large size, containing a few large tetraspores in a single row.—PLATE CXII. A. Fig. 1, plant, growing on a fragment of *Carpophyllum Maschalocarpus*, natural size; 2, part of branch, with bipartite leaves and stichidia, highly magnified.

5. *Polyzonia Harveyana*, Dcne. in Raoul, *Pl. Nov. Zel.* p. 32. *Harv. Ner. Austr.* p. 72.

Var. β . *Colensoi*; omnibus partibus gracilior.

HAB. Parasitical on various *Algae*, very common.

We are indebted to Mr. Colenso for a very large suite of specimens, a comparison of which proves that *P. Harveyana* and *P. Colensoi*, of *Ner. Austr.*, cannot be kept specifically distinct.

Gen. XL. POLYSIPHONIA, Grev.

(Grev. *Fl. Edin.* p. 308. *Harv. Man. ed.* 1, 84. *J. Ag. Alg. Medit.* p. 119. *Harv. Ner. Austr.* p. 37. *Kütz. Sp. Alg.* p. 802, etc.)

SUBGENUS 1. OLIGOSIPHONIA, J. Ag.

1. *Polysiphonia abscissa*, Hook. fil. et Harv.; dense cæspitosa vel implicata, capillaris, purpurascens vel coccinea, fronde alternatim decomposita tenaci flaccida, ramis minoribus basi longe nudis apice alterne ramulosis, ramulis patentibus fastigiatis (quasi abscissis), apicibus nudis vel fibrilliferis, articulis ramorum diametro multiplo ramulorum subduplo triplove longioribus bistriatis, siphonibus quatuor, ceramidiis globoso-ovatis pedicellatis sæpe secundis, tetrasporis parvis in ramulos distortos nidulantibus.—*P. abscissa et P. microcarpa*, *Fl. Ant. v. 2.* p. 479, 480. *t. 182. f. 3.* *Harv. Ner. Austr. pp.* 42, 43.

HAB. Akaroa, Raoul, Lyall. Blind Bay, Cook's Straits, and Paterson's Harbour, Southern Island, Lyall. (Native of Cape Horn.)

Fronde 3–6 inches high, capillary, densely tufted, of a more or less brilliant purple-red or blood-red, alternately much branched. Principal branches set with shorter ones, which are naked at the base, and multifid at the top.

On re-examining *P. microcarpa* and *P. abscissa*, of the 'Flora Antarctica,' we fear they are not sufficiently distinct. Some of our present specimens are referable to one form, and some to the other. In general habit this species much resembles *P. formosa* of the northern hemisphere, but differs in the shape of the ceramidia, etc.

2. *Polysiphonia strictissima*, Hook. fil. et Harv.; dense cæspitosa, atro-rubescens, flaccida, fronde elongata basi setacea sursum sensim attenuata capillari dichotome ramosissima, axillis inferioribus patentibus

superioribus angustissimis, ramis minoribusque erectis fere appressis, apicibus inæquilongis (nec fastigiatis), articulis inferioribus brevibus vel diametro subduplo longioribus, mediis diametro 6–8-plo, superioribus 5-plo longioribus, ultimis sesqui- triplove longioribus.—*Lond. J. Bot. v. 4. p. 538. Harv. Ner. Austr. p. 42.*

HAB. New Zealand, *Raoul*. Port Underwood, *Lyall*.

Dr. Lyall's specimens enable us to amend the specific character originally drawn up from badly-preserved specimens. The lower part of the frond is as thick as a hog's bristle, and cartilaginous; upwards it is much attenuated, flaccid, very soft, and of a brighter colour. The lower forks are patent, the upper extremely narrow. It is allied to our *P. variabilis*, but the articulations are greatly longer than in any state of that species we have seen.

3. *Polysiphonia variabilis*, Harv.; fusco-rubescens, gregaria, flaccida, fronde ultra-setacea articulata basi irregulariter dichotoma, ramis majoribus furcatis vel alterne vel secunde decompositis patentibus, minoribus alterne divisim ramosissimis, ramulis erectis apice multifidis, axillis inferioribus latis, superioribus angustissimis, articulis omnibus brevibus, inferioribus diametro brevioribus, mediis subduplo longioribus, superioribus æqualibus v. sesquilongioribus, siphonibus quatuor latis sæpe spiraliter tortis, ceramidiis lato-ovatis subsessilibus.

Var. β . *longiarticulata*; articulis longioribus, mediis diametro triplo, superioribus duplo longioribus.

HAB. On shells, etc., in deep water, Blind Bay, Port Nicholson, and Otago, *Lyall*. Tauranga, *Davies*.
Var. β . Akaroa, and Bluff Harbour, Foveaux Straits, *Lyall*.

Fronde 2–4 inches high, as thick as a hog's bristle, flaccid, closely adhering to paper, irregularly dichotomous below, alternately or secundly branched above; very variable in the amount of ramification. *Branches* sometimes nearly naked, with but a few multifid ramuli; sometimes virgate, set with regularly alternate, multifid branchlets; sometimes inordinately divided and decompound. *Colour* a brownish-red. *Articulations* sometimes uniformly short; in other specimens the medial ones are three to four times as long as their diameter.

A common and very variable species, much resembling some forms of the northern *P. elongella*. The basal articulations only have secondary cells.

4. *Polysiphonia nana*, Harv.; fronde vix unciali crassa (setaceo-capillari) flabelliformi irregulariter dichotome ramosa, ramis patentibus, ramulis alternis subulatis acutis subfastigiatis, articulis omnibus diametro brevioribus, siphonibus quatuor amplis, ceramidiis numerosis ovatis subsessilibus.

HAB. On corallines, Auckland, New Zealand, *Lyall*.

Possibly only a dwarf state of the preceding. Our specimens, however, though crowded with fruit, are only half an inch in height.

5. *Polysiphonia brachygona*, Harv.; purpurea, rigidiuscula, fronde setacea alterne divisa vel furcata, ramis primariis pluries alterne decompositis sensim maxime attenuatis, minoribus subdichotome divisim et in ramulos capillares multifidos abeuntibus, articulis infimis brevissimis cellulis parvis corticatis, mediis bivenosis diametro sesqui- duplo (raro triplo) longioribus, superioribus fere diametrum æquantibus, ultimis brevissimis, siphonibus quatuor.

HAB. East side of Stewart's Island, *Lyall*.

Fronde 3–4 inches high, divided from the base into several principal branches, each of the thickness of a hog's bristle. These are alternately decompound, each successive series more and more slender. The secondary and other divisions are very irregular, either alternate, secund, or subdichotomous. *Axils* patent. *Substance* rigid, very imperfectly adhering to paper.—Allied to *P. Griffithsiana*, Harv.

6. *Polysiphonia rhododactyla*, Harv.; caule articulato basi vix subcorticato robusto elato dichotome ramoso cartilagineo apicem versus sensim gelatino-membranaceo et in ramulos flaccidos roseos desinente, ramis pluries furcatis, axillis patentibus, ramulis dichotome multifidis ultimis subsecundis vel fasciculatis

erectis axillis angustissimis, apicibus acuminatis, articulis infimis striæformibus brevissimis, mediis diametrum æquantibus, ramulorum majorum diametro brevioribus, minorum brevissimis striæformibus, siphonibus quatuor amplis.

HAB. Dredged in five fathoms, D'Urville Island, *Lyall*.

Habit of *P. elongata*, but very different. Nearest to *P. variabilis*, but much brighter in colour, with very different articulations, and very acute or acuminate ramuli. *Fronde* 8 inches long, as thick as hog's-bristle, somewhat attenuate, the main stem and the branches cartilaginous; the ramuli very flaccid, and closely adhering to paper; ultimate ramuli frequently secund. *Joints* visible in all parts, those toward the base of the stem with supplementary cellules.

7. *Polysiphonia amphibia*, Harv.; fusco-rubens, cæspitosa, fronde articulata capillari rigidiuscula decomposite ramosissima sensim attenuata, ramis ramulisque alterne v. secundatim divisim vix dichotomis, minoribus sæpe basi longe nudis apice ramosis, axillis patentibus, articulis bivenosis, mediis nodosis diametro subduplo, superioribus duplo triplove, ultimis sæpius sesquolongioribus, siphonibus quatuor, tetrasporis parvis.

HAB. In a stream of brackish water, covered at high tides by the sea, Massacre Bay, *Lyall*.

Tufts dense, 2-3 inches high, intricate. *Fronde* capillary, much branched, rigid, attenuated upwards, the branches irregularly alternate, many times compounded, the lesser divisions all patent. *Ramuli* spreading at wide angles, often multifid at the tips.

Not sufficiently known. It somewhat resembles some states of *P. urceolata*, but its amphibious locality induces us to keep it, for the present at least, distinct.

8. *Polysiphonia rudis*, Hook. fil. et Harv., *Fl. Ant. v. 1. p. 183. t. 74. f. 2.* *Harv. Ner. Austr. p. 44.*

HAB. Port Underwood, Cook's Straits, *Lyall*. (Native of Auckland Islands.)

9. *Polysiphonia implexa*, Hook. fil. et Harv. in *Lond. J. Bot. v. 4. p. 538.* *Harv. Ner. Austr. p. 44.*

HAB. New Zealand, *Raoul*. Cape Kidnapper and Parimahu, *Colenso*.

10. *Polysiphonia macra*, Harv.; dense cæspitosa, parva (semiuncialis), e filis repentibus orta, caulibus erectis parum ramosis, ramis simplicibus alternis vel secundis filiformibus vix ramulosis, articulis omnibus conformibus trivenosis diametro æqualibus vel sesquolongioribus nunc diametro brevioribus.

HAB. Akaroa, *Lyall*. Tidal rocks, Hawke's Bay, *Colenso*.

Forming a dense, dark brown mat, on the surface of rocks, the base of the tuft composed of a dense plexus of creeping filaments, which throw up erect, subsimple, or slightly branched, irregularly-divided stems. Not the same as *P. implexa*; but not sufficiently known.

11. *Polysiphonia Colensoi*, Hook. fil. et Harv.; caule (unciali-biunciali) setaceo robusto pellucide articulato tetragono quaquaversum ramoso, ramis alterne decompositis ramulisque duplicis generis spiralter insertis e quoque fere geniculo egredientibus onusto, aliis subulatis simplicibus, aliis pinnatis demum in ramos proficientibus, articulis omnibus diametro brevioribus bicellulosis, cellulis quadratis, ceramidiis ovato-globosis pedicellatis. (TAB. CXII. C.)

HAB. Parasitical on *Sargassum* and *Carpophyllum*, *Colenso*.

A distinctly-marked species, with nearly the same order of branching and habit as *P. ceratoclada*, but readily distinguished by its four-tubed stem and branches. The articulations are pellucid in all parts of the frond, the cell-walls very thick, and the coloured portion of the cells, viewed laterally in the stem, nearly square. *Conceptacles* occupy the position of a pinnated ramulus on the larger branches. It becomes very dark in drying.—PLATE CXII. C. Fig. 1, plant, *natural size*; 2, part of branch, with simple and composite ramuli; 3, apex of a ramulus; 4, cross section of a branch; 5, a conceptacle (ceramidium) *in situ*:—*more or less magnified*.

12. *Polysiphonia Lyallii*, Hook. fil. et Harv. *Fl. Ant. v. 1. p. 182. t. 74. f. 1. Lond. J. Bot. v. 4. p. 268. Harv. Ner. Austr. p. 41.*—*P. Mallardiæ*, Harv. *Ner. Austr. (partim).*

HAB. Preservation Harbour and Foveaux Straits, *Lyall.* Hawke's Bay, and other stations, *Colenso.* (Native of Antarctic shores.)

Dr. Lyall's specimens here referred to are much larger and finer than those formerly received from Auckland Islands, and differ a little in ramification. Stem 8–12 inches long, simple, furnished throughout with closely-set, lateral, patent, simple branches, sometimes only a line or two asunder, sometimes half an inch or more. Branches densely clothed with multifid, imbricated ramuli. Conceptacles ovate, half the size of those of *P. Mallardiæ*, subsessile on the ramuli. Primary tubes sometimes five.

Mr. Colenso's specimens trace the species from an early stage. When about an inch high it is unbranched, densely clothed with multifid ramuli. Older specimens are more and more compound. Some of these latter we formerly confounded with *P. Mallardiæ*, but they differ from that species in the ceramidia, and in some minor characters, and so nearly agree with Dr. Lyall's plant as to convince us that they belong to the same species.

SUBGENUS 2. POLYSIPHONIA, *J. Ag.*

13. *Polysiphonia Brodiaei?* Grev.; caule elato corticato immerse articulado 7–8-siphonio simplici vel furcato alterne ramoso, ramis sæpius brevibus quaquaversum egredientibus ramulis decompositis creberrime multifidis subfasciculatis obsessis, ramulis erectis pellucide articulatis 3–4-striatis, articulis diametro sesquielongioribus, ceramidiis ovato-urceolatis ad ramulos sessilibus.—*P. Brodiaei*, Harv. *Phyc. Brit. t. 195, etc.*

HAB. On the beach, East Coast, and South Harbour, Southern Island; and Port Cooper, Banks' Peninsula, *Lyall.* (Native of Europe.)

Dr. Lyall's specimens are about 10 inches long, $\frac{1}{4}$ a line in diameter at the base, well clothed with short branches an inch or two in length. They are copiously in fruit: more robust than our specimens from the West of Ireland, but not offering any very decided differences. The specimen from Port Cooper is nearly denuded of ramuli, but the few that remain have the proper structure, and bear tetraspores.

14. *Polysiphonia botryocarpa*, Hook. fil. et Harv., *Fl. Ant. v. 1. p. 181. t. 70. Harv. Ner. Austr. p. 57;* ceramidiis ovato-urceolatis ad ramulos sessilibus sæpius secundis.

HAB. Otago and Foveaux Straits, *Lyall.* (Native of Auckland Islands.)

Since this plant was described in the 'Flora Antarctica,' we have received from the Auckland Islands a specimen which, instead of the dense tufts of minute ceramidia, such as our former specimens bore, is copiously covered with ceramidia of a size proportionate to the species, and sessile along the ramuli, frequently several secund on each ramulus. These we must regard as the normal condition of the fruit; the tufted *ceramidia* formerly described and figured by us being the result of disease. We regret that such a character should be perpetuated in the specific name. Some of the specimens from Foveaux Straits are two feet or more in length.

15. *Polysiphonia cancellata*, Harv., *Lond. J. Bot. v. 3. p. 440. Ner. Austr. p. 51. t. 15.*

HAB. Banks' Peninsula, *Lyall.* (Native of New Holland.)

16. *Polysiphonia aterrima*, Hook. fil. et Harv., *Lond. J. Bot. v. 4. p. 536. Harv. Ner. Austr. p. 52.*

HAB. Parasitical on Fucoids, very common.

17. *Polysiphonia decipiens*, Mont., *Voy. Pôle Sud, Bot. v. 1. p. 131. Fl. Ant. v. 1. p. 184. Harv. Ner. Austr. p. 50. P. rhytiphæoides*, Hook. fil. et Harv. *Lond. J. Bot. v. 4. p. 537.*

HAB. Otago and Akaroa, *Lyall.* New Zealand, *Raoul.*

18. *Polysiphonia ramulosa*, Harv.; nigrescens, fronde unciali setaceo-capillari articulata flabellatim ramosa, ramis virgatis alterne divisus ramulisque quaquaversum egredientibus densissime obsessis, ramulis

brevibus spinæformibus patentibus nunc simplicibus subulatis nunc ramulos minores subulatos ferentibus, articulis ramorum ramulorumque diametro duplo brevioribus, siphonibus septem.

HAB. Parasitical on *Sargassa*, Parimahu, *Colenso*.

About 1 inch high, as thick as horsehair, divided above the base into numerous principal branches, which are alternately subdivided. These are beset with very numerous, patent, spine-like ramuli, one or two lines long, spreading to all sides, and either quite simple, or bearing other similar and smaller ones. *Apices* acute. *Articulations* about half as long as broad, or a little longer.

Smaller than *P. cancellata* or *P. decipiens*, and apparently different, though nearly allied.

19. *Polysiphonia isogona*, Harv.; dense cæspitosa, badia, siccitate fragilis, frondibus setaceo-capillaribus e basi decomposite ramosissimis, ramis pluries alterne vel subdichotome divisis, ramis minoribus basi longe nudis apice multifidis, ramulis erectis, axillis omnibus angustis, apicibus parce fibrillosis, articulis omnibus diametro subsesqui- vel duplo longioribus, geniculis pellucidis, siphonibus novem.

HAB. Blind Bay, Cook's Straits, *Lyall*. Cape Kidnapper and Hawke's Bay, *Colenso*.

Densely tufted. The habit is very similar to that of *P. anisogona*, but the filaments are more slender, with fewer tubes, and uniformly short articulations. It adheres to paper in drying, and is rather fragile when re-moistened. Mr. Colenso's specimens are smaller and very badly preserved, but have the microscopic characters of the species.

20. *Polysiphonia comoides*, Harv.; dense cæspitosa, badia, frondibus capillaribus e basi decomposite ramosissimis, ramis pluries alterne vel subdichotome divisis, minoribus basi nudis apicem versus alterne compositis, ramulis basi angustatis erectis, articulis mediis diametro 4-5-plo, superioribus 2-3-plo, ramulorum subsesquilongioribus, geniculis pellucidis, siphonibus novem decemve.

HAB. Akaroa and Port Cooper, Banks' Peninsula, *Lyall*.

Very similar in external habit to *P. isogona*, from which it is chiefly to be known by the longer articulations, should that character prove a constant one.

21. *Polysiphonia corymbifera*, Ag.; fusco-rubescens, dense cæspitosa, fronde capillari-setacea articulata multistriata dichotoma vel vage ramosa, axillis primariis distantibus ramisque nudiusculis, ramis minoribus lateralibus corymboso-fastigiatis pluries dichotomis, articulis ramorum diametro triplo quadruplo longioribus, ramulorum sesquilongioribus, ultimis diametrum vix æquantibus, siphonibus undecim v. duodecim.—*Ag. Sp. Alg. v. 2. p. 90. Harv. Ner. Austr. p. 54.*

HAB. Maketu, *Chapman*. (Native of Cape of Good Hope.)

Rather more slender than the Cape of Good Hope specimens, and usually with only eleven radiant cells in the axis. Habit very similar.

22. *Polysiphonia nigrescens*, Grev. *Harv. Ner. Austr. p. 54. Phyc. Brit. t. 277. E. Bot. t. 1717, 1743.*

HAB. New Zealand, *Raoul*. (Native of Northern Atlantic and Pacific.)

23. *Polysiphonia pennata*, Ag.; siccitate nigrescens, caule setaceo compresso simpliciusculo apice alterne ramoso cum ramis distiche pinnato, pinnis simplicissimis lineari-subulatis acutis erecto-patentibus pluristriatis, articulis omnibus diametrum subæquantibus, siphonibus 8-10.—*Ag. Sp. Alg. v. 2. p. 102. J. Ag. Alg. Medit. p. 141.*

HAB. Auckland, *Lyall*. Cape Kidnapper, *Colenso*. (Native of South of Europe.)

Fronde 1-2 inches high, sparingly branched beyond the middle; the branches erecto-patent, simple, or alternately decomposed in the upper part. All the branches at the stem pinnated with distichous, subulate, erecto-

patent ramuli. *Colour* when growing a deep red: blackish when dried.—Very similar to the Mediterranean specimens.

24. *Polysiphonia ceratoclada*, Mont., *Voy. Pôle Sud, Bot. v. 1. p. 130. t. 5. f. 2. Fl. Ant. v. 1. p. 183. t. 76. f. 2. Harv. Ner. Austr. p. 48.*

HAB. Banks' Peninsula and Lyall's Bay, Cook's Straits, *Lyall*. Parasitic on *Carpophyllum*, East Coast, *Colenso*. (Native of Auckland Islands.)

25. *Polysiphonia Sulivane*, Hook. fil. et Harv.; caule (e filo repente orto) erecto flabellatim ramosissimo, ramis alterne decompositis et ramulis duplicis generis e quoque fere geniculo ortis onusto, aliis lineari-subulatis acutis patentibus simplicissimis invicem sæpissime ternis, aliis alterne pinnatis demum in ramos proficientibus, articulis ramorum diametro duplo triplove, ramulorum sesquolongioribus multistriatis.—*Fl. Ant. v. 2. p. 479. t. 182. f. 4. Harv. Ner. Austr. p. 48.*

HAB. South Harbour, Southern Island, *Lyall*. (Native of Falklands.)

More robust and of larger size than our Falkland Island specimens, but the same in essential character. It is a slenderer plant than *P. ceratoclada*, with longer joints and more distant ramuli. The order of ramification is very regular: viz., ramuli issue alternately from every node; first, three subulate ramuli from successive nodes; then a pinnated one; again three subulate, and so on. The subulate ramuli never alter, but the pinnated grow out into branches. If one of the pinnate ones be attentively examined, after every third pinnule may be seen a node, either naked or hairy, a minute ramulus different from the pinnules; this ramulus is the bud of a future branch. The branching in *P. ceratoclada* is similar, but less easily seen, owing to the more densely-set ramuli.

26. *Polysiphonia dendritica*, Ag. *Harv. Ner. Austr. p. 47.*

HAB. Parasitical on *Pterocladia lucida* and other *Algae*, common. (Native of New Holland and South America.?)

27. *Polysiphonia cladostephus*, Mont. *Pôle Sud, Bot. v. 1. p. 132. t. 13. f. 4 a. Harv. Ner. Austr. p. 45. P. byssocladus, Hook. fil. et Harv. in Lond. J. Bot. v. 3. p. 436.*

HAB. Parasitical on *Sargassa*, etc., Akaroa, *Lyall*, *Raoul*. (Native of New Holland and Tasmania.)

Gen. XLI. DASYA, Ag.

(Ag. Sp. Alg. ii. 116. Harv. Ner. Austr. p. 57. *Dasya, Lophothalia, Eupogonium, Trichothamnion, Eupogodon*, Kütz. Sp. Alg. pp. 795–802.)

1. *Dasya collabens*, Hook. fil. et Harv.; caule elato (8–12-unciali) tereti inarticulato flaccido glabro indiviso decomposite pinnato, pinnis (v. ramis primariis) bi-tripinnatis circumscriptione ovato-lanceolatis, pinnulis distichis iterum subdivisis et ramellis articulatis monosiphoniis dichotomis laxè vestitis, ramellis patentibus basi crassiusculis sensim attenuatis acutissimis bis-terve furcatis, articulis diametro 2–3-plo longioribus ad genicula contractis, stichidiis . . . ?—*Harv. Ner. Austr. p. 61. t. 21 (status junior).*

HAB. Akaroa, *Raoul*, *Lyall*. Bluff Harbour, Foveaux Straits, Chalky Bay, Middle Island, and Port Adventure, Southern Island, *Lyall*.

The figure in 'Nereis Australis,' taken from a young plant, gives a very erroneous impression of this beautiful species, which grows 8–12 inches long, and becomes three or four times pinnated, with the habit of *D. coccinea*. It is extremely soft and flaccid, and adheres very closely to paper. *Colour* a beautiful rosy-red or crimson.—Dr. Lyall's specimens are not in fruit.

2. *Dasya squarrosa*, Harv.; caule setaceo pellucide articulato vel basi subcorticato in parte inferiore sæpius ramellis pusillis exasperato apice glabro crebre pinnato v. bi-tri-pinnato, ramis distichis subtrisiphoniis,

articulis diametro æqualibus vel parum longioribus, ramulis alternis patentibus brevissimis in ramellos bis terve furcatos obtusissimos solutis, articulis ramellorum diametro sesquolongioribus, stichidiis . . . ?

HAB. On the large *Algae*, Port William, Southern Island, *Lyall*.

Fronde gregarious, 1–2 inches high, distichous, several times pinnate. *Stems* articulate, except near the base in large specimens, rough in the lower part, with minute, horizontally patent, short, hair-like ramelli, smooth above, marked with three tubes on the lateral view, pinnate or bi-tripinnate. *Branches* springing alternately from every second or third node, very patent, pinnated with short, divaricating ramuli, which are trisiphonous at the base, but gradually pass off upwards into monosiphonous, simple or forked, exactly cylindrical, very obtuse, patent ramelli, not in the least attenuated to the point. *Articulations* of the branches about as long as broad; of the ramelli rather longer. *Colour* a fine crimson-lake. *Fruit* unknown. *Siphons* in the stem seven or eight.

3. *Dasya tessellata*, Harv.; caule unciali tereti polysiphonio pellucide tessellato vel cellulis transversim ordinatis 4–5 oblongis notato distiche pinnato vel bi-tripinnato glabro, ramis consimilibus, ramulis alternis brevissimis patentibus pectinato-dichotomis squarrosis basi tri-tetrasiphoniis in ramellos monosiphonios simplices subulatos divaricatos abeuntibus, stichidiis oblongis acutis ad latera ramulorum sessilibus.

HAB. Blind Bay and Massacre Bay, Cook's Straits, *Lyall*.

Densely tufted. *Stems* 1–2 inches high, setaceous, pellucidly cellular, or tessellated with large, transversely seriated, square or oblong cells, of which four or five are seen in the breadth of the stem, pinnate or bipinnate; the branches very patent, similarly cellular as the stem. The penultimate branches are pinnated with alternate, distichous, very patent, short ramuli, which are either regularly dichotomous, or, by suppression, pectinato-secund, three-tubed in the lower part, but passing off in the ultimate divisions into single-tubed, subulate, but not very acute, and sometimes quite obtuse, divaricating ramelli. Some of these ramelli are in fertile specimens changed into sessile stichidia. A cross section of the stem shows about twelve cells surrounding the central tube. *Colour* a fine crimson-lake.

TRIBE II. LAURENCIACEÆ.

Gen. XLII. ASPARAGOPSIS, *Mont.*

(*Mont. Fl. Canar. Pl. Cell. Addenda*, p. xv. *Harv. Ner. Austr.* p. 88. *J. Ag. Sp. Alg.* ii. 774. *Kütz. Sp. Alg.* p. 802. *Lictoria*, *J. Ag. Linnæa* xv. 22.)

1. *Asparagopsis Delilei*, *Mont. Harv. Ner. Austr.* p. 88. t. 35. *J. Ag. Sp. Alg.* v. 2. p. 776. *Kütz. Sp. Alg.* p. 802. *Fucus taxiformis*, *Del. Egypt.* p. 151. t. 57.

HAB. Dredged in five fathoms, at D'Urville Island, Cook's Straits, *Lyall*. (Native of New Holland, Tasmania, the Mediterranean Sea, and Canary Islands.)

Gen. XLIII. DELISIA, *Lamour.*

(*Lamour. Dict. Cl. Hist. Nat.* v. 389. *Harv. Ner. Austr.* p. 88. *J. Ag. Sp. Alg.* ii. 779. *Kütz. Sp. Alg.* p. 770. *Calocladia et Bowiesia*, *Grev.*)

1. *Delisia elegans*, *Lamour. Harv. Ner. Austr.* p. 89. t. 34. *J. Ag. Sp. Alg.* v. 2. p. 781. *Kütz. Sp. Alg.* p. 770. *Bonnemaisonia elegans*, *Ag. Sp. Alg.* v. 1. p. 198. *Harv. Lond. J. Bot.* v. 3. p. 412.

HAB. Dredged in fifteen fathoms, at Preservation Harbour, West Coast, Middle Island, and at Akaroa, Banks' Peninsula, *Lyall*. (Native of New Holland and Tasmania.)

Gen. XLIV. LAURENCIA, *Lamour.—J. Ag. ref.*

(*Lamour. Ess.* p. 42. *Grev. Syn.* p. lii. *Harv. Ner. Austr.* p. 81. excl. sp. *J. Ag. Sp. Alg.* ii. 740. *Kütz. Sp. Alg.* p. 852. excl. sp.)

1. *Laurencia elata*, *Harv., Ner. Austr.* p. 81. t. 33. *Kütz. Sp. Alg.* p. 856. *J. Ag. Sp. Alg.* v. 2. p. 766.

HAB. East Coast, *Colenso*. (Native of New Holland.)

2. *Laurencia virgata*, J. Ag., *Sp. Alg.* v. 2. p. 752.

HAB. Cape Kidnapper and Parimahu, *Colenso*. Houraki Gulf and Banks' Peninsula, *Lyall*. (Native of South Africa and California.)

Mr. Colenso's specimens closely resemble those from the Cape of Good Hope, on which Agardh founds his species. Dr. Lyall's, from Houraki Gulf, are also decidedly the same; but those from Banks' Peninsula vary in some degree from the type.

3. *Laurencia Forsteri*, Grev. *Harv. Ner. Austr.* p. 85. *J. Ag. Sp. Alg.* v. 2. p. 744. *Kütz. Sp. Alg.* p. 854. *Fucus Forsteri*, *Turn. Hist.* t. 77.

HAB. New Zealand, *Forster*. (New Holland.)

A common species in Australia and Tasmania, but which we have not received from New Zealand.

4. *Laurencia gracilis*, Hook. fil. et Harv., *Lond. J. Bot.* v. 7. p. 444. *Harv. Ner. Austr.* p. 84. *J. Ag. Sp. Alg.* v. 2. p. 746.

HAB. East Coast, *Colenso*.

5. *Laurencia distichophylla*? J. Ag.; fronde rosea vel purpurascente compressa distiche decompositopinnata, pinnis in rachide stricta sursum dilatatis plano-compressis bi-tripinnulatis sæpius oppositis distichis patentibus, pinnulis cylindraceis obtusis simplicibus pinnellatisve, ceramidiis ad ramulos pinnularum compositarum sessilibus ovato-urceolatis acuminatis, tetrasporis infra apices pinnellarum fasciatis.—*J. Ag. Sp. Alg.* v. 2. p. 762?

HAB. Waitemata Harbour, *Lyall*. Hawke's Bay and Parimahu, *Colenso*. Bay of Islands, *J. D. H., Davies*.

Fronde 2–3 inches high, densely tufted, decomposed, pinnate, sometimes barely bipinnate, sometimes four to five times compounded. Outline ovate. In some of the very compound fronds the ultimate ramuli are now and then not perfectly distichous, but this is rare. *Colour* a rosy purple, brighter, and almost crimson in some of our specimens.

We have not seen specimens of Agardh's plant, but judge from his description that it cannot be greatly different from ours.

6. *Laurencia botrychioides*, Harv.; fronde nana purpurascente vel fuscescente compresso-plana disticha decomposita pinnatifida, pinnis pinnulisque in rachide stricta sursum dilatato subexcurrente sæpissime oppositis patentibus, inferioribus majoribus, pinnulis brevissimis cuneatis vel clavatis apice crenatis demum multifido-congestis, pinnellis clavæformibus tetrasporas infra apices foveantibus, ceramidiis . . . ?—*L. botryoides*, *Harv. Ner. Austr.* p. 82 (*partim, nec Ag.*).

HAB. Bay of Islands, *J. D. H.* Parimahu, *Colenso*.

Fronde tufted, rising from matted surculi, erect, 1–3 inches high, the larger specimens three to four times pinnatifid. *Rachides* flat, especially above, $\frac{1}{2}$ –1 line broad, straight, closely pinnatifid; the laciniae opposite and patent. Ultimate pinnules very short, at first crenate or tuberculate at the end, afterwards multifid, their divisions all turbinate. *Colour* dull brownish-purple.

Nearly allied to *L. concinna* of 'Nereis Australis' (*L. complanata*, Suhr.), but scarcely the same. It also resembles *L. pinnatifida*, var. *Osmunda*, and our *L. distichophylla*, but is distinguished by the colour and shape of the ramuli.

7. *Laurencia papillosa*, Grev. *Harv. Ner. Austr.* p. 84. *J. Ag. Sp. Alg.* v. 2. p. 756. *Kütz. Sp. Alg.* p. 855. *Fucus thyrsoides*, *Turn. Hist.* t. 19.

HAB. New Zealand, *Banks*. (Native of South of Europe, Gulf of Mexico, Indian Ocean, Mauritius, Sandwich Islands, etc.)

Gen. XLV. CLADHYMENIA, *Harv.*

(Harv. Lond. J. Bot. iv. 539. Ner. Austr. p. 87. excl. sp. J. Ag. Sp. Alg. ii. 771. Kütz. Sp. Alg. p. 879.)

1. *Cladhymenia Lyallii*, Harv., *Lond. J. Bot.* v. 4. p. 540. *Ner. Austr.* p. 87. t. 33. *J. Ag. Sp. Alg.* v. 2. p. 771. *Kütz. Sp. Alg.* p. 879.

HAB. Bay of Islands, *Lyall*.

2. *Cladhymenia oblongifolia*, Harv.; radice fibroso-ramosa, fronde stipitata latiuscula gelatinoso-membranacea sub-bipinnatifida, laciniis erecto-patentibus oblongo-linearibus basi attenuatis subpetiolatis apice obtusissimis margine fimbriatis, ceramidiis ovatis ad cilia marginalia ramosa filiformia sessilibus, tetrasporis in ciliis marginalibus applanatis nidulantibus.—*Harv. Lond. J. Bot.* v. 4. p. 540. *Ner. Austr.* p. 87. *J. Ag. Sp. Alg.* v. 2. p. 771. *Kütz. Sp. Alg.* p. 879. (TAB. CXIII.)

HAB. Paroah Bay and Port Cooper, Banks' Peninsula, *Lyall*. East Coast, *Colenso*.

Fronde a foot or more in length, nearly an inch in breadth, pinnately or bipinnately parted; *laciniæ* erecto-patent, 6–8 inches long, $\frac{1}{2}$ an inch wide, tapering to the base, very obtuse, simple, or bearing, especially in the upper half, a second series of similar *laciniæ*; the margin of all more or less fringed with filiform or compressed, simple or branched processes. *Conceptacles* ovate, on the sides of the marginal ciliary processes. *Tetraspores* in shorter, simpler, and flattened processes. *Colour* "red," when dry brownish. *Substance* gelatinoso-membranaceous, very closely adhering to paper in drying; soon decomposing in fresh water, and giving out a large quantity of gelatine, which stains the paper on which the specimen is displayed.

Dr. Lyall's newly-received specimens of this plant are of large size, and with perfect fructification of both kinds. In external habit, the larger ones are very similar to *Callophyllis Hombroniana*, for which, without a careful examination, some of them may be overlooked.—PLATE CXIII. Fig. 1, plant, *natural size*; 2, marginal processes, bearing conceptacles; 3, vertical section of a conceptacle; 4, spores from the same; 5, marginal processes, bearing tetraspores; 6, a tetraspore:—*all more or less magnified*.

Gen. XLVI. PTILONIA, *Harv.—J. Ag.*

(Harv. Ner. Austr. p. 124. J. Ag. Sp. Alg. ii. 773.)

1. *Ptilonia Magellanica*, Harv. *J. Ag. Sp. Alg.* v. 2. p. 774. *Thamnophora Magellanica*, *Mont. Pôle Sud*, p. 162. t. 8. f. 2. *Plocamium Magellanicum*, *Hook. fil. et Harv. Fl. Ant.* v. 2. p. 474.

HAB. East Coast, lat. 43°, *Lyall*. (Native of Cape Horn and Kerguelen's Land.)

We have only seen a single specimen from the above locality. This plant abounds at Cape Horn, the Falklands, and Kerguelen's Land.

Gen. XLVII. CHAMPIA, *Ag.—Harv. ref.*

(Harv. Ner. Bor. Amer. pt. 2. p. 75. *Champia et Lomentariæ* sp., Auct. *Chylocladiæ* sp., Grev. Ner. Austr. etc.)

1. *Champia Novæ-Zelandiæ*, Harv.; fronde stipitata compressa apice subattenuata opposite vel verticillatim composita, ramis simplicibus vel iterum ramosis, ramulis sæpius oppositis, articulis diametro duplo brevioribus, apicibus obtusis.

Var. β ; ramis ramulisque apice attenuatis, ceramidiis ovato-conicis sessilibus.—*Chylocladia?* *Novæ-Zelandiæ*, *Hook. fil. et Harv. Lond. J. Bot.* v. 4. p. 541. *Ner. Austr.* p. 80. *Lomentaria Novæ-Zelandiæ*, *Kütz. Sp. Alg.* p. 863.

HAB. Bay of Islands and Foveaux Straits, *Lyall*. Tauranga, *Davies*. Maketu, *Chapman*. Var. β . Port William, Southern Island, *Lyall*.

Broader than *C. Tasmanica*, to which it is nearly allied.

2. *Champia affinis*, Harv. *Chylocladia affinis*, Hook. *fil. et Harv. in Lond. J. Bot. v. 6. p. 402. Harv. Ner. Austr. p. 79. t. 29. Lomentaria affinis*, Kütz. *Sp. Alg. p. 863. J. Ag. Sp. Alg. v. 2. p. 730.*
 HAB. Port William, Southern Island, *Lyall*. (Native of New Holland.)

The specimens are not in fruit, and are so far doubtful.

3. *Champia parvula*, Harv., *Ner. Bor. Amer. pt. 2. p. 76. Chylocladia parvula*, Grev., *Harv. Phyc. Brit. t. 210. Ner. Austr. p. 80. Lomentaria parvula*, Gaill., Kütz. *Sp. Alg. p. 864. J. Ag. Sp. Alg. v. 2. p. 729.*

HAB. Akaroa, *D'Urville, Raoul*. (Native of Northern Atlantic and Mediterranean.)

TRIBE III. WRANGELIACEÆ.

Gen. XLVIII. WRANGELIA, *Ag.*

(*Ag. Sp. Alg. ii. 136. J. Ag. in Linn. xv. 37. J. Ag. Sp. Alg. ii. 703. Harv. Phyc. Brit. t. 27. Kütz. Sp. Alg. p. 664.*)

1. *Wrangelia Lyallii*, Harv.; fronde setacea flaccida fere e basi pellucide articulata ecorticata in parte inferiore venulosa pinnatim vel bipinnatim ramosa, ramis elongatis simplicibus ad nodos opposite vel verticillatim ramellosis, ramellis pinnatis, pinnis oppositis patentibus parum attenuatis obtusis subacutisve, articulis ramorum diametro multiplo, ramellorum 6-8-plo longioribus, tetrasporis ad pinnas ultimas sessilibus solitariis vel fasciculatis triangule divisis, cystocarpis minutis terminalibus fere nudis (vix involucreatis).

HAB. Ruapuke and Preservation Harbour, *Lyall*.

Fronde 4-5 inches long, thicker than hog's-bristle, once or twice pinnated; the branches long, virgate, and simple. *Stem* veiny near the base, pellucidly articulate above, and all the branches pellucidly articulate, with narrow endochrome and thick cell-walls. All the nodes are furnished with opposite or whorled, patent, pinnated ramelli; the pinnae mostly opposite, rarely alternate. *Colour* a brilliant carmine. *Tetraspores* sessile on the inner faces of the pinnae of the ramelli, one, two, or more at each node. *Cystocarps* minute, terminating the rachides of nearly naked ramelli. It closely adheres to paper in drying.—Allied to *W. multifida* and to *W. crassa*, but different.

2. *Wrangelia squarrolosa*, Harv.; fronde setacea rigida e basi articulata ecorticata distiche ramosa, ramis alternis oppositisve pluries compositis nunc laxe ramulosis nunc creberrime pinnatis v. bipinnatis, pinnis sæpissime oppositis, articulis omnibus diametro 2-3-plo longioribus ad genicula ramellis minutis verticillatis dichotomo-multifidis squarroso-spinescentibus obsessis, tetrasporis sessilibus in ramellos lateralibus.

Var. *a*; decomposite pinnata, pinnis pinnulisque creberrimis oppositis.

Var. *β*; vage ramosa, vix pinnata.

HAB. On the beach at Preservation Harbour, both varieties, *Lyall*.

The two varieties which we have here associated look to the naked eye very different, but not more so than parallel varieties of *D. penicillata*; and the microscopic characters of each are so similar that we fear to separate them. The squarrose ramelli, which densely clothe the nodes, are at first simple, become gradually branched, and at last are excessively divided; they are about a quarter of a line long, whorled, and crowded together, giving a beaded character to the nodes. *Substance* rigid, not strongly adhering to paper.

Except in substance there is considerable resemblance in the general aspect to *W. penicillata*. Till the cystocarps shall be discovered, the genus must remain in some degree doubtful. Possibly *Callithamnion spinescens*, Kütz., may be an allied plant.

TRIBE IV. CORALLINACEÆ.

Gen. XLIX. AMPHIROA, *Lamour.*

(*Lamour. Cor. Flex.* p. 294. *Dcne. Class.* p. 123. *Harv. Ner. Austr.* p. 95. *J. Ag. Sp. Alg.* ii. 529. *Cheilosporum* et *Arthrocardia*, *Aresch.*)

1. *Amphiroa corymbosa*, *Dcne.*, *Class.* p. 112. *Harv. Ner. Austr.* p. 99. t. 38. *J. Ag. Sp. Alg.* v. 2. p. 550.

HAB. Parimahu, and Cape Turnagain, *Colenso.* Bay of Islands, *Swainson, Lyall.* (Native of Cape of Good Hope and New Holland.)

2. *Amphiroa elegans*, *Hook. fil. et Harv.*, *Ner. Austr.* p. 101. t. 38. *J. Ag. Sp. Alg.* v. 2. p. 546.

HAB. Cape Kidnapper, *Colenso.*

Gen. L. CORALLINA, *Linn.*

(*Lamour. Cor. Flex.* p. 275. *Dcne. Class.* p. 119. *Harv. Ner. Austr.* p. 103. *J. Ag. Sp. Alg.* ii. 560.)

1. *Corallina officinalis*, *Linn.* *Harv. Ner. Austr.* 104. *Phyc. Brit.* t. 222. *J. Ag. Sp. Alg.* v. 2. p. 562.

HAB. Auckland, *Lyall.* Ahuriri, Hawke's Bay, *Colenso.* (Native of Northern and Southern Oceans.)

2. *Corallina armata*, *Hook. fil. et Harv.*, *Ner. Austr.* p. 103. t. 40. *J. Ag. Sp. Alg.* v. 2. p. 566.

HAB. New Zealand, several localities, *Colenso.*

Gen. LI. JANIA, *Lamour.*

(*Lamour. Cor. Flex.* p. 266. *Dcne. Class.* p. 123. *Harv. Ner. Austr.* p. 104. *J. Ag. Sp. Alg.* ii. 553, et *Corallinæ* sp., *J. Ag. l. c.*)

1. *Jania Cuvieri*, *Dcne.* *Harv. Ner. Austr.* p. 105. *J. Ag. Sp. Alg.* v. 2. p. 572.

HAB. Banks' Peninsula, *Lyall.* Several stations, *Colenso, Swainson.* (Native of New Holland and South Africa.)

2. *Jania pistillaris*, *Mont.*, *Pôle Sud, Bot.* p. 147. *Harv. Ner. Austr.* p. 105. *J. Ag. Sp. Alg.* v. 2. p. 574.

HAB. Bay of Islands, *Hombro.*

Unknown to us.

3. *Jania gracilis*, *Mont.*, *Pôle Sud, Bot.* p. 147. *Harv. Ner. Austr.* p. 105. *J. Ag. Sp. Alg.* v. 2. p. 559.

HAB. Akaroa, *Hombro.*

4. *Jania micrarthrodia*, *Lamour.*, *Pol. Flex.* p. 271. t. 9. f. 5 a. B. *Harv. Ner. Austr.* p. 107. *J. Ag. Sp. Alg.* v. 2. p. 555. *J. tenuissima*, *Sond. Pl. Preiss.* v. 2. p. 186. *Harv. Ner. Austr.* t. 40. *J. antenna*, *Kütz. Phyc. Gen.* p. 389. *Sond. l. c.* p. 186. *Harv. l. c.* p. 107.

HAB. Port Cooper, *Lyall.* Cape Kidnapper, Parimahu, etc., *Colenso.* (Native of New Holland.)

5. *Jania Novæ-Zelandiæ*; fronde setacea (1-2-pollicari) dichotoma, axillis acutis, articulis cylindraceis diametro subsextuplo longioribus, ceramidiis urnæformibus axillaribus ramulis binis bi-triarticulatis coronatis.

Var. *β. longiarticulata*; articulis diametro 12-plo longioribus.

HAB. Banks' Peninsula, *Lyall.* East Coast, *Colenso.*

Larger and coarser than *J. rubens*, with longer joints. Near *J. Natalensis*, but not the same.

Gen. LII. MELOBESIA, *Lamour.*

(*Lamour. Cor. Flex.* p. 313. *Dcne. Class. l. c.* *Harv. Ner. Austr.* p. 109. *J. Ag. Sp. Alg.* ii. p. 510. *Lithothamnion*, *Phil.—Aresch.*)

1. *Melobesia calcarea*, *Ell. et Soll., Harv. Phyc. Brit. t.* 291. *Harv. Ner. Austr.* p. 110. *J. Ag. Sp. Alg. v. 2.* p. 523.

HAB. New Zealand, *J. D. H.* (Native of Northern Atlantic.)

2. *Melobesia Patena*, *Hook. fil. et Harv., Ner. Austr. p.* 111. *t.* 40. *J. Ag. Sp. Alg. v. 2.* p. 514.

HAB. Parasitical on *Ballia*, *Colenso.*

TRIBE V. SPHÆROCOCCHOIDEÆ.

Gen. LIII. DELESSERIA, *Lamour.*

(*Grev. Alg. Brit.* p. 71. *Harv. Ner. Austr.* p. 114. *J. Ag. Sp. Alg.* ii. 677. excl. sp.)

1. *Delesseria Hookeri*, *Lyall, MS.*; fronde (maxima) petiolata cartilagineo-membranacea crassa purpurea ovato-lanceolata vel elliptico-obovata indivisa vel in laciniis pluribus palmatim partita costata nervisque suboppositis dichotomis peragrata, margine eroso vel crenulato, coccidiis hemisphaericis ore obliquo in sporophyllis propriis minutis e nervis lateralibus evolutis, tetrasporis minutis in soris oblongis parvis per laminam densissime sparsis. (TAB. CXIV., CXV.)

HAB. *Lyall's Bay, Cook's Straits, Foveaux Straits, and Otago, Lyall.*

Fronde 2 feet or more in length, 4–5 inches broad, ovato-lanceolate or elliptico-obovate, in our specimens much torn, the lacerations running obliquely from the margin to the midrib. *Apices* acute or subacute. Sometimes the frond is deeply palmatifid, the midrib branching, and one branch running through each segment. *Midrib* 1–2 lines wide, pinnated at distances of half an inch, with opposite (rarely alternate), thick, rib-like, erecto-patent, dichotomous veins, which are gradually obliterated towards the margin. *Margin* minutely eroso-dentate. *Conceptacles* on little obovate processes, 1–2 lines long, rising from the dichotomous veins, hemispherical, with an oblique, prominent orifice, and thick, cellular pericarp. *Nucleus* depressed-hemispherical, on a basal placenta; spore-threads dichotomous. *Tetraspores* in minute, oblong sori, scattered through the lamina near its base. *Colour* a splendid crimson-purple. *Substance* very thick, the surface cellules small.—The noblest of the genus.—PLATE CXIV., CXV. Fig. 1, plant, *natural size*; 2, small portion of the lamina, bearing sporophylla; 3, a young conceptacle; 4, an older conceptacle; 5, vertical section of a conceptacle; 6, section of the frond:—*all more or less magnified.*

2. *Delesseria nereifolia*, *Harv.*; fronde cartilagineo-membranacea elastica elliptico-oblonga vel lato-lineari obtusa costata et opposite pinnatim venosa demum foliolis e costa incrassata plus minus denudata erumpentibus composita, foliolis ovatis ellipticis oblongisve integerrimis costa dilatata percursis opposite venosis et venulis microscopicis reticulatim anastomosantibus creberrime peragratis, fructu . . . ?

HAB. On the beach, Preservation Harbour, West Coast, Middle Island, and east side of the Southern Island, *Lyall.*

Principal frond 6–8 inches long, 1 inch broad, linear-oblong, obtuse, with a strong cartilaginous midrib, which, after being denuded of its membrane, is changed into a stout, naked, simple stem. From the midrib of the primary frond spring, without order, numerous secondary fronds, 2–3 inches long, $\frac{1}{2}$ – $\frac{3}{4}$ of an inch wide, the youngest ovate or elliptical, the rest oblong or somewhat lanceolate. *Apices* mostly very blunt. *Leaves* very entire, flat, with broad, but not prominent, midribs, closely feathered with opposite, parallel, slender veinlets, between which the membrane is everywhere reticulated with microscopic, articulated veinlets, formed of cylindrical cells. *Colour* a rosy-purple. *Substance*, when fresh, “stiff and elastic.” In drying it adheres to paper.

A distinctly-characterized species, with a beautiful and remarkable cellular structure. The fruit being unknown, it may be doubtful whether it belongs to *Delesseria* or *Wormskioldia*, J. Ag.

3. *Delesseria quercifolia*, Bory, *Coq. p.* 186. *t.* 18. *f.* 1. *Hook. fil. et Harv. Fl. Ant. v. 2. p.* 471. *Harv. Ner. Austr. p.* 114. *t.* 46. *Kütz. Sp. Alg. p.* 878. *J. Ag. Sp. Alg. v. 2. p.* 692.

HAB. East Coast, lat. 43° S., *Lyall*. (Native of Falkland Islands and Cape Horn.)

4. *Delesseria Davisii*, Hook. fil. et Harv., *Fl. Ant. v. 2. p.* 470. *t.* 175. *Harv. Ner. Austr. p.* 115. *Kütz. Sp. Alg. p.* 878. *J. Ag. Sp. Alg. v. 2. p.* 689.

HAB. Ruapuke, Preservation Harbour, and Chalky Bay, *Lyall*. (Native of Cape Horn.)

This is much nearer *D. dichotoma* than we had supposed, if the New Zealand specimens, here noticed, be correctly referred.

5. *Delesseria dichotoma*, Hook. fil. et Harv., *Fl. Ant. v. 1. p.* 185. *t.* 71. *f.* 2. *Harv. Ner. Austr. p.* 115. *J. Ag. Sp. Alg. v. 2. p.* 682.

HAB. Ruapuke, and Chalky Bay, *Lyall*. (Native of Auckland Islands.)

6. *Delesseria pleurospora*, Harv.; fronde stipitata flabelliformi laciniata costa dichotoma apicem versus evanescente percursa, laciniis cuneatis dichotomis attenuatis acutis v. subobtusis patentibus, margine integerrimo, soris secus costam utrinque seriatis demum confluentibus lineari-elongatis.

HAB. Preservation Harbour, *Lyall*.

We offer this species with some doubt. It agrees with *D. dichotoma* in ramification, but is a smaller and narrower plant, and is especially characterized by having the *sori* disposed in a single series at each side of the midrib. If this character prove constant, it will be sufficient to keep it distinct.

7. *Delesseria oppositifolia*, Harv.; fronde lineari-lanceolata basi et apice attenuata costata demum foliolis oppositis e costa prorumpentibus pinnatim decomposita, foliolis lineari-lanceolatis acutis costa articulata trisiphonia percursis venisque pellucidis monosiphoniis oppositis e quoque geniculo costæ exeuntibus notatis.

HAB. South Harbour, Southern Island, rare, *Lyall*.

Our specimens are 1½ inch in height, the leaflets about ½ a line wide. The frond is regularly bi-tripinnate, the pinnæ and pinnulæ opposite, and horizontally patent. It is composed of simple, linear-lanceolate foliola, each opposite pair springing from the midrib of the older foliolum. The costæ of the larger leaves are cylindrical, and coated with small cellules; those of the smaller leaves are articulated, each articulation formed of three oblong, hexagonal, parallel cells. Colour a lake-red. No fruit seen.

8. *Delesseria crassinervia*, Mont., *Pôle Sud, p.* 164. *t.* 8. *f.* 1. *Hook. fil. et Harv. Fl. Ant. v. 1. p.* 184. *v. 2. p.* 471. *Harv. Ner. Austr. p.* 115. *J. Ag. Sp. Alg. v. 2. p.* 694.

HAB. Sandy Beach, Patterson's Inlet, East Coast, Southern Island, and Ruapuke, *Lyall*. (Native of Antarctic shores.)

The specimens of this species, formerly described, convey but an imperfect idea of its size and ramification. Some of the magnificent ones now sent by Dr. Lyall have a *main frond* or *rachis* 2 feet long, closely pinnated throughout with branches, each 6 or 8 inches in length. These branches emit leaflets, which are hypophyllously four to five times decomposed. Some of those from Ruapuke have *conceptacles* in the midribs of the smaller leaves. The costa in all is very broad.

9. *Delesseria ruscifolia*, Lamour. *Harv. Phyc. Brit. t.* 26. *Ner. Austr. p.* 115. *J. Ag. Sp. Alg. v. 2. p.* 695. *Fucus ruscifolius, Turn. Hist. t.* 15. *E. Bot. t.* 1395.

HAB. On the beach, Blind Bay, Cook's Straits, *Lyall*. (Native of Europe and South Africa.)

Very similar to the common European form.

10. *Delesseria Leprieurii*, Mont., *An. Sc. Nat. 2nd Ser. v. 13. p. 196. t. 5. f. 1. Harv. Ner. Austr. p. 116. J. Ag. Sp. Alg. v. 2. p. 682. Harv. Ner. Bor. Amer. pt. 2. p. 98. t. 22 C.*

HAB. Bay of Islands, *J. D. H.* (Native of Demerara, and estuaries of North American rivers, as far north as the Hudson, at West Point.)

Gen. LIV. HEMINEURA, *Harv.*

(*Ner. Austr. p. 116. Delesseria sp., J. Ag. Hypoglossi sp., Kütz.*)

1. *Hemineura cruenta*, Harv.; fronde pinnatifido-decomposita tenuissime membranacea rosea integerrima crispa, costa valida infra apicem obsoleta demum folifera, laciniis minoribus pinnatifidis patentibus acutis costula basi apiceque evanescente notatis.

HAB. Massacre Bay, Cook's Straits, *Lyall.*

Fronde tufted, 4–5 inches long, $\frac{1}{2}$ –1 inch broad, bi-tri-pinnatifid, the laciniæ narrow, the ultimate ones not more than a line in breadth, delicately membranaceous, crisped and waved. A strong midrib runs through the principal rachis of the frond, but without emitting lateral branches to the lobes. These lobes have slender midribs, which commence at the base of the lobe, and disappear nearly at its apex. The young marginal lobes are faintly costulate in a similar way. *Apices* acute, and margin quite entire.

In our specimens the midrib of the primary frond emits, in the upper part, very numerous, minute, lanceolate leaflets, which are perhaps afterwards developed into new fronds; if so, old plants must be very dense and intricate. We have seen no fruit.

Gen. LV. NITOPHYLLUM, *Grev.*

(*Grev. Alg. Brit. p. 77. Harv. Ner. Austr. p. 118. J. Ag. Sp. Alg. p. 651. Aglaophyllum, Mont., D'Orb. Voy. p. 33. Endl. 3rd Suppl. p. 52. Aglaophyllum, Schizoglossum, et Cryptopleura, Kütz. Sp. Alg.*)

1. *Nitophyllum D'Urvillæi*, *J. Ag., Sp. Alg. v. 2. p. 666. Dawsonia D'Urvillæi, Bory, Coq. t. 19. f. 1. Aglaophyllum D'Urvillæi, Mont.! Bonite, p. 111.*

HAB. Ruapuke, Foveaux Straits, *Lyall.* (Native of Chili.)

Dr. Lyall's specimens agree very well with the specific character, and also, except in size, with a specimen received from Dr. Montagne. They are about 10 inches long, the stipes nearly 3 inches before it branches, and strongly costate. The lamina is palmato-dichotomous, the segments linear, subcuneate, the lower ones crisped at the margin, the upper slightly undulate, the terminal lobes linear-oblong, and very obtuse. The costa of the stipes divides into several branches, one of which is directed to each of the principal lobes of the frond, and is continued upwards until it is gradually explanated and lost near the apex. *Tetraspores* in minute, dot-like sori, aggregated in the upper lobes, over which they are thickly scattered.—The habit of this species is very similar to that of *Botryoglossum platycarpum*.

2. *Nitophyllum palmatum*; stipite elongato cuneato medio incrassato basi vix subcostato in laminam palmatifidam aveniam (venulis microscopicis tenuissimis nihilominus percursam) crassiusculam sensim dilatato, laciniis majoribus cuneatis dichotome palmatis, minoribus lato-linearibus obtusis margine integerrimis erectis, sinibus angustis, coccidiis sparsis, soris oblongis per lacinias superiores densissime longitudinaliter seriatis vel sparsis.

Var. β . *marginatum*; margine foliifero.

Var. γ ? *membranaceum*; fronde tenuiore roseo-sanguinea.

Var. δ ?? *pinnatifidum*; laciniis plus minus pinnatifidis, sinibus latioribus rotundatis.

Var. ϵ ?? *crispatum*; præcedente simile, nisi laciniis omnibus crispatissimis.

HAB. East Coast, *Lyall*, *Colenso*, apparently common. Vars. β and γ , in the same locality, *Lyall*. Vars. δ and ϵ . Foveaux Straits and Port Cooper, *Lyall*.

Fronde 6–8 inches long, or more. *Stipes* broadly cuneate, 1–2 inches long, thickened in the middle, but not ribbed. *Lamina* vertically cleft into numerous linear-cuneate, very erect segments, with very narrow axils. Smaller *laciniae* linear-oblong, obtuse, flat, and even. *Substance* thickish. *Colour* when dry a dull brownish-red. *Conceptacles* abundantly scattered through the upper segments. *Sori* oblong, often elongate, generally disposed in longitudinal, interrupted lines, closely covering the surface of the lamina for an inch or two below the summit, and continued in the lower part within the margin, sometimes scattered. Such is our var. α , the common form, which bears a strong resemblance in aspect to *Rhodymenia palmata*. Var. γ is of much thinner substance and brighter colour, and may perhaps prove to be a distinct species. Vars. δ and ϵ have the lobes pinnatifid and the axils obtuse, and it is not without hesitation that we refer them to this species.

3. *Nitophyllum variolosum*, Harv.; stipite cuneato basi incrassato mox in laminam aveniam dichotome vel palmatim partitam abeunte, laciniis decomposite multifidis superioribus angustioribus sæpius processibus ciliiformibus marginatis aspergatisque, axillis patentibus apicibusque obtusis, soris sparsis sub-hemisphærico-convexis tetrasporas paucas triangule divisas foventibus.

HAB. Port Cooper, Banks' Peninsula, *Lyall*. East Coast, *Colenso*.

Fronde 2–3 inches high, slightly stipitate, irregularly multifid. Upper *laciniae* very narrow, and repeatedly dichotomous. Sometimes multifid *lacinulae* issue from the sides, as well as the ends, of the upper segments, and then the frond becomes very intricately divided. In such specimens especially the upper lobes are sprinkled over and margined with ciliiform, gland-like, or root-like processes. *Sori* thickened into pimple-like tubercles, very convex, containing few tetraspores.—Seemingly a distinct species; readily known when in fruit.

4. *Nitophyllum denticulatum*, Harv.; stipite cuneato costa mox evanescente aut supra productiore ramosa percurso in lamina sæpius avenia flabelliformi plus minus dichotoma abeunte, lamina nunc subdivisa vel parum lobata nunc profunde partita, margine sæpissime eroso-denticulata crispata, apicibus obtusis, coccidiis sparsis, soris ovatis oblongisve numerosissimis per totam frondem sparsis.

Var. β ; fronde sessili ovata vel suborbiculari, margine pinnatifido eroso-denticulato.

Var. γ ; fronde dichotoma denticulata crispata.

Var. δ ?; fronde dichotoma, margine integerrimo undato-crispato.

HAB. Blind Bay, Cook's Straits, and East Coast, *Lyall*. Maketu, *Chapman*. Tauranga, *Davies*.

This resembles *N. Bonnemaisoni* in habit, but is almost always denticulate at the margin.

5. *Nitophyllum multinerve*, Hook. fil. et Harv., *Fl. Ant. v. 2. p. 473*. *Hart. Ner. Austr. p. 119*. *J. Ag. Sp. Alg. p. 666*. *Cryptopleura multinervis*, *Kütz. Sp. Alg. p. 870*.

HAB. Massacre Bay, Cook's Straits, Chalky Bay, Middle Island, and east side of Southern Island, *Lyall*. (Native of Falkland Islands.)

6. *Nitophyllum minus*, Sond.; dense cæspitosa, pusilla, fronde sessili e basi dichotomo-pinnata, segmentis linearibus angustis divaricato-patentibus obtusis multiidis, axillis omnibus latis, soris terminalibus solitariis oblongis vel orbiculatis.—*Cryptopleura minor*, *Sond. in Preiss. Pl. v. 2. p. 194*. *Harv. Ner. Austr. p. 119*. *J. Ag. Sp. Alg. v. 2. p. 655*.

HAB. Parasitical on various Algae. East Coast, *Colenso*. Tauranga, *Davies*. (Native of New Holland.)

Mr. Colenso's specimens are very similar to one communicated by M. Sonder. Mr. Davies's are twice as broad, but in other respects the same.

7. *Nitophyllum uncinatum*, J. Ag., *Sp. Alg. v. 2. p. 654*?

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HAB. Blind Bay, Cook's Straits, *Lyall*. (Native of Europe.)

Our specimens are not in fruit, but have the habit of the European *N. uncinatum*.

8. *Nitophyllum*? *suborbiculare*, Harv.; fronde pusilla subsessili rotundata indivisa, margine integerrimo vel crenato-lobato, cystocarpis sorisque per totam frondem dense conspersis.

HAB. Parasitical on *Carpophyllum Maschalocarpus*. Blind Bay, Cook's Straits, *Lyall*. Hawke's Bay, *Colenso*.

Fronde with a very minute setaceous stipes, or subsessile, suddenly expanding into a roundish, delicately membranaceous, entire lamina, about 1 inch in diameter, and of a bright rosy-red colour. *Lamina* composed of a single layer of irregularly angular cells, of moderate size. *Conceptacles* scattered over the surface, prominent on both sides, depressed, spheroidal, with thick walls composed of several rows of cells in radiating lines. *Nucleus* not perfectly seen in the few cuttings made. *Tetraspores* formed in slightly thickened, depressed, wart-like sori scattered over the surface.

We are not quite certain of the genus of this plant, the nucleus requiring a careful re-examination, when more specimens shall have been obtained. Should it have the structure of the *Rhodymeniaceæ*, as we half suspect, the genus may be called *Abroteia*.

Gen. LVI. SARCODIA, *J. Ag.*

(*J. Ag. Sp. Alg. ii. 622. Rhodymenia* sp., Hook. et Harv.)

1. *Sarcodia Montagneana*, *J. Ag., Sp. Alg. v. 2. p. 623.* *Rhodymenia Montagneana*, *Hook. fil. et Harv. in Lond. J. Bot. v. 4. p. 544. Harv. Ner. Austr. t. 48. Rhodophyllis Montagneana, Kütz. Sp. Alg. p. 787.*

HAB. Bay of Islands, *J. D. H., Lyall*.

A very distinct genus, with a curious and beautiful structure of frond.

Gen. LVII. PHACELOCARPUS, *Endl. et Dies.*

(*Endl. et Dies. Bot. Zeit. 1845, p. 290. J. Ag. Sp. Alg. ii. 646. Ctenodus, Kütz. Phyc. Gen. p. 407.*)

1. *Phacelocarpus Labillardieri*, *J. Ag., Sp. Alg. v. 2. p. 648.* *Ctenodus Labillardieri, Kütz. Phyc. Gen. p. 407. t. 58. f. 2. Hook. fil. et Harv. in Lond. J. Bot. v. 4. p. 549. Fucus Labillardieri, Mert. in Turn. Hist. t. 137.*

HAB. Common, *Sinclair, Lyall, Colenso, etc.* (Native of New Holland.)

Gen. LVIII. MELANTHALIA, *Mont.*

(*Mont. An. Sc. Nat. 1843. Kütz. Sp. Alg. p. 784. J. Ag. Sp. Alg. ii. 611.*)

1. *Melanthalia abscissa*, *Hook. fil. et Harv., Lond. J. Bot. v. 4. p. 548. J. Ag. Sp. Alg. v. 2. p. 613.* *Fucus abscissus, Turn. Hist. t. 223. Chondrococcus abscissus, Kütz. Sp. Alg. p. 752.*

HAB. New Zealand, *Banks*.

2. *Melanthalia Jaubertiana*, *Mont., Pl. Cell. Exot. v. 4. p. 36. J. Ag. Sp. Alg. v. 2. p. 613. Hook. fil. et Harv. in Lond. J. Bot. v. 4. p. 548. Kütz. Sp. Alg. p. 784.*

HAB. Abundant in several localities, *Sinclair, J. D. H., Lyall, Colenso, etc.* (Native of Tasmania.)

We retain this species in deference to the opinions of Dr. Montagne and Professor J. Agardh, although unable to point out a character by which it can be distinguished from *M. abscissa*, of which we consider *M. Jaubertiana* to be only a more developed form.

Gen. LIX. GRACILARIA, *Grev.*

(*Grev. Alg. Brit.* p. 121. *J. Ag. Sp. Alg.* ii. 584. *Plocaria*, *Endl.* 3rd Suppl. p. 50. *Sphærococci* sp., *Kütz.*)

1. *Gracilaria confervoides*, *Grev.*, *Alg. Brit.* p. 123. *Harv. Phyc. Brit.* t. 65. *J. Ag. Sp. Alg.* v. 2. p. 587. *Fucus confervoides*, *Turn. Hist.* t. 84. *E. Bot.* t. 1668, etc.

HAB. Otago and Ruapuke, *Lyall.* Hawke's Bay, *Colenso.* Tauranga, *Davies.* (Native of temperate and tropical oceans.)

2. *Gracilaria multipartita*, var. *polycarpa*, *Grev.*, *Harv. Phyc. Brit.* t. 15. *J. Ag. Sp. Alg.* v. 2. p. 600. *Sphærococcus polycarpus*, *Grev. Crypt. Scot.* t. 352. *Fucus granateus*, *Turn. Hist.* t. 215.

HAB. Blind Bay, Cook's Straits, *Lyall.* (Native of temperate and tropical oceans. Rare in England.)

3. *Gracilaria coriacea*, *Harv.*; stipite brevi mox cuneato in frondem planam carnosu-coriaceam dichotomo-flabelliformem desinente, laciniiis cuneatis dichotomis vel vage fissis margineque nonnunquam folioliferis, axillis rotundatis apicibusque obtusis, conceptaculis numerosissimis per frondem sparsis depresso-hemisphæricis semi-immersis umbilicatis poro magno pertusis.—*Rhodymenia?* *coriacea*, *Hook. fil. et Harv. in Lond. J. Bot.* v. 4. p. 545.

HAB. *Lyall's Bay*, Cook's Straits, and Bay of Islands, *Lyall.*

This resembles *G. multipartita* in habit, but is very much thicker, more coriaceous, and minutely wrinkled when dry. The conceptacles are deeply sunk in the frond, much depressed or umbilicate at the apex, with a small, basal placenta, from which rise innumerable spore-threads. These, in our specimens, break up into innumerable minute spores, more like those of a *Rhodymenia* than of a *Gracilaria*, but we suspect that they are immature or abortive.

Gen. LX. CALLIBLEPHARIS, *Kütz.*

(*Kütz. Phyc. Gen.* p. 403. *Sp. Alg.* p. 755. *J. Ag. Sp. Alg.* ii. 618. *Rhodymenia* sp., *Grev. et Auct.*)

1. *Calliblepharis? tenuifolia*, *Harv.*; fronde tenuissime membranacea rosea dichotomo-pinnata et e margine foliifera, laciniiis basi maxime attenuatis oblongo-lanceolatis nunc subciliato-dentatis, coccidiis . . . tetrasporis (zonatim divisis) sparsis.

HAB. Chalky Bay, *Lyall.*

Frond 6–8 inches long, 1 inch broad, with the aspect of *C. ciliata*, but very much thinner in substance, and brighter in colour. *Tetraspores* scattered through all the laciniaë, zonate.—The genus of this plant cannot be certainly ascertained till the conceptacles shall have been discovered. It may possibly be a *Rhodophyllis*.

TRIBE VI. GELIDIACEÆ.

Gen. LXI. GELIDIUM, *Lamour.*

(*J. Ag. Sp. Alg.* ii. 466. *Gelidium*, *Auct. excl. sp.*)

1. *Gelidium corneum*, *Lamour.*, *Harv. Phyc. Brit.* t. 53. *J. Ag. Sp. Alg.* v. 2. p. 469. *Kütz. Sp. Alg.* p. 764. *Fucus corneus*, *Huds.*, *Turn. Hist.* t. 257. *E. Bot.* t. 1970, etc.

HAB. Hawke's Bay, *Colenso.* Banks' Peninsula, *Lyall.* (Generally diffused.)

Besides an ordinary form, the var. *clavatum*, *Grev. (cæspitosum, J. Ag.)*, is sent by Mr. *Colenso* from Cape Kidnapper, and another variety, growing on mussel-shells, from several localities, by Messrs. *Colenso*, *Chapman*, and *Davies*. This latter variety, which at first we felt disposed to keep distinct, may be called *subulifolium*. It is 1–2 inches high, nearly or quite terete, as thick as hog's-bristle, and closely pinnate throughout; the lowest pinnæ short and simple, the upper longer and compound. All the pinnules acute and thorn-like, mostly opposite. Colour dark, lurid-purple.

2. *Gelidium asperum*, Grev., *Kütz. Sp. Alg. p. 475. J. Ag. Sp. Alg. v. 2. p. 475.*
 HAB. New Zealand, *Baume, fide J. Ag. l. c.* (New Holland.)

Gen. LXII. PTEROCLADIA, *J. Ag.*

(*J. Ag. Sp. Alg. ii. 482. Gelidii sp., Auct.*)

1. *Pterocladia lucida*, *J. Ag., Sp. Alg. v. 2. p. 483. Gelidium lucidum, Sond. Pl. Preiss. v. 2. p. 174. Hook. fil. et Harv. in Lond. J. Bot. v. 4. p. 549. Kütz. Sp. Alg. p. 763. Fucus lucidus, Br. in Turn. Hist. t. 238.*

HAB. Very abundant. (Native of New Holland.)

A most variable plant, sporting quite as much as *Gelidium corneum*. *Pterocladia* is only to be known from *Gelidium* by the structure of the conceptacle. In external habit, and in the structure of the frond, there is a close resemblance.

Gen. LXIII. HYPNEA, *Lamour.*

(*J. Ag. Sp. Alg. ii. 438. Kütz. Sp. Alg. p. 758, etc.*)

1. *Hypnea musciformis*, *Lamour. J. Ag. Sp. Alg. v. 2. p. 442. Kütz. Sp. Alg. p. 758. Fucus musciformis, Wulf. Turn. Hist. t. 127.*

HAB. New Zealand, *Banks.* (Native of tropical and sub-tropical seas.)

We have not seen any New Zealand specimens of this plant.

Gen. LXIV. CAULACANTHUS, *Kütz.*

(*Kütz. Phyc. Gen. p. 395. Sp. Alg. p. 753. J. Ag. Sp. Alg. ii. 432. Olivia, Mont. Fl. Alg. p. 126.*)

1. *Caulacanthus spinellus*, *Kütz., Sp. Alg. p. 753. J. Ag. Sp. Alg. p. 434. Rhodomela? spinella, Hook. fil. et Harv. in Lond. J. Bot. v. 4. p. 534. Harv. Ner. Austr. p. 36.*

HAB. On corallines, mussel-shells, etc. Common, *Colenso.*

We formerly misunderstood the affinities of this little plant, which is a true species of *Caulacanthus*.

TRIBE VII. CHÆTANGIÆ.

Gen. LXV. APOPHLŒA, *Harv.*

(*Harv. in Lond. J. Bot. iv. 549. Kütz. Sp. Alg. p. 795. J. Ag. Sp. Alg. ii. 457.*)

1. *Apophlœa Sinclairii*, *Harv., Lond. J. Bot. v. 4. p. 550. Kütz. Sp. Alg. p. 795. J. Ag. Sp. Alg. v. 2. p. 548. (TAB. CXVI. B.)*

HAB. New Zealand, *Sinclair, Wilkes, Colenso.*

PLATE CXVI. B. Fig. 1, plant, attached to a stone; 2, cross section of a minute portion of the frond; 3, tetraspore-cavity from the same; 4, tetraspores; 5, peripheric filaments of the frond:—*more or less highly magnified.*

2. *Apophlœa Lyallii*, *Hook. fil. et Harv.*; fronde stipitata flabelliformi fastigiata dichotome ramosissima, ramis pluries furcatis flexuosis patentibus crassissimis, axillis rotundatis apicibusque obtusis, strato corticali madefacto persistente. (TAB. CXVI. A.)

Var. β . *gigartinoides*; fronde minori omnibus partibus dimidio graciliori, cæterum simillima.

HAB. On rocks, Preservation Harbour, Middle Island; and var. β at Otago, *Lyall.*

Fronde, in var. α , 5–6 inches long, with a slender stipes, which gradually increases in diameter upwards, forks about an inch above the base, and then attains from $1\frac{1}{2}$ –2 lines in diameter. It afterwards forks eight or nine times, the diameter remaining nearly the same, until at the final furcations it rapidly diminishes. *Axils* all rounded, and

apices obtuse. *Tetraspores* attached to the walls of cavities hollowed out of the cortical layer of the branches, over which they are abundantly scattered. The structure of the frond is similar to that of *A. Sinclairii*, but the cortical layer does not effloresce on immersion in fresh water, after having been dried.—PLATE CXVI. *A.* Fig. 1, plant, and 2, the same, var. β , both of the natural size; 3, cross section of a minute portion of the frond, with the immersed tetraspore-cavities; 4, tetraspores:—both highly magnified.

TRIBE VIII. *SQUAMARIEÆ*.

Gen. LXVI. PEYSSONNELIA, *Dcne.*

(*Dcne. Pl. Arab.* p. 168. *J. Ag. Alg. Medit.* p. 92; *Sp. Alg.* ii. 499. *Kütz. Sp. Alg.* p. 695. *Harv. Phyc. Brit.*)

1. *Peyssonnelia rugosa*, *Harv.*; fronde arcuissime adnata expansa orbiculari intense rubro-fusca, superficie rugosissima.

HAB. On the surface of sand-covered rocks, Cape Kidnapper, *Colenso.*

Fronde 1–2 inches broad, attached by the whole of the under surface, more or less orbicular, the upper surface wrinkled all over without regularity. *Colour* a very dark reddish-brown. *Substance* membranaceo-coriaceous, thicker than in *P. DUBYI*.—We have not seen fruit, but the structure of the frond is the same as in others of this genus.

TRIBE IX. *HELMINTHOCLADIEÆ*.

Gen. LXVII. NEMALION, *Duby.*

(*Duby, Bot. Gall.* p. 959. *J. Ag. Sp. Alg.* ii. 417. *Kütz. Sp. Alg.* p. 712, etc.)

1. *Nemalion ramulosum*, *Harv.*; fronde vermiformi compressa (2–3 lineas lata) quaquaversum ramosa vel subdichotoma, ramis crebris inæquilongis patentissimis simplicibus furcatisve iterum ramulosis, apicibus obtusis.

HAB. Otea, *Lyall.*

Fronde 6 inches long, 2–3 lines wide, compressed, once or twice forked, and densely set with lateral branches and ramuli, spreading irregularly to every side. *Branches* of very unequal lengths, long and short intermixed; in our specimens 1–2 inches long, horizontally spreading, obtuse, simple, or set with lateral ramuli, their ends often divaricately forked. *Axis* composed of densely interwoven, slender filaments; *periphery* of elongated, dichotomous filaments. *Fruit* unknown.—This appears a well-marked species, but probably varies much in ramification. We have seen very few specimens.

Gen. LXVIII. SCINAIA, *Bivona.*

(*Bivona, in L'Iride, 1822.* *J. Ag. Sp. Alg.* ii. 420. *Ginannia, Mont. Canar.* p. 162. *Endl. 3rd Suppl.* p. 40. *Harv. Phyc. Brit.* t. 69. *Kütz. Sp. Alg.* p. 715, etc.)

1. *Scinaia furcellata*, *Bivona.* *J. Ag. Sp. Alg.* v. 2. p. 422. *Ginannia furcellata, Mont. Harv. Phyc. Brit.* t. 69. *Hook. fil. et Harv. in Lond. J. Bot.* v. 4. p. 548. *Ulva furcellata, E. Bot.* t. 1881.

HAB. East Coast, *Cunningham.* (Native of temperate and subtropical seas.)

TRIBE X. *RHODYMENIACEÆ*.

Gen. LXIX. PLOCAMIUM, *Lamour.*

(*Harv. Fl. Ant.* p. 186. *Ner. Austr.* p. 121. *J. Ag. Sp. Alg.* ii. 392. *Plocamium, Thamnophora, et Thamnocarpus, Kütz. Sp. Alg.* p. 883.)

1. *Plocamium coccineum*, *Lyngb., Hyd. Dan.* p. 39. t. 9. *Harv. Phyc. Brit.* t. 44. *Hook. fil. et*
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Harv. Fl. Ant. v. 1. p. 186, v. 2. p. 474. J. Ag. Sp. Alg. v. 2. p. 395. Kütz. Sp. Alg. p. 883. Fucus coccineus, Huds. Turn. Hist. t. 59. E. Bot. t. 1242.

HAB. Common all round the coast; many varieties. (Atlantic, Pacific, and Antarctic seas. Very rare on east coast of North America.)

2. *Plocamium costatum*, Hook. fil. et Harv., *Alg. Tasm. in Lond. J. Bot. v. 6. p. 404. Harv. Ner. Austr. p. 122. Kütz. Sp. Alg. p. 886. J. Ag. Sp. Alg. v. 2. p. 403. Thamnophora costata, J. Ag. in Linnæa xv. p. 10. T. Cunninghamii, Grev.*

HAB. Bay of Islands, etc., common. (New Holland and Tasmania.)

3. *Plocamium procerum*, Hook. fil. et Harv., *Lond. J. Bot. v. 4. p. 542. Ner. Austr. p. 122. Thamnophora procera, J. Ag. in Linn. xv. p. 10.*

HAB. New Zealand, *Lyall.* (New Holland.)

4. *Plocamium corallorhiza*, Hook. fil. et Harv., *Lond. J. Bot. v. 4. p. 542. Harv. Ner. Austr. p. 121. J. Ag. Sp. Alg. v. 2. p. 402. Thamnophora corallorhiza, Ag. Sp. p. 225. Fucus corallorhiza et F. cirrhosus, Turn. Hist. tt. 96, 63.*

HAB. Dusky Bay, *Forster.* (Native of Cape of Good Hope.)

This locality requires verification.

5. *Plocamium angustum*, Hook. fil. et Harv. *in Lond. J. Bot. v. 6. p. 404. Harv. Ner. Austr. p. 122. Kütz. Sp. Alg. p. 885. J. Ag. Sp. Alg. v. 2. p. 402. Thamnophora angusta, J. Ag. in Linn. xv. p. 10.*

HAB. New Zealand, common, *Colenso, etc.* (Native of New Holland.)

6. *Plocamium abnorme*, Hook. fil. et Harv., *Lond. J. Bot. v. 4. p. 543. J. Ag. Sp. Alg. v. 2. p. 401. Harv. Ner. Austr. p. 123.*

HAB. Bay of Islands, *Lyall, J. D. H. Maketu, Chapman.*

7. *Plocamium cruciferum*, Harv.; fronde costata angusta pectinato-pinnata, pinnis alterne geminis, inferiore laciniisque superioris lineari-subulatis parum acutis integerrimis, sporophyllis axillaribus pedicellatis tri-multilobatis cruciformibus vel palmatifidis lobis brevissimis oblongisve, tetrasporis numerosissimis.

HAB. East Coast, *Colenso.*

Scarcely to be known from *P. angustum*, except by the difference in the *sporophylla*, which here resemble compositions of Greek foliated crosses or trefoils; sometimes, by excessive division, multiradiate. The lobes are short, and the whole stichidium generally crowded with large tetraspores. Our New Zealand specimens of *P. angustum* have sporophylla similar to those found on the original Tasmanian ones, and are larger than the present plant, with shorter, more deltoid, and more acute ramuli.

8. *Plocamium dispernum*, Harv.; fronde costata angusta pectinato-pinnata decomposita subflabelliformi, pinnis alterne geminis, inferiore laciniisque superioris anguste subulatis acutis integerrimis, sporophyllis axillaribus minutissimis decomposite ramosis ramis petiolatis ovatis oblongisve tetrasporas binas foventibus, coccidiis supra-axillaribus sessilibus sparsis.

HAB. Foveaux Straits, and Lyall's Bay, Cook's Straits, *Lyall.* East Coast, *Colenso.*

Fronde 6-12 inches long, $\frac{1}{4}$ a line broad, stipitate, afterwards decompose, closely pectinato-pinnate, more or less flabelliform. In the shape of the ramuli it resembles *P. angustum*, but the habit is different, and the form of the sporophylla quite peculiar; each ovate, pedicellate lobe rarely containing more than two tetraspores, which are of such large size as to fill the lobule. The ramification is most like that of *P. abnorme*, but the fruit is very different.

Gen. LXX. RHODOPHYLLIS, *Kütz.*

(Kütz. Sp. Alg. p. 786. J. Ag. Sp. Alg. ii. 387. *Stictophyllum*, Kütz. Sp. Alg. 874. *Euthora* sp., J. Ag. l. c. p. 385.)

1. *Rhodophyllis Gunnii*, Harv.; fronde tenui-membranacea rosea decomposita pinnatifida, laciniis alternis subbipinnatifidis crebris, lacinulis crenato-dentatis, axillis rotundatis apicibusque obtusis, coccidiis sphaericis marginalibus, tetrasporis zonatim partitis prope apices laciniarum sparsis.—*Cladhymenia*? *Gunnii*, Harv. Lond. J. Bot. v. 4. p. 540. Harv. Ner. Austr. p. 87. t. 32. *Callophyllis Gunnii*, Kütz. Sp. Alg. p. 746. *Euthora Gunnii*, J. Ag. Sp. Alg. v. 2. p. 386.

HAB. Dredged in fifteen fathoms, at Preservation Harbour, and found on the sandy beach at Chalky Bay, West Coast, *Lyall*. (Native of Tasmania.)

Dr. Lyall's specimens, with both descriptions of fruit, are very similar to those sent by Mr. Gunn from Tasmania. The tetraspores are zonate, and not tripartite, as incorrectly shown in the plate in 'Nereis Australis.'

2. *Rhodophyllis membranacea*, Hook. fil. et Harv.; fronde tenui-membranacea rubra (siccitate fusciscenti) punctis rubris minutissimis densissime conspersa decomposita pinnatifida et sæpe prolifero-fimbriata, laciniis alternis primariis latis secundariis angustis, lacinulis profunde lobatis pinnatifidisve, ultimis lineari-oblongis subacutis basi angustatis, axillis rotundatis, coccidiis sphaericis marginalibus, tetrasporis zonatim partitis prope apices laciniarum sparsis.—*Halymenia*? *membranacea*, Harv. in Lond. J. Bot. v. 4. p. 448. *Rhodymenia membranacea*, Harv. l. c. v. 6. p. 405. *Stictophyllum membranaceum*, Kütz. Sp. Alg. p. 874. *Euthora membranacea*, J. Ag. Sp. Alg. v. 2. p. 385. (TAB. CXVII.)

HAB. Cook's Straits, *Lyall*. East Coast, *Colenso*. (Native of Tasmania.)

Nearly related to the preceding, but with narrower segments and a more ragged habit, and a very fugacious colour. Under a lens the whole frond appears closely dotted with dark red specks, which we formerly mistook for tetraspores. The true tetraspores are confined to the ultimate laciniae, and are zonate. Our present specimens are well furnished with fruit of both kinds.—PLATE CXVII. Fig. 1, plant, *natural size*; 2, vertical section of a conceptacle; 3, spore-threads from the same; 4, apex of a lacinia, with scattered tetraspores; 5, a tetraspore:—*all more or less highly magnified*.

3. *Rhodophyllis*? *angustifrons*, Harv.; dense cæspitosa, intense rubra, fronde angustissima lineari e basi dichotomo-decomposita, laciniis divaricatis sæpe dichotomis nunc tri-multifidis, axillis rotundatis, apicibus acutis v. obtusis, fructu . . . ?

Var. β ; duplo angustior, apicibus omnibus acutissimis.

HAB. Port Nicholson and Bluff Harbour, *Lyall*.

Fronde densely tufted, 2–3 inches high, excessively branched from the base, dichotomous or irregularly partite; the laciniae from $\frac{1}{4}$ line to a line, rarely more in breadth, preserving nearly the same width throughout, or slightly widening upwards, widely spreading, the terminal ones frequently secund. *Apices* either blunt or acute. *Substance* membr. naceous, adhering to paper.—The genus to which this plant should be referred cannot be ascertained till the fruit be discovered.

4. *Rhodophyllis*? *lacerata*, Harv.; stipite cartilaginea filiformi brevi mox complauato et in basi frondis desinente, lamina tenuissime membranacea rosea subdichotoma, laciniis primariis latis secundariis sensim angustatis dichotomo-multifidis, ultimis elongatis attenuatis acutis fere subulatis hic illic parcissime denticulatis, fructu . . . ?

HAB. On rocks at Port William, *Lyall*. (A single specimen.)

We do not like to found species on single specimens, and yet are unwilling to omit some notice of this plant, which can hardly be referred to the preceding; and we are unable to point to any nearer relationship.

Gen. LXXI. RHODYMENIA, *Grev. ref.*

(Grev. Alg. Brit. p. 84 (ref.). J. Ag. Sp. Alg. ii. 375.)

1. *Rhodymenia sanguinea*, Harv.; stipite tereti brevi mox cuneato-applanato et in basi frondis abeunte, fronde purpureo-sanguinea palmato-dichotoma profunde laciniata, laciniis latis angustisve cuneatis apice attenuatis margine simplici vel foliifero, foliolis cuneatis, axillis rotundatis, cystocarpis hemisphæricis numerosissimis per totam frondem tetrasporisque per lacinias minores densissime sparsis.

HAB. Foveaux Straits, *Lyall*.

Fronde rising for half an inch, with a cylindrical stipes, which then flattens into the cuneate base of the lamina, sometimes an inch, sometimes 2–3 inches to the first fork. *Fronde* 12–14 inches long, as much or more in the expansion of the laciniæ, deeply divided; laciniæ from half an inch to one or two inches broad, cuneate, attenuated to the apex. Sometimes the apices are truncate, and then frequently foliiferous; the leaflets cuneate, either truncate or pointed; margin entire or foliiferous. *Conceptacles* very numerous, hemispherical, scattered over the whole frond; nucleus often partially barren. *Tetraspores* tripartite, densely scattered over the lesser laciniæ and the accessory leaflets. *Colour* a fine purplish blood-red. *Substance* firmly membranaceous, thickish.

2. *Rhodymenia lanceolata*, Harv.; fronde (vix nota) . . . in lacinias lanceolatas elongatas basi et apice acutas integerrimas partita, cystocarpis tetrasporisque per totam frondem densissime sparsis.

HAB. Port Cooper, Banks' Peninsula, *Lyall*.

We have only seen imperfect specimens of this seemingly distinct species. It may possibly be only a variety of the preceding, but the substance is softer, and the cortical layer more developed. *Laciniæ* 6–8 inches long, quite simple, $\frac{1}{2}$ an inch to an inch broad, tapering, but not considerably, to the base and the acute apex. *Colour* a purplish blood-red.

3. *Rhodymenia epymenioides*, Harv.; stipite brevissimo cartilagineo in frondis costa mox evanescente prolongato, fronde tenui-membranacea rosea dichotoma flabelliformi basi cuneata costata, laciniis cuneato-linearibus patentibus obtusis rotundatis v. marginatis, fructu . . . ?

HAB. On stems of *Ascidia*, Otago Harbour, *Lyall*.

Stipes $\frac{1}{2}$ inch long, cartilaginous, prolonged as an evanescent rib, into the cuneate base of the many times dichotomous, flabelliform frond. *Laciniæ* $\frac{1}{2}$ inch wide, linear or somewhat cuneate, very obtuse, the axils sometimes rounded, sometimes subacute. *Colour* rosy-red. *Substance* delicately membranous, thin, adhering to paper. *Cells* of the medullary stratum large, thin-walled, rapidly expanding when moistened.—It is difficult, by a character, to distinguish this plant from *R. dichotoma*, but the microscopic appearance is different. Here the cells rapidly expand when a thin slice is moistened, whilst they are opened with much difficulty in *R. dichotoma*. Our present plant strongly resembles *Epymenia obtusa*, but the substance is thinner, and the structure different. *Fruit* unknown.

4. *Rhodymenia corallina*, Grev. *Hook. fil. et Harv. Fl. Ant. v. 2. p. 475. Mont. Voy. Pôle Sud, p. 155. J. Ag. Sp. Alg. v. 2. p. 379. Sphærococcus corallinus, Bory, Voy. Coq. p. 175. t. 16. Rich. Voy. Astr. N. Zeal. p. 3.*

HAB. D'Urville Island, Cook's Straits, and East Coast, lat. 43°, *Lyall*. (Native of Chili.)

Our specimens are without fruit, and more densely tufted than usual.

5. *Rhodymenia dichotoma*, Hook. fil. et Harv., *Fl. Ant. v. 1. p. 186. t. 72. f. 1. Callophyllis dichotoma, Kütz. Sp. Alg. p. 746.*

HAB. Dredged in eight fathoms, Queen Charlotte's Sound, *Lyall*. (Native of the Auckland Islands.)

6. *Rhodymenia linearis*, J. Ag., *Sp. Alg. v. 2. p. 379. R. Palmetta, Hook. fil. et Harv. Lond. J. Bot. v. 7. p. 444. (nec Ag.)*

HAB. East Coast, *Colenso*. Otago, *Lyall*. Auckland Islands, *Turnbull*. (Native of South Africa?)

This is only to be known from *B. Palmetta* by the apiculated conceptacles, scattered over the laciniae. The first specimens we received were without fruit, and we mistook them. Mr. Colenso has recently sent us fruiting specimens. The sori of tetraspores are terminal, as in *B. Palmetta*, and the individuals that bear them are broader and less compound than the others.

7. *Rhodymenia prolifera*, Harv.; stipite brevi mox in basi cuneata frondis desinente, lamina dichotoma, laciniis patentibus linearibus vel subcuneatis parum divisis apice proliferis, foliolis linearibus subacutis basi attenuatis simplicibus vel furcatis sæpe pedicellatis, cystocarpis hemisphæricis sparsis, soris indefinitis ab apice attenuato remotis.

HAB. Hawke's Bay, *Colenso*.

Allied to *P. linearis*, but larger, of thicker substance, with differently placed tetraspores and generally prolific; the foliations stipitate, simple or forked. *Fronde* 4–8 inches long, distantly forked; the axils rounded; the laciniae from $\frac{1}{4}$ inch to nearly 1 inch wide in the widest part. *Colour*, when dry, a dull brownish-red.

TRIBE XI. CRYPTONEMIACEÆ.

Gen. LXXII. STENOGRAMMA, Harv.

(Harv. Bot. Beechey Voy. p. 408. Phyc. Brit. t. 157. Mont. in Duch. Rev. Bot. p. 481. Kütz. Sp. Alg. p. 873. J. Ag. Sp. Alg. ii. 390.)

1. *Stenogramma interrupta*, Mont. in Duch. Rev. Bot. 1846, p. 483. Harv. Phyc. Brit. t. 157. Kütz. Sp. Alg. p. 873. J. Ag. Sp. Alg. v. 2. p. 391. S. California, Harv. Beechey, p. 408. Kütz. Sp. p. 874. *Delesseria interrupta*, Ag. Syst. p. 250. Mont. in Webb. Ot. Hisp. t. 8.

HAB. East Coast, *Colenso*. Blind Bay, Cook's Straits, and Chalky Bay, West Coast, *Lyall*. (Native of Spain, South of England, South of Ireland, Keys of Florida and California.)

Splendid specimens, with both kinds of fruit.

Gen. LXXIII. EPYMENIA, Kütz.

(Kütz. Sp. Alg. p. 787. J. Ag. Sp. Alg. ii. 219.)

1. *Epymenia obtusa*, Kütz., Sp. Alg. p. 787. J. Ag. Sp. Alg. p. 220. *Phyllophora obtusa*, Grev. Hook. fil. et Harv. Fl. Ant. v. 1. p. 187, et v. 2. p. 486.

HAB. East Coast, *Colenso*, *Lyall*. (Native of Cape of Good Hope, and Antarctic shores.)

Dr. Lyall's specimens have narrower and less divided segments than usual, some of them narrowed to an obtuse point; but we have Cape of Good Hope individuals nearly similar.

2. *Epymenia acuta*, Harv.; fronde basi cuneata alte et valide costata flabelliformi pluries dichotoma, laciniis patentibus lato-linearibus apice attenuatis subacutis.

HAB. Akaroa, *Lyall*.

Fronde 5–6 inches high, flabelliform, subfastigate, cuneate at the base, repeatedly dichotomous, with a strong rib, which branches at the principal lobes, one branch running up each segment, and vanishing about the middle. *Segments* patent, $\frac{1}{3}$ – $\frac{1}{2}$ inch broad, linear, the ultimate ones attenuate to an acute or subobtuse point.—Possibly only a variety of *E. obtusa*, but a smaller and more strongly ribbed plant.

Gen. LXXIV. GYMNOGONGRUS, Mart.

(Mart. Bras. p. 27. J. Ag. Sp. Alg. ii. p. 313. *Tylocarpus*, *Oncotylus*, et *Chondri* sp., Kütz.)

1. *Gymnogongrus furcellatus*, J. Ag., *Sp. Alg.* v. 2. p. 318. *Sphærococcus furcellatus*, *Ag. Syst.* p. 217. *Kütz. Sp. Alg.* p. 737. *Gracilaria furcata* et *G. torulosa*, *Hook. fil. et Harv. in Lond. J. Bot.* v. 4. p. 545, et v. 7. p. 444.

HAB. Not uncommon, *Colenso, Lyall.* (West coast of South America.)

A very variable plant, of which we have now received several varieties. Our former specimens were imperfect, and led us into error.

2. *Gymnogongrus vermicularis*, J. Ag., *Sp. Alg.* v. 2. p. 323. *Chondrus vermicularis*, *Grev. Kütz. Sp. Alg.* p. 739. *Fucus vermicularis*, *Turn. Hist. t.* 221.

HAB. Milford Haven, *Lyall.* (Cape of Good Hope, and western South America.)

Some specimens of Mr. Colenso's, from Hawke's Bay, belong to this genus, but are too imperfect to be satisfactorily described.

Gen. LXXV. CALLOPHYLLIS, Kütz.

(Kütz. Phyc. Gen. p. 400. Sp. Alg. p. 744. J. Ag. Sp. Alg. ii. 296. *Rhodymenia* sp., Auct.)

1. *Callophyllis variegata*, Kütz., *Sp. Alg.* p. 745. *J. Ag. Sp. Alg.* v. 2. p. 302. *Rhodymenia variegata*, *Mont. Pôle Sud*, p. 156. *Hook. fil. et Harv. Fl. Ant.* v. 2. p. 475. *Sphærococcus variegatus*, *Bory, Cog. t.* 14.

HAB. Tauranga, *Davies.* (Antarctic shores, and extratropical South America.)

2. *Callophyllis erosa*, *Hook. fil. et Harv.*; fronde sublineari pinnato-dichotoma decomposita nunc creberrime nunc distanter ramosa, laciniis erecto-patentibus plus minus compositis elongatis lobulis marginalibus eroso-dentatis lacinulatisve ornatis, axillis omnibus rotundatis apicibusque acutis, cystocarpis sphaericis ad marginem sessilibus. (TAB. CXVIII.)

HAB. Foveaux Straits, and Port Cooper, *Lyall.*

Variable in habit, sometimes very densely, sometimes distantly branched, 6–12 inches long, the principal laciniae from $\frac{1}{4}$ to $\frac{1}{2}$ an inch wide, erecto-patent or very erect, between pinnate and dichotomous, or alternately decompose. Frond often margined with small, eroso-dentate lobules. *Conceptacles* sessile on the edge of the frond, projecting beyond the margin. Colour a fine purple-crimson.—It adheres to paper in drying.—PLATE CXVIII. Fig. 1, plant, natural size; 2, portion of a lacinia with marginal conceptacles; 3, section of the frond; 4, tetraspores:—more or less magnified.

3. *Callophyllis asperata*, *Harv.*; fronde tenui-membranacea subsessili flabelliformi dichotomo-palmata subfastigiata, laciniis sursum latioribus apiceque crenato-multifidis margine simplici vel crispo et fimbriato, lamina processibus ciliiformibus pluribus asperata, cystocarpis sphaerico-convexis disco frondis immersis.

HAB. Port Nicholson, Cook's Straits, *Lyall.*

Frond 4–5 inches long, sessile, flabelliform and fastigiata, repeatedly dichotomous or subpalmately decompose; the segments $\frac{1}{2}$ –1 inch wide, broader upwards, crenato-multifid at the expanded and fastigiata apex. The margin is either flat or much curled, sometimes ciliiferous: the lamina is very generally asperated with minute, scattered, subulate processes. *Conceptacles* scattered over the disc. Colour a rosy crimson. Substance delicately membranaceous, closely adhering to paper in drying.

4. *Callophyllis coccinea*, *Harv. in Lond. J. Bot.* v. 6. p. 405. *Kütz. Sp. Alg.* p. 746. *J. Ag. Sp. Alg.* v. 2. p. 301.

HAB. Tauranga, *Davies.* (Tasmania.)

5. *Callophyllis Hombroiana*, Kütz., *Sp. Alg.* p. 746. *J. Ag. Sp. Alg.* v. 2. p. 303. *Rhodymenia Hombroiana*, *Mont. Pôle Sud*, p. 157. t. 1. f. 2. *Hook. fil. et Harv. Fl. Ant.* v. 1. p. 186. t. 72. f. 2.

HAB. Foveaux Straits, *Lyall*. East Coast, *Colenso*. "A truly lovely *Alga*, sometimes two feet long," *Colenso*. (Auckland Islands.)

6. *Callophyllis acanthocarpa*, Harv.; fronde basi cuneata palmatim vel subdichotome fissa vel in laciniis pluribus vage partita, laciniis patentibus sæpissime fimbriatis, fimbriis indivisis vel multifidis aculeatis, cystocarpium marginalibus vel in fimbriis immersis aculeato-echinatis.

HAB. On stems of *Ascidia*, Middle Island and East Coast, and at Cape Cooper, *Lyall*. East Coast, *Colenso*.

Of this we have seen but few specimens, and, notwithstanding their peculiarities, we almost fear that they belong to a variety of *C. Hombroiana*, from which species the present, if permanently distinct, will chiefly differ in its aculeate conceptacles.

Gen. LXXVI. KALLYMENIA, *J. Ag.*

(*J. Ag. Alg. Medit.* p. 98. *Harv. Phyc. Brit.* t. 13. *J. Ag. Sp. Alg.* ii. 284. *Euhymenia*, Kütz. *Sp. Alg.* p. 741.)

1. *Kallymenia Harveyana*, *J. Ag., Sp. Alg.* v. 2. p. 288. *Euhymenia Harveyana*, Kütz. *Sp. Alg.* p. 743.

HAB. Blind Bay, Cook's Straits, *Lyall*. (Native of the Cape of Good Hope.)

A single specimen only, found by Dr. *Lyall*.

Gen. LXXVII. GIGARTINA, *Lamour.*

(*J. Ag. Sp. Alg.* ii. 260. *Harv. Ner. Bor. Amer.* pt. 2. p. 174.)

1. *Gigartina pistillata*, *Lamour.* *J. Ag. Sp. Alg.* v. 2. p. 264. *Kütz. Sp. Alg.* p. 749. *Mont. Pôle Sud*, p. 119. *Gigartina divaricata*, *Hook. fil. et Harv. Fl. Ant.* v. 1. p. 187.

Var. β . *dilatata*; stipite mox compresso sensim appanato cuneato in frondem lato-linearem planam dichotomam flabellatam desinente, laciniis distiche pinnatis, pinnulis divaricato-patentibus basi angustatis acutis vel obtusis.

Var. γ . *erinacea*; fronde appanata dichotomo-flabelliformi et distiche pinnata ramulis numerosissimis capsuliferis utrinque densissime echinata.

HAB. Several localities round the coast, *Colenso*, *Lyall*. (Native of South of Europe; and of Cornwall, England, in one spot only.)

Had we not a suite of specimens connecting these very remarkable varieties with the ordinary state of the species, which also occurs, but seemingly more rarely, at New Zealand, we should not have ventured to bring together plants which at first sight are so different. Our variety *dilatata*, in its broadest state, has segments fully half an inch in breadth, and quite flat. Though our specimens of *G. divaricata* are few and imperfect, we fear they must be referred to one of the varying forms of the species.

2. *Gigartina Chapmani*, *Hook. fil. et Harv.*; fronde teretiuscula filiformi siccitate compresso-canaliculata alterne decomposita ramosissima, ramis flexuosis vage divisas, ramulis sparsis subulatis divaricato-patentibus. (TAB. CXIX. B.)

HAB. Maketu, *Chapman*.

We have seen but a solitary specimen, and should probably have referred it to *G. acicularis*, but that the frond is much more slender, not much thicker than hog's-bristle, and much more branched than in any state of *G. acicularis*

known to us. Two inches long.—PLATE CXIX. *B.* Fig. 1, plant, *the natural size*; 2, a branch and ramuli, *magnified*; 3, cross section of a fragment of the frond, *highly magnified*.

3. *Gigartina decipiens*, Hook. fil. et Harv.—*Iridæa decipiens*, Hook. fil. et Harv. in Lond. *J. Bot.* v. 4. p. 547. *J. Ag. Sp. Alg.* v. 2. p. 257. *Kütz. Sp. Alg.* p. 728.

HAB. New Zealand, *Raoul*.

4. *Gigartina ancistroclada*, Mont., *Voy. Pôle Sud*, p. 121. t. 7. f. 4. *Kütz. Sp. Alg.* p. 751. *J. Ag. Sp. Alg.* v. 2. p. 272.

HAB. Akaroa, *D'Urville*. Otago, *Lyall*.

5. *Gigartina alveata*, J. Ag., *Sp. Alg.* v. 2. p. 271. *Chondrus alveatus*, Grev. Hook. fil. et Harv. in Lond. *J. Bot.* v. 4. p. 547. *Fucus alveatus*, Turn. *Hist.* t. 239.

HAB. New Zealand, *Banks, Cunningham, J. D. H.*

6. *Gigartina livida*, J. Ag., *Sp. Alg.* v. 2. p. 270. *Mont. Pôle Sud*, p. 120. Hook. fil. et Harv. Lond. *J. Bot.* v. 6. p. 407. *Fucus lividus*, Turn. *Hist.* t. 254.

HAB. Paroa Bay, Otago, and Jackson's Bay, *Lyall*. (Native of Tasmania.)

7. *Gigartina Chauvinii*, J. Ag., *Sp. Alg.* v. 2. p. 268. *Mont. Bonit.* p. 72. *Sphærococcus Chauvinii*, *Bory, Coq.* t. 20.

HAB. New Zealand, *D'Urville*. (Native of extratropical South America.)

8. *Gigartina stiriata*, A. Ag., *Sp. Alg.* v. 2. p. 277. *Iridæa stiriata*, *Bory*. Hook. fil. et Harv. Lond. *J. Bot.* v. 4. p. 547. *Fucus stiriatus*, Turn. *Hist.* t. 16.

HAB. Paroa Bay, *Lyall*. (Native of the Cape of Good Hope.)

9. *Gigartina Radula*, J. Ag., *Sp. Alg.* v. 2. p. 278. *Mastocarpus Radula et bracteatus, et Chondrodic-tyon Capense*, *Kütz.* *Iridæa Radula*, *Bory, Coq.* p. 107. Hook. fil. et Harv. *Fl. Ant.* v. 1. p. 188, et v. 2. p. 485. *Fucus bracteatus*, Turn. *Hist.* t. 25.

HAB. Bay of Islands, etc., *J. D. H.* (Native of the Cape of Good Hope and Pacific Ocean.)

Gen. LXXVIII. IRIDÆA, *Bory*.

(*Bory, Coq.* p. 103 (excl. sp.). *J. Ag. Sp. Alg.* ii. 250. *Harv. Ner. Bor. Amer.* pt. 2. p. 178.)

1. *Iridæa micans*, *Bory, Voy. Coq.* p. 110. t. 13 et 13 bis. *Mont. Voy. Pôle Sud*, p. 104. Hook. fil. et Harv. in Lond. *J. Bot.* v. 4. pp. 263, 548.

HAB. Akaroa, *D'Urville*. (Antarctic shores and South America.)

2. *Iridæa lanceolata*, Harv.; frondibus gregariis corneo-membranaceis, stipite lineari-cuneato foliolis pinnato in laminam lanceolatam attenuatam undato-crispatam purpureo-sanguineam sensim dilatato.

HAB. Otago, *Lyall*.

*Fronde*s many from the same base, 1–2 feet long, rising with a linear-cuneate, flat stipes, about 1 inch long and 1 or 2 lines broad, which is pinnated with patent, linear, or lanceolate leaflets, and gradually widens into the base of the lamina. *Lamina* lanceolate, gradually tapering to each end, 1–3 inches broad, undate and variously crisped. *Colour* a purplish-red, brightening in fresh water. *Substance* rather rigid. It imperfectly adheres to paper. *Fruit* unknown.—Allied to *I. laminarioides*, but seemingly distinct.

3. *Iridæa lusoria*, Harv. *Rhodymenia lusoria*, Grev. in Hook. *Comp. Bot. Mag.* v. 2. p. 329. Hook. fil. et Harv. Lond. *J. Bot.* v. 4. p. 544.

HAB. East Coast, *Cunningham*.

Our specimens are very imperfect, but have the structure of frond proper to this genus.

Gen. LXXIX. HALYMENIA, *Ag. ref.*

(J. Ag. Alg. Medit. p. 95; Sp. Alg. ii. 197. Harv. Ner. Bor. Amer. pt. 2. p. 192.)

1. *Halymenia Nova-Zelandiæ*, Mont., *Voy. Pôle Sud*, p. 11. *Kütz. Sp. Alg.* p. 716. *J. Ag. Sp. Alg.* v. 2. p. 207. *H. Urvilleana*, Mont. l. c. t. 12. f. 2.

HAB. Akaroa, *D'Urville*.Unknown to us, unless our *Nemastoma Daviesii* be a synonym.Gen. LXXX. CHRYSYMENIA, *J. Ag.*

(J. Ag. Alg. Medit. p. 105; Sp. Alg. ii. 209. Harv. Ner. Bor. Amer. pt. 2. p. 187.)

1. *Chrysymenia? polydactyla*, Hook. fil. et Harv.; caule filiformi solido subdichotome decomposito ramosissimo ramulis lineari-fusiformibus basi et apice subacutis simplicibus tubulosis pinnatim obsito? fructu . . . ? (TAB. CXIX. A.)

HAB. South Harbour, Southern Island, *Lyall*.

Stem 3-4 inches long, twice as thick as hog's-bristle at the base, attenuated upwards, solid, much branched, between dichotomous and alternate, the larger branches angularly flexuous, the lesser straight, virgate, alternate or secund. *Branches* densely set with alternate, secund, or somewhat fasciculate, finger-like, hollow ramuli, subacute at the base and apex. *Substance* firmly membranaceous, scarcely adhering to paper in drying. *Colour* a dull, dark purplish-red. No *fruit* seen.—Apparently related to *C. uvaria*; but until the fruit be discovered, the genus must be doubtful.—PLATE CXIX. A. Fig. 1, plant, *natural size*; 2, apex of a branch and hollow ramuli; 3, cross section of a branch; 4, cross section of a ramulus; 5, tetraspores:—*all more or less magnified*.

Gen. LXXXI. CHYLOCLADIA, *J. Ag.*

(J. Ag. Sp. Alg. ii. 360. Harv. Ner. Bor. Amer. pt. 2. p. 185.)

1. *Chylocladia umbellata*, Hook. fil. et Harv.; fronde tereti subtrichotoma, ramis primariis apice hamatis infra apicem latere convexo ramos sæpius ternos quaternosve emittentibus, ramis minoribus basi constrictis clavatis curvatis apice ramulis ter-quaternis vesiculæformibus coronatis. (TAB. CXIX. C.)

HAB. Port Underwood, Cook's Straits, *Lyall*.

Fronde 1-2 inches long, about $\frac{1}{2}$ a line in diameter, terete, trichotomous, all the primary branches curved and hooked at the summit, and emitting, below the apex on the convex side, three or four erect, linear-clavate, slightly curved, lesser branches. These either throw out a second set from their apex, or are crowned with three or four small, ovate or oblong, obtuse ramuli, which no doubt lengthen into clavate branches. *Colour* a dull purple.—Allied to *C. articulata*, but very distinct.—PLATE CXIX. C. Fig. 1, plant, *natural size*; 2, umbellate ramuli; 3, cross section of a ramulus; 4, structure of the frond:—*more or less magnified*.

2. *Chylocladia secunda*, Hook. fil. et Harv. *Chrysymenia secunda*, *Hook. fil. et Harv. in Lond. J. Bot.* v. 4. p. 548.

HAB. Akaroa, *Raoul*. Port Cooper, Banks' Peninsula, *Lyall*.Can this be *Dumontia pusilla*, Mont. *Pôle Sud*, p. 105. t. 13. f. 2?

3. *Chylocladia? cæspitosa*, Harv.; cæspitosa, parvula, caule curvato arcuato (radicante?) ramos erectos opposite pinnatos v. verticillatim ramosos emittente, ramulis fusiformibus oppositis vel quaternis basi parum constrictis apice attenuatis acutis majoribus curvatis.

HAB. Port Nicholson, *Lyall*.

A doubtful species, requiring further examination. We have seen but one immature specimen. It may possibly be only a variety of *C. clavellosa*, though the occasionally quaternate ramuli are unlike that species.

Gen. LXXXII. DASYPHLEA, *Mont.*

(Mont. Voy. Pôle Sud, p. 100. J. Ag. Sp. Alg. ii. 215.)

1. *Dasyphlea insignis*, Mont., *Pôle Sud*, p. 102. t. 8. f. 3. *Kütz. Sp. Alg.* p. 757. *J. Ag. Sp. Alg.* v. 2. p. 215.

HAB. Akaroa, *D'Urville*.Gen. LXXXIII. DUMONTIA, *Lamour.*

(J. Ag. Sp. Alg. ii. 348.)

1. *Dumontia filiformis*, Grev., *Alg. Brit.* p. 165. t. 17. *Harv. Phyc. Brit.* t. 95, et *Sup.* t. 357. *J. Ag. Sp. Alg.* v. 2. p. 350. *Hook. fil. et Harv. Fl. Ant.* v. 1. p. 189.

HAB. Tidal rocks, Tuingara, near Cape Turnagain, *Colenso*. (Native of Europe.)Gen. LXXXIV. CATENELLA, *Grev.*(Grev. *Alg. Brit.* p. 166. t. 17. J. Ag. Alg. *Medit.* p. 89; Sp. Alg. ii. 351. *Kütz. Phyc. Gen.* t. 76. f. 4. *Harv. Ner. Bor. Amer.* pt. 2. p. 201.)

1. *Catenella Opuntia*, Grev., *Alg. Brit.* p. 166. *Harv. Phyc. Brit.* t. 88. *J. Ag. Sp. Alg.* v. 1. p. 352. *Kütz. Sp. Alg.* p. 724. *Fucus Opuntia*, *Turn. Hist.* t. 107.

HAB. Bay of Islands, *J. D. H.* (Native of Europe.)Gen. LXXXV. PRIONITIS, *J. Ag.*(J. Ag. Sp. Alg. ii. 185. *Harv. Ner. Bor. Amer.* pt. 2. p. 197.)

1. *Prionitis Colensoi*, Hook. fil. et Harv.; fronde plana lato-lineari nigrescente vage subpinnatim composita, ramis suboppositis patentibus basi angustatis extra medium dilatatis margineque eroso-dentatis vel fimbriato-lobulatis, lobulis apice denticulatis vel simplicibus inæqualibus crebris, apicibus obtusis axillisque rotundatis. (TAB. CXX. A.)

HAB. Rocks near Cape Turnagain, *Colenso*.

Fronde 6–8 inches long, $\frac{1}{4}$ inch broad, branched from the base, irregularly pinnate. *Branches* 3–4 inches long, flat, opposite or irregular, narrowed below, dilated beyond the middle, and thence linear-oblong, obtuse or somewhat attenuated. In the lower part the margin is simple, above it is fimbriate or lacero-dentate, the lobes minute, 1–2 lines long, denticulate at the dilated apex. *Structure* as in the genus. *Fruit* unknown. *Colour*, when dry, very dark brown, or nearly black. *Substance* rigid.—It does not adhere to paper in drying.—PLATE CXX. A. Fig. 1, plant, *natural size*; 2, section of the frond, *highly magnified*.

Gen. LXXXVI. NEMASTOMA, *J. Ag.*(J. Ag. Alg. *Medit.* p. 89; Sp. Alg. ii. 162. *Gymnophlea*, *Kütz.*)

1. *Nemastoma (Aræotes) intestinalis*, Harv.; fronde succosa (strato medullari laxissimo) compresso-tubulosa lineari vage ramosa, ramis intestinæformibus simplicibus furcatisve basi constrictis apice attenuatis acutis, favellis per totam frondem sparsis plexu denso florum circumdatis.

HAB. On rocks, Preservation Harbour, *Lyall*.

Fronde 6–8 inches long, $\frac{1}{4}$ – $\frac{1}{2}$ inch wide, compressed (?), cylindrical, divided irregularly into three or four simple or once-forked branches, which are constricted at their insertion, and taper to an acute point, sometimes tipped with a pair of mucrones, which probably lengthen into branches. *Substance* very thin and delicate, full of

viscid matter. The medullary stratum consists of a few, very slender, distant, anastomosing filaments; the exterior of a reticulated plexus passing off into the periphery in moniliform filaments. *Colour* a purplish-red. It closely adheres to paper in drying. *Favellæ* suspended below the periphery, and enclosed in a dense plexus of filaments.

2. *Nemastoma*? *attenuata*, Harv.; fronde (simplici?) carnosomembranacea succosa (strato medullari laxo) compressa lineari-attenuata, tetrasporis cruciatis sparsis.

HAB. Jackson's Bay, *Lyall*.

Of this we have only seen an imperfect specimen, about fifteen inches long, and a third of an inch wide in the lower part, from which it gradually tapers to the apex. It is either the upper part of a simple frond, or a portion of a branch of a slightly divided one. In either case it seems nearly related to *N. intestinalis*, but is of much thicker and firmer substance, and quite distinct.

3. *Nemastoma pinnata*, Hook. fil. et Harv.; fronde plana carnosomembranacea decomposita pinnata, pinnis patentibus suboppositis lineari-lanceolatis basi et apice longe attenuatis, pinnulis filiformibus inæqualibus subhorizontalibus, tetrasporis cruciatis sparsis. (TAB. CXX. B.)

HAB. Akaroa, *Lyall*. (Only one specimen.)

Fronde 4–5 inches long, and about as much in the expansion of the branches, undivided or once forked, closely and pretty regularly pinnated throughout; the pinnæ distichous, opposite or subalternate, patent, much attenuated to each end, two or three lines broad at the widest part, pinnulated with subhorizontal, ciliiform pinnules of irregular length. *Tetraspores* cruciate, dispersed. *Medullary stratum* tolerably compact, passing off at the outward edge into a network of anastomosing filaments, from which spring the moniliform peripheric filaments. *Substance* soft. *Colour* a pale red.—It closely adheres to the paper in drying.—PLATE CXX. B. Fig. 1, plant, *natural size*; 2, section of the frond; 3, a tetraspore:—*both highly magnified*.

4. *Nemastoma Daviesii*, Harv.; fronde stipitata foliacea gelatinosomembranacea ovato-lanceolata subpinnata disticha, rachide simplici vel furcata, pinnis lato-lanceolatis vel subovatis basi et apice attenuatis undato-crispatis patentibus dentatis v. ciliatis, favellis numerosissimis per frondem sparsis.

HAB. Tauranga, *Davies*. Port Underwood, *Lyall*.

Fronde 6–8 inches long, expanded, leaf-like, more or less regularly pinnate, the principal rachis from $\frac{1}{4}$ – $1\frac{1}{4}$ inch wide, oblong or lanceolate, or irregularly sinuate, pinnated with numerous, lateral, ovato-lanceolate lobes, $\frac{1}{4}$ inch to an inch wide, 2–4 inches long, crisped and curled, irregularly dentate, lobulate or margined with ciliiform processes. All the divisions taper to the base and apex. *Colour* purplish-red, changing to blood-red. *Substance* gelatinosomembranaceous, closely adhering to paper. *Favellæ*, on one of our specimens, very abundant.

5. *Nemastoma endiviaefolia*, Harv.; fronde e basi cuneata vage dichotoma vel palmatifida et laciniata, nunc anguste lineari multifida apicibus acutis tri-quadrifurcatis, nunc latifolia subpinnatim ramosa laciniis lateralibus palmatifidis vel dichotomis integerrimis vel eroso-denticulatis acutis vel abrupte truncatis, axillis rotundatis, tetrasporis cruciatis sparsis.

HAB. Blind Bay and Port Nicholson, *Lyall*.

Excessively variable in form, and perhaps passing into *N. Daviesii*, from which, in its typical state, it looks very different. A larger suite of specimens than we possess would be required to connect the various individuals we have here brought together, more from the sum of probabilities than from exact evidence. Scarcely two are precisely similar.

6. *Nemastoma prolifera*, Harv.; fronde (speciminibus mancis tantum visis) cuneata vage ramosa gelatinosomembranacea viscida, lamina applanata foliolis parvis filiformibus vel cuneatis simplicibus multifidis-que fimbriata et utrinque densissime obsessa.

HAB. On stones, Akaroa, *Lyall*.

A single broken specimen only, apparently the upper half of a frond, has been seen. It is about 8 inches long,

1 inch broad at the truncate base, gradually widening upwards to two inches, then forking; the segments being about $\frac{2}{3}$ of an inch wide. Every part is densely beset with filiform or cuneato-multifid leaflets, less than an inch in length, and the margin is fringed with similar processes. *Substance* delicately gelatinoso-membranaceous; when fresh, "covered with viscid matter" (D. L.). *Structure* as in the genus; the medullary stratum rather lax.

TRIBE XII. SPYRIDACEÆ.

Gen. LXXXVII. SPYRIDIA.

(Harv. in Hook. Br. Fl. ii. 336; Man. 300. Phyc. Brit. t. 46. J. Ag. Sp. Alg. ii. 338. Kütz. Sp. Alg. p. 665.)

1. *Spyridia opposita*, Harv.; fronde filiformi decomposita ramosissima, ramis ramulisque ramellis oppositis densissime obsitis, ramellis crebris imbricatis incurvis subdecussatim oppositis vix distichis nec basi angustatis apice acutis simplicibus, articulis ramellorum diametro æqualibus.—*Harv. in Herb. T. C. D.*

HAB. Chalky Bay, West Coast, *Lyall*. (Native of South Australia, *Mrs. Eddington*.)

Stems 3-4 inches high, filiform, much branched and bushy, branches and their divisions mostly alternate, the lesser branches virgate. All the younger parts are densely clothed with robust, dark red ramelli, opposite each other in insertion, but not strictly distichous and yet scarcely tetrastichous. *Ramelli* a line long, incurved, tapering to the acute, simple apex, but not constricted at the base. *Fruit* unknown.—The first specimens we received of this species were collected in South Australia, near Cape Northumberland, by *Mrs. Eddington*.

TRIBE XIII. CERAMIACEÆ.

Gen. LXXXVIII. CERAMIUM, *Roth*.

(J. Ag. Sp. Alg. ii. 113. *Homoceras, Gongroceras, Trichoceras, Celeceras, Echinoceras, Acanthoceras, Ceramium et Pteroceras*, Kütz.)

1. *Ceramium cancellatum*, Ag., *Sp. Alg. v. 2. p. 145*. *Hook. fil. et Harv. Lond. J. Bot. v. 4. p. 550. Fl. Ant. v. 1. p. 191. J. Ag. Sp. Alg. v. 2. p. 136. Pteroceras cancellatum, Kütz. Sp. Alg. p. 690.*

HAB. On various parts of the coast, common, *Lyall, Colenso, Davies, Chapman, etc.* (Native of Cape of Good Hope.)

We have many varieties from various localities.

2. *Ceramium virgatum*, Hook. fil. et Harv., *Lond. J. Bot. v. 7. p. 445. J. Ag. Sp. Alg. v. 2. p. 137.*

HAB. Parasitical on *Carpophyllum*, East Coast, *Colenso*.

3. *Ceramium vestitum*, Harv.; fronde setacea obsoletissime articulata vel continua, ramis ramulis capillaribus quaquaversis dichotomo-multifidis densissime vestitis, articulis ramulorum dense corticatis (vix conspicuis v. omnino obscuris) diametro æqualibus, axillis patentibus, apicibus patentibus rectis.

HAB. Port Adventure, Southern Island, *Lyall*.

It is not without much hesitation that we propose this species, founded on a solitary specimen. The stature is that of *C. rubrum*, to whose variety *proliferum* it may be compared; but here the ramuli are much more slender in proportion to the main branches, much more densely corticated, scarcely obviously articulate, and the apices are straighter. It seems to us to be at least as good a species as *C. obsoletum*, Ag.

4. *Ceramium rubrum*, Ag., *Syn. p. 60. J. Ag. Sp. Alg. v. 2. p. 127. Kütz. Sp. Alg. p. 685. Harv. Phyc. Brit. t. 181. Conferva rubra, E. Bot. t. 1166. Dillw. Conf. t. 34.*

HAB. On all the coasts, many varieties, common. (Generally diffused.)

5. *Ceramium diaphanum*, Roth. *J. Ag. Sp. Alg. v. 2. p. 125. Harv. Phyc. Brit. t. 193. Conferva diaphana, Dillw. Conf. t. 38. E. Bot. t. 1742. Homoceras pulchellum, Kütz.*

HAB. Port Cooper, Akaroa, and Otago, *Lyall*. (Cape of Good Hope and Northern Atlantic.)

6. *Ceramium uncinatum*, Harv. ; fronde ultracapillari regulariter dichotoma fastigiata, axillis patentibus apicibusque forcipatis, articulis inferioribus diametro 3-4-plo longioribus interstitiis pellucidis nudis, geniculis nodoso-elevatis spinula singula articulata subulata uncinato-recurva crassa exteriori latere necnon spinella (nunc obsoleta) interiore latere opposita armatis, tetrasporis . . .

HAB. Cook's Straits, *Lyall*. Cape Turnagain, etc., *Colenso*.

Allied to *C. acanthonotum*, but much more robust, with strongly swollen nodes and recurved or hooked thorns, and very frequently furnished with a minute thorn on the inner face of the branch. We consider it a distinctly marked species.

Gen. LXXXIX. CENTROCERAS, *Kütz.*

(*Kütz.* Linnæa, 1841, p. 741. Phyc. Gen. p. 381. Sp. Alg. p. 688. J. Ag. Sp. Alg. ii. 147. Harv. Ner. Bor. Amer. pt. 2. f. 211.)

1. *Centroceras clavulatum*, Mont. *Fl. Alg.* p. 140. *J. Ag. Sp. Alg.* v. 2. p. 148. *Harv. Ner. Bor. Amer. pt. 2. p. 211. t. 33 C.* *Ceramium clavulatum*, *Ag. Mont. Cuba, t. 2. f. 1.*

HAB. Common on the coast, *Colenso*, *Lyall*, etc. (Tropical and subtropical seas.)

Gen. XC. PTILOTA, *Ag.*

(*Sp. Alg.* i. 384. Endl. 3rd Suppl. p. 36. Mont. Voy. Pôle Sud, p. 97. Hook. fil. et Harv. Fl. Ant. i. 190. J. Ag. Sp. Alg. ii. 92. *Ptilota*, *Rhodocallis*, et *Euptilota*, *Kütz.*)

1. *Ptilota formosissima*, Mont., *Voy. Pôle Sud, p. 97. t. 9. f. 3.* *Hook. fil. et Harv. Fl. Ant. v. 1. p. 190. t. 77. J. Ag. Sp. Alg. v. 2. p. 102.* *Euptilota formosissima*, *Kütz. Sp. Alg. p. 671.*

Var. β ; ramis circumscriptione lineari-lanceolatis.

HAB. Very abundant, *Lyall*, *Colenso*, etc. (Auckland Islands.)

2. *Ptilota pellucida*, Harv. ; fronde filiformi disticha decomposite pinnata, ramis primariis apicem versus ecorticatis bi-tripinnatis, pinnis articulatis monosiphoniis oppositis inæqualibus, una indivisa, altera pinnatim partita vel unilateraliter pectinata, pinnellis filiformibus basi constrictis subacutis, articulis diametro sesqui-duplo-longioribus.

HAB. Otago, and East Coast of Southern Island, *Lyall*.

Fronde 2-3 inches long, ovate in outline, closely branched, and three or four times pinnate. Primary branches alternate, each of them opposed by a minute, undivided ramulus, or by a very short, simply pinnate branchlet, which is rarely more than two or three lines long; oppositely bi-tripinnate, one pinna of each pair being constantly developed and compound, the other either very much smaller and less compound, or remaining unchanged as a simple ramulus. The upper portion of the branches for some distance below the apex is visibly articulated, and nearly ecorticated, and the smaller branches are still more pellucid, the rachides of the penultimate pinnæ being destitute of cortical cells. *Articulations* of the pinnæ once and a half to twice as long as broad. *Fruit* unknown. *Colour* bright rosy-red.—A beautiful species, allied to *P. Harveyi*, but more pellucid, with longer articulations, and a different ramification. It also seems related to the *Callithamnion Ptilota* of 'Flora Antarctica,' the favellæ of which are unknown, and which is probably a *Ptilota*. We dare not, however, at present unite it to that species, of which we possess but very imperfect specimens.

Gen. XCI. BALLIA, *Harv.*

(Harv. in Hook. Lond. J. Bot. ii. 191. Mont. Voy. Pôle Sud, p. 94. Hook. fil. et Harv. Fl. Ant. i. 190. J. Ag. Sp. Alg. ii. 74. *Kütz. Sp. Alg.* p. 663.)

1. *Ballia callitricha*, Mont., *Pôle Sud, p. 94. Kütz. Sp. Alg. p. 663. J. Ag. Sp. Alg. v. 2. p. 75.*

Ballia Brunonis, *Harv. l. c. t. 9.* *B. Hombroniana*, *Mont. Pôle Sud, t. 12. f. 1.* *Sphacelaria callitricha*, *Ag. Sp. Alg. v. 2. p. 23.* *l. c. Alg. Eur. t. 6.*

HAB. Many varieties common on the coast. (Southern Ocean, south of 34°.)

Gen. XCII. GRIFFITHSIA, *Ag.*

(*Ag. Sp. Alg. ii. 126.* *J. Ag. Sp. ii. 75.* *Kütz. Sp. Alg. p. 659.* *Hook. fil. et Harv. Fl. Ant. i. 191, ii. 488.*)

1. *Griffithsia setacea*, *Ag., Sp. Alg. v. 2. p. 129.* *J. Ag. Sp. Alg. v. 2. p. 84.* *Kütz. Sp. Alg. p. 660.* *Harv. Phyc. Brit. t. 184.* *Conferva setacea*, *Ellis. E. Bot. t. 1689.* *Dillw. Conf. t. 82.*

Var. β . *filiformis*; filis tenuioribus articulisque longioribus (fructu ignoto). *G. filiformis*, *MS.*

HAB. Foveaux Straits and East Coast, *Lyall, Colenso.* Var. β , at Port Cooper, Banks' Peninsula, and Bluff Harbour, etc., *Lyall.* (Atlantic Ocean, in temperate latitudes.)

2. *Griffithsia antarctica*, *Hook. fil. et Harv.*; filis crassis cæspitosis dichotomis flaccidis, axillis inferioribus patentibus superioribus acutis, ramis elongatis erectis ramulisque nudis sæpe secundis ad nodos constrictis, articulis cylindraceis superne paulo incrassatis ramorum diametro 4–6-plo ramulorum subtriplo longioribus, ramulis fructiferis lateralibus articulo brevissimo constantibus involucro umbellato coronatis, tetrasporis non visis.—*Fl. Ant. v. 2. p. 488.* *J. Ag. Sp. Alg. v. 2. p. 87.*

Var. β . *fastigiata*; ramis minoribus decompositis flabelliformibus fastigiatis ramulisque sæpe secundis.

HAB. East Coast, *Colenso.* Ruapuke, Foveaux Straits, and East Coast, *Lyall.*

Gen. XCIII. CALLITHAMNION, *Lyngb.*

(*Lyngb. Hyd. Dan. p. 122.* *Ag. Sp. Alg. ii. 156.* *J. Ag. Sp. Alg. ii. 5.* *Harv. Phyc. Brit. et Man. Hook. fil. et Harv. Fl. Ant. i. 191, ii. 489.* *Callithamnion et Phlebothamnion*, *Kütz. Sp. Alg. p. 638.*)

1. *Callithamnion flaccidum*, *Hook. fil. et Harv. Fl. Ant. v. 2. p. 490. t. 188. f. 1.* *Kütz. Sp. Alg. p. 648.* *J. Ag. Sp. Alg. v. 2. p. 31.*

HAB. Port Otago, *Lyall.* (Native of Cape Horn.)

2. *Callithamnion Plumula*, *Lyngb. Hyd. Dan. p. 127.* *Alg. Sp. Alg. v. 2. p. 159.* *J. Ag. Sp. Alg. v. 2. p. 29.* *Harv. Phyc. Brit. t. 242.* *Kütz. Sp. Alg. p. 647.* *Conferva Plumula*, *Ellis. Dillw. Conf. t. 50.*

HAB. Dredged in five fathoms, D'Urville Island, *Lyall.* (Native of Cape Horn; Europe and North America.)

3. *Callithamnion applicitum*, *Harv.*; minutissimum, repens et decumbens, fronde distiche pinnatim composita, pinnis oppositis pinnulatis vel bipinnulatis, pinnulis creberrimis obtusis, articulis ramorum cylindraceis diametro triplo longioribus pinnularum diametro brevioribus.

HAB. Parasitical on *Amphiroa*, *Colenso.*

Fronde 2–6 lines long, exceedingly slender, prostrate, and attached by the whole under surface to the coralline on which they grow, decompound, pinnate, and distichous. All the divisions opposite. *Articulations* of the branches cylindrical, filled with endochrome, 3–4 times as long as broad; of the pinnæ hexagonal, about as long as broad; of the pinnules quadrate, shorter than their breadth. Basal reticulation of branches and pinnæ shorter than the rest. *Colour* rosy-red. *Substance* soft, decomposing.—Very much more minute in all its parts than *C. australe*, and of a softer substance. A very pretty microscopic object.

4. *Callithamnion hirtum*, *Hook. fil. et Harv., Fl. Ant. v. 1. p. 192. t. 78. f. 2.* *Kütz. Sp. Alg. p. 655.* *J. Ag. Sp. Alg. v. 2. p. 53.*

HAB. Port Cooper, Otago, Port William, Tory Channel, and Port Underwood, *Lyall*. (Native of Auckland Islands.)

5. *Callithamnion scoparium*, Hook. fil. et Harv., *Fl. Ant. v. 2. p. 490. t. 189. f. 3. J. Ag. Sp. Alg. v. 2. p. 35.* *Phlebothamnion scoparium*, *Kütz. Sp. Alg. p. 656.*

HAB. Preservation Harbour, West Coast, and Foveaux Straits, *Lyall*. East Coast, *Colenso*. (Native of Falkland Islands, and Cape Horn.)

6. *Callithamnion Colensoi*, Harv.; fronde robusta dendroidea atropurpurea, caule ultrasetaceo corticato quaquaversum lateraliter ramoso, ramis sursum longe corticatis apice articulatis ramulis brevibus dichotomo-multifidis imbricatis squarrosis densissime obsessis, ramellis divaricatis subulatis acutis alternis, articulis ramulorum diametro sesquolongioribus.

HAB. East Coast, and Hawke's Bay, *Colenso*.

Our specimens are not in good order, but are sufficient to establish this as a species quite different from any other New Zealand one. It is allied, however, to *C. purpuriferum* of the Cape of Good Hope, *C. Montagnei* of Cape Horn, *C. Pikeanum* of California, and *C. Arbuscula* of the North of Europe; but appears distinct from all these. *Fronde* dendroid, 2-3 inches high, the main stem as thick as sparrow's-quill below, attenuated upwards. All the branches are densely clothed on every side with minute, squarrose, very compound ramuli. *Colour* blackish when dry.

7. *Callithamnion brachygonum*, Harv.; fronde capillari (basi vix setacea) alterne divisa quaquaversum ramosa e basi fere ecorticata, ramis elongatis virgatis subsimplicibus iterum alterne ramosis dense plumulatis, plumulis elongatis linearibus angustis pinnatis vel bipinnatis, ramulis brevibus sensim attenuatis subacutis erecto-patentibus, articulis ramorum diametro 2-3-plo, pinnarum subduplo longioribus, pinnularum diametro aequalibus v. sesquolongioribus, tetrasporis globosis secus ramulos seriatis.

HAB. Blind Bay, *Lyall*. Tauranga, *Davies*.

One or two inches high, densely tufted, flaccid, bright carmine-red. *Stem* subsimple, set on all sides with lateral, similar branches, which bear a second or third series of similar, rod-like branchlets, the last series of which are clothed with subdistichous plumules. *Plumules* very narrow, erecto-patent, the lowermost simply pinnate, the upper gradually longer and more compound, those near the middle of the branches very long and bipinnate. All the articulations are short; those of the stem and branches veinless, with a narrow endochrome and thick walls. *Tetraspores* line the inner faces of the ramuli.—A distinct and pretty little species.

8. *Callithamnion puniceum*, Harv.; fronde subcapillari flaccida decomposite ramosissima basi tantum corticata, ramis multoties pinnatim compositis alternis, plumulis oblongis patentibus basi pinnatis apice bipinnatis corymboso-fastigiatisque, pinnulis subulatis acutis (e basi latiore sensim attenuatis), articulis primariis diametro 8-10-plo longioribus pellucidis vel venulosis, secundariis brevioribus, ramulorum diametro 2-3-plo longioribus, tetrasporis solitariis ad ramulos laterales.

HAB. Tauranga, *Davies*.

Densely tufted, 2-3 inches long, excessively branched, inextricable. *Stem* and branches decomposed, pinnate, the upper divisions at least distichous. *Plumules* short, patent, either simply pinnate, or the lower half pinnate and the upper bipinnate. *Ramuli* remarkably tapering from a broad base to an acute point, patent. *Substance* very tender. *Colour* a fine purple-lake.—We are unable to give a more satisfactory character of this plant, which nevertheless seems not exactly similar to any with which we are acquainted. Our specimens are somewhat decayed.

9. *Callithamnion consanguineum*, Harv.; fronde subcapillari decomposite ramosissima, ramis primariis quaquaversum egredientibus sursum longe corticatis, secundariis subdistichis alterne pinnatim compositis articulatis basi nudis apice distiche plumulatis, plumulis fastigiatis basi nudis extra medium pinnatis, pinnis

patentibus, reticulis ramorum diametro subtriplo, ramulorum duplo longioribus, apicibus obtusis, tetrasporis lateralibus subsolitariis triangulipartitis.

HAB. Port Nicholson, *Lyall*.

Densely tufted, 2-3 inches high, thinner than human hair, excessively branched, the larger branches spreading every way, the lesser gradually more distichous upwards, alternately decompose-pinnate. *Stem* and *branches* opaque with veins, the lesser branches alone pellucidly articulate, decompose-pinnate, and alternately plumulate. *Plumules* short, fan-shaped, naked below, pinnate above, the terminal pinnæ very close together. *Articulations* twice or thrice as long as broad, those of the branches longest. *Colour* a rosy-purple. *Substance* rather flaccid, adhering to paper.

10. *Callithamnion byssoideum*, Arn. *Harv. Phyc. Brit. t. 262.* *Wyatt, Alg. Danm. no. 185.* *J. Ag. Sp. Alg. v. 2. p. 40.* *Phlebothamnion byssoides*, *Kütz. Sp. Alg. p. 657.*

HAB. Bluff Harbour, Foveaux Straits, and at Otago, *Lyall*. Maketu, *Chapman*. (Native of Europe and North America.)

We had at first regarded these specimens as representing a distinct species, which we should have named *C. tenerimum*, but on re-examination we fear they approach the northern *C. byssoideum* too nearly to be kept separate.

11. *Callithamnion Rothii*, *Lyngb., Hyd. Dan. p. 129. t. 41.* *Harv. Phyc. Brit. t. 120 B. Kütz. Sp. Alg. p. 640.* *J. Ag. Sp. Alg. v. 2. p. 17.* *Conferva Rothii*, *Dillw. Conf. t. 73.* *E. Bot. t. 1702.*

HAB. On tidal rocks, and in caverns, Hawke's Bay, and Cape Kidnapper, *Colenso*. (Native of Europe and North America.)

SERIES III. CHLOROSPERMEÆ.

TRIBE I. SIPHONÆÆ.

Gen. XCIV. CAULERPA, *Lamour*.

(*Lamour. Ann. Mus. xx. 282.* *Ag. Sp. i. 433.* *Endl. 3rd Suppl. p. 16.* *Kütz. Sp. Alg. p. 495.* *Phyllerpa*, *Kütz. Chanoinia*, *Bory*, etc.)

1. *Caulerpa Brownii*, *Endl.*; caule vestito, ramis elongatis dichotomis, ramulis (foliis) cylindraceis basi subconstrictis erecto-patentibus quadrifariam imbricatis mucronulatis obtusisve. (TAB. CXXI. A.)

HAB. *Lyall's Bay* and *Chalky Bay*, *Lyall*. *New Zealand*, *Colenso*. (Native of *New Holland*.)

A larger and more branching plant than the following, with simple ramuli. Some specimens, however, are almost intermediate in character between the extreme forms of these supposed species.—PLATE CXXI. A. Fig. 1, plant, *natural size*; 2, four verticillate ramuli; 3, a ramulus; 4, apex of another ramulus, to show that they are sometimes blunt:—*all magnified*.

2. *Caulerpa furcifolia*, *Hook. fil. et Harv., Lond. J. Bot. v. 6. p. 416.* *Caulerpa Selago*, *Nobis, l. c. v. 4. p. 550 (excl. syn.)*. (TAB. CXXI. B.)

HAB. *New Zealand*, *Colenso*. (Native of *Tasmania*.)

Our figure represents the typical form, such as we have also received from *Tasmania*, and formerly described in *Hooker's London Journal*. On some specimens recently examined, we find *simple* cylindrical ramuli mixed with the forked ones, a variation which materially weakens the specific character.—PLATE CXXI. B. Fig. 1, plant, *natural size*; 2, four verticillate ramuli; 3, a ramulus:—*both magnified*.

3. *Caulerpa hypnoides*, *Ag., Sp. Alg. v. 1. p. 443.* *Endl. 3rd Suppl. p. 16.* *Chauvinia hypnoides*, *Kütz. Sp. Alg. p. 497.* *Fucus hypnoides*, *Turn. Hist. t. 173.*

HAB. *East Coast*, *Colenso*. (Native of *New Holland*.)

4. *Caulerpa sedoides*, Ag., *Sp. Alg.* v. 1. p. 438. *Endl. 3rd Suppl.* p. 16. *Chauvinia sedoides*, Kütz. *Sp. Alg.* p. 498. *Fucus sedoides*, *Turn.* t. 172.

HAB. Lyall's Bay, Cook's Straits, *Lyall*. New Zealand, *Colenso*. (Native of tropical and subtropical seas.)

5. *Caulerpa articulata*, Harv.; caule , ramis erectis gracilibus indivisis vel parum ramosis articulato-constrictis, ramulis oppositis distichis cylindraceis obtusis basi maxime constrictis patentibus e quoque articulo ortis.

HAB. East Coast, rare, *Colenso*.

We have not seen the creeping stems. Our specimens consist of branches, 4-5 inches long, twice as thick as hog's-bristle, simple or forked, regularly articulato-constricted at intervals of one or two lines, clothed with leaf-like ramuli throughout. *Ramuli* opposite, distichous, two springing from above the middle of each internode, half an inch long, cylindrical, obtuse, very much constricted at their insertion, as thick as the branches, bright green. A distinct and beautiful species.

Gen. XCV. CODIUM, *Stackh.*

(*Stackh. Ner. Brit.* p. 24. *Ag. Sp. Alg.* i. 451. *Kütz. Sp. Alg.* p. 500. *Lamarckia*, *Olivi.* *Agardhia*, *Cabr.* *Spongodium*, *Lamour.*)

1. *Codium tomentosum*, Ag., *Sp. Alg.* v. 1. p. 451. *Kütz. Sp. Alg.* p. 500. *Harv. Phyc. Brit.* t. 93. *Fucus tomentosus*, *Turn. Hist.* t. 135. *E. Bot.* t. 712.

HAB. Port Nicholson, *Lyall*. Tauranga, *Davies*. East Coast, *Colenso*. (Generally diffused.)

2. *Codium adhaerens*, Ag., *Sp.* v. 1. p. 457. *Kütz. Sp. Alg.* p. 502. *Harv. Phyc. Brit.* t. 35 A.

HAB. Banks' Peninsula, *Lyall*. Outer rocks, Cape Kidnapper, *Colenso*. (Native of Europe; Cape of Good Hope, Mauritius, etc.)

Gen. XCVI. BRYOPSIS, *Lamour.*

(*Lamour. Ann. Mus.* xx. 281. *Ag. Sp. Alg.* i. 446. *Endl. 3rd Suppl.* p. 20. *Kütz. Sp. Alg.* p. 490.)

1. *Bryopsis plumosa*, Ag., *Sp. Alg.* v. 1. p. 488. *Kütz. Sp. Alg.* p. 493. *Harv. Phyc. Brit.* t. 3. *Ulva plumosa*, *E. Bot.* t. 2375.

HAB. Cook's Straits, and Akaroa Harbour, and Otago, *Lyall*, who sends three or four varieties. (Northern Atlantic.)

Gen. XCVII. VAUCHERIA, *DC.*

(*DC. Fl. Franc.* p. 62. *Lyngb. Hyd. Dan.* p. 75. *Ag. Sp. Alg.* i. 458. *Kütz. Sp. Alg.* p. 486. *Ectosperma*, *Vauch.*)

1. *Vaucheria Dillwynii*, Ag., *Sp.* v. 1. p. 463. *Kütz. Sp. Alg.* p. 487. *Grev. Alg. Brit.* t. 19. *Conferva frigida*, *Dillw. Conf.* t. 16.

HAB. On damp ground, *Colenso*. (Europe.)

Dr. Lyall and Mr. Colenso have sent specimens of perhaps two or three species of this genus, but not in a state in which they can be satisfactorily determined.

TRIBE II. BATRACHOSPERMEÆ.

Gen. XCVIII. BATRACHOSPERMUM, *Roth.*

(*Roth, Fl. Germ.* iii. 480. *Ag. Syst.* p. 23. *Endl. 3rd Suppl.* p. 22. *Kütz. Sp. Alg.* p. 535.)

1. *Batrachospermum moniliforme*, *Roth.* *Ag. Syst.* p. 53. *Kütz. Sp. Alg.* p. 535. *Conferva gelatinosa*, *Dillw. Conf.* t. 32.

HAB. In running streams of fresh water, Canterbury Plains, *Lyall.* New Zealand, *Colenso.* (Europe and North America.)

TRIBE III. *CONFERVACEÆ.*

Gen. XCIX. CLADOPHORA, *Kütz.*

(*Kütz. Phyc. Gen.* p. 269. *Sp. Alg.* p. 387. *Harv. Phyc. Brit.*)

1. *Cladophora herpestica*, *Kütz.*, *Sp. Alg.* p. 415. *Conferva herpestica*, *Mont. Voy. Pôle Sud, Crypt.* p. 6. *Hook. fil. et Harv. in Lond. J. Bot.* v. 4. p. 551.

HAB. Bay of Islands, *Hombrohn, J. D. H.* Cape Kidnapper, *Colenso.*

2. *Cladophora Lyallii*, *Harv.*; densissime pulvinata, effusa, filis vix uncialibus crassissimis rigidis subfastigiatis intricatis flexuosis vage ramosis, ramis alternis secundisve nunc oppositis patentibus, ramulis paucis sæpe secundis, apicibus obtusis, articulis diametro sesquolongioribus ad genicula constrictis. (TAB. CXXI. C.)

HAB. South Island, *Lyall.*

Forming widely effused, very dense, mat-like tufts, composed of rigid, very thick, interwoven filaments, less than an inch in length, decumbent at the base, then erect. These filaments are very irregularly branched; the branches patent, very frequently secund, sometimes opposite, or alternate. *Ramuli* few, of three or four articulations. *Articulations* constricted at the very narrow dissepiments, about once and a half as long as broad in all parts of the frond. *Apices* very obtuse. *Colour* a pale yellowish-green.—It does not adhere to paper in drying.—PLATE CXXI. C. Fig. 1, part of a mat of *Cladophora Lyallii*, natural size; 2, part of a branching filament, magnified; 3, apex of a ramulus, highly magnified.

3. *Cladophora pellucida*, *Kütz.*, *Sp. Alg.* p. 390. *Harv. Phyc. Brit.* t. 174. *Cladophora catenifera*, *Kg. l. c.* *Conferva pellucida*, *Dillw. Conf.* t. 90.

HAB. Waitemata Harbour, *Lyall.* (Native of Europe, and of the Cape of Good Hope.)

Of this plant we have only seen a fragment about 1 inch in length, but closely agreeing with some of our British specimens of this strongly marked species. We are not disposed to separate the Cape of Good Hope specimens on which *Kütz.* founds his *C. catenifera*.—Any one conversant with *C. pellucida* must know that, though true to certain broadly marked characters, it puts on several forms, and varies, in the same locality, in diameter and in the comparative length of the articulations.

4. *Cladophora verticillata*, *Hook. fil. et Harv., Fl. Ant.* v. 1. p. 193. *Kütz. Sp. Alg.* p. 388.

HAB. In a cave, Port William, *Lyall.* (Native of the Auckland Islands.)

These specimens are fully eight inches long. In other respects they agree with the Auckland Islands specimens formerly described.

5. *Cladophora Colensoi*, *Harv.*; filis nigro-viridibus rigidis gracilibus flexuosis e basi decompositis, ramis elongatis curvatis parum divisis basi nudis apice ramulosus, ramulis sæpissime secundis appressis abbreviatis vel longiusculis, articulis endochrome denso repletis diametro 3-4-plo longioribus.

HAB. Hawke's Bay, rare, *Colenso.*

Filaments 2 inches high, not densely tufted, nor very much branched. *Branches* springing a short distance from the base, numerous, but little divided, often quite simple, flexuous, with a few lateral branches, and more or less clothed with short, secund, very erect, or close-pressed ramuli. *Articulations* nearly of the same length in all parts of the frond, cylindrical, not contracted at the joints, filled with endochrome, which recovers its form on re-moistening; the cell-walls thick and rigid. *Colour* a dark green.—It does not adhere to paper in drying. It is allied to *C. rupestris*, but more slender and flexuous.

6. *Cladophora Daviesii*, Harv. ; filis læte viridibus rigidis crassiusculis vage ramosissimis, ramis alterne vel dichotome ramosis basi longe nudis apice crebre ramulosis, ramulis secunde multifidis corymboso-fasciculatis, axillis ramorum rotundatis, articulis diametro sesqui- vel duplo longioribus siccitate sæpe alterne compressis.

HAB. Tauranga, *Colenso*.

Filaments 4–5 inches long, densely tufted, much branched. *Branches* alternately or subdichotomously divided, frequently quite bare of ramuli for a considerable distance above and below the principal forks, and chiefly bearing ramuli near the summits, where they are crowded, somewhat corymbose, short, and very densely inserted, being generally secund, and consisting of two or three articulations. *Substance* rigidly membranaceous, not adhering to paper. *Colour* a beautifully clear, bright green. *Membrane* thin. *Articulations* uniformly short in all parts of the frond, seldom more than twice as long as broad. *Axillæ* remarkably rounded and broad.—Of this, which most resembles some of the forms of *C. Hutchinsiae*, we have as yet seen but two specimens.

7. *Cladophora gracilis*, Griff., in *Wyatt, Alg. Danm. No. 97. Harv. Phyc. Brit. t. 18. Kütz. Sp. Alg. p. 403.*

HAB. Port William, Southern Island, *Lyall*. (Native of Europe.)

Dr. Lyall's specimens are 14–15 inches long, and closely resemble the most luxuriant ones from the south of England, except that they are still more slender, with rather longer articulations, and longer and more distant ramuli. We are not disposed to separate them specifically; at least, not without further evidence than can be derived from the two or three specimens we have yet seen.

8. *Cladophora crinalis*, Harv. ; cæspite brevi basi intricata densissima intense-viridi crinali, filis tenuibus rigidiusculis siccitate nitidulis decompositis, ramis ramulisque erectis vel appressis strictis parum divisus, ramulis sparsis obtusis, articulis diametro 4–6-plo longioribus ad genicula constrictis.

HAB. New Zealand, *Colenso*.

Tufts 1–2 inches high, very dense, intricate at the base. *Filaments* slender, decompound, but not very much branched, all the divisions remarkably straight and erect; the ramuli few, scattered, short or long. *Articulations* constricted at the dissepiments, in the lower part six or eight times as long as broad, in the upper four to six times, with a thin tube, more or less completely filled with deep-green endochrome, which does not perfectly recover its form.—It imperfectly adheres to paper in drying.

Gen. C. CONFERVA, *Ag.*

1. *Conferva* (Chætomorpha) *Darwinii*, Kütz., *Sp. Alg. p. 380. Conferva clavata, var. Darwinii, Hook. fil. et Harv. Fl. Ant. v. 2. p. 493. t. 192. f. 1.*

HAB. East Coast, *Lyall, Colenso*.

2. *Conferva* (Chætomorpha) *aerea*, Dillw., *Conf. t. 80. E. Bot. t. 1929. Harv. Phyc. Brit. t. 99 B. Ag. Syst. p. 100. Kütz. Sp. Alg. p. 379. Wyatt, Alg. Danm. No. 190.*

HAB. Houraki Gulf, *Lyall*. (Native of Europe.)

3. *Conferva valida*, Hook. fil. et Harv., in *Lond. J. Bot. v. 6. p. 416. Kütz. Sp. Alg. p. 379.*

HAB. Port William, Southern Island, *Lyall*.

Gen. CI. TYNDARIDEA, *Bory.*

(*Bory, Dict. Class. i. 495. Harv. in Hook. Br. Fl. ii. 361.*)

1. *Tyndaridea anomala*, Ralfs in *E. Bot. Suppl. t. 2899. Hass. Br. Fresh W. Alg. p. 161. t. 38. f. 2, 3. Zygonium anomalum, Kütz. Sp. Alg. p. 447.*

HAB. In fresh water, *Colenso*. (Native of England?)

So far as a badly dried specimen allows us to decide, this does not differ from the English plant.

2. *Tyndaridea? byssoidea*, Harv.; filis arachnoideis nigricantibus gelatinosis, articulis diametro subtriplo longioribus.

HAB. In a fresh-water lake, Kapiti, Cook's Straits, *Lyall*.

We do not like to omit all notice of this species, and yet feel that the character given is quite insufficient to distinguish it. Our specimens are not in conjugation. The endochrome has contracted into a mass, with faint indications of bination, either in the centre or end of the articulation. Under the microscope it has a greenish tinge. To the naked eye the colour is smoky.

TRIBE IV. *ULVACEÆ.*

Gen. CII. PORPHYRA, *Ag.*

(*Ag. Syst.* xxxii. *Endl.* 3rd *Suppl.* p. 19. *Harv. Phyc. Brit.* t. 92. p. 211. *Kütz. Sp. Alg.* p. 691, excl. sp.)

1. *Porphyra laciniata*, *Ag., Syst.* p. 190. *Ag. Ic. Alg. Eur.* t. 26, 27. *Harv. Phyc. Brit.* t. 92. *Kütz. Sp. Alg.* p. 692.

HAB. Cook's Straits and Banks' Peninsula, *Lyall*. (Generally diffused.)

2. *Porphyra vulgaris*, *Ag., Aufz.* p. 18. *Grev. Alg. Brit.* p. 169. *Harv. Phyc. Brit.* t. 211. *Kütz. Sp. Alg.* p. 692. *Porphyra linearis*, *Grev. Alg.* p. 170. t. 18 (the young plant.)

HAB. Cape Kidnapper, etc., *Colenso*. (Generally diffused.)

Gen. CIII. BANGIA, *Lyngb.*

(*Lyngb. Hyd. Dan.* p. 82. *Ag. Syst.* p. 25. *Grev. Alg. Brit.* p. 177. *Harv. Phyc. Brit.* t. 96, etc. *Kütz. Sp. Alg.* p. 358.)

1. *Bangia ciliaris*, *Carm., MSS. Hook. Br. Fl. v. 2.* p. 316. *Harv. Phyc. Brit.* t. 322.

HAB. On leaves of *Zostera*, Cook's Straits, *Lyall*. (Native of Europe.)

This forms a dense fringe to the margin of the leaves. The fronds in our specimens are nearly $\frac{1}{2}$ an inch long, and very variable in breadth. Some have one or two rows of cells, as is common in the British plant; others have the middle part of the frond flattened into a leafy expansion, with many rows of irregularly-shaped cells; and others have pretty wide, uniformly flattened fronds.

2. *Bangia lanuginosa*, *Harv.*; filis (parasiticis) minutis curvatis cylindraceutis, cellulis purpureis uniseriatis diametro subduplo brevioribus.

HAB. Parasitical on *Chordaria sordida*, *Colenso*.

This covers the *Chordaria* with a dense, purple coat, about a line or two in length. Filaments curled, cylindrical, containing a single row of bright purple, lenticular cells, considerably shorter than their diameter. Substance soft and gelatinous.—Allied to *B. ceramicola*, but smaller, with much shorter and more densely-set cells. Except in colour, it does not differ from *Lyngbya (Hormotridia)*.

Gen. CIV. ENTEROMORPHA, *Link.*

(*Link. in Hor. Phys.* p. 5. *Harv. Phyc. Brit.* *Solenia*, *Ag. Syst.* xxxii. *Kütz. Sp. Alg.* p. 478.)

1. *Enteromorpha compressa*, *Grev., Alg. Brit.* p. 180. t. 18. *Harv. Phyc. Brit.* t. 335. *Kütz. Sp. Alg.* p. 480. *Solenia compressa*, *Alg. Syst.* p. 186.

HAB. Sea-shores, abundant. Very variable in form and size. (Generally diffused.)

2. *Enteromorpha intestinalis*, *Link, Hor. Phys. Ber.* p. 5. *Grev. Alg. Brit.* p. 179. *E. Bot. Suppl.* t. 2756. *Harv. Phyc. Brit.* t. 154.

HAB. Sea-shores, with the preceding, from which it only differs in having an unbranched frond. Generally diffused.)

3. *Enteromorpha clathrata*, var. *ramulosa*. *E. ramulosa*, *Hook. Br. Fl. v. 2. p. 315. Harv. Phyc. Brit. t. 245.*

HAB. Otago, *Lyall.* (Europe, etc.)

Gen. CV. ULVA, *Ag.*

(*Ag. Syst. xxxii. Grev. Alg. Brit. p. 171. Harv. Phyc. Brit. Ulva, Phycoseris, et Prasiola, Kütz. Sp. Alg. p. 472, etc.*)

1. *Ulva* (*Phycoseris*) *lobata*, *Kütz., Sp. Alg. p. 477. (An Phycoseris rigida? Kg. Ulva rigida? Ag.)*

HAB. Sea-shores, *Colenso.* (Cape of Good Hope.)

This is perhaps only a variety of *U. rigida*, as we had at first named our specimens. We have very similar ones from the Cape of Good Hope, which appear to be referable to Kützing's var. *Africana* of his *P. lobata*, to which therefore we refer our plant.

2. *Ulva latissima*, *Linn., Fl. Suec. p. 433. Ag. Sp. Alg. v. 1. p. 407. Harv. Phyc. Brit. t. 171. Kütz. Sp. Alg. p. 474.*

HAB. Sea-shores, common. (Generally diffused.)

3. *Ulva bullosa?* *Roth, Cat. Bot. v. 3. p. 329. Grev. Alg. Brit. p. 174.*

HAB. On stones, under water, *Colenso.* (Europe.)

A few young specimens, which seem to belong to this or an allied species.

4. *Ulva* (*Prasiola*) *crispa*, *Lightf., Fl. Scot. p. 972. Ag. Sp. Alg. v. 1. p. 416. Hook. fl. et Harv. Fl. Ant. v. 2. p. 498.*

HAB. Port Cooper, *Lyall.* (Generally diffused.)

TRIBE V. OSCILLATORIEÆ.

Gen. CVI. CALOTHRIX, *Ag.*

(*Ag. Syst. xxiv. Harv. Phyc. Brit. Endl. 3rd Suppl. p. 13.*)

1. *Calothrix scopulorum*, *Ag., Syst. p. 70. Harv. Phyc. Brit. t. 58 B. Schizosiphon scopulorum, Kütz. Sp. Alg. p. 329.*

HAB. Sea-shores, on rocks and mud, near high-water mark, common, *Colenso.* (Generally diffused.)

Gen. CVII. OSCILLATORIA, *Vauch.*

(*Vauch. Conf. t. 15. Ag. Syst. xxiv. Harv. Phyc. Brit. Oscillaria, Bosc. Endl. 3rd Suppl. Kütz. Sp. Alg. p. 237.*)

1. *Oscillatoria* — ?

Mr. Colenso sends us a species of this genus, which we have not sufficient specimens to determine.

Gen. CVIII. TOLYPOTHRIX, *Kütz.*

1. *Tolypothrix irregularis*, *Berk.; filis æuginosis irregularibus hic illic constrictis l. torulosis sæpe attenuatis, annulis angustissimis.*

HAB. Amongst patches of *Vaucheria*, on tidal mud, *Colenso.*

Threads very irregular, $\frac{1}{8000}$ — $\frac{1}{4000}$ inch across, compressed, sometimes constricted, sometimes torulose, often

attenuated above or below, furnished at the base with a minute, hyaline, elliptic connecting-joint. *Fruit-rings* very narrow.—*M. J. B.*

TRIBE VI. *NOSTOCHINEÆ*.

Gen. CIX. *NOSTOC*, *Vauch.*

(*Vauch. Conf.* p. 203. *Ag. Syst.* xviii. *Kütz. Sp. Alg.* p. 295.)

1. *Nostoc verrucosum*, *Vauch.*, *Conf.* p. 225. t. 16. f. 3. *Kütz. Sp. Alg.* p. 300.

HAB. In fresh-water streams, Canterbury Plains, *Lyall.* (Europe and North America.)

NAT. ORD. CIV. LICHENES.

By the Rev. Churchill Babington, B.D., F.L.S.

THE following enumeration of New Zealand *Lichenes* and *Byssaceæ* comprises about 150 species, of which at least 100 are also found in Britain. The term *species* is here taken in the larger sense; for a much greater number of *forms*, often easily to be recognized, undoubtedly occur in the country. Thus the first species, *Usnea barbata*, comprises six Acharian species, or, as I should call them, slightly differing forms. This catalogue, though probably sufficiently complete to give a general notion of the distribution of genera in the country, and of their relative magnitudes, to some extent does, notwithstanding, I am firmly convinced, fall considerably below the true number of species inhabiting the islands; in fact, there is no doubt that specimens, which I am unable to name satisfactorily, and yet am unwilling to describe as new, belong to species not occurring in the following pages. In no class of plants is there so great a liability to error as in the Lichens: in no class of plants ought new species to be proposed with greater caution,—it may almost be said, with greater reluctance. There are enough, and too many, bad species in this Order already, and it is to be feared that a few may have here been added to the number. The remark of a great botanist, though somewhat paradoxically expressed, has a truth underlying it: “In other tribes of plants, the more we study them the more species we discover: among Lichens, the more we study them the fewer we find them.”

It thus becomes clear that the lichenological flora of a country requires to be studied by a native botanist, who may recognize a protean species by a knowledge of its living forms, or, as Fries expresses it, of its history. Without this knowledge, especially in the case of crustaceous Lichens, it is oftentimes hopeless to attempt to arrive at a clear result; and I am confident that the more difficult species of the southern hemisphere, even of the higher genera (of *Sticta*, for example) will never be properly elucidated, till they have been described and limited by some one who is familiar with them in a living state. I have strong suspicions that several species which have been here kept as distinct will prove to be only remarkable varieties of the same plant; and, on the other hand, I may have occasionally erred in reducing two or more described species to one. Even the European species of the more difficult genera are at present very ill understood.

The family of *Lichenes* is more cosmopolitan in its species than any other known tribe of plants; the more it is studied, the more this is found to be the case; and one reason why the variation of the species is sometimes so exceedingly great, is because many of them exist under almost every condition of latitude, altitude, and climate. The fact of their general distribution teaches also another lesson, that a lichenist should be slow to describe new species without some tolerable acquaintance with the Order generally. This remark has repeatedly forced itself upon my mind while engaged in the present work,



W.H. & C. 1841

F. Reichenow

Lindsaea spicata Lam., *Zett.*

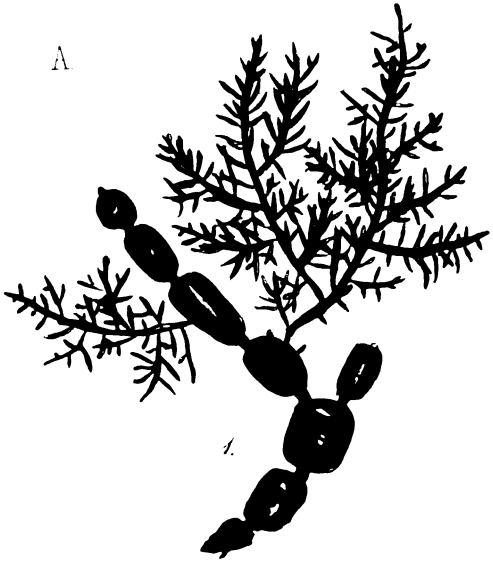


W H B delet lith

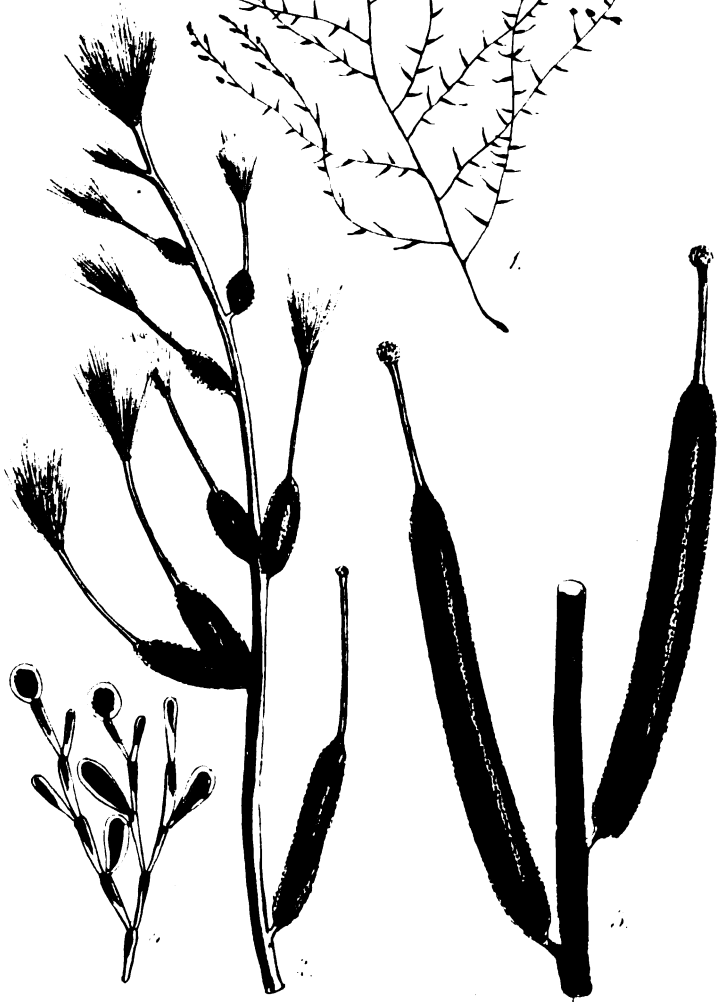
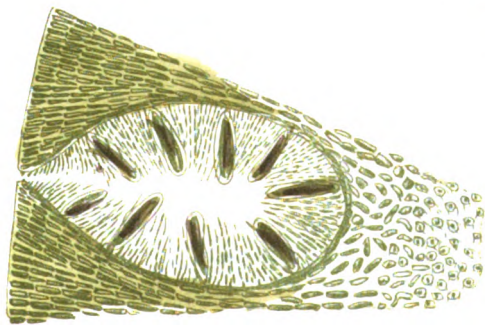
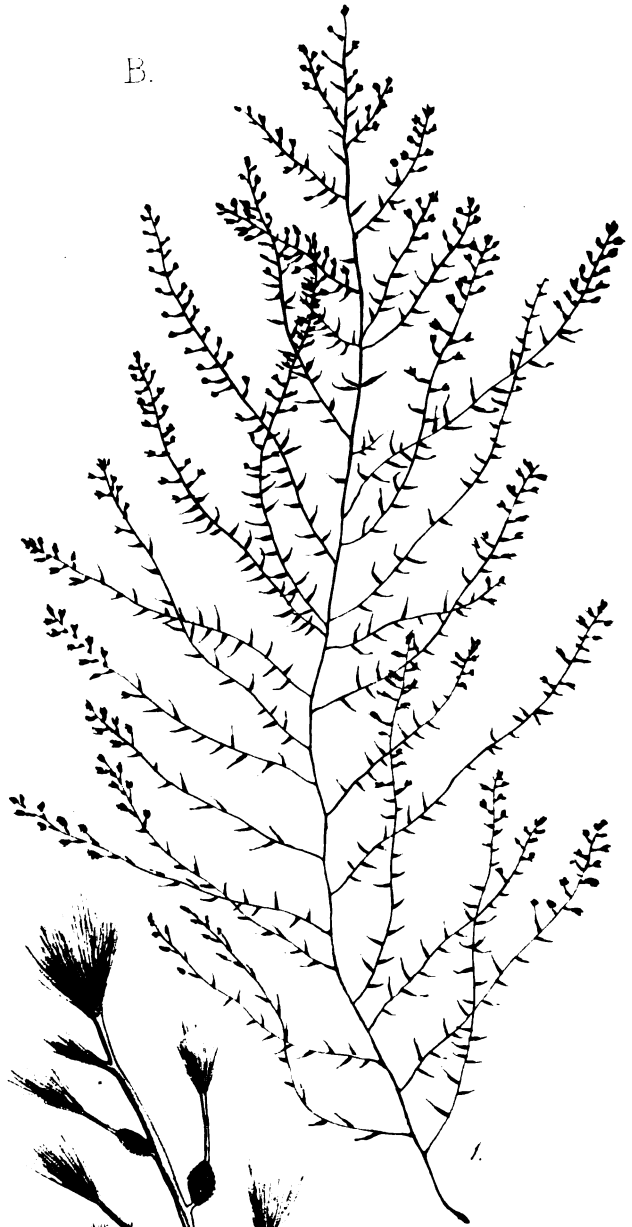
F. Ravenel

Cystophora hyalini, Hook, fil & Harvey

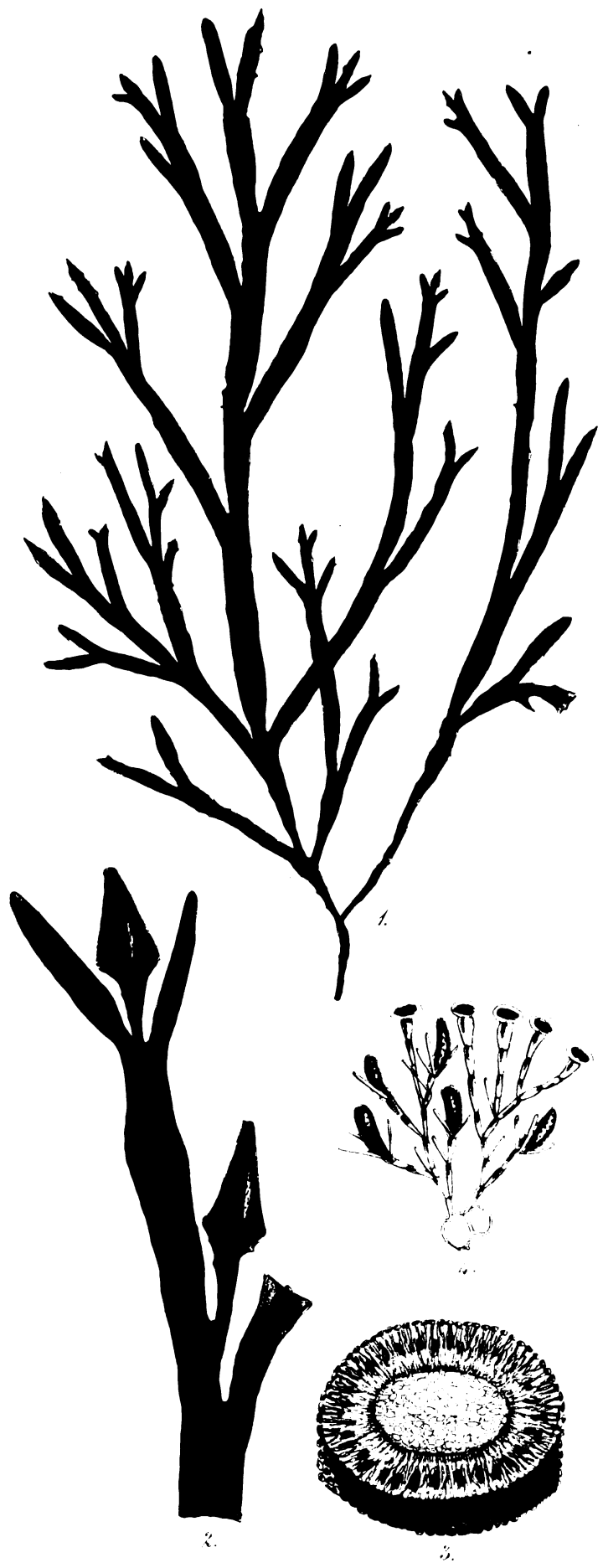
A.



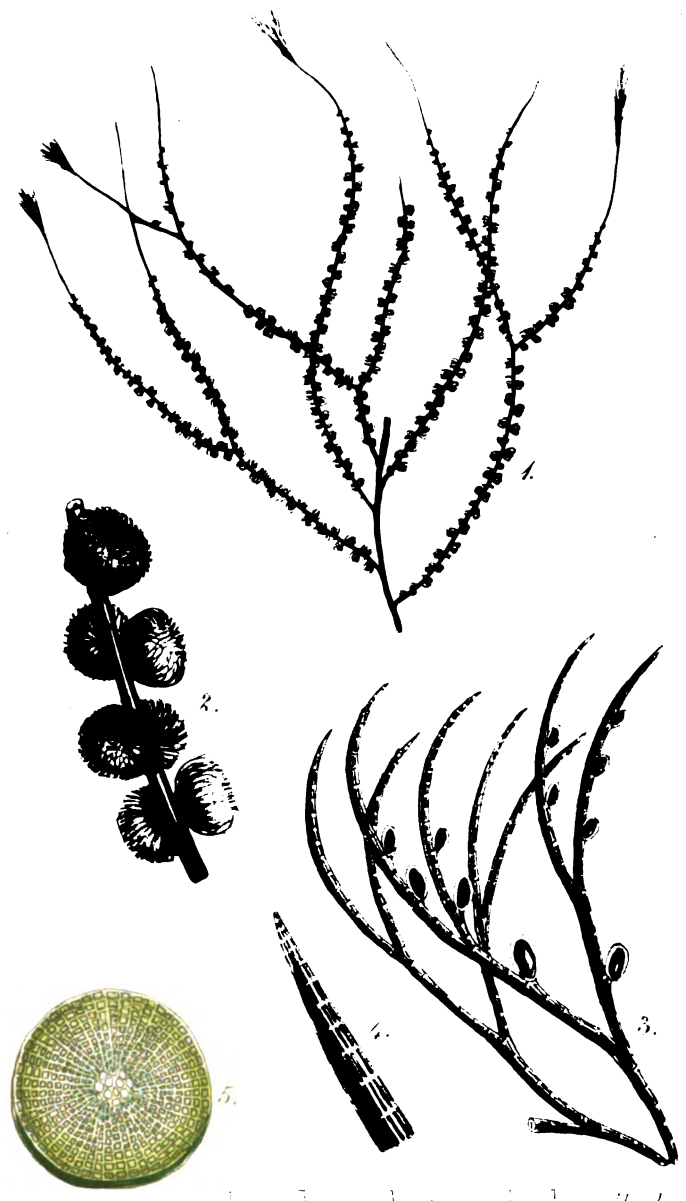
B.



A.



Copelandia thalassica, *Wulfen*

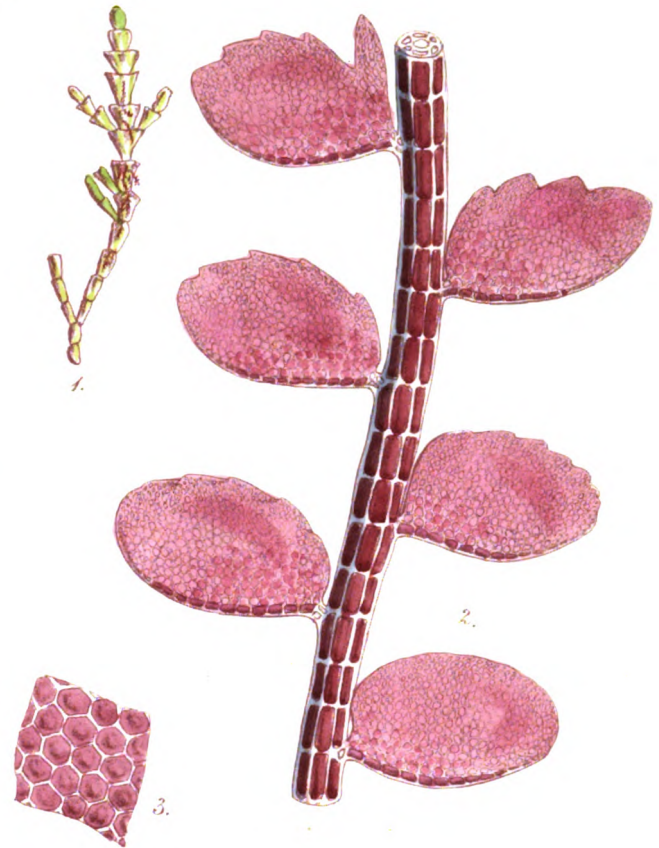


Phacelium botryocladum, *Hook & Harvey*



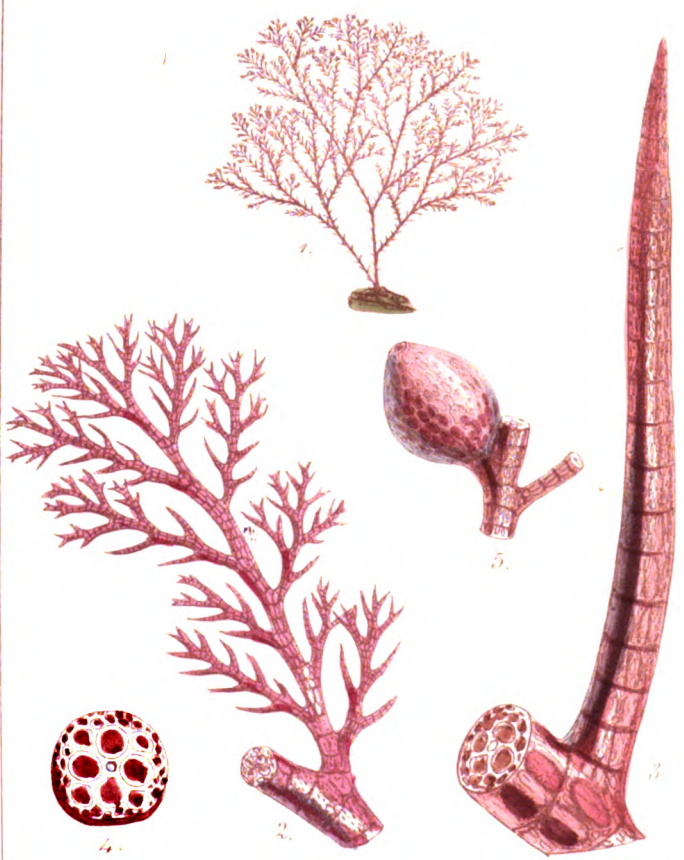
Phacelium thalassica, *Wulfen*

B.



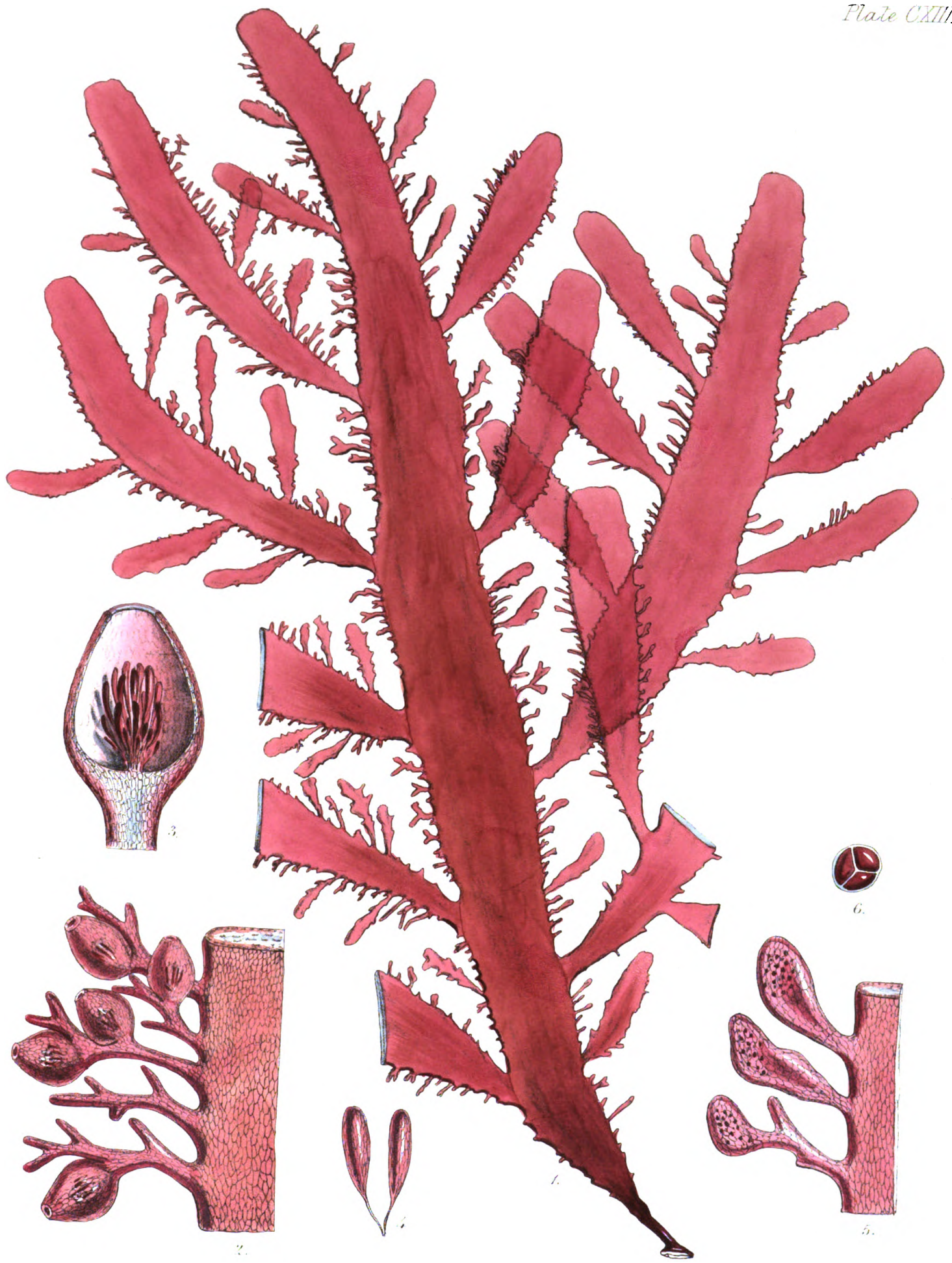
Hydrocoleum

Hydrocoleum



Hydrocoleum

Rytiphloea delicatula



W. H. Harvey

W. H. Harvey

Cladhymera oblongifolia, Hook. fil. & Harvey

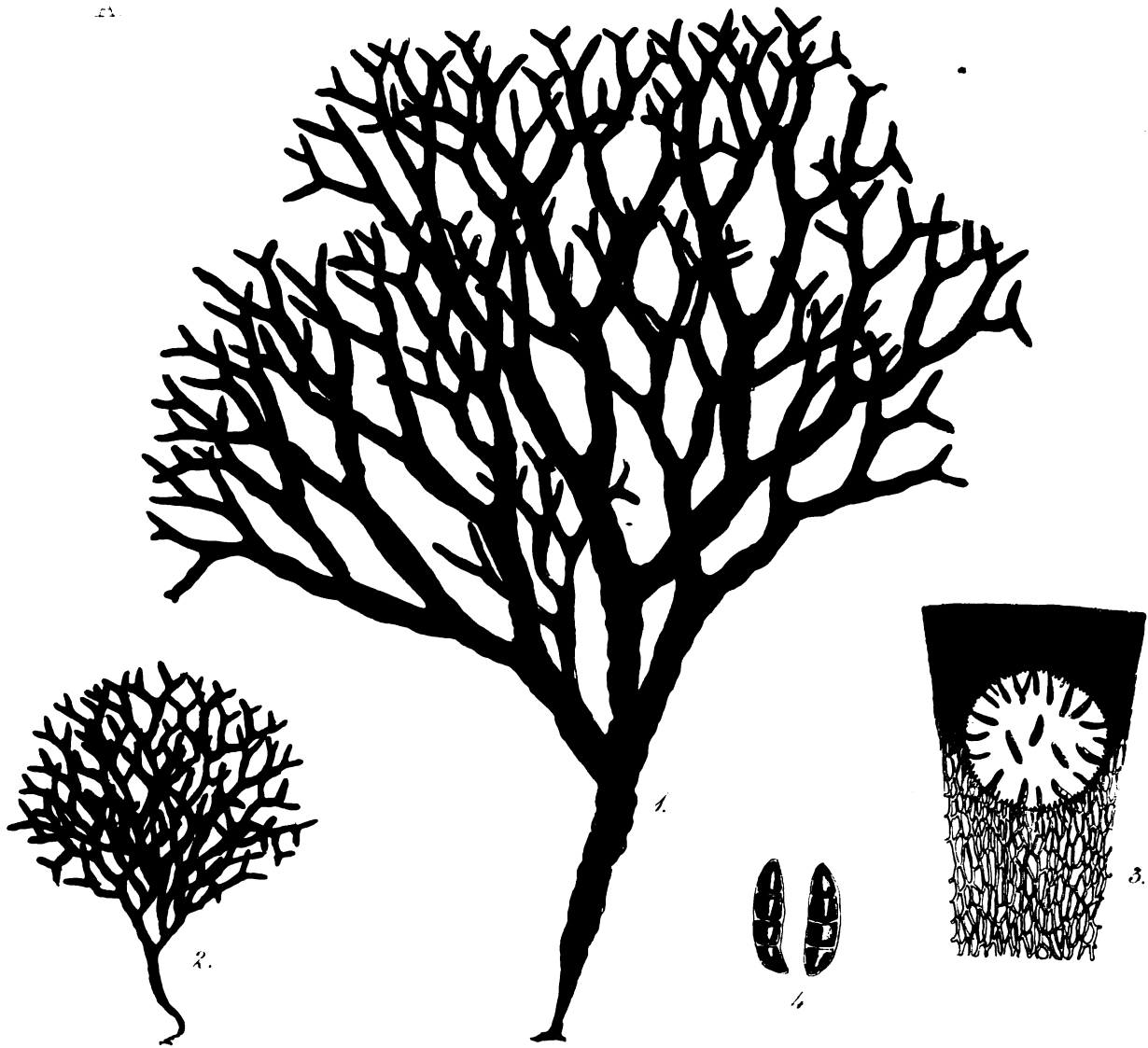




W. H. H. del et lith.

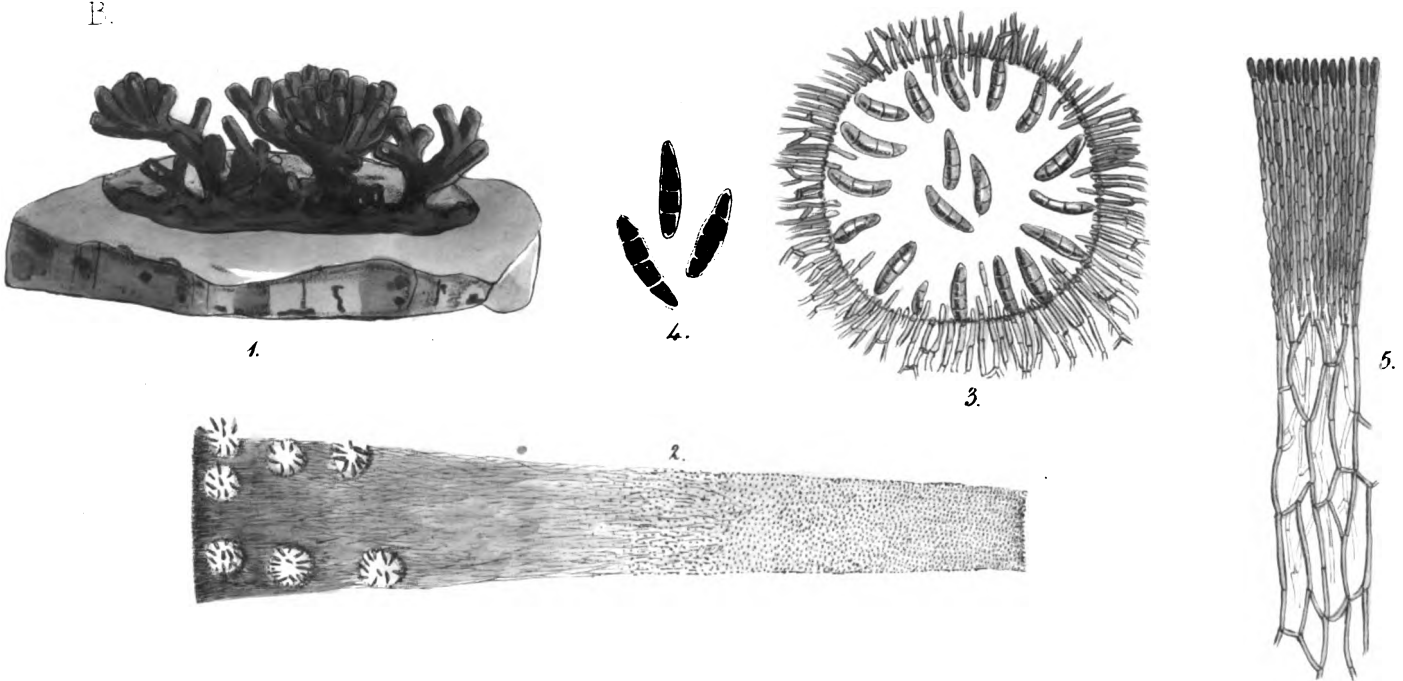
Delesseria Hookeri, Lyall

F. Reeve del.

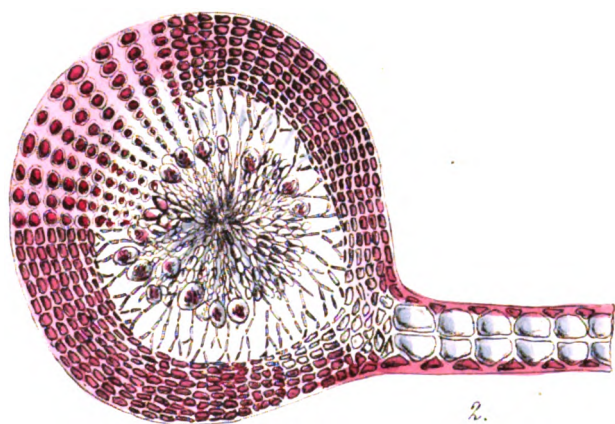
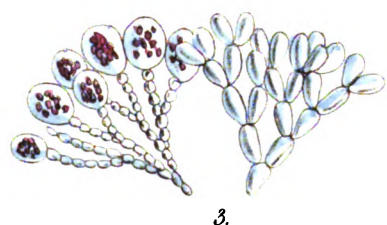
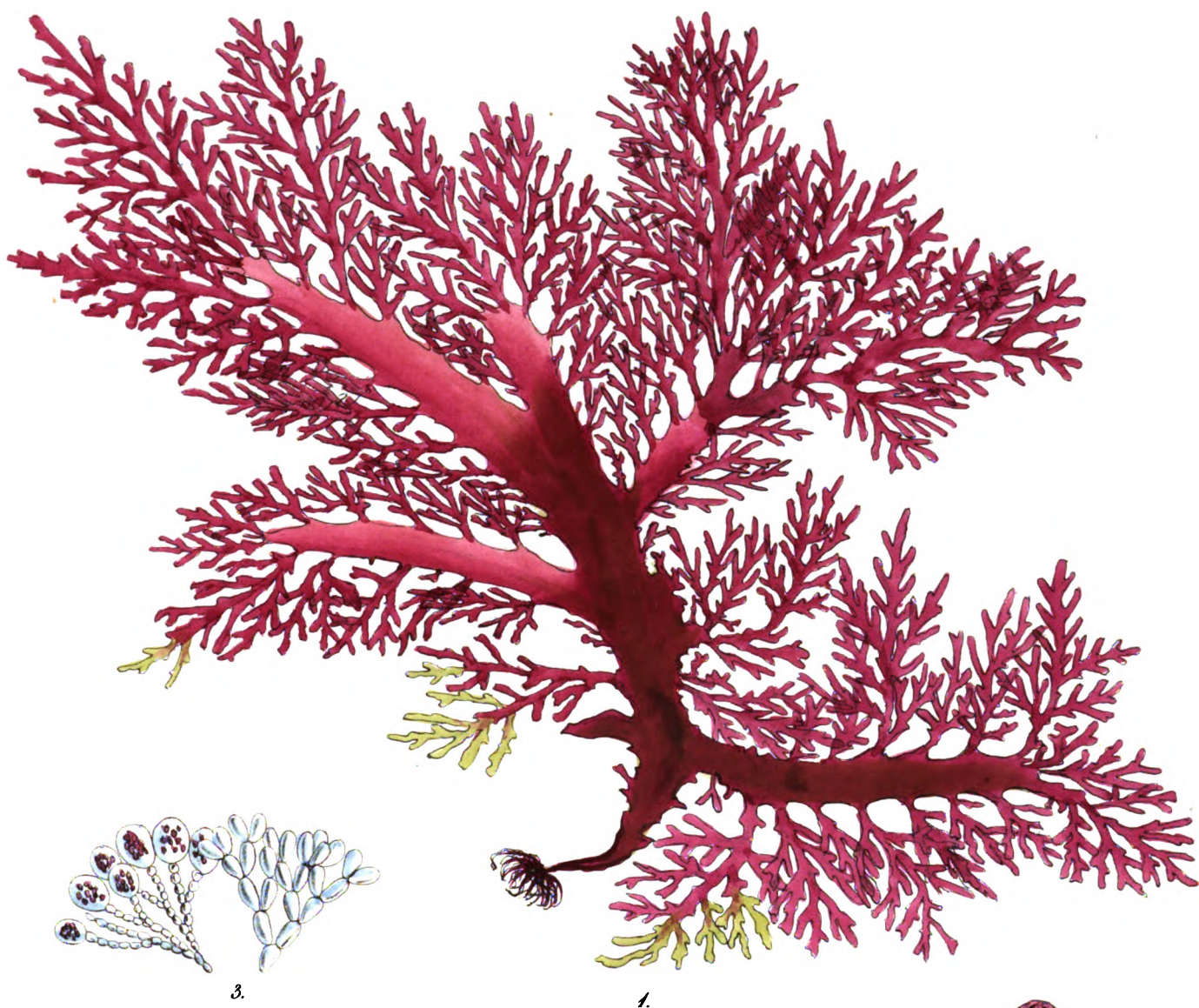


Apophlœa Lyallii, Hook, fil. & Harv.

B.



Apophlœa Sinclarii, Hook fil. & Harv.



W. H. R. H. H.

F. R. C. R. M.

Rhodophyllis membranacea, Harv.

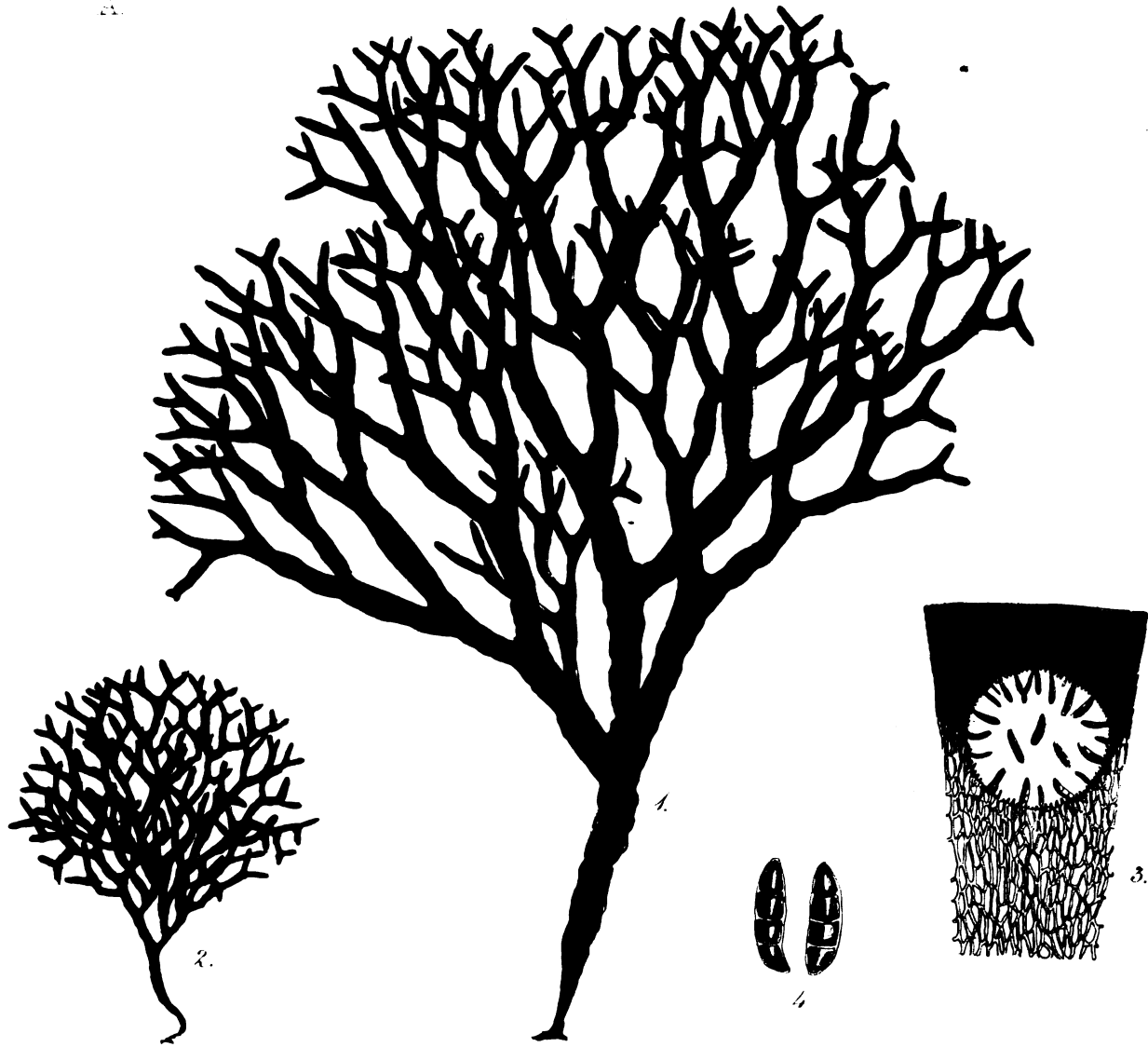




V. H. H. del. et. lith.

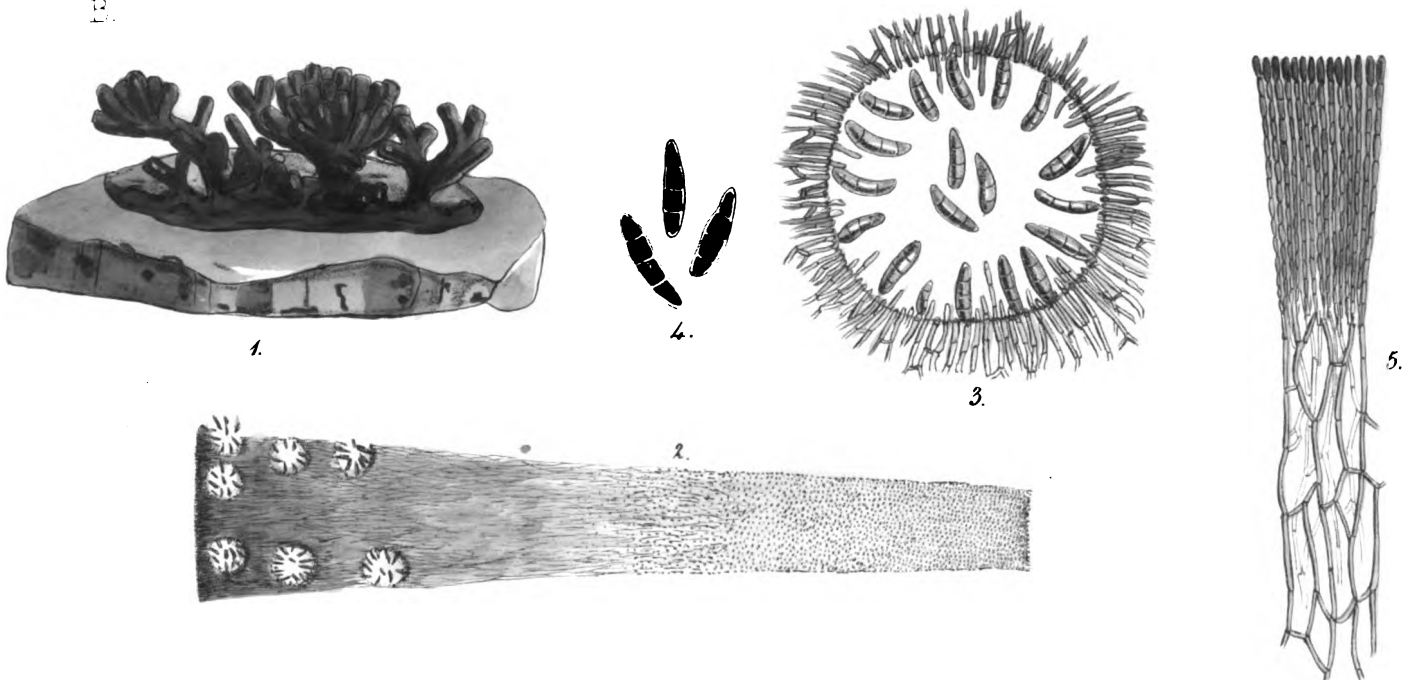
Delesseria Hookeri, Lyall

F. Reere. imp.



Apophitea Lyalli, Hook, fil. & Harv.

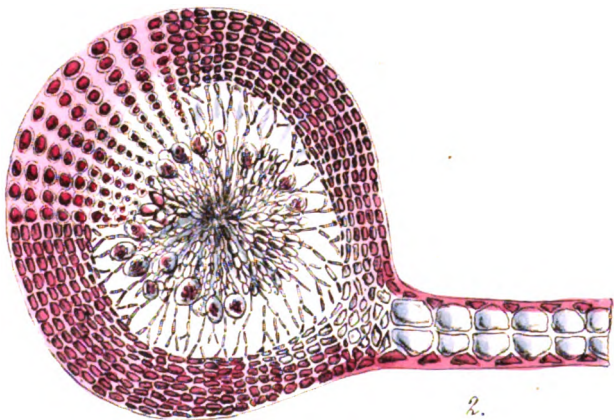
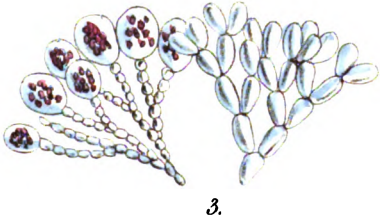
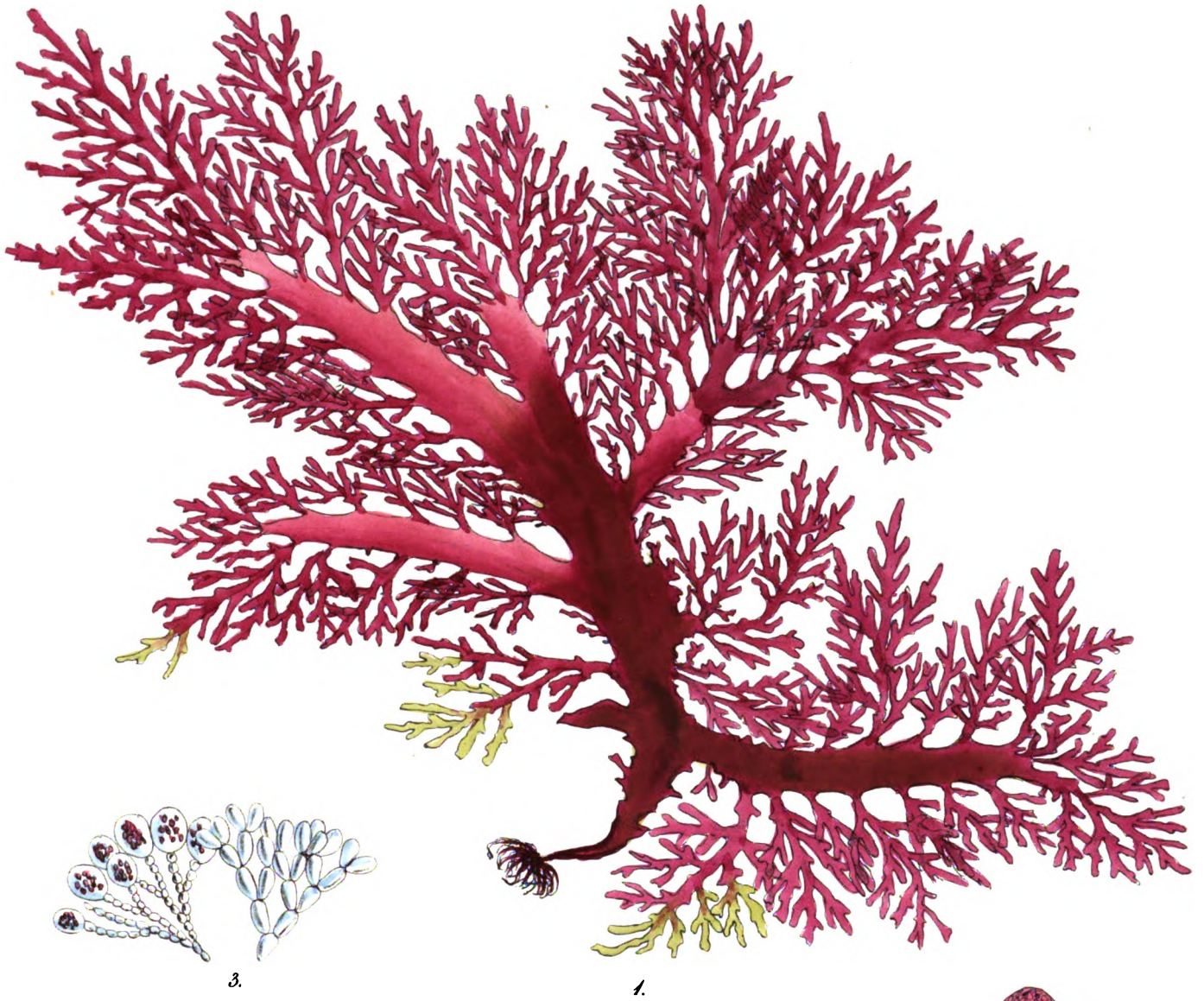
B.



Apophitea Sinclairi, Hook fil & Harv.

WITH ROCK.

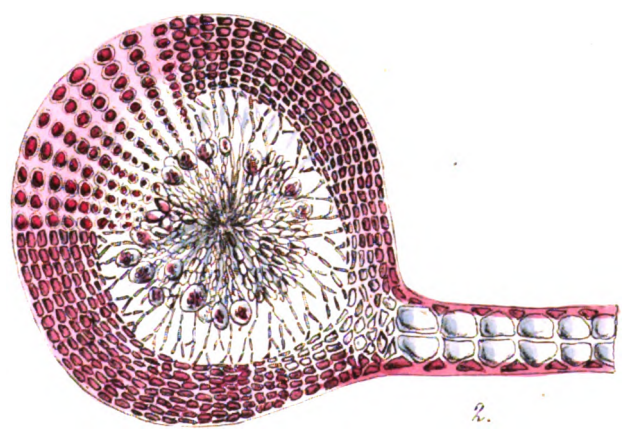
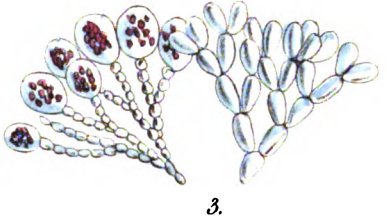
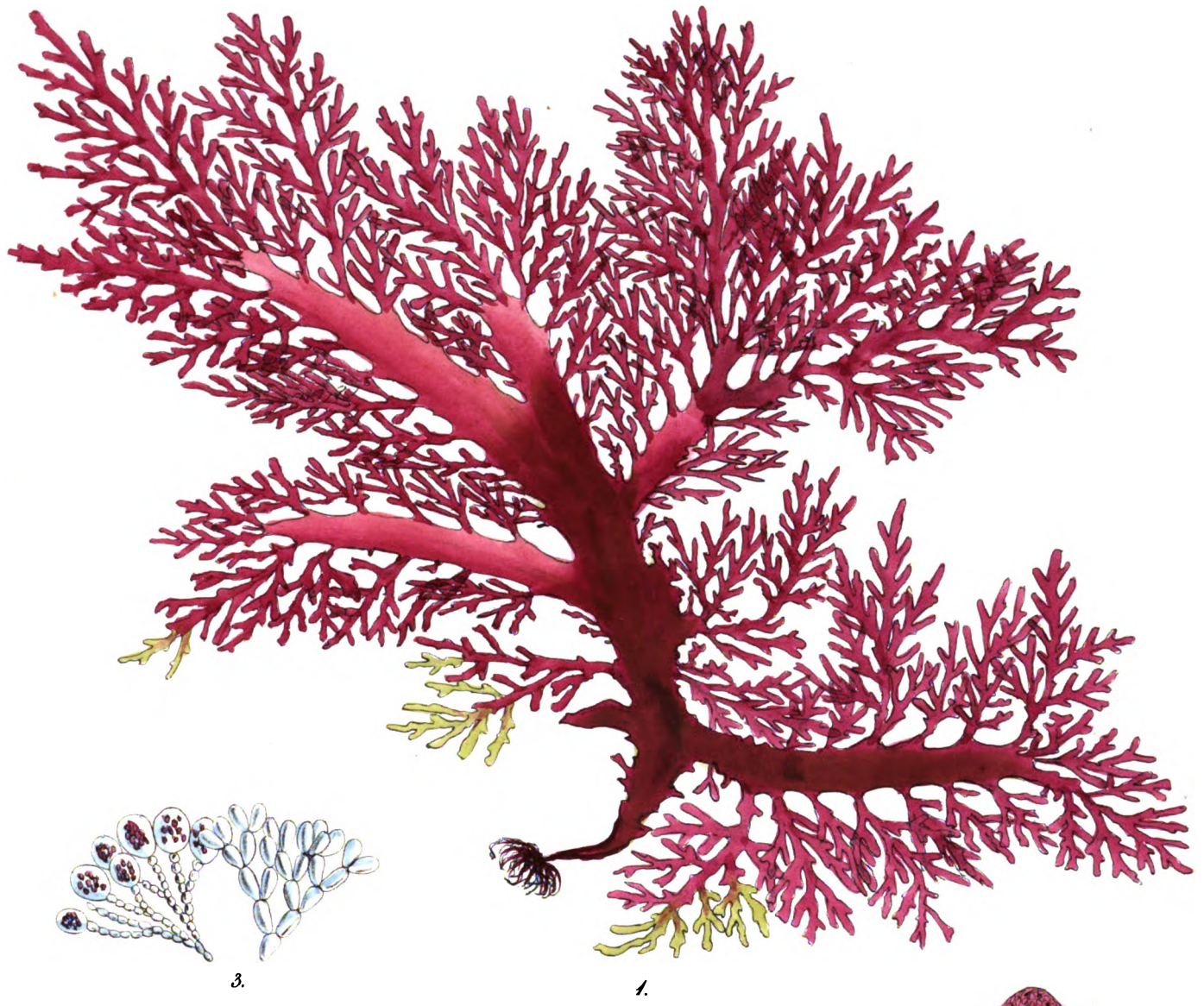
FIGURES 1-5.



W. E. M. C. B. S.

F. Rees, del.

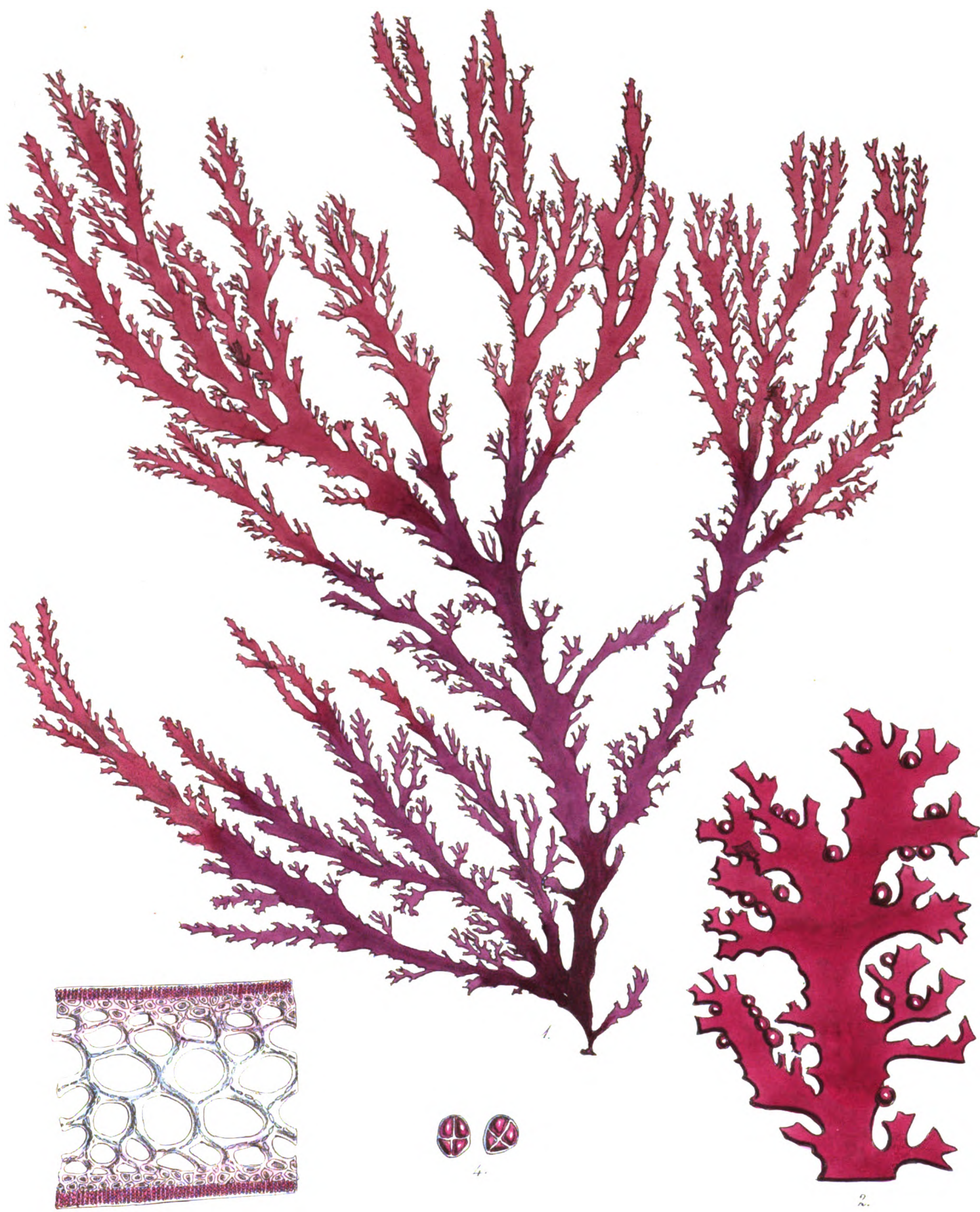
Rhodophyllis membranacea, Harv.



W. E. Wood

F. Rees

Rhodophyllis membranacea, Harv.



3.

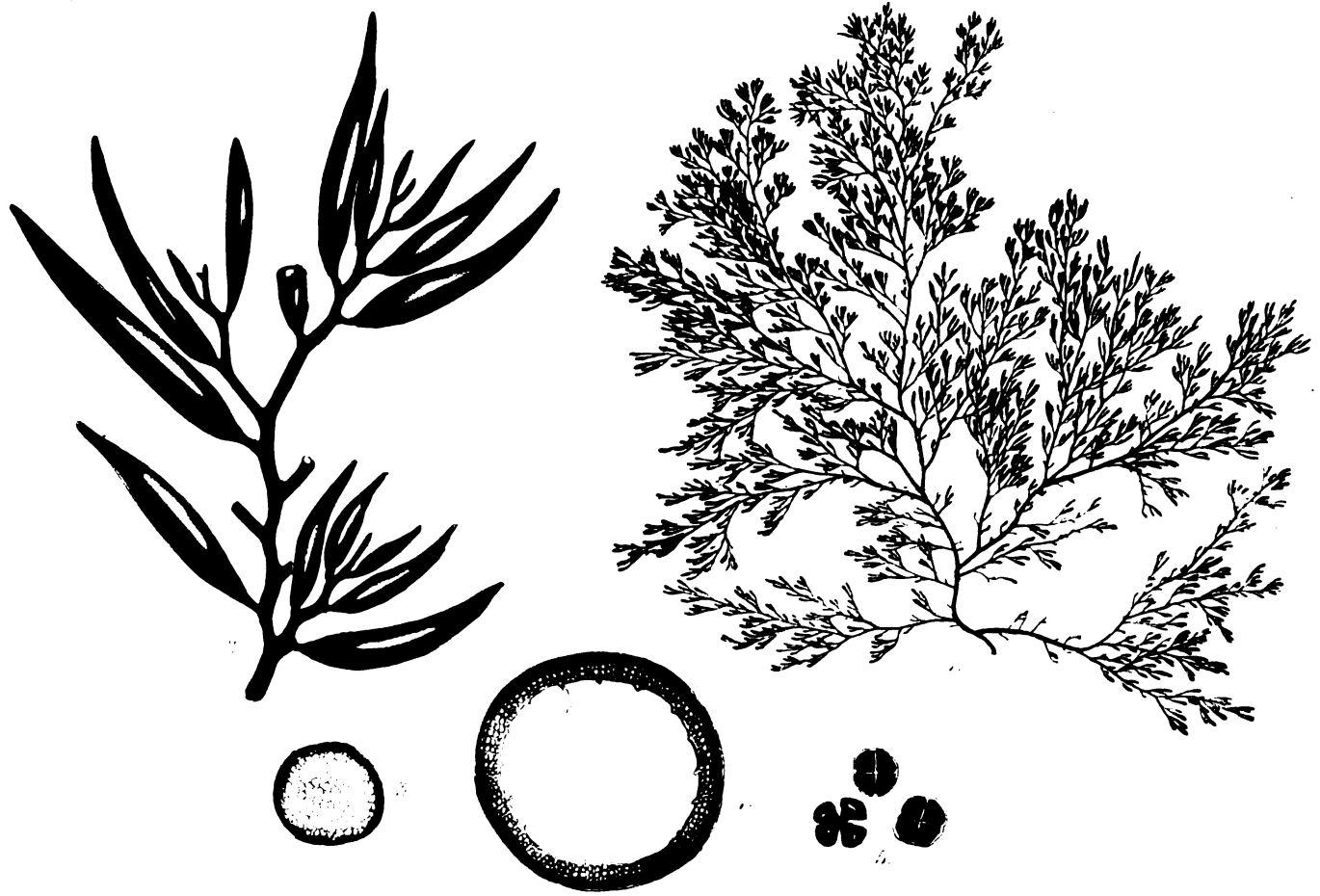
2.

4.

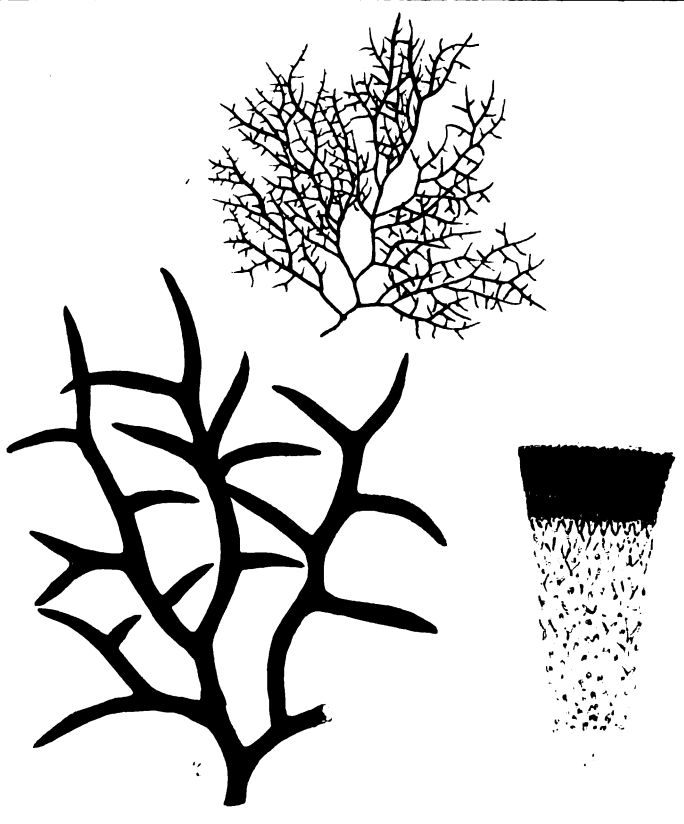
W H H del et lith.

F Beeve, imp.

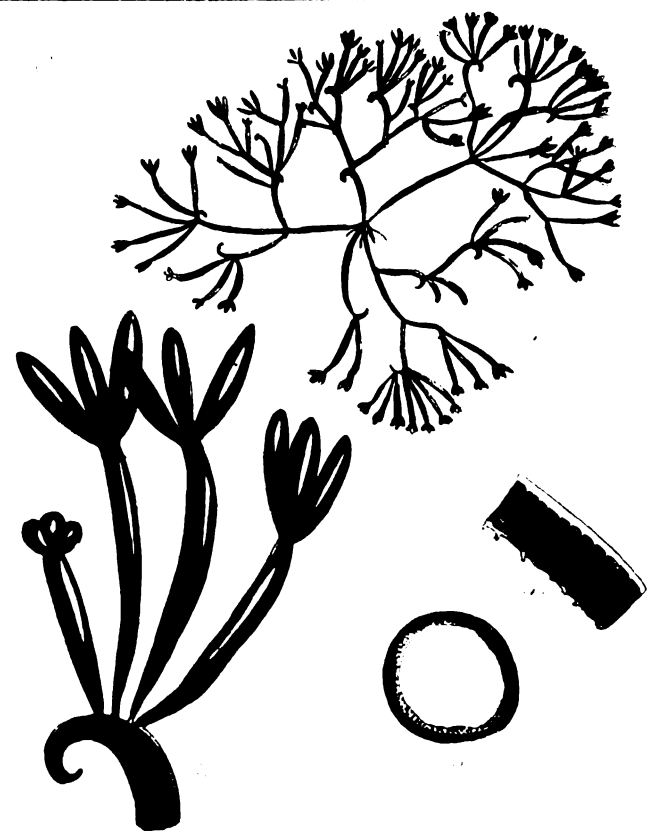
Callophyllis erosa, Hook, fil. & Harv.



Gigartina papillata (Setchell) Dawson



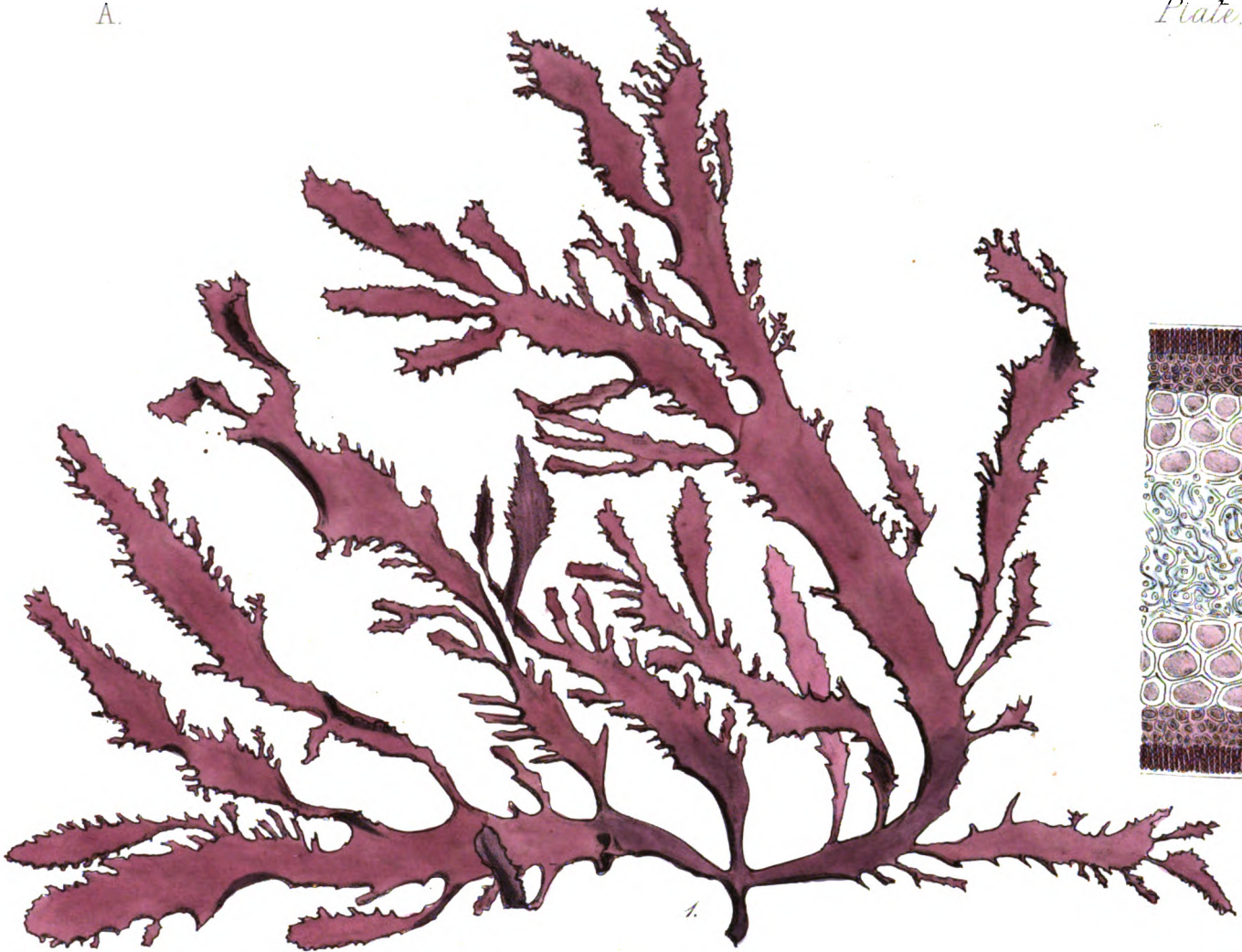
Gigartina Chapmanii (Setchell) Dawson



Chylodactylus unguiculata (Hooker et J. Ag.) Dawson

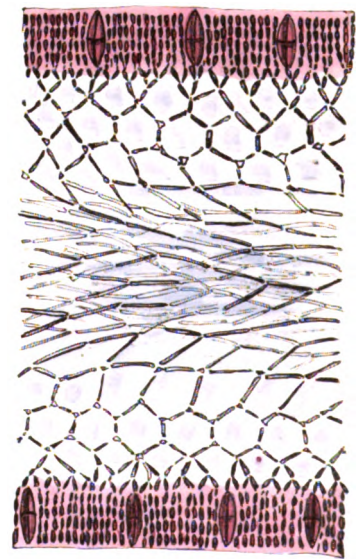
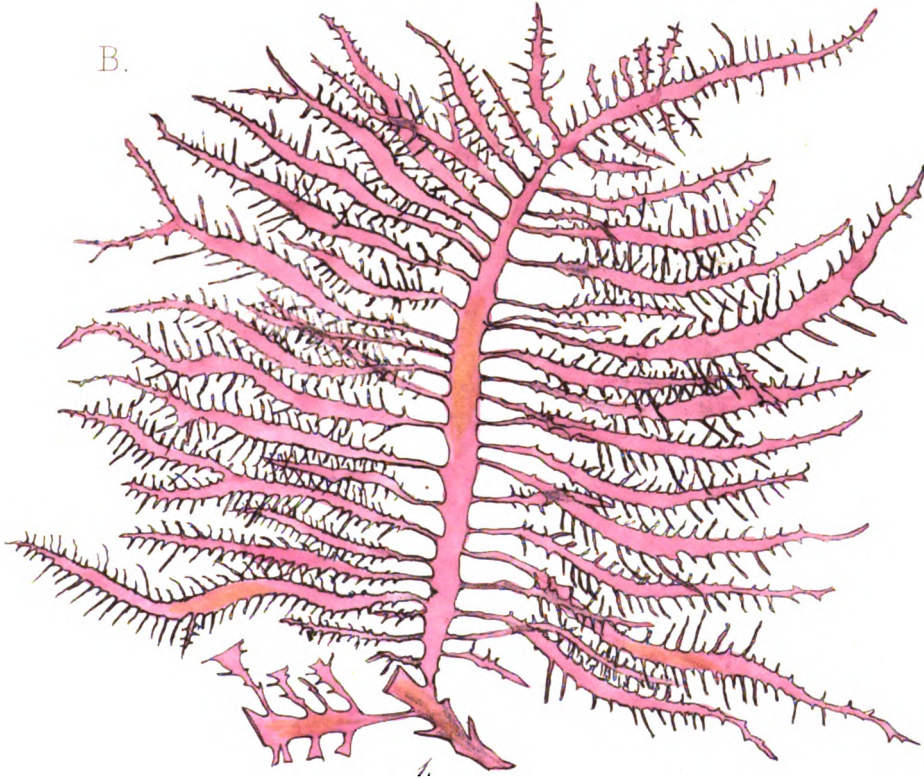
Plate III

A.



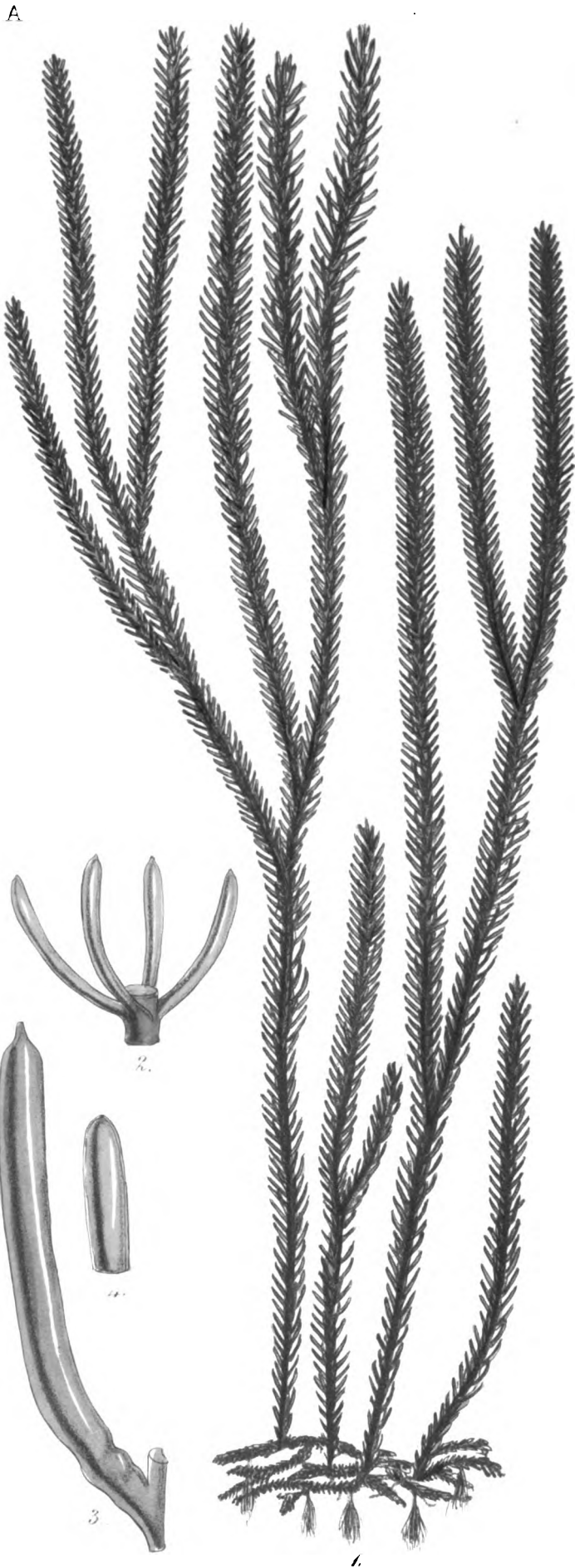
Priontis Colensoi, Hook, fil. & Harv.

B.



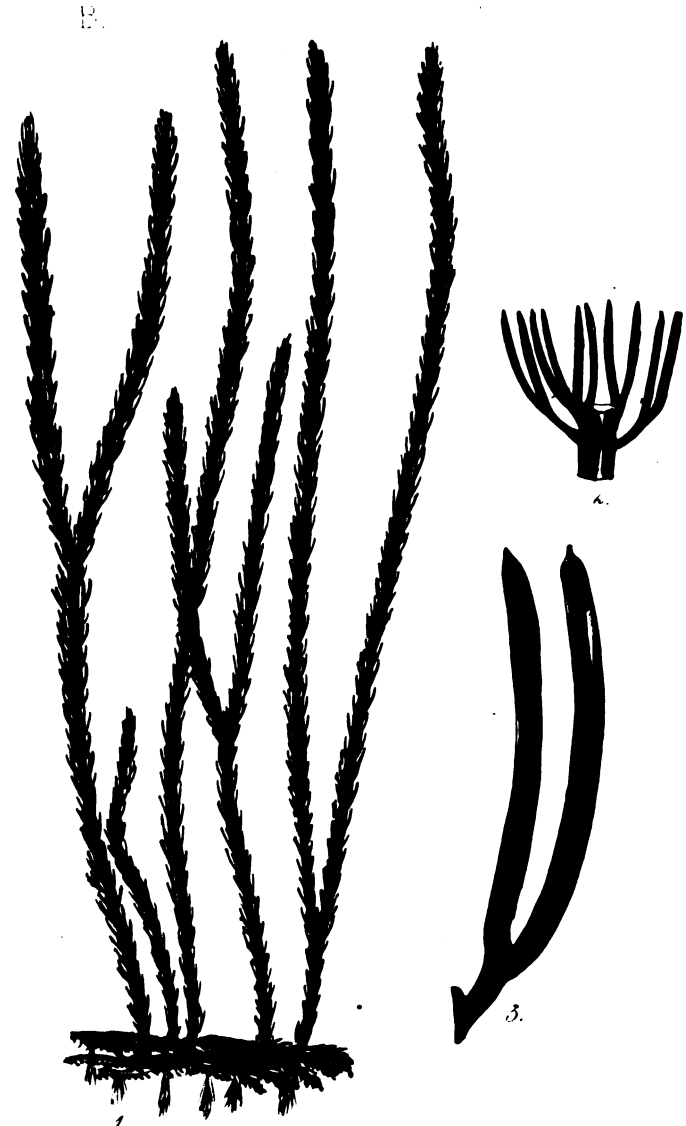
W. H. F. del et lith

Nemastoma pinnata, Hook, fil. & Harv.

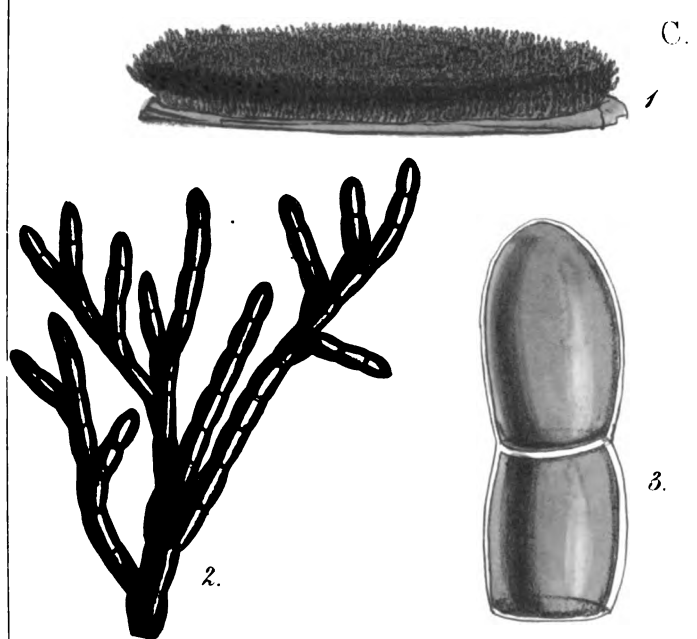


A. *Caulerpa*

Caulerpa Brownii, *Exell*



B. *Caulerpa furcifolia*, *Hook, fil. & Harvey*



C. *Cladophora*

Cladophora Lyallii, *Hook, fil. & Harvey*