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CRYPTOGAMIC BOTANY

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THE

CRYPTOGAMIC BOTANY

OF

THE ANTARCTIC VOYAGE

OF

H.M. DISCOVERY SHIPS *EREBUS* AND *TERROR*

IN THE YEARS 1839—1843.

UNDER THE COMMAND OF

CAPTAIN SIR JAMES CLARK ROSS, Kt., R.N., F.R.S. &c.

BY

JOSEPH DALTON HOOKER, M.D., R.N., F.L.S.,

ASSISTANT SURGEON OF THE "EREBUS" AND BOTANIST TO THE EXPEDITION.

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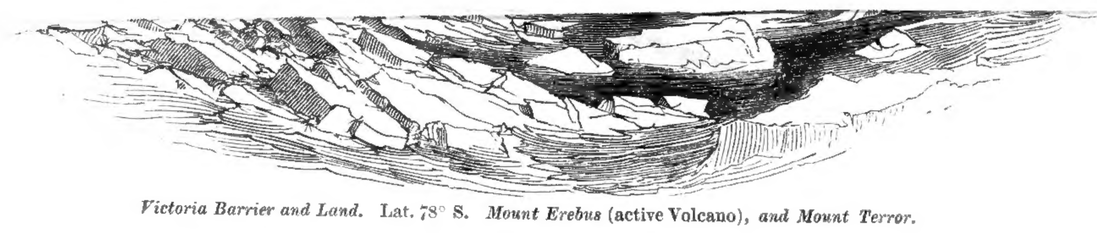

Victoria Barrier and Land. Lat. 78° S. *Mount Erebus* (active Volcano), *and Mount Terror.*

Published under the Authority of the Lords Commissioners of the Admiralty.

LONDON:

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FORTIN, MASSON, ET CIE., PARIS.

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the command of Captain Sir James Clark Ross...By Joseph
Dalton Hooker...pt.I.Flora Antarctica v.1 & 2.This was
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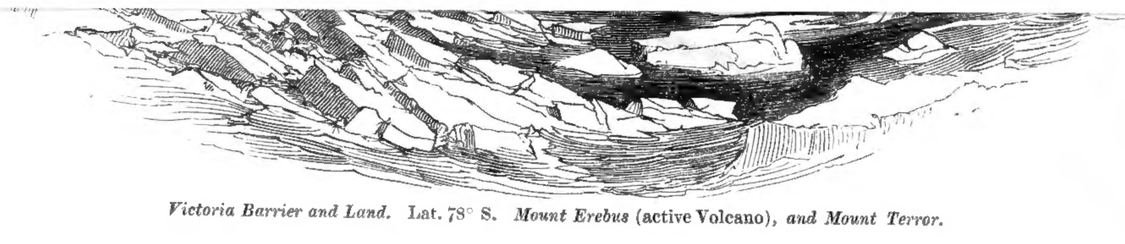

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INTRODUCTION.

SO large is the proportion of *Mosses, Hepaticæ, Sea-weeds* and *Lichens*, brought home by the Antarctic Expedition, as compared with the *Phænogamic plants*, and they contain so much of interest and novelty, that, at the request of several able Cryptogamic Botanists, I have been induced to prepare a few copies illustrative of these Tribes, unconnected with the entire *Flora of the Antarctic Regions*. It gives me the greatest pleasure to comply with this request, because I am thus afforded the means of illustrating the labours of my distinguished coadjutors, the Rev. M. J. Berkeley, Mr. Wilson, Dr. Taylor, and Dr. Harvey, in a suitable manner, and giving them to the world in a far cheaper form than that of any similar publication.

The number of *Mosses* to be described under the head of the several localities where they were collected, amounts to nearly three hundred species. In their determination, my friend, Mr. Wilson, has afforded me the aid of his unequalled acumen and knowledge of this tribe; every species having been subjected by both of us to the most rigid analysis. Nor am I less indebted to that gentleman for assisting me in the Plates, many of the dissections being wholly due to his pencil. It is to be regretted that neither space nor time was allowed us to dwell upon the geographical distribution of the *Mosses*, without interfering with the physiological and anatomical remarks, which, though few, are the results of many years patient investigation of living specimens.

To Dr. Taylor I owe the diagnoses of all the *Hepaticæ*: his acknowledged merit as a Cryptogamic Botanist is a warrant for the able execution of this portion of the Work. I have myself farther subjected them to the most careful examination; added somewhat to the descriptions; and prepared the dissections which accompany them. I lament, however, the impossibility of representing all the new species in this work; many of those that are unavoidably omitted being equally worthy of illustration with such as have been figured.

When it is remembered that no fewer than one hundred and fifty new species of *Hepaticæ* were collected, and more than double that number required investigation, it will not be thought surprising that these minute and apparently insignificant productions should have proved to be among the most laborious departments of our Botany. The *Lichens*, not amounting to quite two hundred, and offering few undescribed species, have received a similar investigation from Dr. Taylor.

In a hemisphere, of which the sea occupies so vast a proportion, the vegetable productions of that element demand particular notice, and the Expedition in which I had the honour to serve being expressly of a maritime nature, a full collection of *Algæ* was one of our first scientific objects. Dr. Harvey of Dublin, whose knowledge of this tribe is the result not merely of well applied talent at home, but of experience derived from two voyages and a protracted residence in the Southern Hemisphere, has given me such aid in this department as no one else was competent to afford. There are sixty species from Lord Auckland's group and Campbell's Island alone; nearly twice as many from the other Antarctic Islands, and these, with the collections formed by Mr. Gunn in Van Diemen's Land, in addition to the *Algæ* brought home by the Antarctic Expedition, from New Zealand, and other quarters of the globe south of the Equator, swell the amount to between three and four hundred species requiring elucidation, a large number of which have not been hitherto described.

So much attention was devoted to the Orders above enumerated, and more especially to the *Flowering Plants*, that but little time could be devoted to the *Fungi*. Some remarkable species were, however, collected, perhaps one hundred in all. These were at once placed in the hands of my friend the Rev. M. J. Berkeley, the first Mycologist of the day, and he has already forwarded to me the description of those from Lord Auckland's group, twenty in number; some of which are very peculiar, though not equally so with those found in the other Antarctic Islands, especially Tierra del Fuego.

CRYPTOGAMIA ANTARCTICA.

BEFORE proceeding to describe the Cryptogamic Plants of the Antarctic Expedition, it may be proper to state, that they received a larger share of attention during the progress of the voyage than is usually paid to those Orders which can only be satisfactorily collected by one accustomed to distinguish the species both microscopically and in the field. As might be expected, the amount of new genera is much smaller than among the Phænogamic plants, and even some of the well-known forms of Europe occur: whilst, however, this general similarity to the productions of other countries tends to diminish the interest of the collections, the great proportion which such tribes bear to the more highly organized plants in these latitudes, adds considerably to their importance in geographic Botany. Thus, though there are only a hundred and twenty-four flowering plants in Lord Auckland's group and Campbell's Island, there are two hundred and fifty Cryptogamiæ; a number which could not fail to offer a large amount of new species and many genera of peculiar interest.

Of the Mosses, however, I may remark, that the two principal groups, *Acrocarpi* and *Pleurocarpi*, bear that certain proportion to one another which follows a fixed law throughout the globe; the former increasing with the latitude over the latter; for these not only decrease in number more rapidly, but also in development, seldom fruiting in low temperatures. The humid, temperate and shady islands of the Southern Hemisphere promised at first sight to be richer in species than investigation proved them to be; this arises from a remarkable luxuriance and diffusion in the individuals. In no part of the world have I been able to collect as many species in a week as during one day's search in many districts of Scotland; a difference too marked to be attributable to my greater familiarity with the species of our own country.

ACOTYLEDONES.

MUSCI.

(By W. WILSON, Esq. and J. D. HOOKER.)

1. ANDREÆA, *Ehrh.*

Theca quadrifida, rarius octofida; valvulis apice operculo persistente connexis. *Calyptra* mitræformis. *Vaginula* apophysiformis, setam brevissimam occultans, demum stipitata.

The peduncle, which elevates the mature capsule in this genus, is nothing more than an elongated receptacle (*pseudopodium*, Brid.) of a white colour; such as is also found in *Sphagnum*. In an early stage, this receptacle scarcely differs in appearance from that of other mosses; by its subsequent elongation the theca is elevated, generally above

the perichætial leaves, whilst the true pedicel or seta remains wholly included in the vaginula. The calyptra hence continues attached to the vaginula for a much longer period than in other genera, and its rupture is occasioned by the distension of the theca; and not by an elongation of the seta. If a very young capsule be longitudinally divided, the seminal sac will be seen lining its interior, and also extending over the surface of the columella, the apex of the latter being attached to the summit of the operculum. The sporules, in a very early stage, are aggregated in fours, and long before the bursting of the calyptra attain a deep brown colour.

The inflorescence is usually, and perhaps invariably, monœcious, the male fructification being on separate branches; though *A. mutabilis* (nobis) appears really dicœcious. Both kinds of flowers are, at first, truly terminal, though, owing to the rapid growth of innovations, especially on the male surculi, they soon become, to all appearance, lateral and even axillary. The male flowers, from their small size, are, in general, concealed by the cauline leaves. The antheridia vary in number, from one or two to seven, intermixed with paraphyses, which, however, have not been seen in *A. mutabilis* (nobis), and which that species probably wants. In the female flower the archegonia are generally four, never more, and are not accompanied with any paraphyses.

1. Andreæa *nitida*, Hook. fil. et Wils.; caulibus suberectis laxe cæspitosis parce ramosis, foliis erecto-patentibus ovato-oblongis obtuse apiculatis concavis enerviis nitidis marginibus reflexis, perichætialibus paulo longioribus erectis. (Tab. LVII. fig. III.)

Hab. Lord Auckland's group; on rocks near the tops of the hills, at an altitude of 1200 feet; very rare.

Caules semi-unciales et ultra, crassiusculi, sub $\frac{1}{2}$ unc. lati, hic illic divisi. *Folia* suberecta, conferta, imbricata, sublingulata, obtusa, summo apice apiculata, dorso convexa, subcarinata, margine superne apiceque subreflexa, puniceo-atra, luce obversa rufo-brunnea, siccitate erecta, vix crispata; *perichætialia* subsimilia, sed longiora, tenera, marginibus planis, areolis minimis subrotundatis. *Inflorescentia* terminalis, dioica? *Flores masculi* gemmiformes, ovati, acuti, denique laterales, foliis caulinis dimidio breviores, foliis valde concavis ovato-rotundatis acutis occlusi; *antheridia* 6 aut plura, paraphysibus paucis filiformibus immixta. *Flores fœminei*: *Archegonia* quatuor, paraphysibus nullis. *Pedicellus* (seu *pseudopodium*) $\frac{1}{15}$ unc. longus, perichætii dimidio longior, v. rarius eo inclusus, apice (ad vaginulam propriam) incrassatus. *Theca* sessilis, parva, elliptica, nigro-fusca, 4-valvis, siccitate dilatata, $\frac{1}{3}$ lin. longa.

A highly remarkable species, and quite unlike any hitherto described.

Plate LVII. *Fig.* III.—1, a tuft, of the natural size; 2, branch and theca; 3 and 4, leaves; 5, a moist theca; 6, an archegonium:—*magnified*.

2. Andreæa *acutifolia*, Hook. fil. et Wils.; caulibus fastigiatim ramosis, ramis apice ramulosis, foliis erecto-patentibus incurvis rigidis lanceolato-subulatis acutis v. ovatis longe acuminatis concaviusculis enerviis basi inæqualibus siccitate erectis, perichætialibus elongatis lanceolatis convolutis, theca subexserta.

Hab. Campbell's Island; on rocks, barren.

Caules erecti, conferti, ramosissimi, $\frac{1}{2}$ unc. longi et ultra, siccitate rigidi. *Folia* undique inserta, patentia, deinde incurva, ovata, acuminata, basi gibbosa, enervia, infra medium denticulata, siccitate subappressa, opaca, rufo-brunnea, juniora flavo-viridia v. rufescentia, areolis pellucido-punctatis moniliformibus; *perichætialia* submajora, lanceolata, erecta. *Flores masculi* gemmiformes, foliis ovatis concavis inclusi. *Antheridia* 4–7, *paraphysibus* filiformibus $\frac{1}{2}$ breviora. *Pedicellus* perichætium vix superans. *Theca* parva, nigra, paulo exserta. *Sporæ* majusculæ, ferrugineæ.

This species may be distinguished from *A. alpina* by its narrower and much more acuminated leaves, which are of a paler hue, never shining, gibbous at the base; those of the perichætium do not differ materially from the cauline ones. The specific character and description are drawn up in part from Hermite Island (Cape Horn) specimens;

those now before us, from Campbell's Island, are smaller, less branched and various in colour, sometimes forming small dense tufts, hardly $\frac{1}{4}$ inch in height, but not different in other respects.

3. ANDREÆA *mutabilis*, Hook. fil. et Wils.; caulibus cæspitosis elongatis ramosis gracillimis, foliis confertis laxisve erecto-patentibus rarius falcato-secundis lanceolatis ovato-lanceolatisve subconcavis enerviis siccitate appressis.

Var. $\overset{\alpha}{\beta}$, *microphylla*; foliis minimis ovato-lanceolatis. (TAB. LVII. fig. II.)

HAB. Lord Auckland's group; on rocks, at an elevation of 1200 feet; rare, (with female fructification). Campbell's Island; on the hills, in rocky places, from 800–1000 feet of elevation, with male inflorescence only.

Muscus polymorphus, cæspitosus. *Caules* semi- ad bi-unciales, inferne nudi, superne ramosi. *Folia* basi macula flava notata, dorso vix papillosa, areolis granuloso-punctatis. *Inflorescentia* dioica; *folia perigonii* ovato-rotundata, acuta, concava. *Antheridia* 3 v. plura, elliptica, majora longiusque pedicellata quam in affinibus. *Paraphyses* nullæ. *Folia* perichætialia caulinis longiora, elliptico-lanceolata, convoluta.

This species, of which we have no examples in good fruit, differs from *A. rupestris* in the more erect and narrower leaves. The specific character has been drawn up from an examination of Falkland Island specimens, as well as of those from the Islands now under consideration. The other varieties are enumerated in the London Journal of Botany (vol. 3. p. 536.).

PLATE LVII. *Fig.* II.—1, a tuft of the natural size; 2, a branch; 3 and 4, leaves:—*magnified.*

4. ANDREÆA *subulata*, Harvey; caule subramoso, foliis falcato-secundis subulatis attenuatis basi dilatatis crassinerviis, perichætialibus convolutis. A. subulata, *Harvey in Hook. Ic. Plant.* vol. iii. t. 201.

Var. γ, *perichætialis*; theca foliis perichætialibus minoribus immersa. (TAB. LVII. fig. I.)

HAB. Lord Auckland's group and Campbell's Island; upon rocks, at a considerable elevation on the hills.

The cauline leaves of this variety are longer and more strict than in the other states of the plant enumerated in the 'London Journ. of Botany' (l. c.), and the theca and perichætium very inconspicuous; we cannot however venture to separate it as a species. It differs from *A. Rothii*, its nearest ally, in the leaves being longer and the nerve thicker, the latter occupying the whole breadth of the leaf, except at the base, so as to have been overlooked, and the leaves consequently described as nerveless.

PLATE LVII. *Fig.* I.—1, specimens of the natural size; 2, a branch; 3 and 4, cauline leaves; 5, section of ditto; 6 and 7, perichætial leaves; 8, a theca:—*magnified.*

2. SPHAGNUM, *Dill.*

Theca globosa, stomate nudo exannulato. *Columella* apice libera, abbreviata. *Calyptra* medio rupta, basi persistente. *Vaginula* apophysiformis, pedicellum brevissimum occultans, demum stipitata. *Perichætium* laterale.

Bridel, supposing this genus to be destitute of a *vaginula*, constituted it a separate order; in which he was followed by ~~Bruch and Schimper~~. Nees & Hornschuch. (Bryol. Germ.)

The female flower, at first sessile, in every respect like that of other pleurocarpous mosses, occupies the place of a ramulus, or is inserted in the axis of two or more branches. As the fructification advances, the receptacle elongates, and the perichætial leaves, becoming separated from one another, it presents the appearance of a lateral branch. The antheridia are found in the fertile plant at the clavate and often discoloured extremities of short deflexed ramuli.

They are roundish, on pedicels as long or longer than themselves, generally solitary in the axils of the perigonial leaves, which are somewhat ventricose at the base, but not otherwise different from those of the stems.

The anatomy of the theca of *Sphagnum* is very peculiar. What appears the columella does not extend, as in other genera, to the summit of the theca, but is a continuation of the seminal sac, ascending from the bottom of the theca, and forms a portion of the same membrane which also lines the under surface of the operculum, passing completely across the stoma, as shewn in Plate LVII. fig. VI., where the central figure is drawn from a sketch and section prepared by Mr. Wilson.

This curious structure of the seminal sac is quite different from what obtains in most genera of mosses, and appears to have been misunderstood by Arnott and Greville, in whose excellent essays upon the 'Genera of Mosses,' the columella is described as sinking, along with its opercular membrane, so low, as to assume the appearance of a tympanum, stretched across the interior of the theca, a little below its base (Wern. Trans. vol. iv. p. 131.); their figure however does not represent the columella bearing any residua of the opercular membrane, but merely having the base of the seminal sac drawn up into the axis of the theca in the form of a cone, which is its true origin. The more striking peculiarities of the sporular sac of *Sphagnum* are these; 1st. its forming a bag or cyst without any orifice: 2nd, in the drawing up of the base of this bag into the axis of the theca, but not so far as to reach the level of the stoma, nor consequently the upper surface, or that opposite the base, which remains entire and stretched across the stoma. If the columella were carried up to the same height as in other mosses, an obliteration of the upper part of the sporular membrane would be caused by the perforation of the latter, (if we regard the metula as a portion of the columella), or else there would ensue a mutual cohesion of the membranes of columella and sac.

Sphagnum may be considered to possess the simplest form of sporular sac, the dehiscence of which is probably caused by a removal of the upper portion in the same plane as the stoma and parallel to the operculum. The next stage of development of this organ is, perhaps, presented in some astomatous mosses; *Voitia**, for instance, a perpendicular section of the theca in which genus exhibits the seminal sac in the form of a vertically elongated ring, supported in the axis of the theca by the corculum of the columella. The latter passes uninterruptedly from the apex of the seta to the top of the persistent operculum, thus apparently perforating the sac, by whose inflected walls it is lined for the greater part of its length. In this case, dehiscence and the escape of the sporules may be supposed

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* In the young state of *Voitia hyperborea*, of which (through the kindness of Sir James Ross), I have examined many thecæ, there is a communication between the seminal sac and the lining of the walls of the theca (thecal membrane), by means of conferva-like filaments such as are seen in most other mosses. Tracing the different membranes upwards, from the apex of the theca, I was led to believe that the same tissue formed the thecal membrane, the conferva-like filaments, and the corculum of the columella; and further, the immediate communication between all the surfaces of the seminal sac and the walls of the theca afforded room for a conjecture, that the latter were immediately concerned in the development of the sporules, especially as before the separation of the spores both the thecal membranes and filaments were full of a grumous fluid, which afterwards disappears. If such a view be correct, the internal structure of the theca of *Voitia* is very simple, and consists, 1st, of stout cells forming the external walls; 2nd, of a fine tissue, not only lining the former and sending filaments to the opposite walls of the seminal sac, but, becoming more condensed at the base and apex of the cavity of the theca, it ascends in its axis and meets the descending portion in the hollow of the columella, over whose surfaces they both ramify; and 3rd, of a vertically elongated ring (the seminal sac) through whose centre this second membrane passes. Mr. Wilson (to whom I am indebted for my knowledge of the structure of both theca and cellular tissue of *Sphagnum*), has not been able, from the want of specimens, to confirm this view of the structure of *Voitia*; he, however, informs me, that "the existence of such a connecting tissue is only analogous to what is found in *Gymnostomum pyriforme*, whose sporular sac is connected with the base of the theca by a bundle of filaments;" he also adds, that "in many *Polytricha* there is a distinct, almost woody, central axis to the columella, with filaments intervening betwixt it and the winged folds of the sporular sac which forms the outer part of the columella."—J. D. H.

to take place through the decay of the theca, when, as frequently happens, the theca and seta are together detached from the plant, and possibly, if persistent, the operation may be aided by the development of a fungus which we have seen in the walls of the capsule of *V. hyperborea*.

The more complicated structure of these parts, which most peristomed mosses possess, may eventually prove mere modifications of, or deviations from the simpler organization of *Voitia* and *Sphagnum*. *Gymnostomum pyriforme* tends to confirm such a theory; in it the columella (what is considered as such being the inflected portion of the sac), ascends from the bottom of the theca to the level of the stoma, and then, expanding outwards, like the mouth of a funnel, reunites with the seminal sac around the rim of the stoma (vid. Grev. and Arn. l. c. vol. p. —). After a time, the edge of the funnel breaks away from that of the sac and with the columella shrivels up, thus giving egress to the sporules.

Mr. Valentine, in his 'Genera of Mosses,' has accurately described the cellular tissue of *Sphagnum*, which is, in several respects, exceedingly curious. The cells themselves are bounded by very thick lines, formed of slender tubes, running between the contiguous cells, but on one side of the leaf only; a transverse section of a small portion of a leaf, exhibiting both the cells and the interjected tubes, is shown at fig. 46. Valentine considers that the latter are derived from the elongated tubes of the stem.

The cells themselves are furnished, in some forms of the genus, with one or more spiral filaments, closely adhering to their walls, sometimes these are entire throughout the length of the cell, at others broken or both broken and branched. We are inclined to believe that the spiral filament is terete and adheres by a small portion only of its surface to the tissue of the leaf; the extreme minuteness and transparency of the parts, however, increase the difficulty of determining such a point with the accuracy that is desirable. No function has, hitherto, that we are aware of, been assigned to these filaments; they may act powerfully in enabling so delicate a tissue to withstand the pressure of the water.

The pores, by means of which a communication between the cavity of the cells and their surrounding medium is preserved, are, in most cases, numerous and large, in others less so; they appear more frequent on the upper surface of the leaf, but are by no means confined to it, for sometimes they are placed opposite to one another, when the leaf itself is perforated. They exist both in cells provided with spiral filaments and without; in some instances, where the spires are broken and branched, the pores are bordered with a thick ring given off from the filament, whence probably arises the supposition that what appeared to be pores were supplementary coils. They vary greatly in size, occasionally extending completely across the cell. Valentine describes them as resembling a minute truncated cone; to us they appear on the same plane with the walls of the cells, except where their edges are thickened, as described above. In *S. macrophyllum* the cells are devoid of any filaments, are very narrow, much elongated, and each perforated by from 8 to 14 large pores, which sometimes nearly divide the cell on one side; they are by far most numerous on the upper surface of the leaf. The uses of these pores are hitherto unknown, they may be due to the nature of the situations in which the species are found. We have not proved them to reside in the intercellular tubes, though their existence in their walls is possible also. On the other hand, the latter alone may continue reservoirs for water during dry seasons, when, from the porous nature of the former, they readily part with their moisture.

Until the dehiscence of the operculum, no rupture of the calyptra takes place in *Sphagnum*. We have not observed the desilient property of the operculum, noticed by some authors. The sporules in all the species are clustered together in fours, of which three only are generally visible at first sight, as represented at Fig. VI. In most of the species the surface of the theca is studded over with stomatiform pores; these are however very inconspicuous, if not wholly absent, in *S. cymbifolium*. The true pedicel is included within the vaginula and is singularly dilated below the orifice of the latter.

PLATE LVII. *Fig.* VI.—1, Longitudinal section of theca of *S. cymbifolium*; 2, section of cellular substance from centre of the same; 3, spores in a very young state; 4, cellular tissue of leaf showing spiral vessels and pores;

5, cell of *S. macrophyllum* with no spiral filament and many large pores; 6, transverse section of the cells of a leaf of *S. cymbifolium*:—all highly *magnified*.

1. Sphagnum *compactum*, Brid., caule erecto ramoso, ramis dense confertis, foliis imbricatis concavis ovato-oblongis obtusis apice denticulatis, theca ovato-rotundata, pseudopodio brevi. S. compactum, *Brid. Bryol. Univ.* vol. i. p. 16.

Var. β, *rigidum*; foliis subrigidis convolutis superne attenuatis apice patulis, pseudopodio gracili subelongato. *Nees et Hornsch. Bryol. Germ.* vol. i. p. 14. t. 2. f. 5*.

Var. γ, *ovatum*; foliis patentibus ovatis subacutis.

Hab. Campbell's Island; in bogs near the sea, both the varieties growing together.

The variety γ. *ovatum* may possibly be a distinct species, though we have not ventured to separate it specifically; it differs from the usual state of the plant in the ovate, not oblong, leaves, which are more acute at the apex, with somewhat cartilaginous margins. Dr. Lyall's specimens, though fragments, evidently belong to a much larger moss than *S. cymbifolium*, Dill., with more tumid branches. Of this species Bridel remarks, "a *S. cymbifolio*, foliis semper apice denticulatis, i.e. præmorsis, ut et toto habitu distinctissimum." The oblong leaves of var. β and the absence of the spiral fibres in the outer cells of the ramuli also appear constant peculiarities.

In this, as in some other species, it is not uncommon to observe the spiral fibres of the lower cells of the leaf disposed in a double or triple helix. The interposed circular discs are readily seen to be pores, from their strong similarity to the distinct apertures found on the cells of the ramulus. The outer cells of the branches seem analogous to the ordinary cellular tissue of the leaves, and the inner to their intercellular tubes; whence the true position of the latter on the upper surface of the leaf may be inferred: whilst, on the other hand, the concavity of the foliage would lead to the supposition of their occupying the opposite one.

3. LEPTOSTOMUM, *Br.*

Peristomium simplex e thecæ membrana interiore ortum, annulare, suberectum, indivisum v. rarius subdenticulatum. *Calyptra* glabra, dimidiata. *Theca* æqualis v. rarius gibbosa, oblonga, in apophysin spuriam obconicam attenuata.

1. Leptostomum *gracile*, Br.; caule cæspitoso subramoso, foliis oblongis subacutis piliferis inferioribus ovato-lanceolatis, theca pendula oblongo-cylindracea, operculo hemispherico. L. gracile, *Brown in Trans. Linn. Soc.* vol. x. p. 321. *Schwaeg. Suppl.* vol. ii. pt. 1. p. 12. t. 104. Gymnostomum gracile, *Hook. Musc. Exot.* t. 22.

Hab. Campbell's Island; on exposed rocks, altitude 1200 feet, barren.

It is not yet proved whether the *L. gracile* and *L. inclinans* be really distinct. Our specimens agree with the former, in having a strong excurrent nerve; they differ from it in the stems being densely matted with radicles, and from *L. inclinans* in the leaves not being contorted when dry and their margins not revolute. There is a new and very well marked species in the Hookerian Herbarium, *L. Bridgesii*,* Wils., MS., from Conception and Colchagua in Chili, in which the leaves are piliferous, with the nerve evanescent below the apex, the seta short, and the theca, instead of being pyriform, is widest at the base. * *L. splachnoides. Hook. & Arnott (Schwägr. Suppl. t. 305.)*

4. SPLACHNUM, *L.*

Peristomium simplex. *Dentes* sedecim, per paria coadunati v. approximati, longitudinaliter exarati, tandem reflexi et plerumque thecæ extus appressi. *Calyptra* campanulata, basi subintegra v. fissa, theca brevior. *Theca* æqualis, apophysata, exannulata.

It is with much reluctance that we refuse to adopt the views of Bruch and Schimper, who, in their beautiful 'Bryologia Europæa,' subdivide *Splachnum* into three or four genera. The several characters which the two species here enumerated possess and which are not conformable with those of any of the subgenera alluded to, would, were these adopted, oblige us to construct a fifth for their reception. *S. octoblepharum* and *S. purpurascens* are so nearly allied to the *S. mnioides*, that we doubt the propriety of even retaining two genera which might be founded on the very dissimilar structure of the calyptra, but on that character alone, unaccompanied with any difference of habit. In one of Bruch and Schimper's divisions, *Tetraptodon*, the calyptra is truly dimidiate and neither inflexed nor appendiculate at the base; in the other, we always find it, previous to its separation from the vaginula, inflexed at the base, but when the seta elongates and carries up the calyptra, this inflexed portion is drawn out and remains as a lacerated and somewhat incurved membrane or appendage. A similar structure is observable in *Schlotheimia*, under which genus the development of *S. quadrifida* is illustrated.

In all the species which we have had an opportunity of examining in a recent state, and especially in *S. sphericum*, *ampullaceum* and *mnioides*, there is a very peculiar arrangement of the sporules, in lines radiating from the columella. Each of these lines is composed of eight or more sporules, contained either in separate cells or in membranous tubes, of a nature evidently analogous to the asci of some Fungi. This structure is probably common to all the species and may be traced obscurely in the dried state of some; it has, however, escaped the observation of Bruch and Schimper, who perhaps did not examine specimens in a sufficiently young state.

The southern species, those at least from the higher latitudes, inhabit decayed vegetable matter.

1. Splachnum *purpurascens*, Hook. fil. et Wils.; caule elongato, foliis patulis obovatis acuminatis integerrimis undulatis evanidinerviis apicibus recurvis, theca elliptico-oblonga microstoma, apophysi obconica angusta, operculo conico. (Tab. LVII. Fig. V. 1.)

Var. β, *minor*. (Tab. LVII. Fig. V. 8.)

Hab. Campbell's Island; in moist bogs, amongst grass; altitude 1000 feet.

Caules laxe cæspitosi, vix ramosi, semiunciales et ultra. *Folia* patula, subremota, planiuscula v. undulata, siccitate erispa, laxe reticulata, inferiora luride purpurascentia. *Inflorescentia* monoica; flores masculi gemmaceo-capituliformes ad baseos foliorum sessiles v. in ramulis propriis terminales. *Seta* uncialis, valida, rubra, nitida, sensim in apophysin theca breviorem incrassata. *Peristomii dentes* octo, conniventes, luteoli, integri v. medio rima longitudinali ad apicem non producta fissi, siccitate fusci et reflexi. *Columella* apice dilatata, plerumque breviter exserta. *Operculum* parvum, anguste conicum, subrostellatum, rarius hemisphericum, flavescens v. rufo-brunneum. *Calyptra* non visa.

Nearly allied to *S. octoblepharum*, but larger, the leaves wider, more distant, less produced at the apex and more crisped when dry. Capsule narrow and more attenuated below, with a smaller mouth. In the var. β, both the two lateral of the longitudinal and the transverse lines on the teeth are very faint; in no instance do the teeth in this species appear to be really formed of four, the lateral lines always ceasing below the apex; the lower part of each double tooth is formed by four cells in a line, but their summits of only two.

Plate LVII. *Fig.* V.—1, *S. purpurascens*, of the *natural size*; 2, a leaf; 3 and 4, capsules; 5, teeth closely approximated in pairs; 6, the same, of var. β; 7, the same of var. α, with a longitudinal fissure and some sporules:—*magnified*. 8, a small tuft of var. β, of the *natural size*.

2. Splachnum *octoblepharum*, Hook.; subramosum, foliis obovatis longe acuminatis subpiliferis integerrimis, theca una cum apophysi clavata, peristomii dentibus octo solitariis. S. octoblepharum, *Hook. Musc. Exot.* t. 167. *Schwaeg. Suppl.* II. pt. 1. p. 105. t. 129. (omitted in *Bridel. Bryol. Univ.*)

Var. β, *pyriforme*; foliis magis erectis confertis, apophysi angustiore. (Tab. LVII. Fig. IV. 1.)

Var. γ, *major*; foliis majoribus latioribus luride viridibus, dentibus 8 geminatis. (Tab. LVII. Fig. IV. 6.)

Hab. Lord Auckland's group; vars. α and β, in spongy bogs and in holes of trees in the woods, frequent. Campbell's Island; var. α, not uncommon; and var. β, in the wet and wooded valleys, on the ground.

From its northern ally, *S. mnioides*, this species differs, both in the structure of the peristome and in the shorter calyptra, which is mitræform and inflexed at the base; also in the carinate leaves. The inflorescence appears truly monoicous, once only we found a hermaphrodite flower. In the varieties α and β, the theca varies greatly in form, and the columella is either included or exserted. In var. γ, the leaves are often very large, and the teeth connive so closely as to appear but 8, which are separable into 16; they are pale yellow, each with a faint middle line: when dry they are erect, recurved or reflexed, and generally of a purple brown colour.

Plate LVII. *Fig.* IV.—1, a small tuft of var. β, of the *natural size*; 2, a leaf; 3, a capsule; 4, teeth; 5, a calyptra;—*magnified*: 6, a plant of var. γ, of the *natural size*; 7, a leaf; 8, a capsule; and 9, teeth of the same:—*magnified*.

5. DRYPTODON, *Brid.*

Peristomium simplex. *Dentes* sedecim, inæqualiter bifidi, v. apice lacero-fissi. *Calyptra* mitræformis, basi lacera. *Theca* æqualis, annulata. Brid. *Bryol. Univ.*, vol. i. p. 191.

This genus is perhaps not distinct from *Grimmia*.

1. Dryptodon *crispulus*, Hook. fil. et Wils.; caule fastigiatim ramoso, foliis ovato-oblongis acuminatis v. e basi ovata gradatim subulato-acuminatis carinatis nervo percurrente, seta perbrevi, theca elliptica, operculo rostrato. (Tab. LVII. Fig. IX.)

Hab. Campbell's Island; on alpine rocks.

Caules laxe cæspitosi, superne fastigiatim ramosi, subrigidi. *Folia* erecto-patentia, subrecurva, margine basi reflexa, forma sat varia, superiora longiora, apice subdiaphana, vix pilifera, nervo valido continuo instructa, flavo-viridia, siccitate crispatula erecta; perichætialia breviora, elliptico-oblonga, obtusa v. acuta. *Seta* vix lineam longa, foliis immersa, pallida, tandem lateralis. *Theca* erecta v. inclinata, elliptico-oblonga, fusco-lutea. *Peristomii* dentes vix ad medium fissi, rufi, conniventes, siccitate reflexi. *Operculum* conico-rostratum, rectum, theca $\frac{2}{3}$ brevius. *Calyptra* conico-mitræformis, subplicata, costata, fusca, basi lacera et inflexa, operculo paulo longior. *Annulus* parvus.

The foliage of this moss bears a considerable resemblance to that of *Racomitrium fasciculare*, from which it differs in the very short seta, pale elliptical theca, and in the peristome being truly that of a *Dryptodon*.

Plate LVII. *Fig.* IX.—1, a specimen of the *natural size*; 2, a cauline leaf; 3 and 4, perichætial leaves; 5, theca; 6, operculum; 7, teeth; 8, calyptra:—*magnified*.

6. RACOMITRIUM, *Brid.*

Peristomium simplex. *Dentes* sedecim ad basin usque bi-tri-quadripartiti, cruribus filiformibus conjuncti. *Calyptra* mitræformis v. campanulata et subulata, theca brevior, basi lacera. *Theca* æqualis exannulata.

1. Racomitrium *lanuginosum*, Bridel, *Bryol. Univ.* vol. i. p. 215. Trichostomum, *Hedw. Musc. Frond.* vol. iii. p. 3. t. 2. *Hook. et Tayl. Musc. Brit.* p. 105. t. 19.

Hab. Campbell's Island; amongst tufts of grass at the foot of precipices, rare and barren.

This does not appear to differ from European specimens.

7. ORTHOTRICHUM, *Hedw.*

Peristomium simplex v. duplex, rarius nullum; *exterius* dentes triginta duo, geminatim v. bigeminatim coadunati, (hinc quasi octo v. sedecim apparent); *interius* ciliæ octo, æquales, v. sedecim, alternis brevioribus, erectis v. horizontaliter patentibus. *Calyptra* campanulata, costata, basi lacera v. crenata, plerumque pilosa. *Theca* erecta, æqualis, exannulata, tandem sulcata, in setam superne incrassatam gradatim attenuata.

1. Orthotrichum *crassifolium*, Hook. fil. et Wils.; caule brevi subramoso, foliis erecto-patentibus lanceolato-subulatis obtusis carnosis nervo crasso subcontinuo, theca breviter exserta pyriformi lævi, peristomii dentibus sedecim, ciliis nullis, calyptra glabra. (Tab. LVII. Fig. VIII.)

Var. β; foliis longioribus, theca breviore foliis immersa.

Hab. Lord Auckland's group and Campbell's Island; on rocks and stones immediately above high-water mark. Var. β, Campbell's Island, with the following species.

Caules pulvinati, 2–4 lin. longi. *Folia* suberecta, crassa, coriacea, supra plana, apice subobtusa, marginibus basi inflexis, nervo crasso infra apicem evanido, siccitate paulo incurva, olivacea v. fusco-lutea, demum nigricantia, suprema linearia, basi latiora. *Inflorescentia* dioica? *Fl. masc.* gemmiformis, terminalis. *Seta* sub lineam longa, valida; vaginula oblonga. *Theca* erecta, pyriformis, v. subturbinata, fusco-lutea, collo brevi, siccitate subcylindracea. *Peristomii dentes* liberi, siccitate erecti v. reflexi, lutei. *Sporæ* majusculæ, subrotundæ, rufo-olivaceæ. *Operculum* convexum, rostello recto, thecæ $\frac{1}{3}$ longitud. *Calyptra* plicata, glabra, rufo-brunnea, basi octofida.

Perhaps allied to the *O. psychrophilum*, Montagne (Ann. Sc. Nat., vol. ix. p. 52); but the leaves are more erect with their margins not reflexed, the capsule even, of a thicker texture, and there is no inner peristome. It bears some resemblance to the *O. Magellanicum*, Mont., from which the same characters will also distinguish it. The dry foliage is of an almost horny consistence.

Plate LVII. *Fig.* VIII.—1, a specimen of the *natural size*; 2, a portion of stem and theca; 3 and 4, leaves; 5, transverse section of ditto; 6, teeth; 7, sporules; 8, calyptra:—*magnified.*

2. Orthotrichum *angustifolium*, Hook. fil. et Wils.; caule brevi subramoso, foliis erectis anguste lineari-subulatis acutiusculis carnosis nervo continuo, theca subsessili immersa elliptica, operculo rostellato, peristomii simplicis dentibus sedecim. (Tab. LVII. Fig. VII.)

Hab. Campbell's Island; on rocks at an elevation of 1200–1400 feet.

Caules pulvinati, 2–3 lin. longi, luridi, rigidi, ramis subterminalibus abbreviatis. *Folia* suberecta, conferta, elongata, stricta, opaca, subcarnosa, supra plana, nervo crasso continuo, siccitate subincurva, atro-viridia; *perichætialia* longiora, lanceolata, acuminata, superne attenuata, subsecunda. *Seta* brevissima. *Theca* elliptico-ovata, parva, pallide fusca, ore majusculo. *Dentes* conniventes, pallide ferruginei, siccitate reflexi. *Sporæ* majusculæ. *Operculum* basi convexum, rostello brevi recto. *Calyptra* non visa.

Allied to the former species, but with larger, much narrower and almost setaceous leaves; the capsule also is smaller and hidden amongst the foliage.

Plate LVII. *Fig.* VII.—1, a tuft of the *natural size*; 2, branch; 3 and 4, leaves; 5, theca and seta:—*magnified.*

8. MACROMITRIUM, *Brid.*

Peristomium simplex v. duplex; *exterius* dentes sedecim, lanceolati, plus minusve geminatim connexi; *interius* membrana apice lacera, multifida. *Calyptra* conica, glabra v. pilosa, basi in lacinias plurimas æquilongas fissa. *Theca* æqualis, exannulata.

In an early state the difference between the calyptra of this genus and of *Orthotrichum* is very considerable, being, in the present case, linear and subulate; but in the latter genus campanulate. We consider Bridel's definition of this as drawn from more natural characters than that of Schwaegrichen.

1. Macromitrium *longirostre*, Schwaegr.; caule repente, ramis erectis, foliis confertis erecto-patentibus lineari-lanceolatis lineis duabus notatis solidinerviis siccitate tortilibus, theca ovali sulcata, calyptra glabra. M. longirostre, *Schwaeg. Suppl.* vol. ii. pt. 2. p. 131. t. 112. *Brid. Bryol. Univ.* vol. i. p. 310. Orthotrichum, *Hook. Musc. Exot.* t. 25.

Hab. Lord Auckland's group and Campbell's Island; abundant on the trunks of trees near the sea.

This species varies considerably in colour and in habit; the leaves are, sometimes, narrower and more spreading than in these specimens; when dry they are always twisted round the stem.

2. Macromitrium *acutifolium*, Brid.; caule repente ramosissimo, foliis lanceolatis valde acuminatis tortis nervo subexcurrente, theca ovata striata, operculi rostro aciculari, calyptra glabra. M. acutifolium, *Brid. Bryol. Univ.* vol. i. p. 736. Orthotrichum, *Hook. and Grev. in Edinb. Journ. of Science*, vol. i. p. 118. t. 5.

Hab. Lord Auckland's group; on rocks at the top of the hill above Rendezvous Harbour, barren and very scarce.

9. SCHLOTHEIMIA, *Brid.*

Peristomium duplex; *exterius* dentes sedecim, per paria approximati, siccitate spiraliter revoluti; *interius* membrana conica, in lacinias sedecim pluresve dentiformes inæqualiter fissa. *Calyptra* conico-mitræformis, glabra, basi appendiculata, demum lacera. *Theca* æqualis, exannulata.

Some species of *Macromitrium*, possessing a double peristome, have been confounded with this genus: from our own experience we are inclined to consider the appendiculate cylindrical calyptra as the most decisive character of *Schlotheimia;* the structure of the peristome apparently affording marks of minor importance only. In an early stage, a fold of the calyptra is produced downwards below the point of insertion of that organ into the vaginula, as in some *Splachna*, *Encalypta*, and possibly in other genera of Mosses. This inverted portion, after the lengthening of the seta has detached the calyptra, splits into four or more segments; vid. Plate LVIII. *Fig.* I.—11 and 12.

1. Schlotheimia *quadrifida*, Brid.; foliis oblongo-lanceolatis cuspidatis tortis, theca oblongo-pyriformi lævi, calyptra glabra. S. quadrifida, *Brid. Suppl. Musc.* vol. ii. p. 18. *Schwaeg. Suppl.* vol. i. pt. 2. p. 41. and vol. ii. pt. 2. p. 147. t. 57. *Brid. Bryol. Univ.* vol. i. p. 321. (Tab. LVIII. Fig. I.)

Var. β; caule robusto, foliis magis confertis inferioribus nigricantibus brevius cuspidatis.

Hab. Campbell's Island; on rocks and dead bushes, frequent. Var. β, on rocks at an elevation of 1200–1400 feet.

This species approaches the *S. Brownii*, Schwaeg. (Suppl. vol. ii. pt. 2. p. 52. t. 167), from which it differs in the shorter and less excurrent nerve, and from *S. nitida* in the leaves being straight and not recurved. The leaves of var. β are of a darker colour, more closely and regularly twisted round the stem, and do not readily recover in water.

It is singular to remark how far these tropical forms extend into the southern regions, whence we infer that an equable climate is the chief condition they require. In Tasmania, where the climate is more excessive than in New Zealand under the same parallel, the *Schlotheimiæ* and *Macromitria* are almost unknown, though in the latter loca-

lity, and indeed throughout the three islands of New Zealand, they abound. Wherever they grow they invariably affect shade and shelter. The European genus *Orthotrichum*, on the other hand, of which there are several Tasmanian examples, is very rare in New Zealand; and in Lord Auckland's group and Campbell's Island, as in the Falkland and other Antarctic Islands, the species court exposure, growing on black and exposed rocks, enduring the full power of such solar heat as those regions afford during the day, and of the frost, wind, and nocturnal radiation at other times. Under these circumstances, their foliage is of a peculiarly hard and almost horny consistence, especially when dry.

Plate LVIII. *Fig.* I.—1 and 2, tufts of the natural size; 3, cauline leaf; 4, upper leaf from near the perichætium; 5, theca; 6, peristome; 7, a tooth; 8, calyptra; 9, calyptra, in a very young state, adherent with the vaginula, split open, exposing the enclosed seta, which is erroneously represented as bulbous; 10, the same, entire, surrounded by pistilla; 11 and 12,calyptra, showing the base inflexed and attached to the summit of the vaginula:—*magnified.*

10. WEISSIA, *Hedw.*

Peristomium simplex, dentibus sedecim, suberectis, angustis, imperforatis. *Calyptra* cuculliformis. *Theca* æqualis, exapophysata, annulata v. exannulata.

1. Weissia *crispula*, Ludw.; caule erecto diviso, foliis imbricatis secundis lanceolatis acuminatis canaliculatis siccitate crispulis, theca erecta oblonga, operculo oblique rostrato. W. crispula, *Hedw. Sp. Musc.* p. 68. t. 12. *Brid. Bryol. Univ.* vol. i. p. 346.

Var. β, *ambigua*; foliis brevioribus subsecundis siccitate vix crispatis, perichætialibus acuminatis nervo excurrente, seta breviore, dentibus interdum per paria approximatis. (Tab. LVIII. Fig. II.)

Hab. Campbell's Island; on exposed rocks from 600–1200 feet above the level of the sea, abundant.

After a very careful comparison of the Campbell's Island plant with specimens of *W. crispula* from Snowdon, we are at length satisfied of the specific identity of the two. It is still uncertain whether the *W. crispula* of Hooker and Taylor be the same as that of Hedwig. The characters of the latter and of *W. cirrata*, as given by Schwaegrichen (Supp. vol. i. pt. 1. p. 75.), differ very slightly. Of *W. cirrata* both Hedwig and Bridel remark, "folia marginibus reflexis aut inflexis," the former we find constantly to be the case, in which respect the plant differs essentially from *crispula*. It is more than probable that the Moss from Snowdon, figured by Dillenius (Hist. Musc. t. 47. f. 38.), and quoted by Bridel as a synonym of his *Dicranum interruptum*, is the *W. crispula* of Hooker and Taylor, which may well be considered by Bridel, a *Dicranum*, having the habit of that genus, and the peristome being unknown to him.

Plate LVIII. *Fig.* II.—1, tuft of the *natural size*; 2, a branch and theca; 3. a leaf; 4, a theca; 5, teeth; 6, calyptra:—*magnified.*

2. Weissia *contecta*, Hook. fil. et Wils.; caule fastigiatim ramoso, foliis erectis strictis lanceolatis superne setaceis integerrimis solidinerviis, seta perbrevi, theca ovata, operculo rostrato. (Tab. LVIII. Fig. III.)

Hab. Campbell's Island; on alpine rocks.

Caules sesquiunciales, dense cæspitosi, subrigidi, fragiles. *Folia* conferta, erecta, vix secunda, 3 lin. longa, in apicem rigidum linearem e nervo crasso excurrente formatum producta, integerrima, canaliculata, marginibus basi inflexis, inferiora fusco-atra, superiora flavo-viridia; *perichætialia* majora, conformia. *Inflorescentia* monoica. *Fl. masc.* ad basin fœminei, gemmiformes; *antheridia* paraphysibus plurimis immixta. *Seta* vix lineam longa, crassiuscula, innovationibus mox lateralis. *Theca* badia, ore patente. *Annulus* o. *Dentes* pyramidati, incurvi, transverse sulcati, ferrugineo-lutei, integri v. apice fissi, siccitate reflexi. *Sporæ* minutæ. *Operculum* basi hemisphericum, rostro obliquo, capsula parum breviore. *Calyptra* coriacea, subulata, parva, fusca.

This agrees with no other species of the genus in habit. It is allied to *Dicranum filiforme*, Schwaeg., but has entire teeth. The calyptra and operculum we have only seen detached amongst the leaves. There is a very similar plant in the Hookerian Herbarium, received from Mr. Dickson; it has however a much longer seta, the perichætial leaves are smaller and shorter, the cauline subsecund, more crisped when dry, and furnished with a thinner nerve.

PLATE LVIII. *Fig.* III.—1, a specimen of the *natural size*; 2 and 3, leaves; 4, perichætial leaf, seta, theca, &c.; 5, teeth; 6, calyptra:—*magnified.*

11. SPRUCEA*, *Brid.*

Peristomium simplex. *Dentes* sedecim, bifidi. *Calyptra* ampla, glaberrima, latere fissa, basi integerrima.—Holomitrium, *Bridel. Endl. et Mart. fl. Bras.* p. 17.

The generic name was founded on a mistaken view of the nature of the calyptra, described by Bridel as "elongato-conica, basi coarctata latereque integerrima;" it is entire, in a very young state only, before the theca is developed. Hornschuch first modified the description of that organ, which is truly dimidiate in all the species, though not as the last named author describes it, "campanulata." Except in greater size, it does not differ from that of *Weissia*. The essential difference between a dimidiate and mitriform calyptra arises simply from the former being too narrow to contain the mature theca, whilst the other is of sufficient capacity for that purpose. In habit this genus appears to us far less intimately allied to *Racomitrium* than to *Didymodon*, with which it coincides in the dilated bases of the leaves; the chief peculiarities are the shorter teeth and longer operculum, characteristics which, if taken in conjunction with the large perichætial leaves, may serve to keep the present distinct.

1. SPRUCEA *perichætialis*, Brid.; caule erecto ramoso, foliis imbricatis erecto-patentibus lanceolatis acuminatis margine planis, nervo continuo, perichætialibus vaginantibus, theca oblonga, operculo aciculari. Holomitrium perichætiale, *Brid. Bryol. Univ.* vol. i. p. 227. Trichostomum, *Hook. Musc. Exot.* t. 73.

HAB. Campbell's Island; not uncommon on the stems of shrubs.

In this species the teeth are split near the summit only, perforated below, and of a similar structure with those of a *Dryptodon*, Brid.

12. DICRANUM, *Hedw.*

Peristomium simplex; dentibus sedecim, bifidis. *Calyptra* cuculliformis.

1. DICRANUM *Menziesii*, Tayl.; caule ascendente subramoso, foliis secundis setaceis basi lanceolatis subrigidis apice sub lente serrulatis siccitate strictis nervo latiusculo valido subexcurrente, seta brevi, theca elliptico-oblonga basi substrumosa semiimmersa, operculo longirostro. D. Menziesii, *Taylor in Phytologist*, vol. ii. p. 1094.

HAB. Lord Auckland's group; on trunks of trees sparingly, barren.

Caules semiunciales. *Folia* suberecta, conferta, 3–5 lin. longa, valde angusta, supra canaliculata, flavescentia, marginibus basi inflexis; *perichætialia* vaginantia $\frac{1}{2}$—$\frac{1}{3}$ breviora, basi dilatata. *Seta* 3 lin. longa, pallida, vix tortilis.

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* Though very averse to the system of changing names, we should not feel ourselves justified in allowing that of *Holomitrium*, founded, as the name is, upon incorrect characters drawn from imperfect specimens, to remain. In proposing that of *Sprucea* for this fine genus, we commemorate the services rendered to British Botany, and especially to Muscology, by our acute friend, Mr. Richard Spruce, of York.

Theca suberecta, curvata, brunnea, siccitate infra orem contracta, demum obscure striata. *Dentes* suberecti, incurvi, rubri. *Operculum* capsulam æquans, rostro gracili, curvato.

The above description has been drawn up from original specimens, gathered by Mr. Menzies (during Vancouver's Voyage) in Dusky Bay, New Zealand. This plant differs from *D. fasciatum*, Hedw. (Sp. Musc. p. 127. t. 28.), in the longer, more setaceous, nerved leaves, solitary seta, and oblong theca. Two closely allied forms occur in Herb. Hook., one having longer stems and more rigid, lurid green leaves, suddenly dilated at the base; the other with lax spreading foliage.

Plate LVIII. *Fig.* IV.—1, plant of the *natural size*; 2, part of branch with theca; 3, leaf; 4, lower part of ditto; 5, theca:—*magnified*.

2. Dicranum *pungens*, Hook. fil. et Wils.; caule elongato subramoso, foliis secundis patentibus lineari-lanceolatis attenuatis convolutis apice carinatis serrulatis tenuinerviis, perichætialibus elongatis convolutis, seta mediocri torta, theca inclinata oblonga curvula, operculo longirostro. (Tab. LIX. Fig. I.)

Hab. Lord Auckland's group and Campbell's Island; barren in the latter locality.

Caules 3–4-unciales, robusti, erecti v. curvati, parce ramosi. *Folia* 4–5 lin. longa, conferta, patentia, subrigida, inferiora subsquarrosa, superiora dense congesta, supra carinata, marginibus apices versus dorsoque serratis, plerumque arcte convolutis, nervo tenui, luteo-viridia, nitida, siccitate supra medium torta; *perichætialia* intima 8 lin. longa, enervia, convoluta, integerrima. *Setæ* interdum binæ, 8–9 lin. longæ, graciles, subflexuosæ, rubræ, siccitate tortæ. *Theca* parvula, elliptico-oblonga, subcurvata, basi vix strumosa, rufo-brunnea, siccitate infra orem contracta. *Dentes* pro genere parvi, conniventes, demum supra medium fissi, ferruginei. *Operculum* (delapsum) theca longius, curvirostrum. *Calyptra* straminea.

This very handsome species resembles the *D. Blumii*, Schwaeg. (Suppl., vol. ii. pt. 2. p. 116. t. 185), inaccurately described as nerveless, but differs essentially in the form of the theca. *D. Billardieri* has shorter and broader leaves, and larger thecæ. In *D. setosum*, nobis, a nearer ally, the leaves are more setaceous and fragile, the nerve broader, and occupying the whole breadth towards the apex, the capsule is longer and more curved, the peristome larger and of a red colour, and the seta not twisted when dry.

Plate LIX. *Fig.* I—1, a specimen of the *natural size*; 2, front, and 3, back view of a leaf; 4, young theca; 5, mature ditto; 6, teeth:—*magnified*.

3. Dicranum *Billardieri*, Schwaeg.; caule elongato dichotome ramoso, foliis subsecundis basi lanceolatis longe acuminatis denticulatis, theca strumosa, operculo longirostro. D. Billardieri, *Schwaeg. Suppl.* vol. ii. pt. 1. p. 70. t. 121.

Var. β, *duriusculum*; caule humili fastigiatim ramoso, foliis magis rigidis attenuatis, nervo latiore, seta longiore.

Hab. Lord Auckland's group; on the ground and dead trunks of trees in woods, both varieties.

The habit of the var. β, which also grows on the more exposed uplands, is rather peculiar; still we can find no specific distinction between them. The *D. Novæ Hollandiæ*, Hornsch., does not appear different from this species.

4. Dicranum *setosum*, Hook. fil. et Wils.; caule fragili subramoso, foliis strictis fragilibus suberectis longissime lanceolato-setaceis apice serrulatis nervo latiusculo subexcurrente, seta longiuscula, theca oblonga curvata, operculo longirostro. (Tab. LVIII. Fig. V.)

Var. β, *attenuatum*; caule flexili elongato ramoso. (Tab. LVIII. Fig. V. 2.)

Hab. Lord Auckland's group and Campbell's Island; on the ground, at the roots of trees in the woods. Var. β, Campbell's Island.

Caules 1–2 unciales et ultra, densi, fragiles. *Folia* semiuncialia, nitida, flavida, solidinervia, nervo in aristam longam excurrente; *perichætialia* abbreviata, vaginantia, basi dilatata. *Seta* 1 unc. longa, crassiuscula, vix torta. *Theca* suberecta, arcuata, substrumosa. *Operculum* theca longius, rostro tenui curvato. *Calyptra* fusca, apice rubra.

We are not acquainted with any species with which the present could be confounded. *D. longisetum*, Hook., has the leaves of a similar form, but their nerve is very broad and indistinct, and the theca is erect. *D. capillaceum*, Brid. (Bryol. Univ., vol. ii. p. 460), differs in the striated capsule. The stems of the var. β are four inches long.

Plate LVIII. *Fig.* V.—1, a tuft, of the *natural size*; 2, a stem of var. β, of the *natural size*; 3 and 4, leaves; 5, theca and calyptra; 6, operculum:—*magnified.*

13. CAMPYLOPUS, *Brid.*

Peristomium simplex; dentibus sedecim, bifidis v. bipartitis, imperforatis, cruribus æqualibus. *Calyptra* conica, fissa, rarius integra, basi fimbriato-lacera v. subciliata. *Theca* æqualis, exannulata, exapophysata, nunc basi inæquali pseudo-apophysata.

1. Campylopus *introflexus*, Brid.; caule erecto ramoso, foliis imbricatis e basi lata lanceolatis acuminatis piliferis nervo lato excurrente, seta madore curvata, theca elliptica striata, operculo conico. C. introflexus, *Brid. Bryol. Univ.* vol. i. p. 472. Dicranum, *Hedw. Sp. Musc.* p. 147. t. 29. fig. 1–7.

Hab. Lord Auckland's group and Campbell's Island; growing both in moist and dry places on the hills.

This species is remarkable for the divergence of the filiform apices of its leaves and the broad nerve which is obscurely lamellated at the back, their margins also are so inflexed as to give them a subulate appearance. The numerous thecæ arise from aggregated perichætia and are quite buried and concealed amongst the foliage. New Holland specimens of this moss exist in the Hookerian Herbarium under the name of *D. pudicum*, Hornsch. *D. capitiflorum*, Pal. de Beauv., from Bourbon, has more strict leaves, more distinctly lamellated at the back.

2. Campylopus *flexuosus*, Brid.; caule erecto subramoso, foliis rigidiusculis concavis subulatis acuminatis nervo lato continuo, seta curvata, theca ovata striata, operculo recto cuspidato. C. flexuosus, *Brid. Bryol. Univ.* vol. ii. p. 469. Dicranum, *Hedw. Sp. Musc.* p. 146. t. 38. f. 1–6. *Hook. et Tayl. Musc. Brit.* p. 94. t. 16.

Hab. Campbell's Island; barren.

14. LOPHIODON*, *Hook. fil. et Wils.*

Peristomium simplex; dentibus sedecim, pyramidatis, per paria approximatis. *Calyptra* cuculliformis.

This genus corresponds with the *Cynodon* of Bridel, a preoccupied name. The present species does not accord with Schwaegrichen's definition of *Cynodontium*, and we are thus obliged to establish a genus for its reception.

1. Lophiodon *strictus*, Hook. fil. et Wils. (Tab. LIX. Fig. II.)

Var. β, foliis longioribus flavidis, theca majore.

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* Nomen e λοφίον *parva crista* et ὀδοὺς *dens*.

Hab. Lord Auckland's group and Campbell's Island; on moist rocks at an altitude of 1200 feet in the former locality, descending lower in the latter. Var. β, Lord Auckland's group, with the former.

Caules sesquiunciales, cæspitosi, fastigiatim ramosi, ramis gracilibus. *Folia* erecta, subsecunda, ~~striata,~~ siccitate appressa, subrigida, longe lineari-setacea, basi lanceolata, vaginantia, flavo-viridia, inferiora nigrescentia; nervo valido continuo, apicem versus obtusum denticulatum paulo dilatato; *perichætialia* majora, convoluta. *Inflorescentia* ~~dioica~~; *Fl. masc.* terminalis, gemmiformis. *Seta* vix uncialis, pallida, subtorta. *Theca* erecta, ~~ovata,~~ cylindracea, basi rotunda, badia, lævis, nitida. *Peristomii dentes* breves, fere horizontales, madore conniventes, siccitate erecti, pallide ferruginei. *Annulus* majusculus. *Sporæ* majusculæ. *Operculum* conico-rostratum, erectum, theca paulo longior. *Calyptra* theca longior, scariosa, fusca, latere fissa.

The singular apex of the leaf distinguishes this species, even in a barren state, from *Weissia contecta*, or any similar moss.

Plate LIX. *Fig.* II.—1 and 2, specimens of the *natural size*; 3 and 4, leaves; 5 and 6, thecæ; 7, peristome; 8, teeth; 9, calyptra:—*magnified*.

15. CERATODON, *Brid.*

Peristomium simplex; dentibus basi liberis, bipartitis, cruribus trabeculisque horizontalibus connexis, superne solutis, flexuosis. *Calyptra* cuculliformis. *Theca* inæqualis, annulata, tandem profunde sulcata, substrumosa.—Ceratodon, *Brid. Bryol. Univ.*, vol. i. p. 480.

1. Ceratodon *purpureus*, Brid.; l. c. Didymodon purpureus, *Hook. et Tayl. Musc. Brit.* p. 113. t. 20. Dicranum, *Hedwig, Sp. Musc.* p, 136. t. 36.

Hab. Lord Auckland's group and Campbell's Island; on the ground, abundant.

16. POLYTRICHUM, *L.*

Peristomium simplex; dentibus 32–64, brevibus, inflexis, cartilagineis, apicibus membrana horizontali (epiphragma) connexis. *Theca* exannulata, ore epiphragmate (e columellæ apice dilatato) clausa. *Calyptra* cuculliformis, glabra, v. indusio villoso e pilis intertextis obtecto. *Theca* exannulata.—Psilopilum, Catharinea, Pogonatum et Polytrichum, *Bridel et auctorum*.

We would gladly avail ourselves of Bruch and Schimper's subdivisions of this genus, as proposed in the 'Bryologia Europæa,' did not the antarctic species prove them to be unnatural. Even the European species do not coincide with the views of those authors, for the *Pogonatum nanum*, Br. and S., has the inner membrane of the sporangium surrounding the columella perfectly cylindrical, and thus is at variance with their definition; and there is nothing essentially different between its structure and that of *Atrichum*, of the corresponding membrane in which no mention is made. This inner sporuliferous lining of the columella exists in all mosses, as well as in the *Atrichum undulatum*, Br. and S., and is the portion of the seminal sac, which, being inverted at the base, ascends the axis of the theca surrounding the columella; it forms the visible columella; the tissue itself, being often of extreme tenuity, is frequently overlooked and its continuity with the sporular membrane is not always evident. We have attempted to explain this structure at p. 8, under *Sphagnum*. That the characters derived from the calyptra are not of generic value is proved by that organ being exposed in *P. magellanicum* and *dendroides*, which have otherwise all the characters of *Pogonatum*. The origin of the villous hairs composing the outer calyptra of many species and their original attachment to the vaginula did not escape the notice of Ehrhart and Mohr and subsequently of Wahlenberg, although overlooked by Bruch and Schimper, whose analyses of the genera of mosses are unequalled in point of exe-

cution. The origin of these hairs in no way argues the absence of paraphyses, which those authors observe, and which are sufficiently perceptible though of only half the diameter of the hairs themselves, these are perfectly straight and inserted near the base of the vaginula.

1. Polytrichum *magellanicum*, Hedw.; caule ramoso, foliis rigidis patentibus recurvis basi ovatis vaginantibus deinde subulatis serratis, theca inclinata v. horizontali oblonga semi-cylindracea supra plana, operculo conico-rostrato, calyptra glabra. P. magellanicum, *Hedw. Sp. Musc.*, p. 101. t. 20. f. 1, 2. Catharinea, *Brid. Bryol. Univ.* vol. ii. p. 106. (Tab. LIX. Fig. III.)

Hab. Lord Auckland's group; moist ground, amongst grass near the tops of the hills.

Theca junior erecta, matura inclinata, tandem horizontalis, basi subgibbosa, fusco-brunnea.

In the peculiar form of the capsule (ill represented in Hedwig's figure) and in general habit, this moss bears a strong similarity to *Dawsonia*; Menzies, who describes the theca as subcylindrical in the Linnæan Transactions (vol. iv. p. 71.), is the only observer who has remarked its peculiar structure. The naked calyptra allies this species to the *Catharineæ* of Bridel, whence some may include it under the division called *Pogonatum* by Bruch and Schimper; on the other hand, the absence of an apophysis will connect it with *Oligotrichum*. From *Polytrichum* of Bruch. and Schimper, it differs in wanting proper angles on the capsule, and from *Atrichum*, of the same authors, in having the inner or inverted portion of the sporular membrane surrounding the columella 4-winged.

This moss is found in as low a south latitude as Brazil, from whence we have seen specimens collected by Raddi and named *Catharinea pseudo-polytrichum*, and there are others in the Herbarium formed by Mr. Gardner. It varies in the length and somewhat in the disposition of the leaves, which are sometimes widely spreading and squarrose, but in the specimens now under consideration, they are shorter than in others from Cape Horn. The seta is also of variable length.

Plate LIX. *Fig.* III.—1, a specimen of the *natural size*; 2 and 3, leaves; 4, young theca; 5, mature ditto; 6, teeth; 7, transverse section of theca; 8, calyptra:—*magnified*.

17. CONOSTOMUM, *Swartz*.

Peristomium simplex; dentibus sedecim, in conum persistentem conniventibus, apicibus subulatis. *Calyptra* brevissima, conico-subulata, stricta, latere fissa. *Theca* subinæqualis, exannulata.

1. Conostomum *australe*, Swartz; caule erecto valde ramoso, ramis fastigiatis obscure pentagonis, foliis densis arcte imbricatis lineari-lanceolatis acuminatis supremis longe piliferis, theca cernua subrotundata v. ovato-globosa. C. australe, *Swartz in Schrader, Neu Bot. Journ.* vol. i. pt. 3. p. 31. t. 6. *Schwaeg. Suppl.*, vol. i. pt. 1. p. 80. and pt. 2. p. 108. t. 130. *Brid. Bryol. Univ.* vol. i. p. 152.

Hab. Lord Auckland's group and Campbell's Island; on moist rocks, at a considerable elevation.

Conostomum has recently been united with *Bartramia*, by Bruch and Schimper. The genus is still an eminently natural one. It is not upon the most evident characters, such as the various species of *Polytrichum* present, however constant they may be, that natural genera can in many cases be founded.

18. BARTRAMIA, *Hedw.*

Peristomium duplex; *exterius* dentes sedecim, inflexi; *interius* membrana carinata, in lacinias sedecim integras bifidasve fissa, ciliis interjectis v. nullis. *Calyptra* cuculliformis. *Theca* globosa v. ovato-globosa rarius elongata, inæqualis; ore obliquo, exannulato.—Philonotis et Bartramia, *Brid. Bryol. Univ.* vol. ii. p. 15 et 32.

1. Bartramia *patens*, Brid.; caule erecto subramoso, foliis patentibus rigidis linearibus acuminatis serrulatis basi dilatatis vaginantibus, theca obliqua, operculo convexo. B. patens, *Brid. Bryol. Univ.* vol. ii. p. 38. *Schwaeg. Suppl.* vol. i. pt. 2. p. 55. t. 62. B. squarrosa, *Turner in Koenig's Annals of Botany*, vol. i. p. 583. t. 2. f. 2.

Hab. Campbell's Island; on rocks, half way up the hills; barren.

Allied to *B. ithyphylla*, Brid.; but larger, with the leaves longer and more dilated at the base.

2. Bartramia *robusta*, Hook. fil. et Wils.; caule erecto subramoso, foliis patentibus rigidis subulatis serrulatis basi quadratis vaginantibus nervo lato continuo, seta crassiuscula, theca erecta, operculo conico rostellato. (Tab. LIX. Fig. IV.)

Hab. Lord Auckland's group and Campbell's Island; in moist places, especially towards the tops of the hills; barren in the latter island.

Caules cæspitosi, pollicares, robusti, basi radiculis intertexis fuscis dense obtecti et connexi. *Folia* densa, rigida, subfragilia, nervo latissimo crasso superne supra paginam folii totam extenso, flavo-viridia, inferiora subrufescentia. *Inflorescentia* dioica; *Fl. masc.* terminalis; antheridiis plurimis oblongis, paraphysibus longioribus immixtis. *Seta* 8 lin. longa, valida, haud torta, rubra. *Theca* erecta, globosa, brunnea, siccitate sulcata. *Peristomium* non visum, an nullum? *Operculum* conico-rostellatum, luteum. *Calyptra* fusca.

A more robust species than the *B. patens*, with broader and more rigid leaves, their dilated bases truly quadrate. The capsule is perfectly erect and the operculum rostellate. It essentially differs from the former in the dicœcious inflorescence. The thecæ are not in a fit state to show the peristome, if this moss really possesses one, of which we have some doubt. This is not distinguishable from the *B. potosica* of Montagne (Ann. Sc. Nat., 2nd Series, vol. ix. p. 56), judging only from the description of that author; but an examination of authentic specimens proves the two truly distinct, the latter being more closely allied to *B. patens*, though having shorter leaves, with their bases not quadrate, but oblong, or almost obovate.

Plate LIX. *Fig.* IV.—1, plant of the *natural size*; 2 and 3, leaves; 4 and 5, theca; 6, old ditto; 7, calyptra: —*magnified*.

3. Bartramia *pendula*, Hook.; caule subpinnatim ramoso fastigiato, foliis ovato-lanceolatis longe acuminatis-serrulatis striatis nervo continuo, theca pendula ovato-globosa subcylindracea sulcata, operculo planiusculo. B. pendula, *Hook. Musc. Exot.* t. 21. Philonotis pendula, *Brid. Bryol. Univ.* vol. ii. p. 27. Mnium pendulum, *Smith in Linn. Trans.* vol. vii. p. 262.

Hab. Campbell's Island; frequent in marshy places, always barren.

Variable in aspect and sometimes resembling *B. fontana*.

19. BRYUM, *Dill.*

Peristomium duplex; *exterius* dentes sedecim, æquidistantes, lanceolati, simplices; *interius* membrana tenera, sedecim carinata, in processus totidem dorso carinatos producta, ciliis aut nullis aut plurimis filiformibus interjectis, dentibus externis oppositis. *Calyptra* parvula, cuculliformis. *Theca* inclinata v. pendula, oblonga, pyriformis v. clavata, plerumque annulata, collo brevissimo v. elongato instructa. Caules *apices versus innovantes*.—Bryum, Webera, Pohlia, Cladodium, *et* Ptychostomum, *Bridel et auctorum*.

In the generic character, given above, we have closely followed that of Bruch and Schimper (Bryol. Europ.), though not satisfied of the propriety of excluding *Mnium*.

1. Bryum *nutans*, Schreb.; caule subramoso breviusculo v. elongato, foliis superioribus elongato-lanceolatis apice serratis inferioribus ovato-lanceolatis integerrimis, theca nutante v. pendula oblongo-pyriformi longitudine varia, operculo majusculo convexo papillato. B. nutans, *Schreber, Fl. Lips.* p. 81. *Hook. et Tayl. Musc. Brit.* p. 203. t. 29. *Bruch et Schimper, Bryol. Europ. Fasc.* 6–9, p. 34. t. 12.

Hab. Lord Auckland's group; on the hills, at an altitude of 1000 feet; rare, growing in a peaty soil.

The description given above is mainly taken from the 'Bryologia Europæa,' the authors of which add to the specific character "hermaphroditum, antheridiis per paria in foliorum summorum perichætialiumque axillis inque archegoniorum receptaculo." The Auckland Island specimens are immature and vary in size, but coincide well with others of British growth. This is a moss of a high arctic as well as antarctic latitude.

2. Bryum *Wahlenbergii*, Schwaeg.; caule simplici erecto v. ascendente, foliis apices versus serratis inferioribus remotis ovatis acuminatis, caulinis confertis lanceolatis costa evanida instructis, theca inclinata v. pendula brevi pyriformi, operculo convexo v. subconico mamillato, dentibus majusculis. B. Wahlenbergii, *Schwaeg. Suppl.* vol. i. pt. 2. p. 92. t. 70. *Bruch et Schimper, Bryol. Europ. Fasc.* 6–9, p. 44. t. 19.

Hab. Lord Auckland's group; barren. (*Dr. Lyall.*)

The inflorescence of this moss is dicœcious.

3. Bryum *blandum*, Hook. fil. et Wils.; caule subsimplici, foliis imbricatis erecto-patentibus oblongis obtusis integerrimis concavis, nervo tenui subcontinuo, theca—? (Tab. LX. Fig. I.)

Hab. Campbell's Island; in boggy places, frequent, but barren.

Caules pollicares, cæspitosi, parce ramosi, flaccidi. *Folia* suberecta, laxe imbricata, valde concava, membranacea, pellucida, laxe reticulata, areolis rhomboideo-hexagonis, marginibus non reflexis, siccitate appressa, contracta, nitida, infima rubella v. rosea, superiora pallide viridia, nervo rubello sub apicem v. evanido. *Fructus* deest.

A very beautiful moss, remarkable for its brilliant reddish and very membranous foliage. Allied to *B. cellulare*, Hook. (in Schwaeg. Suppl., t. 214 *a*, idem ac *Pohlia turbinata*, Schwaeg., l. c. t. 194?); but the leaves are larger, much more concave and obtuse, and the stems longer.

Plate LX. *Fig.* I.—1, and 2, specimens of the *natural size*; 3, a portion of a branch and leaves; 4, leaf:—*magnified*.

4. Bryum *truncorum*, Brid.; caule erecto subsimplici, foliis marginatis obovatis serratis longe acuminatis supremis rosulatis, theca pendula elongata cylindracea, operculo brevi conico apice acuto. B. truncorum, *Brid. Bryol. Univ.* vol. i. p. 699.

Hab. Campbell's Island; in moist exposed places, barren.

These specimens seem to be of the same species as others gathered in New Zealand with capsules, and which agree well with Bridel's description of *B. truncorum*, a Bourbon plant, detected by Bory de St. Vincent. Our moss is closely allied to the *B. ramosum*, Hook. (Ic. Plant. t. 20. f. 2), and also to *B. patens*, Hook. and Wils. (Lond. Journ. of Bot., vol. iii. p. 155), from which latter, as also from *B. roseum*, it differs in the margined leaves and in the remarkably narrow elongated theca. It is perhaps the *B. leptothecium*, Tayl. MSS.

5. Bryum *annulatum*, Hook. fil. et Wils.; caule perbrevi, foliis patentibus subrigidis ovato-lanceolatis acutis integerrimis solidinerviis, theca pendula ovata, operculo conico, annulo latissimo. (Tab. LX. Fig. II.)

Hab. Campbell's Island; on the low grounds, scarce.

Caules cæspitosi, 2 lin. longi. *Folia* conferta, subconcava, nervo crasso continuo vix excurrente instructa, siccitate non crispata. *Seta* 3–4 lin. longa, apice arcuata. *Theca* subobovata. *Peristomii externi* dentes lutei, trabeculati, trabeculis remotis. *Annulus* magnus, insignis, longitudine $\frac{1}{3}$ peristomii exterioris.

We advance this species with much hesitation and after a very careful examination. It is most nearly allied to the *B. balanoides* (Tayl. MSS.), of which it may possibly be a variety, differing from that moss in the rigid and differently shaped leaves, in the large annulus and distant trabeculæ of the outer teeth. The capsule is not sufficiently mature to show the nature of the ciliæ of the inner peristome.

Plate LX. *Fig.* II.—1, a specimen of the *natural size*; 2, 3, 4, and 5, leaves; 6. theca:—*magnified.*

20. FUNARIA, *Schreb.*

Peristomium duplex; *exterius* dentes sedecim, obliqui, apice cohærentes; *interius* cilia totidem membranacea, basi connata, v. membrana plana, in ciliis 16, dentibus oppositis, fissa. *Calyptra* cuculliformis, ventricosa, basi subtetragona. *Theca* inæqualis, pyriformis, cernua, sæpius annulata.

1. Funaria *hygrometrica*, Hedw.; caule brevissimo subsimplici, foliis appressis ovato-lanceolatis integerrimis nervo excurrente, seta arcuata madore torta, theca cernua pyriformi profunde sulcata, operculo planiusculo. F. hygrometrica, *Hedw. Sp. Musc.* p. 170, *et auctorum.*

Hab. Campbell's Island; frequent on the hills; not seen in Lord Auckland's group.

The absence of this moss, in the parts of Lord Auckland's group explored by the expedition, is very remarkable, considering its abundance in Campbell's Island, and is doubtless owing to the presence of carbonized matter over the surface of a great part of the latter island. In the Antarctic regions, as in Europe, the *Funariæ* invariably follow fires, and the confervoid filaments of its youngest state constitute the first appearance of vegetation on the burnt soil of the Falkland Islands.

§ PLEUROCARPI.

21. ANŒCTANGIUM, *Brid.*

Stoma nudum. *Calyptra* cuculliformis. *Theca* æqualis, exannulata. *Seta* lateralis.—Hedwigia, *Hook. Musc. Exot.*

1. Anœctangium *Humboldti*, Brid.; caule erecto diviso pinnatim ramoso, ramis deflexis subrecurvis, foliis imbricatis obovatis concavis enerviis piliferis, theca subglobosa sulcata, operculo basi planiusculo oblique rostrato. A. Humboldti, *Brid. Bryol. Univ.* vol. ii. p. 165. Hedwigia, *Hook. Musc. Exot.* t. 137. *Schwaeg. Suppl.* vol. ii. pt. 1. p. 9. t. 103.

Var. β, *australe*; caule breviore, foliis acutis seta recta breviore terminatis marginibus non cartilagineis.

Hab. Lord Auckland's group and Campbell's Island; on moist rocks, at an elevation of 1400 feet in the former and 600 in the latter island.

The original specimen, figured in the 'Musci Exotici,' has the leaves terminated by a slender hair-like production of their own length, whilst others, gathered by Dr. Lyall at Rio, are muticous in that respect; those now before us are intermediate, and some others from Cape Horn more closely resemble the moss of the Andes.

22. LEUCODON, *Schwaeg.*

Peristomium simplex, membranaceum; dentibus sedecim, bipartitis. *Calyptra* cuculliformis.

1. Leucodon *Lagurus*, Hook.; caule ramoso tomentoso, foliis imbricatis ovatis concavis acuminatis piliferis seminerviis, theca erecta cylindracea, operculo acuminato. L. Lagurus, *Hook. Musc. Exot.* t. 126. *Schwaeg. Suppl.* vol. i. pt. 1. p. 121. t. 133.

Var. β, foliis majoribus ima basi binerviis.

Hab. Campbell's Island; on rocks, at an elevation of 1000 feet, barren.

In the original specimens the leaves are generally nerved half-way up; in the present they possess two very short nerves; but the variety is not otherwise distinguishable from the Antarctic American plant.

23. LESKIA, *Hedwig*.

Peristomium duplex; *exterius* dentes sedecim acuti; *interius* membrana in dentibus sedecim æquilongis fissa. *Calyptra* cuculliformis.

1. Leskia *concinna*, Hook.; caule erecto bipinnatim ramoso, foliis distichis oblongis acuminatis marginatis apice serratis evanidinerviis stipulis conformibus duplo brevioribus, theca suberecta oblonga, operculo subulato. L. concinna, *Hook. Musc. Exot.* t. 34. *Schwaeg. Suppl.* t. 269. Hypopterygium, *Bridel, Bryol. Univ.* vol. ii. p. 711.

Hab. Lord Auckland's group; shady rocks on the tops of the hills, altitude 1200–1400 feet.

This moss, which is furnished with accessory leaves (stipules) on the lower surface of the stem, belongs to the same group as *Hypnum laricinum*, Hook. (Musc. Exot. t. 35), and *L. rotulata*, Hedw., they should perhaps be separated from *Leskia* and from *Hookeria*, to which they are in some respects allied. Bridel's genus *Hypopterygium* is so constructed as not to admit of these, the fertile flowers being lateral and not covered by the stipules, and the calyptra truly dimidiate instead of mitriform. In *Pterigynandrum ciliatum*, Hedw., which has the habit of this group, the peristome is single.

2. Leskia *tamariscina*, Hedw.; caule flabellatim ramoso, ramis subdivisis, foliis distichis oblique lanceolatis serrulatis evanidinerviis, stipulis rotundatis mucronatis, theca oblonga subpendula, operculo conico rostellato. L. tamariscina, *Hedw. Sp. Musc.* p. 212. t. 51. (*excl. syn. Swartzii fid. Hook.*). Hypopterygium, *Brid. Bryol. Univ.* vol. ii. p. 715.

Hab. Lord Auckland's group; barren. (*Dr. Lyall.*)

According to the remark in Hooker's Musc. Exot. (sub. t. 35), the name *Leskia tamariscina* of Swartz (Fl. Ind. Occ.), should be substituted for that of *L. rotulata*, Hedw. We are not aware that any subsequent author has noticed the curious tubular setiform processes in the axillæ of the leaves and sometimes of the stipules in this moss.

3. Leskia *Novæ-Hollandiæ*, Schwaeg.; caule erecto simplici, foliis distichis oblongo-lanceolatis apice denticulatis nervo in cuspidem excurrente, seta basilari elongata, theca ascendente cylindracea. L. Novæ Hollandiæ, *Schwaeg. Suppl.* vol. i. pt. 2. p. 160. t. 83. Rhizogonium, *Brid. Bryol. Univ.* vol. 2. p. 664.

Hab. Lord Auckland's group; on the trunks of trees in the deepest and darkest recesses of the woods; scarce and barren.

24. HYPNUM, *Dill.*

Peristomium duplex; *exterius* dentes sedecim, lanceolati, reflexiles; *interius* membrana carinata, in cilia totidem interdum pertusa ciliolis interjectis fissa. *Calyptra* cuculliformis.—Isothecium, Hypnum *et* Stereodon, *Bridel.*

a. *Foliis distichis.*

1. Hypnum *bifarium*, Hook.; caule erecto subpinnatim ramoso, foliis remotis erecto-patentibus distichis lanceolatis marginatis duplicato-serratis solidinerviis, theca horizontali ovata, operculo conico acuminato. H. bifarium, *Hook. Musc. Exot.* t. 57. *Schwaeg. Suppl.* t. 257, *a*. Isothecium, *Brid. Bryol. Univ.* vol. ii. p. 356.

Hab. Lord Auckland's group; on the dead trunks of trees.

The serratures of the leaves are composed of a double row of spines, as in *H. spiniforme*. The operculum is half the length of the theca, shorter and less acuminated than in the figure in 'Musci Exotici.'

b. *Foliis imbricatis.*

* *Foliis solidinerviis.**

2. Hypnum *spiniforme*, L.; caule erecto subsimplici, foliis patentibus lineari-subulatis marginatis duplicato- spinuloso-serratis solidinerviis, seta subbasilari, theca ovata arcuata, operculo oblique conico rostrato. H. spiniforme, *Linn. Sp. Pl.* p. 1587. *Hedwig, Musc.* vol. iii. p. 59. t. 25. *Brid. Bryol. Univ.* vol. ii. p. 557.

Var. *β*, caule gracili, foliis brevioribus lanceolato-subulatis luridis.

Hab. Lord Auckland's group; var. *β*, under large tussacks of grass on the hills, rare and barren.

Neither in this nor in any other specimens of *H. spiniforme* have we seen the leaves to be bifarious.

3. Hypnum *elongatum*, Hook. fil. et Wils.; caule elongato robusto subramoso, ramis elongatis, foliis erecto-patentibus ovato-lanceolatis nervo excurrente apiculatis serrulatis striatis. (Tab. LX. Fig. III.)

Hab. Lord Auckland's group and Campbell's Island; in dry rocky places on the hills, rare and always barren.

Caules 4–6 unciales, basi procumbentes, deinde ascendentes, incurvi, parce et vage ramosi. *Folia* suberecta, dense imbricata, serrulata, plicato-striata, siccitate erecta, subtorta, nervo tenui in apiculum exsertum subelongatum desinente instructa, flavo-viridia, nitida, inferiora sordide viridia, dorso papillosa, areolis minutis oblongis, basi marginibusque pellucidis reticulatis.

This moss closely resembles the *H. densum*†, Swartz (Fl. Ind. Occ.), which is but ill represented in Hedwig's 'Species Muscorum.'

Plate LX. *Fig.* III.—1, a specimen, of the *natural size*; 2, leaf:—*magnified.*

4. Hypnum *consimile*, Hook. fil. et Wils.; caule elongato subramoso debili, foliis erecto-patentibus supremis secundis ovato-lanceolatis acuminatis serrulatis striatis nervo subexcurrente. (Tab. LX. Fig. IV.)

Hab. Lord Auckland's group; in marshy places on the hills, barren.

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* The subdivisions here proposed appear to us more natural than those in general use, of which they are in some respects modifications.

† An original specimen of this in Herb. Hook. may be thus characterized;

H. *densum*, Sw.; foliis lanceolatis acuminatis argute serratis fragilibus siccitate striatis evanidinerviis (areolis rotundatis) margine basi punctatis. H. densum, *Swartz, Fl. Ind. Occ.*, p. 1829.

Hab. Jamaica; roots of trees on the Blue Mountains, (*Swartz*).

Caules 3–4 unciales, graciles, laxe cæspitosi, parce ramosi; ramis erectis. *Folia* laxe imbricata ut in *H. elongato*, sed multo minora et e basi subquadrata gradatim attenuata, minute serrulata, nervo valido apice incrassato subexcurrente instructa, areolis minimis subrotundis v. punctiformibus.

This moss might readily be taken for a slender state of the *H. elongatum*, nobis, from which it is truly distinct in the lower part of the leaf being subquadrate, angled on each side a little above the base, thence tapering gradually to a point, in the margin being more minutely serrated, the nerve stronger, and in the smaller reticulation.

Plate LX. *Fig.* IV.—1, a specimen of the *natural size*; 2 and 3, leaves; 4, portion of a leaf, shewing the reticulation:—*magnified.*

5. Hypnum *scabrifolium*, Hook. fil. et Wils.; caule pinnatim ramoso, foliis laxe imbricatis ovato-lanceolatis acuminatis margine scabris dorso papillosis nervo valido subexcurrente. (Tab. LX. Fig. VI.)

Hab. Lord Auckland's group; barren. (*Dr. Lyall.*)

Caules unciales et ultra, ramis interdum divisis. *Folia* caulina dissita, patentia, subrecurva; ramulina minora, laxe imbricata, erecto-patentia, vix secunda, siccitate incurva, nervo continuo, omnia margine scabra subdenticulata, glaucescentia, areolis minimis punctiformibus opacis.

This is one of the discoveries of my zealous friend Dr. Lyall, the value of whose collection is particularly noticed in the preface to this work. The number of mosses and sea-weeds especially, brought home from the Antarctic regions, was much increased through that officer's unwearied exertions.

Nearly allied to the *H. crispifolium*, Hook. (Musc. Exot. t. 31), but smaller, with the leaves neither plicate nor falcate.

Plate LX. *Fig.* VI.—1, a specimen of the *natural size*; 2, a branch; 3 and 4, leaves; 5, apex of ditto:—*magnified.*

** *Foliis ruptinerviis.*

6. Hypnum *rutabulum*, L.; caule procumbente vage ramoso, ramis subcompressis, foliis patentibus laxe imbricatis ovatis acuminatis subserrulatis nervo ad medium evanido, seta scabra, theca cernua ovata, operculo conico. H. rutabulum, *Linn. Sp. Pl.* p. 1590. *Hedw. Musc. Frond.* vol. iv. p. 29. t. 12. *Hook. et Tayl. Musc. Brit.* p. 176. t. 26.

Hab. Lord Auckland's group and Campbell's Island; in marshy situations.

There are two varieties in the collection, both of them barren.

7. Hypnum *serpens*, L.; caule subpinnatim ramoso, ramulis simpliciusculis filiformibus suberectis, foliis patentibus ovatis acuminatis evanidinerviis, theca cernua oblonga, operculo convexo subconico acuto. H. serpens, *Linn. Sp. Pl.* p. 1596. *Hedwig, Musc. Frond.* vol. iv. p. 45. t. 18. *Hook. et Tayl. Musc. Brit.* p. 155. t. 24.

Var. β; foliis subsolidinerviis.

Hab. Lord Auckland's group; the var. β only. (*Dr. Lyall.*)

Except in the more defined nerve, this does not materially differ from British specimens.

*** *Foliis subenerviis.*

8. Hypnum *acutifolium*, Hook. fil. et Wils.; caule fastigiatim ramoso, foliis dense imbricatis suberectis elliptico-lanceolatis acuminatis integerrimis enerviis. (Tab. LX. Fig. V.)

Hab. Campbell's Island.

Caulis procumbens, uncialis. *Rami* conferti, fastigiati, subsimplices, graciles, fragiles. *Folia* subsecunda, siccitate erecta, subappressa, vix pilifera, concava, luride viridia, areolis linearibus.

Allied to *H. extenuatum*, Brid., but smaller, the leaves more erect, and tapering gradually to a very narrow point.

Plate LX. *Fig.* V.—1, a specimen, of the *natural size*; 2, portion of branch and leaves; 3, leaf:—*magnified.*

9. Hypnum *chlamydophyllum*, Hook. fil. et Wils.; caule prostrato subramoso, ramis simplicibus elongatis cuspidatis, foliis imbricatis patentibus quadrato-rotundatis integerrimis basi truncatis concavis nervo breviusculo evanido, seta elongata gracili lævi, theca cernua ovato-oblonga, operculo conico. (Tab. LXI. Fig. I.)

Hab. Campbell's Island; on the ground, barren.

Caules sesquiunciales, vage ramosi; ramis 1 unc. longis, ad apices e foliis arcte convolutis cuspidatis. *Folia* valde concava, ad apices rotundata, obtusissima, basi latissima, truncata, subauriculata, pallide luteo-viridia, subscariosa, pellucida, splendentia, nervo simplici infra medium evanido v. nervis duobus brevibus, areolis anguste oblongis inferioribus multo majoribus; *perichætialia* erecta. *Seta* fere $1\frac{1}{2}$ unc. longa, gracilis, lævis, torta, rubra. *Theca* cernua v. horizontalis, ovato-oblonga, brunnea. *Peristomium* luteum. *Operculum* breve, theca concolor.

Allied to *H. cochlearifolium*, but with the habit of a *Leskia*, and readily distinguished by its cuspidate branches, wider and more flaccid leaves which are singularly broad and truncate at the base, where also there are a number of large pellucid cells; the seta also is longer and more slender.

The above description has been drawn up in part from fertile Tasmanian specimens, gathered in that country by Mr. Lawrence. There are in the Hookerian Herbarium several allied undescribed species, both from New Zealand and Tasmania. A Fuegian moss, *Hypnum? auriculatum*, Mont., (Voy. au Pole Sud, Bot. Cryptog., t. 20. fig. 3), is the American representative of this, it differs in having the base of the leaves produced on each side into two lobes.

Plate LXI. *Fig.* I.—1, a specimen, of the *natural size*; 2, 3, and 4, leaves; 5 and 6, thecæ:—*magnified.*

10. Hypnum *cochlearifolium*, Schwaeg.; caule subrepente, ramis ascendentibus apice radicantibus, foliis imbricatis subrotundis obtusiusculis concavissimis subhemisphericis enerviis, theca cernua ovata, operculo conico. H. flexile*, *Hook. Musc. Exot.* t. 110. (*excl. syn. Swartzii, Hedwigii,* et *Schwaegr.*)

Hab. Lord Auckland's group and Campbell's Island; at the foot of precipices near the tops of the mountains, altitude 1200–1400 feet; barren.

This moss is a native of the woods of New Zealand, even as far north as lat. 36° S.; hence its occurrence only at the tops of mountains in the most bleak and exposed situations of so high a latitude as Campbell's Island was quite unexpected. We cannot distinguish it from more luxuriant northern specimens in its barren state.

11. Hypnum *Arbuscula*, Sw.; caule erecto bipinnatim ramoso, foliis imbricatis erecto-patentibus ovatis

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* The *Hypnum flexile*, Hedw., is a very different moss from this, as may be inferred from the following description drawn up from an authentic specimen:—

Leskia *flexilis*, Hedw.; caule pendulo subpinnatim ramoso, foliis ovato-oblongis rigidiusculis apiculatis (apiculo recurvo) enerviis, perichætialibus squarrosis, theca erecta elliptica, operculo subulato, calyptra valde pilosa.—L. flexilis, *Hedw. Sp. Musc.* p. 234. t. 58. Hypnum? *Swartz, Prodr.* p. 141. *Fl. Ind. Occ.* p. 1830.

Hab. Jamaica; on the tops of mountains in the southern parts of the island, (*Swartz*).

obtusis integerrimis concavis subbinerviis, seta brevi, theca erecta ovata. H. Arbuscula, *Smith, in Linn. Trans.*, vol. xix. p. 280. t. 23. *Hook. Musc. Exot.* t. 112. Isothecium, *Brid. Bryol. Univ.* vol. ii. p. 372.

Var. β, foliis subdistichis. H. Arbuscula, *Schwaeg. Suppl.* t. 300.

Hab. Lord Auckland's group and Campbell's Island; rocky places on the hills; and on the ground in the woods, where it was found in fruit by Dr. Lyall. Var. β, Lord Auckland's Island; barren. (*Dr. Lyall.*)

The original specimens, figured in the 'Musci Exotici,' are there correctly described as having the leaves imbricated all round the stem, but the seta is represented too long and slender. The stems of the var. β are somewhat compressed, and the leaves thus become in a measure distichous, as shown in Schwaegrichen's figure, which may indicate a different species. The majority of our specimens agree well with the figure in 'Musc. Exot.;' except that the theca is more truly elliptical and somewhat apophysate, gradually tapering downwards into a thick slightly curved seta, which is very little longer than the capsule and barely exserted beyond the perichætial leaves. We have never seen the seta so short, or the theca so globose, as they are represented by Schwaegrichen. The arcuate stems sometimes root at the apex.

c. *Foliis patulis squarrosis.*

12. Hypnum *aciculare*, Brid.; caule vage ramoso, ramis simplicibus, foliis squarrosis ovatis acuminatis apice inciso-serratis subenerviis, theca inclinata cylindracea arcuata, operculo aciculari longissimo. H. aciculare, *Brid. Bryol. Univ.* vol. ii. p. 505. *Schwaeg. Suppl.* vol. ii. p. 280. t. 92.

Hab. Lord Auckland's group and Campbell's Island; on the ground in the woods, rare in fruit.

The calyptra is remarkably long in this moss, lanceolato-subulate, slightly inflated when young, of a rich chestnut-brown colour.

d. *Foliis secundis.*

* *Nervosis.*

13. Hypnum *comosum*, Lab.; caule repente, ramis erectis superne fastigiatim ramosis subdendroideis, foliis imbricatis subscopariis patentibus ovato-lanceolatis apice serratis nervo excurrente superioribus subsecundis, theca pendula sulcata, operculo curvirostro. H. comosum, *La Billard. Fl. Nov. Holl.* vol. ii. p. 107. t. 253. f. 2. *Schwaeg. Suppl.* vol. i. pt. 2. p. 265. t. 91. Isothecium, *Brid. Bryol. Univ.* vol. ii. p. 374.

Hab. Lord Auckland's group; forming large tufts in the woods near the sea, rarely fruiting.

In habit this fine moss resembles some species of *Bartramia*.

14. Hypnum *hispidum*, Hook. fil. et Wils.; caule ramoso curvato v. arcuato, foliis imbricatis falcato-secundis ovatis longe acuminatis integerrimis subplicatis nervo crasso longe exserto, seta lævi, theca ovata æquali, operculo longirostro. (Tab. LXI. Fig. II.)

Hab. Lord Auckland's group; rocky places near the tops of the hills, barren.

Caules 2–4 unciales, vage ramosi, ramis rigidis simpliciusculis, curvatis. *Folia* dense imbricata, rigida, basi ovata, deinde setaceo-subulata, nervo valido excurrente longe acuminata, subconcava, basi obscure plicata, atro-viridia, siccitate suberecta, areolis minutis; *perichætialia* minora, ovata, nervo longe exserto. *Seta* valida, flexuosa, ½ unc. longa, rigida, rubra, apice arcuata. *Theca* æqualis, subhorizontalis, fusco-lutea, operculo æquilongo, rostro obliquo. *Calyptra* non visa.

This is a very common moss in the northern island of New Zealand, growing on rocks, on the exposed roots of large forest-trees, especially of the *Podocarpus dacrydioides*, and upon stones in streams of water; under the last circum-

stances the stems become much elongated, and the whole plant resembles the *Ancectangium aquaticum*, Hedw. The drawing is made from New Zealand specimens.

PLATE LXI. *Fig.* II.—1, a specimen of the *natural size*; 2, another, of the aquatic state, also of the *natural size*; 3 and 4, leaves; 5, young theca; 6 and 7, mature thecæ:—*magnified.*

15. HYPNUM *filicinum*, L.; caule compresso pinnatim ramoso, foliis falcato-secundis lanceolatis acuminatis basi cordatis solidinerviis perichætialibus striatis, theca cernua subcylindracea, operculo conico acuto. H. filicinum, *Linn. Sp. Pl.* p. 1590. *Hedw. Sp. Musc.* p. 258. t. 76. f. 7–10. *Hook. et Tayl. Musc. Brit.* p. 183. t. 26.

Var. β, *minor*; caule gracili, foliis suberectis lanceolatis.

HAB. Var. β. Lord Auckland's group; in woods by the banks of streams. (*Dr. Lyall.*)

Though the habit is more delicate than that of British specimens, we are unable to separate this moss specifically from *H. filicinum*, of which a perfectly intermediate variety occurs in the Falkland Islands.

16. HYPNUM *fluitans*, L.; caule erecto v. natante subpinnatim ramoso, foliis laxe imbricatis falcatis lanceolatis acuminatis nervo ultra medium producto, theca cernua oblonga, operculo conico. H. fluitans, *Linn. Fl. Suec.* Ed. 2. p. 399. *Hedw. Musc. Frond.* vol. iv. p. 94. t. 36. *Hook. Musc. Brit.* p. 185. t. 24.

HAB. Campbell's Island; in swampy places, barren.

** *Foliis enerviis.*

17. HYPNUM *gracile*, Hook. fil. et Wils.; caule ramoso, ramis gracilibus subrecurvis, foliis imbricatis secundis erecto-patentibus ellipticis obtusiusculis concavis subdenticulatis subenerviis, perichætialibus squarrosis. (TAB. LXI. Fig. III.)

HAB. Lord Auckland's group; dry rocky places near the tops of the hills, scarce and barren.

Caules unciales et ultra, curvati, subsimplices, nunc valde ramosi; ramis gracilibus. *Folia* elliptica, subspathulata, minutissime denticulata, nervo infra medium evanido v. nervis duobus brevibus, areolis linearibus supremis latioribus; *perichætialia* ovata, acuminata, serrulata, enervia.

Allied to *H. micans*, Wils. (in Hook. Brit. Fl. vol. ii. p. 86), but different in the branched stems and larger leaves, which are not recurved at the margin.

PLATE LXI. *Fig.* III.—1, a specimen of the *natural size*; 2, a portion of a branch; 3 and 4, leaves:—*magnified.*

18. HYPNUM *cupressiforme*, L.; caule decumbente vage pinnatim ramoso, ramis simplicibus incurvis, foliis circinnato-falcatis secundis ovato-lanceolatis integerrimis subenerviis, perichætialibus conformibus, theca subcernua cylindracea, operculo conico cuspidato. H. cupressiforme, *Linn. Sp. Pl.* p. 1592. *Hedw. Musc. Frond.* vol. iv. p. 59. t. 23. *Hook. et Tayl. Musc. Brit.* p. 189. t. 27.

HAB. Lord Auckland's group and Campbell's Island; abundant, but barren.

19. HYPNUM *leptorhynchum*, Brid.; caule subpinnatim diviso, foliis falcatis tortis lineari-lanceolatis acuminatis apice denticulatis enerviis, theca nutante oblonga, operculo longissime et tenuissime rostrato. H. (Stereodon) leptorhynchum, *Brid. Bryol. Univ.* vol. ii. p. 621. *Schwaeg. Suppl.* vol. i. pt. 2. p. 295. t. 93.

Var. β, seta brevior.

HAB. Lord Auckland's group; both varieties on the trunks of prostrate trees, rare.

20. Hypnum *Terræ-Novæ*, Brid.; caule pinnatim ramoso, ramis incurvis simplicibus, foliis secundis circinnatim falcatis ovato-lanceolatis subintegris enerviis, perichætialibus elongatis recurvis subcrinitis subserrulatis, theca suberecta cylindracea, operculo brevi conico apiculato. H. Terræ-Novæ, *Brid. Bryol. Univ.* vol. ii. p. 619. (Tab. LXI. Fig. IV.)

Var. β, *australe*; foliis e basi lata gradatim attenuatis subpiliferis integerrimis.

Hab. Var. β. Campbell's Island; on decayed vegetable matter in the woods.

Our specimens do not sufficiently depart from the description of Bridel to warrant our considering them as a distinct species; the only difference appears to lie in the entire perichætial leaves and the cauline being probably more gradually attenuated from the base upwards. The seta is half an inch long. Operculum convex, subconical, or nearly hemispherical.

Plate LXI. *Fig.* IV.—1, a specimen of the *natural size*; 2, 3, and 4, leaves; 5 and 6, thecæ:—*magnified.*

25. HOOKERIA, *Sw.*

Peristomium duplex; *exterius* dentes sedecim, basi liberis; *interius* membrana erecta, in lacinias sedecim carinatas fissa, ciliolis interjectis plerumque nullis. *Calyptra* mitræformis.

1. *Foliis marginatis undique imbricatis.*

1. Hookeria *nervosa*, Hook. fil. et Wils.; caule parce fastigiatim ramoso, foliis imbricatis erecto-patentibus ovato-lanceolatis acuminatis carinatis marginatis integerrimis solidinerviis, theca erecta ovato-cylindracea apophysata, calyptra basi fimbriata. (Tab. LXI. Fig. V.)

Hab. Lord Auckland's group; on twigs of bushes in ravines, at an altitude of 500 feet, rare.

Caules fere 1½ unciales, dense conferti, ramis fastigiatis. *Folia* arcte imbricata, acuminata v. longe cuspidata, margine incrassata, nervo valido subexcurrente, pallide viridia, siccitate appressa, areolis rotundatis; *perichætialia* breviora, erecta, elliptica, obtusiuscula. *Seta* 3–4 lin. longa, rubra, apice scabriuscula. *Theca* parvula, suberecta. *Calyptra* conico-subulata, basi fimbriata, apice scabriuscula, fusco-brunnea.

This moss closely resembles the *Daltonia splachnoides*, Schwaeg., and cannot be generically removed from that plant. It differs specifically in the inflorescence not being hermaphrodite, in the shorter peristome, in the sporules being twice the diameter, the calyptra twice as long, less conical, the seta shorter and thicker, the theca more oblong; the leaves wider, more patent, carinate, and nerved to the very apex or beyond it. We have South American specimens of *D. splachnoides*; but none corresponding with the moss now before us.

Plate LXI. *Fig.* V.—1 and 2, specimens of the *natural size*; 3, a leaf; 4 and 5, perichætial leaves; 6, theca; 7, operculum; 8, teeth; 9, calyptra; 10, base of ditto:—*magnified.*

2. Hookeria *pulchella*, Hook. fil. et Wils.; caule procumbente distiche ramoso, ramis compressis, foliis confertis imbricatis subdistichis obovatis obtusis marginatis seminerviis, theca suberecta oblonga apophysata, operculo rostrato, calyptra basi dense fimbriata superne glabra. (Tab. LXII. Fig. I.)

Hab. Lord Auckland's group; on bushes and the ultimate branches of trees, about 500 feet above the sea, rare, but abundantly fruiting.

Caules semiunciales et ultra, subpinnatim ramosi; ramis subcomplanatis mollibus. *Folia* late obovata obtusa interdum apiculata, flaccida, pellucida, lateralia patentia, antica posticaque subappressa, margine tenue cartilaginea, albida, integerrima, nervo tenui ad medium evanido instructa, areolis parvis rotundatis inferioribus majoribus; *perichætialia* minora, erecta, ovata, obtusa, subconvoluta. *Seta* vix semiuncialis, apice scabriuscula, luride rubra, infra

thecam paulo incrassata. *Theca* suberecta, parvula, oblonga, basi obconica, seta concolor, apophysi angusta. *Peristomium* stramineum. *Operculum* theca paulo brevius, basi conoideum, rostro recto cylindraceo, margine submembranacea, semidiaphana. *Calyptra* thecæ parum longior, conico-subulata, fusco-lutea, apice rufo-fusca, basi ciliis plurimis confertis fimbriata.

A most beautiful little flaccid and tender species, of a pale straw colour, with the calyptra exactly as in ~~Dawsonia~~ Daltonia *splachnoides*, Schwaeg., whence the species will form a connecting link between *Daltonia* and *Hookeria* (*Pterigophyllum*, Brid.). It is not improbable that this curious structure of the calyptra, which appears to be of very rare occurrence in the genus, may, in conjunction with the erect theca and some other peculiarities, prove of sufficient importance to separate these species from all other *Hookeriæ*.

PLATE LXII. *Fig.* I.—1, a specimen of the *natural size*; 2, a leaf; 3 and 4, theca; 5, operculum; 6, calyptra:—*magnified.*

2. Foliis immarginatis - complanatis -

3. HOOKERIA *denticulata*, Hook. fil. et Wils.; caule suberecto parce ramoso, foliis laxe imbricatis subquadrifariis lateralibus distichis intermediis appressis subrotundis grosse dentatis nervo ad medium evanido, theca pendula ovata, operculo rostrato, calyptra glabra. (TAB. LXII. Fig. II.)

HAB. Lord Auckland's group and Campbell's Island; in wet and marshy places, not uncommon, rare in fruit, which was only seen in the former locality.

Caules pollicares, parce ramosi; rami compressi, subincurvi, siccitate rigidi. *Folia* configuratione sat varia, late oblonga, ovata, v. obovata, obtusa, musco recenti micantia, pellucida, siccitate nigricantia, subcrispa, fragilia, madore tardius nervo valido plerumque furcato infra medium evanido interdum brevissimo, areolis majusculis hexagonis; *perichætialia* parva, ovata. *Seta* $\frac{1}{2}$ unc. longa, crassa, vix torta, rubra. *Theca* cernua v. pendula, elliptica, basi attenuata, rufo-brunnea, opaca. *Peristomii dentes externi* flavi, lineis duobus rubris notati. *Operculum* rostratum, rectum, theca brevius. *Calyptra* conico-mitræformis, glabra, carnosa, rufo-fusca.

Our specimens want both the operculum and calyptra, the descriptions of which are taken from Tasmanian specimens. This species bears much affinity to *H. quadrifaria*, but is smaller and readily distinguishable by its dentate leaves. In general aspect it approaches the *H. cristata*.

PLATE LXII. *Fig.* II.—1, specimen from Cape Horn of the *natural size*; 2, a Campbell's Island specimen of the *natural size*; 3 and 4, leaves:—*magnified.*

4. HOOKERIA *pennata*, Smith; caule erecto simplici, foliis bifariis verticalibus ovato-lanceolatis serratis subenerviis, stipulis orbiculatis mucronulatis serratis, seta perbrevi, theca suberecta ovata, operculo conico acuminato. H. pennata, *Smith, in Linn. Trans.* vol. ix. p. 277. *Hook. Musc. Exot.* t. 163. Cyathophorum, *Brid. Bryol. Univ.* vol. ii. p. 722.

Var. β, *minor*; foliis rotundatis concavis fusco-olivaceis. (TAB. LXII. Fig. III.)

HAB. Lord Auckland's group; in the dark woods, barren: var. β, on decaying stumps of trees by a water-course, also barren.

The var. β is certainly not entitled to rank as a species, though at first sight its difference appears striking. Another form, probably also a variety, with very narrow leaves, has been sent from Assam by Mr. Griffith, under the name of *Neckera Adiantum*, Griff. MSS. *Hookeria pennata*, on account of its accessory leaves (stipules), appears most naturally allied to those species included by Bridel in *Hypopterygium*; it is only in the much advanced state that the vaginula becomes hollow and cup-shaped, whence Bridel's name of *Cyathophorum* is scarcely tenable, considering that the vaginula in other species of *Hookeria* is very turgid. The calyptra is truly mitriform.

We have New Zealand specimens of this magnificent moss, nearly a foot long and loaded with thecæ.

PLATE LXII. *Fig.* III.—1, a specimen of the *natural size*; 2 and 3, leaves:—*magnified.*

4 Hookeria crispula. in Addenda.

XXXIV. HEPATICÆ, *Juss.*

(By Dr. Thomas Taylor* and J. D. Hooker.)

1. JUNGERMANNIA, *L.*

(1. Gymnomitrion, *Nees.*)

1. Jungermannia *stygia,* Hook. fil. et Tayl.; perpusilla, caule erecto laxe cæspitoso ramoso, foliis erectis subimbricatis appressis obovatis obtusis integris v. emarginatis, perichætiis rotundatis caule duplo latioribus. (Tab. LXII. Fig. IV.)

Hab. Campbell's Island; on rocks on the hills, growing amongst other *Hepaticæ* and Mosses.

Caules 2–3 lin. longi, crassiusculi, superne fusco- v. atro-purpurei, inferne fusco-olivacei vage ramosi; ramis divaricatis. *Folia* minima, subsecunda, alterna, vix imbricata, obovata v. oblonga, apices versus obtusos late emarginata, segmentis obtusis, rarius integra, margine superiore interdum scariosa. *Perichætia* subrotunda, foliis imbricatis, latiusculis, ad apices albidos plerumque scariosis.

A very inconspicuous little species, approaching *J. concinnata* (Lightf.), of which it is probably the representative in these islands. The leaves are, however, more distant, never bifid at the apex, the stems slenderer and the perichætia sessile and round. Its colour is like *Gymn. adustum*, Nees, a German plant, with short and simpler stems.

Plate LXII. *Fig.* IV.—1, a plant of the *natural size*; 2, a specimen, *magnified*; 3, stem and leaves; 4, leaf: both *magnified.*

2. Jungermannia *acinacifolia,* Hook. fil. et Tayl.; atro-fusca, caulibus erectis cæspitosis parce ramosis, foliis secundis ante imbricatis erectis acinaciformibus integerrimis apice rotundatis demum scariosis concavis atro-purpureis. (Tab. LXII. Fig. V.)

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* The liberal manner in which the most eminent Naturalists in each department of Cryptogamic Botany have afforded their cooperation, has removed the diffidence I should otherwise have felt in publishing this difficult portion of the Antarctic Flora. To Dr. Taylor's extensive knowledge and keen discrimination I owe the diagnoses of the *Hepaticæ* and *Lichenes*. The large amount of *Jungermanniæ* which were collected, and the entangled manner in which they delight to grow, rendered their separation a task demanding no ordinary patience and skill. Further, the microscopic investigation of eighty different species and a much greater number of specimens, entailed upon that gentleman and myself an amount of labour which we would fain hope has resulted in the correct determination of a collection so unexpectedly novel and interesting. After a thorough examination by Dr. Taylor, the specimens have passed twice under my own eyes, preparatory to the completion of the descriptions and the drawings, which latter have been further revised by Mr. Fitch when transferring them to the stone; this severe scrutiny will, it is to be trusted, reduce the errors into which I should otherwise personally have fallen, to a very small number.

Amidst so many new species it is not to be wondered that some are advanced with hesitation. In a tribe of plants so minute, a casual resemblance or a slight variation may often lead (without reference to the microscope) on the one hand to a union of what are not the same, and on the other to a multiplication of species. The difficulty of holding a middle course between these extremes is acknowledged. Our plan, when investigating the plants of new countries, so remote from any whose productions are explored, has been, to consider tangible characters, though often slight, as specific differences; at the same time stating the amount of difference, and hoping that future observers may obtain such materials as will either unite these with the plants of other lands, or tend still further to prove them distinct.

Hab. Campbell's Island; on rocks near the hill-tops, growing amongst mosses, &c.

Cæspites luride atro-purpurei, vix 1 unc. alti, supra muscos elati. *Caules* sæpius curvati, anni præteriti nunc ad apices innovationibus binis instructi. *Folia* ita imbricata et secunda ut caulis superne profunde canaliculata appareat, opaca, acinaciformia, margine posteriore lente recurva, anteriore convexa.

A larger plant than the former, or than *J. concinnata*; of a rigid habit, more sparingly branched and of a fuscous or blackish purple colour, with leaves so densely imbricated all round the stem, that the latter appears terete and grooved down the front. It is perhaps more nearly allied to the *J. lutescens*, Gottsche, but its leaves are broadly rounded, of a thinner texture, the shoots pale lemon-colour, the whole plant of a different habit, and further, the latter is furnished with stipules.

Plate LXII. *Fig.* V.—1, a specimen of the *natural size*; 2, another specimen, *magnified*; 3, part of stem and leaves; 4, a leaf; both *magnified*.

3. Jungermannia *ochrophylla*, Hook. fil. et Tayl.; pallide viridis, caule suberecto v. decumbente parce ramoso, foliis distichis laxe imbricatis erecto-patentibus late obovatis v. subquadratis breviter bifidis segmentis obtusis concavis, stipulis valde inconspicuis v. nullis. (Tab. LXII. Fig. VI.)

Hab. Lord Auckland's group; amongst mosses on rocks at the tops of the hills, altitude 1200 feet.

Laxe cæspitosa. *Cæspites* pallide virescentes, 1 unc. lati et ultra. *Caules* subunciales, superne subincrassati, irregulariter pinnatim ramosi. *Folia* semiamplexicaulia, imbricata, patentia, subdivaricata, obovata, basi angusta, concava, bifida, sinu brevi, segmentis longitudine vix $\frac{1}{4}$ folii obtusis. *Stipulæ* dum adsint minimæ, oblongæ, apicibus vix emarginatis.

This has more the appearance of the European *J. minuta* than of any of its congeners, but the leaves are not so abruptly truncate, the notch at their summits is much narrower and their sides more rounded. It is a more conspicuous plant than either of the two preceding, of a looser texture and paler colour, and has patent leaves. From *J. perigonialis*, nobis, it may be distinguished by its greater size, paler hue, stout stems and more crowded leaves, which are loosely reticulated and have obtuse segments.

Plate LXII. *Fig.* VI.—1, specimen of the *natural size*; 2, a portion of a branch with leaves; 3, a leaf; both *magnified*.

(2. Sarcoscyphus, *Corda*.)

4. Jungermannia *perigonialis*, Hook. fil. et Tayl.; pusilla, caule cæspitoso erecto subramoso, foliis approximatis suberectis secundis obovatis v. ovato-rotundatis inæqualiter bifidis subobtusis basi semi-amplexicaulibus marginibus integerrimis, perigoniis ovato-oblongis, foliis perigonialibus arcte imbricatis subintegris valde concavis basi ventricosis saccatisve. (Tab. LXII. Fig. VII.)

Hab. Lord Auckland's group; on rocks, at the tops of the hills.

Cæspites densi, luride brunnei, 2–3 unc. diametro. *Caules* graciles, intertexti, sub $\frac{1}{2}$ unc. longi, crassiusculi. *Folia* laxe imbricata, subsecunda, curvata, breviter bifida, sinu obtuso, segmento inferiore plerumque majore. *Perigonia* plurima, terminalia v. ramulis ultimis lateralia, basi subampullacea v. in sacculum producta, apicibus brevibus, rarius emarginatis, nunc bifidis.

No calyces have been observed upon this plant, which is so nearly allied to the *J. Funckii*, Mohr, that they might easily be confounded; the latter differing in its short stems and more closely imbricated leaves, which are, as well as those of the convolute perigonia, acutely bifid; the segments of all are acute. It also a good deal resembles *J. stygia*, nobis, though the plant is larger and the leaves have a very different direction.

PLATE LXII. *Fig.* VII.—1, a specimen of the *natural size*; 2, front view and 3, lateral view of portion of stem and leaves; 4, leaf; 5, ditto of perigonium; *magnified*.

(3. AULICULARIA, *Corda*.)

5. JUNGERMANNIA *occlusa*, Hook. fil. et Tayl.; caule erecto laxe cæspitoso, ramis binis simplicibus v. parce ramosis, foliis appressis reniformi-rotundatis basi sublobulatis in ramos decurrentibus integerrimis concaviusculis. (TAB. LXII. Fig. VIII.)

HAB. Campbell's Island; in moist boggy places.

Caules biunciales, luride v. pallide virescentes, inferne brunnei v. nigrescentes. *Folia* olivacea, pallide flava v. brunnea, superne arcte in capitulum circinnatum imbricata, areolis crebris minimis.

This is evidently the southern representative of *J. compressa*, from which it is distinguishable by the inferior margin of the leaf being produced into a lobe, as also by the closer and smaller cells of the leaves. In the European plant the lower lobe of the leaf is decurrent on the stem, but does not form a lobe nor is it produced below the junction of its inferior margin with the branch.

PLATE LXII. *Fig.* VIII.—1, a specimen of the *natural size*; 2 and 3, leaves; *magnified*.

6. JUNGERMANNIA *strongylophylla*, Hook. fil. et Tayl.; minuta, caulibus cæspitosis erectis ramosis, foliis minimis suberectis laxe imbricatis secundis rotundatis integerrimis concaviusculis, stipulis truncatis bifidis, calyce oblongo subcompresso ore rotundato bilabiato. ((TAB. LXII. Fig. IX.)

Var. β, *minima*; gracilis, foliis minoribus.

HAB. Campbell's Island; on the hills: var. β, Lord Auckland's group; in wet places at the roots of grasses, &c.

Cæspites brunnei v. virescentes, supra muscos prostrati v. iis immixti. *Caules* graciles, subflexuosi. *Folia* minima, laxe cellulosa, pellucida, cellulis marginalibus majoribus, madore sub lente pallide fusco-olivacea. *Stipulæ* oblongæ v. obovatæ, truncatæ, bifidæ. *Folia perichætialia* elongata calyce oblongo-obovato ore crenato paulo longiora. *Varietas* β, minor evadit, foliis remotis perigoniisque instructa. *Perigonia* plurima, lateralia, e foliis majoribus confertis ventricosis spicatis formata.

There is no northern congener with which this will bear any close comparison; the form of the calyx and perichætial leaves resemble the *J. crenulata*; the present is, however, a very much smaller plant, distinctly stipulate, of a different habit and with rounder leaves.

PLATE LXII. *Fig.* IX.—1, a specimen of the *natural size*; 2, the same, *magnified*; 3, portion of branch with leaf and stipule; *magnified*.

(4. GOTTSCHEA, *Nees*.)

7. JUNGERMANNIA *Lehmanniana*, Lind. *in Lehm. Pugill. Plant. IV.* p. 60. *Gottsche, Nees et Lindenb. Synops. Hepat.* p. 20. G. Hombroniana, *Mont. in Voy. au Pole Sud. Bot. Crypt.* t. 16. f. 1. *et in Ann. Sc. Nat.* 1843. p. 243.

HAB. Lord Auckland's group; on rocks and at the roots of trees in the woods, abundant.

Also a native of Tasmania and of New Holland. We quite agree with the authors of the 'Synopsis Hepaticarum' in uniting *G. Hombroniana*, Mont. with this.

8. JUNGERMANNIA *pinnatifolia*, Hook. Musc. Exot. t. 114. *Gottsche, Lindenberg et Nees, Synops. Hepat.* p. 22. G. ciliigera, *Hook. fil. et Tayl. in Hook. Lond. Journ. of Bot.* vol. iii. p. 376. (TAB. LXIII. Fig. I.)

HAB. Lord Auckland's group; growing amongst mosses in the woods, often forming large tufts by itself.

This noble plant was described under the name of *J. ciliigera* in the 'London Journal of Botany,' quoted above. The specimens differed from the published figure in the lobes of the leaf being considerably unequal, and especially in their being produced at their union below into a ciliated wing or keel, characters which appear to have been overlooked in the '*Musci Exotici*.' We have added a correct drawing of this species, which was prepared before we were aware that it was an already published plant.

PLATE LXIII. *Fig.* I.—(sub nom. *J. ciliigera*), 1, a specimen of the *natural size*; 2, the same, *magnified*; 3 and 4, leaves; 5, calyx; *magnified.*

9. JUNGERMANNIA *Balfouriana*, Tayl.; caulibus erectis laxe cæspitosis subsimplicibus squamosis, foliis subimbricatis patentibus lobo ventrali oblongo-falcato subtus apicem versus cristato cristis tribus ciliatis, dorsali semi-ovato utroque obtuso ciliato, stipulis quadrato-rotundatis quadrifidis.

HAB. Lord Auckland's group; in woods near the sea.

Laxe cæspitosa, pallide viridis. *Caules* e caudice repente erecti, 3 unc. longi, squamis ciliatis lanceolatis obsiti. *Folia* conferta, vix imbricata, oblongo-lanceolata, obtusa, superne lobo verticali aucta. *Stipularum* laciniæ obtusæ, ciliatæ.

The *Gottscheæ* of Nees are a group of *Jungermanniæ* almost confined to the southern hemisphere; one is a native of the Philippine Islands, and a few others inhabit the Peninsula of India and the Island of Java; but the larger proportion frequent the humid and temperate woods of New Zealand, from whence we have received no less than eight species; they are certainly the *nobiles* of the order *Hepaticæ*. *J. Balfouriana* is most nearly allied to *Gottschea Blumii* of Nees, a Java plant; from which it may be discriminated by its smaller size, less falcate leaves, more entire cauline scales, and above all by the quadrifid stipules. It was first received by Dr. Balfour from New Zealand, though probably originally discovered by Mr. Colenso in that island, or by the Antarctic Expedition in Lord Auckland's group. A figure of it will be given in the Flora of New Zealand.

10. JUNGERMANNIA *pachyphylla*, Lehmann, *Pugillus Plant. VI.* p. 61. *Gottsche, Nees et Lindenb. Synops. Hepat.* p. 19.

HAB. Lord Auckland's group; on the bare ground, at an elevation of 600–800 feet, very rare.

Originally discovered by Du Petit Thouars in Tristan d'Acunha. Our specimens are small and very imperfect; growing on the bare ground in exposed places, the plant is with difficulty detected.

(5. PLAGIOCHILA, *Nees et Mont.*)

11. JUNGERMANNIA *fasciculata*, Lind. *Sp. Hepat. Fasc.* 1. p. 7. n. 2. t. 1. *Gottsche, Lind. et Nees, Synops. Hepat.* p. 27.

HAB. Lord Auckland's group; forming large tufts in the woods.

A very fine species, hitherto only known as a native of New Holland. The stems are rigid and wiry, 2–3 inches long, branching upwards, with the branches erect and curving. The leaves are rather coriaceous, pale fuscous-yellow; it belongs to the same section with the European *J. spinulosa*, Dicks.

12. Jungermannia *hemicardia*, Hook. fil. et Tayl.; caule ascendente subtriangulari simplici v. ramoso, foliis dense arcteque imbricatis erecto-patentibus oblique et late ovatis basi cordatis apicibus rotundatis marginibus integris v. superne denticulatis subconcavis, margine anteriore recurvo posteriore basi in lobulum producto. (Tab. LXIII. Fig. II.)

Hab. Campbell's Island; on exposed rocks, near the summits of the hills.

Cæspites fusco-olivacei, 1–2 unc. lati. *Caules* una cum foliis triangulares, $\frac{3}{4}$–1 unc. longi, e rhizomate repente ascendentes, simpliciusculi, rigidi, antice plani, profunde canaliculati. *Folia* arcte imbricata, integra v. denticulata, opaca, dense cellulosa, areolis minimis hexagonis.

The leaves of this species meet back to back and are so closely imbricated that the stems appear triangular, their anterior margins not touching but leaving a space which appears like a groove running down the whole length of the stems, their recurved margins are rather tumid and decussate on the opposite face. In general habit this resembles the *J. punctata*, Tayl., a species recently detected both in Ireland and the Canary Islands, from which the gibbous or oblique leaves will readily distinguish it.

Plate LXIII. *Fig.* II.—1, a specimen of the *natural size*; 2, a stem; 3, portion of a branch; 4 and 5, leaves; *magnified*.

13. Jungermannia *circinnalis*, Lehm. *Pugill. Plant. IV.* p. 64. *Lehm. et Lind. Spec. Hep.* p. 124. t. 27. *Gottsche, Lind. et Nees, Synops. Hep.* p. 53.

Hab. Lord Auckland's group; on rocks and on the hills, rare.

This agrees with authentic specimens of Lehmann's plant, except in the summits of the stems not being so remarkably circinnate as they are described. Such circinnate summits, however, are truly *perigonia*, whose leaves are smaller, more ventricose and erect than those of the stem; and further, some of them contain in their axillæ a single, rather large, pedicellated anther. Our specimens are about half an inch long, stout and curved; the leaves much more lax than in the former species.

14. Jungermannia *cognata*, Hook. fil. et Tayl.; parvula, fulva, caule erecto cæspitoso subsimplici v. ramoso, foliis laxe imbricatis patulis late ovatis v. elliptico-oblongis acuminatis paucidentatis basi attenuatis decurrentibus, margine anteriore vix recurvo, calyce terminali perichætio æquilongo vix curvato bilabiato labiis ciliato-dentatis. (Tab. LXIII. Fig. III.)

Hab. Lord Auckland's group; on alpine rocks, growing amongst stunted tufts of *Hymenophyllum multifidum*.

Cæspites diametro 1–2 unciales, inferne brunnei, superne flavi v. flavo-fusci. *Caules* erecti, 1 unc. longi, subrigidi, inferne nudi, parce ramosi, anni præcedentis sæpius innovati, apicibus subcurvatis. *Folia* disticha, subpatentia v. divaricata, coriacea, apices versus 3–5 dentata, dente apicali majusculo acuminato, margine anteriore subrecurvo decurrente; folia perichætii erecta, elongata, magis dentata.

This has much affinity to the *J. decipiens*, Hook., a very variable species in the form of the leaves, but in which their cellules are much larger and more lax, while in this they are so dense as to be hardly distinguishable. The European plant differs further from the present in a character alluded to by the authors of the '*Synopsis Hepaticarum*,' who remark, "*J. decipiens* ab omnibus congeneribus margine dorsali folii inflexo nec reflexo differt."

Plate LXIII. *Fig.* III.—1, a specimen of the *natural size*; 2, the same, *magnified*; 3 and 4, portions of stems and leaves; 5, perichætium and calyx; *magnified*.

15. Jungermannia *pleurota*, Hook. fil. et Tayl.; cæspitosa, caule erecto diviso v. parce ramoso, foliis

laxe imbricatis erecto-patentibus obovatis obtusiusculis apices versus parce crenato-dentatis basi angustatis, margine anteriore recurvo decurrente, calyce elongato-obovato basi nudo 4–5-alato ore contracto denticulato. (Tab. LXIII. Fig. IV.)

Hab. Lord Auckland's group; on moist rocks, near the summits of the hills.

Cæspites subdensi, 2–3 unc. diametro, pallide straminei v. virescentes. *Caules* $\frac{3}{4}$ unc. longi, subrigidi, simpliciusculi. *Folia* inferiora integra v. interdum unidentata, superiora apices versus plus minusve irregulariter crenato-dentata, omnia conformia, basi angustata antice decurrentia, apices versus rotundata, cellulis distinctis. *Calyx* terminalis, subpedicellatus, erectus, basi attenuatus, foliis caulinis vix duplo longior, alis 4–5 angustis planis v. rugosis, duobus oppositis interdum opacis, ore subtubuloso, crenato v. 4-fido, tandem fisso, foliis perichætii propriis nullis.

In external appearance this species very closely resembles the former, the leaves are, however, more loosely cellular, and in the structure of the calyx it widely differs. The Peruvian *Pl. gymnocalycina*, Lind., (Spec. Hep. p. 48. t. 10) has the calyx equally naked below and of a similar outline, but it is smooth and furnished with only two very obscure ribs, its foliage also is perfectly dissimilar and the whole plant is much larger. The wings of the calyx are formed out of deep folds of its membrane.

Plate LXIII. *Fig.* IV.—1, a specimen of the *natural size*; 2, calyx and upper leaves; *highly magnified*.

16. Jungermannia *fuscella*, Hook. fil. et Tayl.; caule subcæspitoso ascendente curvato vage ramoso, foliis laxe imbricatis patulis late oblongo-rotundatis basi obliquis subdeflexis siccitate verticalibus v. subcrispatis, margine anteriore recurvo subdecurrente, posteriore in lobulum latum producto denticulato, calyce terminali obovato truncato deflexo foliis perichætialibus breviore. (Tab. LXIII. Fig. V.)

Hab. Lord Auckland's group; in moist boggy places.

Cæspites late diffusi, 3–4 uncias diametro, luride olivacei v. fusco-atri. *Caules* $1\frac{1}{2}$–2 unciales, superne curvati, subgraciles, sæpe reflexi, siccitate una cum foliis subcrispatis subsquarrosis rigidi. *Folia* latiuscula, dense cellulosa, opaca, areolis subpunctiformibus, luce transmissa pallide fusco-olivacea, marginibus integris v. plerumque margine posteriore denticulato, supremis interdum omnino sub lente denticulatis.

In many respects this species resembles Montagne's *P. pusilla* (Voy. au Pole Sud, Bot. Crypt. tab. 16. f. 3), a species, judging from the plate, founded upon a young and imperfect specimen, and which we think exists in the Herbarium of the Expedition of a larger size. It differs from this in the deep serratures of the leaves, in the habit and colour and above all, in belonging (according to the figure) to a section having the leaves coadunate at the base. In the form of the foliage our plant more nearly resembles the *P. hemicardia*, nobis, but is very different in the disposition of the leaves on the stem. A few calyces were observed; they are very uniform, shorter than the perichætial leaves and concealed by them; some are proliferous, the stem being produced through their axis and exserted: this abnormal state has been observed in *J. Lyoni*, Tayl., and in several species of mosses, as in *Conomitrium Berterii*, Montagne (Cryptog. Boliv. t. 3. f. 4).

Plate LXIII. *Fig.* V.—1, a specimen of the *natural size*; 2, 3, 4, leaves; *magnified*.

(6. Jungermannia, *Nees.*)

17. Jungermannia *colorata*, Lehmann, *in Linnæa*, vol. iv. p. 366. *Gottsche, Nees et Lind. Synops. Hepat.* p. 86.

Hab. Lord Auckland's group and Campbell's Island; in various situations from the sea to the hill tops, abundant.

This is one of the most universally diffused species in the Southern Hemisphere, and especially abundant throughout the Antarctic regions; it bears considerable resemblance to the *J. orbicularis*, Mich., of North America, and to several other species.

18. Jungermannia *intortifolia*, Hook. fil. et Tayl.; sordide purpurea, cæspitosa, caulibus erectis subflaccidis simplicibus v. parce ramosis, foliis patentibus imbricatis concavissimis oblongo-rotundatis inæqualiter bi-quadrifidis segmentis acuminatis marginibus incurvis paucidentatis, stipulis imbricatis rotundatis emarginatis v. bifidis subdentatis valde concavis. (Tab. LXIV. Fig. I.)

Hab. Campbell's Island; in bogs on the hill-sides.

Cæspites lati, interdum supra terram extensi, flaccidi, sordide purpurei. *Caules* $1\frac{1}{2}$–2 unc. longi, erecti, superne incrassati, subdichotome ramosi. *Folia* valde concava et ventricosa, quasi inflata, amplexicaulia, rarius integra, segmentis acuminatis, apicibus incurvis, substantia flaccida cellulosa laxe reticulata, vix pellucida. *Stipulæ* sæpe latere unico solummodo dentatæ, majusculæ, membranaceæ, dense imbricatæ.

The whole of the texture of this fine species is, when wet, so flaccid, that its large closely imbricated stipules are at first with difficulty distinguished from the leaves. It is perhaps more nearly allied to the *J. serrulata*, Sw. (Musc. Exot. t. 88), than to any other; still, this is quite a distinct plant, much larger, stouter, with the leaves somewhat fleshy and brittle, longer and more erect, of a lurid purple colour.

Plate LXIV. *Fig.* I.—1, a specimen of the *natural size*; 2, portion of stem with leaves and stipules; 3, a leaf; both *magnified*.

19. Jungermannia *schismoides*, Montagne *in Voy. au Pole Sud, Bot. Crypt.* t. 17. fig. 1. *et in Ann. Sc. Nat.* 1843. p. 250. *Gottsche, Lindenb. et Nees, Syn. Hepat.* p. 81.

Hab. Lord Auckland's group and Campbell's Island; creeping amongst mosses and other *Hepaticæ*.

Gottsche (Synopsis, l. c.) compares this species with *J. piligera*, Nees, a plant of Java; it is perhaps more like *J. incumbens*, Lehm. of Tristan d'Acunha, differing by the greater size and nearly equal segments of the leaves. These have no near ally in Europe.

20. Jungermannia *multicuspidata*, Hook. fil. et Tayl.; laxe cæspitosa, subramosa, prostrata, ramis inferne radicantibus apicibus ascendentibus, foliis distantibus suberectis laxis obovatis bi-tri-quadrifidis segmentis acutis v. acuminatis laxe cellulosis, calyce terminali v. laterali elongato cylindraceo ore dentato.

Hab. Campbell's Island; in pools, near the sea.

Cæspites inter *Sphagna* repentes vel in aquam subnatantes, rarius supra terram in umbrosis, 1–2 unc. diametro, laxe intertexti, pallide albido-straminei. *Caules* subramosi, plerumque ad basin calycis innovationibus binis instructi, graciles, laxe foliosi. *Folia* pellucida, valde membranacea, ad medium divisa, sinubus obtusis, segmentis subdivaricatis; *perichætialia* erecta, laxe imbricata, plerumque tri-quadrifida. *Calyx* perichætio bis longior, elongatus, cylindraceus, ore contracto inæqualiter 3–5 dentato, latere fissus, infra orem obscure sulcatus.

This species has indeed many points in common with *J. bicuspidata*, the same pale colour, loose leaves with large cellules, acuminated segments, and an elongated calyx. It is marked by the smaller size, the stem-leaves being more erect, the division of the leaf deeper, and the calyx more generally terminal than in *J. bicuspidata*, L.

21. Jungermannia *turgescens*, Hook. fil. et Tayl.; caule cæspitoso procumbente ramoso, foliis imbricatis secundis suberectis concavis reniformi-rotundatis integerrimis, margine anteriore decurrente, stipulis

obovatis rotundatisve integerrimis apice bifidis, calyce terminali compresso oblongo truncato ore integerrimo v. obscure lobato. (Tab. LXIV. Fig. II.)

Hab. Lord Auckland's group; on the ground, near the tops of the hills.

Cæspites 2–3 unc. lati, pallide flavo-olivacei. *Caules* vix unciales, intertexti, vage ramosi, prostrati, apicibus ascendentibus. *Folia* fere reniformia, e marginibus valde incurvis concava, subpellucida, areolis minutis. *Stipulæ* parvæ, sinu brevi, segmentis subacutis. *Calyx* in ramo anni præteriti terminalis, compressus, oblongus, basi angustatus, vix curvatus.

The leaves on the fertile shoots of this species rapidly increase in size upwards, becoming more densely imbricated; the terminal pair or perichætial leaves are the largest and most erect.

Those species of *Jungermannia* with round, concave, imbricating leaves and bifid stipules, which inhabit the north of Europe, have their calyces subcylindrical or ovate; the present differs from all of them in that organ being decidedly compressed and truncate, appearing like a flattened cylinder after the egress of the capsule. It may by some be considered as forming a separate genus, to which perhaps our *J. strongylophylla* should be referred.

Plate LXIV. *Fig.* II.—1, a specimen of the *natural size*; 2, back view of stem, leaves, and stipules; 3, front view of leaf and stipule; 4, back view of leaf; 5, stipule; 6, calyx; *magnified.*

22. Jungermannia *notophylla*, Hook. fil. et Tayl.; straminea, caule erecto subsimplici v. ramoso, foliis numerosissimis arcte imbricatis patenti-recurvis reniformi-rotundatis valde concavis integerrimis marginibus incurvis, stipulis ovato-rotundatis obtusis v. emarginatis integriusculis. (Tab. LXIV. Fig. III.)

Hab. Lord Auckland's group; on banks, in the woods near the sea, forming large patches.

Cæspites majusculi. *Caules* graciles, teretes, superne subincrassati et incurvi, pallide straminei, flaccidi, 2 unc. longi. *Folia* densissime imbricata, marginibus valde incurvis, quasi inflata, substantia molli, flaccida, subpellucida, subauriculiformia, obliqua, antice decurrentia, carnosa. *Stipulæ* valde concavæ, latæ, plerumque integræ, magnitudine $\frac{1}{4}$ foliorum.

This curious and fine species is of a peculiarly flaccid and as it were greasy texture when moist; there is no European or exotic *Jungermannia* known to us with which it can be at all compared.

Plate LXIV. *Fig.* III.—1, a specimen of the *natural size*; 2, portion of stem with leaves and stipules; 3, leaf and stipule; 4, stipule; *magnified.*

23. Jungermannia *cymbalifera*, Hook. fil. et Tayl.; caule laxe implexo suberecto v. procumbente subsimplici tereti curvato, foliis arcte denseque imbricatis erecto-patentibus oblique rotundatis serrulatis concavis margine anteriore sursum in appendiculam obovato-rotundatam producto, stipulis transversis latissimis arcte imbricatis obscure trilobis integerrimis, calyce laterali ovato-oblongo subcompresso plicato ore dentato. (Tab. LXIV. Fig. V.)

Hab. Lord Auckland's group; on the roots of old trees in the woods, rare.

Cæspites laxi, pallide virescentes v. lutescentes. *Caules* subunciales, teretes, intertexti, simplices v. parce ramosi, flexuosi, prostrati, apicibus sæpius incurvis. *Folia* densissime imbricata, subsecunda, marginibus anticis approximatis, appendicibus seu auriculis pedicellatis e membrana duplici formatis instructa, substantia subcarnosa, flaccida, pellucida, cellulis distinctis. *Calyx* vere lateralis, basi subtumidus, infra orem compressus, longitudinaliter plicatus, foliis perichætialibus paucis.

A singularly beautiful and easily recognised plant, with much the habit and external appearance of *J. notophylla*, nobis, but most distinct from it and from any other species. The appendages of the leaves and the broad obscurely lobed stipules all closely imbricating up the stem give the appearance of a very complicated structure. Like the

J. notophylla it swells much in moistening, and assumes a stout and as it were greasy appearance, from the peculiar texture of the distended cells. The broad stipules, reaching nearly across the back of the stem, resemble those of *J. Billardieri*, and are as regular and close along the whole plant as the scales of a snake.

PLATE LXIV. *Fig.* V.—1, a specimen of the *natural size*; 2, front; 3, back, and 4, side view of stem; 5, a leaf; 6, calyx and perichætium: *magnified*.

24. JUNGERMANNIA *diplophylla*, Hook. fil. et Tayl.; caule procumbente laxe implexo divaricatim ramoso, foliis distichis arcte imbricatis divaricatis bilobis lobis plica conduplicatis ciliatis v. ciliato-dentatis, lobo superiore erecto patente multo minore ovato subacuto substipuliformi, inferiore patente late ovato obtuso, stipulis subquadrato-rotundatis bifidis segmentis ciliato-dentatis. (TAB. LXIV. Fig. IV.)

HAB. Lord Auckland's group; creeping over the caudices of *Ferns*, rare.

Caules subsolitarii, vage repentes, v. cæspites laxos planos sub 1 unc. diametro formantes, planiusculi, procumbentes, parce divaricatim ramosi, 1 unc. longi, latiusculi, albidi. *Folia* tenerrima, membranacea, laxe cellulosa, pellucida, dense imbricata, pulcherrime ciliato-dentata, valde concava, profunde biloba, lobis valde inæqualibus, lobo anteriore multo minore supra faciem anticam caulis extenso, stipulam referente; folium superius in sinu concavo inferioris receptum.

In some respects this remarkably beautiful species resembles a *Gottschea*, but it is in reality more allied to the genus *Scapania* of Lindenberg, from whose published characters it differs only in the presence of stipules! From what we have seen of the fructification, however, it widely departs from that group. The calyptra, in a specimen from M'Quarrie's River (New Holland), is globose, destitute of any calyx, surmounted by a truncated style, rough with numerous barren pistilla on its surface, and surrounded by scales; the scales are laciniate, the outermost the narrowest, and all enclosed in a triphyllous perichætium.

PLATE LXIV. *Fig.* IV.—1, a specimen of the *natural size*; 2, front, and 3, back view of a branch; 4, a stipule: *magnified*.

25. JUNGERMANNIA *minuta*, Crantz, *Hist. Groen.* p. 285. *Hook. Brit. Jung.* t. 44. *Gottsche, Nees et Lind. Synops. Hepat.* p. 120.

HAB. Lord Auckland's group; amongst mosses and other *Hepaticæ*.

This little species is probably not uncommon in the high southern latitudes, having been also gathered in Kerguelen's Land.

26. JUNGERMANNIA *tenacifolia*, Hook. fil. et Tayl.; caule rigido tenui laxe cæspitoso erecto subsimplici flexuoso, foliis distantibus patentibus rigidis tenacibus elliptico-oblongis obtusis integerrimis basi angustatis marginibus planis v. recurvis, stipulis conformibus minoribus integris bifidisve. (TAB. LXIV. Fig. VI.)

HAB. Lord Auckland's group; amongst other *Hepaticæ*, mosses, &c., in exposed situations near the tops of the hills.

Cæspites laxi, fusco-brunnei v. atri. *Caules* graciles, vix 1 unc. longi, rigidi, vix ramosi, flexuosi. *Folia* stipulis conformia semper patentia, dura, rigida, opaca, rarius recurva, fusco-brunnea.

We know of no species with which the present can at all be compared. The leaves and stipules are so nearly alike and so regularly stiff and patent, that the stems look pectinated with a triple row of spines, standing at regular intervals. This rigidity, combined with the slender habit, is very remarkable.

PLATE LXIV. *Fig.* VI.—1, a specimen of the *natural size*; 2, back, and 3, side view of portion of stem; 4, leaf; 5, stipule: all *magnified*.

27. Jungermannia *vertebralis*.—Scapania? vertebralis, *Gottsche, Lind. et Nees, Synops. Hepat.* p. 72.

Hab. Lord Auckland's group; on trees, very rare.

Our specimens of this beautiful species are smaller, but otherwise they coincide with those of Tasmania. It is very closely allied to the *J. chloroleuca*, nobis, from Cape Horn, and also to the *J. densifolia*, Hook.

(7. Gymnanthe, *Tayl.*, subgenus novum.)

Receptaculum commune terminale, descendens, obconicum. *Calyx* nullus. *Capsula* quadrivalvis, seta suffulta. *Elateres spirales* seminibus immixti. *Antheræ* in foliorum axillis liberæ, pedicellatæ.—Stirps *exstipulata*; perichætia *majora*; folia *caulina infima minima*. Tayl. MSS.

28. Jungermannia *saccata*, Hook.; *Musc. Exot.* t. xvi. J. tenella, *nobis in Lond. Journ. of Botany*, vol. iii. p. 377, 560 and 579.

Hab. Lord Auckland's group; in the woods, abundant.

The figure of this plant, in the '*Musci Exotici*,' does not well accord with our species, in which the upper margin of the leaf is more produced into a lobe, the apex blunter and sometimes emarginate or even bilobed, the lower margin more recurved and the whole base broader.

To this group may be added the *Jungermannia* (*Acrobolbus*, Gottsche) *Wilsoni*, Nees, and the following.

29. Jungermannia *Urvilleana*.—Scapania Urvilleana, *Mont. in Voy. au Pole Sud, Bot. Crypt.* t. 16. f. 2. *et in Ann. Sc. Nat.* 1843. p. 247. *Gottsche, Lind. et Lehm. Syn. Hepat.* p. 63.

Hab. Lord Auckland's group; mixed with other *Hepaticæ* in the woods.

This species, rather variable in its form, especially of the margins of its leaves, is a native of Tasmania, as well as of Lord Auckland's group and the Straits of Magalhaens, where it was first detected by D'Urville.

(8. Lophocolea, *Nees.*)

30. Jungermannia *bispinosa*, Hook. fil. et Tayl.; caulibus procumbentibus implexis subramosis, foliis laxe imbricatis secundis erecto-patentibus oblongo-ovatis v. quadratis obtuse emarginatis bifidisve segmentis divaricatis acuminatis basi lata decurrente, stipulis minimis bipartitis segmentis subulatis integerrimis v. utrinque subdentatis. (Tab. LXIV. Fig. VII.)

Hab. Campbell's Island; on moist ground and trunks of trees in the woods.

Cæspites implexi, 2–3 unc. lati, pallide straminei. *Caules* prostrati, subflexuosi, graciles. *Folia* secunda, remota, bifida; stipulis bifidis, rarius multifidis.

Very nearly allied to the *J. bidentata*, L., differing in its smaller size, more remote and suberect leaves, which are narrower, their cellules more minute, their emargination deeper, and in the stipules being less and generally not so compound.

Plate LXIV. *Fig.* VII.—1, a specimen of the *natural size*; 2, portion of the stem, *magnified*.

31. Jungermannia *lenta*; Hook. fil. et Tayl.; caulibus elongatis cæspitosis subsimplicibus flexuosis

flaccidis ascendentibus, foliis contiguis patentibus distichis oblongis bifidis segmentis divaricatis acuminatis integerrimis, stipulis minutis lanceolatis bipartitis integerrimis, calyce obovato compresso trigono, ore bilabiato dentato.

Hab. Lord Auckland's group; in large tufts upon the moist trunks of trees.

Cæspites lati, interdum 2–3 unciales, supra albidi v. pallide straminei, inferne dilute brunnei. *Caules* 1–2 unciales, valde intertexti, elongati, graciles, simplices v. rarius ramosi, apices versus paulo curvati, flaccidi, cellulosi. *Folia* e caule prostrato suberecta, paulo divergentia, hinc quasi biserialia, oblonga, versus medium sublatiora, emarginata v. bifida, sinu obtuso, segmentis acuminatis; *perichætialia* conformia, erecta. *Stipulæ* bifidæ, integerrimæ, rarius basi extus unidentatæ. *Calyx* membranaceus, pellucidus, trigonus, latere anteriore latiore, angulis incrassatis opacis, ore majusculo bilobo, lobis acuminatis argute dentatis. *Capsula* ovalis, pedunculo $\frac{1}{4}$ unc. longo.

This species is very nearly allied to and apparently intermediate between the *J. bidentata*, L. and *J. perpusilla*, nobis, the former in particular, from which it is only to be distinguished by the smaller size and the entire segments of the stipules; from the latter it may be known by being at least double the size, by the more tufted habit, the deeper emargination of the leaf, their more acuminate segments and larger cells, and by the deeper division of the stipules. There are numerous radicles issuing from the stem throughout its whole length, their position is immediately above the stipules, whence it seems highly probable that, when less tufted, the plant may be wholly creeping. This species will be figured in the Flora of New Zealand, of which island also it is a native.

32. Jungermannia *perpusilla*, Hook. fil. et Tayl.; cæspitosa, caulibus ascendentibus subramosis, foliis erecto-patentibus subsecundis oblongo-ovatis bifidis segmentis divaricatis subobtusis integerrimis, stipulis minutis oblongis bifidis v. rarius laceris, perigoniis ovatis. (Tab. LXIV. Fig. IX.)

Hab. Campbell's Island; mixed with other *Hepaticæ* and mosses, sparingly.

Cæspites parvi, pallide flavi, laxi. *Caules* vix 3 lin. longi, subramosi, graciles. *Folia* patentia, ovata, basi lata, bifida v. rarius trifida, sinu obtuso. *Stipulæ* diametro caulem æquantes, in segmentis 2 æquilongis integris v. rarius sectis divisæ. *Perigonia* e foliis ventricosis imbricatis ad apices recurvis in spicam brevem ovatam dispositis. *Perichætii* abortivi folia elongata, subdentata, sinu minus profunda.

Under the preceding, to which this bears most affinity, we have pointed out their relative peculiarities.

Plate LXIV. *Fig.* IX.—1, a specimen of the *natural size*; 2, a portion of a branch, *magnified*.

33. Jungermannia *grisea*, Hook. fil. et Tayl.; cæspitosa, procumbens, caulibus implexis ramosis, foliis patentibus approximatis supremis congestis oblongo-rotundatis integerrimis marginibus recurvis, stipulis bipartitis segmentis hinc unidentatis v. rarius multipartitis, calyce terminali oblongo trigono compresso ore dentato. (Tab. LXIV. Fig. VIII.)

Hab. Lord Auckland's group; creeping amongst mosses, &c., rare.

Cæspites depressi, plani, fusco-olivacei. *Caules* 1 unc. longi, vage ramosi, flexuosi, apicibus ascendentibus. *Folia* inferiora disticha, marginibus recurvis, convexa, suprema appressa, secunda, in capitulum congesta, substantia crassiuscula, luride flava, subpellucida, cellulis minimis. *Calyx* 1 lin. longus, trigonus, angulis incrassatis opacis, latere inferiore latiore, ore triangulari dentato. *Perichætii folia* tria, erecta, horum duo superiora majora magisque elongata quam in foliis caulinis, rotundata, integra; tertium v. stipulare, oblongum, emarginatum, marginibus recurvis.

This very closely resembles the *L. discedens*, Nees; it is, however, a larger species, of a paler colour. The leaves are erecto-patent and not recurved, their tops entire, the stipules are divided, and each segment is again divided or bears a tooth at the outer margin.

Plate LXIV. *Fig.* VIII.—1, a specimen of the *natural size*; 2, portion of branch; 3, perichætium and calyx: both *magnified*.

34. Jungermannia *multipenna*, Hook. fil. et Tayl.; procumbens, caulibus implexis ramosis, foliis distichis patentibus imbricatis obovatis acutis obtusisve truncatis v. emarginatis margine anteriore gibboso inferiore decurrente, stipulis subquadratis varie sectis plerumque bifidis segmentis divisis v. quadrifidis rarius irregulariter dentatis interdum in lacinias quatuor divaricatas subulatas fissis, calyce oblongo triquetro ala superiore latiore ciliato-dentata.

Hab. Lord Auckland's group; on the ground and on the bark of trees in the woods.

Cæspites horizontales, appressi, pallide brunnei v. rufi, rarius virescentes. *Caules* vix 1 unc. longi, vage ramosi. *Folia* late ovato-oblonga, exacte opposita, horizontaliter patentia, forma apices versus varia, plerumque truncata v. late emarginata, laxe cellulosa, pellucida, superiora interdum utrinque cum stipulis connata; *perichætialia* erecta, dentata. *Stipulæ* variæ, interdum subintegræ, marginibus irregulariter dentatis, sæpius late quadratæ, quadrifidæ v. bifidæ, segmentis basi extus unidentatis, rarius quadripartitæ, laciniis divaricatis elongato-subulatis.

This plant has so many points in common with *J. heterophylla*, Schrad., that we retain it as a separate species with much hesitation, and chiefly on account of the larger cells of its more rounded leaves, which are more gibbous above and narrower towards the apex; the broad stipules, which are never ovate, and also on account of the longer calyx, of which the lips are more frequently and deeply toothed, as are the perichætial leaves. Through a mistake the specific character and description of *J. intortifolia*, nobis, were repeated under this species in the 'London Journal of Botany,' vol. iii. p. 381.

35. Jungermannia *spinifera*, Hook. fil. et Tayl.; caulibus prostratis laxe implexis subramosis, foliis densis arcte imbricatis erecto-patentibus tenerrimis laxe reticulatis ovato-oblongis basi decurrentibus marginibus recurvis bifidis segmentis elongatis subulatis, stipulis majoribus latissimis reniformibus sexfidis segmentis lanceolatis. (Tab. LXV. Fig. I.)

Hab. Lord Auckland's group; on wet rocks near the tops of the hills, scarce.

Pallide flava v. albo-virescens, inter alias *Hepaticas* repens. *Caulis* ½ unc. longus, apicem versus attenuatus recurvus, antice canaliculatus. *Folia* arcte imbricata basi latiora antice approximata, margine inferiore longe decurrente, sinu obtuso, segmentis acuminatis divaricatis, cellulis majusculis laxis pellucidis. *Stipulæ* plerumque conformes, pro genere maximæ, basi concavæ, amplexicaules, in lacinias sex erectas v. divergentes subulatas fissæ. *Antheræ* inter baseos foliorum perigonii parte superiore caulis sitæ, pedicellatæ, albæ, majusculæ.

A highly beautiful species and very different from any we have ever seen. The apices of the leaves are rather variable, in general they are bifid for ⅓ or ½ way down, with a rounded sinus; but, in other cases, the segments have more the appearance of subulate appendages placed on each of the rounded apices of the leaf; in one instance a trifid leaf was observed, the third segment was on the upper margin towards the base.

Plate LXV. *Fig.* I.—1, a specimen of the *natural size*; 2 and 3, leaves; 4, stipule; *magnified*.

36. Jungermannia *allodonta*, Hook. fil. et Tayl.; caulibus implexis prostratis ramosis, foliis distichis imbricatis horizontaliter patentibus ovato-oblongis obtusis rotundatisve utrinque ad apicem bisetosis v. truncatis rarius acutis v. apiculatis, stipulis minutis lanceolatis bipartitis.

Hab. Lord Auckland's group; on the bark of trees in the woods.

Cæspites 1–2 unc. diametro, plani, appressi, luride virescentes. *Caules* sub 1 unc. longi, vage ramosi, prostrati, hic illic radicantes, una cum foliis sub 1 lin. lati. *Folia* tenera, laxe cellulosa, alterna, horizontaliter patentia,

ovato-oblonga v. subquadrata, basi lata decurrente, plerumque rotundata, apicem versus setis duabus subulatis divaricatis aucta, hinc quasi bicaudiculata, non raro autem truncata v. subemarginata, superiora interdum acuta v. apiculata. *Stipulæ* profunde bifidæ, sæpius in lacinias duas subulatas parallelas v. paulo divergentes partitæ, inconspicuæ.

37. Jungermannia *planiuscula*, Hook. fil. et Tayl.; laxe cæspitosa, caule procumbente ramoso, foliis membranaceis tenerrimis distichis laxe imbricatis patentibus ovato-rotundatis basi obliquis latioribus decurrentibus integerrimis, stipulis ovatis apice bifidis utrinque unidentatis rariusve integris. (Tab. LXV. Fig. II.)

Hab. Lord Auckland's group; on wet rocks near the sea, in the beds of streams, &c., forming large patches.

Cæspites majusculi, 3–4 unc. lati, fusco-purpurei, innovationibus pallide olivaceis. *Caules* nigricantes, sub 2 unc. longi, flaccidi, vage ramosi, procumbentes v. prostrati. *Folia* magnitudine varia, plerumque majuscula, $1\frac{1}{2}$ lin. longa, laxe cellulosa, tenerrima, pellucida, apicibus rotundatis sæpe recurvis, marginibus interdum undulatis. *Stipulæ* bifidæ, segmentis subulatis erectis approximatis.

This exhibits much the habit and mode of growth of the last, but is a widely different and far larger plant; it is very variable in size, some of the shoots on the same branch having leaves not half the length of others.

Plate LXV. *Fig.* II.—1, specimen of the *natural size*; 2, branch with stipule and leaf; 3, leaf; 4 and 5, stipules; *magnified*.

(9. Cheiloscyphus, *Corda*.)

38. Jungermannia *australis*, Hook. fil. et Tayl.; cæspitosa, procumbens, caule ramoso, foliis imbricatis suberectis rotundatis basi superne sublobatis inferne decurrentibus, stipulis bipartitis varie sectis segmentis plerumque basi dentatis, fructu in ramis brevibus terminali, calyce oblongo curvato subcompresso bialato bilabiato labiis rotundatis obscure crenatis. (Tab. LXV. Fig. III.)

Hab. Lord Auckland's group and Campbell's Island; moist banks in the woods and on trunks of trees.

Cæspites 2–3 unc. lati. *Caules* robusti, suberecti v. procumbentes, vage ramosi, nunc inter *Hepaticas* alias solitarii, sub 1 unc. longi, fusco-brunnei, sæpe per totam longitudinem radicantes. *Folia* inferiora subpatentia, superiora imbricata, erecta, appressa, oblongo-rotundata, apicibus rotundatis integerrimis, cellulis plerumque majusculis opacis. *Stipulæ* forma variæ, plerumque oblongæ et bifidæ, utrinque basi unidentatæ, segmentis divaricatis acuminatis, rarius subquadratæ, quadrifidæ, v. quadridentatæ. *Calyx* exsertus, paulo curvatus, oblongus, basi cylindraceus, superne compressus, bialatus, alis subundulatis, ore obliquo bilabiato, labiis divergentibus obscure crenulatis.

The fertile branches of this plant are short, with about five pairs of leaves, of which the upper, or perichætial, are oblong, and the corresponding stipule is the largest and most deeply laciniated. A broken capsule, found within the calyx, contained rounded angular seeds and slender much-twisted spiral filaments, each formed of a double helix. The barren plant strongly resembles some states of *J. polyanthos*, L., but in the fertile plant the oblong winged calyx, the included calyptra, and the more divided and toothed stipules abundantly distinguish it.

Plate LXV. *Fig.* III.—1, specimen of the *natural size*; 2, branch and calyx; 3, leaves and stipule; 4 and 5, stipules: *magnified*.

39. Jungermannia *Billardieri*, Schwæg. *Musc. Hepat. Prodr.* p. 19. *Hook. Musc. Exot.* t. 61. Cheiloscyphus, *Corda, Nees et auctorum*.

Hab. Lord Auckland's group and Campbell's Island; abundant in the woods and in marshes on the hills.

40. Jungermannia *coalita*, Hook.; *Musc. Exot.* t. 123. Cheiloscyphus, *auctorum*.

Hab. Lord Auckland's group; on the trunks of dead trees, &c., in the woods.

41. Jungermannia *sinuosa*, Hook.; *Musc. Exot.* t. 113. Cheiloscyphus, *auctorum*.

Hab. Lord Auckland's group; at the roots of trees, growing mixed with mosses.

Our specimens are quite white, the leaves, and especially the stipules, broader than in the figure quoted above; the latter reniform, with shorter laciniæ.

42. Jungermannia *leucophylla*, Hook. fil. et Tayl.; laxe cæspitosa, caulibus erectis elongatis subramosis gracilibus, foliis arcte imbricatis patentibus membranaceis convexis subtriangularibus una cum stipulis coalitis marginibus recurvis ciliato-dentatis, stipulis oblongis erectis marginibus recurvis eroso-dentatis, calyce elongato oblongo compresso bilabiato labiis denticulatis, perigonii foliis confertis abbreviatis. (Tab. LXV. Fig. IV.)

Hab. Lord Auckland's group; on the ground in the woods, generally mixed with other species.

Caules laxe cæspitosi, dispersi, flavo-fusci v. pallide brunnei, tenues, curvati, vage ramosi, vix 1 unc. lati, cum foliis stipulisque subtrigoni. *Folia* una cum *stipulis* in laminam triangularem horizontaliter patentem perfoliatam omnino coalita, marginibus recurvis seu potius deflexis, substantia tenera pellucida laxe cellulosa. *Perigonia* terminalia v. lateralia, ramis angustiora, conspicua, foliis brevioribus quam folia caulina magisque confertis. *Antheræ* 3–4, pedicellatæ, minimæ.

A well marked and beautiful species.

Plate LXV. *Fig.* IV.—1, a specimen of the *natural size*; 2, front, 3, back, and 4, side view of a branch; *magnified*.

43. Jungermannia *fissistipa*, Hook. fil. et Tayl.; caule prostrato subramoso, foliis distichis oblique patentibus densis arcte imbricatis ovatis obtusis apices versus grosse dentatis, marginibus decurvis inferiore integerrimo basi decurrente, superiore cum stipula rotundata fimbriato-lacera coalito. Cheiloscyphus fissistipus, *Gottsche, Lehm. et Lind. Spec. Hepat.* (ined.)

Hab. Lord Auckland's group; on the dead and decaying trunks of trees, in the woods.

This beautiful and strongly scented species is a near ally of *J. coalita*, Hook.; but in that the leaves are simply bifid at the apex, in this they are toothed repeatedly, and the stipules are much more divided, besides being generally distinctly bifid at the apex owing to the terminal pair of teeth being more remote than the others.

(10. Lepidozea, *Dumort.*)

44. Jungermannia *lævifolia*, Hook. fil. et Tayl.; cæspitosa, implexa, caule elongato pinnato, ramis breviusculis patentibus attenuatis recurvis, foliis stipulisque quadrato-rotundatis quadrifidis rarius tri-quinquefidis segmentis acutis incurvis, calyce in ramis inferioribus abbreviatis terminali lanceolato acuminato sub orem denticulatum plicato.

Hab. Lord Auckland's group and Campbell's Island; at the roots of trees, &c., abundant.

Cæspites plani, appressi, subdensi, dilute flavo-brunnei v. olivacei. *Caules* graciles, 1–2 unc. longi, ramis divaricatis. *Folia* horizontaliter patentia, caule oblique inserta, remota, lævia, pallida, pellucida. *Stipulæ* $\frac{1}{4}$ magnitudinis folii. *Perichætium* perbreve, e foliis paucis erectis appressis quam foliis caulinis minus profunde sectis. *Capsula* cylindracea; *semina* numerosa, luride-brunnea, globosa; *fila* spiraliter torta, elongata, helice duplici.

This and the following may be considered representatives of the British *J. reptans*, L., to which the present is very nearly allied, though differing in the much smaller size, the less pinnated stems, the more distant leaves which have not the singularly prominent cells of the northern plant, and especially in the short perichætium and elongated calyx. It is also a native of New Zealand, in the Flora of which country it will be figured.

45. Jungermannia *patentissima*, Hook. fil. et Tayl.; subcæspitosa, caule valido repente pinnatim ramoso, ramis brevibus, foliis plus minusve imbricatis patentibus v. incurvis cellulosis latissime obovato-quadratis basi angustatis tri-quadrifidis segmentis integerrimis obtusis rectis v. incurvis, stipulis brevibus subquadratis transverse elongatis tri-quadridentatis. (Tab. LXV. Fig. V.)

Hab. Lord Auckland's group; creeping among tufts of other *Hepaticæ*, on trunks of trees, &c.

Caules inter *Hepaticas* alias *Muscosque* dispersi, pallide flavo-olivacei, breviusculi, vix $\frac{1}{4}$ unc. longi, validi, crassiusculi, cellulosi; ramis plerumque inconspicuis, brevibus, alternis, versus apices attenuatis. *Folia* caulina plerumque conferta, patentia (sed oblique, non horizontalia), subquadrata, plus minusve obovata, basi angustata v. subcuneata, segmentis incurvis v. planis, obovatis, 3–5-fidis, sæpius 4-fidis, cellulis majusculis. *Stipulæ* caule vix latiores, segmentis brevibus.

This plant approaches nearer to the *J. reptans*, L., than the former; it is, however, very much smaller, the leaves more closely imbricated, generally more deeply divided and narrower at the base.

Plate LXV. *Fig.* V.—1, specimen of the *natural size*; 2, portion of branch; 3 and 4, leaves; 5 and 6, stipules; *magnified.*

46. Jungermannia *tenax*, Greville, *in Annals of Lyceum of New York*, vol. i. p. 277. pl. 23.

Hab. Lord Auckland's group; on the dry trunks of trees and on the ground.

A curious little species, first described by Dr. Greville, who gives an excellent figure of it, from New Holland specimens.

47. Jungermannia *tetradactyla*, Hook. fil. et Tayl.; cæspitosa, implexa, caule debili prostrato subpinnatim ramoso, foliis subremotis distichis patentibus basi quadratis quadrispinosis spinis articulatis, stipulis minimis quadripartitis, calyce elongato cylindraceo ore contracto ciliato.

Hab. Lord Auckland's group; creeping over patches of *J. coalita*.

Cæspites 1–2 unc. lati, pallide flavo-virides. *Caules* interdum 1 unc. longi, innovationibus plurimis ramosi; cellulæ externæ latæ, pellucidæ, albæ, centrales virides, opacæ, hinc caulis sub lente quasi ala membranacea cinctus appareat. *Folia* caulina remota, ramulina (plerumque superiora) conferta, basi angusta, deinde latiora, in spinas elongatas desinentia. *Stipulæ* caule vix latiores, segmentis subulatis.

Closely allied to the *J. centipes*, nobis, of Tasmania, from which it may be distinguished by the (transparent) more branched and pinnate stems, the more distant and patent transparent leaves, which are more deeply divided, with the segments elongated and setaceous: the two species are very near in other respects.

From New Zealand we have this plant with calyces and perigonia; the former are remarkably large in proportion to the size of the plant, being as long as the shoots which bear them, they are ovato-cylindrical and slightly bent on one side. The perichætial leaves are erect, with a longer entire portion or base than the cauline. Perigonia forming cylindrical spikes, their leaves large, bifid above with tumid bases, each containing in its axilla a single minute, round, brown, pedicellated anther.

48. Jungermannia *dispar*, Mont.; caulibus elongatis cæspitosis ramosis, foliis laxe imbricatis rarius in ramulis terminalibus imbricatis patenti-incurvis obovato-cuneatis basi angustatis ad medium trifidis seg-

mentis lineari-subulatis subacutis, stipulis minoribus conformibus, perigoniis terminalibus capitatis pro planta majusculis.—an J. hippurioides varietas? *J. dispar*, Montague *in Voy. au Pole Sud, Bot. Cryptog.* (ined.)

Hab. Lord Auckland's group and Campbell's Island; on the ground.

49. Jungermannia *hippurioides*, Hook. fil. et Tayl.; minima, laxe cæspitosa, caule procumbente ramoso, foliis subimbricatis patentibus obovatis bi-trifidis basi angustis, segmentis linearibus subacutis, stipulis minutis valde inconspicuis erectis appressis trifidis. (Tab. LXV. Fig. VII.)

Hab. Lord Auckland's group; on decayed bark, and at the roots of grasses and ferns in wet places.

Cæspites per innovationibus vagis intertexti, pallide olivacei. *Caules* vix unciales, irregulariter pinnati, una cum foliis densis crassiusculi. *Folia* conferta, imbricata, patentia, quasi verticillata, profunde bi-trifida rarius quadrifida, laciniis cellulosis inarticulatis. *Stipulæ* valde inconspicuæ, cauli latiori arcte appressæ, plerumque in segmenta tria divisæ.

A very distinct little species, though not easily characterized; the figure will give the best idea of its habit and peculiarities. It is most nearly allied to the *J. tetradactyla*, nobis, (vid. ante) from which it may be recognized by its shorter and more patent leaves, which, as well as the stipules, are usually trifid.

Plate LXV. *Fig.* VII.—1, specimen of the *natural size*; 2, portion of branch; 3, stipules; *magnified.*

50. Jungermannia *albula*, Hook. fil. et Tayl.; majuscula, caulibus subimplexis erectis ramosis, foliis dense et arcte imbricatis erecto-patentibus concavis late et oblique ovato-rotundatis fimbriato-laceris laciniis plerisque profunde bifidis, stipulis concavis majusculis rotundatis sex- ad decemfidis laciniis bifidis. (Tab. LXV. Fig. VI.)

Hab. Lord Auckland's group; creeping through tufts of *Gottschea Lehmanniana.*

Caules vage dispersi, pallide albido-virescentes, subpinnatim v. dichotome ramosi, ½–1 unc. longi, sub ½ lin. lati, ramis breviusculis sæpe dichotomis, innovationibus flagelliformibus interdum instructis. *Folia* latissima, concava, basi semi-amplexicaulia, dense imbricata, sese amplectentia, laxe cellulosa, membranacea, pellucida, margine anteriore basin versus dentata, cæterum in lacinias curvatas bifidas partita. *Stipulæ* ⅓ magnitudine folii, imbricatæ, conspicuæ, marginibus laciniatis.

This is a very beautiful plant, much larger and of a different aspect from any of the former.

Plate LXV. *Fig.* VI.—1, a specimen of the *natural size*; 2, lower, and 3, upper view of a portion of a branch; 4, leaf; 5, stipule:—*magnified.*

(11. Mastigobryum, *Nees.*)

51. Jungermannia *Novæ Hollandiæ*, Nees; caule prostrato ramoso subtus flagellifero divaricatim ramoso, ramis patentibus plerisque recurvis, foliis arcte imbricatis oblongo-acinaciformibus curvatis concavis abrupte truncatis apice eroso bi-tridentato stipulis caule latioribus reniformi-rotundatis marginibus recurvis dentatis v. multifidis.

Hab. Lord Auckland's group; common in the woods, creeping amongst mosses and other *Hepaticæ.*

52. Jungermannia *involuta*; Herpetium involutum, *Mont. in Voy. au Pole Sud, Bot. Crypt.* t. 18. fig. 2. *et in Ann. Sc. Nat.* 1843. p. 253.

Hab. Lord Auckland's group; common in the woods, forming large tufts.

A very handsome species, variable in size; of a much larger and more erect habit, and with broader leaves than the *J. Novæ Hollandiæ*, the latter have larger cells also.

53. Jungermannia *atro-virens*, Hook. fil. et Tayl.; caule gracili erecto disperso ramoso subtus flagellifero, foliis parvis patentibus subdistantibus triangulari-rotundatis apice inæqualiter bifidis segmentis acutis integerrimis, cellulis parvis punctiformibus marginem versus inferiorem majoribus, stipulis minutis transversis semi-rotundatis tripartitis segmentis acutis.

Hab. Lord Auckland's group; creeping through tufts of *Dicrana* and other mosses, in the woods and on the hills, not uncommon.

Caules 1–2 unciales, graciles, sæpe solitarii, vage ramosi, rigidi, erecti, interdum subflexuosi, crassiusculi, olivaceo-brunnei. *Folia* pro magnitudine caulis parva, vix imbricata, verticaliter patentia, oblique ovato-rotundata v. subtriangularia, bifida v. bidentata, segmento inferiore majore, apicibus plerumque incurvis, pallide brunnea v. flavo-fusca, subopaca, densa; cellulis manifeste punctiformibus. *Stipulæ* tridentatæ, dentibus acutis v. obtusis.

A very distinct species, which can scarcely be confounded with any other, of a wiry habit though particularly graceful and slender; this character, together with the great disproportion between the breadth of the leaves and stem, and the unequal cellules which are so large towards the inferior margin as almost to resemble a nerve, will readily distinguish it from any other. A similar disposition of the cellules is seen in *M. inæquilaterum*, Nees.

54. Jungermannia *nutans*, Hook. fil. et Tayl.; caulibus crassiusculis cæspitosis subsimplicibus erectis incurvis apicibus sæpe nutantibus, foliis densis arcte imbricatis patentibus valde concavis late ovatis apice inæqualiter bifidis margine subintegris carnosiusculis laxe cellulosis, stipulis erectis late ovato-rotundatis apice bifidis v. subdentatis, stolonibus subbasilaribus ascendentibus ad apices demum foliosis. (Tab. LXV. Fig. VIII.)

Hab. Lord Auckland's group; in moist places on the ground, and at the roots of trees.

Caules cæspitosi, simplices, erecti, incurvi v. nutantes, ut in *J. tenaci*, Grev., crassiusculi, carnosuli, cellulosi, albidi v. pallide virescentes, ad apices siccitate sæpe nigricantes, subunciales. *Folia* valde concava, bifida, segmento inferiore minore, cellulis sæpe margines versus prominulis aquosis, ad medium folii majoribus.

Very unlike any of the other species of this genus, though in some respects approaching the *J. tenax*, Grev., in which the stems are branched and the leaves multifid. The whole plant is of a singularly flaccid or flabby consistence, formed of watery or fleshy cells, a good deal similar to those of *J. notophylla*, nobis (vid. ante).

Plate LXV. *Fig.* VIII.—1, specimen of the *natural size*; 2, portion of branch; 3, stipule:—*magnified*.

(12. Schisma, *Dumort.*)

55. Jungermannia *Scolopendra*, Hook.; *Musc. Exot.* t. 40. Schisma Scolopendra, *Nees et auct.*

Hab. Lord Auckland's group and Campbell's Island; on the hills, abundant; often resembling a *Racomitrium* in its habit of growth.

(13. Mastigophora, *Nees.*)

56. Jungermannia *hirsuta*, Nees.

Hab. Campbell's Island.

This we have compared and found to agree with authentic specimens of *J. hirsuta*, Nees, but we are not aware where that species is published.

(14. Trichocolea, *Nees.*)

57. Jungermannia *mollissima*, Hook. fil. et Tayl.; laxe cæspitosa, implexa, caule ascendente bipinnatim ramosissimo, foliis confertis alternis patentibus e basi lata dichotoma multifidis laciniis capillaribus sti-

pulis bifidis dichotome laciniatis, calyce ex parte inferiore caulis obovato clavato bilabiato undique squamis lineari-lanceolatis laciniatis tecto.

Hab. Lord Auckland's group and Campbell's Island; abundant on moist rocks on the hills, on trunks of trees in the woods, &c.

Cæspites plani, molles, albidi, juniores pallide virides. *Caules* 4–6 unc. longi et ultra, teretes; rami divaricati, conferti, per totam longitudinem caulis subæquilongi, hinc caulis subpectinatus. *Folia* basi patentia, sursum erecta, apicibus incurvis. *Stipulæ* foliis conformes sed minores. *Calyx* sub 2 lin. longus, lateralis; *pedicello* fere $\frac{1}{2}$ unc. longo; *capsula* oblonga.

This very beautiful plant is nearly allied to *J. tomentella*, Ehr., from which it differs in the more procumbent or prostrate mode of growth, in the more crowded cylindrical (not compressed) branches, in the stipules and leaves being broader at the base and dichotomously divided, and in the calyx bearing elongated linear-lanceolate scales. It is also a native of New Zealand.

58. Jungermannia *polyacantha*, Hook. fil. et Tayl.; caulibus subcæspitosis erectis ramosis spiculosis, foliis laxe imbricatis patentibus stipulisque basi angustis quadrifidis laciniis multifidis ramosis ultimis spiculæformibus articulatis, calyce terminali majore lineari-obovato superne tumido subquadridentato hispido. (Tab. LXV. Fig. IX.)

Hab. Lord Auckland's group; in woods near the sea.

Caules tenues, graciles, laxi, inter *Muscos Hepaticasque* alias dispersi, v. cæspitosi, pallide flavi, flaccidi, debiles, vix $\frac{1}{2}$ unc. longi, parce ramosi, apicibus plerumque e foliis plurimis confertis incrassati, spiculis articulatis obsiti. *Folia* basi semiamplexicaulia. *Stipulæ* concavæ. *Calyx* vere terminalis, pro planta maximus, squamis foliaceis obovatis multifidis hispidus.

A very curious and distinct little species. The stems and branches have a peculiarly hispid and squarrose appearance, from the acicular scales and apices of the leaves which beset them and point in all directions. In some respects it resembles *J. tetradactyla*, nobis, and in others the *J. setacea* and *J. trichophylla*, from all of which it is abundantly distinguished by the compound segments of the leaves. From *J. tomentella*, its nearest ally, it differs in its much smaller size and different habit, in the rigid and fragile texture of its more deeply divided leaves, which appear hardly to possess any base or lamina, and in the crenate mouth of the calyx.

Plate LXV. *Fig.* IX.—1, specimen of the *natural size*; 2, leaf; 3, calyx:—*magnified*.

(15. Radula, *Dumort.*)

59. Jungermannia *complanata*, L.; *Syst. Nat.* vol. ii. p. 706. *Hook. Brit. Jungerm.* t. 81.

Hab. Campbell's Island; upon the bark of trees.

60. Jungermannia *physoloba*, Mont., caulibus cæspitosis prostratis subpinnatim ramosis, ramis complanatis, foliis suberectis imbricatis convexis integerrimis lobo superiore obovato-rotundato margine recurvo, perichætialibus oblongis transversis deflexis, calyce elongato obconico compresso truncato integerrimo. Radula physoloba, *Mont. in Voy. au Pole Sud, Bot. Crypt.* t. 17. fig. 4. *et in Ann. Sc. Nat.* 1844. p. 255. J. complanata, var. β, *Hook. Brit. Jungerm.* t. 81. f. 17. J. Aquilegia, *nobis, in Lond. Journ. of Botany*, vol. iii. p. 291.

Hab. Lord Auckland's group; growing mixed with mosses on wet rocks.

Cæspites lati, appressi, plani, olivaceo-brunnei. *Caules* 1–4 unc. longi, irregulariter pinnati, ramis divaricatis. *Folia* basi angusta, concava; lobo inferiore basi tumido, superiori obtuse angulato arcte appresso.

Found abundantly in Ireland, and according to Lindenberg in Switzerland; in the former locality, as in its southern habitat, preferring wet rocks. It may be distinguished from *J. complanata*, L., by its smaller size, more convex leaves, thin texture and brown colour, by the lesser lobe being tumid at the base and not sharply reflected on the larger or upper, and by the deflexed perichætial leaves; besides these characters we may remark that the perigonia are usually terminal and not upon lateral short branches, and that the angulate portion of the lower lobe is shorter than in *J. complanata*.

61. Jungermannia *uvifera*, Hook. fil. et Tayl.; caule implexo procumbente pinnatim ramoso, foliis imbricatis patentibus integerrimis, lobo superiore majore convexo late oblongo-rotundato apice recurvo basi rotundato, inferiore superne truncato v. rotundato ovato-oblongo obtuso inferne subtumido apice lobo superiori appresso, perigoniis lateralibus filiformibus sub foliis latentibus, calyce obovato-oblongo valde compresso subcochleariformi utrinque marginibus acutis subalatis lateribus basi ad medium 4–5 costatis, ore truncato integro.

Hab. Lord Auckland's group; on the bark of trees, &c., abundant.

Cæspites planiusculi v. tumidi, late extensi, olivaceo-brunnei, implexi. *Caules* 1–2 unc. longi, crassiusculi, valde ramosi, foliis convexis undique imbricati, apicem versus sæpe purpurascentes. *Folia* subrecurva, late obovato-rotundata; lobo superiore nunc deorsum in auriculam producto, nunc angustiore, lobo inferiore $\frac{1}{3}$ magnitudine superioris, superne eo arcte appresso inferne tumido, forma varia, substantia opaca læte sed pallide flavo-brunnea. *Innovationes* infra folia plurimi, breves, parvi, perigoniis sæpe alternantes. *Perigonia* omnino inter folia occlusa, minuta, filiformia, foliis 8–10 urceolatis arcte imbricata. *Perichætium* e foliis duobus erectis constans, apicibus latis rotundatis, lobo inferiore subinvoluto.

This species is closely allied to the *R. pectinata*, Nees, but the upper lobes of the leaves are more elongated and the lower are broad at the apex, the perigonia also are shorter. The calyx is here remarkable for the compressed margins being almost winged and the two sides furnished with several elevated costæ. The smaller lobe of the leaf is at first very tumid, more appressed when older.

(16. Madotheca, *Dumort.*)

62. Jungermannia *elegantula*. Madotheca elegantula, *Mont. in Voy. au Pole Sud, Bot. Crypt.* t. 18. f. 3. *et in Ann. Sc. Nat.* 1843. p. 255.

Hab. Lord Auckland's group; on trunks of trees in the woods.

Very closely allied to the European *J. platyphylla*, differing chiefly in the less decidedly pinnate ramification, in the more distant branches, in the frequent toothing of the lower lobe (not shown in Montagne's figure), and in the plane margins of the stipules, which are recurved only at the tips; the capsule also is split down to the very base into four valves. Montagne compares it with *M. subsquarrosa*, Nees and Mont., from Juan Fernandez.

(17. Frullania, *Nees.*)

63. Jungermannia *Magellanica*, Lamarck, *Encycl. Bot.* vol. iii. p. 28. *Hook. Musc. Exot.* t. 115.

Hab. Campbell's Island; on alpine rocks.

The foliage is paler in colour and more lax than in the specimens figured in the 'Musci Exotici.' It is also a native of Tasmania, from whence we have specimens with fully formed calyces.

64. JUNGERMANNIA *clavigera*, Hook., *Musc. Exot.* t. 70.

HAB. Campbell's Island; on rocks, and on the trunks of trees.

These specimens vary much in colour, in general they are of a richer brown, and less olivaceous than in the figure quoted, at other times they are nearly black.

65. JUNGERMANNIA *ptychantha*. Frullania ptychantha, *Mont. in Voy. au Pole Sud Bot. Crypt.* t. 19. f. 3. *et in Ann. Sc. Nat.* 1843. p. 257. J. Myosota, *nobis in Lond. Journ. of Bot.* v. 3. p. 393.

HAB. Lord Auckland's group and Campbell's Island; on the trunks of trees, and on rocks on the hills, abundant.

The perichætial leaves in this species are three, closely embracing the base of the calyx; the two lateral entire, obovate, having a strap-shaped acute curved inner lobe with reflexed sides; the third or stipular lobe is oblong, deeply divided into recurved linear segments, whose margins are uneven but not toothed. *Calyx* cylindrical and smooth for $\frac{1}{3}$ way up, then ovate-rotundate, exserted, laciniated; in the young state it appears terminated by a short tube.

This species may be known from all others by the minute, divergent auricles below the leaves, and more particularly by the plicate calyx. Montagne compares it with *F. gracilis*, *nodulosa* and *integristipula*, and adds that besides the difference in the calyx, the first of these has the involucral leaves serrated, and in the two others the stipules are entire.

66. JUNGERMANNIA *allophylla*, Hook. fil. et Tayl.; caulibus laxe dispersis flaccidis gracilibus flexuosis subramosis, foliis distantibus erecto-patentibus patulisve late ovatis obtusis acutisve integriusculis laxe reticulatis, auriculis anguste oblongo-pyriformibus clavatisve incurvis a folio divergentibus, stipulis minutis bifidis segmentis lanceolatis sæpius clavatis. (TAB. LXVI. Fig. I.)

HAB. Campbell's Island; on the hills, rare, growing with other *Jungermanniæ*.

Caules 2–3 lin. longi, parce ramosi; rami alterni, siccitate subatri, madore læte sanguineo-purpurei. *Folia* forma sat varia, inferiora longiora, late ovata v. elliptica, obtusa v. rarius acuminata, integerrima v. bi-tridentata, cellulis pro planta maximis, auriculis pedicellatis majusculis erectis interdum deflexis.

A beautiful little species and one of the smallest that is known of this subgenus; as in *J. clavigera* the lobes of the stipules are often replaced by club-shaped auricles.

PLATE LXVI. *Fig.* I.—1, a specimen of the *natural size*; 2 and 3, front and back view of leaves; *magnified*.

67. JUNGERMANNIA *rostrata*, Hook. fil. et Tayl.; caule exiguo repente subpinnatim ramoso, foliis subapproximatis patentibus rotundatis subapiculatis integerrimis lobo inferiore oblongo-lanceolato appendiculato, stipulis minutis rotundatis bifidis integerrimis, perigoniis obovatis rotundatis, perichætiis oblongo-rotundatis, calyce obovato apice tubuloso basi angusto lineari.

HAB. Lord Auckland's group; on *Parmelia enteromorpha*, Ach.

Cæspites 1–2 unc. lati, rufo-brunnei. *Caules* minuti, graciles. *Folia* rotundata, lobulo inferiore $\frac{1}{3}$ magnitudine superioris; *perichætialia* oblonga, apiculata, incurva, marginibus lobuli inferioris reflexis. *Calyx* perichætio bis longior.

The present species bears much general resemblance to *J. lobulata*, Hook., differing from it in the smaller size, the narrow base of the calyx, which is of a different and less trigonous form, being wider above, and in the acute or apiculate leaves of the perichætium. It is as small as the previous species.

68. JUNGERMANNIA *reticulata*, Hook. fil. et Tayl.; caulibus implexis prostratis subpinnatim ramosis,

ramis brevibus, foliis distichis imbricatis patentibus concavis late rotundatis apice recurvis superioribus late ovatis grosse dentatis, auriculis interdum nullis superioribus nunc bifidis segmento exteriore clavato interiore subulato, stipulis bi-quadripartitis. (Tab. LXVI. Fig. II.)

Hab. Lord Auckland's group; rocks on the mountains.

Cæspites 2–3 unc. lati, planiusculi, rupibus appressi, intertexti, nigrescentes, nunc pallidiores, innovationibus læte purpureis. *Caules* sub 2 unc. longi, interdum elongati, ramis plerumque brevibus. *Folia* tenerrima, valde pellucida, areolis majusculis, inferiora integerrima, sæpe lobulo intus aucta. *Stipulæ* concavæ, profunde partitæ, nonnullis v. omnibus clavatis.

This is a very beautiful microscopic object, and though allied to *J. clavigera* is very distinct from it. The lower leaves are sometimes nearly reniform, with no auricle whatever, but the most remarkable differential character lies in the very lax reticulation of its cells

Plate LXVI. *Fig.* II.—1, a specimen of the *natural size*; 2 and 3, leaves; 4, 5 and 6, stipules; *magnified*.

69. Jungermannia *aterrima*, Hook. fil. et Tayl.; pusilla, caule implexo procumbente vage ramoso, foliis imbricatis patentibus convexis rotundato-oblongis integerrimis marginibus recurvis, auriculis late oblongo-pyriformibus inflatis, stipulis minutis ovatis bipartitis segmentis lanceolatis basi extus unidentatis, perigoniis rotundatis, foliis perichætialibus integerrimis incurvis. (Tab. LXVI. Fig. III.)

Hab. Lord Auckland's group; on alpine rocks, mixed with *Andreæa* and other mosses.

Cæspites nigri, apicibus nitidis rarius purpurascentibus; ramis subsolitariis. *Folia* rotundata v. late et oblique ovata. *Stipulæ* bipartitæ, integræ v. utrinque dente majusculo extus aucto et hinc quadrifidæ. *Planta* plerumque monoica. *Perigonia* breviter pedunculata, arcte imbricata, rotundata, superne longitudinaliter sulcata, marginibus foliorum valde incurvis. *Perichætii* foliia tria, secunda, valde concava, corpora tria rotundata referentes.

This has some points of affinity with the *J. fragilifolia*, Tayl., a species lately observed in Ireland and Switzerland, which is equally minute but not so uniformly black and shining, and has the leaves less densely cellular, and the perichætial ones dentate.

Plate LXVI. *Fig.* III.—1, a specimen of the *natural size*; 2, 3 and 4, leaves; 5 and 6, stipules; 7, perichætial leaf; *magnified*.

70. Jungermannia *congesta*, Hook. fil. et Tayl.; cæspitosa, caule procumbente ramoso, foliis imbricatis patentibus integerrimis late ovatis rotundatisve subapiculatis, auricula inflata oblongo-pyriformi, stipulis minutis ovato-rotundatis bifidis integerrimis, foliis perichætialibus oblongis apiculatis integerrimis albidis.

Hab. Lord Auckland's group; on rocks and on the bark of trees.

Cæspites extensi, sub 2 unc. lati, pallide flavo-brunnei. *Caules* graciles, sub 2 unciales, pinnatim ramosi; ramis erecto-patentibus, sæpe ascendentibus v. sursum curvatis. *Folia* valde convexa, plerumque apiculata, auricula caule remota infra marginem folii extensa. *Stipulæ* integerrimæ, caule vix latiores, apicem versus bifidæ, segmentis acutis. *Folia* perichætialia erecta, integerrima, acuminata, duobus lateralibus oblongis lobulo inferiore margine inflexo, stipulari in segmenta duo lanceolata apiculata integerrima fissa.

Very similar to the *J. ptychantha*, Mont., but the whole plant much smaller, the auricles occupy a different position, and the perichætial leaves are of a different form. The barren perichætia which have rounded summits, are probably modified in the perfect plant. From *J. aterrima*, to which it is in some respects allied, it may be known by the larger size, pale colour, acute perichætial leaves, and, above all, by the entire stipules.

71. Jungermannia *scandens*. Frullania scandens, *Mont. in Voy. au Pole Sud, Bot. Crypt.* t. 19. f. 2. *et in Annal. des Sc. Nat.* 1843, p. 258.

Hab. Lord Auckland's group; on branches of trees (*MM. Hombron et Jacquinot*).

This species was not found during the stay of the Antarctic Expedition in Lord Auckland's group. Montagne compares it with *F. hians*, *ornithocephala*, and *obscura*, Nees.

(18. Lejeunia, *Lib.*)

72. Jungermannia *implexicaulis*, Hook. fil. et Tayl.; caulibus cæspitosis suberectis ramosis, foliis laxe imbricatis suberectis patentibus valde concavis ovatis obtusis apicibus marginibusque incurvis areolis punctiformibus, lobulis anguste ovatis tumidis inflexis, stipulis rotundatis caule latioribus apice fissis segmentis suberectis.

Hab. Campbell's Island; creeping through tufts of mosses in rocky places.

Caules $\frac{1}{2}$–1 unc. longi, inter muscos dispersi v. *cæspites* plus minusve confertos formantes, olivaceo-virides, vage ramosi, ramis erectis. *Folia* valde concava, hinc oculo nudo rami moniliformes apparent, subdecurrentia, lobulo cauli proximo, areolis minimis punctiformibus. *Stipulæ* fere orbiculares, primo visu integræ, sed fissæ segmentis approximatis v. imbricatis.

Very nearly allied to the *J. serpyllifolia*, Dicks.; it has, however, a different aspect, owing to the erect leaves, which are not plane but very concave, and instead of being loosely cellular are formed of a very compact tissue, the cells of which require a high power to be distinguished, the leaves themselves also are twisted forwards and not patent. The stipules appear undivided, except when the segments are forced asunder; whilst in *J. serpyllifolia* they diverge and often have a very rounded sinus between them.

73. Jungermannia *Mimosa*, Hook. fil. et Tayl.; caulibus implexis repentibus ramosis, foliis imbricatis patentibus concavis oblique obovato-oblongis subcurvatis v. acinaciformibus apicibus patentibus recurvis integerrimis, lobulis ovatis involutis, stipulis late ovatis acute bifidis, calyce late elliptico-ovato pentagono ore contracto subtubuloso.

Hab. Lord Auckland's group; on moist alpine rocks.

Cæspites parvi, fusco-olivacei. *Caules* sub $\frac{1}{2}$ unc. longi, irregulariter vage ramosi, ascendentes. *Folia* subincurva, ut in *J. serpyllifolia*, sed præsertim apices versus latiora et ad latus curvata, hinc subacinaciformia, lobulo erecto-patente; substantia crassiuscula, areolis parvis. *Stipulæ* caule vix latiores, apice fissæ, segmentis subdistantibus erectis, sinu obtuso. *Folia perichætialia* late oblongo-rotundata, integra, concava, apicibus recurvis, tertio stipulæ conformi sed magis concavo. *Perigonia* lateralia, spicata; foliis arcte imbricatis, brevibus, rotundatis, tumidis. *Calyx* basi angustatus, obovatus v. obovato-ellipticus, pentagonus v. sub 5-alatus, ore minuto tubuloso.

The chief points of distinction between this and the *J. serpyllifolia*, Dicks., reside in the denser structure of the leaves, their tops being recurved; the larger calyx, which tapers towards the narrower base, and the rounder more concave perichætial leaves. From *J. implexicaulis* it may be known by the more cellular and planer leaves, their very different direction, and the remote segments of the stipules.

74. Jungermannia *primordialis*, Hook. fil. et Tayl.; caulibus exilibus implexis vage ramosis, ramis subpatentibus, foliis laxis suberectis anguste obovatis apicibus rotundatis concavis integerrimis lobo inferiore ovato involuto, stipulis minimis emarginato-bifidis segmentis linearibus subobtusis divaricatis.

Hab. Lord Auckland's group; on a species of *Sticta* in the woods.

Cæspites parvi, pallide olivaceo-virides. *Caules* sub $\frac{1}{4}$ unc. longi, ramis divaricatis. *Folia* remota, suberecta, anguste obovata, lobo inferiore extus ad inflexionem dente obtuso aucto.

The minute size, more erect, narrow and more distant leaves, will readily distinguish this species from small states of *J. serpyllifolia*, even in the absence of fructification.

75. Jungermannia *albo-virens*, Hook. fil. et Tayl.; minima, caulibus implexis prostratis ramosis, foliis laxis patentibus valde concavis oblongis apice rotundatis integerrimis, lobulis involutis ovatis tumidis, stipulis exiguis oblongis bifidis segmentis obtusis acutisve, calyce in ramo brevi proprio terminali obovato-elongato basi angustato apice quadriplicato tubuloso. (Tab. LXVI. Fig. IV.)

Hab. Lord Auckland's group; on rocks at the summits of the mountains, mixed with other *Jungermanniæ*.

Laxe cellulosa. *Caules* per plantas alias dispersi, non cæspitosi, pallide flavo-olivacei, 2–3 lin. longi, siccitate fragiles, irregulariter ramosi, ramis remotis. *Folia* basi semiamplexicaulia et subsaccata, superne oblonga et rotundata, apicibus plerumque recurvis, cellulis majusculis aquosis. *Stipulæ* cauli arcte appressæ, inconspicuæ, oblongæ, caule vix latiores. *Perichætii foliola* tria, lateralibus erectis concavis obtusis lobulo acuto intus auctis, tertio v stipulari oblongo bifido stipulis omnino conformi sed majore. *Calyx* apice tubulosus, demum in lacinias quatuor dehiscens. *Capsula* spherica, pallide brunnea, valvis basi coadunatis. *Semina* majuscula, pauca, angulata; filis spiralibus paucis, diametro $\frac{1}{3}$ seminum.

Very nearly allied to the *J. ulicina*, Tayl. (*J. minutissima*, Brit. Jung.), preferring also wet mosses on which to grow. The British plant may be distinguished by its smaller size, the larger cells of the leaves, which are not so concave and subacute, whilst their lobulus has a sharp process or tooth at the point of involution, also by the more divided stipules, whose segments are acuter, and by the recurved perichætial leaves.

Plate LXVI. *Fig.* IV.—a specimen of the *natural size*; 2, portion of branch; 3, leaf, and 4, stipule: *magnified.*

76. Jungermannia *latitans*, Hook. fil. et Tayl.; minima, caule tenuissimo prostrato ramoso, foliis remotiusculis suberectis celluloso-crenulatis ovatis acutis apicibus sæpe incurvis, lobulis ovatis involutis, stipulis inconspicuis bifidis segmentis lanceolatis obtusis, foliis perichætialibus late obovato-cuneatis acuminatis.

Hab. Lord Auckland's group; mixed with other *Hepaticæ*.

Cellulosa, minima. *Cæspites* laxi, dispersi, planiusculi, pallide virescentes. *Folia* remotiuscula, longitudine varia, acuta v. acuminata, cellulis præcipue versus margines majusculis tumidis et prominentibus, hinc folia subcrenata, lobulo $\frac{1}{2}$ latitudine folii. *Stipulæ* valde inconspicuæ, caule vix latiores. *Perichætii foliola* ramis anni præcedentis terminalia, erecta, obovata, acuminata, lateralia incurva, tertio oblongo concavo bifido.

Closely resembling the *J. hamatifolia*, Hook.; but the leaves are much broader. From *J. echinata*, Tayl., it may be known by the presence of stipules; from *J. albo-virens*, by its smaller size, more cellular texture, and acute leaves.

77. Jungermannia *plicatiloba*, Hook. fil. et Tayl.; caulibus implexis procumbentibus vage ramosis, foliis laxis erecto-patentibus valde concavis rotundato-quadratis subtruncatis integerrimis, lobo inferiore incurvo apice angulato superiori subæquali basi tumido appresso, stipulis exiguis emarginato-bifidis segmentis linearibus subincurvis.

Hab. Lord Auckland's group; on *Parmelia intestiniformis*, Ach.

Cæspites minuti, laxi, pallidi. *Caules* vix $\frac{1}{4}$ unc. longi. *Folia* remota. *Stipulæ* minimæ.

The shoots of this species appear like rows of the minutest beads, so small is the whole plant, and the stem is all but imperceptible, even with a tolerable lens. The position of the lobe on the lower part of the leaf resembles that of a *Radula*.

(19. SYMPHIOGYNA, *Nees*.)

78. JUNGERMANNIA *Phyllanthus*, Hook., *Musc. Exot.* t. 95.

HAB. Lord Auckland's group; in the shaded woods, abundant but barren.

79. JUNGERMANNIA *flabellata*, Lab., *Fl. Nov. Holl.* vol.ii. p.109. t.254. f. 1. *Hook. Musc. Exot.* t. 13.

HAB. Lord Auckland's group; with the former, but also barren.

(20. ANEURA, *Nees*.)

80. JUNGERMANNIA *multifida*, L. *Hook. Brit. Jungerm.* t. 45.

Var. β, *incisa*; frondibus atro-viridibus carnosis inciso-ramosis, lobis pinnatis apice bilobis subdecurvis. J. incisa, nobis, in *Hook. Lond. Journ. of Bot.* vol. iv. p. 93.

Var.? γ, *minima*; cæspitosa, frondibus vix $\frac{1}{4}$ lin. latis.

HAB. Lord Auckland's group and Campbell's Island; var. β, in the former locality only; var. γ, Lord Auckland's group. (*Dr. Lyall.*)

Of this widely diffused and highly variable plant we have noticed what appear to be the most striking varieties; all of them are destitute of any trace of fructification, and some may be improperly included under this species, or even genus; there are, however, no grounds for removing them from *Aneura*, and being anxious to draw attention in this work to all that is known of the Flora of the South, we prefer arranging such dubious plants with their nearest apparent allies, to passing them by unrecorded.

(21. METZGERIA, *Nees*.)

81. JUNGERMANNIA *furcata*, L. *Hook. Brit. Jung.* t. 55. and 56.

Var. γ, *æruginosa, Brit. Jungerm.* l.c.

HAB. Lord Auckland's group and Campbell's Island; very abundant at the roots of ferns and other plants; var. γ, on the bark of trees.

This plant is as variable in size in this part of the world as in others.

(22. ZOOPSIS, *Hook. fil. et Tayl.*)

Perichætium e squamis paucis lanceolatis. *Calyx* e frondis nervo ortus, pedicellatus, obovato-oblongus, in lacinias plurimas fissus.—Frondes *lineares, parce ramosæ, e cellulis hexagonis pro magnitudine plantæ majusculis tumidis formatæ, nervo centrali valido, marginibus crenatis interdum sinuato-repandis.* Calyx *maximus*.—Planta anomala a *Diplolæna*, Nees, differt calyce simplici, hinc, scilicet extrorsum, squamis perichætialibus prædito.

82. JUNGERMANNIA *argentea*, Hook. fil. et Tayl.; *Hook. Lond. Journ. of Botany*, vol. iii. p. 400. *sub* Metzgeria. (TAB. LXVI. Fig. VI.)

Hab. Lord Auckland's group; at the roots of trees, ferns, &c., growing amongst other *Hepaticæ* and mosses.

Cæspites parvi, procumbentes, argentei, inter muscos dispersi. *Frondes* rigidiusculæ, 2–3 lin. longæ, simpliciusculæ, gracillimæ, compressæ v. complanatæ, e cellulis majusculis hexagonis nervum validum includentibus formatæ, marginibus e cellulis irregulariter prominentibus sinuato-repandis, rarius hinc inde in lobos expansis, nervo centrali viridi valido. *Rami* pauci, patentes, simplices v. rarius furcati. *Calyces* pro magnitudine plantæ maximi, e nervo centrali ipso orti, breviter pedicellati, urceolati v. campanulati, laxe cellulosi, in lacinias plurimas magis articulatas minusve profunde fissi, basi squamis paucis (perichætio) muniti.

A very singular plant, closely allied to none in the Order *Hepaticæ*; it forms pale silvery patches at the roots of ferns, &c., in the woods, but has only been found fruiting in New Zealand, where, as in Tasmania also, it is probably abundant. In the specimens from Lord Auckland's group the fronds are hardly sinuated at the margins and often formed of only one or two series of cells surrounding the axis; in those from more Northern Latitudes other series of cells are superadded, the fronds are more compressed, and their margins so sinuated from the irregularly placed cells as to resemble the rudiments of leaves. Though the walls of the cells are exceedingly delicate, the whole plant is of a rigid texture, and very slowly recovers itself when moistened; this somewhat horny consistency of the frond, resembling some *Sertulariæ*, has suggested to us the generic name. The drawing was made before the fructification was observed, by Mr. Wilson, upon the New Zealand specimens.

Plate LXVI. *Fig.* VI.—1, a small tuft of the *natural size*; 2, a frond; 3, a section of the same, very highly *magnified*.

2. HYGROPILA, *Tayl.*

1. Hygropila *dilatata*, Hook. fil. et Tayl. in *Hook. Lond. Journ. of Bot.* vol. iii. p. 576.

Hab. Lord Auckland's group; on the ground in damp woods.

This is one of the numerous frondose *Hepaticæ* which cover the ground so abundantly in the humid regions of the South; they evidently belong to many species, but having never been found in fructification, it is exceedingly difficult to distinguish the species by the form and texture of their variable fronds, and still more to determine the genera to which they belong. The present, of which our specimens are but imperfect, seems identical with a very common New Zealand plant, which abounds in moist places, and especially near cataracts.

3. MARCHANTIA, *March.*

1. Marchantia *polymorpha*, L.

Hab. Lord Auckland's group and Campbell's Island; abundant.

A plant universally distributed throughout the Southern Hemisphere.

4. ANTHOCEROS, *Michel.*

1. Anthoceros *punctatus*, L.?

Hab. Campbell's Island; on the wet ground.

We are not assured of the identity of this plant with the Europæan *A. punctatus*, L., the specimens being very imperfect.

Dubii generis.

Riccia? *cochleata*, Hook. fil. et Tayl., in *Hook. Lond. Journ. of Bot.* vol. iv. p. 96. (Tab. LVI. Fig. V.)

Hab. Lord Auckland's group; growing in dense tufts of mosses and *Hepaticæ*, on exposed rocks towards the hill tops.

Frondes laxe cæspitosæ, vix $\frac{1}{2}$ unc. longæ, $\frac{1}{10}$ crassitudine, olivaceæ, ascendentes, lineari-oblongæ, crassæ, concavæ, hinc inde lobatæ, apicibus procumbentibus bilobis, lobis rotundatis integerrimis conniventibus, marginibus integris incurvis. *Substantia* carnosa, intus spongiosa, laxe cellulosa.

This being quite unlike any of the hitherto described *Hepaticæ*, we attached the generic name of *Riccia* from a certain resemblance in the form of its frond to several species of that genus, but the plant is more probably allied to some frondose *Jungermannia*,—*J. epiphylla* for instance. The concave frond with entire connivent lobes, partakes of the habit of that of *Collema granulatum*, Ach., but our plant is certainly a Hepatica.

Plate LXVI. *Fig.* V.—1, a specimen of the *natural size*; 2, a frond, and 3, a section of the same; *magnified*.

XXXV. FUNGI, *L.*

(By the Rev. M. J. Berkeley.)

The number of *Fungi* collected during the Expedition is very small, in proportion to that of other cryptogamic plants, with the exception of those found in New Zealand and Van Diemen's Land. In the more southern localities, *Fungi* may naturally be expected to cease, sooner than *Algæ*, *Lichens*, and *Mosses*; and accordingly, from such localities, the amount of species is trifling indeed. Even where the degree of cold is not sufficient to prevent the growth of *Fungi*, their fructification is materially affected; and thus, in the higher forms, the hymenium will frequently be found barren; while, in some hypogæous species, transformations of the sporophores themselves take place, causing the fructifying mass to assume a very anomalous appearance. Some species indeed, as *Pilobolus crystallinus* and *Hydrophora stercorea*, seem to flourish most in the frosty nights of autumn, and the species of the genus *Chætonypha* and *Lanosa nivalis* thrive either beneath or upon the surface of the snow; but I know of no other exceptions to the more general habit of these species, and in these cases, the temperature either does not descend below the freezing point, or, as in the case of the *Chætonypha*, vegetation takes place only when the surface of the snow is just melting under the influence of the sun.

Amongst the more northern islands visited by the Expedition it is probable that some interesting forms, had time allowed, would have rewarded further research; though, indeed, constant attention was directed, even to the obscurest forms of vegetation, wherever circumstances would permit. As it is, there is a considerable number of new species to describe, and some of them possess much interest, especially a new *Cyttaria* from Cape Horn, the specimens of which are so numerous as to afford an excellent opportunity of examining the structure of this curious genus; which, like *Podisoma* and *Gymnosporangium*, which infest certain species of Juniper, developes itself on the living branchlets of the deciduous-leaved Beech. Some of the species, like those of other Cryptogams, are identical with plants of the Northern Hemisphere; and this is especially observable in New Zealand, where the identity is not confined to those families in which it is more usual.

1. AGARICUS, *L.*

1. Agaricus *pyxidatus*, Bulliard, *tab.* 568. *fig.* 2.

Var. β, *hepaticus*, Fries *Epicr.* p. 122. Ag. subhepaticus, *Batsch El.*, *fig.* 211.

Hab. Lord Auckland's group; in the woods near the sea.

A plant, so far as can be judged from the specimens, which were much damaged by insects before being

gathered, belongs to the species quoted above. The stem is either equal or attenuated upwards, generally smooth, except towards the base, where it is at times clothed with cottony filaments which spread over the soil.

2. CLADOSPORIUM, *Link.*

1. Cladosporium *herbarum*, Link, *Obs.* II. p. 37.

Hab. Lord Auckland's group and Campbell's Island; on the leaves of *Carex appressa*, Br.

This fungus originates beneath the cuticle, in slender dull black parallel lines; it afterwards forces itself through to the surface and resembles some *Puccinia*. No characters exist to distinguish it as a species, though its habit is very peculiar.

3. HENDERSONIA, *Berk.*

1. Hendersonia *microsticta*, Berk.; peritheciis sparsis punctiformibus atris globosis minutis, sporis lanceolatis acutis triseptatis. (Tab. LXVIII. Fig. I.)

Hab. Lord Auckland's group and Campbell's Island; on the withered stems of *Chrysobactron Rossii* of the previous year's growth.

Perithecia parva, epidermide tecta, subprominula, atra, globosa. *Sporæ* pellucidæ, irregulares v. lanceolatæ, utrinque acutæ, triseptatæ, quandoque breviter pedicellatæ; endochromio cellulis conformi.

There are no external characters by which this may be discriminated from several other black punctiform *Fungi*. The structure of the spores indicates a total want of affinity with *Sphæria*; these, under a low power, appear multiseptate or triguttate; but, with a higher lens and well adjusted light, each is seen to be furnished with three transparent septa: their shape is that of *Neottiospora*.

Plate LXVIII. *Fig.* I.—1, stem of *Chrysobactron* with fungus of the *natural size*; 2, a portion of the same, *magnified*.

4. UREDO, *Pers.*

1. Uredo *antarctica*, Berk.; amphigena, maculis oppositis purpureis, soris bullatis, sporis majusculis lævibus late obovatis fuscis. (Tab. LXVIII. Fig. II.)

Hab. Campbell's Island; on leaves of *Luzula crinita*.

Amphigena; maculis parvis, oppositis, subrotundatis, purpureis, subtus pallidioribus. *Sori* bullati. *Sporæ* obsoletissimæ, pedicellatæ, obovatæ v. subglobosæ, læves, guttula centrali oleosa præditi.

External appearance very closely resembling the *Cœoma Luzulæ*, Libert., but the form of the spores is quite different, and also like *Uredo oblongata*, which likewise grows upon *Luzulæ*, but is a very different parasite.

Plate LXVIII. *Fig.* II.—1, leaf of *Luzula* with fungus of *natural size*; 2, portion of ditto, *magnified*; 3, spores very highly magnified.

5. SPHÆRIA, *Hall.*

1. Sphæria *herbarum*, Pers. *Synops.* p. 79. (*quoad var.* γ, tectam), *Fr. Syst. Myc.* vol. ii. p. 511. *Notaris in Act. Acad. Turin.* vol. vii. p. 30. *cum analysi optima.* (Tab. LXVIII. Fig. III.)

Hab. Lord Auckland's group and Campbell's Island; on the scapes of *Chrysobactron Rossii* with *Hendersonia microsticta*.

Fries says of this plant, or rather of what have been referred to it, "Farrago specierum minimarum" and under it two very different species are given in the 'Scleromycetes Suecicæ,' (no. 38). Of one of these, both a larger and smaller form occur; the other is identical with what has been published as a small state of *Sphæria complanata*. I have given, at nos. 267 and 288, of my 'British Fungi' (Fasc. 4th), the same plant, in two different stages of growth, as *Sp. herbarum* and *Sp. complanata*; these are intended to illustrate the views of Fries, and with no idea that either would prove identical with any of the larger or normal species, which are well distinguished by their sporidia. These, in the true *S. herbarum*, are oblong, with several longitudinal and transverse dissepiments, like what are seen in *Sphæria Laburni*, in the specimens before me from Auckland Island and in the larger English form. The plant published in my 'Fasciculi' is destitute of asci, which is the case with *S. acuta*, Hoffm. The analysis of the latter plant, given by Greville, belongs to *S. coniformis* (which often occurs on the same stem), and does not therefore properly refer to *Sphæria* at all; but either to the *Sphæronema* or to the genus *Septoria*, as extended by Desmazières, or finally, if *Sphæria* be remodelled according to the plan upon which De Notaris has revised the Italian species, it will come under a new generic name.

On carefully removing the cuticle of the *Chrysobactron*, I find that in the specimens before me the perithecia give out a few straight filaments which creep for a short distance; this I believe to be a common occurrence with the subcuticular species. On the same stalks individuals having the same external characters occur, in which the sporidia are uniseptate. This form I at first believed to be a distinct species, but am now satisfied that it is an imperfect state of *S. herbarum*; especially since three septa are at times seen.

Plate LXVIII. *Fig.* III.—1, stem of *Chrysobactron* with fungus of *natural size*; 2, portion of ditto, *magnified*; 3, ascus of *S. herbarum*; 4, the same, of an immature specimen; 5, sporidia of ditto:—highly *magnified*.

2. Sphæria *nebulosa*, Pers.? *Synops. Fung.* p. 31.

Hab. With the former.

Very imperfect; as are also the published descriptions of *S. nebulosa* itself.

3. Sphæria *nigrella*, Fries? *Syst. Mycol.* v. 2. p. 512.

Hab. With the two former.

Specimens, unfortunately without fructification and therefore undeterminable.

4. Sphæria *phæosticta*, Berk.; gregaria, peritheciis globosis atris epidermide fusco-maculato tectis, ostiolo prominulo punctiformi, ascis linearibus, sporidiis uniserialibus fuscis breviter cymbiformibus. (Tab. LXVIII. Fig. IV.)

Hab. Lord Auckland's group and Campbell's Island; on the dead leaves of *Hierochloe Brunonis*.

Gregaria, oculo nudo maculas parvas punctiformes brunneolas exhibens, sub quaque macula perithecium minus globosum ostiolo subprominulo punctiformi latitat. *Asci* primum breves, sporidiis pellucidis ellipticis biserialibus, demum lineares, sporidiis fuscis breviter cymbiformibus uniserialibus, nucleo magno globoso.

I know of no species at all resembling the present. The change in the form of the asci and sporidia is very instructive and confirms me in my opinion, that *Sphæria herbarum* and its accompanying uniseptate state belong to the same species (vid. supra). It is worthy of observation, that the sporidia exhibit these changes whilst still colourless. *Diplodia* presents a somewhat analogous case to this, septa being sometimes formed in that genus after the spores have acquired their colour.

Plate LXVIII. *Fig.* IV.—1, leaf and fungus of the *natural size*; 2, portion of the same, *magnified*; 3, an immature and mature ascus; 4, sporidia:—all *magnified*.

5. Sphæria (foliicolæ) *depressa*, Berk.; gregarea, minor, atra, peritheciis tectis subglobosis lævibus callo destitutis siccitate depressis, sporidiis lanceolatis. (Tab. LXVIII. Fig. V.)

Hab. Campbell's Island; on the dead leaves of *Luzula crinita*.

Gregaria, epidermide atro-punctato omnino tecta. *Perithecia* minora, subglobosa, callo destituta, siccitate depressa. *Asci* lineares, paraphysibus tenuioribus immixti. *Sporidia* biseriata, lanceolata, endochromio bipartito sed non septato.

The only species with which the present can be compared are the *S. duplex* and *S. saxifricola*; from both these it will be found to differ by the external characters given above, and, from the latter in particular, by the simple pellucid and neither triseptate nor yellowish sporidia.

Plate LXVIII. *Fig.* V.—1, leaf and fungus of the *natural size*; 2, portion of the same, *magnified*; 3, asci and paraphyses; 4, sporidia, shewing the endochrome collected at either extremity; *magnified*.

6. DOTHIDEA*, *Fries*.

1. Dothidea *hemispherica*, Berk.; hypogena, solitaria, erumpens, macula subeffusa epiphylla nigra, stromate hemispherico carbonaceo, cellulis ellipticis obtusiusculis, ascis breviusculis, sporidiis uniseptatis oblongis. (Tab. LXVII. Fig. II.

Hab. Lord Auckland's group; on the leaves of *Veronica odora*.

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* I take the present opportunity of describing two new species of *Dothidea*, contained in the Herbarium of Sir W. J. Hooker.

1. Dothidea *circumscripta*, Berk.; innata, gregaria, maculis suborbicularibus irregularibus depressis nigris nitidis circumscriptis, cellulis paucis magnis depresso-globosis, collo brevi, ostiolo papillæformi, ascis clavatis, sporidiis oblongo-lanceolatis. (Tab. LXVIII. Fig. VI.)

Hab. Andes of Columbia (*Jameson*). Chacapoyas, Peru (*Mathews*); on various species of *Vaccinium*.

Hypophylla, rarissime epiphylla, innata. *Maculæ* $\frac{3}{4}$ lin. latæ, suborbiculares v. confluentes, irregulares, depressæ, nigræ, nitidæ, quandoque leviter undulatæ, minutissime granulatæ, ostiolis paucis papillæformibus notatæ, linea nigra plus minusve evidenter circumscriptæ, demum omnino fatiscentes, et scutellam epidermide marginatam exhibentes. *Cellulæ* fructiferæ paucissimæ, magnæ, globosæ, depressæ, collo brevi, ostiolo papillæformi. *Asci* clavati. *Sporidia* octona, oblonga, hinc acuminata.

A very pretty species, remarkable for the small number of fructifying cells and the dark line enclosing the stroma, which is especially evident when the latter is abortive; beyond this line there is sometimes a coloured ring. The sporidia are almost of the same shape with those figured by Corda, in *Rhytisma Eugeniacearum*; when young they are filled with distinct granules which become less evident as they are more developed. In age the stroma completely decays and falls out, leaving a scutellum surrounded by the cuticle. This follows from the dark line indicating a harder substance than that of the stroma, which is not always externally visible, but will be found on making a vertical section.

Plate LXVIII. *Fig.* VI.—1, a branch of *Vaccinium* and fungus of the *natural size*; 2, a section, *slightly magnified*; 3, asci, *slightly magnified*; 4, sporidia, *highly magnified*.

2. Dothidea *bullata*, Berk.; epiphylla, bullata, suborbicularis, nigra, superficialis, crassiuscula, rugosa, granulata, intus nigra, cellulis ellipticis, ostiolo papillæformi, ascis oblongis, sporidiis oblongis uniseptatis.

Hab. Peru; on the leaves of a resinous shrub. (*Mathews.*)

Epiphylla, submarginalis, superficialis. *Maculæ* $\frac{1}{4}$ unc. latæ, suborbiculares, crassiusculæ, depresso-bullatæ,

Hypogena, nigra, maculam nigram subeffusam superne stromatis indicem exhibens, una tantum macula in singulo folio ut videtur evoluta. *Stroma* $\frac{2}{3}$–1 lin. latum, hemisphericum, carbonaceum, extus scabriusculum, nec evidenter papillato-granulosum, demum fatiscens: intus carbonaceum, superne reticulatim cellulosum, sub lente atro-cæruleum vel demum viridi-fuscum constans, basi in floccos abeunte. *Cellulæ fructiferæ* oblongo-ellipticæ, periphericæ, obtusiusculæ, vix apiculatæ. *Asci* breviusculi. *Sporidia* octona, oblonga, uniseptata, medio constricta.

This species has much more the habit of a *Sphæria* than most *Dothideæ*, being of a carbonaceous texture, like the *Sphæria fragiformis*; but though, on making a delicate vertical section, a thin stratum of tissue, consisting of only a single layer of cells, occasionally appears, no trace of this is seen on the sides of the cavities distinct from the neighbouring tissue. The specimens procured are not numerous, in no instance does more than one individual appear upon a single leaf, the latter being probably of too small a size to support more than a solitary stroma of such high organization. Like some other species indicated by Montagne in his '*Fungi of Cuba*,' this is probably originally produced between the layers of the cuticle, for some of the latter is found beneath the stroma. The cells of the stroma pass at the base into a mass of reticulated filaments, without any membrane being attached to the meshes.

Plate LXVII. *Fig.* II.—1, a sprig of *Veronica odora*, with the fungus of the *natural size*; 2, a section of the fungus; 3, a portion of the same, *more highly magnified*; 4, an ascus; 5, sporidia; 6, a section shewing the loose cellular tissue of the centre, the pentagonal tissue about the base of the cells, and the elongated tissue between them:—all *magnified*.

2. Dothidea *spilomea*, Berk.; gregaria, hypophylla, maculis epiphyllis nullis v. obsoletissimis, subinnata, depressa, tenuis, orbicularis, sæpe confluens, minutissime granulosa, nitida, cellulis globosis, ascis clavatis, sporidiis oblongis uniseptatis medio constrictis. (Tab. LXVII. Fig. I.)

Hab. Lord Auckland's group and Campbell's Island; on the leaves of *Veronica elliptica*, Forst.

Hypogena, nigra, nitida; maculis $\frac{1}{2}$–$\frac{1}{6}$ lin. latis, gregariis, orbicularibus, quandoque confluentibus, depressis, subinnatis, tenuibus, minutissime granulatis. *Stroma* tenue, subtus cum parenchymate confusum. *Cellulæ fructiferæ* globosæ, ostiolo punctiformi. *Asci* clavati. *Sporidia* oblonga, quandoque curvata, uniseptata, medio constricta.

In some leaves the spots are very numerous, in others they are but few and of a larger size. The species is most allied to the *D. amphimelana*, Mont., and *D. Zollingeri*, B. and M., although not very near either; it exhibits, also, some affinity with *D. granulosa*, Hook. et Arn. Externally it strongly resembles the punctiform variety of *Rhytisma salicinum*. The spots are of a shining black, and are very minutely granulated under a lens.

Plate LXVII. *Fig.* I.—1, a sprig of *Veronica elliptica*, covered with the parasite, of the *natural size*; 2, a section, *slightly magnified*; 3, ditto, *more highly magnified*; 4, asci; 5, sporidia: *magnified*.

7. ASTEROMA, *Dec.*

1. Asteroma *dilatatum*, Berk.; superficiale, maculis ricciæformibus, lobis dilatatis e filamentis serpentibus approximatis in membranam congestis. (Tab. LXVIII. Fig. VII.)

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nigræ, non tamen nitidæ, rugosiusculæ, granulatæ, intus nigræ, substantia sub lente fusca. *Cellulæ fructiferæ* ellipticæ, albo-farctæ, ostiolo papillæformi. *Asci* oblongi, basin versus latiores. *Sporidia* oblonga, uniseptata.

A very fine species, allied to *D. amphimelana*, Mont., *D. Rutæ* and *D. puccinioides*. The first of these is more regular and innate, besides having a spot on the under side opposite to that on the upper; whereas, in the present species, in consequence of the superficial mode of growth, there is no such spot. *D. amphimelana* has no evident border to the stroma. *D. Rutæ* has uniseptate sporidia, but they are short and brown; in which respect also *D. bullata* differs from *D. puccinioides*, and in several other characters from both, as its much larger size.

Hab. Lord Auckland's group; on the leaves of *Panax simplex*, Forst.

Maculæ omnino superficiales, orbiculares, epiphyllæ, 2 lin. latæ, opacæ, olivaceo-nigræ, *Lichenem* parvum *Fucumve* referentes, lobatæ, lobis apice dilatatis e filamentis approximatis constantibus.

This pretty species, which was unfortunately not found in fruit, resembles somewhat *Rhytisma quercinum*, Rudolph, for which I am indebted to Dr. Montagne. That species, however, originates beneath the cuticle, while this is, I believe, entirely superficial. The ramification is different, the tips of the branches being dilated in a flabellate form. The stroma, also, consists of approximated threads, not of an irregular cellular membrane. This structure is almost identical with that of *Myrionema punctiforme*, Harv., except that the filaments are there much branched, which I do not find to be the case here.

This species is accompanied with another in a very imperfect state, and which may be a species of *Dothidea*.

Plate LXVIII. *Fig.* VII.—1, leaf of *Panax*, with fungus, of the *natural size*; 2, portion of the same, *magnified*; 3, filaments, *very highly magnified*.

8. HYSTERIUM, *Tod.*

1. Hysterium *breve*, Berk.; peritheciis brevibus ellipticis nigris prominulis, rima angustissima, ascis linearibus elongatis. (Tab. LXVIII. Fig. VIII.)

Hab. Campbell's Island; on the dead leaves of *Uncinia Hookeri*, Boott.

Perithecia minuta, nigra, nitida, prominula, breviter elliptica, raro utrinque apiculata, rima angustissima. *Asci* elongati, lineares, paraphysibus filiformibus rectiusculis immixti, sporidiis filiformibus.

This species is manifestly different from the small form of *H. culmigenum*, and the nature of the asci and paraphyses are further distinct, being in the latter plant shorter and of a different form, with the apices of the paraphyses curved or curled. The apiculate extremities may not prove to be a constant character, though the probability is that it will, at least in full grown specimens.

Plate LXVIII. *Fig.* VIII.—1, leaf and fungus of the *natural size*; 2, portion of the same; 3, perithecium shewing the contained asci; 4, ascus; all more or less *magnified*.

9. AYLOGRAPHUM, *Libert.*

1. Aylographum *Bromi*, Berk.; peritheciis simplicibus filis arachnoideis comitatis, sporidiis oblongis uniseptatis medio constrictis. (Tab. LXVIII. Fig. IX.)

Hab. Lord Auckland's group; on the leaves of *Bromus antarcticus*.

Mycelium arachnoideum, fuscum, quandoque abundantius et sterile, in maculis autem fertilibus parcum. *Perithecia* minima, oblonga, brevia, recta v. curvata, simplicia, atra, nitida. *Asci* brevissimi, obovati, tenerrimi. *Sporæ* octonæ, oblongo-ellipticæ, medio constrictæ, uniseptatæ.

The species of this genus, which has principally been investigated by Madame Libert, resemble extremely minute *Opegraphæ*. The present individual approaches the *A. junceum*, but differs from it and from all others by the septate sporidia. The perithecium easily breaks up into its elemental cells, and such I find to be also the case with some of Madame Libert's species; while, in others, the cellular structure is more permanent and forms a beautiful microscopic object.

Plate LXVIII. *Fig.* IX.—1, a portion of leaf and fungus, of the *natural size*; 2, perithecium, *magnified*, showing the contained asci; 3, ascus; and 4, sporidia:—*highly magnified*.

10. ANTENNARIA, *Link.*

1. Antennaria *scoriadea*, Berk.; spongiosa, floccis fasciculatis sursum lateraliter connexis, peridiis subellipticis irregularibus. (Tab. LXVII. Fig. III.)

Hab. Lord Auckland's group and Campbell's Island; on the branches and twigs of several shrubs and trees, but especially of *Dracophyllum longifolium*.

Spongiosa, ramos incrustans. *Flocci* $\frac{1}{4}$–$\frac{1}{2}$ unc. longi, fasciculati, superne processibus brevibus lateralibus more *Zygnematis* connexi, subtus e membrana reticulata vel mycelio repente nascenti, filamentis tenuioribus immixti, erecti, irregulariter ramosi. *Articuli* moniliformes vel præsertim in filamentis ultimis continui, læves, nucleo globoso solitario. *Perithecia* subelliptica, irregularia.

A very singular substance, which must strike the traveller through the woods especially of New Zealand or of Lord Auckland's group, in both which localities it is very abundant, resembling charcoal, and sometimes so widely diffused that the branches look as if burnt. The colonists of the former islands call it "the black moss." Distinguished from *A. pannosa* and *A. Robinsonii* by its long fasciculate threads, giving it exactly the habit of *Scorias spongiosa*. The finest specimens have a rigid bristly appearance, quite different from that of any other species of the genus. This has been also gathered in Valparaiso by Mr. Bridges, and at the Swan River by Mr. Drummond. I have not been able to trace the developement of the peridia in the Auckland Island specimens, but it would appear that, as in *M. Robinsonii*, M. and B., they arise either from a swollen articulation or from a process given off by an articulation, in either case they are dependent on a simple metamorphosis of the latter.

Plate LXVII. *Fig.* III.—1, a plant of the *natural size*; 2, flocci from the base of the tufts, with a portion of the cellular matrix; 3, flocci from the summits of the tufts, laterally aggregated; 4, sporangia; 5, portions of the filaments in various states:—*all more or less highly magnified.*

11. SCLEROTIUM, *Tod.*

1. Sclerotium *durum*, Pers. *Synops. Fung.* p. 121.

Hab. Lord Auckland's group; on the capsules of *Gentiana concinna*.

This production is enumerated here because it has hitherto appeared in the works of Mycologists, but I am decidedly of Léveille's opinion that it should be expunged.

XXXVI. ALGÆ, *L.*

By W. H. Harvey, Esq., M.D., and J. D. Hooker.

1. MARGINARIA, *A. Rich.*

Radix ramosa. *Frons* plana, linearis, sursum flabellato-pinnata; pinnis coriaceo-membranaceis, spinuloso-dentatis, enerviis, dichotome fissis; margine superiore vesiculas petiolatas receptaculaque gerente. *Conceptacula* receptaculis semi-immersa, globosa, poro pertusa. "*Sporæ* magnæ, obovato-pyriformes, perisporio initio inclusæ, mox nudæ, e cellulis parietalibus oriundæ, paraphysibus immixtæ, in *M. Boryana* vero e morphosi ultimi articuli filorum ut videtur ortæ, forsan hinc minutæ et tantum ut gemmæ habendæ."—*Mont.*

Obs. The genera *Marginaria*, A. Rich., *Carpophyllum*, Grev., *Scytothalia*, Grev., and *Seirococcus*, Grev., are all very closely related to each other, and to *Sargassum*. From the latter they differ more by possessing a frondose, imperfectly leafy mode of growth, than by any very decided structural character; and habit alone will scarcely separate some of them from the decurrent species of that genus, *S. decurrens*, *Peronii*, *Boryi*, &c. These last have

lately been erected into a distinct genus, by Kützing, under the name of *Pterocaulon*, and on grounds equally valid with those which separate some of the above groups. *Seirococcus* was distinguished from *Scytothalia* by Dr. Greville, by having moniliform instead of oblong or lanceolate receptacles; but the genera have been reunited by Montagne, who has added a new species (*Scyt. Jacquinotii*), and this last approximates so closely to *Marginaria*, as to reduce the clearly appreciable differences between *Scytothalia*, Mont., and *Marginaria*, to the former having entire and the latter spinuloso-dentate margins,—a circumstance of very minor importance, and perhaps of specific value only. *Carpophyllum* may be distinguished by the position of its vesicles and the clustering of its receptacles from *Fucus*; on the other hand it approaches *Sargassum* through *S. Boryi*, Ag. *Marginaria* contains but two species, of which Kützing in his late work constitutes as many genera. A. Richard, on the contrary, struck with the slight characters on which he had established *Marginaria*, afterwards combined it with *Sargassum*.

The paraphyses, so carefully described by Montagne in the generic character as occuring mixed with the spores, answer well to the antheridia observed lately by MM. Decaisne and Thuret in *Fucus*, whence this species would be regarded by these authors as hermaphrodite.

1. Marginaria *Urvilleana*, A. Rich.; *Montagne Prodr. Phycear. in itin. ad Polum Antarct.* p. 10. *Voy. au Pole Sud, Bot. Crypt.* p. 60. t. 3. f. 1. *A. Rich. Fl. Nov. Zel.* p. 10. t. 3. Sargassum Urvilleanum, *A. Rich. Sert. Astrolab.* p. 138. *A. Cunn. in Hook. Comp. to Bot. Mag.* vol. ii. p. 327.

Hab. Lord Auckland's group; very abundant in shallow water.

Pinnæ 12–18 unc. longæ, $\frac{3}{4}$–1 unc. latæ, coriaceo-membranaceæ, nigro-fuscæ, planæ, læves, enerves, argute serratæ, obtusæ, basi sensim attenuatæ, subpetiolatæ, irregulariter dichotome fissæ, ramis superioribus plerumque simplicibus, inferioribus divisis, sinubus angustis rotundatis, laciniis erecto-patentibus. *Vesiculæ* sphæricæ, 4–8 lin. latæ, muticæ, petiolo inconspicuo plano 1 lin. longo suffultæ, margine pinnularum superiori affixæ. *Receptacula* breviter pedunculata, 2–3 lin. longa, ad basin frondis secus marginem superiorem in serie elongata inserta, divaricata, lanceolata, obtusa, compressa, torulosa. *Conceptacula* globosa, receptaculis immersa, demum plus minusve convexa, poro pertusa. *Sporæ* exemplaribus nostris immaturæ.

Dr. Montagne enumerates *Blossevillea retorta*, Mont., and *B. retroflexa*, Kütz., as natives of Lord Auckland's group, and also the *Carpophyllum macrophyllum*, Mont.

2. D'URVILLEA, *Bory*.

1. D'Urvillea *utilis*, Bory *in Duperrey Voy. Bot. Crypt.* p. 65. t. 1 and 2. f. 2. *D'Urville, Fl. Ins. Mal. in Mém. Soc. Linn. Paris*, vol. iv. p. 594. *Montagne, Crypt. Boliv.* et in *Voy. au Pole Sud, Bot. Crypt.* p. 23. *Decaisne in Archiv. Mus.* vol. iv. p. 153. t. 5. f. 1–6. *Postels et Ruppr., Illust. Alg.* t. 1. Fucus antarcticus, *Chamisso in Choris, Voy. Pittor.* t. 7.

Hab. Lord Auckland's group and Campbell's Island, and in the open sea for ten degrees southward of these groups.

The distribution of this species will be considered with that of the genus *Macrocystis* in the second portion of the *Flora Antarctica*.

3. XIPHOPHORA, *Mont.*

Frons olivacea, linearis, compresso-plana, coriacea, dichotome ramosa. *Vesiculæ* nullæ. *Conceptacula* per totam frondem sparsa, ramis immersa, tuberculiformia, poro pertusa, intus naturæ diversæ; *altera* sporas obovatas, nigro-fuscas, demum quadripartitas, limbo hyalino cinctas, parietibus affixas, sessiles; *altera* fasciculos filorum ramosorum, articulatorum, apicibus turgidis et demum in corpuscula granulis repleta (*antheridia* vel *gemmas*) mutatos foventia.

We fully agree with our excellent friend Montagne in the propriety of establishing the present genus, and

for the several reasons adduced by him in his memoir, in the '*Annales des Sciences Naturelles*,' Oct. 1842. He must allow us, however, to claim for La Billardière, not only the discovery of the plant, but that of its fruit also; for, though the description of that author be imperfect, there can exist no doubt that the tubercles immersed in the frond, which he notices, are what we now know to be fructification. We further enter our protest against the system of changing the specific name from *gladiatus*, which is quite unexceptionable, to *Billardieri*. In the general character we have described the spores as finally divided into four, more or less unequal parts, when they resemble the tetraspores of several *Florideæ*, which doubtless, as demonstrated by M. Decaisne and Thuret in other *Fucaceæ*, form together but a single spore. Young, and even nearly mature, seeds exhibit no traces of this internal division; while those that are fully grown and have assumed a dark colour, are divided by very clear lines and even spaces. "With regard to other organs in the *Fucaceæ*, which M. Montagne calls gemmæ or acrosperms, we incline to consider them analogous to what are termed antheridia in some other families." *

1. Xiphophora *Billardieri*, Mont. *Prodr. Nov. Phyc. in itin. ad Polum Antarct.* p. 12. *Voy. au Pole Sud, Bot. Crypt.* p. 55. t. 7. f. 1. Fucus gladiatus, *Labill. Pl. Nov. Holl.* II. p. 3. t. 256. *Encycl. Meth. Bot. Suppl.* V. p. 439. *Lamouroux in Mem. du Mus. d'Hist. Nat.* XX. p. 36. *Turner, Hist. Fuc.* t. 240. *Berkeley in Ann. Nat. Hist. for* 1843, p. 57. Ctenodus, *Kützing*. (Tab. LXIX. Fig. III.)

Hab. Lord Auckland's group; on rocks in the sea, very abundant.

Conceptacula per totam frondis longitudinem præcipue apicem versus sparsa, immersa, tuberculiformia, leviter convexa, poro pertusa, externe consimilia, interne nucleis diversis instructa. *Altera* sporas obovatas v. pyriformes. *Sporæ* magnæ, sessiles, e cellulis parietalibus ortæ, perisporio hyalino circumdatæ, nucleo primum simplici demum quadripartito nigro-fusco donatæ, cum paraphysibus simplicibus articulatis filiformibus achromaticis commixtæ. *Altera* contra filis ramosissimis tenuibus hyalinis articulatis farciuntur, quorum externi turgidi materie granulosa repleta evadunt.

Plate LXIX. *Fig.* III.—Divided spores of *Xiphophora* (called erroneously tetraspores on the plate).

4. LAMINARIA, *Ag.*

1. Laminaria, (sp.)?

Hab. Campbell's Island. (*Dr. Lyall.*)

A fragment of a young frond, too imperfect for description or determination of the species.

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* The remark in inverted commas was made by Dr. Harvey.—The division of the spores of *Fucaceæ* was observed while examining the *D'Urvillea utilis* in a fresh state, when they were considered as tetraspores, and again by Dr. Montagne and by myself, in dried specimens of *Xiphophora*. More recently, and since the above was written, the interesting paper of MM. Decaisne and Thuret has appeared, in the '*Annales des Sc. Nat.*' (Series 3. vol. iii. p. 1.) It is there shown that this structure exists in five species of *Fucus* abundant on our shores; *F. nodosus*, *serratus*, *vesiculosus*, *canaliculatus* and *tuberculatus*: also in *Himanthalia*, which I have elsewhere allied to *D'Urvillea* (London Journ. of Botany, vol. ii. p. 325), and the mode of division in the original spores is excellently followed and illustrated, as also their germination, a most important point. I cannot omit here an allusion to two of the most remarkable recent discoveries in modern Botanical Science, made by those observers, and published in the same paper:—that of organs, in every respect analogous to the antheridia of mosses (of whose nature my coadjutor, Mr. Harvey, had formed the same idea), existing in all the above-mentioned *Fuci*; and these antheridia being wholly filled, before bursting, with bodies endowed with rapid motion and apparent volition, and which, though thus proved to be truly of vegetable origin, have hitherto been ranked in the animal kingdom. I am indebted to the friendship of M. Decaisne for a demonstration of these curious phenomena in living *Algæ*, and for the original drawings from which the plates that accompany his interesting paper in the '*Annales*' are executed.—J. D. H.

5. MACROCYSTIS, *Ag.*

1. Macrocystis *pyrifera*, Agardh, *Sp.* vol. i. p. 47. *Nov. Act. Nat. Cur.* vol. xix. p. 297. t. 26. f. 1.

Hab. Lord Auckland's group, Campbell's Island, and in the open sea to the south as far as the 65th degree.

The observations on this genus and its distribution, are reserved for the Cryptogamic portion of the other Antarctic Islands.

6. DESMARESTIA, *Lamour.*

1. Desmarestia *viridis*, Lamour.; fronde cartilaginea basi subcompressa, supra cylindracea decomposito-pinnata, pinnis pinnulisque exacte oppositis filiformibus ultimis capillaribus. D. viridis, *Lamour. in Ann. Mus.* xx. 25. *Endl. Gen. Pl. Suppl.* vol. iii. p. 28. *Kütz. Phyc. Gen.* p. 344. Dichloria viridis, *Grev. Alg. Brit.* p. 36. t. 6. Sporochnus viridis, *Ag. Spec. Alg.* vol. i. p. 154. *Syst.* p. 259. Fucus viridis, *Fl. Dan.* t. 886. *Turn. Hist. Fuc.* t. 97. *Engl. Bot.* t. 1669.

Hab. Lord Auckland's group. (*Dr. Lyall.*)

We defer our remarks on this plant, and on the genus *Desmarestia* in general, to a future portion of this work. The present species was found abundantly at Christmas Harbour in Kerguelen's Land, Berkeley Sound, and Port William in the Falkland Islands, and at Cape Horn; and will, therefore, come more properly along with some new species into the flora of those regions.

7. DICTYOSIPHON, *Grev.*

Obs. The following species differs in some points from this genus, being of a thicker substance and denser structure, and with the walls composed of a greater number of rows of cells, which are themselves very much smaller. The surface of the frond is, therefore, not in the least reticulated. Still the fructification is so identical with that of *Dictyosiphon*, that we are unwilling to separate it, especially since the habit is not dissimilar.

1. Dictyosiphon? *fasciculatus*, Hook. fil. et Harv.; caule filiformi subindiviso, ramis abbreviatis pluries ramosis quadrifariis raro oppositis sæpissime fasciculatis alternis vel secundis omnibus ramulisque basi attenuatis acutis, sporis densissime per ramulos sparsis semi-immersis. (Tab. LXIX. Fig. I.)

Hab. Lord Auckland's group; on rocks in the sea.

Radix pusilla? *Frondes* circumscriptione lanceolatæ, cæspitosæ, 4–8 unc. longæ, fusco-olivaceæ, membranaceæ, vix coriaceæ, cylindraceæ, v. subcompressæ, primo filis articulatis laxe repletæ, mox tubulosæ et cavæ, e cellulis minutis coloratis rotundis 3–4 serialibus interioribus majoribus formatæ. *Caulis* indivisus vel basi in ramos elongatos simplices partitus, inferne setaceus, supra sensim latior, medio $\frac{1}{2}$–1 lin. latus, apicem versus attenuatus, per totam longitudinem ramis plurimis patentibus vestitus. *Rami* breves, 1–2 unc. longi, nunc brevissimi, utrinque attenuati, irregulariter inserti, nunc quadrifarii, nunc subdistichi, sæpissime fasciculati, alterni vel secundi, rarius oppositi; ramulis conformibus setaceis, gracilibus, erectis, alternis, oppositis v. fasciculatis, simplicibus, basi attenuatis apice subulatis. *Axillæ* acutæ. *Sporæ* olivaceæ v. nigræ, ovales, per totam frondem sparsæ, nec in soros aggregatæ, limbo tenui hyalino cinctæ, semi-immersæ, demum prominulæ.

A single specimen of this plant, which seems to be common in Lord Auckland's group, was picked up by Dr. Lyall in Berkeley Sound, Falkland Islands. It was more bushy than the Auckland Island specimen, with longer branches; the outline is ovate and not lanceolate; the main branches chiefly are crowded and fasciculate, the minor ones of the ramuli more frequently distichous, often opposite and rather patent. In fact, part of the plant exhibits the bushy aspect of *Dictyosiphon* and part resembles *Striaria*; the scattered fruit distinguishing it from the latter genus.

Plate LXIX. *Fig.* I.—1, a specimen of the *natural size*; 2, branch; 3, section of ditto;—*magnified.*

8. CHORDA, *Stackh.*

Frons tubulosa, filiformis, simplex, intus transversim septata, extus filis minutis clavatis horizontalibus omnino velata. *Fructus*: *sporæ* pyriformes filis periphericis immersæ.

1. Chorda *lomentaria*, Lyngb., *Hydr. Dan.* p. 74. t. 18. *Grev. Alg. Brit.* p. 48. *Hook. Br. Fl.* vol. ii. p. 276. *Harv. Br. Alg.* p. 35. *Wyatt, Alg. Danm.* no. 6. Scytosiphon Filum, var. γ. *Ag. Sp. Alg.* vol. i. p. 162. *Ag. Syst.* p. 257. C. rimosa, *Mont.*? *Prod. Phyc. Antarct.* p. 12. *Voy. au Pole Sud, Bot. Crypt.* p. 44.

Hab. Lord Auckland's group; on rocks in the sea.

Radix scutata. *Frons* (in exemplaribus Aucklandicis) pedalis, 2 lin. lata, basi tenuissima, longe setaceo-filiformis, sursum sensim latior, apicem versus subattenuata vel acuminata, remote septata, constricta, interdum subcontinua et æqualis. *Color* sordide badius v. fusco-olivaceus. *Superficies tota* filis clavatis minutissimis sporis immixtis velata.—Chartæ arcte adhæret.

These specimens differ slightly from the European form of the species, in having the constrictions less obvious and at much wider intervals. In some individuals scarcely any constriction occurs, and then it is not easy at first sight to distinguish them from a common state of *Asperococcus echinatus*. In others, again, they are evident, and microscopical examination proves that they do not belong to *Asperococcus*. At the Falkland Islands this plant was also found, and the specimens from that locality are identical with the common European appearance.

9. ADENOCYSTIS, *Hook. fil. et Harv.*

Radix scutata. *Frons* membranacea, saccata, intus cava, aqua repleta, foveis convexis opacis fila arachnoidea emittentibus conspersa, filis minutis clavatis omnino velata. *Fructus*: *sporæ* pyriformes filis periphericis immersæ.

Obs. This genus differs from *Asperococcus* in having its fructification spread over the entire surface, as in *Chorda*, and not confined to distinct sori; and from the latter in being destitute of septa, and in possessing innumerable pale depressions, composed of radiating filaments with very short coloured joints, emitting from their apices tufts of colourless, long, jointed, byssoid fibres. These appear afterwards to fall away, leaving depressions and often punctures of the membrane in their place. The tufts of arachnoid fibres do not expand well after having been dried, though they may always be found in the damaged state, by carefully scraping away the surface of the frond.

1. Adenocystis *Lessoni*, Hook. fil. et Harv.; Asperococcus Lessoni, *Bory, in Duperrey Voy.* p. 199. t. 11. f. 2. *Grev. Syn.* p. xlii. *Endl. Gen. Supp.* vol. iii. p. 26. (Tab. LXIX. Fig. II.)

Hab. Lord Auckland's group; on rocks left by the tide, abundant.

Radix scutata, exigua. *Frondes* 1½ unc. longæ, ½ latæ, cæspitosæ, e stipite setaceo-filiformi 1 lin. longo ortæ, ellipticæ vel obovatæ, inflatæ, aqua semper repletæ, obtusissimæ, membranaceæ, vix reticulatæ, cellulis minutissimis constitutæ, glandulis superficiariis v. subimmersis convexis dense conspersæ. *Glandulæ* hemisphæricæ, e filis minutis radiantibus brevissime articulatis atro-fuscis formatæ, fibrillas penicillatas longe articulatas hyalinas arachnoideas apice gerentes, demum concavæ. *Superficies frondis* filis coloratis (endochromaticis) minutissime clavatis erectis in strato tenuissimo connexis induta. *Sporæ* obovatæ, nigro-fuscæ, limbo hyalino cinctæ, per totam frondem sparsæ, filis periphericis immersæ, sessiles. *Color* fusco-olivaceus, sordidus. *Substantia* mollis.—Chartæ adhæret.

Our plant strongly resembles the *Fucus saccatus* of Turner, (*Dumontia saccata*), especially specimens from Nootka Sound; a close microscopic examination being necessary to distinguish them. Possibly the plant, alluded to by Turner, in his description of *F. saccatus*, as having been sent to him from New Holland by Mr. Brown, and

which that author regarded as a species of *Asperococcus*, may be identical with the present, it being very abundant throughout the Antarctic Islands, even so far as 64° south, where it inhabits the Icy Sea.

Plate LXIX. *Fig.* II.—1, a portion of the frond, in an old state, exhibiting a depression from which the filaments are given off; 2, 3, and 4, spores which cover the whole surface of the frond; 5, full formed spore:—all highly *magnified*.

10. ASPEROCOCCUS, *Lamour.*

1. Asperococcus *echinatus*, Grev., *Alg. Brit.* p. 49. t. 9. A. rugosus, *Lamour. Essai*, p. 62. Encœlium echinatum, *Ag. Sp. Alg.* vol. i. p. 145.

Hab. Lord Auckland's group; on rocks in the sea, very common.

11. CHORDARIA, *Agardh.*

1. Chordaria *flagelliformis*; Ag. *Sp. Alg.* vol. i. p. 166. *Syst.* p. 256. *Lyngb. Hydr. Dan.* t. 13. *Hook. Br. Fl.* vol. ii. p. 275. *Grev. Alg. Brit.* p. 45. t. 7. *Harv. Man.* p. 45. *Wyatt, Alg. Danm.* no. 57. Fucus flagelliformis, *Turner, Hist. Fuc.* t. 85. *Engl. Bot.* t. 1222.

Hab. Campbell's Island. (*Dr. Lyall.*)

Apparently identical with the British plant.

12. SPHACELARIA, *Lyngb.*

1. Sphacelaria *funicularis*, Mont.; fronde basi stuposa in ramis paucis crassis ramulis densissime vestitis apice flabellatim partitis divisa, ramis ultimis fasciculatis elongatis fastigiatis circumscriptione obovatis ramulis elongatis articulatis dichotome pinnatis obsessis. S. funicularis, *Mont. Prodr. Phyc., &c.*, p. 13. *Voy. au Pole Sud, Bot. Crypt.* p. 38. t. 14. f. 1.

Hab. Lord Auckland's group; on rocks left by the tide, very abundant.

Radix magna, filis brunneis ramosis intricatis vel stupa obtecta. *Caulis* 3–4 unc. longus, 1 lin. diam. subdichotome in ramos paucos divisus, totus densissime ramulis quadrifariis abbreviatis pinnulatis vestitus. *Rami* apice flabellatim fastigiati; minores graciles, erecti, simplices, ramulis dimorphis quadrifariis obsiti, aliis abbreviatis subappressis simplicibus subulatis, alteris elongatis dichotome pinnatis, pinnulis alterne furcatis vel sub-bipinnatis, pinnis pinnulisque elongatis remotis. *Apices* nunc acuti, nunc sphacelati, massam sporarum includentes. *Color* olivaceus. *Substantia* rigida, dura.

Nearly allied to *S. scoparia*, Lyngb.

12. RHODOMELA, *Ag.*

1. Rhodomela *glomerulata*, Mont.; "fronde tereti filiformi siccitate longitrorsum striata ramosissima, ramis circumscriptione corymbosis iterum ramosis, ramentis lateralibus simplicibus aut bifidis corniformibus fasciculum sessilem stichidiorum oblongorum vel ovato-lanceolatorum sinu foventibus." *Mont. Prodr. Phyc. Antarct.* p. 4. *Voy. au Pole Sud, Bot. Crypt.* p. 141.

Hab. Lord Auckland's group. (*Admiral D'Urville.*)

The *R. Gaimardi*, Gaud.? of Montagne is certainly our *Polysiphonia botryocarpa*.

13. POLYZONIA, *Suhr.*

1. Polyzonia *cuneifolia*, Mont.; surculo articulato polysiphonio repente, caulibus erectis filiformibus

articulatis alternatim ramosissimis, ramis ramulisque patentibus simplicibus elongatis, foliis distichis breve petiolatis trapeziformibus basi cuneatis apice abrupte truncatis, margine inferiore integerrimo superiore inciso-dentato v. lobato, stichidiis spicatis supra-axillaribus lanceolatis dentatis, ceramidiis axillaribus sessilibus solitariis ovatis v. suburceolatis. P. cuneifolia, *Mont. Prodr. Phyc. Antarct.* p. 4. *Voy. au Pole Sud, Bot. Crypt.* p. 143. (Tab. LXXVI.)

Hab. Lord Auckland's group and Campbell's Island; abundant on the stems of the larger *Algæ*.

Frondes primordiales repentes, caulibus *algarum* radicibus disciformibus seriatim affixæ, multistriatæ, foliis distichis ornatæ. *Caules* e surculis repentibus orti, erecti, setacei, 4–5 unc. longi, distiche foliosi, articulati, indivisi; ramis plurimis, patentibus, elongatis, simplicibus, distiche alternis vel secundis; ramulis conformibus, alternis v. secundis. *Folia* patentia, disticha, 1. lin. longa, breve petiolata, sæpissime trapezoidea, rarius subrotundata, apice truncata, basi late cuneata v. deltoidea; margine inferiore stricto, integerrimo, superiore lacero-dentato, v. 4–5-lobato, lobis serratis. *Ceramidia* ovato-urceolata, in sinu folii profunde fissi sessilia, sporarum fasciculum pyriforme foventia. *Stichidia* in spicis supra-axillaribus foliosis (v. bracteatis) ordinata, sessilia, lanceolata, dentata, sphærosporarum seriem solitariam includentia. *Sphærosporæ* magnæ, atro-rubescentes. *Color* amæne roseus, siccitate vix et ne vix nigricans. *Substantia* membranacea.—Chartæ laxe adhæret.

Most of the numerous specimens of this truly beautiful plant are covered with fructification, chiefly stichidia, the ceramidia being, as is the case with many of the *Rhodomeleæ*, much more rarely produced.

Plate LXXVI. *Fig.* 1, a leaf; 2, a branch bearing stichidia; 3, a stichidium; 4, a branch with ceramidia; 5, a ceramidium; 6, spores from the same:—*magnified.*

14. POLYSIPHONIA, *Grev.*

1. Polysiphonia *botryocarpa*, Hook. fil. et Harv.; caule inarticulato valido elongato flexuoso, ramis alterne ramosissimis, ramulis erecto-patentibus alternis secundis sensim attenuatis ultimis subulatis articulatis, articulis multistriatis diametro æquantibus, capsulis minutissimis ovatis in glomerulis parvis pedicellatis densissime congestis, stichidiis seriatim affixis lanceolatis. Rhodom. Gaimardi, *Gaud.? Montagne, Voy. au Pole Sud, Bot. Crypt.* p. 140. (Tab. LXX.)

Var. *α*, *crassior*; caule alternatim et angulatim flexuoso, ramulis crebrioribus.

Var. *β*, *tenuior*; caule curvato, ramulis elongatis minus divisis.

Hab. Lord Auckland's group; both varieties abundant on the roots of large *Algæ*, &c.

Radix scutella parva, fibris suppeditata. *Caulis* 8–14 unc. longus, basi ½ lin. diam. sursum attenuatus, cartilagineus, opacus, venis anastomosantibus reticulatus, alternatim flexuosus, nunc geniculatus, nunc curvatus v. alterne arcuatus, subsimplex vel e basi parce divisus. *Rami* alterni, cauli conformes, inter se circumscriptione late ovati, plus minusve decompositi, alterne v. secunde partiti, non vere dichotomi. *Ramuli ultimi* alterni v. dichotomi, subulati, erecti v. erecto-patentes, simplices, articulati, articulis 4–5-striatis, diametro æquantibus. *Siphones* in ramis majoribus septem principales tubulum centralem angustum radiatim cingentes, cellulis irregularibus peripheriam versus sensim minoribus circumdati. *Color* atro-rubescens. *Ceramidia* minutissima, ovata, in glomerulis perpusillis subterminalibus lateralibus v. axillaribus aggregata, in quoque glomerulo numerosissima, pedicellata, sporarum pyriformium fasciculum includentia. *Stichidia* ramulis ultimis seriatim affixa, remotiuscula, sphærosporas majusculas angulatas pluriseriatas includentia:—Chartæ laxe adhæret.

This species is of so large a size, such considerable diameter of filament, is so opaque and withal exhibits such slight external appearance of articulation, that it seems at first sight, to possess considerable affinity with *Rhodomela*, and further bears a strong resemblance to *R. subfusca*, which it exceeds in size, while agreeing with it in ramification. A careful examination, however, induces us to place it in *Polysiphonia*, and in the section to which *P. fruticulosa*

belongs. The internal structure of the stem is similar to that of *P. fruticulosa*, but there are fewer radiating fibres, and is quite unlike that of *Rhod. subfusca*. There are two varieties, one more robust, flexuous and densely branched than the other; but they do not appear specifically distinct. Both bear capsular fruit, of a peculiarly clustered character, different from that of any other *Polysiphonia*, and we regard it as the principal distinction on which the species rests. The capsules are farther remarkable for their minuteness in proportion to the plant producing them. Their number, however, compensates for size, thirty or forty occupying a space not greater than that of a capsule of the dimensions usual in this genus.

Plate LXX. *Fig.* 1, portion of a stem of the *natural size*; 2, branch and ceramidia; 3, ceramidium; 4, longitudinal section of the same; 5, spores; 6, branch and stichidia; 7, stichidium; 8, sphærospores:—*magnified.*

2. Polysiphonia *Lyallii*, Hook. fil. et Harv.; caule cartilagineo setaceo inarticulato alterne vel vage ramoso, ramis elongatis simplicibus inarticulatis ramulis brevibus articulatis quadrifariis multifidis densissime vestitis, ramulorum articulis diametro æqualibus 3–5 venosis. (Tab. LXXIV. Fig. I.)

Hab. Lord Auckland's group. (*Dr. Lyall.*)

Caulis erectus, 4–5 unc. longus, validus, simplex v. basi divisus; ramis paucis, elongatis, alternis v. secundis, simplicibus; caulis et rami inarticulati, densissime e basi ad apicem ramulis brevibus 1 lin. longis obsiti. *Ramuli* articulati, quadrifarii, patentissimi irregulariter multifidi, nunc fere dichotomi, alterne v. secunde partiti; ultimi subulati, acuti, patentes v. recurvi. *Articuli* 3–5-striati, diametro subæquales v. vix longiores. *Color* intense fusco-ruber. *Fructus* .... ? *Siphones* in ramis majoribus quatuor, magni, tubulum centralem angustum cruciatim cingentes, cellulis irregularibus peripheriam versus sensim minoribus circumdati.

We have much pleasure in naming this very distinctly marked and beautiful species after its discoverer, Dr. Lyall.

Plate LXXIV. *Fig.* I.—1, plant of the *natural size*; 2, branch; 3, portion of stem; 4, ditto of branch:—*magnified.*

3. Polysiphonia *dumosa*, Hook. fil. et Harv.; caule erecto rigido flabellatim ramoso inarticulato, ramis patentibus alternis v. subdichotomis elongatis, ramulis distantibus æqualibus brevibus patentissimis subdistichis laxe pinnatis subulatis, articulis ramulorum brevissimis. (Tab. LXXV. Fig. I.)

Hab. Campbell's Island; parasitic on the stems of large *Algæ*.

Caules cæspitosi, 1–3 unc. longi, erecti, cylindracei, basi simplices, sursum flabellatim ramosi v. irregulariter dichotome v. alterne divisi. *Rami* simplices v. divisi, per totam longitudinem ramulis 1–2 lin. longis, horizontali-patentibus subdistichis laxe pinnatis obsiti. *Pinnulæ* patentes, subulatæ, acutæ, strictæ, curvatæ v. tortæ. *Articuli* in ramulis tantum manifesti, brevissimi, 3–5-striati. *Siphones* ramulini quatuor, magni, tubulum centralem angustum cruciatim cingentes, cellulis irregularibus peripheriam versus sensim minoribus circumdati. *Color* badius, apices versus fusco-ruber. *Substantia* rigida.—Chartæ vix adhæret.

Allied to *P. Lyallii*, but much smaller in all its parts; of a duller colour and more rigid substance, differently branched and with less dense ramuli, which are nearly, though not strictly, distichous. In aspect, it somewhat resembles *P. ceratoclada*, though quite unlike that species in internal structure.

Plate LXXV. *Fig.* I.—1, portion of a branch; 2, stem and branch; 3, section of stem:—*magnified.*

4. Polysiphonia *punicea*, Mont.; punicea, caule vage ramoso articulato setaceo flexuoso, ramis alternis v. secundis subremotis, ramulis alternis remotiusculis flabellato-dichotomis abbreviatis patentissimis ultimis subulatis recurvis, articulis ramorum diametro 3–4-plo longioribus 3–5-venosis ramulorum subquadratis biveniis pellucidis apicibus acutis, "capsulis subsessilibus ovato-acuminatis" (Mont.), stichidiis lanceolatis sphærosporas pluriseriatas includentibus, ceramidiis sessilibus solitariis urceolatis, ore contracto porrecto. P. punicea, *Mont. Prodr. Phyc. Antarct.* p. 6. *Voy. au Pole Sud, Bot. Crypt.* p. 128. t. 5. f. 3.

Hab. Lord Auckland's group; on the roots and stems of sea-weeds.

Caulis 4–8 unc. longus, setam porcinam diam. æquans, sursum attenuatus, subangulatim flexuosus, vage ramosus, nunc subsimplex, ramis lateralibus instructus, nunc e parte inferiore subdichotome divisus, articulatus, *Rami* inferiores longiores, superiores sensim abbreviati, simplices v. ramosi, patentes v. divaricati; ramulis abbreviatis, flabellatis, dichotomis, patentissimis, laxe quadrifariam insertis, ultimis subulatis divaricatis v. recurvis. *Articuli* caulis et ramorum majorum diam. 3–4-plo longiores, 4–5-striati, medio pellucide coccinei v. punicei, ad geniculos cellulis minutis superficialibus donati hinc opaci; ramulorum diam. vix longiores v. æquales, 2–3-striati. *Siphones* in ramis majoribus novem, tubulum centralem amplum radiatim cingentes, cellulis externis nullis; caules hinc sulcati. *Ceramidia* non visa. *Stichidia* lanceolata, sphærosporas magnas quadripartitas pluriseriatas includentia. *Substantia* tenera.—Chartæ adhæret.

Slightly variable in some minor characters, yet a distinctly marked and easily recognized species. Main branches irregular, being imperfectly dichotomous or having a simple stem furnished with lateral branches. The most striking specific character consists in the dichotomously multifid fan-like ramuli, which are set rather laxly along the branches. We have not seen ceramidia; several of our specimens produce stichidia, of the shape described by Montagne; but the sphærospores are in a double and occasionally a triple row, as in *Dasya*. In one individual, the ceramidia are replaced (by disease) with a cluster of sphærical bodies, forming a mass which resembles the favella of a *Callithamnion*, and, from which, fascicles of ramuli are given off in a proliferous manner. These call to mind the capsules of *P. botryocarpa*, and though their structure be very irregular, they suggest a doubt whether the remarkable fructification of the latter plant is not abnormal.

5. Polysiphonia *rudis*, Hook. fil. et Harv.; pusilla, filis cæspitosis rigidis tenacibus gracilibus subfastigiatis ramosis, ramis alternis apicem versus crebrioribus inferioribus filiformibus nudis elongatis superioribus basi nudis apice pinnatis, pinnulis subulatis elongatis erectis, articulis ramorum diametro 2–3-plo ramulorum sesqui-longioribus 3–4-striatis. (Tab. LXXIV. Fig. II.)

Hab. Lord Auckland's group; parasitic on larger *Algæ*.

Caules dense cæspitosi, e filis intertextis orti, 1–1½ unc. longi, siccitate rigidi, madore tenaces, atro-fusci, vix rubescentes, indivisi. *Rami* inferiores erecti, elongati, simplices, filiformes, nudi; superiores sensim breviores, apices versus breviores, inferne nudi, superne pinnati, pinnis subulatis erectis inferioribus longioribus, hinc ramulis corymbosis. *Circumscriptio* ramorum obovata. *Articuli* per totam plantam manifesti, ramorum diametro 2–3-plo longioribus pauci-striatis, ramulorum sesqui-longioribus.

Plate LXXIV. *Fig.* II.—1, a specimen of the *natural size*; 2, lower portion of branch and stichidia; 3, upper ditto; 4, a stichidium; 5, sphærospores:—*magnified.*

6. Polysiphonia *ceratoclada*, Mont.; filo primario repente, caulibus erectis compressis indivisis demum ramos alternos emittentibus, ramis ramulisque brevibus subulatis patentissimis v. recurvis vestitis, ceramidiis sessilibus ovatis suburceolatisve, articulis brevissimis. P. ceratoclada, *Mont. Prodr. Phyc. Ant.* p. 6. *Voy. au Pole Sud, Bot. Crypt.* p. 130. t. 5. f. 2. (Tab. LXXVI. Fig. II.)

Var. β, *secundata*; ramis incurvis, ramulis plerumque secundis.

Hab. Lord Auckland's group; both varieties generally parasitical on *Laurencia pinnatifida*.

Tota ramulis subulatis obsita. *Caules* e filis repentibus *Algas* alias infestantibus, erecti, 1–4 unc. alti, compressi, in exemplaribus minoribus simplices, in majoribus ramis alternis cauli similibus donati. *Ceramidia* solitaria, ovata, lateralia, sessilia. *Stichidia* subulata, attenuata, sphærosporas uniseriatas foventia. *Substantia* rigidula. *Color* fusco-ruber.—Chartæ laxe adhæret.

The habit of this plant is precisely that of a *Polyzonia*; Montagne's specimens are in a young state, in which

simple stems, destitute of branches, and merely clothed with patent subulate ramuli, rise from creeping filaments; such individuals are from $\frac{1}{2}$–1 inch high. But, when larger, lateral branches begin to be developed, in every respect similar to the main stem. In one specimen, $3\frac{1}{2}$ inches long, which alone is in fructification, the branches are 1–$1\frac{1}{2}$ inch in length. The variety β is a remarkable one, and possibly a distinct species, it is smaller and slenderer, with the branches much curved and the ramuli very generally secund.

Plate LXXVI. *Fig.* II.—1, portion of a branch; 2, the same with ceramidia; 3, section of stem; 4, ceramidium; 5, spores: *magnified.*

7. Polysiphonia *decipiens*, Mont.; "cæspitosa, fragilissima, filis cylindraceis subcontinuis fusco-nigris irregulariter virgato-ramosissimis, ramulis erectis, spinis subulatis spiraliter alternis strictis, articulis diametro multoties brevioribus ex siccatione collapsis 3–5-venosis; fructu .... ?" Mont. *Prodr. Phyc. Antarct.* p. 5. *Voy. au Pole Sud, Bot. Crypt.* p. 131.

Hab. Lord Auckland's group. (*Admiral D'Urville.*)

8. Polysiphonia *cladostephus*, Mont.; "filo primario articulato polysiphonio vage ramosissimo fusco-purpureo nigrescente, ramis conformibus e geniculis ramellos verticillatos dichotomos monosiphonios dense imbricatos emittentibus, fructu .... ?" Mont. *in Ann. des Sc. Nat.* (Nov. 1843), p. 39. *Voy. au Pole Sud, Bot. Crypt.* p. 132. t. 13. f. 4.

Hab. Lord Auckland's group. (*Admiral D'Urville.*)

Apparently nearly related to *P. byssoides*, Grev., and still more closely to *P. byssoclados*, Harv. (*Griffithsia australis*, Ag.)

15. JANIA, *Lamour.*

1. Jania *Hombronii*, Mont., *Voy. au Pole Sud, Bot. Crypt.* p. 146.

Hab. Lord Auckland's group; on rocks in the sea, abundant.

What we take for Montagne's plant much resembles the *Corallina officinalis*, L.; we are not, however, well versed in these vegetables, which have only recently been skilfully investigated by Decaisne.

16. LAURENCIA, *Lamour.*

1. Laurencia *pinnatifida*, Lamour.; var. γ, *angusta*. Fucus *Turn. Hist. Fuc.* vol. i. p. 40.

Hab. Lord Auckland's group; on rocks in the sea.

17. DELESSERIA, *Lamour.*

1. Delesseria *crassinervia*, Mont.; caule alato ramoso, foliis lineari-lanceolatis e costa valida proliferis, capsulis in costa sessilibus, soris sphærosporarum linearibus costæ parallelis. D. crassinervia, *Mont. Prodr. Phyc. Ant.* p. 1.

Hab. Lord Auckland's group and Campbell's Island.

We have some doubts as to the validity of this species, which differs from *D. Hypoglossum* only in the comparative breadth of its costa; a somewhat inconstant character, being, at times, excessively broad, covering nearly the whole lamina, at others, nearly, if not quite, as narrow as in *D. Hypoglossum*. These intermediate forms do not exist among our Campbell's Island individuals, but in those from the Falklands.

2. Delesseria *dichotoma*, Hook. fil. et Harv.; costa crassa dichotoma frondem cuneatam obtusam v. emarginatam demum bifido-laciniatam percurrente infra apicem evanida, frondibus e costa denudata orien-

tibus oblongis cuneatis rariusve elliptico-lanceolatis costa furcata, soris rotundatis maculatis, coccidiis costalibus v. sparsis. (Tab. LXXI. Fig. II.)

Hab. Lord Auckland's group and Campbell's Island. (*Dr. Lyall.*)

Frons junior, folium obovatum, obtusum v. emarginatum, demum bilobum; costa furcata, demum repetito-dichotoma, deorsum crassa, sursum attenuata, sub apicem evanida. *Frondes* adultæ *caulis* furcatus v. dichotomus, 2–3 unc. longus, setæ porcinæ crassitie, nudus v. interruptim alatus, superne in frondes cuneatas v. dichotomas abeuns; inferne denudatus v. frondibus novis primordiali conformibus sed angustioribus minusque cuneatis ornatus, hæ $1\frac{1}{2}$ unc. longæ, costis supra medium furcatis fructiferis. *Coccidia* in laminam rarius in costam sita, sphærica, sparsa, granulis cuneatis repleta. *Sori sphærosporarum* rotundati, supra laminam dispersi. *Substantia* membranacea. *Color* purpureo-roseus v. sanguineus.—Chartæ adhæret.

When fully grown, this species resembles a very broad and luxuriant state of *D. alata*, found in the north of Ireland, but differs essentially from it in its mode of growth. Judging by young specimens, it appears to originate in a broadly ovate or cuneate leaf, traversed by a forked, or, as the frond advances, repeatedly dichotomous midrib, which, though gradually evanescent, is obvious for nearly the whole length of the lamina, and thus differs from the imperfectly branching veins of the *Nitophylla*. In old and battered specimens, however, this character can only be detected in the young parts; in them, the costa of the first formed leaf becomes denuded, considerably thickened and converted into a dichotomous stem, irregularly winged in portions, and only preserving, on the upper part, the remains of its former character; while, all along its denuded portions, spring numerous new fronds, narrower than that which forms the principal one, and less cuneate, but in other respects similar.

Plate LXXI. *Fig.* II.—1, 2, and 3, specimens in different states, of the *natural size*; 4 and 5, coccidia; 6 and 7, sphærospores:—*magnified.*

18. NITOPHYLLUM, *Grev.*

1. Nitophyllum *crispatum*, Hook. fil. et Harv.; fronde basi nervosa cuneata latissime expansa v. oblonga dichotoma v. laciniata margine crispata, nervis ramosis, laciniis cuneatis apicibus axillisque obtusis, soris minutis rotundatis coccidiisque sparsis. (Tab. LXXI. Fig. I.)

Hab. Campbell's Island; dredged up in three fathoms water.

Two specimens, one with capsular, the other with granular fruit, we refer to this species. The capsuliferous specimen bears a very great resemblance to the north of Ireland variety of *N. laceratum*; the granuliferous, again, has more the oblong form of *N. punctatum*. Both agree in being traversed, especially in the lower part, with obscure dichotomous nerves, in having the margin crisped, and exhibiting a tendency to dichotomous division. The scattered granular fructification essentially distinguishes it from *N. laciniatum*, and the form and size of the spots, from *N. punctatum*.

Plate LXXI. *Fig.* I.—1, 2, and 3, specimens of the *natural size*; 4, coccidia; 5, sphærospores:—*magnified.*

2. Nitophyllum *punctatum*? Grev. *Alg. Brit.* p. 79. t. 12. *Agardh, Species Alg.* vol. i. p. 186. Aglaophyllum, *Montagne in Plant Cell. Canar.* p. 150.

Hab. Campbell's Island; with the former.

Decayed fragments, which appear to belong to this species, are all that were procured.

19. PLOCAMIUM, *Lyngb.*

Obs. The genera *Thamnophora* and *Plocamium* appear to differ in no respect from each other, and so perfectly

do they agree in habit, that plants regarded by the elder Agardh as varieties of *Pl. coccineum* (β and γ) are considered by his son as distinct species of *Thamnophora**.

1. Plocamium *coccineum*, Lyngb.; *Hydr. Dan.* p. 39. t. 9. *Grev. Alg. Brit.* p. 12. t. 98. *Hook. Brit. Fl.* vol. ii. p. 293. P. vulgare, *Lamour.* Pl. coccineum, fenestratum, Lyngbyanum, et Binderianum, *Kütz. Phyc. Gen.* p. 449 and 450.

Hab. Lord Auckland's group and Campbell's Island; abundant.

This is the only species of the genus found in the northern hemisphere and is apparently common, especially in all temperate regions of the globe.

20. RHODOMENIA, *Grev.*

1. Rhodomenia *Hombroniana*, Mont.; "fronde cartilagineo-membranacea plana e basi substipitata dichotoma pinnatifissa, pinnis ob axillas obtusas patenti-erectis obtusis, margine fimbriato seu ramenta dentata conceptaculifera emittente, conceptaculis hemisphericis papillula instructis." *Mont. Prodr. Phyc. Antarct.* p. 1. *Voy. au Pole Sud, Bot. Crypt.* p.157 . t. 1. f. 2. (Tab. LXXII. Fig. II.)

Hab. Lord Auckland's group; on the stems of large *Algæ*.

Our specimens of this plant are young, and as they differ from the more advanced state in form and in colour, we have added a figure; the colour in this state is of a beautiful red purple, sometimes inclining to violet. When fully developed, the species assumes the appearance represented by Dr. Montagne in the plate quoted above. We are indebted for magnificent specimens, collected at Akaroa, to M. Raoul.

Plate LXXII. *Fig.* II.—1. a young specimen, of the *natural size*; 2, 3 and 4, marginal leaflets bearing the fructification; 5, section of the same :—*magnified.*

2. Rhodomenia *ornata*, Mont.; "fronde carnoso-membranacea oblongo-lanceolata latissima plana vivide purpurea utrinque margine prolifera, foliis s. pinnulis obovatis substipitatis tandem cuneatis maximis palmatifissis, conceptaculis per totam frondem sparsis." *Mont. Prodr. Phyc. Antarct.* p. 1. *Voy. au Pole Sud, Bot. Crypt.* p. 160. t. 11.

Hab. Lord Auckland's group. (*Admiral D'Urville.*)

The plant, from which the magnificent plate given by Montagne was executed, is marked by the lamented D'Urville as a native of Lord Auckland's Island, where, we regret to say, it was not collected by the Antarctic Expedition.

3. Rhodomenia *dichotoma*, Hook. fil. et Harv.; fronde membranacea rosea basi cuneata latissima dichotoma, axillis rotundatis, laciniis patentibus linearibus v. cuneatis obtusis demum emarginatis et bifidis. (Tab. LXXII. Fig. I.

Hab. Campbell's Island; on rocks in the sea.

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* I had long supposed that the sphærospores of these genera were different; but after a complete examination of the fruit of *T. corallorhiza, costata, angusta, Mertensii, procera, Cunninghamii, Telfairiæ* and *cornuta*, and comparison with that of *Pl. coccineum*, I have been obliged to abandon this idea. In all, the sphærospores are cylindrical, divided into four by three transverse striæ. Kützing separates *Pl. cornutum* under the generic name of *Thamnocarpus*, but I am at a loss to conceive upon what grounds.—W. H. H.

Frons flabellatim expansa, 4–7 unc. lata, basi cuneata, pluries dichotoma, laciniis linearibus cuneatisve, $\frac{1}{4}$–$\frac{1}{2}$ unc. latis et ultra, patentibus, apicibus obtusis emarginatis bifidisve. *Substantia* tenuis, membranacea, e cellulis superficiem versus minimis coloratis formata, interioribus magnis hyalinis.—Chartæ non adhæret.

Our specimens of this plant are unfortunately barren, it resembles in outline the *Phyllophora obtusa*, but is of a very different consistence. Its nearest ally is the *R. Palmetta*, to gigantic specimens of which it may be compared.

Plate LXXII. *Fig.* I.—1. a specimen of the *natural size*; 2, lacinia of a specimen with narrower fronds, also of the *natural size*.

Dr. Montagne adds *R. corallina*, Grev., *R. variegata* (*Halymenia*, Bory), and *R. bifida*, Grev., as natives of Lord Auckland's group, but the specimens are imperfect and they may belong to some of the former.

21. HYPNEA, *Lamour.*

1. Hypnea *multicornis*, Mont.; "fronde filiformi tereti compressa inordinate corymboso-ramosissima, ramis ultimis subdistichis alternis aut subsecundis furcatis, ramulis patenti-recurvis hamulosis, pluribus apice conformi incrassatis sporophoris." *Mont. Voy. au Pole Sud, Bot. Crypt.* p. 153. t. 9. f. 1. Rhodomela, *Mont. Prodr. Phyc. Antarct.* p. 4.

Hab. Lord Auckland's group. (*Admiral D'Urville.*)

22. GRATELOUPIA, *Agardh.*

1. Grateloupia? *Aucklandica*, Mont.; "fronde cartilaginea filiformi tereti vage ramosissima, ramis ramentisque confertis fasciculatisque subcompressis basi attenuatis sæpius ex insigni frondis tuberculo singulis pluribusve enatis, fructu . . . . ?" *Mont. Prodr. Phyc. Antarct.* p. 7. *Voy. au Pole Sud, Bot. Crypt.* p. 15. t. 10. f. 1.

Hab. Lord Auckland's group. (*Admiral D'Urville.*)

23. PHYLLOPHORA, *Grev.*

1. Phyllophora *obtusa*, Grev.; fronde corneo-membranacea stipitata basi longe cuneata enervi flabelliformi subdichotome laciniata, laciniis latissimis valde obtusis axillis acutis, coccidiis stipitatis sporophyllisque e frondis pagina ortis aggregatis. P. obtusa, *Grev. in Wern. Trans.*

Hab. Lord Auckland's group; on shells, &c., in the sea.

Radix scutata, parva, parce fibrosa. *Frondes* aggregatæ, 6–14 unc. longæ, basi cuneatæ, in stipitem filiformem attenuatæ, 1–1½ unc. longæ, alterne dichotome fissæ v. palmatæ, simplices v. furcatæ, valde obtusæ, axillis angustis acutis. *Coccidia* pedicellata, in soros elongatos laciniarum paginam occupantes aggregata, globosa, pedicello filiformi v. foliaceo. *Sporophylla* aggregata, rotundata, sphærosporas minutas foventia. *Substantia* siccitate rigide membranacea v. cornea, subtranslucens. *Color* amæne roseus.

The Auckland's group specimens are small and barren, but agree entirely with those of the Cape of Good Hope, from which in part the preceding description has been prepared.

24. GIGARTINA, *Lamour.*

1. Gigartina *divaricata*, Hook. fil. et Harv.; caule cartilagineo-carnoso compresso lineari subdichotome diviso, ramis distichis pinnatis subpinnatisve, ramulis patentissimis linearibus subattenuatis.

Hab. Campbell's Island; thrown up on the beach.

Caulis 4–6 unc. longus, subdichotome divisus, 1–2 lin. latus, compressus, strictus, ramis subquadrifariis distichisve dense obsitus. *Rami* divaricati, stricti, compressi, rugulosi, nudi, parce pinnati v. subbipinnati, apicibus longe nudis. *Pinnulæ* horizontales, breves, simplices v. furcatæ, lineares, acutæ, nunc abbreviatæ et spiniformes. *Color* lividus v. nigro-rubescens, ad apices ramulorum pallidior purpurascens. *Substantia* cartilagineo-carnosa, firma, elastica, siccitate valde contracta.—Chartæ non adhæret.

Our specimens are imperfect and barren, but sufficient to prove them to be a very distinct species of *Gigartina*. The whole plant is very elastic, shrinking much in drying; internally it is composed of a dense body of anastomosing filaments, radiating towards the circumference through a firm gelatine.

G. pistillata, Lam., is also enumerated in Montagne's account of Lord Auckland's Island.

25. NOTHOGENIA, *Mont.*

1. Nothogenia *variolosa*, Mont. *in Ann. Sc. Nat.* Series 2. vol. xx. p. 302. t. 10. f. 3. Chondrus variolosus, *Mont. Prodr. Phyc. Antarct.* p. 6. *Voy. au Pole Sud, Bot. Crypt.* p. 110.

Hab. Lord Auckland's group; on rocks in tbe sea, abundant.

Frondes cæspitosæ, 4–5-unciales, anguste lineares, 1–1½ lin. latæ, compressæ, planæ v. subcanaliculatæ, basi cuneatæ, superne pluries dichotomæ, laciniis basi angustatis, ultimis elongatis obtusis v. emarginatis ½–1 unc. longis. *Conceptacula* per totam laciniarum supremarum, immersa, convexa, verrucæformia, poro pertusa, utraque frondis pagina sparsa. *Substantia* cartilaginea. *Color* fusco-ruber, purpurascens.—Chartæ laxe adhæret.

26. CHONDRUS, *Stack.*

1. Chondrus *tuberculosus*, Hook. fil. et Harv.; fronde cartilaginea basi cuneata late lineari furcata v. ter quaterve dichotoma plana v. canaliculata, laciniis patentibus obtusis, axillis rotundatis, verrucis sphæroideis pagina frondis superiore extantibus medio depressis demum pertusis massam densam sporarum rosearum includentibus.

Hab. Lord Auckland's group; on rocks in the sea.

Frons 2-uncialis, basi simplex, superne plus minusve furcata, margine simplici pinnulisve ornata. *Laciniæ* planæ v. pagina superiore canaliculata, patentes v. divaricatæ, sursum latiores, obtusæ. *Coccidia* v. *verrucæ* numerosissima, magnitudine seminis Brassicæ, globosa, latere concavo frondis sita, extantia, rarius pagina frondis immersa, basi constricta, apice depressa v. umbilicata, siccitate apotheciam *Lichenis* referentia, demum pertusa. *Sporæ* minutæ. *Substantia* crassa, carnoso-cartilaginea, siccitate valde contracta. *Color* lividus.—Chartæ laxe adhæret.

Apparently a distinct species. Smaller than *Noth. variolosa*, but broader, less frequently dichotomous and with very different fructification. The coccidia? are situated on one side of the frond, prominent, constricted at the base and contain a large dense spherical mass of sporules, similar to those of the differently shaped warts of *Chondrus crispus*. The shape of the fruit is that of *Iridæa Radula* or *stiriata*, and when dried under pressure it resembles the apothecia of a *Collema*.

27. IRIDÆA, *Bory.*

1. Iridæa *Radula*, Bory, *in Duperrey Voy. Bot. Crypt.* p. 107. *Grev. Alg. Brit.* p. 61. Sphærococcus Radula, *Agardh, Sp. Alg.* vol. i. 268. Fucus Radula, *Hb. Banks, Esper*, t. 113. Fucus bracteatus, *Gmel., Turn.* t. 25. Mastocarpus Radula, et Chondrodictyon Capense, *Kütz. Phyc. Gen.* p. 396 and 398.

Hab. Lord Auckland's group and Campbell's Island; very abundant on rocks in the sea.

Radix scutata, fibris comitata. *Caulis* 1–2 unc. longus, basi cylindraceus, crassitie pennæ corvinæ, mox compressus, superne dilatatus, divisus v. ramosus. *Frondes* basi rotundatæ, cuneatæ v. attenuatæ, ellipticæ lanceolatæve,

6–20 unc. longæ, rarius bi-tripedales, crassæ, simplices v. furcatæ v. ad basin bipartitæ, nunc margine frondes accessorias emittentes, interdum poris perplurimis pertusæ. *Superficies frondis* lævis, lucida, adulta papillosa; papillis creberrimis, tandem totam frondem utrinque vestientibus, apice fructiferis, favellidia immersa poro pertusa gerentibus. *Sporæ* minutæ, roseæ, densissime aggregatæ. *Sphærosporæ* frondibus papillarum destitutis immersæ, substrato corticali sitæ, in globulis minutis punctiformibus aggregatæ, totam frondem pustulantes. *Substantia* crassa, carnosa. *Color* lividus, rubescens purpurascensve, raro atro-sanguineus.

There is scarcely a maritime rock on the Antarctic coasts, that does not abound with this most protean species in all stages of growth, and bearing fronds with every variety of outline. It is much eaten by marine animals, and from this or other causes, amongst which may be reckoned the fall of the fructiferous papillæ, the plant is frequently found more or less perforated with round holes, sometimes so regularly as to resemble coarse lace: this state has been described by Kützing, under the name of *Chondrodictyon Capense*, and by Decaisne as *Iridæa clathrata* (Ann. Sc. Nat. Ser. III. vol. ii. p. 236). More puzzling is the form of the secondary fructification or sphærospores, which is so like a primary fruit, that had not both Mr. Harvey and myself seen this plant growing on its native rocks, we should have supposed the individuals producing them to belong to a different species. The secondary fruit of *I. stiriata* is of the same nature.

The *I. micans*, Bory, *volans*, Grev., and *laminarioides*, Bory, enumerated by Montagne as natives of Lord Auckland's group, are probably states of this.

28. HALYMENIA, *Agardh.*

1. Halymenia *latissima*, Hook. fil. et Harv.; fronde plana tenui gelatinoso-membranacea latissime ovato-lanceolata simplici bifida v. margine laciniato-pinnatifida, laciniis ovato-lanceolatis acutis. (Tab. LXXIII.)

Var. β, *bifida*; fronde lanceolata basi attenuata bifida v. bifurcata, laciniis lanceolatis erectis.

Hab. Lord Auckland's group and Campbell's Island; both varieties abundant on rocks in the sea.

Frondes 2–14 unc. longæ, 4–6 latæ, tenues, basi cuneatæ, late lanceolatæ v. ovato-oblongæ, acutæ, simplices v. furcatæ, margine plano simplici integerrimo v. laciniis plurimis subpinnatifido. *Substantia* gelatinosa. *Favellidia* numerosissima, per totam frondem sparsa, cellulis medullaribus immersa. *Color* amæne roseus.

We offer this as a new species with some doubt, the varieties of *H. ligulata* approaching it. The fronds are so broad and thin, that the favellidia form convexities on its surface, which are more or less obliterated when moist.

Plate LXXIII. *Fig.* 1, portion of the surface of the frond; 2, section of the same; 3, spores:—all *magnified*.

29. DUMONTIA, *Lamour.*

1. Dumontia *filiformis*, Grev., *Alg. Brit.* p. 165. t. 17. Halymenia, *Agardh Spec. Alg.* vol. i. p. 214.

Hab. Campbell's Island. (*Dr. Lyall.*)

Identical with the European plant. Found also at the Cape of Good Hope and in other widely separated localities.

2. Dumontia *cornuta*, Hook. fil. et Harv.; fronde tubulosa hic illic inflata divisa, parte inferiore nudiuscula superiore ramis confertis fasciculatisve quadrifariis vestita, ramis furcatis patentibus flexuosis alternatim ramulosis, ramulis recurvis utrinque attenuatis apicibus acutis.

Hab. Campbell's Island. (*Dr. Lyall.*)

Frondes cæspitosæ, 2–3 unc. longæ, tubulosæ, irregulariter inflatæ, 2 lin. latæ, vage divisæ; ramis intricatis, patentibus, flexuosis, furcatis; ramulis fusiformibus, patentibus v. recurvis. *Color* fuscatus, badius v. rubescens.

Our specimens of this plant are barren; we refer it to *Dumontia* from the tubular inflated frond, structure, and habit.

30. BALLIA, *Harv.*

1. Ballia *Brunonis*, Harv., *in Hook. Journ. of Bot.* vol. ii. p. 191. Sphacelaria callitricha, *Agardh Ic. Alg. Europ.* t. 6. Ballia callitricha, *Mont. Voy. au Pole Sud, Bot. Crypt.* p. 94.

Var. β, *Hombroniana*. B. Hombroniana, *Mont. Prodr. Phyc. Antarct.* p. 9. *Voy. au Pole Sud, Bot. Crypt.* p. 95, t. 12. f. 1.

Hab. Lord Auckland's group and Campbell's Island; on the roots and stems of large *Algæ*, abundant.

Caulis in exemplaribus Aucklandicis 2 unc. altus, seta porcina duplo crassior, hirtus, vage ramosus, di-trichotomus; ramis primariis apice flabellatim ramulosis, circumscriptione rotundatis, fastigiatis, 3–5 lobatis. *Ramuli* bi-tripinnati, pinnulis subremotis acutis. *Articuli* pinnarum diametro duplo vix triplo longiores, ovato-oblongi, rarius cylindracei, apice angustati, pinnularum sesqui-longiores, ovati. *Substantia* rigida, cornea. *Color* purpureo-roseus.

The Auckland's group specimens appear to belong chiefly to the *B. Hombroniana* of Montagne, a native of Akaroa*, on the middle island of New Zealand; they differ from those of Tasmania and the Falklands in being shorter and of a denser habit, in having longer articulations to the pinnæ and pinnulæ, and in the latter being generally only twice pinnated, with the ultimate pinnules separated and remote, like the teeth of a comb. Kerguelen's Land individuals connect these forms. We have examined several hundreds of specimens, from seven or eight different localities in the Antarctic Ocean, without being able to trace any constant specific distinction amongst them; the same individual often bears both bipinnate and tripinnate fronds, with the segments remote or approximated; the length of the articulations and their form, and the outline of the branches from broadly ovate to linear-lanceolate are equally variable characters. We can, however, well understand Montagne's drawing a different conclusion from an examination of but few specimens of the extremes.

31. PTILOTA, *Agardh.*

1. Ptilota *formosissima*, Mont., caule ancipiti compresso costa articulata percurso vage ramoso decomposite pinnato, pinnis valde inæqualibus pinnulisque alternis patentibus ultimis serratis, favellis sessilibus, involucri foliis pinnatifidis, sphærosporiis marginalibus pedicellatis. Pt. formosissima, *Mont. Prodr. Phyc. Ant.* p. 8. *Voy. au Pole Sud, Bot. Crypt.* p. 98. t. 9. f. 3. (Tab. LXXVII.)

Hab. Lord Auckland's group; abundant.

Radix callus exiguus. *Frondes* aggregatæ, 6–10 unc. longæ, 4–6 latæ, flabelliformes. *Caulis* (*jugamentum* Ag.) basi teres, mox plano-compressus, linearis v. utrinque subattenuatus, $\frac{1}{2}$–$1\frac{1}{2}$ lin. latus, distiche ramosissimus. *Pinnæ* $\frac{1}{4}$ unc. longæ, alternæ, pinnatæ v. bipinnatæ; pinnulis brevibus, alternis, patentibus, serratis v. pectinatis, apice subacutis. *Favellæ* sessiles, involucro quadrifoliato pectinato cinctæ, sphæricæ, sporis minutis angulatis farctæ. *Sphærosporæ* marginales, pedicellatæ, globosæ, demum 4-partitæ. *Color* amæne puniceus. *Substantia* cartilaginea, firma.—Chartæ laxe adhæret.

We have numerous specimens of this magnificent plant in the most perfect state of fructification. The favellæ, involucred with four regularly pectinated bracteæ, are striking objects under the lens. The stem is not strictly articulate, in our specimens at least, but traversed by a strong raised articulated mid-rib, most evident on the old frond and occupying one-third of the breadth of the stem. The surface cellules, like those of other parts of the frond, are minute, but internally divided by transverse diaphragms into a series of cells full of gelatine, whose walls are formed of jointed fibres.

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* "Insula Leyden, Batavia," is also given as a habitat (in Voy. au Pole Sud) probably erroneously, for the genus has not hitherto been found to the northward of the 40th degree of south latitude.

PLATE LXXVII. *Fig.* 1, favella *in situ*; 2, the same removed with the involucre laid open; 3, sphærospores; —*magnified.*

32. CERAMIUM, *Adans.*

1. CERAMIUM *rubrum*, var. γ, *secundatum*, Agardh, *Sp. Alg.* p. 149. Cer. secundatum, *Lyngb. Hydr. Dan.* t. 37.

Var. ε, *tenue*, Agardh, *Sp. Alg.* vol. ii. p. 149.

HAB. Lord Auckland's group and Campbell's Island; both varieties abundant.

2. CERAMIUM *diaphanum*, Agardh, *Sp. Alg.* vol. ii. p. 150.

Var. β, *Aucklandicum*, proliferum, articulis brevibus.

HAB. Lord Auckland's group; not common.

Apparently a curious state of the *C. diaphanum.*

3. CERAMIUM *cancellatum*, Agardh, *Sp. Alg.* vol. ii. p. 145.

HAB. Lord Auckland's group; parasitic on other seaweeds, rare.

Our specimen entirely agrees with others collected at the Cape of Good Hope, and with the description of Agardh; it is doubtful, however, whether all may not be varieties of *C. obsoletum*, Ag., from which they differ mainly in the more branched and less virgate habit. One of our South African specimens is so repeatedly branched, as eminently to justify Agardh's character, "ramis distichis multifidis quasi cancellatis;" that from Lord Auckland's group is taller and the extreme divisions alone retain that character; neither of these are more than four inches long; we have, however, much larger examples, in which it is wholly lost. The station of Agardh's *C. cancellatum* is dubious, and his comparison of it with a plant brought from the Cape of Good Hope by Gaudichaud, renders it very probable that the Southern Ocean is its place of growth.

33. GRIFFITHSIA, *Agardh.*

1. GRIFFITHSIA *setacea*, Ag.? vol. ii. p. 129.

HAB. Lord Auckland's group.

Our young and mutilated specimens of what we refer to *G. setacea* are not sufficient for a satisfactory determination of the species. The articulations are rather narrower than in the European plant, but they do not otherwise differ.

34. CALITHAMNION, *Lyngb.*

1. CALITHAMNION *gracile*, Hook. fil. et Harv.; filo primario repente ramoso, caulibus erectis laxe bitripinnatis, pinnis remotis valde elongatis, pinnulis brevibus alternis erecto-patentibus simplicibus v. apice ramulosis, articulis primariis diametro 4–5-plo, secundariis sub 3-plo longioribus.

HAB. Campbell's Island; dredged up in four fathoms water.

Fila 1–2 unc. longa, gracillima, e fibrillis repentibus ramosis orta, laxe irregulariter alterne rarius opposite pinnatim divisa. *Sphærosporæ* sessiles, minutæ, sphæricæ. *Favellæ* ignotæ. *Articuli* pellucidi. *Color* roseus. *Substantia* tenera.

2. CALITHAMNION *pectinatum*, Mont.; "microscopicum, filo primario repente pinnis pinnulisque oppo-

sitis patentibus, articulis cylindraceis diametro duplo longioribus aut æqualibus, sphærosporis axillaribus." *Mont. Prodr. Phyc. Ant.* p. 9. *Voy. au Pole Sud,* p. 90.

Hab. Lord Auckland's group; creeping on other *Algæ*. (*Admiral D'Urville.*)

3. Calithamnion *hirtum,* Hook. fil. et Harv.; caulibus nigrescentibus intertextis, primariis robustis basi venosis continuis hirtis apice articulatis, secundariis elongatis ramulis pinnatis quadrifariis densissime vestitis, pinnulis simplicibus incurvis obtusis, articulis diametro sesqui-longioribus. (Tab. LXXVIII. Fig. II.)

Hab. Lord Auckland's group; parasitic on other seaweeds.

Caules cæspitosi, fibris intertextis basi comitati, 2–3 unc. longi, robusti, vage quadrifariam ramosi, per totam longitudinem ramulis quadrifariis densissime velati. *Rami* cauli similes, longitudine varii; *ramuli* inferiores breves caulibus habitum hirtum funalemve impertiunt, superiores longiores et pinnati evadunt; secundarii (v. plumulæ) pinnati, pinnis alternis erecto-patentibus elongatis obtusis incurvis, rachide flexuosa. *Color* atro- v. fusco-ruber. *Sphærosporæ* sphæricæ, solitariæ, latere interiore ramuli affixæ, pusillæ. *Substantia* rigidiuscula.—Chartæ adhæret.

In habit this approaches the *C. tetricum*, but after a careful comparison both with that and with *C. Arbuscula*, which it also resembles, we are convinced that it is distinct from either. The plumules are very different from those of the former species and larger than in the latter. It is not likely to be confounded with any other species.

Plate LXXVIII. *Fig.* II—1, a plant of the *natural size*; 2, branch; 3, ultimate pinnule; 4, portion of the same:—*magnified.*

4. Calithamnion *micropterum,* Hook. fil. et Harv.; parvum, erectum, caule articulato parce ramoso, ramis distichis alternis circumscriptione obovatis obtusis bi-tripinnatis, pinnis alterne multifidis flexuosis, pinnulis erecto-patentibus obtusis, articulis caulis ramorumque diametro 2–3-plove longioribus, ramulorum diametro aquantibus, sphærosporis sessilibus solitariis ellipticis.

Hab. Lord Auckland's group; parasitical on *Ptilota formosissima*. (*Dr. Lyall.*)

Radix scutata. *Caulis* subsolitarius, 2–3 lin. longus, erectus, parce distiche et alterne divisus. *Rami* basi pinnis simplicibus ornati, superne bi-tripinnati, nunc pinnulis alterne multifidis ut in *C. tetragono*. *Ramuli* alterni, inferiores simplices, superiores iterum divisi. *Articuli* pellucidi, rosei, venis destituti. *Sphærosporæ* minutæ, ramulis sparsæ, appressæ, ellipticæ, massam quadrifidam includentes. *Color* pulcherrime roseus. *Substantia* tenera.

This does not belong to the parasitical section of the genus typified by *C. Daviesii,* but rather resembles some of the larger species, as *C. tetragonum,* to which, in the form of the joints, the disposition, shape and relative size of the sphærospores, it is closely allied.

35. CONFERVA, *Agardh.*

1. Conferva *Pacifica,* Mont., *Prodr. Phyc. Antarct.* p. 16. *Voy. au Pole Sud, Bot. Crypt.* p. 7.

Hab. Lord Auckland's group; on rocks in the sea, very abundant.

Cæspites 3–4 unc. longi, vage funiculari-divisi, e filis gracilibus intricatis læte virentibus compositi. *Fila* ramosissima; ramis inferioribus irregulariter ramosis, ramulos radiciformes hic illic emittentibus, superioribus vage ramosis dichotomis v. secundis, ramulis erectis, supremis appressis elongatis strictis. *Articuli* partis inferioris breves, diametro 2–3-plove longiores, superiores sensim elongati, ramulorum supremorum longissimi. *Color* læte viridis, nitens. *Substantia* membranacea.—Chartæ adhæret.

This species is nearly related to the *C. arcta* of Europe, to some varieties of which, especially that called *C. centralis*, it bears a very close resemblance.

The *C. virgata*, Ag., is enumerated by Montagne in his Flora of the 'Voy. au Pole Sud.'

2. Conferva *verticillata*, Hook. fil. et Harv.; cæspitosa, filis gracillimis strictis parum divisis, ramis lateralibus simplicissimis longissimis erectis strictis oppositis ternis quaternisve, articulis fili primarii diametro multoties, ramorum quadruplo, longioribus pellucidis.

Hab. Lord Auckland's group; on rocks in the sea, very abundant.

Fila tenuissima, 4 unc. longa, rigidula, simplicia v. parum divisa, erecta, stricta, ramis lateralibus ornata. *Rami* sæpius terni quaternive, verticillati, rarius bini, rarissime alterni, longissimi, filo primario longiores, erecti, strictissimi, simplices, ramulis omnino destituti, apice sphacelati. *Articuli* fili primarii diametro 7–8-plo longiores, clavati, geniculis nodosis, ramorum cylindracei diametro 3–4-plove longiores. *Color* siccitate luride viridis, opaca; planta vivente pallida, subhyalina.—Chartæ laxe adhæret.

Very nearly allied to *C. flagelliformis*, Suhr, a native of the Cape of Good Hope, agreeing with that plant in the remarkable ramification, but differing in the more slender habit, not being one half the diameter, and in having much larger articulations, especially on the main threads, which are singularly clavate with swollen joints, a character we do not observe in any states of *C. flagelliformis*. It cannot be confounded with any other species of the genus.

36. CODIUM, *Stack.*

1. Codium *tomentosum*, Stack., *Grev. Alg. Brit.* p. 185. t. 19. *Hook. Br. Fl.* vol. ii. p. 318. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 35.

Hab. Lord Auckland's group; very abundant.

Equally abundant in the Antarctic as in the Northern Seas. Montagne gives the *C. adhærens*, Ag., as a native of this group.

37. ULVA, *L.*

1. Ulva *latissima*, Linn., *Flor. Suec.* no. 1159. *Mont. Voy. au Pole Sud, Bot. Crypt.* p. 33.

Hab. Lord Auckland's group and Campbell's Island; most abundant.

The *U. reticulata*, Försk., is mentioned by Montagne as a native of this group.

38. PORPHYRA, *Agardh.*

1. Porphyra *capensis*, Kützing.

Hab. Lord Auckland's group and Campbell's Island; on rocks in the sea.

This differs from the European *P. vulgaris* in the rigid texture of the frond, which is not always simple in the Cape of Good Hope specimens. The *P. columbina*, Mont., appears to be the same plant.

39. SCHIZONEMA, *Agardh.*

1. Schizonema *crispum*, Mont.; "filis cæspitosis viridibus crispatissimis apice penicillato-ramosis, ramis obtusis, cymbellis subparallelogrammis." *Mont. Prodr. Phyc. Antarct.* p. 16. *Voy. au Pole Sud, Bot. Crypt.* p. 2.

Hab. Lord Auckland's group; on the fronds of the smaller *Algæ*.

We have observed what we take to be this species, together with an *Achnanthes* and several other imperfect *Diatomaceæ*, upon *Ptilota formosissima* and some of the filamentous *Algæ*, amongst which is probably the *Achnanthes brevipes*, Ag.

XXXVII. LICHENES,* *L.*

(By Dr. Thomas Taylor and J. D. Hooker.)

1. USNEA, *Ach.*

1. Usnea *plicata*, Ach., *Syn. Lich.* p. 305. *Engl. Bot.* t. 257. *Schærer Lich. Helv.* no. 401.

Var. β, *hirta*, Ach. l. c. *Schærer*, no. 399.

Hab. Lord Auckland's group and Campbell's Island; both varieties, abundant.

The variety β, in Lord Auckland's group, is evidently the original plant, from which the *U. hirta* varies, and both are undoubtedly forms of *U. florida*; the latter, in its ordinary fruiting state, does not attain a high northern or southern latitude, being replaced by the *U. melaxantha*, which almost reaches the limits of Antarctic vegetation. We have little hesitation in affirming (with the author of the British Flora) that not only all the English species of *Usnea* are different aspects of one plant; but also that it is the only individual of the genus which we know to inhabit the temperate and warm parts of the globe.

2. Usnea *barbata*, Ach., *Syn. Lich.* p. 306.

Var. β, *sulphurea*; pallide straminea v. sulphurea.

Hab. Lord Auckland's group and Campbell's Island; the var. β only, but abundant.

This differs from the European plant in no respect but its pale sulphur or lemon colour; it is plentiful throughout Tasmania, Fuegia, and the Falkland Islands, and is decidedly a state of *U. hirta* β, hardly distinguishable from *U. hirta* itself, as the most casual observation in these islands will prove. It is often detached from its original place of growth, and, being carried by the winds over the barren hills, is found in great abundance, sticking to low bushes and even to the rigid shrubby thallus of *U. melaxantha*, in Fuegia and the Falklands. Some of the slenderest states are with difficulty to be discriminated from the genus *Cornicularia*, the filaments being brittle and the central thread not very apparent.

2. RAMALINA, *Ach.*

1. Ramalina *inflata*, Hook. fil. et Tayl.; thallo in cæspitem orbicularem congesto pallide flavo v. albido dichotome ramoso fistuloso turgido submembranaceo intus vacuo, lobis fistulosis intus stuppeis nunc foraminulosis ultimis acuminatis, apotheciis substipitatis concavis, disco concolore pruinoso, margine inflexo integerrimo. Cetraria inflata, *nobis, in Hook. Lond. Journ. of Bot.* vol. iii. p. 646. (Tab. LXXIX. Fig. I.)

Hab. Lord Auckland's group; on rocks near the sea.

Planta cæspitosa, albida, siccitate rigidiuscula, madore flaccida, membranacea, pellucida, brunneo picta. *Thallus* e basi subscutata ramosissima, 1–2-uncialis, cavus, inflatus, paulo compressus; ramis erectis, sub 3–4 lin. latis, fistulosis, sublacunosis, raro pertusis, intus vacuis v. parce stuppeis, extus lævibus, ramulis alternis angustatis. *Apothecia* lateralia v. terminalia, oblique inserta, stipite brevi; disco planiusculo, sub 3 lin. lato, concolori v. fusco-pruinoso;

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* In arranging these species of a most variable Order of plants, the *Synopsis* of Acharius is followed, because it appears to us the more natural. That the precise plant referred to, under his name, may be the better understood, we have cited two works, which seem particularly worthy of attention, from the discrimination which the authors have shewn in selecting a variety of forms; these are the 'Lichenes Helveticæ' of M. Schærer, and the 'Stirpes Cryptogamicæ Voges. Rhenan.' of Mougeot and Nestler.

excipulo thallode crassiusculo; margine integerrimo, primum inflexo; sporis 4–8 in quoque asco, oblongis, utrinque obtusis, linea transversa medio notatis.

Mr. Churchill Babington has pointed out to us the affinity of this species with the *R. pusilla*, Prev. (Fries, Lich. Eur. p. 29), a native of the Isles Hyères in the Mediterranean Sea. Of this plant we possess no specimens, and from the description the only points of difference seem to lie in the greater size of the present, which has the apothecia more separated from the thallus and are plane instead of concave. It is also a native of Tasmania.

The *R. geniculata*, nob. (in Lond. Journ. of Bot.), is allied to the present species in its fistulose thallus, but is much smaller and very differently branched. A third congener, or perhaps the true *R. pusilla*, is a native of Tasmania. The other species inhabiting the southern regions, are *R. ovata*, *verrucosa*, and *terebrata*, all allied to, and perhaps varieties of, *R. scopulorum* itself, in many cases almost undistinguishable from *R. fraxinea* and *fastigiata*.

Plate LXXIX. *Fig.* 1, a specimen of the *natural size*; 2, an older state of the same; 3, portion of ramulus and apothecium; 4, section of apothecium; 5, portion of lamina proligera; 6, ascus; 7, spores:—*more or less magnified.*

3. SPHÆROPHORON, *Ach.*

1. Sphærophoron *tenerum*, Laurer, *in Linnæa*, vol. ii. p. 45. t. 1. f. 4. S. australe, *nobis, in Hook. Lond. Journ. of Bot.* vol. iii. p. 654.

Var. β, *curtum*; S. curtum, *nobis, in Lond. Journ. of Bot.* vol. iii. p. 654.

Hab. Lord Auckland's group and Campbell's Island; on the ground in turfy places; β, in more elevated situations.

Laurer's description of this species is very characteristic, though drawn up from a small state of the plant, the apothecia not being always small, but sometimes even a line in diameter, they terminate in nearly erect, stout, solid, naked, terete branches, are hemispherical, broader than the branch which bears them; in the adult state margined only with the remains of a thallodal border, which afterwards falls away entirely. This is the decisive mark between all forms of *S. tenerum* and *S. corallinum*, for the colour varies from a rich brown to white and pink. It is an abundant Australian and Fuegian species.

2. Sphærophoron *australe*, Laurer, *in Linnæa*, vol. ii. p. 44. S. insigne, *Laurer*, l. c.

Hab. Lord Auckland's group.

I am indebted to Mr. Churchill Babington for an authentic specimen of this beautiful species. In the normal state it differs widely from *S. compressum*, the whole frond being plane, branched in a palmate manner, repeatedly and dichotomously divided, with all the divisions divaricating and spread out like a fan, slightly convex above, there smooth but hardly shining, pale olive-green or yellowish; underneath, it is plane or slightly convex, more rugose and white; the ramuli of the oldest states are often transversely cracked or articulate; others again, and especially the Tasmanian specimens, are membranaceous and buff-coloured, wholly unlike any other aspect hitherto observed in the genus. In alpine specimens, growing with *Leptostomum inclinatum*, which bear fruit abundantly, the apothecia are large, covered with a thin, buff-coloured membrane, fixed wholly to the underside of the frond, which appears prostrate and branched beyond it. From Lord Auckland's group and Campbell's Island we have several varieties of this plant; 1. The thallus quite plane, repeatedly dichotomously branched, grey above, white beneath, powdered with minute black soredia (or abortive apothecia), the apothecia rare, small, nearly terminal on the under surface of the frond. 2. Thallus short, pale yellow, densely tufted, with the ultimate branches broader and truncate; always barren. 3. Thallus short, less divided especially below, white, pale greenish-yellow or pink; ultimate branches very short, thin, their apices everywhere tipped with abortive apothecia. 4. Branches few, broader, stouter; apothecia large. This is the ordinary fruiting state of the plant in these islands, and some specimens cannot be distin-

guished from the figure in English Botany of *S. fragile* (t. 114.), *S. compressum*, Ach., whence it comes to be a doubt whether if we consider this, the fruiting, as the ordinary state of the plant, all should not merge into *S. compressum*, itself a variety of *S. corallinum*; against which it may be urged that the membranous Tasmanian specimens also produce fructification abundantly.

3. Sphærophoron *compressum*, Ach., *Syn. Lich.* p. 287. Lichen fragilis, *Eng. Bot.* t. 114.

Hab. Lord Auckland's group and Campbell's Island; on the trunks of trees.

Under *S. australe*, Laur., we have stated our impression that this is a state of that plant.

4. STEREOCAULON, *Ach.*

1. Stereocaulon *ramulosum*, Ach., *Syn. Lich.* p. 284. *A. Rich. Flor. Nov. Zel.* p. 34. t. 9. f. 3. S. macrocarpum, *A. Rich.* l. c. t. 9. f. 4. Lichen Salazinus, *Bory, Voy.* vol. iii. p. 106. t. 16. f. 3. (Tab. LXXX. Fig. 1.)

Hab. Lord Auckland's group and Campbell's Island; particularly abundant in the latter locality.

Our specimens of this plant are truly magnificent, and this has induced us to add a figure, shewing the globose appendices (abortive apothecia) which are not represented in the works quoted above. Small specimens of this species, both from New Zealand, Tasmania and the group now under consideration, so much resemble the *S. paschale*, as to be with difficulty discriminated from it, whence we suspect the present plant may prove a remarkably luxuriant state of that, for it is abundant throughout many warm latitudes, to the exclusion of the *S. paschale*, which reappears in the higher latitudes of Cape Horn and Kerguelen's Land.

Plate LXXX. *Fig.* I.—1, vertical section of an apothecium; 2, portion of lamina proligera:—*both magnified.*

2. Stereocaulon *Argus*, Hook. fil. et Tayl.; thallo erecto tereti-cylindraceo v. subcompresso fastigiatim ramoso albo-cinerascente, gemmis granulatis ramosis, ramulis appendicibus globosis plerumque terminatis, apotheciis terminalibus, excipulo thallode crasso extus rugoso, margine primum inflexo, disco brunneo concavo demum reflexo. (Tab. LXXIX. Fig. II.)

Hab. Campbell's Island; rocks on the mountains, abundant.

Thallus validus, 2–3 unc. altus, primum strictus, erectus, demum curvatus, elongatus. *Apothecia* magnitudine varia, semper margine thallode crasso immersa; excipuli marginibus ætate per reflexionem marginis apothecii omnino occlusis; ascis oblongo-lanceolatis, granulis angulatis repletis, filamentis raris dilatatis transverse septatis immixtis.

A very distinct plant, well characterized by the thick cup into which its plane apothecia are immersed, the latter in age become much broader, their margins roll back carrying the border of the excipulus inwards, when it requires a longitudinal section to shew the true nature of the apothecium.

Plate LXXIX. *Fig.* II.—1, a specimen in the ordinary state; 2, the same much older, both of the *natural size*; 3, section of young apothecium; 4, section of ripe ditto; 5, the same when old; 6, portion of lamina proligera; 7, septate filament; 8, asci:—all more or less *magnified.*

5. CÆNOMYCE, *Ach.*

1. Cænomyce *rangiferina*, Ach., *Syn. Lich.* p. 277. *Engl. Bot.* t. 173.

Hab. Lord Auckland's group and Campbell's Island; on the ground.

2. Cænomyce *aggregata*, Ach., *Syn. Lich.* p. 275. C. terebrata, *Laurer, in Linnæa*, vol. ii. p. 43. (*fid. cel. Montagne.*) Dufourea collodes, *nobis, in Lond. Journ. Bot.* vol. iii. p. 650. (Tab. LXXX. Fig. II.)

Hab. Lord Auckland's group and Campbell's Island; on the ground, abundant.

One of the most widely diffused species throughout the Southern Hemisphere; though variable, its limits are well defined. Its nearest ally is the beautiful *C. retipora*, Lab.

Plate LXXX. *Fig.* II.—1, a specimen in the ordinary state, *natural size*; 2, portion of the same, *magnified*; 3, large, and 4, small variety, *natural size*; 5, apothecium, *magnified*.

3. Cænomyce *ecmocyna*, var. *gracilis*, Ach. *Syn. Lich.* p. 261. *Engl. Bot.* t. 1284. *Schærer, Lich. Helv.* vol. lxv. C. sarmentosa, *nobis, in Lond. Journ. Bot.* vol. iii. p. 651.

Hab. Lord Auckland's group; on dry ground on the hills.

4. Cænomyce *pyxidata*, Ach., *Syn. Lich.* p. 252. *Engl. Bot.* t. 1393. *Schærer*, no. 68.

Var. *rigida*; olivaceo-cinerea tota gemmis granulatis tecta, thallo foliaceo, podetiis brevibus inflatis rigidis scaberrimis. C. rigida, *nobis, in Lond. Journ. of Bot.* p. 652.

Hab. Lord Auckland's group; in the woods; β, on dry turfy soil.

5. Cænomyce *uncialis*, Ach., *Syn. Lich.* p. 276. *Engl. Bot.* t. 174.

Hab. Lord Auckland's group. (*Admiral D'Urville.*)

6. PELTIDEA, *Ach.*

1. Peltidea *polydactyla*, Ach., *Syn. Lich.* p. 240. *Mougeot et Nestler*, n. 633.

Hab. Campbell's Island; on the ground, abundant.

7. STICTA, *Ach.*

1. Sticta *orygmæa*, Ach., *Syn. Lich.* p. 233. *Montagne in Voy. au Pole Sud, Bot. Crypt.* t. 15. f. 1.

Hab. Lord Auckland's group and Campbell's Island; on the branches of shrubs, very abundant.

Acharius cites "Staten Land" as the habitat of this species; we have never seen specimens from the American Continent (the Cape Horn station quoted in the 'Lond. Journ. of Bot.' being erroneous), whence it is possible that the author may refer to another plant; we have, however, followed our friend Montagne, who gives this name to his beautiful plate of our plant.

2. Sticta *foveolata*, Delise, *Monogr. de Sticta*, p. 101. t. 8. f. 36. *Mont. in Voy. au Pole Sud, Bot. Crypt. ined.* S. linearis, *nobis* (*in part*), *Lond. Journ. of Bot.* vol. iii. p. 647.

Hab. Lord Auckland's group; on the trunks of trees.

Except in being of a rather larger size, this does not differ from a copious suite of specimens which we have examined from Tasmania. The apothecia are variable, generally with the disk flat, but sometimes concave, and in these specimens very much so. In both this and the *S. Billardieri*, which seems hardly distinct from it, the border of the apothecia is often evanescent.

3. Sticta *Freycinetii*, Delise; thallo flavo-cinnamomeo rariusve olivaceo nudo glabro lævi plano v. concavo rimis albidis, subtus nudo v. velutino atro v. luride brunneo, lobis linearibus concavis divaricatim ramosis, marginibus undulatis crenatis v. sinuato-lobatis glaberrimis v. sorediatis, cyphellis albidis, apotheciis sparsis plerisque marginalibus breviter stipitatis concavis extus villosis puberulisve, disco plano rufo-fusco demum valde concavo, margine fimbriato crenato ætate involuto.—S. Freycinetii, *Delise, Monogr. de Sticta*, p. 124. t. 14. f. 45. S. glabra, *nobis, in Lond. Journ. of Bot.* vol. iii. p. 647.

Hab. Lord Auckland's group and Campbell's Island; on the trunks of trees and on rocks in mountainous places, very abundant.

An exceedingly variable plant, of which we have added a character, that of Delise being imperfect. The most obvious specific distinction lies in the pubescent apothecia with fimbriated margins to the cups, to which may be added, the pale colour, and the wrinkled margins of the lobes, which are sometimes extremely concave. In alpine specimens the thallus is often quite smooth underneath, with the margins singularly crumpled. The colour varies, underneath it is of all shades, from black to a dirty yellow. Cape Horn and Falkland Island specimens are more plane, with the lobes and apothecia larger.

4. Sticta *cellulifera*, Hook. fil. et Tayl.; thallo stellatim expanso subdichotome ramoso fusco v. flavo olivaceo sæpe virescente glabro profunde reticulatim lacunoso rimis albidis, subtus fuliginoso tomentoso apicibus loborum flavescentibus, lobis latiusculis rotundatis angulatisve subacutis obtusis retusisve, cyphellis parvis flavis, apotheciis plurimis plerisque marginalibus, disco atro plano demum concavo, marginibus integris crenulatisve inflexis.

Hab. Lord Auckland's group and Campbell's Island; on the trunks and branches of trees, abundant, also on the mountain rocks.

We know of no single character by which this form, which is as variable as any of its congeners, may be recognized. In its normal state the whole frond is fully a span across, all parts of it rugose with deep lacunæ; specimens from the woods are of a lax habit, with lobes an inch broad, of a pale brown or yellow beneath; those from the mountains, again, are deep olive green and almost black beneath, with the lobes short and round, and the cyphellæ of a bright yellow. In many respects it is very closely allied to the *S. carpoloma*, Delise, which, according to Montagne (whose authentically named collection of *Stictæ* is the completest I have seen), has the apothecia invariably marginal. The present plant includes in part both *S. impressa* and *S. cellulifera*, of the 'London Journal of Botany.'

5. Sticta *Menziesii*, Hook. fil. et Tayl.; thallo stipitato valde coriaceo obovato-cuneato ecostato flavo-fusco subtus brunneo, laciniis planiusculis lobatis retusis supra glaberrimis lævibus subtus puberulis, cyphellis immersis luteis marginibus elevatis, apotheciis sparsis atro-fuscis, disco plano demum concavo, marginibus tenuiter inflexis.

Hab. Lord Auckland's group; on the trunks of old trees.

Discovered by Mr. Menzies in Dusky Bay, New Zealand. Very distinct from *S. filicina*, of Acharius, in the ecostate frond, very thick texture, and dark coloured apothecia. Mr. Menzies' specimens have rather broader lobes, but do not otherwise differ from those gathered in Lord Auckland's group. The *S. latifrons*, A. Rich., is also costate, and of a different colour, with small pale yellow-red apothecia. The present is in New Zealand probably confined to the southern extremity.

6. Sticta *Richardi*, Mont., *Voy. au Pole Sud, ined.* S. carpoloma, *A. Richard, Flor. Nov. Zel.* p. 30. t. 9. f. 1.

Hab. Lord Auckland's group; on the trunks of trees.

Dr. Montagne distinguishes this from the *S. carpoloma*, Delise, by its having the apothecia on the surface, as well as on the margins of the frond, and by its different under surface. Our specimens are in a rather imperfect state.

The *S. variabilis*, Ach., is also enumerated by Montagne as a native of Lord Auckland's group.

8. PARMELIA, *Ach.*

1. Parmelia *rubiginosa*, Ach., *Syn. Lich.* p. 202. Lichen affinis, *Engl. Bot.* t. 983.

Hab. Lord Auckland's group and Campbell's Island; on the bark of living trees, also on the ground on the hills.

A most variable plant and a very abundant one in New Zealand and Tasmania; on the hills the thallus is reduced to a few imbricating scales, as in *Squamaria*, and the apothecia are strangely contorted and closed, having the border closely inflexed; in this state we are inclined to suspect that it passes into the *Lecanora Hypnorum* of these islands.

2. Parmelia *sphinctrina*, Mont. *in Voy. au Pole Sud, Bot. Crypt.* t. 15. f. 3.

Hab. Lord Auckland's group; on the bark of trees.

This, judging from our copious suites of Tasmanian and New Holland specimens, is hardly distinct from *P. rubiginosa*. Montagne's figure of it is excellent.

9. LECANORA, *Ach.*

1. Lecanora *Hypnorum*, Ach., *Syn. Lich.* p. 193.

Hab. Campbell's Island; upon tufts of *Andreæa* and other mosses.

The upright mode of growth and slender laciniæ of the thallus, distinguish the present from its allies; the specimens are of a dusky yellow colour.

2. Lecanora *versicolor*, Hook. fil. et Tayl.; substrato adnato tenui atro, thalli squamulis subrotundis planis crenulatis albidis demum flavis confertis lævibus, apotheciis majusculis sessilibus concavis, disco nigro-pruinoso, margine integerrimo subincurvo.

Hab. Lord Auckland's group; on bark.

Cæspites 1 unc. latæ, nigro-limitatæ, substrato continuæ, fuscæ v. pallide virescentes. *Apothecia* squamis majora, disco nigro-pruinoso, margine thallode crassiusculo.

Allied to the *L. varia*, but marked by the scattered apothecia, dark discs and smooth thallodal border.

3. Lecanora *tartarea*, Ach., *Syn. Lich.* p. 172. *Engl. Bot.* t. 156 et 1634.

Hab. Lord Auckland's group; on the ground.

Specimens, apparently of this plant, are in a very imperfect state.

4. Lecanora *Parella*, Ach., *Syn. Lich.* p. 169. *Engl. Bot.* t. 727.

Hab. Lord Auckland's group; on the hills.

Also in a very rudimentary state.

10. LECIDEA, *Ach.*

1. Lecidea *geomæa*, Taylor, *in Flor. Hibern.* p. 124. L. uliginosa, var. γ, *Ach. Syn. Lich.* p. 25.

Hab. Lord Auckland's group; on the ground.

2. Lecidea *incana*, Hook., *Br. Fl.* vol. ii. p. 181. Lichen incanus, *Engl. Bot.* t. 1683. Biatora pachycarpa, *Fries, Lich. Europ.* p. 259.

Hab. Lord Auckland's group; on the ground.

Mr. Churchill Babington informs us, that he has proved the *L. incana* to be merely a deliquescent state of Fries's *Biatora pachycarpa*.

11. PORINA, *Ach.*

1. Porina *granulata*, Hook. fil. et Tayl.; thallo tartareo granulato albido, granulis subrotundis rugosis confertis fertilibus majoribus, poris 1–5 pertusis, nucleis pellucidis pallide lutescentibus.

Hab. Lord Auckland's group; bare ground on the hills.

This plant grows mixed with young states of *Lecanora Parella*, from which it is with difficulty distinguished, it forms large pure white or pinkish patches, sometimes several inches in breadth, very convex, and often raised above the soil; the apothecia are hemispherical, with a broad depression, in the centre of which again is often a conical mamilla; there appear to be no spores in the apothecia, and the plant may be merely a rudimentary form of some more highly organized lichen. It is also abundant at Cape Horn and in the Falkland Islands.

12. THELOTREMA, *Ach.*

1. Thelotrema *lepadinum*, Ach., *Syn. Lich.* p. 115. Lichen inclusus, *Engl. Bot.* t. 678.

Hab. Lord Auckland's group; on the bark of trees, abundant.

13. OPEGRAPHA, *Ach.*

1. Opegrapha *atra*, Pers.; O. denigrata, *Ach. Engl. Bot.* t. 1753.

Hab. Campbell's Island; on the bark of *Dracophyllum scoparium*.

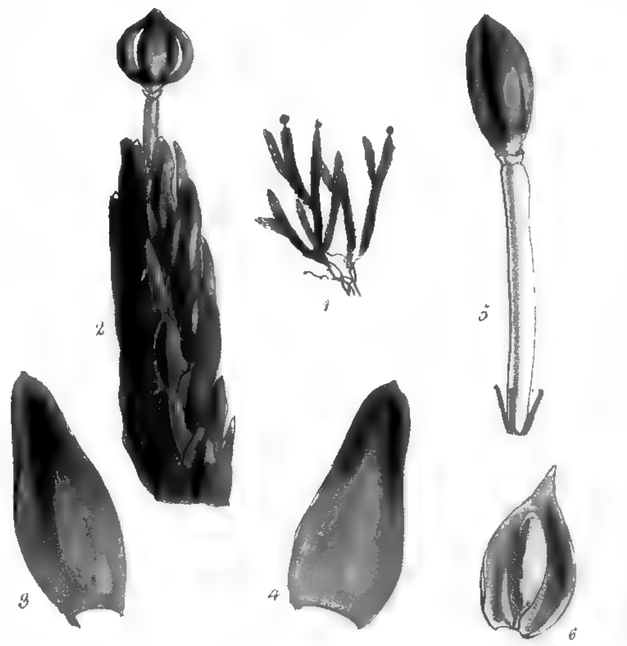
I

A. subulata γ.

II

A. mutabilis.

III



A. nitida.

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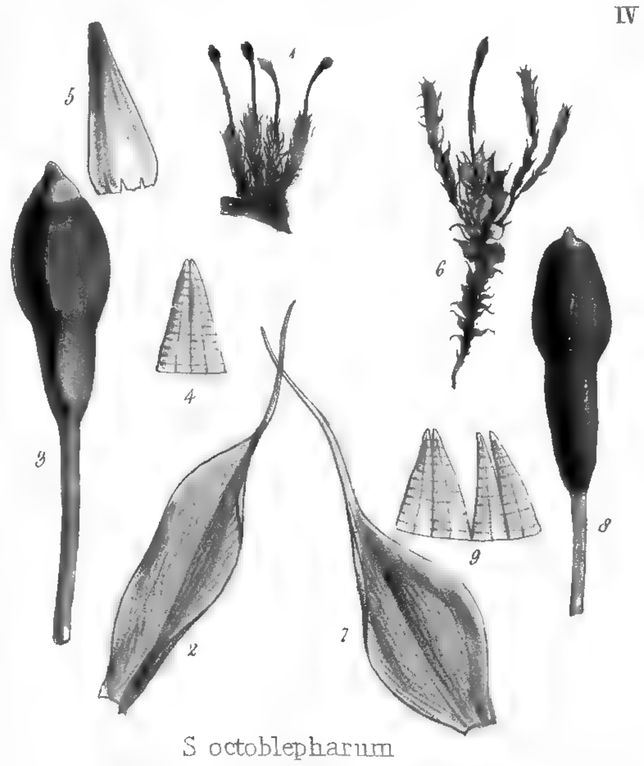
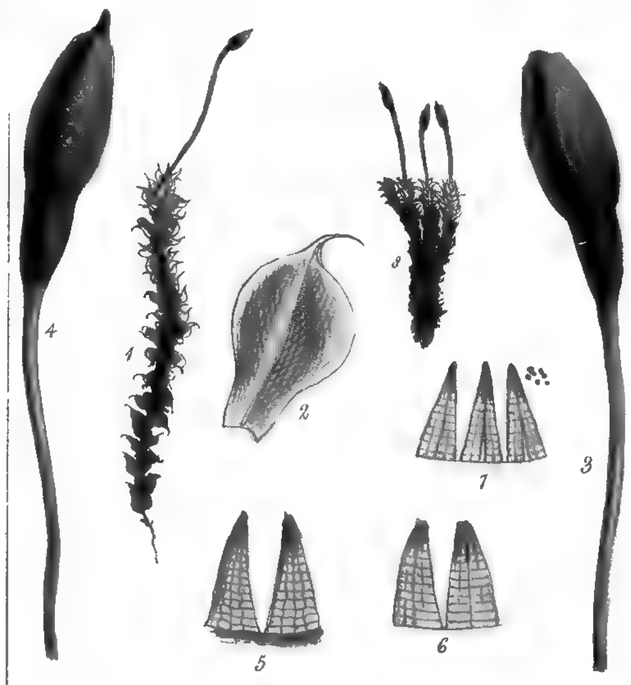


S octoblepharum

V



S. purpurascens.

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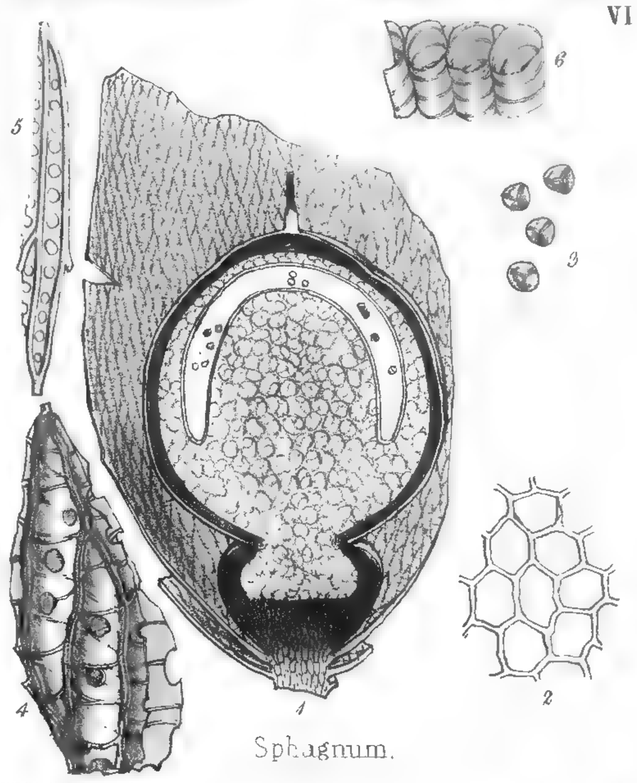
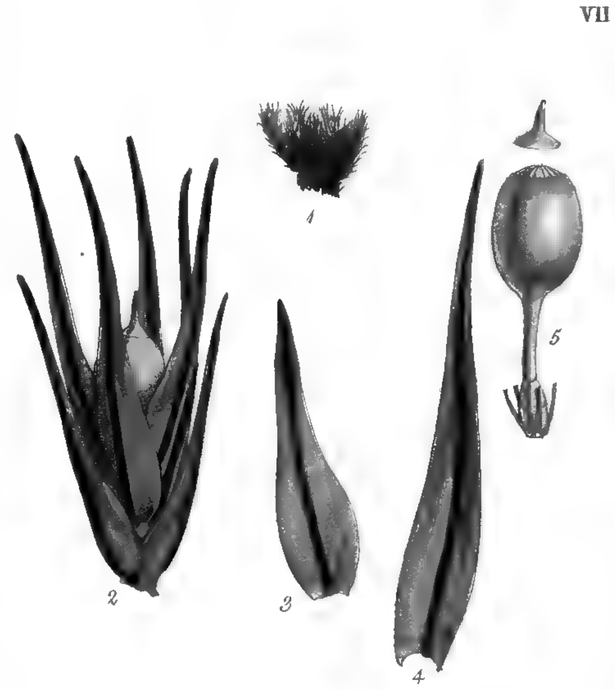


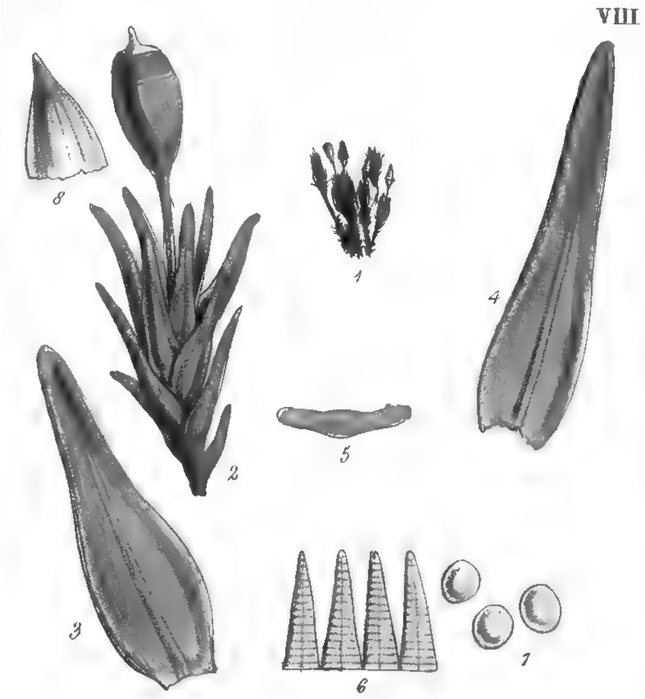
Sphagnum.

VII



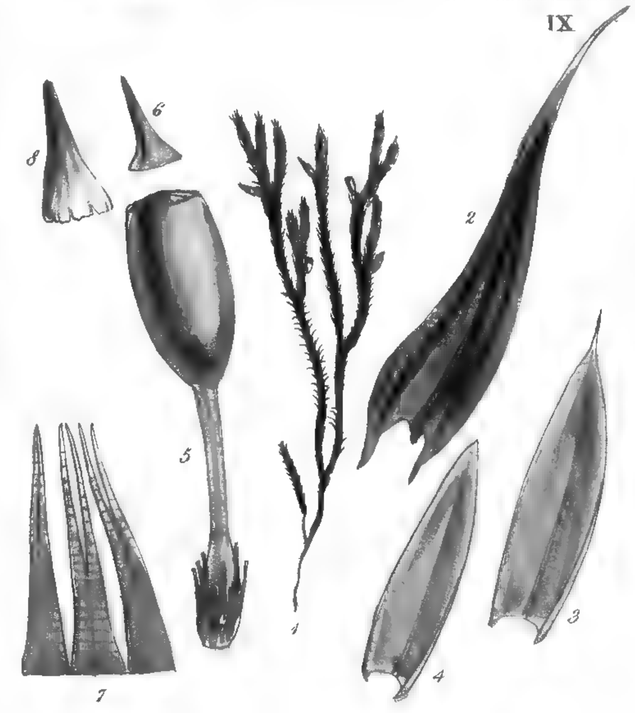
O angustifolium.

VIII



O crafsifolium.

IX



D. crispulus.

W W ,. D:H., & W.F del.t

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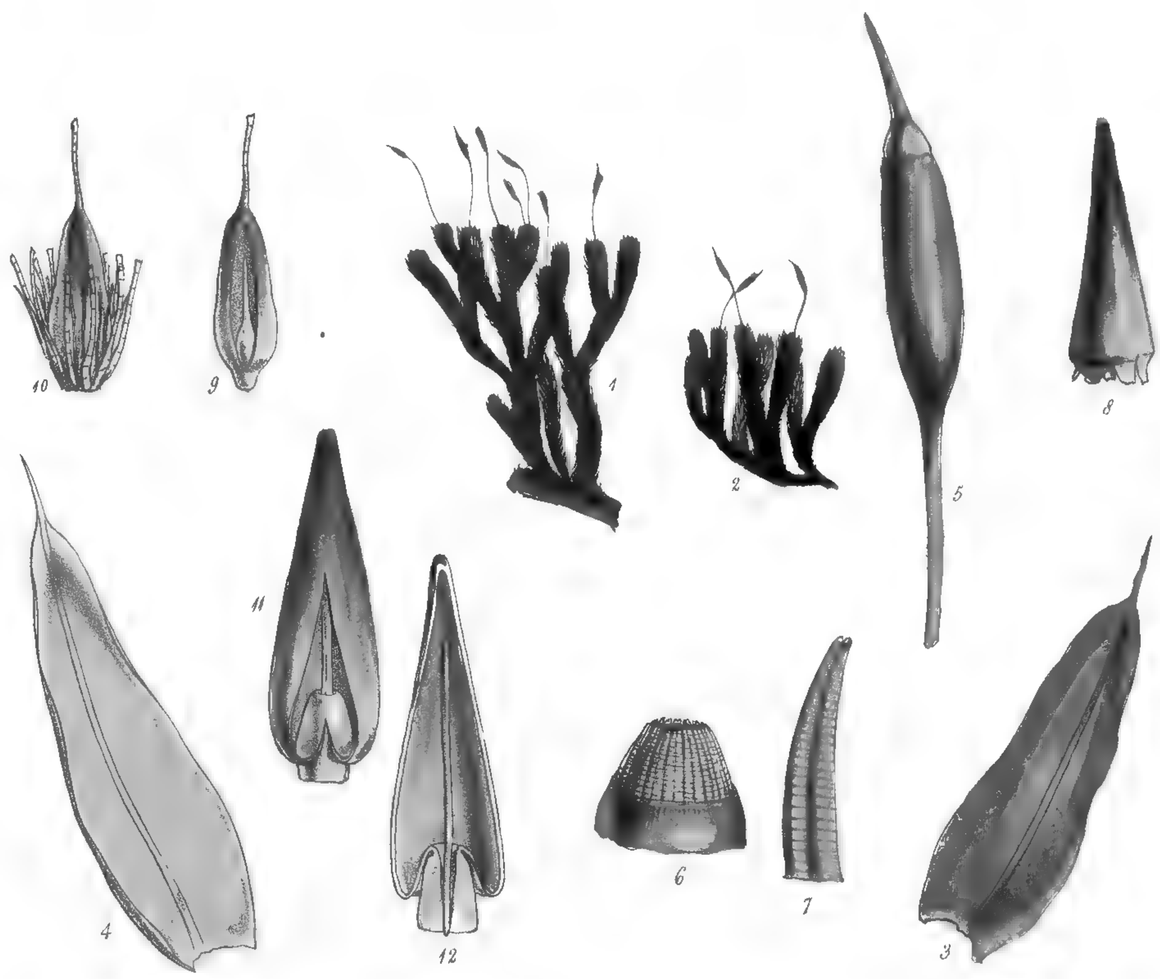
I.



S. quadrifida.

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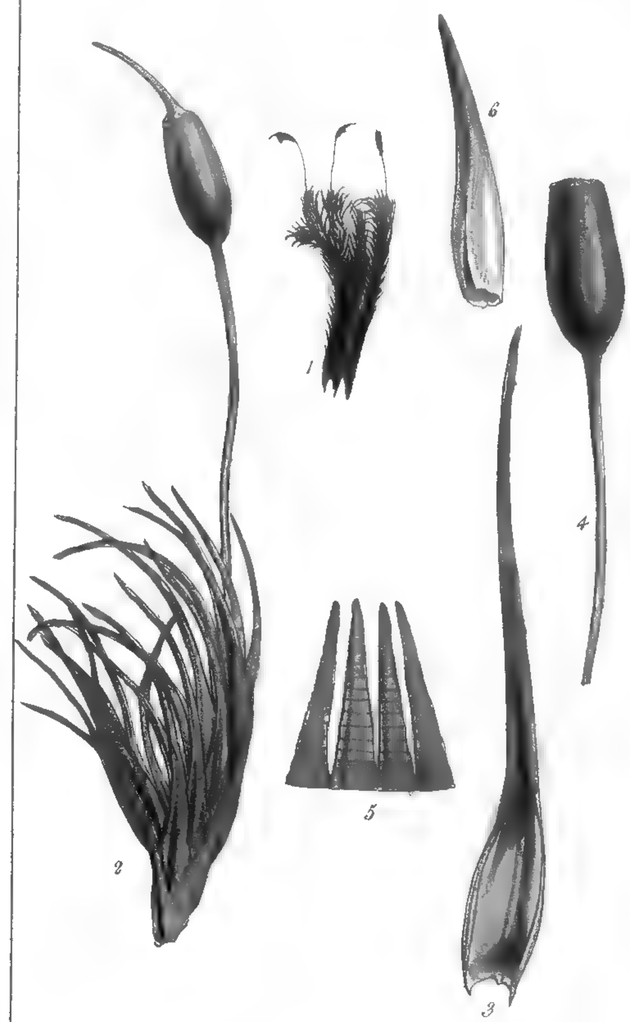
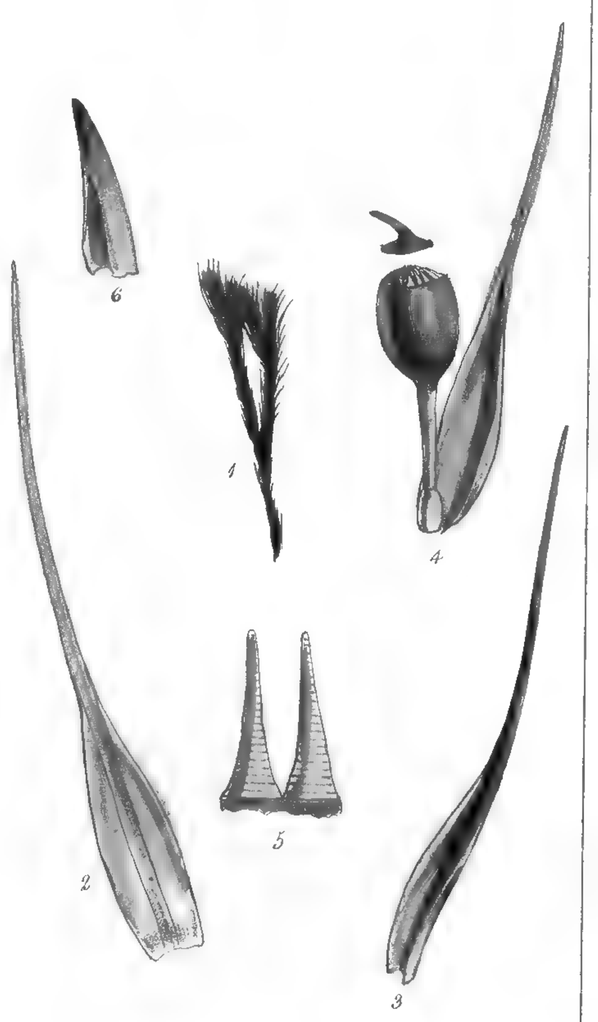


W crispula. *var.*

III.

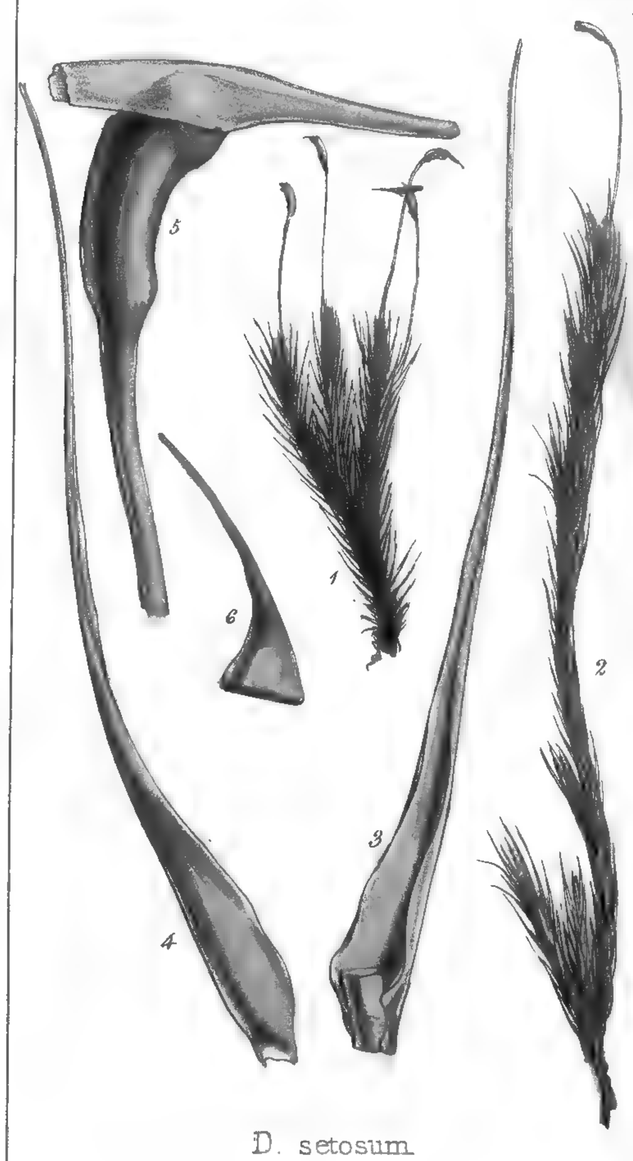


W. contecta

IV.

D. Menziesii

V.



D. setosum

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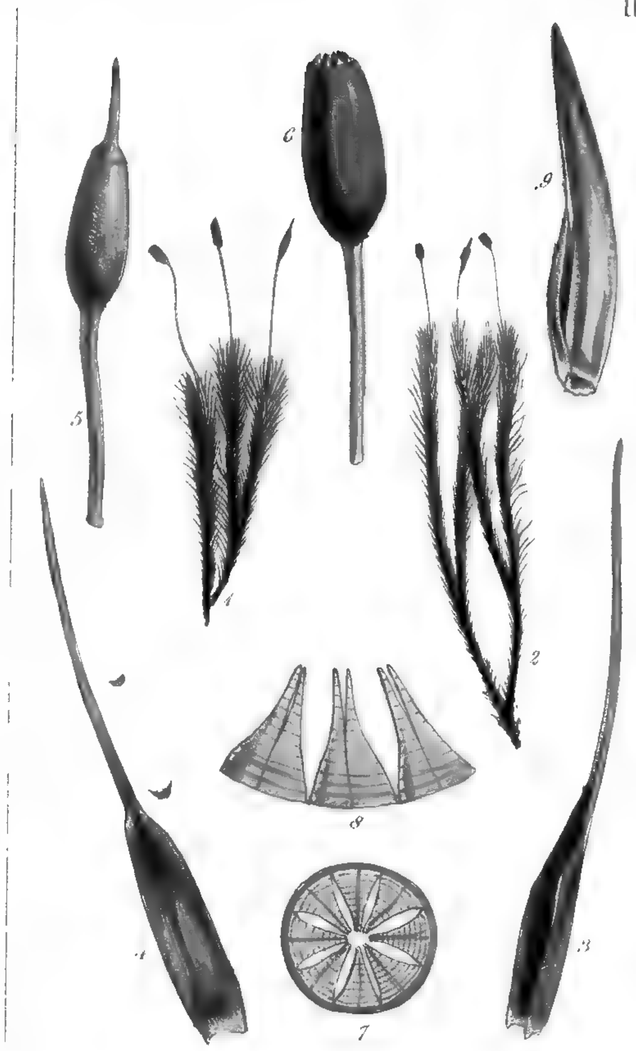
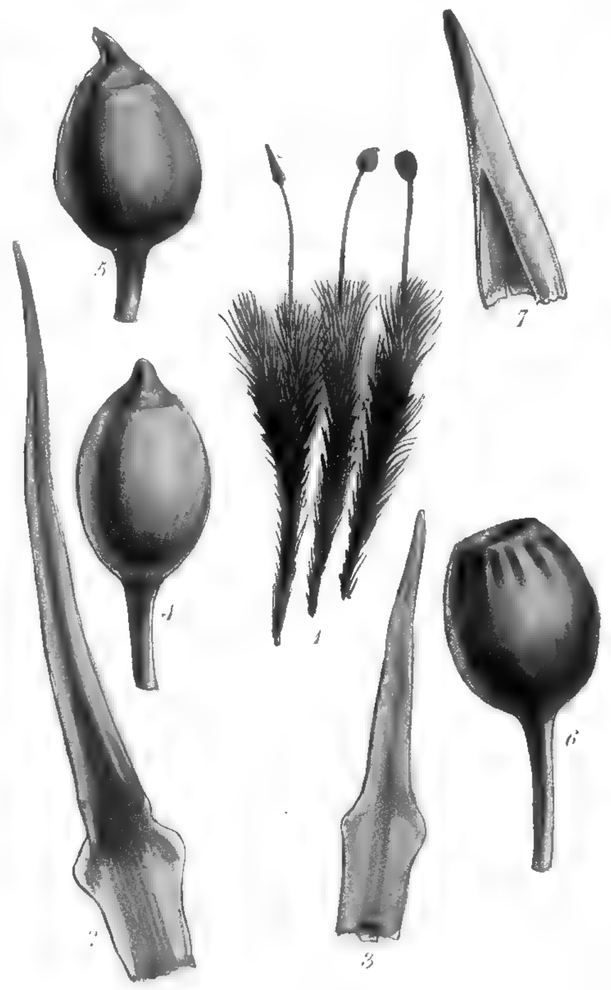
I

II



III

IV



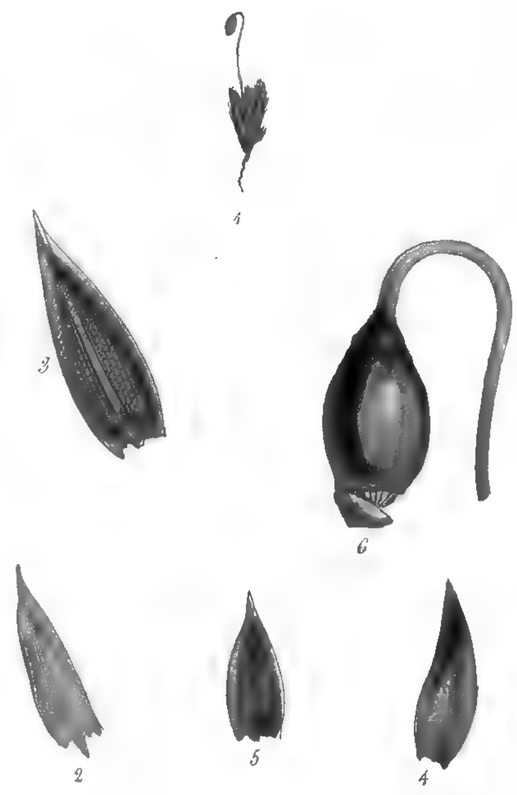
Bart robusta

Printed by Bacon Brothers

I

Bryum blandum.

II

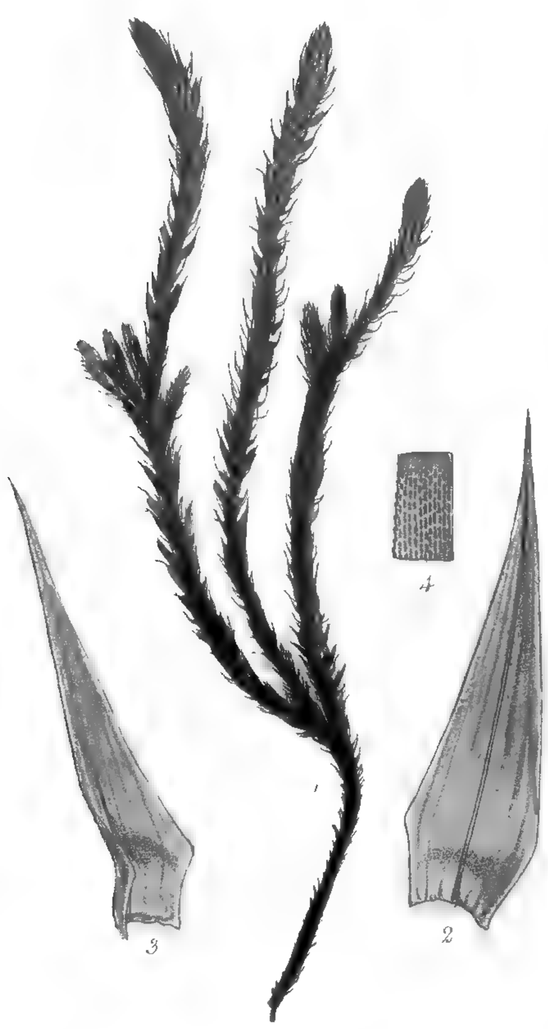


B. annulatum.

III

Hypn: elongatum.

IV



H. consimile.

V

H. acutifolium.

VI.

H scabrifolium.

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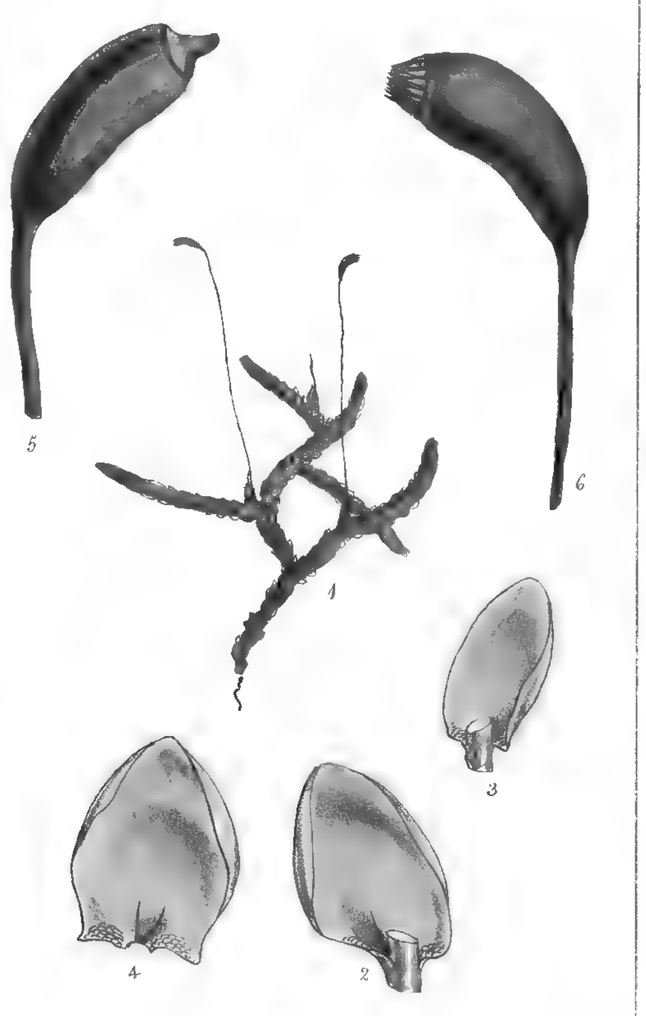
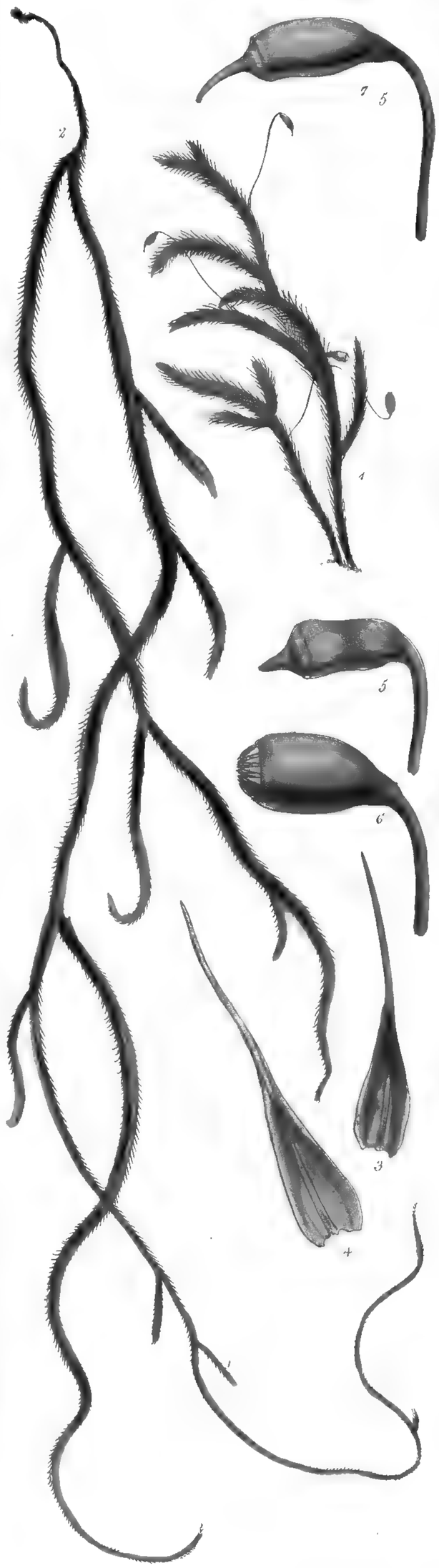
Printed by Reeve, Brothers.

I



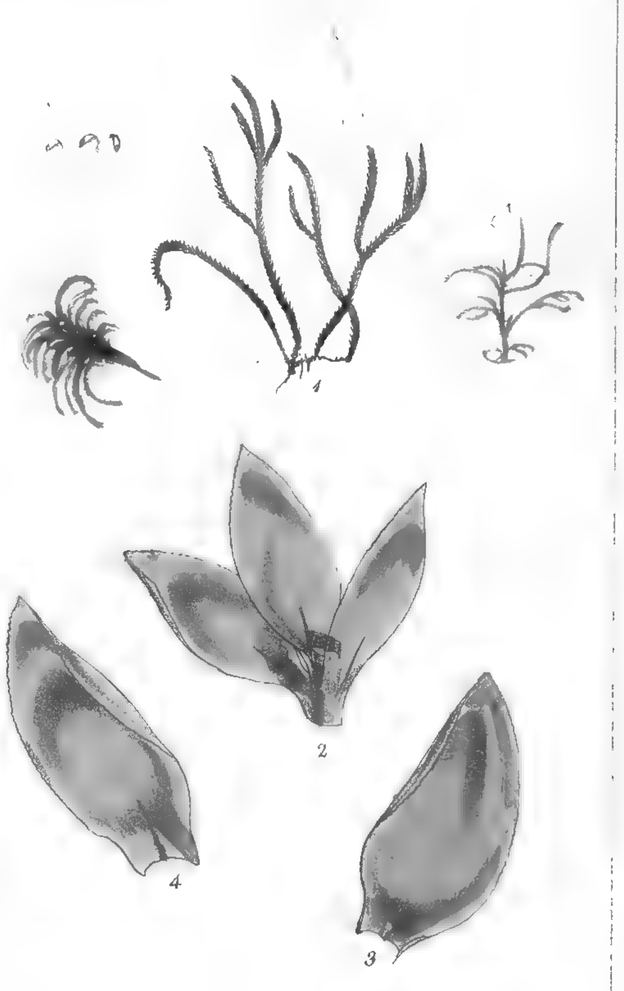
H. chlamydophyllum.

II



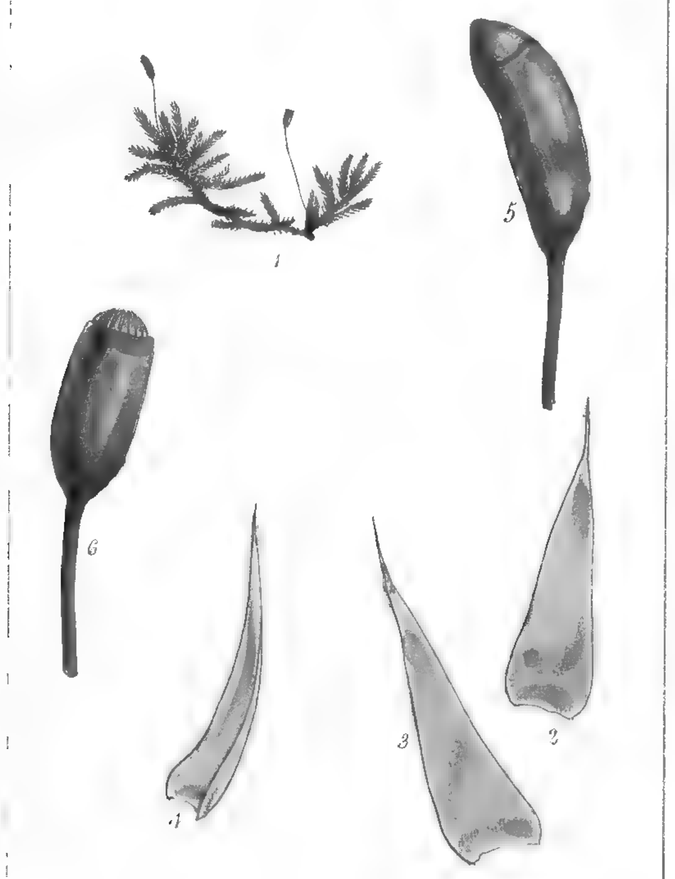
H hispidum.

III



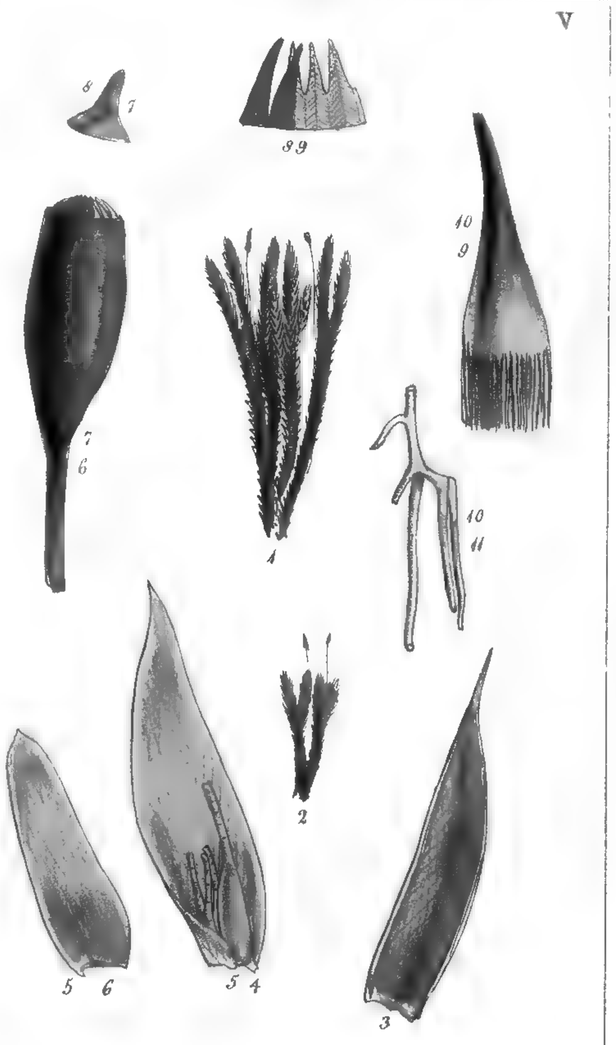
H. gracile.

IV



H. Terræ-novæ limatum.

V



Hookeria nervosa

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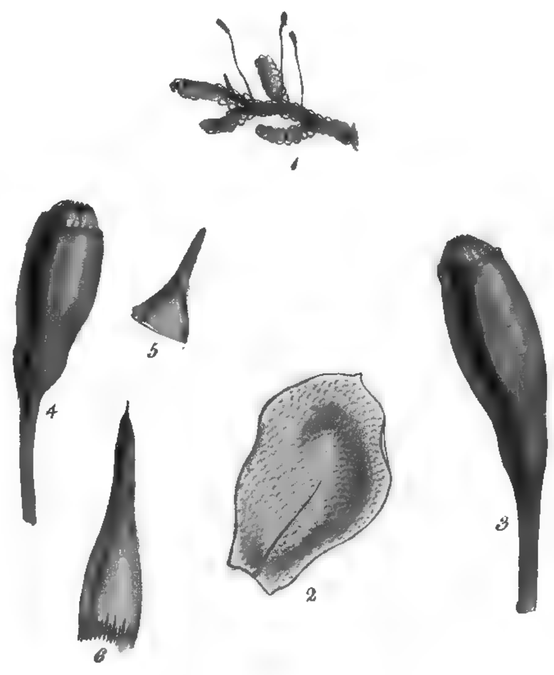

Hook: pulchella.

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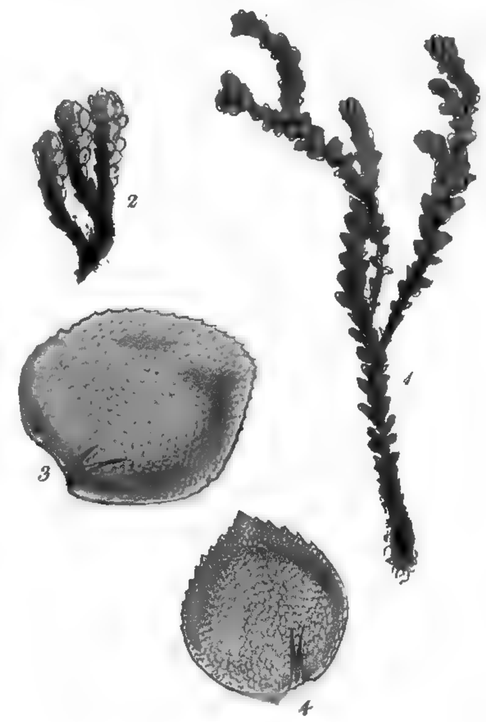
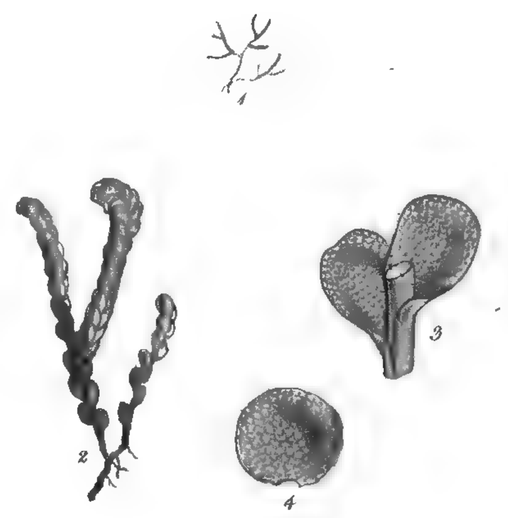


H. denticulata.

III.

H. pennata. *var.*

IV.

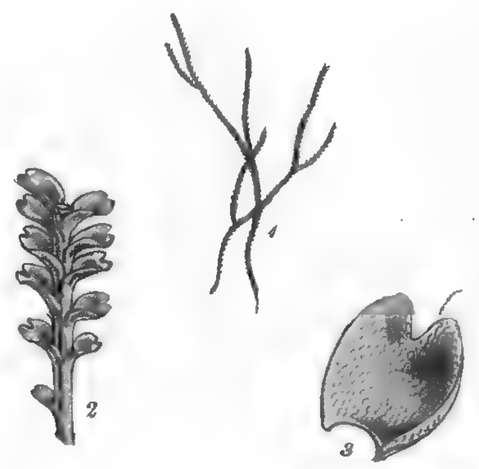


Jung: stygia.

V.

J. acinacifolia.

VI.



J. ochrophylla.

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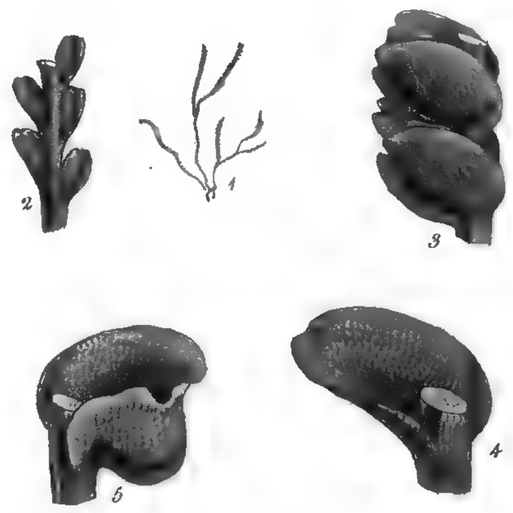

J. perigonialis.

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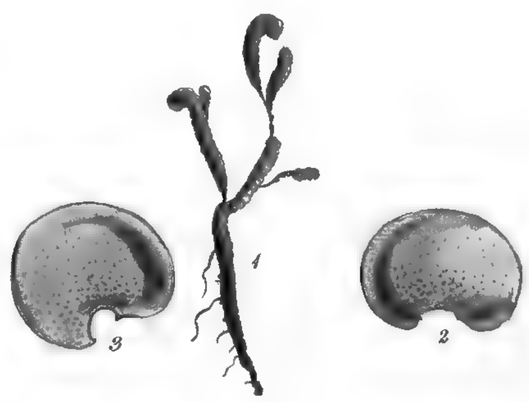

J. occlusa.

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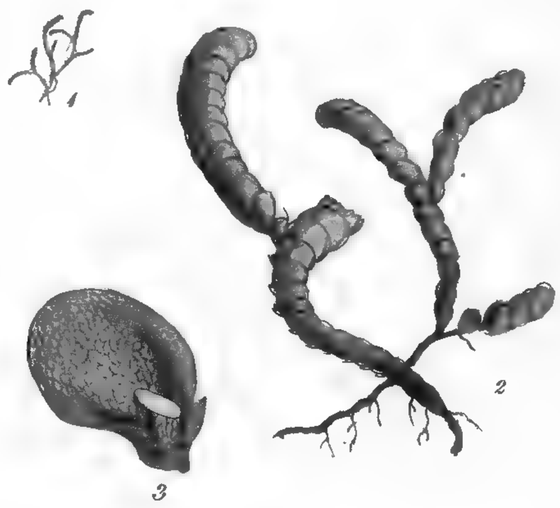

J. strongylophylla.

W.W.J D.H. & W.F. del.t

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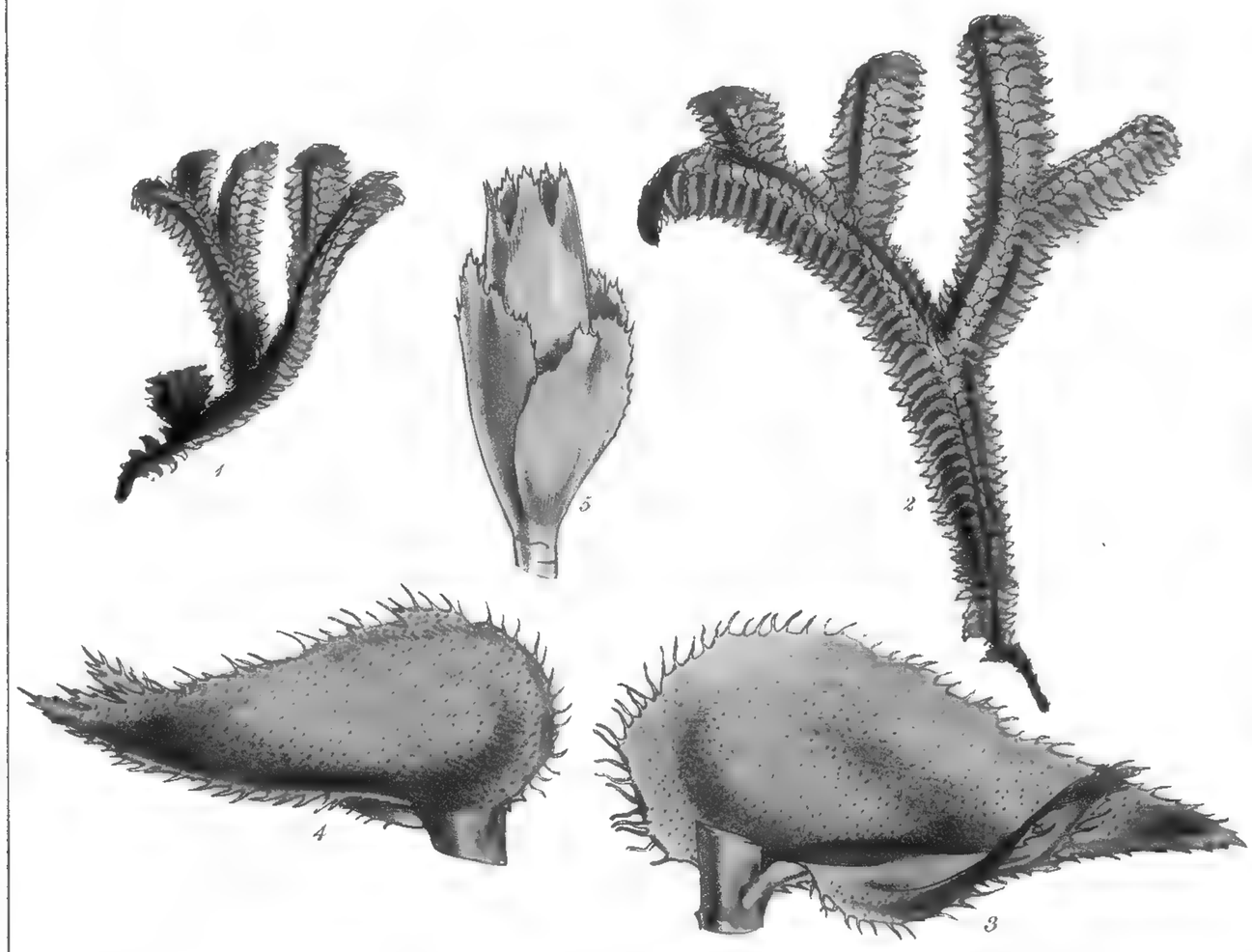

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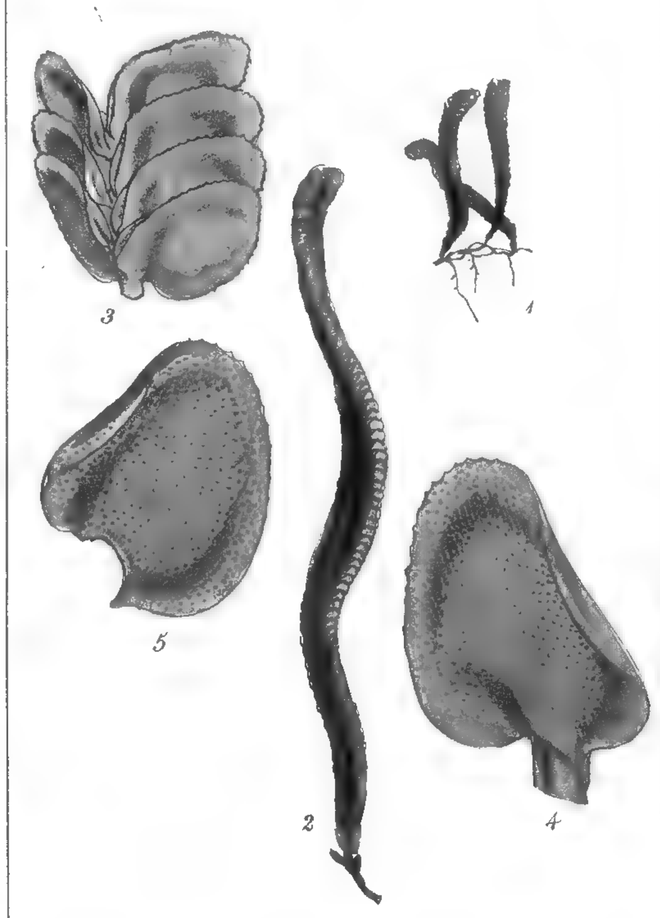


J. hemicardia.

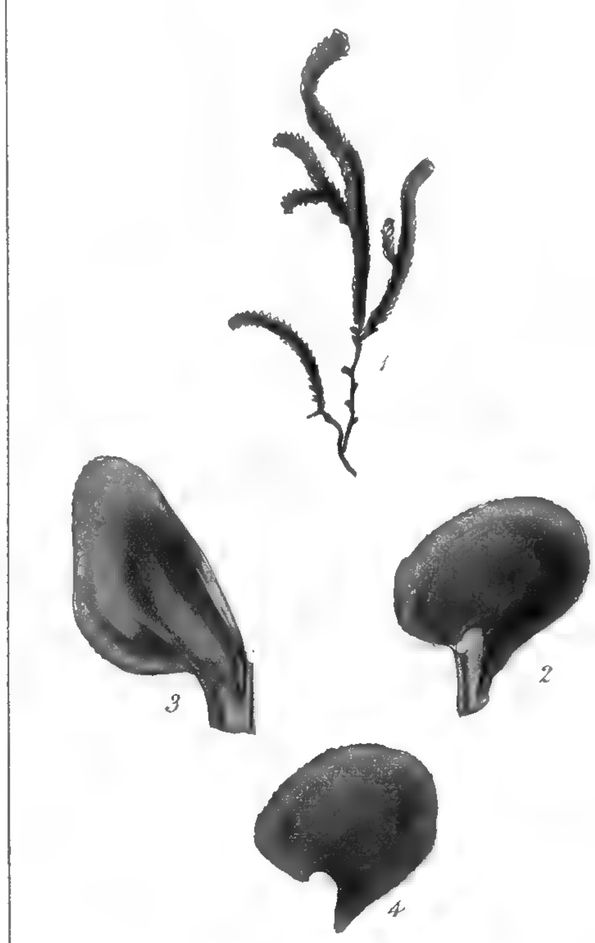
III.

J. cognata.

IV.

J. pleurota

V.



J. fuscella.

J.D.H.& W.Fitch del[t]

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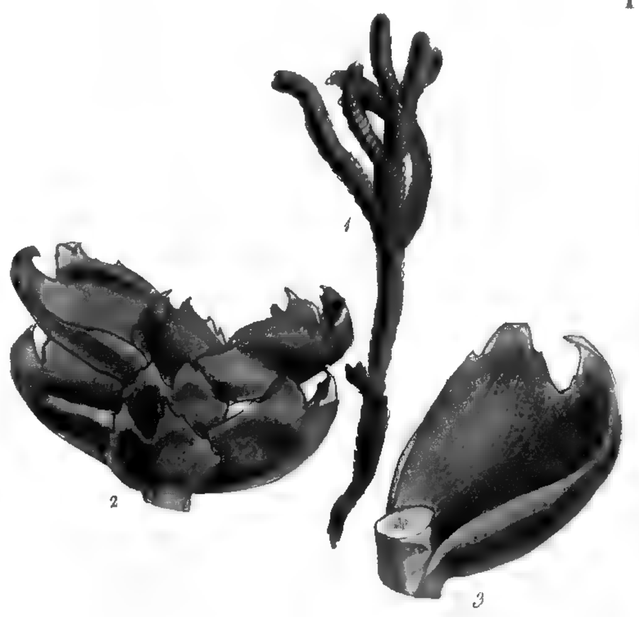

J. intortifolia.

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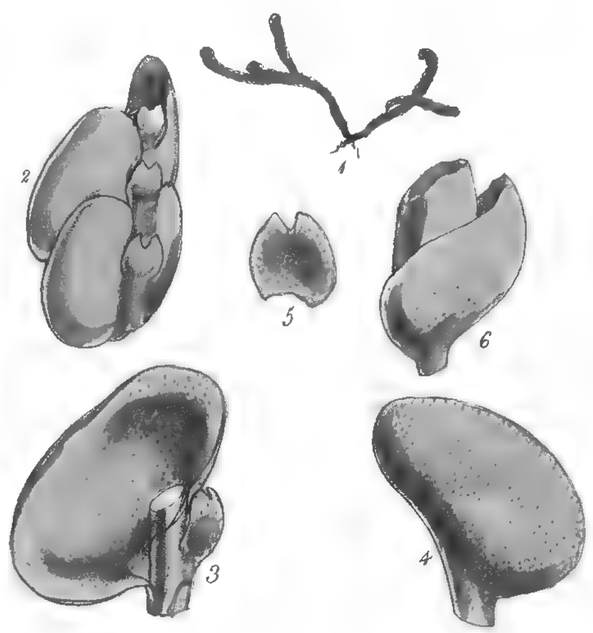

J. turgescens

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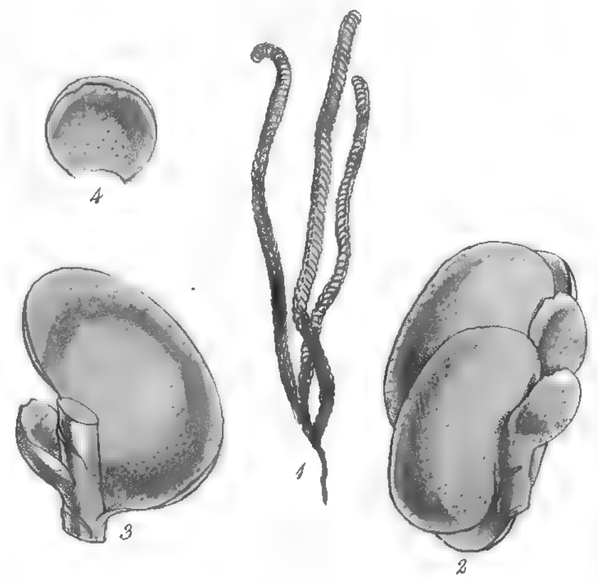

J notophylla

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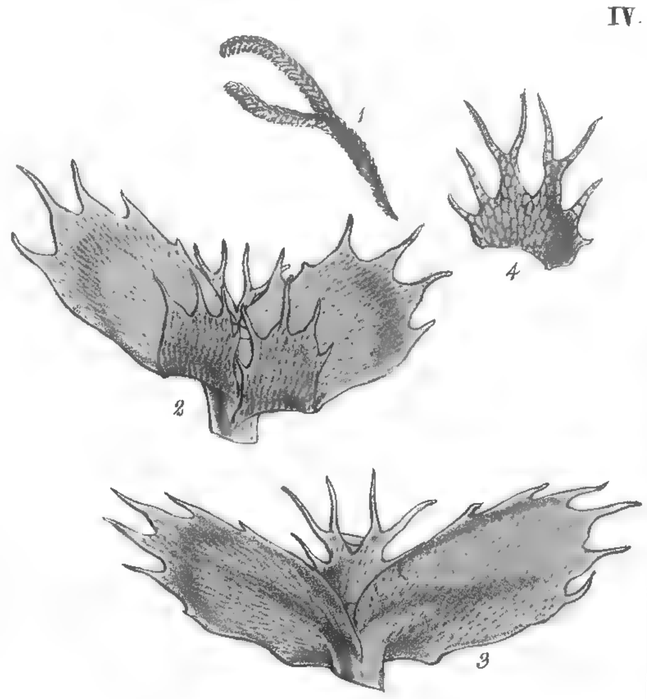

J diplophylla.

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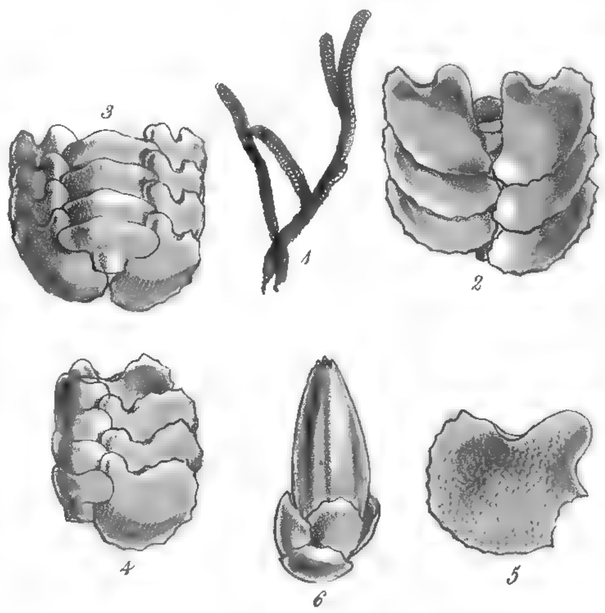
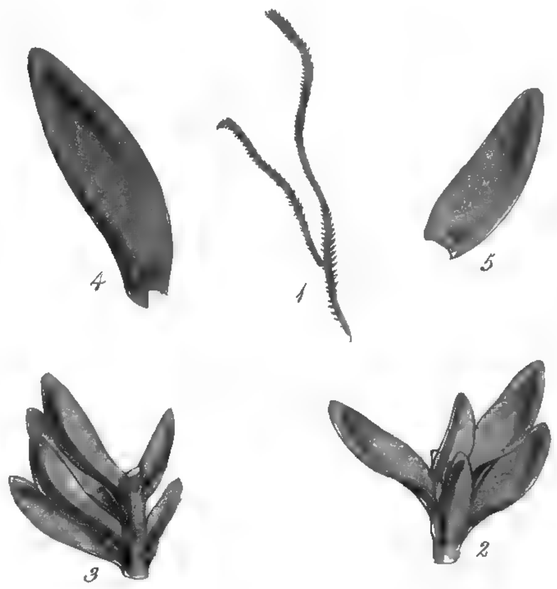


J cymbalifera.

VI.

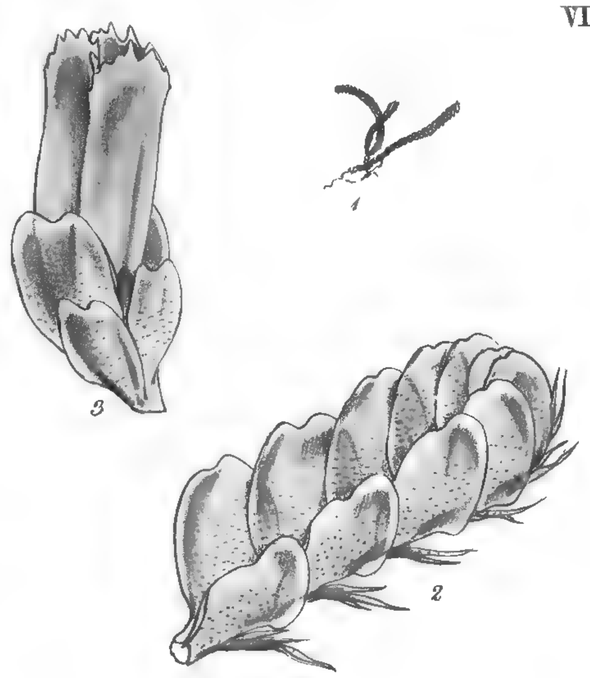


J. tenacifolia.

VII.

J. bispinosa.

VIII.



J. grisea.

IX.

J. perpusilla

W.W. J.D.H & W.F. del[t]

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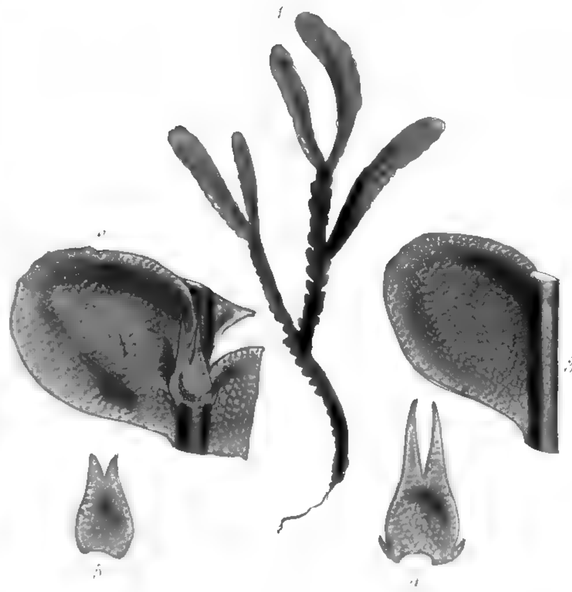
I

II



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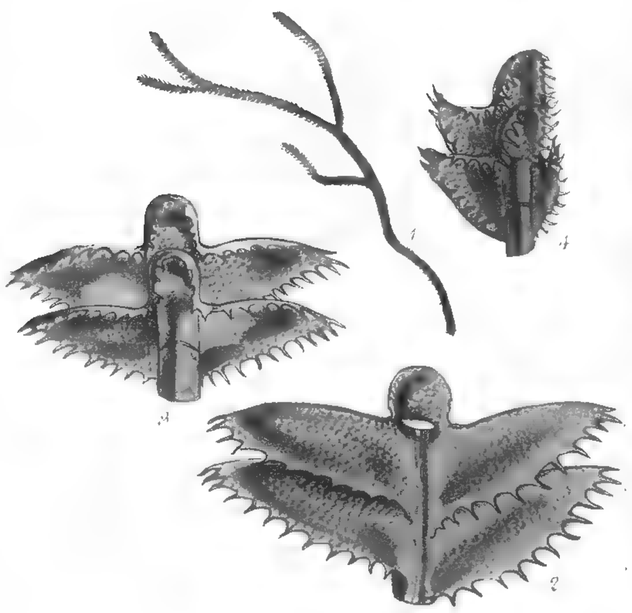

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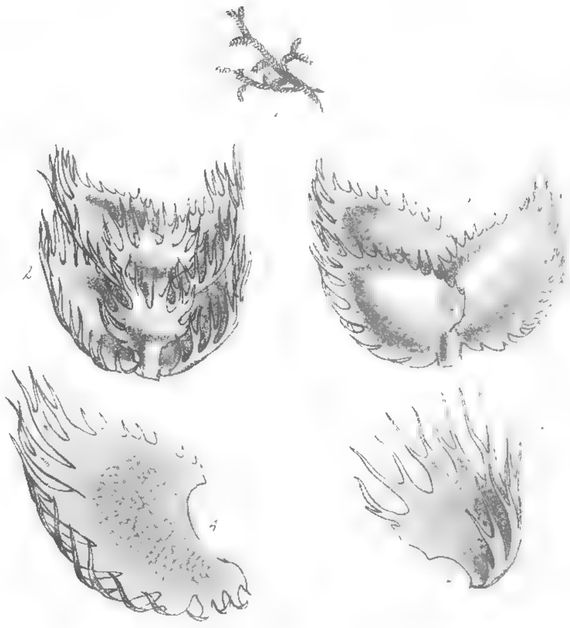

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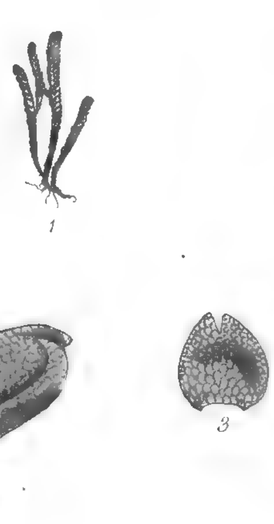


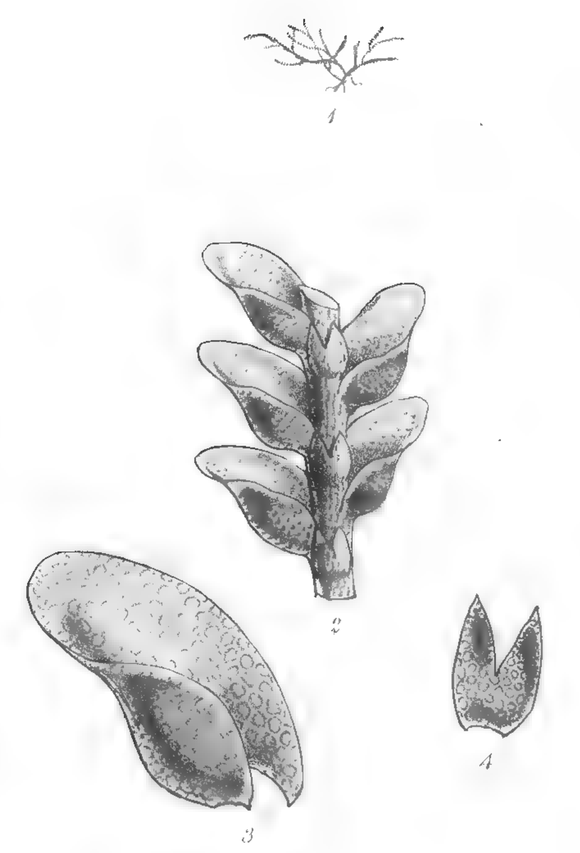
I

II

III

J. aterrima

IV.



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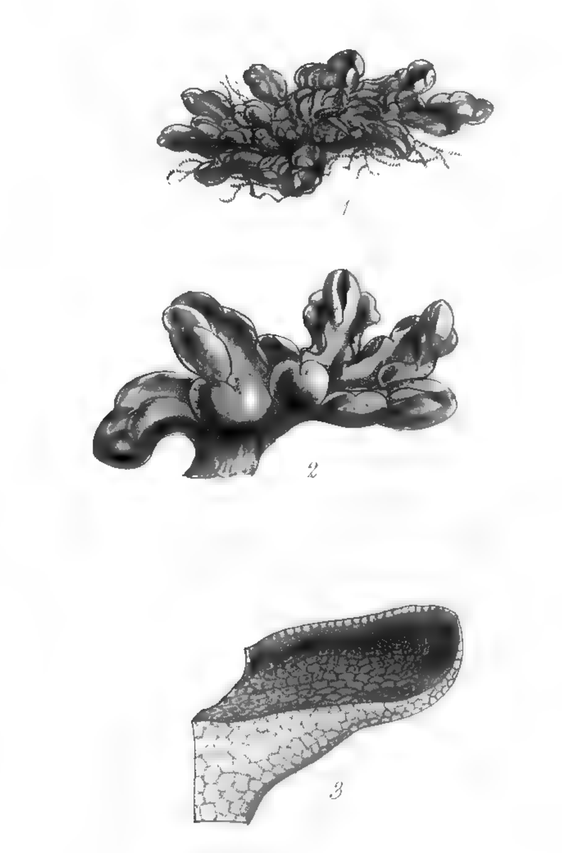

J. reticulata

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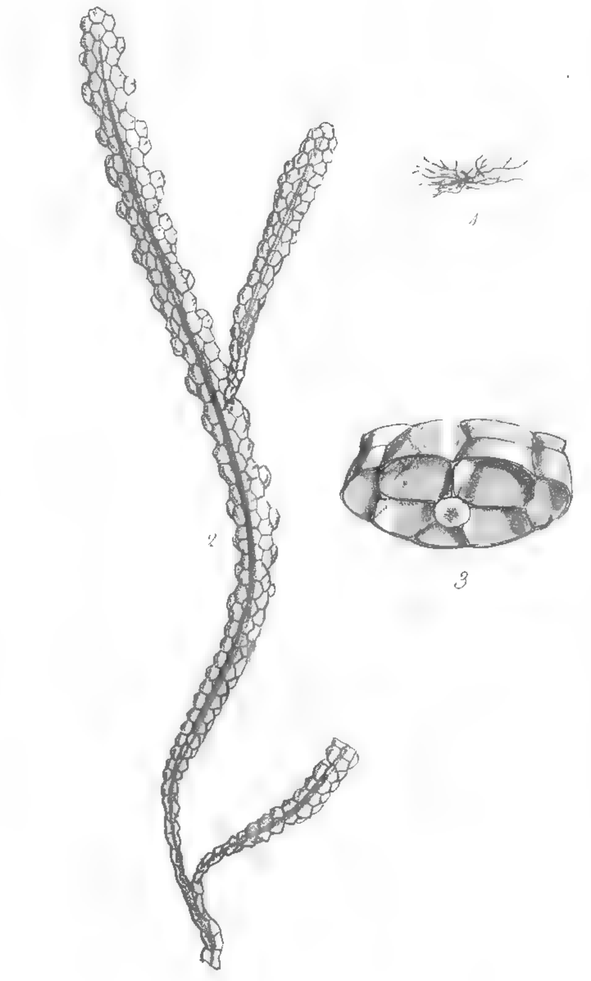

J. argentea

J. cochleata

J. laburensis

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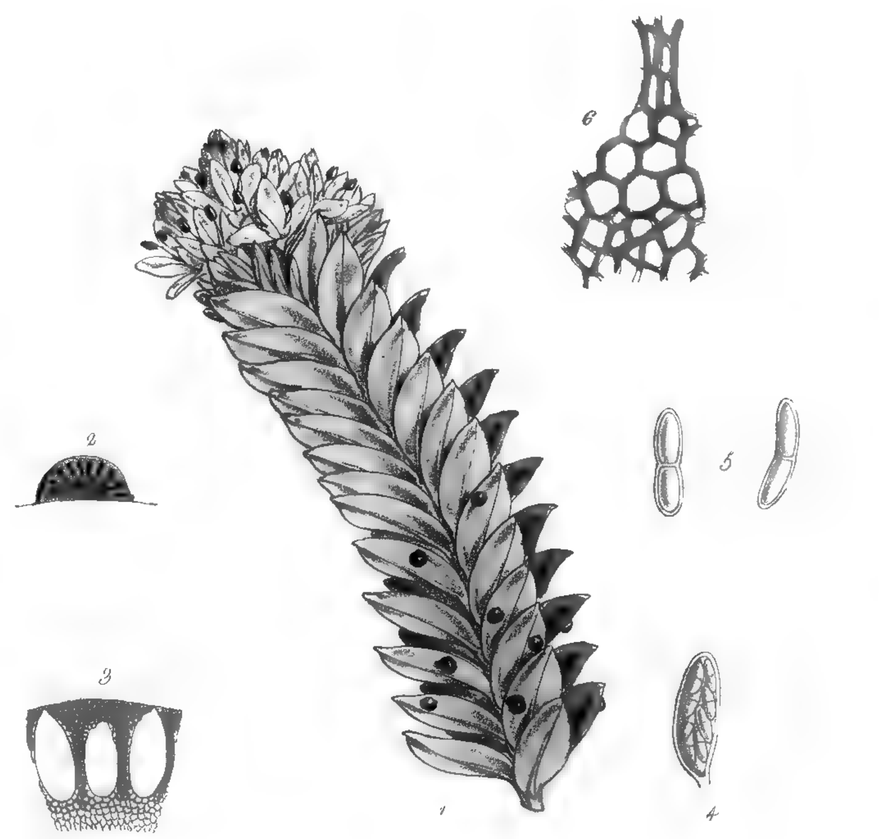
I.

Dothidea spilomea.

II.



D. hemisphærica.

III.

Antennaria scoriadea

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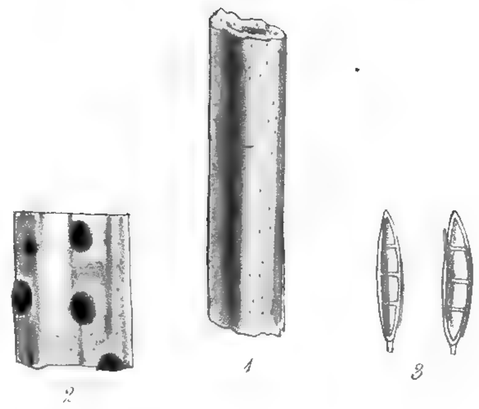
I



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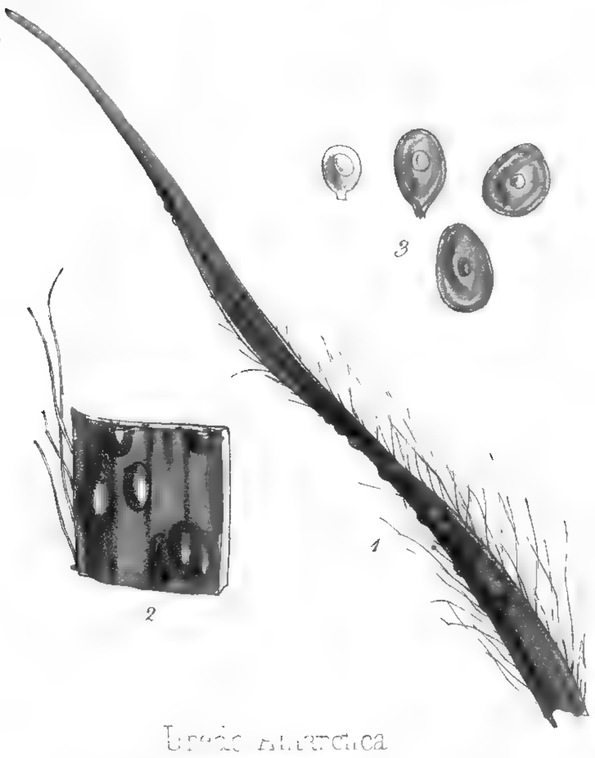

Uredo Americana

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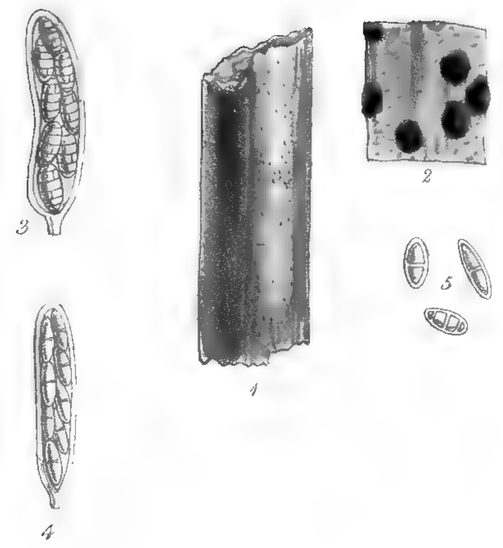

Sphæria herbarum

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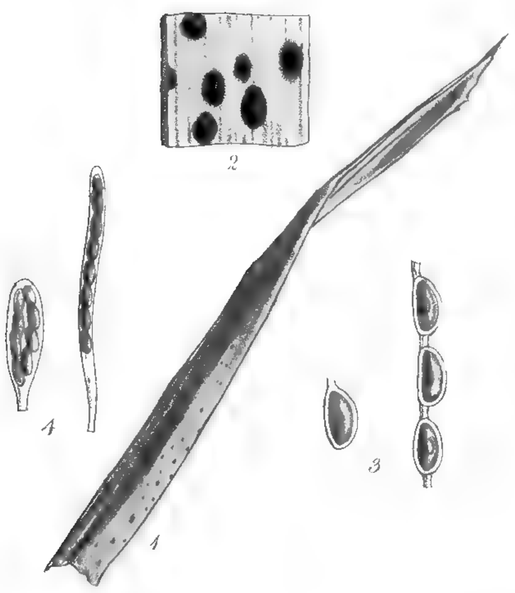

S phæcsticta.

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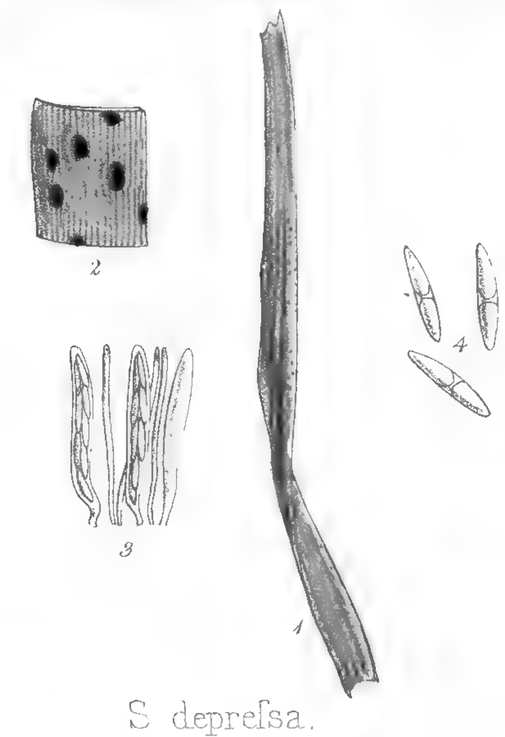
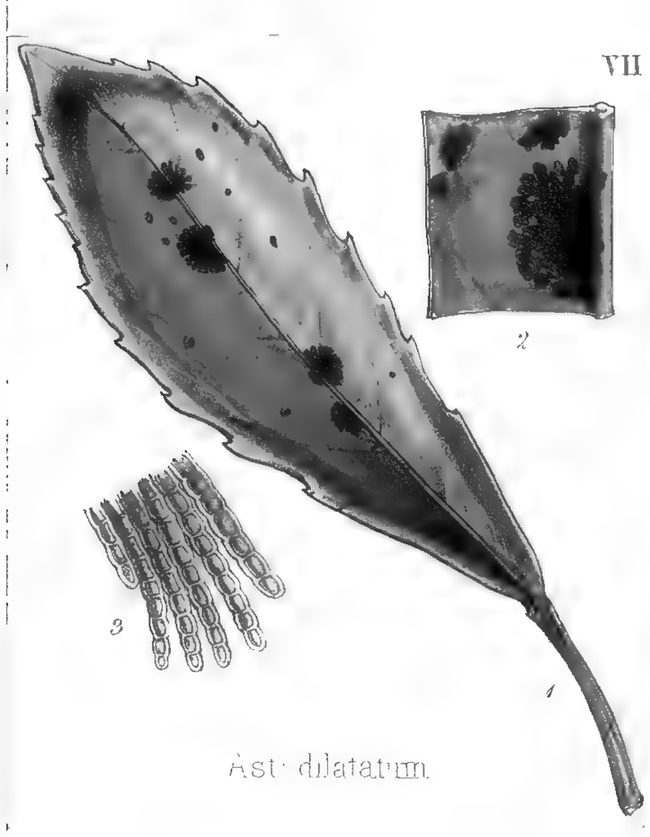


S deprefsa.

VI.

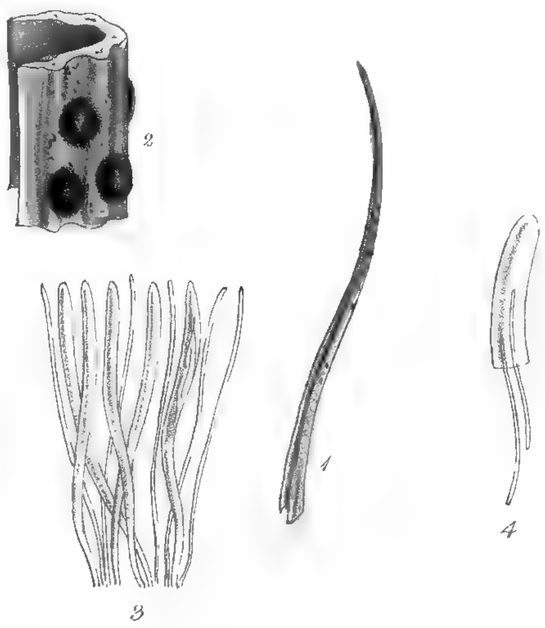
Doth: circumscripta.

VII



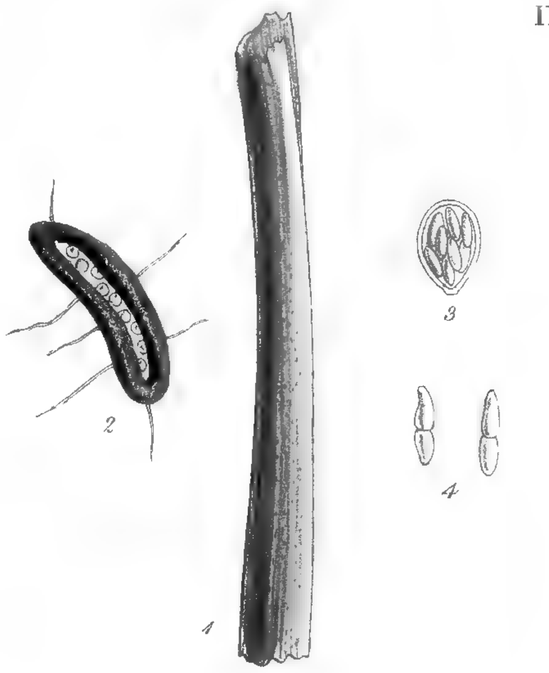
Ast: dilatatum

VIII.



Hyst breve

IX



Aylog: Bromi

M J.B & W P del[t]

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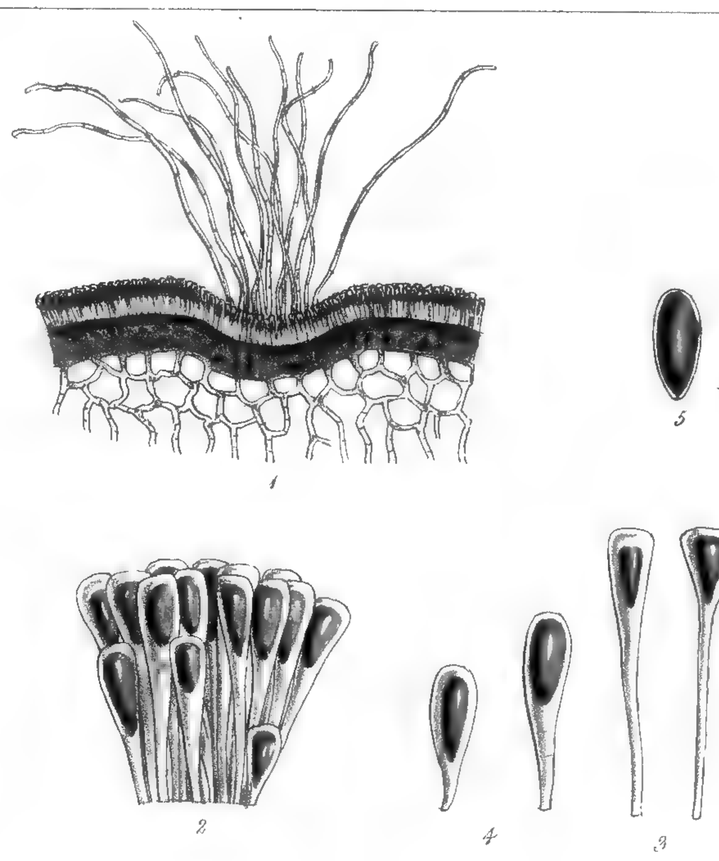
Dictyosiphon fasciculatus.



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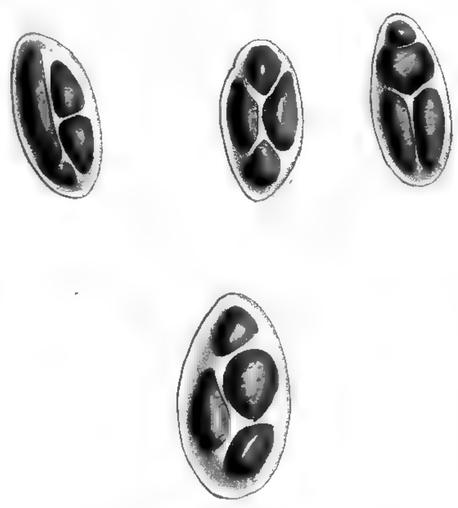

Xiphophora Billardieri. (tetraspores)

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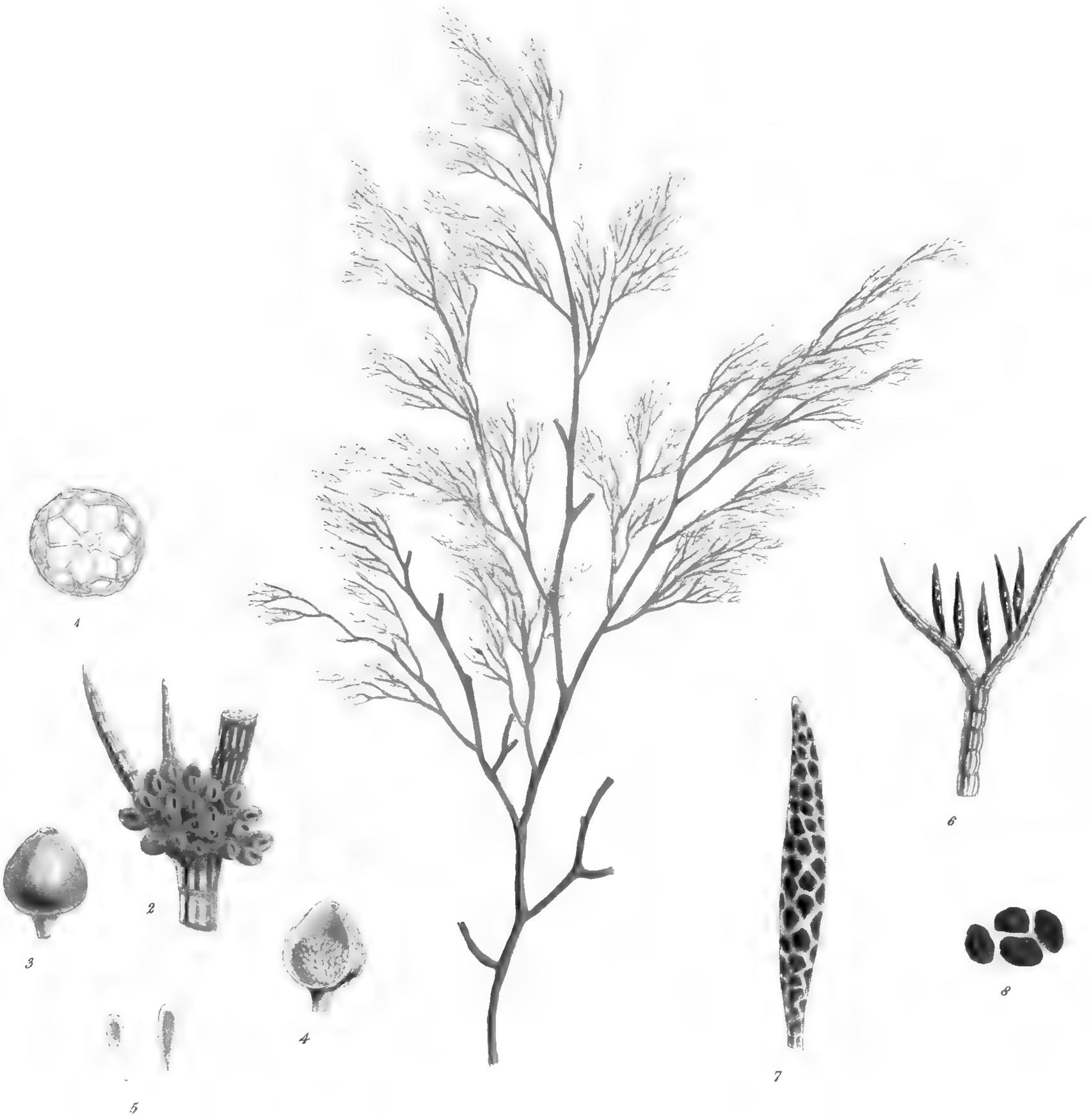

Polysiphonia botryocarpa.

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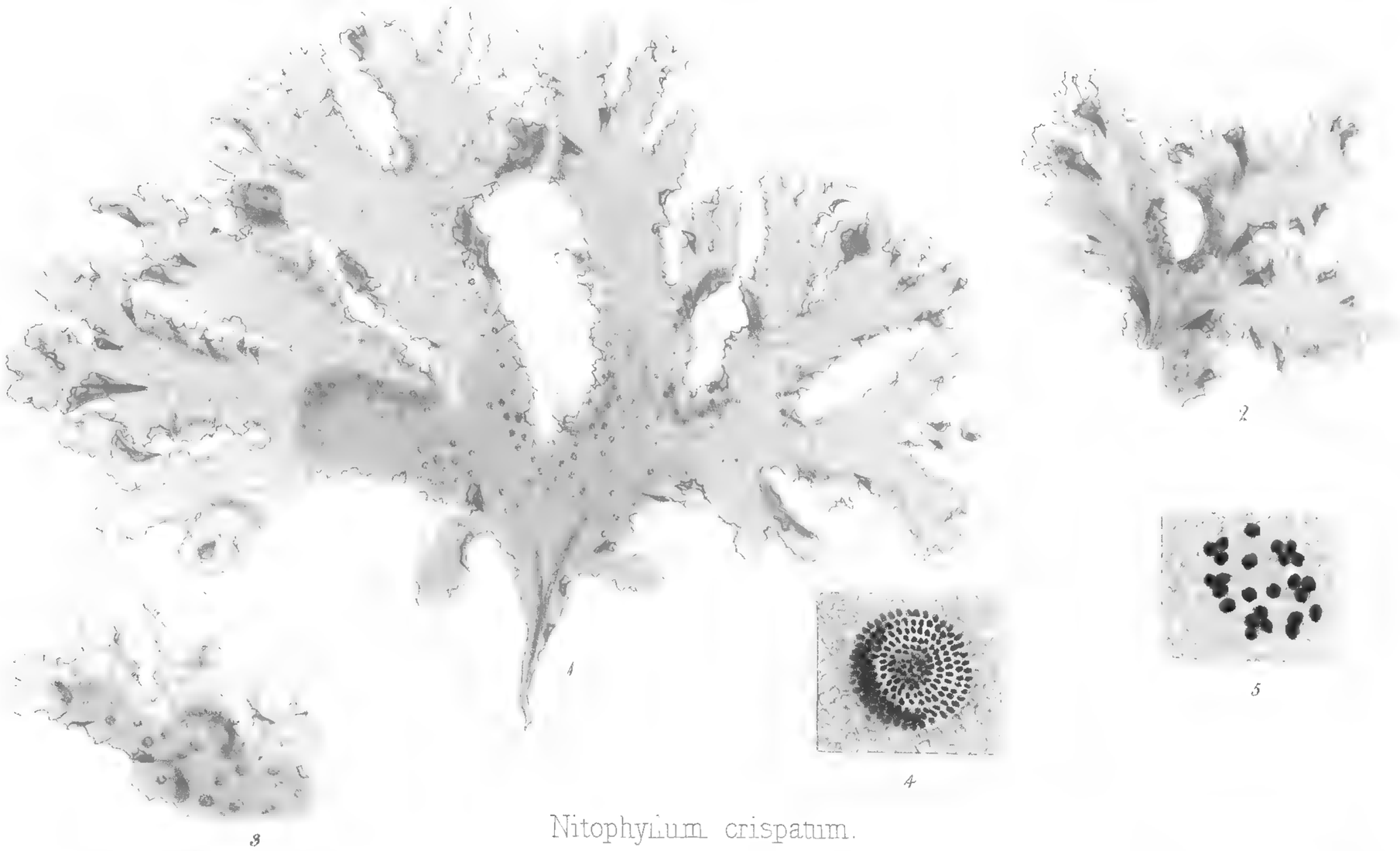

Nitophyllum crispatum.

Delefseria dichotoma.

J.D.H & W.F. delt

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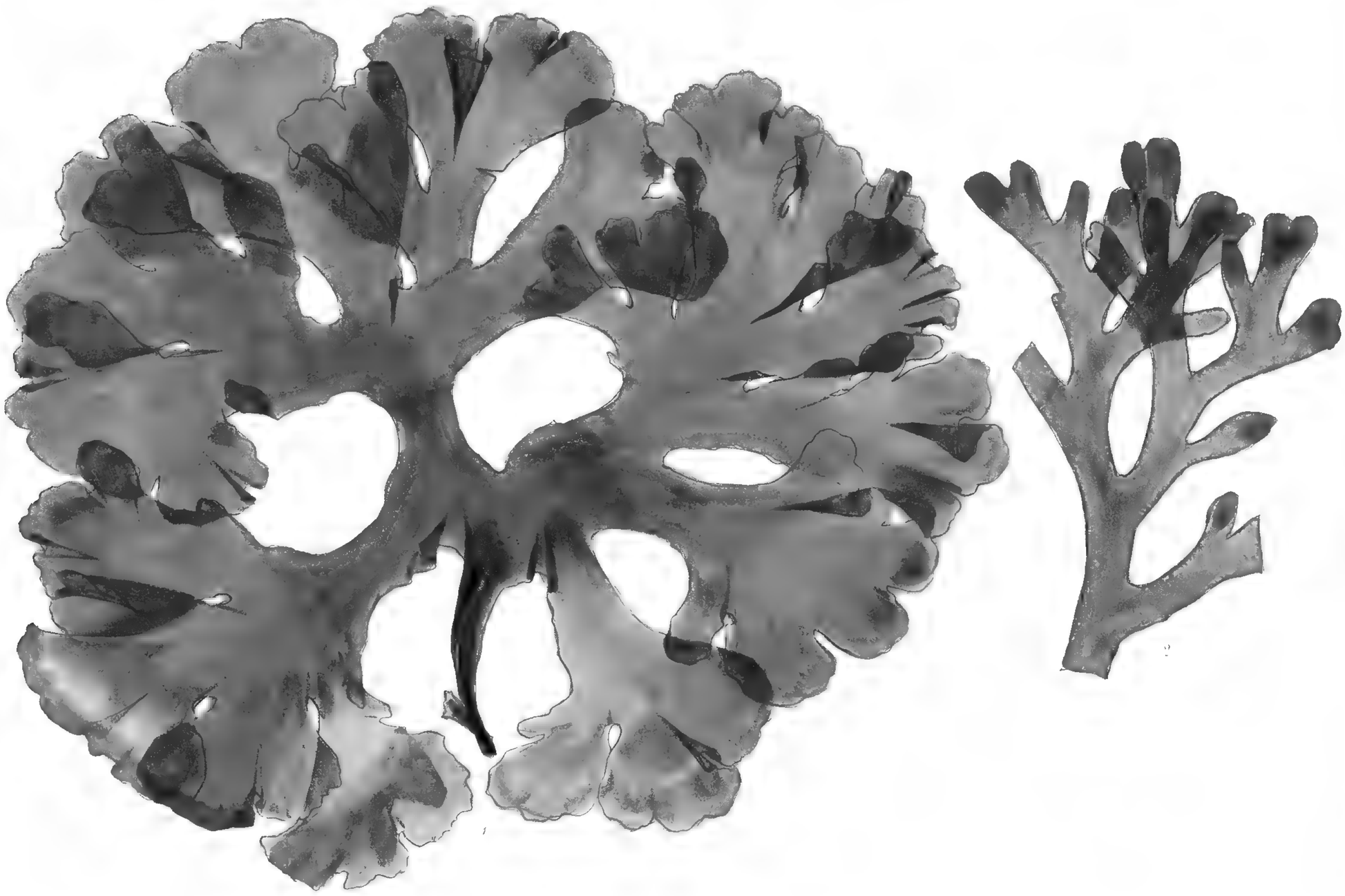
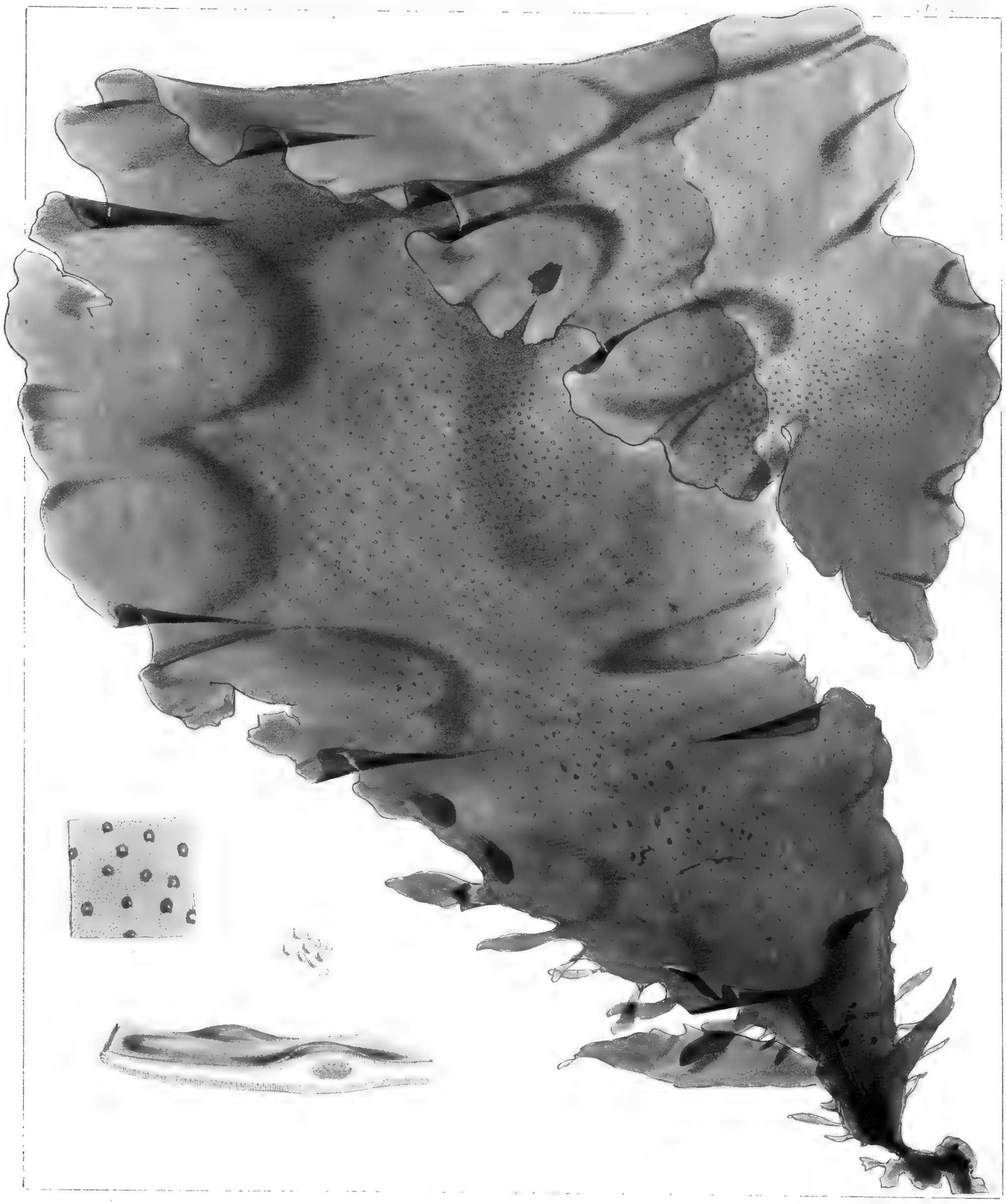
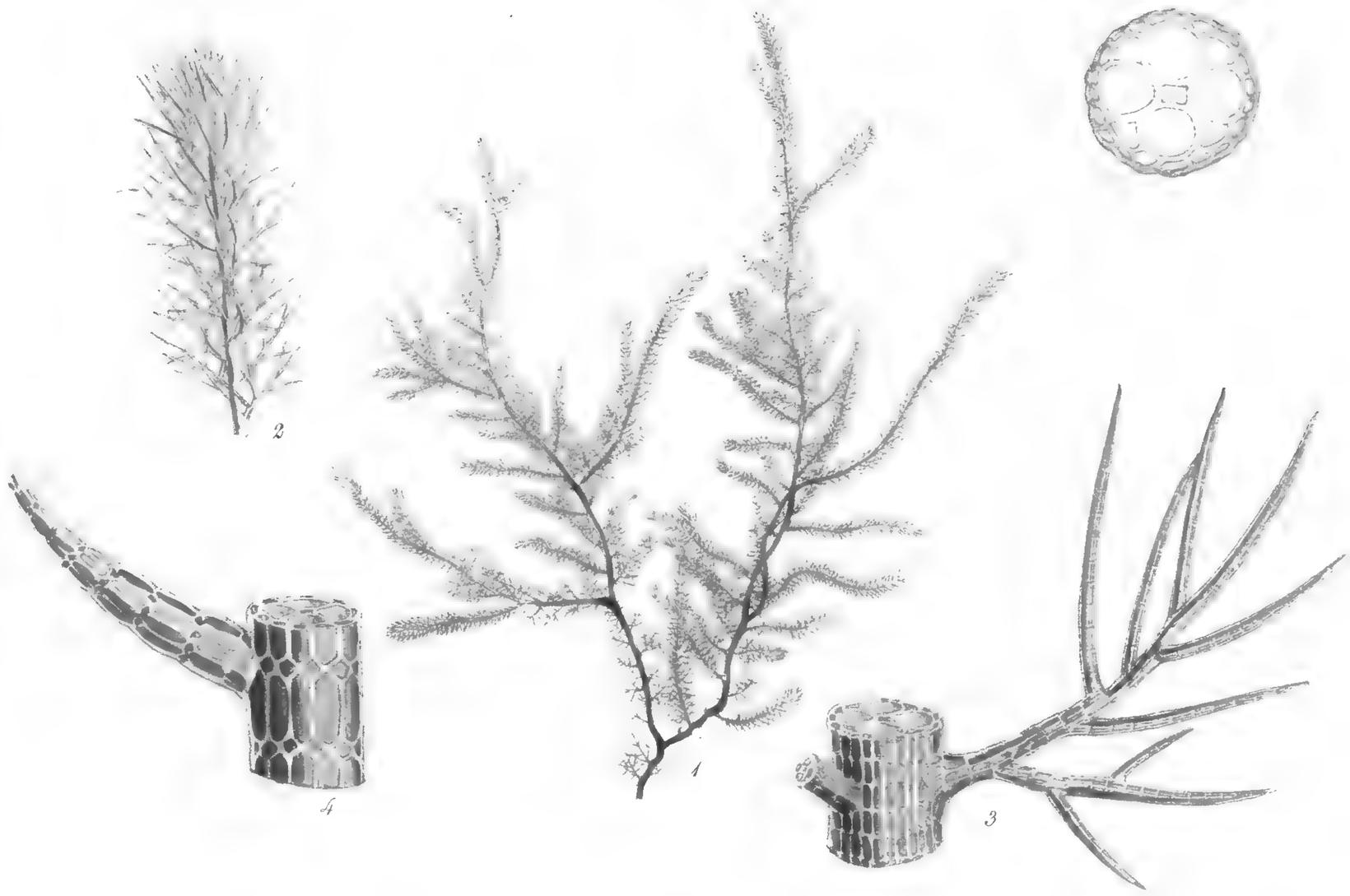


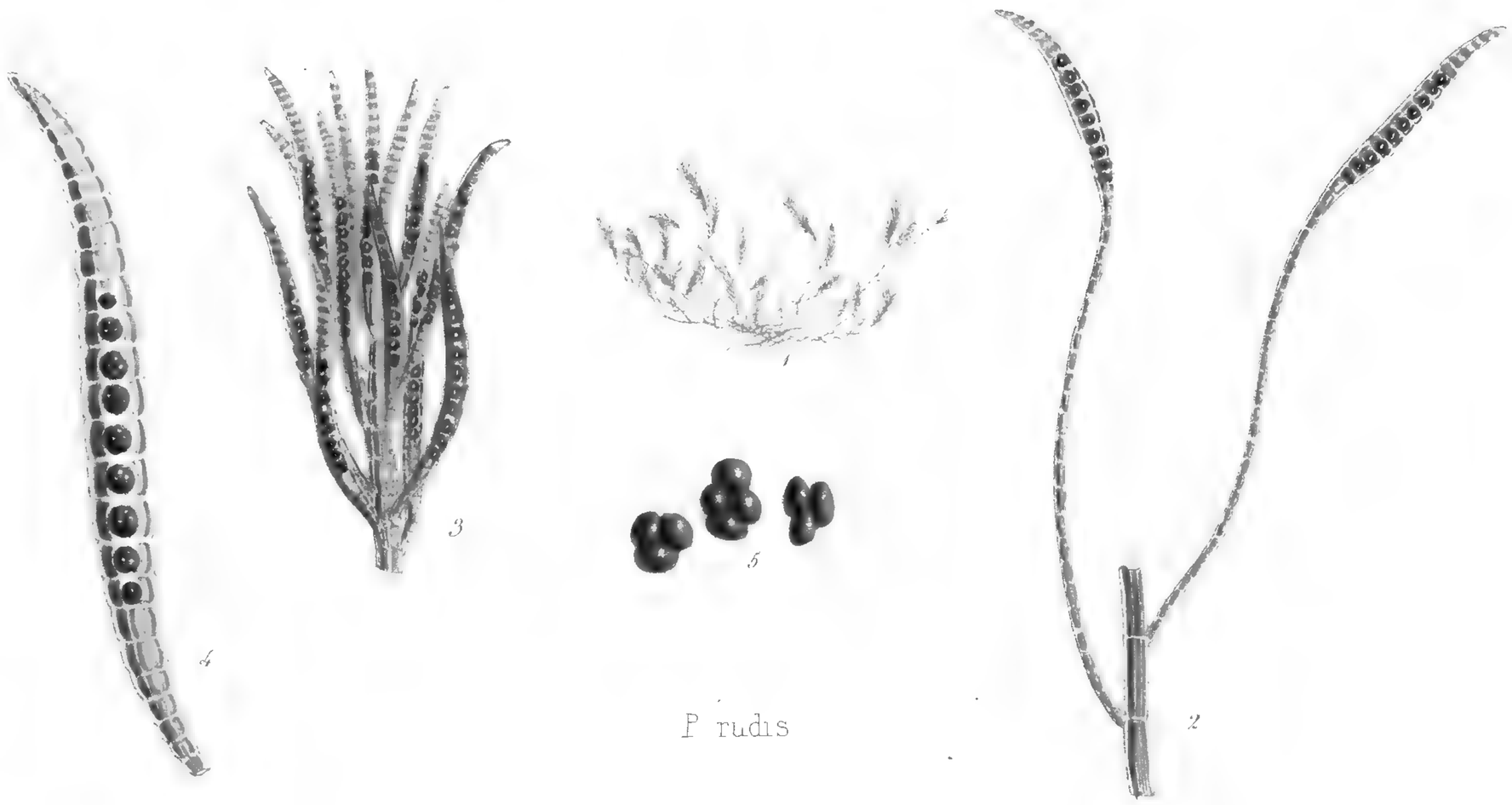
Rhodomenia dichotoma.

R Hombroniana *(young)*





Polysiphonia Lyallii



P rudis

W H H & W F del.

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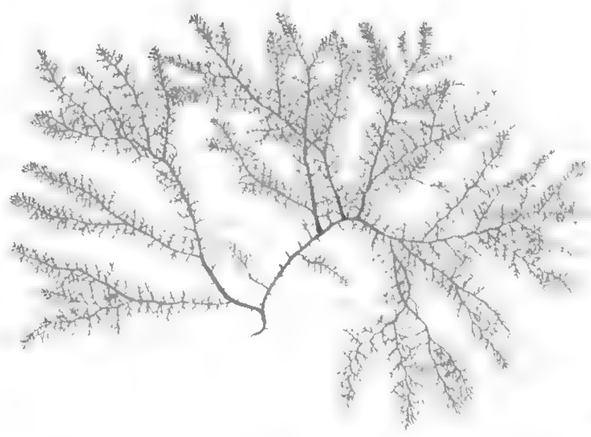

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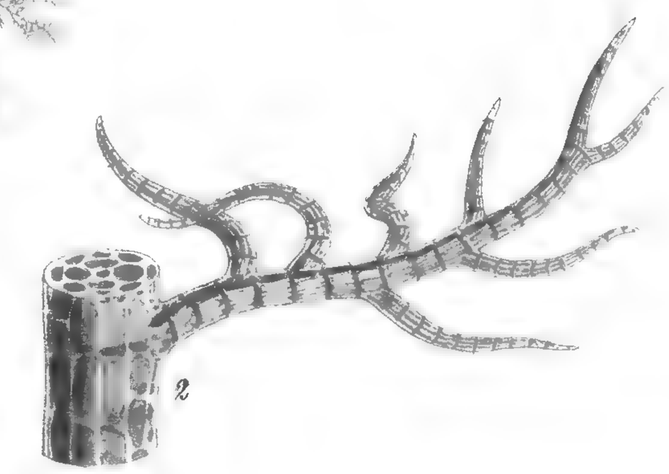

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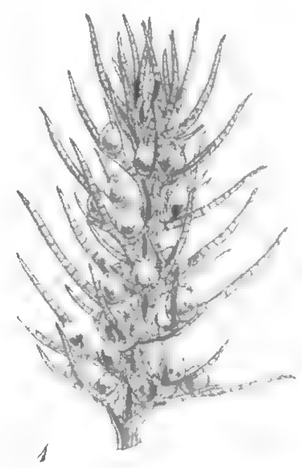

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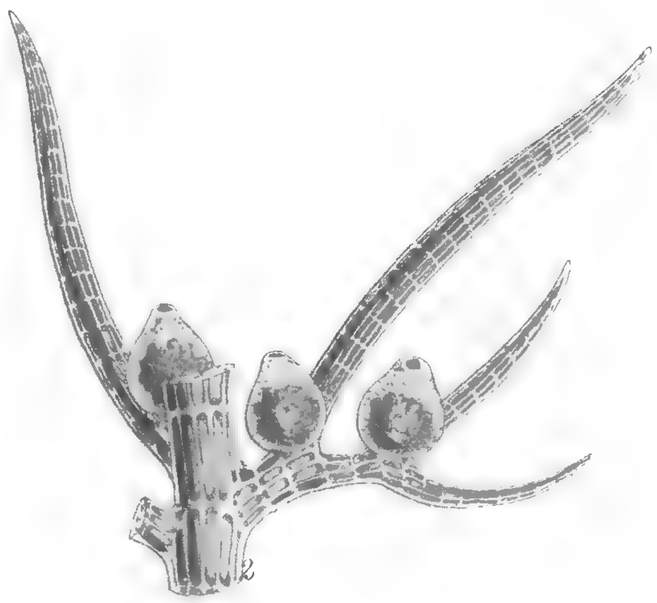

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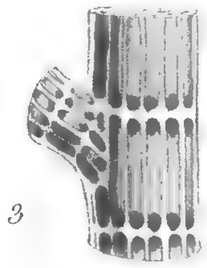

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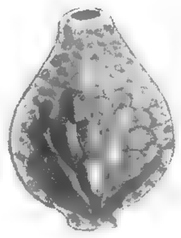

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Pol: ceratoclada. Mont:

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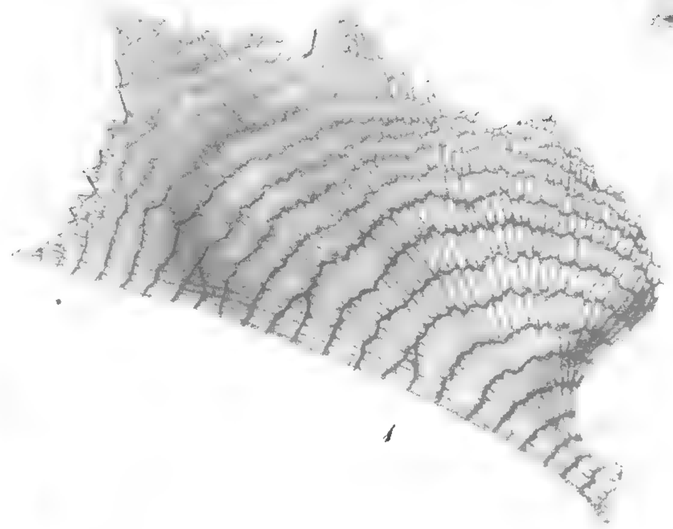

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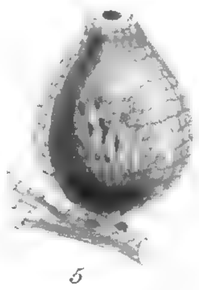

5

Polyzonia cuneifolia. Mont.

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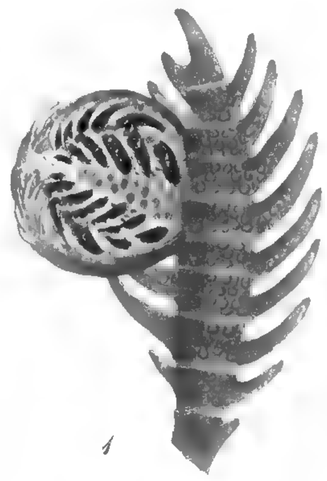
3

2



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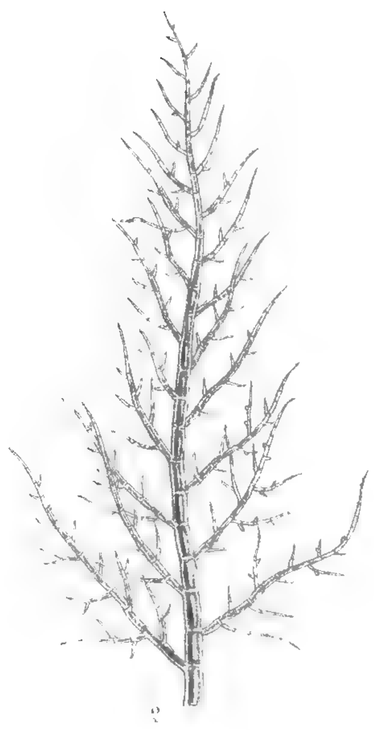
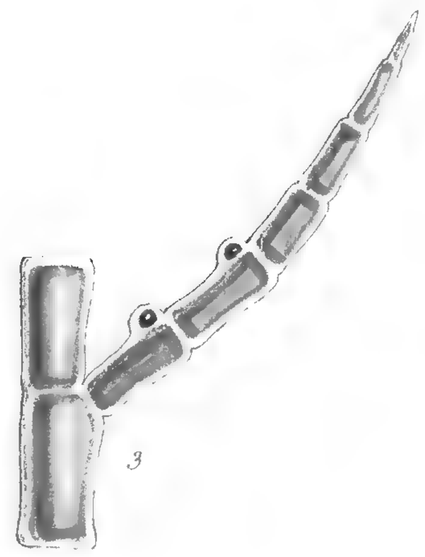
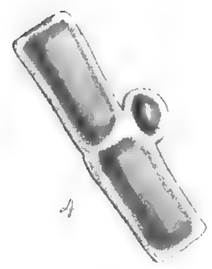
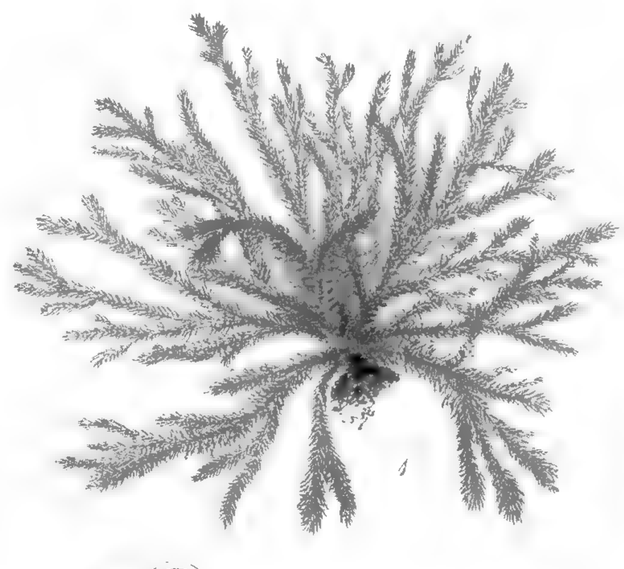
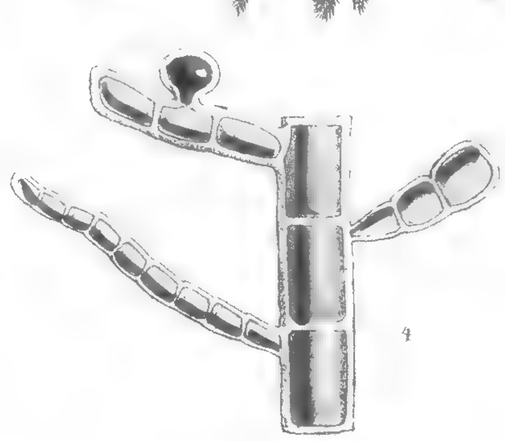


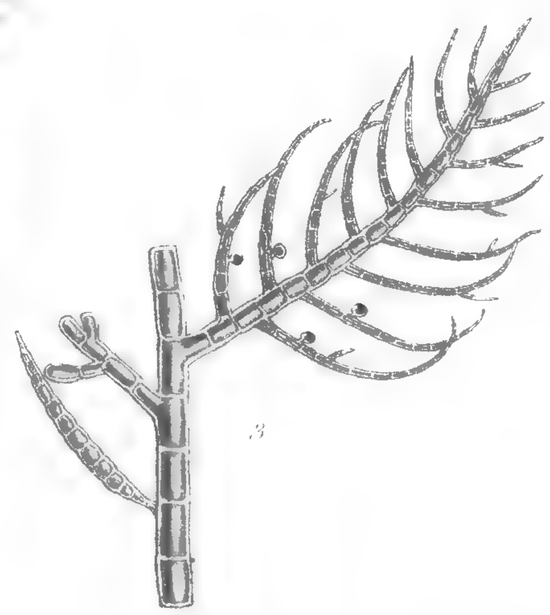




Cal gracile







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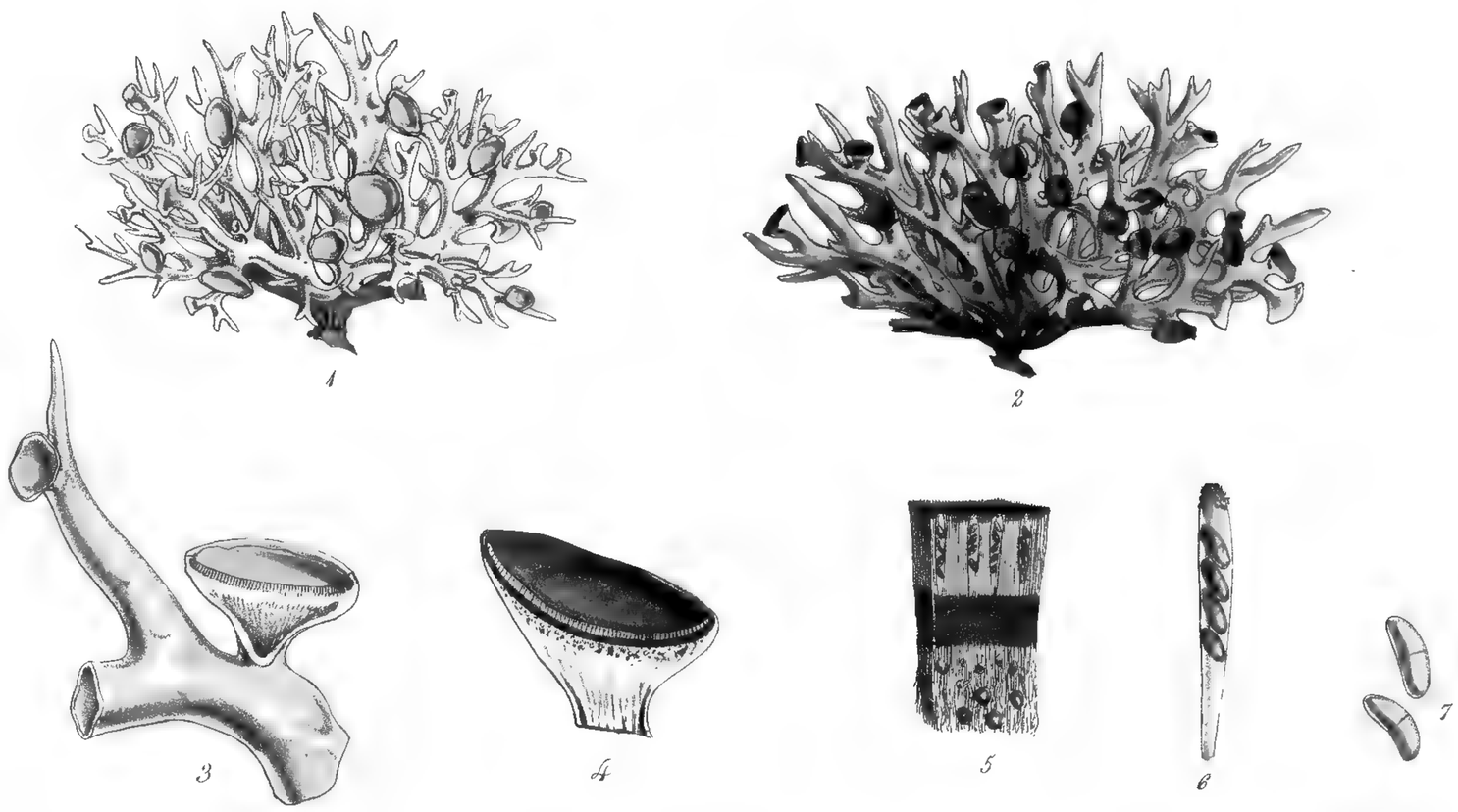

Ramalina inflata.

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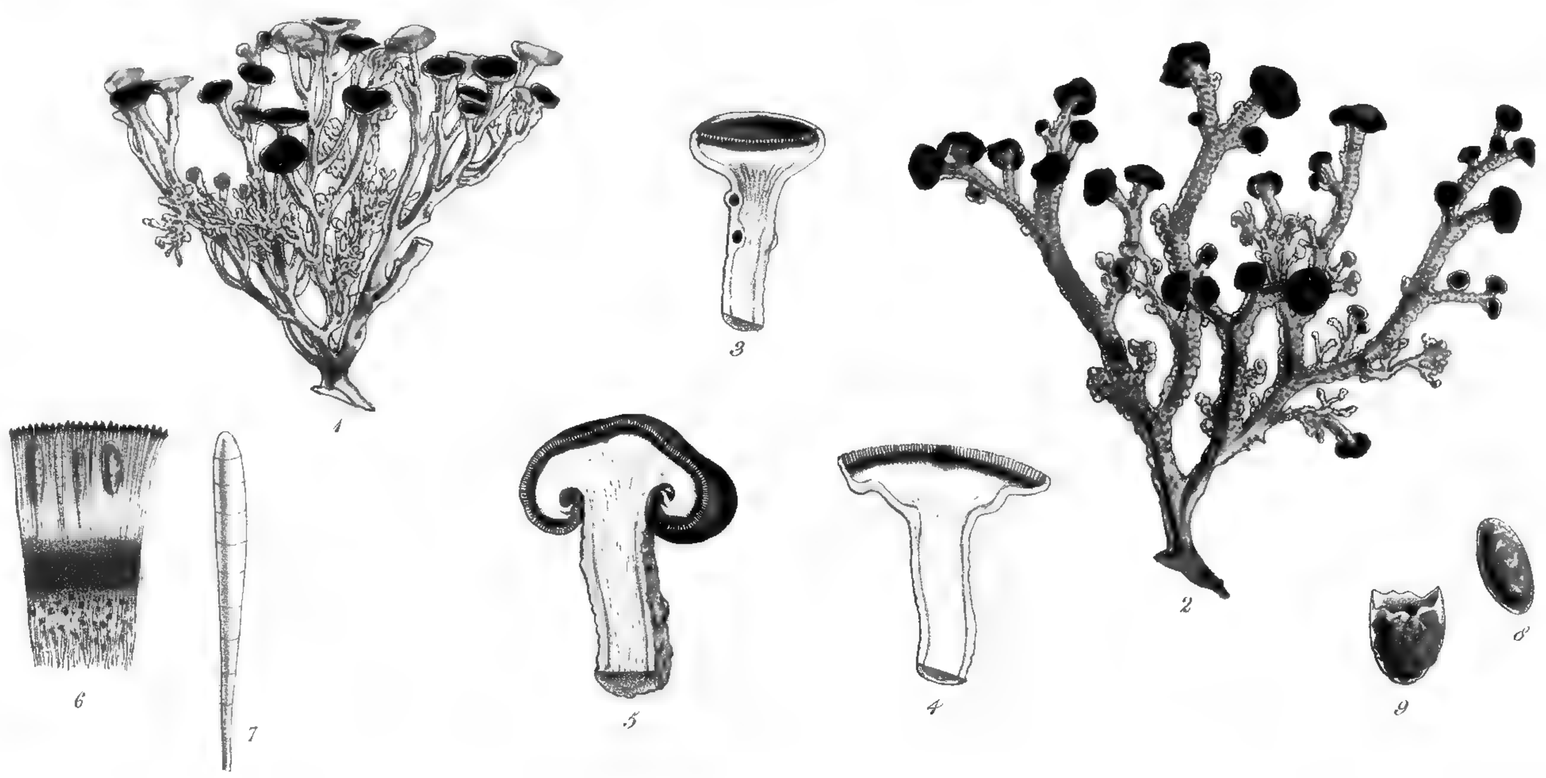

Stereocaulon Argus.

J. D. H. & W. Fitch del.t

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Mrs Hall

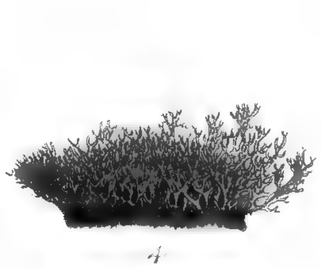
I.

1

2

Stereocaulon ramulosum. Ach

II.



4

5

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3

Cenomyce aggregata. Ach

J. D. H & W. Fitch del^t

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CRYPTOGAMIA ANTARCTICA.

PART II.

MUSCI, *L.*

By W. Wilson, Esq., and J. D. Hooker.

1. ANDREÆA,* *Ehrh.*

1. Andreæa *alpina,* Linn.; caule ramoso elongato, foliis undique imbricatis patentibus apice incurvisr obovatis acuminatis concavis infra medium contractis siccitate appressis. A. alpina, *Dill. Hist. Musc.* t. 73. f. 39. *Hook. et Tayl. Musc. Brit.* ed. 2. p. 2. t. 8.

Var. 1. foliis inferioribus squarrosis subrectis.

Var. 2. caulibus gracilioribus, foliis confertis.

Hab. Var. 1 and 2, Hermite Island, Cape Horn; Kerguelen's Land, var. 1. on alpine rocks.

This species has in Europe frequently been confounded with *A. rupestris*, and we cannot assent to the remark in the 'Muscologia Britannica,' that Dr. Mohr was the first to distinguish it accurately; since neither the description of Weber and Mohr (*Bot. Tasch.* p. 383), nor their citation of Dillenius (*Hist. Musc.* t. 73. f. 40), as a synonym for *A. rupestris* instead of *A. Rothii*, tends to prove that these authors understood the species. The illustrative figures and observations show that *A. alpina* of Weber and Mohr (*Bot. Tasch.* t. 11. f. 3, 5), is only a state of *A. rupestris*, with leaves spreading in all directions. This is confirmed by the fact that *A. alpina* of Mougeot and Nestler (*Stirp. Crypt. Voges.* no. 115), is that very form of *A. rupestris* to which we allude. The figures of Dillenius

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* For the generic characters and remarks on this and other genera, see the 1st Part of this work.

doubtless refer to *A. alpina*; but the absence of a separate figure of *A. rupestris*, and the remark, "in rupibus surculi e fusco rufescunt" (p. 507), prove that this author considered both these as varieties of one species. The true *A. alpina* may always be known from *A. rupestris* by its obovate dark glossy leaves, and its longer and more robust stems.

2. Andreæa *marginata*, Hook. fil. et Wils.; caulibus laxe cæspitosis subramosis, foliis erecto-patentibus incurvis ovatis longe acuminatis infra medium contractis enerviis marginibus inferne pallidis caulinis majoribus superioribus confertis, perichætialibus longioribus elongatis late lanceolatis convolutis, theca exserta. (Tab. CLI. Fig. I.)

Hab. Hermite Island, Cape Horn, frequent on rocks on the mountains; *J. D. H.*

Caules unciales. *Folia* e basi ovata longe acuminata, concava, superiora in caule fertili sensim majora, laxiora et magis erecta, omnia puniceo-atra, nitentia, areolis minutis, oblongis, marginalibus inferne minoribus, pallidioribus.

With some hesitation we venture to separate this from *A. alpina*, on account of the more gradual acumination of its leaves, which are full twice as long. It differs from *A. acutifolia* in having the leaves considerably larger, the lower part more suddenly dilated, and the base not gibbous; also in their dark colour and glossiness, and in the more evident perichætium. It is easily recognised by its habit.

Plate CLI. *Fig.* I.—1, a specimen:—*natural size*; *fig.* 2 and 3, leaves; *fig.* 4, theca:—*magnified.*

3. Andreæa *acutifolia*, Hook. fil. et Wils., *vid. Part.* 1.

Var. β. rufescens, ramis fastigiatis. (Tab. CLI. Fig. II. 2.

Var. γ. foliis latioribus.

Var. δ. foliis superioribus subsecundis. (Tab. CLI. Fig. II. 1.)

Var. ε. foliis superioribus erectis elongatis.

Var. ζ. foliis erectis obtusiusculis atro-sanguineis.

Hab. Var. α, β, and ε, Hermite Island, Cape Horn. Var. δ, and ζ, Falkland Islands. Var. γ. Kerguelen's Land.

All these varieties differ somewhat, though slightly, from that gathered in Campbell's Island.

Plate CLI. *Fig.* II.—1, specimen of var. δ, and 2, specimen of var. β:—*natural size*; *fig.* 3, perichætium and theca; *fig.* 4, perichætial leaves; *fig.* 5, cauline leaf of var. δ; *fig.* 6, leaf, and *fig.* 7, theca of var. β:—*magnified.*

4. Andreæa *rupestris*, Linn.; caule humili subramoso, foliis e basi vaginante patentibus (interdum secundis) ovato-lanceolatis vel ovatis superne attenuatis acutiusculis enervibus superioribus siccitate appressis, perichætialibus longioribus ovato-lanceolatis convolutis, theca exserta. A. rupestris, *Hook. et Tayl. Musc. Brit.* p. 2. t. viii.

Hab. Hermite Island, Cape Horn, frequent on maritime rocks.

Slightly differing from British specimens in its wider, less evidently papillose leaves, which are more suddenly dilated near the middle. Bridel (Bryol. Univ.) cites with doubt, Dillenius (Musc. p. 507. t. 73. f. 40) as a synonym for this species, but the description of Dillenius distinctly mentions the nerved leaves which are characteristic of *A. Rothii*, to which species even the description of Linnæus (as Bridel properly remarks) seems to refer. The secund foliage, generally ascribed to *A. rupestris*, is not a constant character, even in specimens gathered in the same locality.

5. Andreæa *mutabilis*, Hook. fil. et Wils., *vid. Part* 1. p. 119. pl. lvii. f. ii.

Var. γ, *subsecunda*; foliis laxioribus inferioribus secundis.

Var. δ. *uncinata*; foliis dissitis falcato-secundis.

Hab. Falkland Islands; both varieties, abundant.

The var. β. of this species is a Lord Auckland's group and Campbell Island plant.

6. Andreæa *laxifolia*, Hook. fil. et Wils.; caulibus laxe cæspitosis parce ramosis, foliis lanceolato-subulatis obtusiusculis concavis enerviis ramulinis falcato-secundis caulinis erectis subsecundis laxe imbricatis, perichætialibus elongatis ovato-lanceolatis convolutis, theca exserta ovato-oblonga. (Tab. CLI. fig. IV.)

Var. β. *minor*; theca subexserta.

Hab. Hermite Island, Cape Horn; not rare, on moist rocks in the higher parts of the Island. Var. β. on rocks near the sea.

Caulis vix uncialis. *Folia* ramulorum conferta, falcato-secunda, luteo-viridia; caulina dissita, majora, vix secunda, subamplexicaulia. *Florescentia* monoica: *flos masculus* primo terminalis, folia perigonialia rotundo-ovata, acutiuscula, concava. *Antheridia* 6. *Paraphyses* numerosæ, duplo longiores. *Theca* siccitate turbinata, basi pallida.

Plate CLI. *Fig.* IV.—1, a tuft of the natural size; 2, 3, 4, and 5, leaves; 6, theca:—*magnified.*

7. Andreæa *subulata*, Harvey; *vid.* Part 1. p. 119. pl. lvii. f. i.

Var. β. *rigida*; foliis minus falcatis crassioribus luridis.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; not uncommon.

The Auckland and Campbell Island variety differs slightly from the above.

Subgen. Acroschisma, *Hook. fil. et Wils.* (*Theca cylindracea, e basi ad medium et ultra indehiscens, apicem versus tantum in valvulis* 4 *vel* 8 *fissa*;—an genus proprium?)

8. Andreæa (Acroschisma) *Wilsoni*, Hook. fil.; caule laxe cæspitoso elongato ramoso, foliis ramulorum undique patentibus squarrosis spathulato-lanceolatis obtusiusculis caulinis erectis laxe imbricatis ovato-lanceolatis basi angustatis amplexicaulibus omnibus enervibus concavis marginibus inflexis, perichætialibus elongatis elliptico-oblongis convolutis, theca exserta cylindracea apicem versus fissa. (Tab. CLI. fig. III.)

Hab. Hermite Island, Cape Horn; on maritime rocks near the spray of rivulets, rare.

Caules sesquiunciales, graciles, erecti, per intervallos breves innovantes, subdichotomi, steriles vage ramosi, rami patentes. *Folia* ramulorum lanceolata, basi subamplexicaulia, erecta, deinde patula, squarrosa, apice subincurva, obtusiuscula, lateribus inflexis, luteo-viridia, caulina majora, erecta, infra medium repente angustata, flavescentia, enervia, areolis majusculis elongatis. *Florescentia* monoica: *antheridia* circiter 11, paraphysibus numerosis longissimis. *Theca* elongata, maxima, inferne integra, badia, apice in valvulis 4 vel 8 fissa.

Allied to *Andreæa laxifolia*, but differing in the remarkable capsule and also in the form of the leaves, which do not taper gradually from the base, but are widened near the middle.

Plate CLI. *Fig.* III.—1, a plant of the natural size; 2, branches; 3, young theca, &c.; 4, leaf; 5, mature theca; 6, perichætial leaf:—all *magnified.*

2. SPHAGNUM, *L.*

In addition to the former remarks on the structure of *Sphagnum*, we would observe, that the spirally lined cellules of the leaves do not constitute the proper parenchyma. The cellules, which contain the chlorophyll, are

those which are interposed between the larger utricles, and which form the network of the leaf. This is well explained by the cauline leaves of *Sphagnum fimbriatum* (Wils. MSS.), a very curious British and Antarctic species, long confounded with *S. acutifolium*; in them the spirally lined cells are altogether absent. Spirally lined cells communicate with each other by pores, as we have ourselves witnessed the passage of animalcules (vibrio) from one cell into another.

1. Sphagnum *cymbifolium*, Dill.; caule elongato, ramis crassis, foliis imbricatis patentibus ovatis obtusis concavis superne denticulatis cellulis ramulorum spiraliter lineatis. S. cymbifolium, *Nees et Hornsch. Bryol. Germ.* vol. i. p. 6. t. 1. f. 1. S. obtusifolium, *Hook. et Tayl. Musc. Brit.* ed. 2. p. 13. t. 4 (ex parte).

Var. 2. *condensatum*, Hook. fil. et Wils.; caule humili, ramulis brevissimis undique dense confertis. S. condensatum, *Brid. Bryol. Univ.* vol. i. p. 18 (?).

Hab. Falkland Islands; common in streams, bogs, and peat-ponds. Var. 2. Strait of Magalhaens, Port Famine, *Capt. King*.

In general aspect exceedingly like the more compact form of *S. compactum*, Bridel, but preserving the true character of the species to which we refer it, in the shape of the leaves, and in the markings of the ramuline cellules. Our specimens are all fertile, the stems not two inches in length. An example occurs where two capsules are produced upon the same pseudopodium.

Mr. Valentine was the first to point out (in the 'Muscologia Nottinghamensis') the structure of the cells of the ramuli, which, from oft-repeated observation, we consider a valid specific character, distinguishing this species from all others. On the other hand, the characters derived from the length of the peduncle and the disposition of the branches appear to be fallacious.

2. Sphagnum *fimbriatum*, Wils. MSS.; caule longiusculo gracili subramoso, foliis dimorphis, caulinis obovato-subrotundis obtusissimis fimbriatis, rameis ovato-lanceolatis acuminatis concavis acutis, perichætialibus obovatis obtusis valde concavis, theca brevi-pedunculata.

Hab. Hermite Island, Cape Horn, and the Falkland Islands.

Caulis plerumque gracilis. *Rami* 3-nati subinde 4–5-nati, longiusculi, apice attenuati. *Folia* caulina erecta, subrotunda, obtusissima, fimbriata!, cellulis propriis (chlorophyllo farctis) reticulum formantibus, interstitiis (e defectu utriculorum linea spirali notatorum) vacuis, folia ramorum conferta, erecto-patentia, apice subrecurva, concava, acuta, perichætialia subcucullata, subretusa, obtusissima, concava, thecam immaturam arcte amplectentia. *Theca* matura globosa, pedicello breviusculo exserto.

From *Sphagnum acutifolium*, Ehrh., this species may be readily known by its more slender habit, and is essentially distinguished by the peculiar cauline leaves, which consist of an open net-work of parenchymatous cells without any intermediate ones lined with spiral filaments; the perichætial leaves are also very different in shape, and those of the branches are more acute, their reticulation also is, especially at the summit, considerably smaller.

The specimens here described are not so slender as others gathered in Britain; but possess all their essential characters; the *S. acutifolia* of Montagne (Voy. au Pole Sud, Bot. Crypt. p. 282) is probably the same plant.

3. Sphagnum *cuspidatum*, Ehrh.; ramulis attenuatis laxis, foliis lanceolato-subulatis laxis patulis siccitate undulatis marginibus reflexis perichætialibus acutis. S. cuspidatum, *Nees et Hornsch. Bryol. Germ.* vol. i. p. 13. t. 4. f. 9. *Hook. et Tayl. Musc. Brit.* p. 15. t. iv.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; common.

Neither this, nor any of the other southern *Sphagna*, are so universal in the Antarctic bogs as they are in the European and Arctic.

3. SCHISTIDIUM, *Bridel.*

Stoma nudum. *Calyptra* mitræformis s. campanulato-conica, in lacinias plures subæquales basi fissa, rarius integra. *Theca* æqualis, exapophysata.

1. Schistidium *marginatum*, Hook. fil. et Wils.; caule erecto, foliis erecto-patentibus lanceolatis subapiculatis marginatis solidi-nerviis subdenticulatis, theca immersa subrotunda, operculo conico-rostrato erecto. (Tab. CLI. fig. VI.).

Hab. Kerguelen's Land; not uncommon on moist banks, alt. 500 feet, forming large patches on wet rocks, and on the debris of precipices.

Caules erecti, vix ramosi, 4 lin. longi, cæspitosi, pallide rubri, succulenti. *Folia* imbricata, erecto-patentia, siccitate paulo tortilia, lanceolato-oblonga, subundulata, inferiora spathulato-lingulata, nervo valido rufo subexcurrente instructa, rufo-viridia, areolis subquadratis, minutis; *perichætialia* paulo longiora, angustiora, erecta. *Seta* theca brevior, erecta, fusco-lutea. *Theca* ovato-cyathiformis, badia, basi rotundata, ore aperto. *Annulus* persistens, inconspicuus. *Operculum* conico-subulatum, capsula paulo longius. *Calyptra* campanulata, apice rufo-brunnea, basi pallida, membranacea, demum lacera. *Sporæ* minimæ, lutescentes. Species dioica?

Very distinct from all other described species.

Plate CLI. *Fig.* VI.—1, a tuft of the natural size; 2 and 3, leaves; 4, theca; 5, calyptra:—*magnified.*

4. GYMNOSTOMUM, *Hedw.*

Stoma nudum. *Calyptra* cuculliformis vel ventricoso-subulata, latere fissa. *Theca* æqualis, exannulata.

1. Gymnostomum *Heimii*, Hedwig; foliis patentibus oblongo-lanceolatis subconcavis apice denticulatis nervo subcontinuo, theca truncato-obovata et oblonga, operculo oblique rostellato columellæ insidente. G. Heimii, *Hedwig, Stirp. Crypt.* vol. i. p. 84. t. 30. *Hook. et Tayl. Musc. Brit.* p. 22. t. vii. Pottia Heimii, *Bruch et Schimper, Bryol. Europæa.**

Var. 1, foliis angustis apice vix serrulatis.

Var. 2, foliis subovato-acuminatis margine pellucidioribus, theca turbinata brevi.

Var. 3, foliis latioribus obovatis concavis.

Hab. Falkland Islands, var. 1 and var. 3 (imperfect) perhaps a distinct species, found near the sea, in sandy places. Hermite Island, Cape Horn; var. 1, on maritime rocks; var. 2, on sandy banks.

Subgenus Physcomitrium, *Bridel.*

2. Gymnostomum (Physcomitrium) *laxum*, Hook. fil et Wils.; cæspitosum, caule simpliciusculo, foliis erecto-patentibus laxe imbricatis elliptico-lanceolatis acutis concaviusculis integerrimis reticulatis siccitate vix crispatis, nervo sub apice evanido. (Tab. CLI. fig. V.)

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* For the sake of brevity, we omit in this work the generic distinctions proposed by Bruch and Schimper in the 'Bryologia Europæa', without, however, intending to question their validity in a natural system. *Pottia* comprises those terrestrial species of *Gymnostomum*, exclusive of *Physcomitrium*, which are of bi-triennial duration and have monoicous inflorescence .

Hab. Kerguelen's Land, not uncommon on moist sandy banks (barren).

Closely allied to the British *Physcomitrium pyriforme*, of which it may be a variety.

Plate CLI. *Fig.* V.—1, a tuft of the natural size; 2 and 3, leaves; 4, apex of ditto:—*magnified.*

5. LEPTOSTOMUM, *Br.*

1. Leptostomum *Menziesii*, Brown; caule subsimplici, foliis oblongo-ovatis apice denticulatis nervosis piliferis, theca oblongo-clavata subrecurva horizontaliter inclinata, operculo conico, rostro brevi obliquo. Gymnostomum Menziesii, *Hook. Musc. Exot.* t. 6.

Hab. Hermite Island, Cape Horn; very common from the sea coast to the top of the hills, alt. 1700 ft., on trees, rocks and banks, forming large noble tufts. Strait of Magalhaens, *D'Urville.*

6. SPLACHNUM, *L.*

1. Splachnum *Magellanicum*, Brid.; caule erecto subdiviso, foliis oblongo-lanceolatis acuminatis serratis evanidinerviis, pedunculis aggregatis, thecæ oblongæ ovatæ apophysi obconica, operculo convexo. S. Magellanicum, *Schwaegr. Suppl.* I. pt. 4. p. 47. t. 14. Eremodon Magellanicus, *Brid. Bryol. Univ.* vol. i. p. 236.

Hab. Hermite Island, Cape Horn, on the horizontal limbs and dead stumps of old trees in the woods, growing in large tufts.

Calyptra conico-mitræformis, basi appendiculata, demum lacera, pallida, apice flavescens.

Our specimens, though not in the best state for the examination of the capsules, all possess apparently a peristome of eight teeth; nevertheless we do not consider it necessary to remove this moss from *Splachnum*. Bridel's genus *Eremodon* is not adopted by Bruch and Schimper, and is indeed untenable. Our moss has characters which induce us to doubt whether it should be referred to *Tayloria* or to *Splachnum* of Bruch and Schimper. Its affinity with the European *Tayloria serrata* and *Rudolphiana* is too striking to be overlooked; but the pale apophysis, though not wider than the capsule, is evidently that of a true *Splachnum*; while the peristome connects it with *Dissodon*, Br. and Sch.

7. GRIMMIA, *Ehrh.*

Peristomium simplex. *Dentes* sedecim, pyramidati, pertusi, rarius imperforati, reflexiles. *Calyptra* mitræformis. *Theca* æqualis.

1. Grimmia *tortuosa*, Hook. fil. et Wils.; caule pulvinato, foliis erecto-patentibus lineari-lanceolatis acuminatis piliferis siccitate tortuosis, theca immersa subsessili urceolata, operculo convexo apiculato. (Tab. CLI. fig. VII.)

Hab. Falkland Islands; dry quartz rocks on Mount Vernet, alt. 1,000 feet, very scarce.

Caules 3–4-lineares, pulvinati, subramosi. *Folia* conferta, erecto-patentia, subflexuosa, lineari-lanceolata, acuminata, pilifera, carinata, margine paulo incrassata, subplana, nervo valido, dorso prominente, excurrente, siccitate tortilia, subcrispata, opaca, atroviridia, areolis minutissimis, punctatis, basi majoribus, reticulatis, pellucidis; *perichætialia* similia. *Seta* brevissima, vix ulla. *Theca* immersa, subrotunda, erecta, fusca, ore patulo. *Annulus* nullus. *Peristomii* dentes conniventes, siccitate erecti, subreflexi, pyramidati, integri, rubri. *Operculum* planiusculum, subrostellatum. *Sporæ* minimæ, ferrugineæ. *Calyptra* brevis, basi lacera, fusca, apice brunnea.

Apparently a distinct species, somewhat allied to *G. apocarpa*, as to the fruit; but in the foliage, more nearly to *G. trichophylla*.

PLATE CLI. *Fig.* VII.—1, a tuft of the natural size; 2, 3, and 4, leaves; 5, theca and calyptra; 6, teeth:—*magnified.*

2. GRIMMIA *falcata*, Hook. fil. et Wils.; caulibus laxe cæspitosis pendulis, foliis falcato-secundis lanceolato-subulatis crassinerviis canaliculatis integerrimis, theca immersa subsessili turbinata, operculo rostellato. (TAB. CLI. fig. VIII.)

HAB. Kerguelen's Land; on rocks and stones near a small waterfall.

Caules laxe cæspitosi, 1–3-unciales, penduli, flexuosi, ramosi, rami subincurvi. *Folia* imbricata, falcato-secunda, lanceolato-subulata, carnosa, integerrima, canaliculata, lateribus inflexis, nervo lato crasso excurrente, lurido-viridia, inferiora sæpe aqua destructa, nervo solo residuo, areolis minutis subquadratis. *Perichætialia* ovato-lanceolata, acuminata, thecam superantia. *Vaginula* conica. *Theca* subsessilis, subrotunda, ore patulo, brunnea. *Annulus* nullus? *Peristomii* dentes magni, apice subperforati, incurvi, dorso trabeculati, rubri, siccitate recurvi. *Operculum* hemisphæricum, rostellatum, capsula brevius. *Calyptra* fusca, mitræformis, brevis. *Flos masculus* in axillis ramulorum ad basin ramuli fructiferi. *Antheridia* plurima, eparaphysata.

Allied to *Grimmia apocarpa*, var. *rivularis*, but very distinct in its falcate leaves, and broad thick nerve. As in that species, the columella generally falls away with the operculum. The short fertile branches are often clustered two or three together.

PLATE CLI. *Fig.* VIII.—1 and 2, plants of the natural size; 3, apex of branch; 4, leaf; 5, perichætial ditto; 6, theca; 7, operculum:—*magnified.*

3. GRIMMIA *maritima*, Turner, *Musc. Hib.* p. 23. t. 3. f. 2. *Hook. et Tayl. Musc. Brit.* p. 66. t. xiii. Schistidium maritimum, *Bruch et Schimper, Bryol. Europ.* fasc. 25–28. p. 10.

HAB. Hermite Island, Cape Horn; on granite rocks near the sea at St. Joachim's Bay.

Ab exemplis Britannicis his notis differt: *caulibus* longioribus pluries ramosis; *foliis* magis patulis, subrecurvis, perichætialibus apice diaphanis, nervo angustiore; *capsula* majore.

This moss affects the same localities in the Antarctic regions that it does in England.

4. GRIMMIA *apocarpa*, Linn.; *Hedw. Musc. Frond.* vol. i. p. 104. t. 39. *Hook. et Tayl. Musc. Brit.* p. 65. t. xiii. Schistidium apocarpum, *Bruch et Schimper, l. c.* p. 7.

Var. 1, foliis subpiliferis suberectis.

Var. 2, foliis obtusiusculis subpatentibus, perichætialibus obtusis.

Var. 3, foliis caulinis angustioribus, perichætialibus prægrandis obtusis.

Var. 4, foliis lineari-lanceolatis longioribus.

HAB. Falkland Islands; var. 1, slate rocks near the sea. Var. 2 and 3, Kerguelen's Land, on rocks, alt. 500 feet. Hermite Island, Cape Horn; on trap rocks near the sea.

The most striking feature of the three last named varieties is the large obtuse perichætial leaves. The habit and place of growth are similar to what this moss inhabits in Britain.

8. DRYPTODON, *Brid.*

This Bridelian genus appears to have been properly reduced to a section of *Racomitrium*, in the 'Bryologia Europæa' of Bruch and Schimper.

1. Dryptodon *rupestris*, Hook. fil. et Wils.; caule gracili fastigiato-ramoso, foliis patentibus ovato-lanceolatis carinatis margine recurvo nervo subcontinuo, seta brevi, theca elliptico-oblonga erecta, operculo rostrato. (Tab. CLII.fig. I.)

Hab. Hermite Island, Cape Horn; moist rocks on the northern slope of Mount Foster, alt. 600 feet.

Caules 1–2-unciales, dense cæspitosi, gracilescentes, fastigiato-ramosi. *Folia* dense imbricata, patentia, ovato-lanceolata vel ovato-acuminata, inferiora subsquarrosa, superiora recurva, acutiuscula, carinata, margine subrecurva, nervo rubello, siccitate appresso-incurva, plus minusve spiraliter contorta, lurido-viridia. *Perichætialia* latiora, elliptico-oblonga, obtusa. *Seta* brevis, $1\frac{1}{2}$ lin. longa, recta, siccitate tortilis. *Theca* erecta, elliptico-oblonga, subpyriformis, parvula, subcoriacea, rufo-brunnea, ore contracto. *Peristomii* dentes subsimplices, rubri, conniventes, siccitate patentes. *Operculum* rostro aciculari, theca paulo brevius. *Calyptra* non visa.

A more robust species than *D. crispulus* (nobis), with the leaves shorter, not piliferous, and the thecæ larger.

Plate CLII. *Fig.* I.—1, plant of the natural size; 2 and 3, leaves; 4 and 5, thecæ; 6, teeth of peristome:—*magnified.*

2. Dryptodon *crispulus*, Hook. fil. et Wils.; vid. Part 1. p. 124. pl. lvii. f. ix.

Var. β. foliis siccitate patulis rigidioribus.

Hab. Kerguelen's Land, in gravelly beds of rivulets.

Also a native of Campbell's Island, but not seen at Cape Horn or the Falkland Islands.

9. RACOMITRIUM, *Brid.*

1. Racomitrium *protensum*, Al. Braun; *Bruch et Schimper, Bryol. Europ.* fasc. 25–28. tab. Drypt. 2. R. aquaticum, *Brid. Bryol. Univ.* vol. i. p. 222. R. cataractarum, *Braun, Brid. l. c. Suppl.* p. 776.

Var. 1, subaquaticum, foliis acutis subsecundis.

Var. 2, caule humili, thecis minoribus.

Var. 3, caule robustiore, foliis longioribus secundis.

Hab. Hermite Island, Cape Horn; all the varieties. Falkland Islands; var. 2 (barren) and var. 3. Kerguelen's Land, also barren).

The last variety much resembles *R. aciculare*, Dill., but has acute leaves and the teeth of the peristome are longer and more slender. It is perhaps still more nearly allied to *Trichostomum subsecundum*, Hook. and Grev., (Hook. Ic. Pl. t. 17. f. 5), chiefly differing in its more robust habit and shorter setæ.

2. Racomitrium *fasciculare*, Dill., *Bridel, Br. Univ.* vol. i. p. 218. *Bruch et Schimp. Bryol. Europ.* Trichostomum fasciculare, *Schwaegr. Suppl.* I. pt. 1. p. 155. t. 38.

Var. 2, caule gracili, ramulis brevissimis, foliis subsecundis luteo-viridibus, calyptra pallida.

Var. 3, caule gracili subsimplici, foliis acutiusculis siccitate subappressis, seta breviore, calyptra pallida.

Hab. Hermite Island, Cape Horn; all the varieties.

The last variety has some resemblance to *R. heterostichum*, var. γ. *gracilescens*, (Bruch and Schimper), but differs in having the leaves more acute and the teeth of the peristome larger and more regularly formed.

3. Racomitrium *heterostichum*, Brid.; *Bryol. Univ.* vol. i. p. 214. *Bruch et Schimper, Bryol. Europ.* fasc. 25–28. p. 9. t. 1. Trichostomum heterostichum, *Hedw. Musc. Frond.* vol. ii. t. 25.

Hab. Falkland Islands; on moist rocks on the hills, barren and stunted.

4. Racomitrium *lanuginosum*, Brid.; *Bryol. Univ.* vol. i. p. 215. *Flor. Antarct.* pt. 1. p. 124. *Bruch et Schimper, Bryol. Europ. l. c.* p. 11. t. 6. Trichostomum lanuginosum, *Hedw. Musc. Frond.* vol. iii. t. 2.

Hab. Falkland Islands; common on the hills, barren. Hermite Island, Cape Horn; also barren. Strait of Magalhaens; *D'Urville*.

This moss is very common throughout the Antarctic regions. The specimens from Hermite Island have the leaves more obscurely toothed than British examples, and the branches very short. It may be *R. Borbonicum*, Brid. (Br. Univ. vol. i. p. 218).

10. ORTHOTRICHUM, *Hedw.*

1. Orthotrichum *crassifolium*, Hook. fil. et Wils.; *see* Part 1. p. 125. pl. lvii. f. viii.

Var. γ, foliis superioribus ovato-lanceolatis acutiusculis.

Var. δ, foliis subsecundis.

Hab. Hermite Island, Cape Horn; vars. 1 and 3, very common on maritime rocks of granite and trap. Falkland Islands; var. 1, also on clay-slate. Kerguelen's Land; vars. 1 and 3 common.

Both these varieties differ from the Campbell's Island state of the moss.

2. Orthotrichum *luteolum*, Hook. fil. et Wils.; caule erecto ramoso, foliis erecto-patentibus siccitate crispulis anguste lineari-lanceolatis basi dilatatis margine planis, theca exserta ovali-oblonga siccitate sulcata, calyptra pilosa. Orthotrichum coarctatum, *Schwaegr. Suppl.* I. 2. p. 26. t. 52 (excl. syn. Belvisian.?). *Hook. et Grev.! in Brewst. Journ.* vol. i. p. 125 (nec Orth. coarctatum, *Br. et Schimp. Bryol. Europ.*) (Tab. CLII. fig. II.) *O. germanum (Wahlenb.) — sec. addend.*

Var. β. calyptra glabra.

Hab. Hermite Island, Cape Horn; var. *a.* and β. on stems of shrubs, especially of *Berberis ilicifolia*, from the sea to alt. 1,000 feet, abundant, forming round soft tufts, rare on rocks. South part of Tierra del Fuego, *C. Darwin, Esq.*, n. 440.

Caules laxe pulvinati, luteoli, subunciales, ramosi. *Folia* conferta, erecto-patentia, curvula, anguste lineari-lanceolati, basi dilatata, ovata, utrinque laxe et pellucide reticulata, margine plana, nervo rubello, areolis laxe punctatis, luteola, siccitate parum crispula. *Vaginula* subpilosa, ovata, minuta. *Seta* longitudine varia folia perichætialia plerumque æquans vel superans, siccitate striata, in collum capsulare sensim dilatata. *Theca* subpyriformis, parva, pallide luteo-fusca, 8-striata, sicca et vacua cylindracea, vix sulcata, ore haud constricto. *Peristomii* externi dentes 8, bigeminati, siccitate reflexi; interni cilia. *Calyptra* campanulata, pilosa, straminea, in var. β. glabra, brunnea. *Florescentia* monoica.

It will be seen how closely the description corresponds with that of *O. coarctatum*, Br. and Schimp.; but on comparing authentic specimens, we find the leaves in the latter much wider and carinate, less dilated at the base, more crisped when dry, the vaginula twice as long, capsule larger, and the habit considerably different. Our moss, unlike that, has very little resemblance to *O. crispum*, and is remarkable for its pale yellowish colour; it varies in the length of the seta. An original specimen of *O. coarctatum* (from P. de Beauvois in Professor Arnott's

Herbarium), as also the description (in Ætheog. p. 80), prove it to be identical with *O. Ludwigii*, Schwaegr., which therefore ought to have been named *O. coarctatum*.

PLATE CLII. *Fig.* II.—1, plant of the natural size; 2 and 3, leaves; 4, seta, theca, &c.; 5, calyptra; 6, theca; 7, teeth of peristome:—*magnified*.

3. ORTHOTRICHUM *crispum*, Hedw.; *Musc. Frond.* vol. ii. t. 35. *Hook. et Tayl. Musc. Brit.* p. 133. t. xxi. *Bruch et Schimper, Bryol. Europ.* fasc. 2–3. p. 23. t. 12.

HAB. Hermite Island, Cape Horn; on rocks and branches of trees near the sea, always barren.

This species often bears, at Hermite Island, jointed conferva-like gemmæ among the young leaves.

4. ORTHOTRICHUM *Magellanicum*, Mont., *in Voy. au Pole Sud, Bot. Crypt.* p. 290. t. 20. f. 2.

HAB. Strait of Magalhaens; *M. Jacquinot*.

11. MACROMITRIUM, *Brid.*

1. MACROMITRIUM *longipes*, Schwaegr.; *Suppl.* II. 2. p. 131.? Orthotrichum longipes, *Hook. Musc. Exot.* t. 24.

Var. ramis gracilioribus elongatis, foliis luridis erectis lineari-oblongis plicato-carinatis nervo excurrente.

HAB. Hermite Island, Cape Horn, *Mr. Davis*; barren.

Perhaps a distinct species; but though different in aspect, obvious characters are wanting to distinguish it from the Hookerian specimens.

12. WEISSIA, *Hedw.*

1. WEISSIA *crispula*, Ludw.; *vid.* Part 1. p. 127. t. lviii. f. ii. Dicranum interruptum, *Brid. Bryol. Univ.* vol. i. p. 438. Bryum pilosum interruptum, *Dill. Musc.* p. 376. t. 47. f. 38.

HAB. Hermite Island, Cape Horn; rocks on Kater's Peak, alt. 1,000–1700 feet, growing in tufts.

Apparently identical with the European plant, and also found in Campbell's Island.

2. WEISSIA *contecta*, Hook. fil. et Wils.; *vid.* Part. 1. p. 127. t. lxiii. f. iii.

HAB. Kerguelen's Land; barren, on rocks.

Also a native of Campbell's Island.

3. WEISSIA *acuta*, Hedw.; *Musc. Frond.* vol. iii. t. 35. *Hook. et Tayl. Musc. Brit.* p. 87. t. 14.

Var. β. theca subrotunda, seta breviore arcuata, peristomii dentibus latioribus cribroso-pertusis.

HAB. Falkland Islands; at Port Louis, barren. Hermite Island, Cape Horn; var. β. on wet rocks in and near water-courses, in St. Martin's Cove; wet sandy banks on Mount Foster.

We have no specimen of *Weissia acuta* β., Wahlenb. (Fl. Lapp.), which seems to differ, according to the description very little from our moss. The capsule of ours is turbinate when dry, with a very wide mouth. The seta is sometimes equally short in British specimens.

4. WEISSIA *stricta*, Hook. fil. et Wils.; caule ramoso, foliis subfalcatis lanceolato-setaceis rigidis canaliculatis integerrimis crassinerviis nervo longe excurrente, theca subrotunda, operculo rostrato. (TAB. CLII. fig. IV.)

Hab. Kerguelen's Land; on rocks near the sea, not uncommon.

Caules unciales, laxe cæspitosi, ramosi. *Folia* suberecta, conferta, rigida, siccitate vix crispata, nervo lato crasso longe excurrente instructa, luteo-viridia; perichætialia longiora, basi latiora, erecta, convoluta. *Seta* 3-linearis, erecta vix tortilis, pallide rufa. *Theca* suberecta, subrotunda, ore contracta, rufo-brunnea, demum atro-rubens,vernicosa. *Peristomii* dentes 16, parvuli, conniventes, pyramidati, obtusiusculi, linea media notati. *Operculum* conico-rostratum, capsulæ longitudine, rostro curvato acuto. *Calyptra* dimidiata, subventricosa, fusco-lutea. *Florescentia* monoica.

We know of no described species with which this can be confounded. It is somewhat allied to the European *W. acuta*, but the capsules are larger, of a firm texture, retaining their shape when dry. In Dr. Lyall's specimens the leaves are more falcate and the seta shorter.

Plate CLII. *Fig.* IV.—1, tufts of the natural size; 2, leaf; 3, young seta; 4, capsule; 5, the same before the fall of the calyptra:—all *magnified*.

5. Weissia *tortifolia*, Hook. fil. et Wils.; caule ramoso, foliis patentibus flexuosis siccitate crispatis lineari-subulatis canaliculatis integerrimis nervo excurrente, perichætialibus brevioribus convolutis, seta brevi, theca subrotunda, operculo rostrato. (Tab. CLII. fig. V.)

Hab. Kerguelen's Land, common on gravelly banks, from the sea to 1,000 feet.

Caules subunciales, dense cæspitosi, ramosi. *Folia* patentia, varie flexuosa, siccitate crispata vel tortuosa, nervo gracili excurrente instructa, lutescenti-viridia, inferiora fuscescentia; perichætialia breviora, ovata, acuminata, convoluta. *Seta* vix 2-linearis, crassiuscula, fusco-brunnea. *Theca* erecta, subrotunda, rufo-brunnea, vernicosa, demum indurata. *Peristomii* dentes 16, pyramidati, conniventes. *Operculum* conico-rostratum, capsulæ longitudine, rostro obliquo. *Calyptra* cucullata, capsulam æquans illamque obtegens, brunnea. *Florescentia* monoica.

Very closely allied to *Weissia stricta* (nobis), but differing in the crisped widely spreading leaves, which are only half as long as in that species.

Plate CLII. *Fig.* V.—1, tuft of the natural size; 2 and 3, leaves; 4 and 5, capsules:—all *magnified*.

13. DICRANUM, *Hedw.*

1. Dicranum *aciphyllum*, Hook. fil. et Wils.; caule ramoso, foliis erecto-patentibus strictis rigidis lineari-lanceolatis integerrimis canaliculatis, nervo latissimo continuo, theca subcylindracea erecta, peristomii dentibus angustis subintegris, operculo longirostro. (Tab. CLII. fig. III.)

Var. 2. foliis secundis.

Var. 3. caule graciliore, foliis brevioribus siccitate subflexuosis, nervo tenuiore.

Hab. Staten-Land, *A. Menzies, Esq.*, (1787). Hermite Island, Cape Horn, on rocks and on branches of trees on the hills, alt. 700 feet. Falkland Islands, on rocky ground among the hills, rare in fruit. Patch Cove, Cape Tres Montes, *C. Darwin, Esq.* Vars. 2 and 3, Hermite Island; var. 3 forming small tufts from the sea-side to the tops of the hills, alt. 1,740 feet.

Caules biunciales, parce ramosi, cæspitosi, siccitate parum fragiles. *Folia* erecto-patentia, vix secunda, siccitate erecta, lateribus inflexis, canaliculata, integerrima, luteo-viridia, nervo latissimo ultra laminam in acumen longum rigidum subulatum producto; perichætialia ovato-lanceolata, vaginantia, caulinis breviora. *Seta* uncialis, tortilis, fusco-lutea, superne pallida. *Theca* subcylindracea, erecta, subæqualis, basi attenuata, fusca, demum siccitate substriata. *Peristomii dentes* 16, breves, angusti, trabeculati, perforati, vix apice fissi, siccitate erecti, rubri. *Sporæ* minutæ, virides. *Operculum* conico-rostratum, thecæ longitudine, rostro obliquo. *Calyptra* luteola.

Nearly allied to *D. longisetum*, Hook. (Musc. Exot. t. 139), but differs in the more robust habit, leaves longer, wider, more rigid, less setaceous above, without serratures, the nerve broader and thicker, capsule longer, peristome smaller, the teeth not divided to the base as in that moss.

PLATE CLII. *Fig.* III.—1, tuft of the natural size; 2, leaf; 3, perichætial ditto; 4, theca; 5, calyptra; 6, theca and peristome; 7, teeth:—all *magnified*.

2 DICRANUM? *imponens*, Mont.; *in Voy. au Pole Sud, Bot. Crypt.* p. 298.

HAB. Strait of Magalhaens, *MM. Hombron et Jacquinot.* Hermite Island, Cape Horn; on the hills (barren).

Not having seen original specimens, it is necessary to mention that in the plant we refer to this species, the leaves are subsecund and entire; while in other respects they agree with the description quoted. *D. penicillatum*, Hornsch., to which Dr. Montagne compares his moss, belongs to the genus *Campylopus*, Brid.

3. DICRANUM *robustum*, Hook. fil. et Wils.; caule elongato subramoso, foliis falcato-secundis longissimis lineari-lanceolatis setaceo-attenuatis convolutis spinuloso-serrulatis, nervo latiusculo excurrente, perichætialibus intimis obtusis enerviis, theca cylindracea inclinata curvula strumulosa, operculo longirostro. D. scoparium, β. reflectens, *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 297? (TAB. CLII. fig. VIII.)

HAB. Hermite Island, Cape Horn; in woods, on the trunks and roots of trees, and in the open country, growing in large tufts, very abundant. Kerguelen's Land, *Dr. Lyall.*

Caules 4-unciales et ultra, robusti, parce ramosi, subinde incurvi, siccitate parum fragiles. *Folia* conferta, 6–7 lineas longa, apice setacea, inferne convoluta, superne carinata, margine dorsoque spinuloso-serrulata, viridia, inferiora squalida, perichætialia exteriora squarrosa, basi rotundato-ovata, acuminata, interiora erecta, convoluta, 3-linearia, elliptico-oblonga, obtusa cum mucrone lineari longiusculo, enervia. *Vaginula* linearis, elongata. *Seta* 7–8 lin. longa, crassiuscula, siccitate vix tortilis, rubella. *Theca* cylindracea, inclinata, curvula, rufo-brunnea, strumulosa. *Peristomii* dentes bifidi, rubri. *Operculum* theca paulo longius. *Calyptra* straminea, apice fusca.

A larger and more robust moss than *D. pungens*, nobis, which it much resembles, differing in its longer leaves, which are more decidedly serrated, less convolute, nerve broader and excurrent, the perichætial ones much shorter, and wholly different in shape, capsule longer and strumose, peristome larger. In general aspect it is not unlike the British *D. majus*, Turn., but is distinguished by the very long and attenuated leaves.

PLATE CLII. *Fig.* VIII.—1, moss, natural size; 2 and 3, leaves; 4 and 5, thecæ:—all *magnified*.

4. DICRANUM *pungens*, Hook. fil. et Wils.; *vid.* Pt. 1. p. 129. t. 59. f. 1.

Var. 2. foliis vix secundis.

Var. 3. foliis minoribus, vix secundis.

Var. 4. *lucidum*; foliis aureo-nitentibus falcato-secundis.

HAB. Hermite Island, Cape Horn. Vars. 1 and 4 (barren) on rocks, trunks of trees, and the ground, very abundant. Kerguelen's Land; Vars. 2 and 4, Cumberland Bay, *R. M'Cormick, Esq.*

The var. 4 is a very elegant moss, differing in aspect from the other varieties, but we are unable to detect sufficient characters to establish it as a species.

5. DICRANUM *Boryanum*, Schwaegr., *Suppl.* II. vol. i. p. 71. t. 121. Cecalyphum dichotomum, *P. Beauv. Prodr.* p. 41. Oncophorus dichotomus, *Brid. Br. Univ.* vol. i. p. 401.

HAB. Kerguelen's Land, common on the hills in large dense tufts, barren.

Our specimens agree precisely with an original one from P. de Beauvois himself. The leaves are more falcate and wider at the base than those of *D. Billardieri*, to which this moss is very closely allied.

6. Dicranum *Billardieri*, Schwaegr., *Suppl.* II. vol. i. p. 170. t. 121. *Fl. Antarct.* p. 119.

Var. caulibus apice ramosis, ramis brevibus confertis flagelliformibus.

Hab. Falkland Islands, amongst stones on Mount Vernet, not common, and always barren.

This peculiar condition of the moss is probably the result of its exposure to a dry atmosphere. Similar appearances occur in such British species as *Campylopus flexuosus*.

7. Dicranum *Starkii*, Web. et Mohr, *Bot. Tasch.* p. 189, 471. *Hook. et Tayl. Musc. Brit.* t. xvii. p. 97.

Var. 2. foliis vix secundis.

Hab. Hermite Island, Cape Horn, both varieties, the first in clefts of rocks, common, but rare in fruit.

Thecæ smaller and more erect than in European specimens. Intermediate between the usual form and *D. Sphagni*, Wahl.

8. Dicranum *tenuifolium*, Hook. fil. et Wils.; caule ramoso, foliis circinatim falcatis basi lanceolatis longissime capillaceis integerrimis nervo lato percursis, theca turbinata, operculo longirostro. (Tab. CLII. fig. VII.)

Hab. Hermite Island; moist shelving rocks on Mount Foster, above Deep-water Bay, scarce.

Caules unciales, parce ramosi, cæspitosi, curvuli, luridi. *Folia* longissima, angustissima, conferta, eleganter circinato-falcata, lurido-viridia, inferiora atrata; perichætialia basi latiora, vaginantia. *Seta* 3–4 lineas metiens, crassiuscula, pallide lutescens. *Theca* parva, suberecta, turbinata, ore patulo, senior fusca. *Peristomii* dentes rubri. *Operculum* oblique longirostrum. *Calyptra* dimidiata, scariosa, fusco-lutea.

Our specimens are not in a very good state, being too far advanced. Allied to the European *D. falcatum*, from which it differs in having narrower and longer leaves, and a very small nearly erect capsule destitute of a struma.

Plate CLII. *Fig.* VII.—1, moss, natural size; 2 and 3, leaves; 4–6, thecæ; 7, peristome:—all *magnified*.

9. Dicranum *vaginatum*, Hook., *Musc. Exot.* t. 141.

Hab. Hermite Island, on moist banks of sea-sand in St. Joachim's Bay, rare.

Our moss differs from original specimens gathered by Humboldt on the Andes of New Grenada, in the following particulars: teeth of the peristome broader; capsule erect, short and turbinate; seta shorter and thicker; leaves entire, acute.

14. CAMPYLOPUS, *Bridel.*

1. Campylopus *introflexus*, Bridel; *Br. Univ.* vol. i. p. 472. *Fl. Antarct.* pt. 1. p. 130. Dicranum introflexum, *Hedw. Sp. Musc.* p. 147. t. 29.

Hab. Falkland Islands, common on the ground, especially in peaty situations.

Also a native of Lord Auckland's group and Campbell's Island.

2. Campylopus *flexuosus*, Bridel; *Br. Univ.* vol. i. p. 469. *Fl. Antarct.* l. c.

Var. foliis piliferis. Dicranum clavatum, *Schwaegr. Suppl.* t. 255 ?

Hab. Amsterdam Island, South Indian Ocean, *Lieut. Smith, R.N.*

Found also in Campbell's Island.

C rigidus. to be added –

15. DIDYMODON, *Hedw.*

1. Didymodon *capillaceus*, Web. et Mohr, *Bot. Tasch.* p. 155. *Hook. et Tayl. Musc. Brit.* p. 119. t. 20. Swartzia capillacea, *Hedw. Musc. Frond.* vol. ii. p. 26.

Hab. Hermite Island, Cape Horn; on sandy banks near the sea, St. Joachim's Bay.

2. Didymodon *longifolius*. Trichostomum longifolium, *Brid. Br. Univ.* vol. i. p. 496. Trichostomum pallidum, β. strictum, *Schwaegr. Suppl.* II. vol. i. p. 77. t. 123?

Var. 2. *tenuifolius*; foliis basi magis dilatatis membranaceis, nervo duplo latiore.

Var. 3. *penicillatus*; caule fastigiato-ramoso, foliis longioribus erectis subquadrifariam imbricatis, nervo crassiore.

Var. 4. *curvifolius*; foliis subfalcatis secundis, e basi latiore sensim angustatis.

Hab. Staten Land, *A. Menzies, Esq.* (1787). Hermite Island, Cape Horn, vars. 1 and 4, abundant. South part of Fuegia, *C. Darwin, Esq.* Falkland Islands, var. 2, on the ground, rare in fruit; var. 3, on stones in streams, (barren).

From *Trichostomum pallidum* our moss differs essentially in the inflorescence, in the dilated base of the leaf, stronger nerve, cylindrical capsule, and also in the structure of the peristome. The var. 2 has at times an elliptical theca.

3. Didymodon? *glacialis*, Hook. fil. et Wils.; caule ramoso fastigiato-cæspitoso, foliis erecto-patentibus apice incurvis fragilibus ovato-lanceolatis lineari-acuminatis solidinerviis. (Tab. CLII. fig. VI.)

Hab. Cockburn Island, lat. 64° S. 57° W. (barren).

Caules 4 lin. longi, ramis erectis. *Folia* e basi concaviuscula, repente in acumen lineare producta, vel nervo crasso longe excurrente, margine haud reflexa, areolis minimis, subrotundis, inferioribus majoribus pellucidis, e fusco lurido-viridia.

One of the only three mosses which have hitherto been detected in a higher latitude than that of Cape Horn.

Plate CLII. *Fig.* VI.—1, tuft of the natural size; 2, branch; 3, 4 and 5, leaves:—all *magnified*.

16. CERATODON, *Brid.*

1. Ceratodon *purpureus*, Brid., *Br. Univ.* vol. i. p. 480. *Fl. Antarct.* pt. 1. p. 131. Didymodon, *Hook. et Tayl. Musc. Bot.* p. 113. t. 20.

Hab. Strait of Magalhaens, *M. Jacquinot* (in D'Urville's Voyage). Falkland Islands, common on clay soil and on the sand-hills about Port Louis. Not seen on Hermite Island.

A very abundant Antarctic plant in many situations.

17. TORTULA, *Hedw.*

We retain this name, instead of *Barbula*, for the following reasons: Schreber is the first authority for the union of the two Hedwigian genera *Tortula* and *Barbula* in the year 1791 (Gen. Plant.). He adopted the name *Tortula* which stands first in Hedwig's arrangement for both. This fact is overlooked by Bruch and Schimper, who in their history

of this genus (Bryol. Europ.), rely chiefly on the authority of Bridel in support of *Barbula*. But Bridel's authority is in favour of *Tortula*, for he adopted it in his earlier work. It was discontinued by him in 1819 (*Mantissa*) under the erroneous impression that the name had been legitimately given to a phenogamous genus; whereas *Barbula* had been applied nine years before by Loureiro to designate a Chinese shrub. Hence Schrader, Sibthorpe, Swartz, Roth, and all British writers on Mosses, retained *Tortula*, a name which would be at present unoccupied if not employed in conformity with the views of Hedwig and Schreber.

1. Tortula *densifolia*, Hook. fil. et Wils.; caule humili subdiviso, foliis patentibus confertis lanceolato-acuminatis acutis marginatis apice serratis solidinerviis, theca oblonga, peristomii dentibus contortis, membrana basilari breviuscula, operculo subulato. (Tab. CLIII. fig. I.)

Hab. Falkland Islands, on clayey rocks near the sea at Port Louis, scarce.

Dioica? *Caules* 4–6 lin. longi, laxe cæspitosi, subdivisi. *Folia* dense conferta, basi erecta, dein patentia, stricta, lanceolato-subulata, acuta, subcarinata, rigidiuscula, margine cartilaginea vix incrassata, apice dentato-serrata, nervo valido rubello, lutescenti-viridia, areolis opacis minimis, basi majoribus subdiaphanis; perichætialia minora erecta. *Seta* 6–8 lin. longa, tortilis, fusca. *Theca* oblonga, erecta, fusca. *Peristomii* dentes basi membrana latiuscula conjuncti, rubelli. *Operculum* subulatum, capsulæ longitudine. *Calyptra* dimidiata, fusca.

The only described species with which this can be compared is *Barbula marginata*, Bruch and Schimp. (Bryol. Europ.); but that is a smaller moss, having leaves not at all acuminated, and an excurrent nerve.

Plate CLIII. *Fig.* I.—1, tuft of the natural size; 2, leaf; 3, apex of ditto; 4, thecæ:—*magnified.*

2. Tortula *robusta*, Hook. et Grev.; caule elongato subramoso, foliis patulo-recurvis lanceolatis subcarinatis acutis apice serratis solidinerviis, theca cylindracea curvula, peristomii dentibus contortis tubo ad tertiam partem producto, operculo subulato. T. robusta, *Hook. et Grev. in Brewst. Ed. Journ.* vol. i. p. 299. t. 12. (Tab. CLIII. fig. II.)

Var. β. foliis laxioribus viridibus.

Hab. Hermite Island, on sandy ground amongst grass at the head of St. Joachim's Bay, forming large patches. Var. β. Falkland Islands, common in moist sandy places (barren).

Dioica, cæspitosa. *Caules* sesquiunciales, robusti, ramosiusculi. *Folia* lanceolata, vix acuminata, patentia, recurva, subcarinata, acuta, apice serrata, margine recurva, flavescentia, nervo tenui saturatius colorato percursa, siccitate erecta, incurva, subtortilia, areolis subrotundis, basi majoribus diaphanis, perichætialia similia erecta. *Seta* uncialis, sinistrorsum tortilis, rubella. *Theca* cylindracea, suberecta, curvula, rufo-fusca, ore rubello. *Annulus* persistens, albidus. *Peristomii tubus* basilaris dentium tertiam longitudinis partem æquans, albidus, dentes contorti, pulchre rubelli. *Operculum* subulatum capsula dimidio longius, flavescens. *Calyptra* dimidiata, castanea.

From all the European *Syntrichiæ* this species is distinguished by the serrated leaves. In size and general aspect it is not unlike *Barbula Mulleri*, Br. and Schimp.

After careful examination of the original specimens of *Tortula robusta* and *T. serrulata*, we have reason to believe that one, if not both, of these mosses is the same species as our Antarctic plants, differing only in the narrow leaves; but they are in too imperfect a state to determine very satisfactorily. The figure of *T. robusta* represents the leaves much too widely spreading, and they are also serrulate at the apex, just as in *T. serrulata*.

Plate CLIII. *Fig.* I.—1, plant of the natural size; 2, leaf; 3, theca; 4, apex of theca and peristome:—all *magnified.*

3. Tortula *Mulleri*. Barbula Mulleri, *Bruch et Schimp. Bryol. Europ.* fasc. 13–15. p. 44. t. 28.

Hab. Falkland Islands, on sand-hills near the Lagoon at Uranie Bay.

In our specimens the inflorescence is variable, even on the same stem; in some the antheridia and paraphyses are abundant, in others entirely wanting.

4. Tortula *lævipila*, (Barbula), *Bruch et Schimp. l. c.* p. 40. t. 25.

Var. 1. foliis erecto-patentibus dorso margineque papillosis, florescentia monoica (interdum hermaphrodita).

Var. 2. foliis ovalibus suberectis dorso lævibus.

Var. 3. caule gracili ramoso, foliis brevioribus suberectis elliptico-oblongis apice pilo brevi instructis margine subincurvis.

Var. 4. foliis obtusis areolis majusculis subrotundis.

Hab. Falkland Islands, vars. 1 and 2, on sandy soil near the sea; vars. 3 and 4, Cockburn Island, lat. 64° S., long. 57° W., both barren.

5. Tortula *gracilis*. Barbula gracilis, *Bruch et Schimp. l. c.* p. 22. t. 8. (Tab. CLIII. fig. III.)

Hab. Cockburn Island, (barren).

Our specimens differ from authentic examples in having the leaves more crowded, more pellucid at the base and less acuminated; the nerve also is wider.

Plate CLIII. *Fig.* III.—1, tuft of the natural size; 2 and 3, leaves; 4, areolæ:—*magnified.*

6. Tortula *hyperborea*, Mont. *in Voy. au Pole Sud, Bot. Crypt.* p. 302. t. 20. f. 4. Syntrichia hyperborea, *Brid. Bryol. Univ.* vol. i. p. 583. S. mucronifolia, *Br. in Parry's 1st Voy. App.* p. 198. *excl. synonym.*

Hab. Strait of Magalhaens; *M. Jacquinot.*

18. POLYTRICHUM, *Linn.*

1. Polytrichum *compressum*, Hook. fil. et Wils.; caule subsimplici, foliis suberectis subulatis concavis subserratis, theca inclinata ovata compressa microstoma, operculo conico-rostrato, calyptra apice subpilosa. (Tab. CLIII. fig. IV.)

Hab. Hermite Island, in various situations, chiefly on wet rocks, from the sea to the tops of the hills, rare in fruit. *W. only.*

Dioicum. *Caules* plus minus dense cæspitosi, vix ramosi, nunc luridi, nunc rufo-ferruginei, subinde luteo-virides. *Folia* erecto-patentia, imbricata, lanceolato-subulata; in caule masculo ovato-lanceolata, breviora; apice incurva, obtusiuscula, concava, mollia, subcarnosa, obscure serrata, nervo angusto haud lamellato instructa, areolis minutis subrotundis, opacis; perichætialia longiora, erecta. *Seta* uncialis, crassa. *Theca* inclinata, subinde horizontalis, ovata, obliqua, compressa, microstoma, lurido-fusca. *Columella* compressa. *Peristomii* dentes circiter 32, irregulares, albidi. *Sporæ* minutæ, ferrugineæ. *Operculum* conico-rostratum, capsula duplo brevius. *Calyptra* apice subpilosa, latere fissa, parvula, fusca. *var. β. see addenda.*

Allied to the Icelandic *P. lævigatum*, Hook., but abundantly distinct in its compressed theca and narrower leaves.

Plate CLIII. *Fig.* IV.—1, plant of the natural size; 2 and 3, leaves; 4 and 5, thecæ; 6, calyptra:—all *magnified.*

2. Polytrichum *juniperinum*, Hedw., *Sp. Musc.* p. 89. t. 28. *Hook. et Tayl. Musc. Brit.* p. 45. t. 10.
Var. foliis confertis suberectis strictis.

Obs. W. 117. is the one described for Polytr. compressum as W. 118. the leaves are lamellated (with 32/- a S. Am. specis (Jameson & Purdie) has only 16 with leaves entire semilamellate, capsule short & roundish ovate - -

Polytr. compressum.
Obs. the Hermite Isl. W. 118. has lamellated leaves, may be diff. from W. 117. -
A S. Am. specis with rounder capsule & only 16 teeth (Purdie & Jameson) has leaves wider entire & semilamellate -
The subula shd. be well compared.

Hab. Falkland Islands, on the moors, (barren). Hermite Island, Cape Horn, (barren).

Evidently the British species, and a very widely dispersed one.

3. Polytrichum *alpestre*, Hoppe; *Bridel, Br. Univ.* vol. ii. p. 140. P. juniperinum, var. *Hook. et Tayl. l. c.* p. 45.

Hab. Strait of Magalhaens, Port Famine, *Capt. King*.

This, which is also a British species, has been collected by Capt. King only.

4. Polytrichum *piliferum*, Schreb.; *Schwaegr. Suppl.* I. vol. ii. p. 313. t. 153. *Hook. et Tayl. l. c.* p. 44. t. 10.

Hab. Falkland Islands, not uncommon on the moors, raré in fruit.

Affecting the same locality and habit in the Falklands that it does in England.

5. Polytrichum *dendroides*, Schwaegr. *Suppl.* II. vol. ii. p. 2. t. 151.

Hab. Strait of Magalhaens, *D'Urville*. Hermite Island, in the woods, on steep banks by rivulets, not uncommon, but rare in fruit.

In fertile specimens the branches are arranged at intervals around a common axis, the lower ones usually subdivided. The peristome has some analogy to that of *Lyellia*, the teeth being very small and the connecting base remarkably thick and prominent. The calyptra is quite glabrous. Columella apparently winged. In habit this moss belongs to *Pogonatum* of Bruch and Schimper, but its other characters do not correspond.

6. Polytrichum *squamosum*, Hook. fil. et Wils.; caule elongato squamoso fastigiato-ramoso, ramis patentibus brevibus densis curvatis, foliis dense imbricatis erecto-patentibus lanceolato-subulatis strictis serratis. (Tab. CLIII. fig. VIII.)

Hab. Hermite Island, on the hills at an altitude of 1,000–1,500 feet, scarce and scattered, always barren.

Caulis subspithameus, ascendens, firmus, subflexuosus, atro-purpureus, maxima ex parte humo sepultus, triqueter, superne squamis appressis luteo-fuscis scariosis nitidis in folia caulina gradatim abeuntibus vestitus, apice dendroideo-ramosus; rami vix semiunciales, subsimplices, patentes, fastigiati. *Folia* dense conferta, suberecta, ad apices ramorum subsecunda, siccitate appressa, e basi membranacea pellucida semiamplexicauli lanceolato-subulata, vix trilinearia, superne lamellata, dorso carinaque scabra.

Although this moss is very different in aspect from *P. dendroides*, the characters seem scarcely sufficient to distinguish it. The short straight leaves are only half as long as in that species.

Plate CLIII. *Fig.* VIII.—1, plant of the natural size; 2 and 3, leaves:—*magnified*.

7. Polytrichum *Magellanicum*, Hedw., *Sp. Musc.* p. 101. t. 20. *Fl. Antarct.* pt. 1. p. 132. t. lix.

Hab. Strait of Magalhaens; *D'Urville, Hombron*. Hermite Island, on fallen trunks of old trees, &c., in the woods; also on alpine rocks, in clefts. Falkland Islands, not uncommon on the ground and in clefts of quartz rocks on the hills, (always barren).

19. CONOSTOMUM, *Sw.*

1. Conostomum *australe*, Swartz, *Schwaegr. Suppl.* II. vol. i. p. 108. t. 130. *Fl. Antarct.* pt. 1. p. 182.

Hab. Hermite Island, on open rocky ground on the hills, occupying the same situations as *C. boreale* in Europe. Falkland Islands, in similar localities, bearing fruit in November.

Entirely the representative of the British and Arctic *C. boreale*. Also found in Lord Auckland's group.

20. BARTRAMIA, *Hedw.*

1. Bartramia *patens*, Schwaegr., *Suppl.* I. vol. i. p. 55. t. 62. *Fl. Antarct.* pt. 1. p. 133.

Var. β. *intermedia*; caule minore.

Hab. Hermite Island, common in the woods, from the sea to the tops of the hills, in crevices of rocks, growing in dense soft tufts. Falkland Islands, common on wet clay-slate rocks near the sea, not found on the hills, abundant in fruit. Var. β. on clayey ground and rocks near the sea.

The variety β. differs only in its smaller size and in the general aspect, which resembles that of the British *B. ithyphylla*.

2. Bartramia *pendula*, Hook.; *Musc. Exot.* t. 21. *Fl. Antarct.* pt. 1. p. 133.

Var. 1. foliis e basi erecta patulo-squarrosis, margine evidentius recurvis parcius denticulatis.

Var. 2. caule longiore robustiore vix tomentoso, foliis latioribus subsecundis.

Hab. Hermite Island, in rocky places near the tops of the hills, scarce, abundant in fruit near the spray of a waterfall on the south side of St. Martin's Cove, forming large patches. Var. 2, always barren.

In some respects our moss resembles *B. tomentosa*, Hook. (Musc. Exot. t. 19), which we scarcely consider to be a distinct species, but the capsule is oblong and pendulous.

The var. 2 may be distinct. It resembles *Hypnum elongatum*, nobis. We have seen only the male inflorescence, which is truly that of *Bartramia*.

3. Bartramia *pomiformis*, Hedw.; *var.* crispa. B. crispa, *Swartz. Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 307.

Hab. Strait of Magalhaens; *Admiral D'Urville et M. Jacquinot.*

21. BRACHYMENIUM, *Hook.*

1. Brachymenium? *ovatum*, Hook. fil. et Wils.; caule humili, foliis laxe imbricatis erecto-patentibus quinquefariis ovato-oblongis nervo valido apiculatis. (Tab. CLIII. fig. IV.)

Hab. Falkland Islands, amongst dry quartz rocks on the hills, (barren).

Caules cæspitosi, inferne dense radiculosi, spongiosi, 1–2-unciales, parce ramosi. *Folia* erecto-patentia, 5-faria, ovato-oblonga, planiuscula, integerrima, luteo-viridia, siccitate subincurva, nervo valido excurrente apiculata, areolis minimis, rotundis. In axillis foliorum fasciculi corporum fuscorum confervæ instar evadunt.

This moss resembles *Tetraphis pellucida*, but differs in the excurrent nerve and in the disposition and texture of the leaves.

Plate CLIII. *Fig.* IV.—1, tuft of the natural size; 2 and 3, leaves:—*magnified.*

22. ORTHODONTIUM, *Schwaegr.*

1. Orthodontium *australe*, Hook. fil. et Wils.; caule ramoso fastigiato humili, foliis erecto-patentibus subrecurvis anguste linearibus subflexuosis, nervo subcontinuo, theca suberecta oblonga brevicolla, operculo brevirostro. (Tab. CLIII. fig. V.)

Hab. Falkland Islands, alt. 900 feet, upon the fibrous roots of the Tussac grass; observed in one spot only. Hermite Island, in clefts of rocks on the hills and on wet banks, not uncommon.

Caules cæspitosi, 2–3 lin. longi, ramis brevibus apice coma incrassatis. *Folia* densa, e basi lineari longissime attenuata, subflexuosa, carinata, integerrima, viridia, nervo conspicuo sub apicem evanido, cellulis elongatis: perichætialia longiora, similia, antheridiis in axillis eorum positis, paraphysibus paulo longioribus immixtis. *Seta* 4–5 lin. longa, gracilis, rubra, siccitate tortilis. *Vaginula* angusta, oblonga. *Theca* lanceolato-oblonga, inclinata, subinde erecta, ore angustato, demum rufescens, siccitate substriata. *Sporangium* internum paulo brevius. *Annulus* obscurus, operculo adhærens. *Operculum* basi conicum, rostello brevi obliquo, interdum conicum, acuminatum, rectum. *Peristomium* breve; dentes externi hyalini, transverse trabeculati, siccitate inflexi; interni processus 16 longiores, carinati, linea media notati, membrana basilari connexi, siccitate erecti, subincurvi. *Sporæ* minimæ, luteæ. *Calyptra* latere fissa, pallida, apice brunnea.

This differs from *Orthodontium lineare*, Schwaegr. (Suppl. t. 188), in the oblong suberect capsule, and in the absence of terminal male flowers, thus deviating from the generic character proposed by Schwaegrichen. In the inflorescence it agrees with the British *Orthodontium gracile*, Bruch and Schimper, but differs in the form of the capsule and the stronger nerve of the leaf.

Plate CLIII. *Fig.* V.—1, plant of the natural size; 2, leaf; 3 and 4, thecæ; 5, peristome:—all *magnified*.

23. BRYUM, *Dill.*

1. Bryum *nutans*, Schreb.; *Hook. et Tayl. Musc. Brit.* p. 203. t. 29. *Fl. Antarct.* pt. 1. p. 134.

Hab. Falkland Islands; from the sea to the hill-tops, varying in size and habit. Hermite Island, Cape Horn; in clefts of rocks in the woods, and on hard soil by streams.

A common Antarctic moss; also a native of Lord Auckland's group.

2. Bryum *lacustre*, Brid.; *Bruch et Schimp. Bryol. Europ. Monogr.* p. 16. t. 2.

Hab. Hermite Island; on sandy banks close to the brushwood a little above high water mark, St. Joachim's Bay.

3. Bryum *bimum*, Schreb.; *Bruch et Schimp. l. c.* p. 50. t. 21.

Hab. Kerguelen's Land (barren).

4. Bryum *Billardieri*, Schwaegr.; *Suppl.* I.vol.ii. p. 115. t. 76 (*non Bruch et Schimp. l. c.* p. 58. t. 26.)

Hab. Falkland Islands; on clay-slate rocks at Port Louis, rare and barren.

The European specimens, described by Bruch and Schimper, belong to *B. Canariense*, Schwaegr. (Suppl. t. 214 *b*); we do not however contend for that moss being a really distinct species.

5. Bryum *argenteum*, Linn.; *Hook. et Tayl. Musc. Brit.* p. 199. t. 29. *Bruch et Schimp. l. c.* p. 78. t. 41.

Var. foliis arcte imbricatis angustioribus acuminatis.

Hab. Falkland Islands; in sandy places near the sea, common. Cockburn Island, (barren).

This variety is connected with the ordinary states of the species by intermediate forms which Mathews gathered at Casapi (Peru). The Hookerian Herbarium contains a *Bryum*, collected by Humboldt in South America, with muticous convolute leaves, allied to this, but probably a distinct species.

6. Bryum *cæspititium*, Linn.; *Hook. et Tayl. Musc. Brit.* p. 201. t. 29. *Bruch et Schimp. l. c.* p. 70. t. 34.

Var. β. gracilescens, *Bruch et Schimp.*

Hab. Strait of Magalhaens, *M. Jacquinot.* Falkland Islands, with unripe fruit. Var. β. Falkland Islands (barren).

7. Bryum *pallescens*, Schwaegr.; *Suppl.* I. vol. ii. p. 67. t. 74. *Bruch et Schimp. l. c.* p. 51. t. 22.

Hab. Falkland Islands, on sand-hills at Uranie Bay. Hermite Island, Cape Horn.

8. Bryum *Antarcticum*, Hook. fil. et Wils.; monoicum, caulibus ramosis cæspitosis, foliis confertis imbricatis erecto-patentibus ovatis acuminatis concavis reticulatis evanidinerviis margine planis. (Tab. CLIII. fig. VI.)

Hab. Cockburn Island, lat. 64° S., long. 57° W., with young setæ.

Caules 2 lin. longi, rubelli, inferne radiculosi. *Folia* late ovata, acumine brevi, apice diaphana, subdenticulata, rufescentia, nervo latiusculo rubello sub apice evanido, areolis subquadratis; perichætialia majora, acumine longiore. *Seta* vix $1\frac{1}{2}$ lin. longa, crassiuscula, rubra. *Calyptra* rubra. *Flos masculus* in ramulis brevibus per innovationes lateralis floribus fœmineis alternans; antheridia cum paraphysibus longioribus subclavatis; archegonia paraphysibus brevioribus filiformibus immixta.

Nearly allied to the British *B. Zierii*, Dicks., but differing essentially in the inflorescence. The leaves are more crowded and have smaller areolæ.

Plate CLIII. *Fig.* VI.—1, tuft of the natural size; 2, stem and 3, leaf, both *magnified*.

9. Bryum *Wahlenbergii*, Schwaegr.; *Bruch et Schimper*, l. c. p. 44. t. 17., *Fl. Ant.* pt. 1. p. 134.

Var. 1. caule rubro, foliis ovatis rubellis.

Var. 2. foliis ovato-lanceolatis laxis viridibus.

Var. 3. caule elongato 2–3-unciali ramoso, foliis rubescentibus ovato-lanceolatis secundis.

Var. 4. foliis ovatis secundis minoribus nigro-viridibus.

Hab. Hermite Island, Cape Horn; var. 1, sand near the sea. Falkland Islands; var. 3, slate rocks near the sea (barren); Kerguelen's Land; var. 1, 2, and 4, all abundant.

The var. 1 is very similar to British specimens, differing in the colour of the leaves and in their being less acute. This moss also inhabits Lord Auckland's group.

10. Bryum *vagans*, Hook. fil. et Wils.; caule vage ramoso, foliis patentibus secundis ovato-lanceolatis apiculatis submarginatis apice serratis, nervo subcontinuo. (Tab. CLIV. fig. 1.)

Hab. Hermite Island; marshy places in the woods, especially on slopes, frequent, (barren.)

Caulis basi procumbens, fere repens, biuncialis, apice ascendens, sæpe incurvus, vage ramosus, rami erecti, apice curvati. *Folia* laxe imbricata, patentia, secunda, mollia, ovato-lanceolata, apiculata, concaviuscula, submarginata; nempe areolis marginalibus angustioribus, confertis, cæteris majusculis, subrhomboideis, apice serrulata, basi haud decurrentia, nervo tenui subcontinuo instructa, juniora pallide viridia, vetustiora luteo-viridia. *Flos masculus* discoideus, terminalis; folia perigonialia late ovata, basi erecta, concava, superne patula, serrulata; antheridia numerosa, cylindracea, paraphysibus filiformibus immixta.

Allied to *B. Wahlenbergii*, but larger, the leaves twice as long, less succulent, not decurrent at the base, margined, apiculate, the nerve extending higher. During the winter months, owing to shifting of the watercourses, the banks on which this moss grows become inundated, and the varieties that ensue are very puzzling. The original plant is gradually covered by a carpet of young branches of a bright green colour, the whole forming a soft spongy and treacherous covering to the bogs.

Plate CLIV. *Fig.* I.—1, plant of the natural size; 2, leaf; 3, areolæ of ditto,—*magnified*.

11. Bryum *lævigatum*, Hook. fil. et Wils; caule ramoso, foliis erecto-patentibus imbricatis ovatis concavis integerrimis siccitate erectis, nervo subcontinuo, theca pendula ovato-oblonga, operculo conico obtuso. (Tab. CLIV. fig. III.).

Var. β. foliis angustioribus minus concavis.

Hab. Hermite Island; wet rocks on Mount Foster, (barren); Falkland Islands; common in bogs, (always barren.) Var. β. Kerguelen's Land (barren).

Dioicum? *Caules* unciales–triunciales, steriles longiores, inferne radiculis tomentosis nigricantibus intertexti, ramosi. *Folia* imbricata, subpatentia, ovata vel elliptico-oblonga, subcallosa, concava, integerrima, nervo valido vix sub apice evanido instructa, læte viridia, nitentia, inferiora e fusco-purpurascentia, siccitate subappressa. *Seta* 7–8 lin. longa, rufa, nitida, haud tortilis. *Theca* pendula, subpyriformis, oblonga, ore subpatulo, rufo, nitido. *Peristomii* externi dentes ferruginei, siccitate erecti; interni cilia perforata ciliolis singulis interjectis. *Operculum* breve, conicum, obtusum.

Our description and figure are drawn up in part from specimens gathered in Van Diemen's Land, by Mr. Lawrence. A very distinct species, characterised by its concave shining subcoriaceous leaves, retaining their shape when dry, intermixed with dark purple radicles.

Plate CLIV. *Fig.* III.—1 and 3, stems of two states, from Hermite Island; 2, a third state, from Van Diemen's Land, of the natural size: 4 and 5, leaves; 6, thecæ;—*magnified.*

12. Bryum *truncorum*, Bridel, *Bryol. Univ.* vol. 1. p. 699.

Hab. Falkland Islands; with fruit rare, Dr. Lyall; and a taller barren state in marshy places, not uncommon.

24. MNIUM, *Bruch et Schimper.*

1. Mnium *rostratum*, Bruch et Schimper; *Bryol. Europ. Monogr.* p. 27. t. 7. Bryum rostratum, *Hook. et Tayl. Musc. Brit.* p. 208. t. xxx.

Hab. Strait of Magalhaens, Port Famine; *Capt. King*, (barren).

25. FUNARIA, *Schreb.*

1. Funaria *hygrometrica*, Hedw.; *Fl. Antarct.* pt. 1. p. 135., *Hook. et Tayl. Musc. Brit.* p. 171. t. xx.

Hab. Falkland Islands; common at Port Louis, on burnt ground.

Not hitherto found in Fuegia, but a native of Campbell's Island.

26. ANŒCTANGIUM, *Brid.*

1. Anœctangium *Humboldti*, Brid. Hedwigia Humboldti, *Hook. Musc. Exot.* t. 137; *Fl. Antarct.* pt. 1. p. 135.

Var. β. australe.

Hab. Hermite Island; on a moist sloping rock exposed to the north, on Mount Foster, alt. 1000 ft.; in large barren patches resembling a discoloured mass of *Sphagnum.*

These specimens are intermediate between the typical form and that of Lord Auckland's and Campbell Island.

27. LEUCODON, *Schwaegr.*

1. Leucodon *Lagurus*, Hook; *Musc. Exot.* t. 126. *Fl. Antarct.* pt. 1. p. 136.

Hab. Strait of Magalhaens; Port Famine; *D'Urville et Jacquinot.* Hermite Island; on trees in the forest and on rocks from the sea to an altitude of 1200 feet in large tufts.

Larger than the specimen figured in the 'Musci Exotici'; the capsules inclined, substrumose, the teeth of the peristome united regularly in pairs by transverse bars, pale yellow, leaves nerved half-way.

28. LESKIA, *Hedwig.*

1. Leskia *nitida*, Hook. fil. et Wils.; caule vage ramoso, ramis longiusculis subsimplicibus teretibus, foliis imbricatis suberectis ovato-oblongis acuminatis concavis integerrimis basi binerviis, seta lævi, theca cylindracea suberecta curvula, operculo brevirostri. (Tab. CLIV. fig. VI).

Hab. Staten Land; *A. Menzies, Esq.* (1787). Hermite Island; Cape Horn; barren.

Caules sesquiunciales, steriles longiores, molles, virides; *rami* teretes, filiformes, apice e foliis convolutis cuspidati. *Folia* dense imbricata, erecto-patentia, ovato-oblonga, acuminata, acumine vix tertiam partem folii æquante, concava, subconvoluta, integerrima, nervis basilaribus duobus instructa, lutescenti-viridia, sericeo-nitentia, tenuissime elongato-areolata; perichætialia longiora, subsquarrosa. *Seta* uncialis, tortilis, gracilis, rubra. *Theca* cylindracea, suberecta, curvula, interdum subcernua, basi attenuata, brunnea. *Operculum* basi conicum, rostello obliquo, capsula dimidio brevius, badium. *Annulus* operculo adherens. *Peristomii* externi dentes lutei, linea media notati, acuminati; interni processus breviores, angusti, carinati, ciliolis nullis.

This moss has considerable resemblance to *Hypnum stramineum*, but differs in having the leaves almost piliferous, in the rostrate operculum and in the structure of the peristome. It is also allied to *Hypnum crinitum*, nobis, from Van Diemen's Land.

Plate CLIV. *Fig.* VI.—1, fruiting, and 2, barren specimen, of the natural size: 3 and 4, leaves; 5, thecæ:—*magnified.*

29. HYPNUM, *Dill.*

a. *Foliis distichis.*

1. Hypnum *politum*, Hook. fil et Wils.; caule ramoso compresso, foliis distichis patentibus oblongis compresso-carinatis subpiliferis integerrimis enerviis, seta lævi, theca suberecta oblonga. (Tab.CLIV. fig. II.)

Hab. Hermite Island; common in woods near the sea. Kerguelen's Land; in rocky places (barren).

Caules unciales et ultra, cæspitosi, subramosi, complanati, distiche ramosi; rami compressi. *Folia* arcte imbricata, patentia, disticha, elliptico-oblonga, scaphæformia vel compresso-carinata, apice cucullata, subpilifera, integerrima, enervia, læte viridia, sericeo-nitentia, tenuissime areolata; perichætialia ovata, longe acuminata, erecta, integerrima, caulinis duplo breviora. *Seta* vix uncialis, lævis, rufo-fusca. *Theca* oblonga, suberecta, sub-apophysata, ore patulo. *Peristomii* externi dentes lutei, incurvi, linea media notati; interni cilia ciliolis interpositis. *Calyptra* dimidiata, straminea. *Operculum* non visum.

A beautiful species, unlike any hitherto described.

Plate CLIV. *Fig.* II.—Specimen of the natural size: 2 and 3, leaves; 4, thecæ; 5, peristome; all *magnified.*

2. Hypnum *denticulatum*, Dill. Linn.; *Hedw. Musc. Frond.* vol. 4. t. 31. *Hook. et Tayl. Musc. Brit.* p. 153. t. xxiv.

Hab. Hermite Island; on moist banks, wet rocks, &c., not uncommon, (barren).

3. Hypnum *reticulatum*, Hook. fil. et Wils.; caule erecto simpliciusculo, foliis distichis patentibus ovato-lanceolatis acuminatis vix piliferis submarginatis reticulatis apice serrulatis, nervo tenui subexcurrente. (Tab. CLIV. Fig. V.)

Hab. Hermite Island; on the ground in damp woods, rare (barren).

Caules laxe cæspitosi, unciales, subelongati, erecti, plerumque simplices, complanati, molles. *Folia* disticha, patentia, subobliqua, acutissima, fere pilifera, areolis marginalibus angustioribus confertis, cæteris majusculis subrhomboideis, recentiora læte viridia, nitentia.

The many points of correspondence between this moss and *Bryum vagans*, nobis, have not escaped our notice. The specimens being few and barren, we are unable to pronounce with confidence on the validity of the species. It differs from *H. subbasilare* in the acuminated distichous leaves and almost excurrent nerve. In habit it much resembles *H. denticulatum*.

Plate CLIV. *Fig.* V.—1, plant of the natural size; 2, leaf; 3, apex of ditto:—*magnified*.

4. Hypnum *riparium*, Dill. Linn.; *Hedw. Musc. Frond.* vol. 4. t. 3. *Hook. et Tayl. Musc. Brit.* p. 152. t. xxiv.

Var. 2. caule elongato rigido, foliis dissitis minoribus rigidulis.

Hab. Kerguelen's Land; both varieties, in the lake near Christmas Harbour (barren).

With the habit of *Fontinalis*; probably a distinct species, but the specimens are not in a state to be determined satisfactorily.

b. *Foliis imbricatis, seta radicali.*

5. Hypnum *mnioides*, Hook.; *Musc. Exot.* t. 77. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 329. H. subbasilare (ex errore), *Schwaegr. Suppl.* t. 256.

Hab. Strait of Magalhaens, *D'Urville*. Hermite Island; abundant everywhere in the woods.

Closely allied to *H. spiniforme*, from which it chiefly differs in its broader leaves.

6. Hypnum *subbasilare*, Hook.; *Musc. Exot.* t. 10. H. mnioides (ex errore), *Schwaegr. Suppl.* t. 257.

Hab. Hermite Island; in moist woods, at the roots of trees, very common, growing in tufts.

This species so much resembles *H. mnioides*, as to be scarcely distinguishable from it until gathered.

In our specimens the leaves are by no means bifarious, as stated in the *Musci Exotici*, and are compressed only when dry. The perichætial leaves are erect, almost piliferous, and nerved to the apex; young calyptra coriaceous, slightly ventricose, not subulate, at length dimidiate. The operculum is absent from all our specimens.

c. *Foliis imbricatis ruptinerviis, seta laterali.*

7. Hypnum *rutabulum*, Dill. Linn.; *Hedw. Musc. Frond.* vol. 4. t. 12. *Hook. et Tayl. Musc. Brit.* p. 176. t. xxvi. *Fl. Antarct.* pt. 1. p. 138.

Var. 1. foliis apice attenuatis, perichætialibus erectis.

Var. 2. foliis majoribus læte viridibus.

Var. 3. caulibus 2–3-pollicaribus, foliis angustioribus luteo-viridibus nitentibus inferioribus fuscis.

Var. 4. caule elongato graciliore.

Var. 5. caule elongato, foliis subcirrhosis brevinerviis.

Hab. Hermite Island, Cape Horn; var. 1. wet rocks in the woods; var. 2, roots of trees (barren). Falkland Islands; var. 5. springy places, forming large green masses. Kerguelen's Land; var. 3. wet places on the hills (barren); var. 4. wet bogs (barren).

The second of these varieties resembles very closely the European plant.

8. Hypnum *subpilosum*, Hook. fil. et Wils.; caule ~~fastigiato-ramoso~~, foliis cordato-ovatis imbricatis suberectis acuminatis subpiliferis concavis striatis serrulatis ruptinerviis. (Tab. CLIV. Fig. IV.)

Hab. Hermite Island, Cape Horn; in moist earth, near the tops of the hills, altitude 1500 feet.

Monoicum. *Caules* laxe cæspitosi, sesquiunciales, vage ramosi, subfastigiati; rami patentes, subrecurvi. *Folia* arcte imbricata, suberecta, cordato-ovata, repente acuminata, acumine fere piliformi, reflexiuscula, concava, subplicata, serrulata, nervo crasso medio exarata, læte viridia, inferiora squalida, areolis angustis. *Seta* inferne lævis, superne scabriuscula. (Cætera desunt).

Closely allied to *H. rutabulum*, but smaller and more rigid, the leaves more closely imbricated and almost piliferous.

Plate CLIV. *Fig.* IV.—1, plant of the natural size; 2, leaf:—*magnified.*

9. Hypnum *albicans*, Dill. Neck.; *Hedw. Musc. Frond.* vol. 4. t. 5. *Hook. et Tayl. Musc. Brit.* p. 167. t. xxv.

Var. caule elongato, foliis luteo-viridibus.

Hab. Hermite Island; in moist places and streams, not uncommon (barren).

This resembles Var. 4. of *H. rutabulum*, but has more distinctly striated leaves.

10. Hypnum *serpens*, Dill. Linn.; *Hedw. Musc. Frond.* vol. iv. t. 18. *Hook et Tayl. Musc. Brit.* p. 153. t. xxiv.

Var. 1. foliis subsecundis subsolidinerviis.

Var. 2. foliis ovatis brevioribus latioribus.

Hab. Kerguelen's Land; both varieties on the rhizomata of the "Cabbage", *Pringlea*, (barren).

d. *Foliis imbricatis subenerviis, seta laterali.*

11. Hypnum *chlamydophyllum*, Hook. fil. et Wils.; *Fl. Antarct.* pt. 1. p. 139. t. lix. fig. i.

Hab. Hermite Island; moist rocks on the hill-tops, altitude 1400 ft., rare.

Also a native of Tasmania and Campbell's Island.

12. Hypnum *auriculatum*; Montagne *in Voy. au Pole Sud, Bot. Crypt.* p. 331. t. 20. f. 3.

Hab. Strait of Magalhaens, *M. Jacquinot.*

13. Hypnum *lucidulum*, Hook. fil. et Wils.; caule ramoso humili, foliis erecto-patentibus ovato-acuminatis apice attenuatis integerrimis margine reflexis basi 1–2-nerviis, seta lævi, theca cernua ovato-oblonga. (Tab. CLV. Fig. I.)

Hab. Hermite Island; on banks and moist rocks in the evergreen beech-woods, abundant; also in crevices of rocks on the hills.

Caules semiunciales et ultra, cæspitosi, ramosi, molles, fragiles. *Folia* conferta, imbricata, erecto-patentia vix secunda, ovato-acuminata, concaviuscula, apice attenuata, subpilifera, tenera, margine reflexa, basi 1–2-nervia, pallide viridia, nitida, tenuissime areolata; perichætialia ovata, breviter acuminata, erecta, integerrima. *Seta* 7–8 lin. longa, lævis, apice incurvata, rubra. *Theca* ovato-oblonga, basi attenuata, curvula, e setæ apice curvata cernua, brunnea. *Peristomium* externum luteum, internum albescens, ciliolis binis.

This moss bears some resemblance to *H. Silesianum*, Schwaegr., but is quite distinct in character, and allied also to *H. adnatum*, Hedw., from which it differs in the flaccid leaves, recurved at the margin.

Plate CLV. *Fig.* I.—1, plant of the natural size; 2 and 3, leaves; 4 and 5, thecæ:—*magnified*.

e. *Foliis patulis squarrosis.*

14. Hypnum *aciculare*, Brid.; *Schwaegr. Suppl.* I. vol. ii. p. 280. t. 92. *Fl. Antarct.* pt. 1. p. 140.

Hab. Staten Land, *A. Menzies, Esq.* Hermite Island; in woods near the sea, not uncommon.

A very abundant plant in the South temperate and colder regions.

f. *Foliis secundis nervosis.*

15. Hypnum *conspissatum*, Hook. fil. et Wils.; caule elongato ramoso, foliis patentibus secundis ovato-lanceolatis acuminatis integerrimis margine incrassatis solidinerviis. (Tab. CLV. Fig. III.)

Var. 2. caule longiore, foliis latioribus.

Var. 3. foliis longioribus magis acuminatis.

Hab. Kerguelen's Land; var. 1, boggy places, common (barren). Falkland Islands; var. 2, (barren), *Dr. Lyall*; var. 3, growing in waters (barren).

Caules fluitantes, biunciales ad semipedales, ramosi, fastigiati; *rami* simplices, ascendentes. *Folia* laxe imbricata, plus minus falcato-secunda, rigidula, crassiuscula, opaca, margine valde incrassata, nervo continuo exarata, juniora intense viridia, cætera lurido-viridia, interdum fuscescentia, inferiora nisi nervus margoque incrassata plerumque tabescentia. (Cætera desunt.)

In the leaves this moss has a close affinity with *Cinclidotus*, but the aspect is that of *Hypnum ruscifolium*.

Plate CLV. *Fig.* III.—1, plant of the natural size; 2 and 3, leaves; 4, apex of ditto:—*magnified*.

16. Hypnum *filicinum*, Dill. Linn.; *Hedw. Sp. Musc.* p. 258. t. 76. *Hook. et Tayl. Musc. Brit.* p. 183. t. xxvi. *Fl. Antarct.* pt. 1. p. 141.

Var. 2. robustius, foliis elliptico-lanceolatis angustioribus.

Var. 3. omnia var. 2, sed foliis vix secundis.

Var. 4. foliis vix secundis latioribus erectis acuminatis.

Hab. Falkland Islands; var. 1, rocky fresh-water streams, and wet sandy places; var. 3, *Dr. Lyall.* Hermite Island; Cape Horn; var. 4, wet rocks and sandy places. Kerguelen's Land; var. 2, boggy places. (barren).

These varieties are all very similar to the plant mentioned in the first part of this work.

17. Hypnum *paradoxum*, Hook. fil et Wils.; caule repente subpinnato, foliis falcato-secundis ovato-lanceolatis acuminatis striatis serrulatis ruptinerviis, seta scabra, theca cernua obovato-oblonga. (Tab. CLV. Fig. II.)

Var. β. foliis laxe imbricatis substriatis, theca ovata, operculo conico.

Hab. Hermite Island, Cape Horn; var. β. on moist rocks and at the roots of trees; scarce.

Caules 2–3-unciales, rami ascendentes. *Folia* falcato-secunda, plicato-striata, serrulata, nervo ultra medium producto, luteo-fusca, subspadicea, in var. β. læte viridia. *Seta* semiuncialis, brunnea. *Theca* horizontalis, turgida, sub ore contracta, rufa. *Peristomium* externum ferrugineum, internum flavum. *Infl. monoic.*

This moss resembles *H. aduncum* in everything but the scabrous seta, and the serrulate leaves; the var. β again approaches very nearly to some varieties of *H. velutinum*. *Infl. monoic, in both var?*

Plate CLV. *Fig.* II.—1, plant of the natural size; 2 and 3, leaves; 4 and 5, thecæ; 6, peristome:—*magnified.*

18. Hypnum *fluitans*, Linn.; *Hedw. Musc. Frond.* vol. iv. p. 36. *Fl. Antarct.* pt. 1. p. 141.

Hab. Hermite Island, Cape Horn, in bogs, very common by the margins of mountain lakes. In fruit amongst wet stones.

Also found, but barren, in Campbell's Island.

19. Hypnum *aduncum*, Dill. Linn.; *Hedw. Musc. Frond.* vol. iv. t. 24. *Hook. et Tayl. Musc. Brit.* p. 186. t. 26.

Var. ε. *revolvens*, Bridel, *Bryol. Univ.* *Hook. et Tayl. l. c.*

Hab. Hermite Island, Cape Horn, (barren).

20. Hypnum *falcatum*, Bridel, *Bryol. Univ.* vol. ii. p. 526. *Schwaegr. Suppl.* II. vol. i. p. 162. t. 145.

Hab. Falkland Islands, common in watery places, rare in fruit.

Apparently the moss mentioned by Gaudichaud under the name of *H. aduncum*, to which indeed it is nearly allied. It differs from *H. fluitans*, in its very strong, often percurrent nerve. The leaves vary in length.

21. Hypnum *uncinatum*, Hall.; *Hedw. Musc. Frond.* vol. iv. t. 25. *Hook. et Tayl. Musc. Brit.* p. 187. t. xxvi.

Hab. Kerguelen's Land, in bogs, not uncommon (barren). Hermite Island, Cape Horn, also in wet places.

g. *Foliis secundis enerviis.*

22. Hypnum *lithophilum*, Hornschuch; ramis elongatis, foliis erecto-patentibus secundis siccitate erectis ellipticis acutiusculis (rameis elliptico-oblongis obtusiusculis) concavis margine reflexis tenuissime lineari-areolatis, perichætialibus erectis. H. lithophilum, *Hornschuch, in Endlich. et Mart. Flora Brasil.* p. 84, in part.

Hab. Hermite Island, Cape Horn; with *H. amœnum* (barren).

In the Hookerian Herbarium we find a Brazilian specimen, apparently authentic, of *H. lithophilum*, labelled "supra lapides rivulorum in novo Friburgo", but consisting of two different species mixed together; and as the description in Fl. Bras. appears to have been drawn up from both, we append a diagnosis of the other species.*

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* Hypnum *succedaneum*, nobis; foliis laxe imbricatis sicco ac humido pariter patulis subsquarrosis late ovatis concaviusculis margine subreflexis, areolis paralellogrammis, perichætialibus longioribus apice subsquarrosis.

Hab. Brazil, Province of Rio, New Friburg, *Martius.*

Our specimens agree with *H. lithophilum*, except that their branches are more elongated and the leaves faintly two-nerved at the base. A Brazilian specimen from Raddi corresponds with the *H. succedaneum*, which is allied to *H. molle*.

23. Hypnum *micans*, Wils.; in *Hook. Brit. Flora*, v. 2. p. 83. *Engl. Bot. Suppl.*

Var. *laxum*, foliis secundis patentibus ellipticis concavis serrulatis enerviis.

Hab. Hermite Island; in moist places in the woods, and on the hills.

Caules semiunciales, prostrati, parce ramosi; *rami* graciles.

This variety is allied to *H. gracile*, nobis, but differs in the reticulation of the leaves, and in their margins being recurved at the base.

24. Hypnum *amœnum*, Hedw., *Sp. Musc.* p. 292. t. 77. Isothecium amœnum, *Brid. Bryol. Univ.* vol. ii. p. 382.

Hab. Hermite Island; on wet rocks by streams of water, generally in woods, growing in patches, rare in fruit.

Allied on the one hand to *H. tenuirostre*, Hook. (Musc. Brit.), and on the other to *H. leptorhynchum*, Schwaegr. From the first of these it differs in the longer more attenuated circinate leaves; from the latter in its larger size and in the elliptical shape of the lower part of the leaf, which is not reflexed at the margin. The operculum, as in those species, has a long slender beak and is somewhat longer than the capsule.

25. Hypnum *leptorhynchum*, Brid.; *Schaegr. Suppl.* I. v. 2. p. 295. t. 93. *Fl. Antarct.* pt. 1. p. 140.

Hab. Hermite Island; very common on the rocks and banks, and on trunks of trees, taking the place of *H. cupressiforme*, which, strange to say, has not hitherto been found in any part of Fuegia or the Falkland Islands.

30. HOOKERIA, *Sw.*

a. *Foliis marginatis enerviis.*

1. Hookeria *apiculata*, Hook. fil. et Wils.; caule compresso subramoso, foliis distiche imbricatis rotundatis apiculatis marginatis enerviis siccitate undulatis, seta scabriuscula, capsula cernua, calyptra pilosa. (Tab. CLV. fig. VI.)

Hab. Hermite Island; on moist shady rocks near the sea (barren), forming green tufts.

Caules steriles unciales, erecti, densius cæspitosi, parce ramosi, inferne radiculis nigris obsiti, ramis erectis compressis; fertiles procumbentes, humiles, vix semiunciales. *Folia* laxe imbricata, lateralia patentia, cætera appressa, rotundato-ovata, apiculata, rigidiuscula, marginata, enervia, siccitate paulo undulata, apice subinde denticulata, areolis majusculis hexagonis; perichætialia erecta, minora, ovato-lanceolata, acuta. *Seta* scabriuscula, 2–3 lin. longa, flexuosa. *Capsula* cernua vel horizontalis, ovata, subapophysata. *Operculum* basi hemisphærico-conicum, rostratum, capsula paulo brevius, rostro recto. *Calyptra* parva, pilosa, albida. *Florescentia* dioica.

Allied to *Hookeria asplenioides*, Schwaegr., but smaller, and having the margin of the leaves thickened and undulated when dry. Described from fertile specimens, gathered on the bark of trees, in Tasmania, by Mr. Gunn.

Plate CLV. *Fig.* VI.—1, tuft of the natural size; 2 and 3, leaves:—*magnified.*

b. *Foliis marginatis evanidinerviis.*

2. Hookeria *Dicksoni*, Hook. in *Brewst. Edinb. Journ. of Science*, vol. 2. p. 226.

Hab. Falkland Islands; on shady clay-banks near the sea, at Port Louis (barren). Hermite Island; common on mossy banks and on the trunks of old trees in the woods of evergreen beech, abundant in fruit.

Very closely allied to *Hookeria pulchella*, nobis (part 1. p. 142. t. lxii); but the leaves are more erect, less crowded, acuminated, with larger reticulations, thecæ larger and decidedly cernuous. The calyptra in both these species is fringed at the base.

3. Hookeria *flaccida*, Hook. fil. et Wils.; caule debili elongato erecto subramoso, foliis imbricatis erecto-patentibus ellipticis concavis obtusis subapiculatis integerrimis anguste marginatis evanidinerviis, seta elongata lævi, theca erecta obovato-oblonga, operculo rostrato, calyptra basi fimbriata. (Tab. CLV. fig. V.)

Hab. Hermite Island; in wet bogs on the hills, amongst other mosses and grass, very rare in fruit.

Caules unciales ad triunciales, graciles, debiles, parce subpinnatim ramosi, rufo-fusci, ramis compressiusculis. *Folia* laxe imbricata, erecto-patentia, flaccida, elliptico-oblonga, concava, obtusa, brevissime apiculata, inferiora subobovata, omnia integerrima, margine tenui cartilagineo nervoque tenuissimo sub apice evanido instructa, sordide ac pallide viridia, siccitate crispata, areolis parvulis rotundatis; perichætialia triplo minora, ovata, enervia. *Seta* uncialis, vix tortilis, rubra. *Theca* erecta, obovato-oblonga, brunnea, subapophysata, ore subpatulo. *Peristomii externi* dentes lutei, incurvi, trabeculati, linea media notati, *interni* processus albidi. *Sporæ* minimæ, luteo-virides. *Operculum* conico-acuminatum, theca paulo brevius. *Calyptra* elongato-conica, acuminata, basi fimbriata, fusca, capsulæ dimidiam partem obtegens.

A remarkably soft and delicate species, bearing much the same analogy to its congeners that *Hypnum stramineum* does to other *Hypna*.

Plate CLV. *Fig.* V.—1, plant of the natural size: 2 and 3, leaves; 4, thecæ; 5, peristome; 6, calyptra:—all *magnified*.

4. Hookeria *Magellanica*, P. Beauv.; caule ramoso erecto, foliis ovato-oblongis acuminatis marginatis evanidinerviis, calyptra basi fimbriata.

Hypnum *Magellanicum*, P. Beauv. *Ætheog.* p. 66.

Hab. Strait of Magalhaens.

An authentic specimen in Professor Arnott's Herbarium is closely allied to *Hookeria flaccida*, nobis. It differs in having narrower acuminated leaves, which do not fully recover their shape after long immersion in water.

c. *Foliis emarginatis.*

5. Hookeria *denticulata*, nobis; vid. Pt. I. *l. c.* 145. tab. lxii. f. 2.

Hab. Falkland Islands; in tufts of *Riccia* and *Jungermannia*, on rocks near the sea, frequent (barren). Hermite Island, Cape Horn; on the wet ground in woods, not uncommon (also barren).

6. Hookeria *cristata*, Hedw.; *Sp. Musc.* p. 211. t. 49. *Schwaegr. Suppl.* t. 278. A.B.

Hab. Hermite Island, Cape Horn.

A solitary barren stem of this occurs in the collection of Hermite Island plants.

31. HYPOPTERYGIUM, *Bridel.*

Our reasons for not having previously admitted this genus will be found in the former portion of this work. We have seen since, that the male flowers are occasionally, though rarely, inserted beneath the accessory leaves, and

therefore we retain this name for a genus which certainly claims to be separated as well from *Leskia* as from *Hookeria*.

1. Hypopterygium *laricinum*, Bridel; *Bryol. Univ.* v. 2. p. 714. Hypnum laricinum, *Hook. Musc. Exot.* t. 35. Hypnum tamariscinum, *Swartz*!

Hab. Hermite Island; in wet places on the ground, very common in the woods, forming large green patches (always barren).

Under *Leskia tamariscina* two species have been confounded by Hedwig (Sp. Musc. p. 212). The name ought to be applied to the present moss, if the inconvenience of changing names generally received did not forbid.

2. Hypopterygium *Thouini*, Schwaegr.; *Suppl.* t. 289 (sub nom. Hypnum). Hypnum Arbuscula, *P. Beauv. Ætheog.* p. 61! Hypopterygium Thouini, *Montagne in Ann. Sc. Nat.*, Aug. 1845, p. 86.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*.

Our specimens are not so large as those described by P. de Beauvois, though evidently belonging to the same species. Dr. Montagne has properly remarked that this species differs from *H. laricinum* in the flabelliform, not pinnate, disposition of its branches, which all spring from one central point and take a horizontal direction. Fertile specimens from Colchagua, in Chili, have also a more pendulous oblong capsule and shorter operculum.

Ord. LIII. HEPATICÆ, *Juss.*

(By Dr. Thomas Taylor and J. D. Hooker.)

1. JUNGERMANNIA, *L.*

(1. Gymnomitrion, *Nees.*)

1. Jungermannia *physocaula*, Hook. fil. et Tayl.; caule gracili disperso suberecto ramoso cellulosotumente, ramis apice curvatis incrassatis, foliis laxe cellulosis imbricatis distichis concavis oblique erectis late ovatis quadrato-rotundatisve ad medium bifidis segmentis late subulatis integerrimis. Nobis in *Lond. Journ. Bot.* v. 3. p. 455. (Tab. CLVI. Fig. I.)

Hab. Hermite Island, Cape Horn; creeping through tufts of *J. densifolia*, Hook.

Caules 1–2 unc. longi, graciles, vage parce ramosi; rami solitarii v. bi-terni, pallide olivacei v. albidi, nunc rufo-brunnei, apice curvati. *Folia* tumida, arcte imbricata, cauli appressa; segmentis formæ subvariis, integerrimis. *Stipulæ* nullæ.

Allied to the Scottish *J. concinnata*, Lightf.; but readily distinguishable by the stems not being tufted, the shoots slender and flexile, the larger more cellular leaves, which are far more deeply divided, and have lanceolate segments, and by the cellular stem.

Plate CLVI. *Fig.* I.—1, plant of the natural size; 2, portion of stem: 3, leaf:—*magnified*.

2. Jungermannia *atrocapilla*, Hook. fil. et Tayl.; caule tenuissimo procumbente implexo parce ramoso flexuoso basi longe nudo, foliis remotis erectis cauli appressis concavis late ovato-quadratis integris eroso-

emarginatis, perichætialibus majoribus imbricatis in capitulum clavatum congestis. Nobis in *Lond. Journ. of Bot.* vol. 5. p. 258.

Hab. Foul Haven, Kerguelen's Land; on clay banks, at an elevation of 600 ft.

Cæspites extensi, 1–2 unc. lati, valde inconspicui. *Caules* atri, diametro setæ equinæ, crassiusculi, subnudi, bas hic illic cicatricati, superne foliis parvis tumidis appressis remotis quasi nodosi, fertiles apices versus foliosi, e foliis perichætialibus gradatim majoribus arcteque imbricatis clavati. *Folia* late quadrata, supra medium apicibusque erosis pallida.

A remarkably distinct little species, forming very obscure black patches on the ground. Stems wiry when dry, and loosely tufted; those of the perichætium paler and olive-brown, having their apices twice as broad as any other parts of the shoot. Perichætial leaves more imbricated, rounder, broader, and more concave than the cauline, enclosing a pair of minute whitish connivent scariose scales, but without any trace of calyptra or barren pistilla.

(2. Gottschea, *Nees.*)

3. Jungermannia *lamellata,* Hook.; *Musc. Exot.* t. 49. Gottsche, Lind. et Nees; *Syn. Hep.* p. 30.

Hab. Staten Land, *Menzies.* Hermite Island, Cape Horn, in dense woods abundant.

This beautiful species is apparently peculiar to the southern extreme of the American continent.

4. Jungermannia *leucophylla,* Lehm. MS. Gottsche, Lind. et Nees; *Syn. Hep.* p. 17.

Hab. Strait of Magalhaens; *Commerson* (in Hb. Reg. Berol.).

5. Jungermannia *splachnophylla,* Hook. fil. et Tayl.; caule crasso subdisperso procumbente simplici recurvo e foliis complicatis densissimeque imbricatis squamoso dorso fibrillis squamisque densissime obsito, foliis erecto-patentibus undulato-complicatis carnosis marginibus sub-erosis, lobo ventrali oblongo-ovato, dorsali subæquali semi-ovato, ala lineari undulata. Nobis *in Lond. Journ. Bot.* vol. iii. p. 455. (Tab. CLVI. Fig. II.)

Hab. Hermite Island, Cape Horn; on the ground amongst underwood, alt. 800–1000 ft., and thence to the hill-tops.

Caules 2-unc. longi, crassi, terræ appressi, sub $\frac{1}{4}$-unc. lati, dorso densissime filamentosi, substuposi. *Folia* sordide alba, densissime imbricata et complicata, carnosa et aquosa, fragilissima, marginibus hinc sæpissime erosis, paulo incurvis, basi sese arcte amplectentia.

A very singular plant, differing in its carnose texture from all the previously described species. The leaves are so thick, brittle, and watery as to be crushed to pieces readily between the finger and thumb, whence the analysis of the dried specimens is extremely difficult.

Tab. CLVI. *Fig.* II:—1, plant of the natural size: 2, front, and 3, back view of leaf; 4, leaf from lower portion of stem:—*magnified.*

6. Jungermannia *pachyla,* Hook. fil. et Tayl.; caule cæspitoso erecto subramoso ramisque apice incurvis anguste linearibus, foliis inflatis dense imbricatis erecto-patentibus, lobis ovato-oblongis acuminatis apicibus incurvis, dorsali integerrimo dorso convexo, ventrali undulato horizontali margine anteriore basi dentato, ala anguste lineari, stipulis majoribus late ovato-quadratis bifidis segmentis lanceolatis apice incisis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 456. (Tab. CLVI. Fig. III.)

Hab. Hermite Island, Cape Horn; on the bare ground in wet places.

Cæspites extensi, laxi, luride rufo-brunnei. *Caulis* erectus, parce ramosus, dorso radiculis fibrillosis purpureis per totam longitudinem instructus, apicibus subcurvatis. *Folia* latiuscula, concava, patentia, marginibus undulatis, erosis. *Stipularum* laciniæ sæpius inæquales.

One of the more slender species of the genus, with the leaves short and concave. Colour a dark reddish brown. The leaves are closely imbricated, the lobes uniting by one-fourth of their length. The smaller lobe is folded at the margin, and receives in the sinus thus formed a similar fold of the leaf above; its inner rounded margin is sharply inciso-dentate. Specifically this is remarkably distinct from any of its congeners, and like the former, is rather an abnormal form.

Plate. CLVI. *Fig.* III:—1, plant of the natural size: 2 and 3, back and front views of leaf and stipule; 4, leaf with the stipule removed, showing the form of the smaller lobe; 5, stipule;—*magnified.*

7. Jungermannia *laminigera,* Hook. fil. et Wils.; caule cæspitoso suberecto ramoso planiusculo, foliis imbricatis patentibus eroso-ciliatis subter lamellatis marginibus lamellisque undulatis ciliato-dentatis, lobo ventrali lanceolato basi bilobo, dorsali semi-cordato, stipulis majoribus late rotundato-quadratis 4–5-fidis ciliatis, calyce terminali oblongo compresso spinuloso ore laciniato ciliato obscure bilobo. Nobis *in Lond. Journ. Bot.* v. 3. p. 456. (Tab. CLVI. Fig. IV.)

Hab. Hermite Island, Cape Horn; on the ground in the woods, abundant.

Cæspites laxi, superne pallide flavo-virescentes, inferne sordide brunnei. *Caules* 1–3 unc. longi; ramis erectis, subfastigiatis. *Folia* patentia, dorso carinis lamellisve plurimis cristatis infra apicem evanidis ornata, versus apices setosa, marginibus creberrime spinuloso-dentatis. *Stipulæ* majusculæ, dorso basi obscure lamellatæ, segmentis linearibus subobtusis, marginibus recurvis ciliato-dentatis. *Calyx* oblongus, ½-exsertus, pallidus, extus spinulosus, vix lamellatus. *Seta* uncialis. *Capsula* cylindracea.

This a good deal resembles the *J. lamellata* (v. supra), but is more robust though smaller, the lobes of the leaves are more united throughout their whole length and the stipules are 4–5-fid. It varies much in size, some of our specimens being hardly an inch long.

Plate CLVI. *Fig.* IV.—1, plant of the natural size; 2, upper, and 3, under surface of the leaf; 4, stipule; 5, calyx:—*magnified.*

(3. PLAGIOCHILA, *Nees et Mont.*)

8. Jungermannia *ansata,* Hook. fil. et Tayl.; caule gracili laxe cæspitoso elongato subramoso, foliis laxe imbricatis planis erectis appressis secundis oblique rotundatis basi decurrentibus integerrimis fuscis. Nobis *in Lond. Journ. Bot.* v. 3. p. 457. (Tab. CLVI. Fig. VI.)

Hab. Falkland Islands; amongst moss on the hills, abundant.

Cæspites laxi, inter muscos implexi, pallide brunnei. *Caules* flexuosi, graciles, tenues, vix ramosi, *Folia* submembranacea, integerrima, rotundata, erecta, cauli appressa, hinc homomalla, margine anteriore obscure recurvo, posteriore decurrente.

In habit resembling the *J. colorata,* Hook. (v. infra), but the stems are more elongated, and the leaves quite entire and free, not united into opposite pairs at their bases. The same characters distinguish it from the *Pl. Braunii* of Java, which further has heteromallous leaves. The trivial name alludes to the produced lower margin of the rounded leaf forming a handle.

Plate CLVI. *Fig.* VI.—1, plant of the natural size; 2 and 3, front and back view of a leaf:—*magnified.*

9. Jungermannia *unciformis,* Hook. fil. et Wils.; caulibus cæspitosis subsimplicibus erectis apice

plerumque curvatis, foliis crassiusculis laxe imbricatis erectis secundis appressis oblique ovato-rotundatis, margine inferiore gibboso obscure sinuato-dentato superiore incurvo basi celluloso. Nobis *in Lond. Journ. Bot.* v. 3. p. 457. (Tab. CLVI. Fig. V.)

Hab. Hermite Island, Cape Horn; on the trunks of trees near the ground.

Cæspites 2–4 unc. lati, rufo-brunnei. *Caulis* ½ unc. longus, apice strictus v. sæpius curvatus, nunc hamatus. *Folia* e basi caulis gradatim majora, imbricata, homomalla, compressa, margine superiore incurvo, plica tumida elongata, inferiore tumido obscure et obtuse sinuato; cellulæ minimæ, densæ, nisi ad basin foliorum ubi majores pallidioresque evadunt, maculam latam efficientes.

A species allied to the *J. biserialis*, L. and L., of Tasmania, but less than half the size, with more minute denticulations to the leaves, which are widely ovate, not round or decurrent at the anterior margin, nor bispinous at the apex.

Plate CLVI. *Fig.* V.—1, plant of the natural size; 2, front, and 3, back view of leaf and portion of stem; 4 and 5, similar views of leaves removed from the stem;—*magnified.*

10. Jungermannia *Magellanica*, Lindb.; *Sp. Hep.* p. 164. *Gottsche. Lindb. et Nees, Syn. Hep.* p. 53. Mont. *in Voy. au Pole Sud, Bot. Crypt.* p. 271.

Hab. Strait of Magalhaens, St. Nicholas Bay; *M.M. D'Urville et Jacquinot.*

We owe our acquaintance with this plant to the liberality of our learned friend M. Montagne, who most generously has communicated to us his own examples of such Antarctic species as we desired for comparison or examination, unhesitatingly confiding his unique specimens to the care of the post-office, that we might profit to the fullest by his labours, and avoid unnecessary errors. It differs from our *J. unciformis* in the larger and narrower leaves, which are acute and serrato-dentate along the inner margin.

11. Jungermannia *duricaulis*, Hook. fil. et Tayl.; caulibus cæspitosis duris robustis flexuosis erectis ramosis, foliis amplis subimbricatis patentibus oblique ovato-cordatis basi decurrentibus argute denticulatis, basi postica porrecta verticali, margine inferiore lente recurvo. Nobis *in Lond. Journ. Bot.* v. 3. p. 458. (Tab. CLVI. Fig. IX.)

Hab. Hermite Island, Cape Horn; abundant, in the woods.

Species insignis. Cæspites laxi, majusculi; externe pallide sed luride olivacei. *Caules* 4 unc. longi, irregulariter ramosi, ramis compressis. *Folia* ⅛ unc. longa, arcte laxiusve imbricata, marginibus dorsalibus parium suboppositorum rotundatis postice porrectis appressis carinamque cauli quasi efficientibus; margine superiore paulo incurvo, marginibus omnibus minute sed creberrime et regulariter denticulatis. *Perigonia* in spicam brevem terminalem disposita.

Most nearly related to the *Pl. flaccida*, Lindb., of St. Vincent, which has a very similarly hard and woody stem but the present may be known by the greater breadth of its branches and foliage, by its more compound ramification and the minute denticulation of its leaves.

Plate CLVI. *Fig.* IX.—1, plant of the natural size; 2, stem and opposite pair of leaves; 3, leaf:—*magnified.*

12. Jungermannia *asplenioides*, Linn.; *Sp. Pl.* p. 1597. Mont. *Voy. au Pole Sud, Bot. Crypt.* p. 268.

Hab. Strait of Magalhaens; *D'Urville.*

We have seen no Fuegian specimens of this species. Those M. Montagne has examined, are in a very unsatisfactory state.

13. Jungermannia *sphalera*, Hook. fil. et Tayl.; caule laxe cæspitoso erecto basi ramoso apice incurvo, foliis vix imbricatis subhorizontaliter patentibus secundis siccitate suberectis late oblique ovato-rotundatis acutis, apice inæqualiter bifido v. bidentato, margine superiore incurvo integerrimo, inferiore planiusculo dentato laxe celluloso. Nobis *in Lond. Journ. Bot.* vol 3. p. 458. (Tab. CLVI. Fig. VIII.)

Hab. Hermite Island, Cape Horn; growing amongst mosses in the woods.

Cæspites laxi, pallide olivacei. *Caules* 1–2 unc. longi, raro in ramos 2–3 erectos divisi. *Rami* compressi, recti v. curvati, apicibus rotundatis. *Folia* remotiuscula, madore patentia, sed secunda, apicibus subrecurvis, basi contracta, margine inferiore grosse irregulariter serrato.

Nearly allied to *J. uncialis*, but taller, with the leaves more remote, less imbricated and secund, more loosely cellular and not so strongly dentate. When moistened the differences are more apparent, the leaves in particular of *J. sphalera* being distinctly narrowed at the base,

Plate CLVI. *Fig.* VIII.—1, plant of the natural size; 2 and 3, front view of leaf, and portion of stem; 4, the same detached from the stem:—*magnified.*

14. Jungermannia *uncialis*, Hook. fil. et Tayl.; caule breviusculo cæspitoso suberecto v. prostrato et ascendente ramoso, foliis imbricatis erecto-patentibus concavis late ovatis acutis argute irregulariter ciliato-dentatis sublaxe cellulosis, margine inferiore subrecurvo, calyce majusculo terminali compresso late obovato, ore oblique subrotundato dentato-ciliato. Nobis *in Lond. Journ. Bot.* vol. 3. p. 459. (Tab. CLVI. Fig. VII).

Hab. Hermite Island, Cape Horn; on damp rocks and the trunks of trees.

Cæspites late extensi, pallide flavo-virescentes. *Caules* vix 1 unc. longi, subprostrati, rarius erecti, vage ramosi, ramis fructiferis subfastigiatis. *Folia* vix decurrentia, perichætialia calyce $\frac{1}{2}$ breviora. *Calyx* obovato-cuneatus, compressus, ore obtuse rotundato, oblique fisso, serrulato. *Capsula* oblongo-sphærica, vix exserta. *Perigonia* in spicas breves secus ramos disposita.

In habit the present approaches the African *P. sarmentosa*, Lindb., but in character it is more nearly allied to our Tasmanian *J. aculeata*. The former, whose fructification is unknown, has larger and more rounded leaves. The *J. aculeata* is a much larger plant; its leaves have a narrower base, and their superior margin is recurved with a broader fold, the denticulation is coarser, and calyx shorter, being scarcely exserted beyond the perichætial leaves; above all, the cellulation of the *J. uncialis* is much coarser though belonging to a smaller plant.

Plate CLVI. *Fig.* VII.—1, plant of the natural size; 2, stem, perigonium and leaves; 3, front, and 4, back view of portion of stem and leaf; 5, calyx and capsule:—*magnified.*

15. Jungermannia *Jacquinotii*, Mont., *in Voy. au Pole Sud, Bot. Crypt.* p. 273.

Hab. Strait of Magalhaens; *D'Urville.*

A very different plant from any collected by the Antarctic Expedition.

16. Jungermannia *minutula*, Hook. fil. et Tayl.; cæspitosa, caule brevissimo erecto parce ramoso, foliis imbricatis erectis appressis obovato-rotundatis convexiusculis, margine anteriore subdecurrente posteriore recurvo, supremis majoribus denticulatis. Nobis *in Lond. Journ. Bot.* vol. 3. p. 459. (Tab. CLVII. Fig. I).

Hab. Kerguelen's Land; on the ground and on moist rocks.

Cæspites late extensi, atro-virides. *Caules* erecti, crassiusculi. *Rami* primarii vix $\frac{1}{8}$ unc. longi. *Folia* inferiora minuta, subintegerrima, caule vix latiora, gradatim majora, superiora arctius imbricata, in capitulum compressum dilatatum congesta, superiora crenato-denticulata, omnia crassa, obscure cellulosa; cellulis parvis, opacis, marginalibus conspicuis.

Each branch is short and bears but few pairs of leaves:—these are narrow at the base, gradually widening upwards to the top of the branches, where they are collected into a flattened head three or four times wider than the inferior part of the shoot. This resembles in general appearance the *P. pusilla*, Mont. (of Tasmania), but is more minute, has not curved stems, there are fewer leaves on the shoots, and the anterior margin of the leaf is decurrent.

Plate CLVII. *Fig.* I.—1, plant of the natural size; 2 and 3, front and back views of leaf and portion of stem:—*magnified.*

17. Jungermannia *heterodonta*, Hook. fil. et Tayl.; cæspitosa, caule erecto v. prostato ramoso, ramis ascendentibus subfastigiatis, foliis erecto-patentibus late ovatis obovatisve grosse inæqualiter eroso-dentatis margine superiore decurrente, inferiore apice obscure bifido, calyce terminali foliis perichætialibus breviore angustioreque obovato-rotundato, ore contracto æquali truncato ciliato-dentato. Nobis *in Lond. Journ. Bot.* vol. 3. p. 460. (Tab. CLVII. Fig. II).

Hab. Kerguelen's Land; on moist rocks near the sea.

Cæspites late extensi, rupibus appressi, læte olivaceo-virides. *Caules* sub 2 unc. longi, irregulariter vage ramosi. *Folia* subarcte imbricata, oblique rotundata, apice latiuscula, dentibus marginalibus, nunc manifeste nunc obscure bifida. *Calyx* perichætio brevior, obscure bilabiatus; labiis rotundatis, crenatis et minute ciliatis.

Allied to the *P. sciophila* of Nepaul, which has emarginato-dentate leaves, but from which the present may be distinguished by its smaller size, erect growth, and closely imbricated foliage, which is more toothed. The perigonia, with which the Antarctic species is supplied, are in the form of a narrow spike, whose leaves are minute, erect, imbricated, and bidentate with somewhat squarrose apices.

Plate CLVII. *Fig.* II.—1, plant of the natural size; 2, leaf and portion of stem; fig. 3, ditto removed from stem; 4, calyx:—*magnified.*

18. Jungermannia *Chonotica*, Tayl.; cæspitosa, surculis erectis subramosis complanatis basi nudiusculis, foliis imbricatis erecto-patentibus oblongo-rotundatis basi angustatis convexis, marginibus recurvis spinoso-dentatis. Tayl. *in Lond. Journ. Bot.* vol. 5. p. 260.

Hab. Chonos Archipelago; *C. Darwin, Esq.*

Cæspites pallide fulvi. *Caules* 2–3 unc. longi, dendroidei, v. nudi basique simpliciusculi. *Perigonia* parva, brevia, in spicam linearem arcte imbricatam disposita, foliolis parvis tumidis denticulatis.

Resembles the *P. fasciculata*, Lindb., of New Holland and Lord Auckland's group; the shoots however are much narrower, leaves shorter, more distinctly and minutely toothed, the branches fascicled and the cells of the leaves much more minute.

19. Jungermannia *distinctifolia*, Tayl. *l. c.*; Lindb. *Sp. Hep.* p. 17. t. 3. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 30.

Hab. Staten Island; *Menzies in Herb. Hook.*

We have not seen specimens of this from the Antarctic Expedition. It is also a native of Jamaica and the Brazils.

(4. Jungermannia, *L. et auct. recent.*)

20. Jungermannia *colorata*, Lehm. *in Linn.* vol. 4. p. 366. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 86. *Fl. Antarct.* Pt. I. p. 149.

Hab. Hermite Island, Cape Horn; from the sea to the mountain-tops. Falkland Islands; on the hills. Kerguelen's Land; particularly abundant on the ground, on the hills.

Also found in New Holland, Tasmania, and New Zealand, Lord Auckland's group, the Cape of Good Hope, and Juan Fernandez. In the Falkland Islands it forms large black patches on the alpine rocks, resembling an *Andreæa*.

21. Jungermannia *byssacea*, Roth; *Cat. Bot.* vol. 2. p. 158. *Engl. Bot.* t. 2463.

Hab. Falkland Islands; amongst mosses on the hills.

22. Jungermannia *bicuspidata*, Linn.; Hook. *Brit. Jung.* t. 11. *Engl. Bot.* t. 2239.

Hab. Falkland Islands; on moist rocks.

One of the, comparatively speaking, few *Hepaticæ*, which, according to the modern limitation of species, is acknowledged to be a cosmopolite.

23. Jungermannia *rigens*, Hook. fil et Tayl.; minima, laxe cellulosa, cæspitosa, caule prostrato subpinnatim ramoso, ramis erectis, foliis laxe imbricatis suberectis concavis late oblongis bifidis, segmentis incurvis late subulatis integerrimis, stipulis ovato-rotundatis concavis bifidis segmentis late subulatis integerrimis. Nobis *in Lond. Journ. Bot.* vol. 3. p. 461. (Tab. CLVII. Fig. III).

Hab. Falkland Islands; on moist maritime rocks.

Cæspites parvi, pallide olivaceo-flavescentes. *Caules* 2–3 lin. longi, carnosiusculi, simplices v. ramosi. *Folia* sursum gradatim minora, imbricata, tumida, hinc caulis submoniliformis. *Stipulæ* pro planta amplæ, foliis consimiles, ad medium v. supra medium bifidæ.

Allied to the British *J. Francisci*, Hook., but more minute, the leaves more concave, and the stipules of a very different form.

Plate CLVII. *Fig.* III.—1, plant of the natural size; 2, portion of stem, leaf, and stipule; 3, stipule, removed :—*magnified.*

24. Jungermannia *tubulata*, Hook. fil. et Tayl.; parvula, caule laxe cæspitoso procumbente ramoso, foliis laxis suberectis oblongis bifidis segmentis acutis acuminatisve, calyce terminali anguste lineari-elongata tubulata, basi oblongo, ore plicato minutissime denticulato, foliis perichætialibus segmentis lanceolatis integerrimis. Nobis *in Lond. Journ. Bot.* vol. 3. p. 463. (Tab. CLVII. Fig. VI).

Hab. Falkland Islands; on moist rocks near the sea.

Caules graciles, laxe cæspitosi, simpliciusculi v. ramosi, vix $\frac{1}{2}$ unc. longi, sæpissime ramulis flagelliformibus nudis aucti, (ut in *J. bicuspidata*, L.), pallide virescentes. *Folia* erecta, pallida, pellucida, basi concava, in segmentis duobus lanceolatis apice subulatis divisa, sinu angusto acuto. *Calyces* conspicui, albidi, elongati, superne subinflati et plicati, ore minutissime denticulato. *Folia* perichætialia erecta; segmentis angustis, integerrimis. *Capsula* oblonga. *Sporæ* numerosissimæ, luteo-brunneæ, subangulatæ. *Elateres* e helice duplici constantes.

So very near the European *J. bicuspidata*, as to be hardly distinguishable from it specifically: the capsules are however shorter, the perichætial leaves entire, the calyx longer, and the areolæ of the foliage smaller. The calyces are always terminal, whereas in *J. bicuspidata* they are more frequently lateral.

Plate CLVII. *Fig.* VI.—1, plant of the natural size; 2, leaf; 3, stipule; 4, perichætium, calyx and capsule: —*magnified.*

25. Jungermannia *vasculosa*, Hook. fil. et Tayl.; flaccida, tenerrima, cæspitosa, caule procumbente subramoso, foliis imbricatis secundis erectis rotundato-quadratis, basi lato decurrente, margine integerrimo undulato, stipulis majoribus ovatis concavis bifidis, segmentis lanceolatis integerrimis v. basi utrinque unidentatis. Nobis *in Lond. Journ. Bot.* vol. 3. p. 461. (Tab. CLVII. Fig. IV).

Hab. Falkland Islands; on wet rocks near the sea, abundant.

Cæspites late extensi, 2–4 unc. lati, atro-virides. *Caulis* 2 unc. longus, parce ramosus. *Folia* laxiuscule imbricata, integerrima; marginibus subinflexis undulatis, superiore subgibboso, inferiore longe decurrente; substantia tenerrima, flaccida, cellulis majusculis. *Stipulæ* conspicuæ, caulem amplectentes; segmentis late lanceolatis, erectis, sinu obtusiusculo.

This has a good deal of resemblance to the *J. cordifolia*, Hook., of Britain, but the presence of stipules will at once distinguish the Antarctic plant. In many respects it has an equal claim to be considered a *Lophocolea* as a *Jungermannia*; on the whole, however, we incline to retain it in the latter genus.

Plate CLVII. *Fig.* IV.—1, plant of the natural size; 2, portion of branch, with leaf and stipule; 3, stipule:—both *magnified*.

26. Jungermannia *erinacea*, Hook. fil. et Tayl.; tenerrima, cæspitosa, caule suberecto ramoso, ramis erecto-patentibus, foliis imbricatis patentibus flaccidis ciliato-dentatis apice obtusis plus minusve profunde emarginatis, lobo inferiore ovato-rotundato superiore libero ovato adpresso stipulis majoribus late rotundatis irregulariter ciliato-dentatis integris bifidisve. Nobis *in Lond. Journ. Bot.* vol. 3. p. 462. (Tab. CLXI. Fig. IV).

Hab. Falkland Islands; on moist rocks near the sea.

Pallide olivaceo-flava. *Cæspites* laxi, extensi. *Caulis* 1½–2 unc. longus, flaccidus, ramosus, ramis subfastigiatis. *Folia* laxe imbricata, tenerrima et flaccida sed areolis minutis, apice plerumque bifida, sinu lato rotundato, ciliis marginalibus basi latiusculis sæpe repente in apicem articulatam desinentibus. *Stipulæ* rotundatæ, ambitu ciliatæ, lobulo minore folii majores, bifidæ.

A very beautiful species, allied to our *J. diplophylla* (Pt. 1. p. 152. t. 64. f. iv); where fructification is unknown, they together appear to form as natural a genus as any which has been proposed out of *Jungermannia*, and differ from *Scapania* in the presence of stipules. The present is readily distinguishable from *J. diplophylla* by the separation of the two lobes of the leaf, by their emarginate tips, by the larger and closer ciliation of their margins and by the less deeply but more frequently divided and broader stipules.

Plate CLXI. *Fig.* IV.—1, plant of the natural size; 2 and 3, portion of stem, leaf, and stipule; 4, stipule:—*magnified*.

27. Jungermannia *humectata*, Hook. fil. et Tayl.; laxe cæspitosa, flaccida, caule erecto parce ramoso, foliis remotis tenuibus erecto-patentibus undulatis basi amplexicaulibus ovato-rotundatis emarginatis bifidisve segmentis obtusiusculis subdivaricatis integerrimis v. utrinque dentatis, stipulis foliis consimilibus sed minoribus. Nobis *in Lond. Journ. Bot.* vol. 3. p. 462. (Tab. CLVII. Fig. V).

Hab. Falkland Islands; on wet sand by the sides of mountain-streams.

Cæspites laxi, extensi, inferne atro-brunnei; ramis paucis, erectis, pallide fusco-olivaceis. *Folia* alterna, remotiuscula, basi caulem totam fere amplectentia, late obovato-oblonga v. rotundata, bifida, sinu acuto v. obtuso.

Possibly from its rather anomalous locality, an altered state of some other species, though we cannot say of what. In the wet place of growth, erect habit and general outline of the leaf, it resembles the British *J. Lyoni*,

Tayl. (*J. socia.* var., Gottsche, Lind. et Nees), differing in the paler green colour of the young shoots, in the more delicate foliage, smaller areolæ, deeper emargination and clasping leaves.

PLATE CLVII. *Fig.* V.—1, plants of the natural size; 2, stipule; 3, leaf:—both *magnified.*

28. JUNGERMANNIA *austrigena,* Hook. fil. et Tayl.; laxe cæspitosa, caule elongato ascendente subramoso, surculis incurvis, foliis imbricatis subsecundis erecto-patentibus rotundatis convexis integerrimis marginibus recurvis perichætialibus rotundatis, stipulis majoribus rotundatis, marginibus reflexis integerrimis bidentatisve, calyce terminali oblongo compresso ore subintegro trigono. *J. austrigena* et *J. cavispina.* Nobis *in Lond. Journ. Bot.* vol. 3. p. 463 et 466. (TAB. CLVII. Fig. VII. and TAB. CLVIII. Fig. V).

HAB. Hermite Island, Cape Horn; moist banks in woods (fruit). Falkland Islands, along with *J. humectata.*

Cæspites laxi, lati, pallide flavidi, virides v. atro-brunnei. *Caules* 2–3 unc. longi, vage ramosi, flexuosi, crassiusculi. *Folia* arcte imbricata, subopposita, antice decurrentia, siccitate plerumque crispata, recurva; madore suberecta, appressa, marginibus plus minusve recurvis. *Stipulæ* rotundatæ, basi utrinque decurrentes, integerrimæ v. apice bidentatæ, marginibus valde deflexis porrectis, intra margines posticos foliorum verticaliter compressæ. *Calyx* majusculus, oblongus, latiusculus, trigonus.

A very curious species, and unlike any with which we are acquainted. The habit of the Falkland Island specimens when dried, is, owing to their having grown in water, so peculiar, that we regarded them at first as a different species, which we described as *J. cavispina,* from the reflexed margins of the closely imbricating stipules, giving a grooved appearance to the back of the stem. The calyx is that of a *Lophocolea,* from which group the presence of stipules and the entire leaves remove it.

PLATE CLVII. *Fig.* VII. Falkland Island state, (sub nom. *J. cavispinæ*).—1, plant of the natural size; 2, front, and 3, back view of stem and leaf; 4, stem and stipule; 5 and 6, stipules:—*magnified.* PLATE CLVIII. *Fig.* V. (Hermite Island state).—1, plant of the natural size; 2, lateral, 3, back, and 4, front view of stem, leaf, and stipule; 5, stem and stipule; 6 and 7, stipules:—*magnified.*

29. JUNGERMANNIA *palustris,* Hook. fil. et Tayl.; caule elongato disperso flaccido ramoso, foliis laxe imbricatis erecto-patentibus tenuissime membranaceis rotundatis valde concavis marginibus incurvis medio longitudinaliter undulatis integerrimis, stipulis majoribus ovalibus cymbiformibus integerrimis. Nobis *in Lond. Journ. Bot.* vol. 3. p. 464. (TAB. CLVII. Fig. VIII).

HAB. Hermite Island, Cape Horn; on the borders of an alpine lake, growing in the water.

Caules inter *Muscos* aliasque *Hepaticas* demersas ascendentes, sparsi, 3 unc. longi; ramis erectis, flaccidissimis. *Folia* tumida, varie incurva, medio plerumque plica longitudinali notata. *Stipulæ* valde concavæ, subimbricatæ.

Allied to the British *J. Doniana,* and to the *J. involutifolia,* Mont. (v. infra), but very distinct from both. The leaves resemble those of *Hypnum cochlearifolium,* Schwaegr.

PLATE CLVII. *Fig.* VIII.—1, plant of the natural size; 2, front view of stem, leaves, and stipules; 3, back view of ditto:—*magnified.*

30. JUNGERMANNIA *involutifolia,* Mont. *in Gottsche, Nees et Lindb. Syn. Hep.* p. 81. *Voy. au Pole Sud, Bot. Crypt.* p. 260.

HAB. Strait of Magalhaens; on tufts of *Hypnum fluitans*: *M. Hombron.*

The nearest ally to this plant is *J. notophylla,* nobis.

31. Jungermannia *fulvella*, Hook. fil. et Tayl.; parvula, caule implexo procumbente ramoso, ramis cylindraceis, foliis arcte imbricatis patentibus concavis marginibus incurvis remote dentatis carnosiusculis pellucidis laxe cellulosis caulinis oblique rotundatis, rameis minoribus arctius imbricatis rotundatis, stipulis erectis concavis late rotundatis integerrimis v. irregulariter dentatis, calyce laterali obovato cylindraceo foliis perichætialibus integerrimis duplo longiore. Nobis *in Lond. Journ. Bot.* vol. 3. p. 464. (Tab. CLVIII. Fig. I.)

Hab. Hermite Island, Cape Horn; in the woods on dead timber, trunks and twigs of trees; abundant. South part of Tierra del Fuego; *C. Darwin, Esq.*

Cæspites 3 unc. lati, pallide fulvi. *Caulis* 1 unc. longus, pluries vage ramosus, ramis tenuibus. *Folia* caulina rameis laxius imbricata, basi latiora planiora, dentibus valde irregularibus. *Stipulæ* rameæ caulinis breviores, sed latiores, rariusque dentatæ. *Folia* perichætialia parva, oblonga, concava, calyce ter breviora. *Calyx* lineari-oblongus, trigonus, subtumidus, ore angustato. *Seta* $\frac{1}{3}$ unc. longa. *Capsula* late oblonga.

With much the appearance of a *Herpetium*, but having no flagelliform shoots, and the leaves are irregularly dentate. It is a most distinct species.

Plate CLVIII. *Fig.* I.—1, plant of the natural size; 2, part of stem, leaf, and stipule; 3, leaf; 4, upper leaf; 5, stipule; 6, portion of branch with leaves, calyx, seta, and capsule; 7, calyx and perichætium; 8, corolla:—*magnified.*

32. Jungermannia *obvoluta*, Hook. fil. et Tayl.; cæspitosa, caule ascendente vage ramoso, ramis cylindraceis elongatis flaccidis suberectis, foliis imbricatis patentibus membranaceis laxe cellulosis late quadratis margine incurvo undulatis bifidis sinu angusto hic illic grosse dentatis subdecurrentibus, stipulis majoribus rotundato-ovatis concavis emarginatis utrinque uni-dentatis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 80. (Tab. CLXI. Fig. I.).

Hab. Hermite Island, Cape Horn, and the Falkland Islands; on the trunks of trees, and on the ground.

Cæspites pallide olivacei, straminei. *Caules* $\frac{1}{2}$–$\frac{3}{4}$ unc. longi. *Folia* secus partem caulis superiorem involuta. *Stipulæ* emarginatæ, sinu latiusculo.

Allied to *J. oligophylla*, nob., but quite different specifically from that, and from any other species with which we are acquainted.

Plate CLXI. *Fig.* I.—1, plant of the natural size; 2, portion of stem, leaves, and stipules; 3, leaf; 4, stipule:—*magnified.*

33. Jungermannia *madida*, Hook. fil. et Tayl.; cæspitosa, caule elongato planiusculo erecto ramoso, ramis erectis fastigiatis, foliis laxe imbricatis patentibus semiamplexicaulibus concavis ovato-quadratis bifidis, segmentis acutis incurvis integerrimis v. apices versus 2–3-dentatis, stipulis majoribus foliis paulo brevioribus concavis late ovatis bifidis subintegerrimis, calyce terminali cylindraceo recto apice obscure dentato, capsulæ valvis lineari-elongatis. Nobis *in Lond. Journ. Bot.* vol. 3. p. 465. (Tab. CLVIII. Fig. II).

Hab. Hermite Island, Cape Horn; on moist banks, and in bogs on the mountains, forming dense tufts.

Cæspites densi, 2–3 unc. lati, locis humidioribus obscure virescentes, siccis rufescentes. *Caules* 2 unc. longi. *Folia* laxe imbricata, ad $\frac{1}{3}$ longitudinis bifida, minute cellulosa, integerrima v. apices versus 1–2-dentata. *Stipulæ* foliis subæquales, late oblongæ, bifidæ, segmentis obscure dentatis. *Calyx* elongatus, superne attenuatus, apice truncatus. *Capsula* elongata, cylindracea.

Very closely allied to the *J. serrulata*, Sw. (*Musc. Exot.* t. 88), of the West Indies, but the leaves are not so densely imbricated, are scarcely serrulate, their areolæ are more minute, and the stipules are different. When growing in moist places the plant is greener and larger, and the leaves more generally serrulate than when found in drier situations.

Plate CLVIII. *Fig.* II.—1, plant of the natural size; 2, portion of stem, leaf, and stipule; 3, leaf; 4, stipule; 5, perichætial leaf; 6, calyx, seta, and capsule; 7, corolla; 8, capsule:—*magnified.*

34. Jungermannia *æquata*, Hook. fil. et Tayl.; caule brevi implexo procumbente ascendente ramoso flexuoso, ramis compressis curvatis, foliis imbricatis secundis appressis suboppositis rotundatis margine incurvis integerrimis crassis opacis ima basi inter se et cum stipula parva ovata bifida v. integra connatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 465. (Tab. CLVIII. Fig. III.)

Hab. Hermite Island, Cape Horn; on the trunks of trees in the woods.

Cæspites parvi, inter *Muscos* aliasque *Hepaticas* nidulantes, rufo-brunnei. *Caules* unciales, vage sed parce ramosi, basi nudi, sursum curvati. *Folia* arcte imbricata, oblongo-rotundata, madore e marginibus incurvis tumida, opposita, basi antice connata, postice cum stipula adnata. *Stipula* ovata, bifida v. varie secta, segmentis subulatis.

The form of the leaves, their opposite arrangement and connexion in front, are similar to *J. Brankiana*, Nees, but that species is destitute of stipules.

Plate CLVIII. *Fig.* III.—1, plant of the natural size; 2, portion of branch; 3, ditto with front view of leaf and stipule, 4 and 5, stipules:—*magnified.*

35. Jungermannia *otophylla*, Hook. fil. et Tayl.; caule debili flavido elongato subramoso, foliis oppositis secundis erecto-patentibus imbricatis flavidis et membranaceis late reniformi-rotundatis basi latissime cauli adnatis integerrimis, margine superiore basi tumido recurvo, stipulis majoribus concavis late rotundatis emarginatis integerrimis obscure sinuatisve. Nobis *in Lond. Journ. Bot.* vol. iii. p. 466. (Tab. CLVIII. Fig. IV.)

Hab. Hermite Island, Cape Horn; in alpine bogs.

Cæspites laxi, luride olivacei v. albescentes. *Caulis* gracilis, 3 unc. longus, parce ramosus; ramis erectis. *Folia* tenuissime membranacea, latissime oblonga v. rotundata, basi ad marginem anteriorem quasi auriculata. *Stipulæ* amplæ, subimbricatæ, marginibus incurvis, apicibus emarginatis, sinu lato, nunc apice sinuato.

In habit and general appearance this approaches our *J. palustris*, which inhabits similar localities, but they are in many respects widely different plants.

Plate CLVIII. *Fig.* IV.—1, plant of the natural size; 2, front, and 3, back view of portion of stem and leaf; 4, stipule:—*magnified.*

36. Jungermannia *densifolia*, Hook., *Musc. Exot.* t. 36. Scapania? densifolia, *Gottsche, Lindb. et Nees, Syn. Hep.* p. 72.

Hab. Hermite Island, Cape Horn; in wet bogs, &c.

A very abundant species in Hermite Island.

37. Jungermannia *chloroleuca*, Hook. fil. et Tayl.; caule erecto cæspitoso parce ramoso flavido, foliis subapproximatis imbricatis patentibus ovatis v. ovato-oblongis inferne tumidis semi-amplexicaulibus bipartitis ciliato-dentatis, segmentis linearibus ligulatisve summo apice bifidis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 467. (Tab. CLXI. Fig. V.)

Hab. Hermite Island, Cape Horn; on moist banks near the sea.

Cæspites suberecti, flavo-virescentes. *Folia* disticha, vix imbricata, segmentis plerumque recurvis, ramis hinc (siccitate præcipue) squarrosis.

So nearly allied to the previous species that a particular description is hardly required; it differs conspicuously in the colour. These species were never seen passing into one another, and both are remarkably constant to their characters. They belong, with the *J. vertebralis*, Gottsche (Pt. 1. p. 153), of Lord Auckland's group and Tasmania, also a very closely allied plant, to a distinct section of the genus. The *J. chloroleuca* differs from *J. vertebralis* in colour, size, and different texture, also in the form of the leaves and ciliation; and from *J. densifolia*, besides the colour, mentioned above, in the denser tissue of the remote leaves, which are much broader at the base, and whose areolæ are blended together, in their long ciliation and bifid apices.

Plate CLXI. *Fig.* V.—1, plant of the natural size; 2, portion of stem and leaf:—*magnified.*

38. Jungermannia *clandestina*, Mont., *in Voy. au Pole Sud, Bot. Crypt.* p. 264. t. 16. f. 4. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 73.

Hab. Strait of Magalhaens; Port Famine and Port Gallant, *M. Hombron.*

39. Jungermannia *schismoides*, Mont., *vid.* Pt. 1. p. 150. (Tab. CLXI. Fig. IX.)

Hab. Hermite Island, Cape Horn; creeping through tufts of mosses in the woods.

The leaves of these specimens are slightly serrulate along the margins, in which respect alone the plant differs from that found in Lord Auckland's group.

Plate CLXI. *Fig.* IX.—1, plant of the natural size; 2, 3, and 4, leaves:—*magnified.*

40. Jungermannia *crebrifolia*, Hook. fil. et Tayl.; caule cæspitoso erecto ramoso, ramis suberectis, foliis carnosulis arcte imbricatis erecto-patentibus secundis concavis late ovato-rotundatis bilobis, lobis ovatis subacutis integerrimis inferiore minore basi dentato v. integerrimo, calyce minimo laterali obovato plicato, ore scarioso laciniato, laciniis lanceolatis. Nobis *in Journ. Lond. Bot.* vol. iii. p. 467. (Tab. CLVII. Fig. IX.)

Hab. Hermite Island, Cape Horn.

Dense cæspitosa, rufo-brunnea. *Caules* fere 2 unc. longi, siccitate fragiles, irregulariter repetitim ramosi, rarius superne paulo incrassati. *Folia* arcte imbricata, valde concava, marginibus apicibusque madore erectis, lobo superiore majore, inferiore basi supra caulem producto, integerrimo v. uni-dentato. *Calyces* minuti, valde inconspicui, ore albido scarioso.

Closely allied to the *J. cryptodon*, Wils. MS., of the Andes of Colombia, which has a similarly toothed lower lobe of the leaf, equally produced at the base across the stem. The present is a larger plant, with more imbricated and erect leaves, their lower lobe smaller, and the produced portion larger in proportion.

Plate CLVII. *Fig.* IX.—1, plant of the natural size; 2 and 3, leaves:—*magnified.*

41. Jungermannia *humilis*, Hook. fil. et Tayl.; parvula, caule implexo procumbente radicante ramoso, foliis subimbricatis erecto-patentibus secundis rotundatis concavis integerrimis crassiusculis, stipulis minutis ovatis integris v. bifidis segmentis unidentatis v. irregulariter sectis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 468. (Tab. CLVIII. Fig. VI.)

Hab. Kerguelen's Land; on tufts of *Azorella Selago*.

Cæspites lati, pallide flavo-olivacei. *Caulis* vix uncialis, irregulariter ramosus. *Folia* laxe imbricata, basi late caule adnata sed non decurrentia, patentia, homomalla. *Stipulæ* cauli æquilatæ, varie sectæ, emarginatæ, bifidæ v. irregulariter sinuato-dentatæ.

Allied to *J. turgescens*, nobis (Pt. 1. p. 150, t. lxiv. f. 2.), of Lord Auckland's group; but the present may be readily distinguished by its smaller size, more olive colour, its toothed stipules, more patent and differently shaped leaves, whose attachment is also different, and which are not decurrent; and by their larger areolæ.

PLATE CLVIII. *Fig.* VI.—plant of the natural size. 2, stem, back view of leaf and stipule; 3, front view of leaf; 4, stipule:—*magnified.*

42. JUNGERMANNIA *minuta*, Crantz, *vid. Fl. Antarct.* Pt. 1. p. 152.

HAB. Kerguelen's Land; on tufts of mosses, &c., on the hills.

Also found in Lord Auckland's group, but hitherto not elsewhere in the Southern Hemisphere; nor out of Europe in the Northern.

43. JUNGERMANNIA *quadripartita*, Hook., *Musc. Exot.* t. 117. Gottsche, Lindb. et Nees; *Syn. Hep.* p. 146.

HAB. Staten Land, *Menzies* (in Herb. Hook.); Hermite Island, Cape Horn; on moist banks, *Mr. Davis.*

(5. GYMNANTHE, *Tayl.*)

44. JUNGERMANNIA *Urvilleana*, Mont., *vid. Fl. Antarct.* Pt. 1. p. 153.

HAB. Hermite Island, Cape Horn; in the woods.

Also a native of Lord Auckland's group and Tasmania.

(6. LOPHOCOLEA, *Nees.*)

45. JUNGERMANNIA *textilis*, Hook. fil. et Tayl.; caule laxe implexo prostrato parce vage ramoso plano, foliis distichis horizontaliter patentibus complanatis approximatis late ovato-quadratis apice bifidis planis laxe cellulosis segmentis subulatis acutis integerrimis, stipulis ovatis bipartitis segmentis linearibus divaricatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 468. (TAB. CLVIII. Fig. IX.)

HAB. Hermite Island, Cape Horn; in woods. Falkland Islands; on wet rocks near the sea, very common.

Cæspites late extensi, pallide sed læte flavo-virides. *Caules* 2 unc. longi, laxe intertexti, terræ appressi. *Folia* disticha, omnia horizontaliter patentia, basi lata, cauli adnata sed non decurrentia, margine superiore subrotundata inferiore recta; substantia tenera, laxe areolata. *Stipulæ* parvæ, cauli æquilatæ, bipartitæ, segmentis subulatis acuminatis. *Perigonia* nunc secus ramos obvia, plerumque apices versus; foliis arcte appressis erectis, basi tumidis.

In some particulars resembling our *J. planiuscula* (Pt. 1. p. 156. t. lxv. f. 2.), of Lord Auckland's group, which is a larger plant, with leaves rounded and otherwise of a very different form. The whole stratum is very flat and appressed, wide, of a fine shining green colour, and soft texture.

PLATE CLVIII. *Fig.* IX.—1, plant of the natural size; 2, stem and leaves; 3, stipule:—*magnified.*

46. JUNGERMANNIA *leptantha*, Hook. fil. et Tayl.; caule flaccido implexo procumbente ramoso, foliis distichis planis subimbricatis patentibus ovato-oblongis integerrimis margine superiore subrecurvo apice emarginato-bidentatis dentibus elongatis sinu rotundato, stipulis porrectis minutis bipartitis segmentis subulatis extus unidentatis 4-partitisve, calyce terminali lineari-oblongo trigono ore trifido segmentis emarginato-bidentatis serratis rarius subintegris. Nobis *in Lond. Journ. Bot.* vol. iii. p. 471. Lophocolea coadunata,

Nees, fid. Montagne in Voy. au Pole Sud, Bot. Crypt. p. 256 (*non* Jung. coadunata, *Swartz.*) (Tab. CLIX. Fig. VI.)

Hab. Hermite Island, Cape Horn; moist places in the woods.

Cæspites late extensi, plani, pallide fusco-olivacei. *Caules* 1–2 unc. longi. *Folia* vix imbricata, patentia, ovata, apicem versus dilatata et in segmenta 2 subulata subcaudata fissa, laxe cellulosa. *Stipulæ* parvæ, cauli subæquilatæ. *Folia* perichætialia erecta, lateralibus emarginatis dentatisque, intermedio seu stipulari bifido integerrimo. *Seta* uncialis. *Capsula* ovalis.

This is one of the many southern forms of *Lophocolea* nearly related to one another, and to *J. bidentata* of Europe; it differs from *J. secundifolia*, in the leaves being horizontally patent and not secund; from *J. diademata*, nob., of New Zealand, in the calyx and less spreading foliage; and from *J. physanthá*, nob., of the same country, also by the totally different calyx, from all three by the divisions of the mouth of the latter organ being dentate. We are indebted to our friend M. Montagne for a specimen of his *J. coadunata*, sō named by Nees, but which we do not consider to be the plant of Swartz.

Plate CLIX. *Fig.* VI.—1, plant of the natural size; 2 and 3, leaves; 4 and 5, stipules; 6, calyx, seta, and capsule:—all *magnified.*

47. Jungermannia *humifusa*, Hook. fil. et Tayl.; caule flaccido procumbente implexe ramoso, foliis approximatis subimbricatis horizontaliter patentibus planis oblongis antice gibbosis emarginato-dentatis integerrimis, stipulis bipartitis segmentis subulato-setaceis extus unidentatis quadripartitisve. Nobis *in Lond. Journ. Bot.* vol. iii. p. 472. (Tab. CLIX. Fig. V.)

Hab. Kerguelen's Land; on the rhizomata of *Pringlea.*

Cæspites lati, explanati, appressi, pallide virides. *Caulis* uncialis, irregulariter ramosus, ad stipulas radicans. *Folia* approximata, vix imbricata, basi latiora, decurrentia, sinu apice formæ irregulari. *Calyx* ovato-oblongus, trigonus; angulo unico alato, subdentato. *Perigonia* in spicas ovato-lanceolatas secus ramos obvias disposita, foliolis imbricatis, ventricosis.

Very nearly allied to *J. leptantha* and perhaps not distinct from it; though we have preferred separating species from such widely-severed localities as these affect, when, as in this case, they present tangible characters. Those of this species will be found in the more erect leaves, with lax areolæ, wide and decurrent bases, and more setaceous stipules.

Plate CLIX. *Fig.* V.—1, plant of the natural size; 2 and 3, leaves; 4, stipule:—*magnified.*

48. Jungermannia *alternifolia*, Hook. fil. et Tayl.; caule gracili laxe implexo procumbente parce ramoso, foliis flaccidis laxe reticulatis alternis patentibus planis triangulari-ovatis emarginatis decurrentibus segmentis spinoso-acuminatis integerrimis, stipulis minutis quadripartitis segmentis setaceis, calyce terminali triangulari-cylindraceo ore trilabiato ciliato. Nobis *in Lond. Journ. Bot.* vol. iv. p. 83. (Tab. CLXI. Fig. II.)

Hab. Falkland Islands; on moist banks near the sea.

Cæspites luride virides, ramis substrictis. *Folia* basi decurrentia, laxe reticulata; *perichætialia* $\frac{1}{2}$ longitudine calycis, erecta, concava, subciliata. *Capsula* oblongo-rotundata.

Related to *J. humifusa*, but distinguishable by the deep division of the apex of the leaf, the longer segments, the more decurrent bases and the wider segments of the stipules. This species was erroneously described (Lond. Journ. Bot. l. c.) as a native of New Zealand; from whence we have never seen specimens.

Plate CLXI. *Fig.* II.—1, plant of the natural size; 2 and 3, branch and leaf; 4, leaf; 5, stipule:—all *magnified.*

49. Jungermannia *divaricata*, Hook. fil. et Tayl.; caule implexo procumbente ramoso, foliis approximatis suberectis secundis e basi angusta oblongis convexis bifidis segmentis lanceolatis acuminatis divaricatis subflexuosis, stipulis bifidis segmentis subulatis extus unidentatis. Nobis *in Lond. Journ. Bot.* vol. v. p. 367. (Tab. CLXI. Fig. VIII.)

Hab. Hermite Island, Cape Horn; in tufts of mosses, &c.

Cæspites pallide flavo-virescentes. *Caules* 1 unc. longi, basin versus præcipue ramosi. *Folia* laxe imbricata, grosse reticulata, ad medium in segmenta dua acuminata divaricata fissa, margine dorsali decurrente et recurvo. *Perigonia* in spicas terminales disposita; foliolis arcte appressis, basi tumidis, antheriferis, segmentis foliis caulinis brevioribus.

Allied to *J. leptantha*, but a smaller plant, with leaves of a different shape, being narrower at the base and deeply divided beyond the middle. The stipules are bipartite.

Plate CLXI. *Fig.* VIII.—1, plant of the natural size; 2 and 3, branch and leaf; 4, leaf; 5, stipule:—all *magnified*.

50. Jungermannia *sabuletorum*, Hook. fil. et Tayl.; minima, caule cæspitoso crassiusculo prostrato ramoso, ramis ascendentibus apice recurvis, foliis approximatis subremotisve erecto-patentibus secundis subquadratis angulis obtusis integerrimis apice retusis laxe cellulosis, stipulis minutis ovatis lanceolatisve bipartitis, segmentis subulatis incurvis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 469. (Tab. CLVIII. Fig. VIII.)

Hab. Falkland Islands; on wet sand and clay-slate.

Cæspites sub 2 unc. lati, pallide flavo-virides. *Caules* breves vix $\frac{1}{4}$ unc. longi. *Rami* e caule prostrato erecti, curvati, demum horizontales. *Folia* versus apices ramorum laxe imbricata, parva, madore homomalla, apice plerumque retusa v. emarginata, rarius rotundata, basi late adnata, laxe cellulosa, paria ultima sæpissima appressa, apicibus ramulorum hinc compressis. *Stipulæ* caule subangustiores.

Perhaps the most minute of the *Lophocoleæ*, from all the species of which its habit and the form of the leaves amply distinguish it.

Plate CLVIII. *Fig.* VIII.—1, plant of the natural size; 2, portion of branch, leaves, and stipules; 3, leaf; 4, stipule:—*magnified*.

51. Jungermannia *rivalis*, Hook. fil. et Tayl.; flaccida, caule cæspitoso ascendenti v. erecto ramoso gracili, foliis distichis laxe imbricatis approximatisve inferioribus remotis teneribus flaccidis oblongo-quadratis angulis obtusis integerrimis basi late adnatis decurrentibus apice retuso, stipulis ovatis bifidis segmentis integerrimis v. extus unidentatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 469. (Tab. CLVIII. Fig. VII.)

Hab. Falkland Islands; on wet rocks, &c., near the sea, abundant.

Cæspites laxi, basi sæpe submersi, atro-fusci, superne pallide olivacei. *Caulis* 1–2 unc. longus, ramosus, ramis erectis gracilibus, laxe foliosis. *Folia* tenerrima, membranacea et flaccida, minute areolata, basi lata decurrente, oblongo-rotundata v. subquadrata, apice plerumque obscure retusa. *Stipulæ* caule vix latiores, basi subrotundatæ, v. late ovatæ, bifidæ; segmentis integerrimis uni-dentatisve.

Allied to *J. planiuscula* (Pt. 1. t. 65. f. 2), which is a larger plant, with differently shaped stipules. Also near the following, which, again, is smaller than either, with leaves of another form.

Plate CLVIII. *Fig.* VII.—1, plant of the natural size; 2 and 3, leaves; 4 and 5, stipules:—*magnified*.

52. Jungermannia *grisea*, Nobis *in Fl. Antarct.* Pt. 1. p. 154. t. lxiv. f. 8.

Var. β, *laxa*; caule ramoso flexuoso, foliis laxius insertis subremotis alternantibus. (Tab. CLX. Fig. IV.)

Hab. Falkland Islands; on clay banks near the sea. Var. β, in similar situations.

Also a native of Lord Auckland's group.

Plate CLX. *Fig.* IV.—1, plant of the natural size; 2, stem and leaves; 3 and 4, leaves; 5 and 6, stipules:—*magnified.*

53. Jungermannia *reclinans*, Hook. fil. et Tayl.; caule prostrato implexo ramoso, foliis imbricatis patentibus siccitate explanatis madore secundis e basi lata ovato-rotundatis integerrimis apice rotundatis v. obscure retusis, stipulis 2–4-partitis, segmentis setaceis intermediis elongatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 470. (Tab. CLIX. Fig. I).

Hab. Falkland Islands; on wet rocks near the sea.

Cæspites laxe intertexti, pallide flavo-olivacei, inter *Muscos Hepaticas*que alias repentes. *Caules* supini, vix ½ unc. longi, parce ramosi. *Folia* margine superiore sursum producto plerumque trilobo, rarius bilobo, lobis latis obtusis, folia nunc integra. *Stipulæ* basi angustatæ, quadratæ, bipartitæ, segmentis plerumque uni-dentatis omnibus setaceis articulatis incurvis.

With much affinity to the *J. multipenna* of Lord Auckland's group; but the upper margin of the leaf is not so gibbous or produced upwards, the stipules have the inner segments straight or recurved, but not reflexed, and much more slender.

Plate CLIX. *Fig.* I.—1, plant of the natural size; 2, stem and leaf; 3, stipule; 4, perichætium and calyx:—*magnified.*

54. Jungermannia *secundifolia*, Hook. fil. et Tayl.; parvula, caule subcæspitoso procumbente subramoso, foliis imbricatis erectis secundis oblongis emarginato-bifidis, segmentis lanceolatis integerrimis, stipulis bipartitis, segmentis inæqualiter bifidis laciniis subulato-setaceis, calyce terminali oblongo trigono, ore trilaciniato laciniis dentatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 471. (Tab. CLIX. Fig. II.)

Hab. Falkland Islands; on tufts of mosses.

Cæspites parvi, inter *Muscos* intricati, pallide olivacei. *Caules* vix ½ unc. longi, prostrati, demum ascendentes, apicibus supinis radicantibus. *Folia* imbricata, madore erecta et secunda. *Stipulæ* amplæ, segmentis setaceis incurvis. *Calyx* majusculus, trigonus, latere inferiore latiore, ore ciliato-dentato.

This in some respects approaches the British *J. bidentata*, but is even more like *J. heterophylla*, from which it may eventually prove not distinct; its claims rest on the closely imbricated and secund leaves, and more entire segments of the stipules.

Plate CLIX. *Fig.* II.—1, plant of the natural size; 2, apex of stem, perichætium, and calyx; 3, leaf; 4, stipule:—*magnified.*

55. Jungermannia *subviridis*, Hook. fil. et Tayl.; parvula, caule cæspitoso prostrato ramoso, foliis laxe imbricatis secundis erecto-patentibus erectisve oblique obovatis quadratisve emarginato-bifidis segmentis obtusiusculis, margine anteriore gibboso, inferiore decurrente, stipulis ovatis bifidis utrinque uni-dentatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 473. (Tab. CLIX. Fig. IV.)

Hab. Hermite Island, Cape Horn; on the ground.

Cæspites lati, 2 unc. diametro, pallide virides, intricati. *Caules* vix $\frac{1}{2}$ unc. longi, decumbentes v. prostrati, apicibus ascendentibus. *Folia* remotiuscula, margine superiore sursum gibboso; substantia dense cellulosa.

Closely allied to the *J. discedens*, Nees, of the East Indies; but the leaves are shorter, wider, have a deeper sinus and more acute segments; and the stipules are not so slender.

Plate CLIX. *Fig.* IV.—1, plant of the natural size; 2, branch, with leaves and stipules; 3 and 4, leaves; 5 and 6, stipules:—all *magnified*.

56. Jungermannia *trachyopa*, Hook. fil. et Tayl.; parvula, caule implexe ramoso procumbente flaccido, foliis tenerrimis laxe cellulosis imbricatis erectis subsquarrosis latissime rotundato-quadratis profunde bi-trifidis grosse inæqualiter spinuloso-dentatis, stipulis late ovatis bifidis segmentis acuminatis grosse dentatis, calyce terminali oblongo trigono, ore laciniato-dentato. Nobis *in Lond. Journ. Bot.* vol. iii. p. 471. (Tab. CLIX. Fig. III.)

Hab. Hermite Island, Cape Horn; growing in the woods on *Anthoceros punctatus*, L.

Caules vix $\frac{1}{2}$ unc. longi, irregulariter ramosi, pallide virides. *Folia* arcte imbricata, in lacinias duas v. plerumque plures lanceolato-subulatas divisa. *Calyx* pro planta majusculus. *Capsula* ovalis. *Seta* cauli æquilonga.

A very distinct species from any of the foregoing, and a beautiful object under the microscope from the delicacy and reticulation of its leaves.

Plate CLIX. *Fig.* III.—1, plant of the natural size; 2, stem and leaf; 3–6, stipules; 7, perichætium, calyx, seta, and capsule:—all *magnified*.

57. Jungermannia *triacantha*, Hook. fil. et Tayl.; caule implexo procumbente vage ramoso, foliis planis approximatis patentibus oblongo-ovatis trifidis segmentis subulato-lanceolatis, stipulis subquadratis bifidis segmentis bilaciniatis laciniis subulatis. Nobis *in Lond. Journ. Bot.* vol. v. p. 368.

Hab. Falkland Islands; on the ground.

Cæspites densi, luride olivacei. *Caulis* uncialis, ramis paucis patentibus. *Folia* basi vix imbricata, patentia, divaricata, oblonga, apices versus sinubus duobus excisis aucta; laciniis 3 subulatis, porrectis, subparallelis. *Stipulæ* liberæ, erecto-patentes, quadrifidæ, segmentis subulatis.

Most nearly allied to *L. chlorophylla*, nobis, of New Zealand, which is, however, a smaller plant and has shorter wider subsecund leaves, and rounded dentate stipules,

(7. Chiloscyphus, *Nees.*)

58. Jungermannia *pallido-virens*, Hook. fil. et Tayl.; majuscula, caule implexe subramoso procumbente, foliis patentibus imbricatis late ovato-oblongis apice retusis integerrimis margine anteriore recurvo, stipulis minutis recurvis oblongis bifidis segmentis subulatis extus unidentatis quadrifidisve, calyce in ramo abbreviato terminali oblongo tri-alato compresso apice laciniato-ciliato. Nobis *in Lond. Journ. Bot.* vol. iii. p. 473. (Tab. CLIX. Fig. IX.)

Hab. Hermite Island, Cape Horn; on the ground near the sea.

Cæspites late extensi, pallide flavo-virescentes, demum fuscescentes, interdum (status minor) omnino fuscati. *Caules* 2 unc. longi, parce ramosi, ramis $\frac{1}{8}$ unc. latis. *Folia* dense reticulata, areolis minutis, laxe imbricata, erecto-patentia, ope stipulæ basi connexa, apice rotundata seu truncata, unidentata v. emarginata. *Stipulæ* minimæ, caulis $\frac{1}{2}$ latitudine, concavæ, recurvæ, oblongæ; segmentis setaceis extus unidentatis. *Perichætium* ramum abbreviatum terminans, e paribus 2–3 foliolorum erectorum appressorum constans, foliolo interiore 4–5-partito. *Calyx* oblongo-campanulatus, latere unico profunde fissus.

This handsome plant resembles the *C. Endlicherianus*, Nees, of Norfolk Island, more than any other species; differing, however, materially in its great size, the less rounded tops of the leaves, their more convex figure, their perfectly entire margins, and by the less laciniated stipules.

Plate CLIX. *Fig.* IX.—1 and 2, plants of the natural size; 3, stem and leaf; 4, back view of ditto and stipules; 5, stipule; 6, perichætial leaf; 7, calyx:—*magnified.*

59. Jungermannia *grandifolia*, Hook. fil. et Tayl.; caule procumbente subsimplici laxe implexo, surculis planis, foliis arcte imbricatis patentibus quadrato-rotundatis antice basi gibbosis margineque recurvis integerrimis, stipulis minutis sub 4-laciniatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 474. (Tab. CLIX. Fig. VIII.)

Hab. Hermite Island, Cape Horn; in the woods.

Cæspites 3–4 unc. longi, $\frac{1}{6}$ unc. lati, superne pallide virescentes, inferne rufo-brunnei. *Folia* ampla, margine superiore basi præcipue recurvo, inferiore basi simplici non decurrente, flaccida, crassiuscula, pellucida, areolis parvis, rarius cum stipulis imo basi connexa, plerumque libera.

The largest and handsomest species of *Chiloscyphus*, in which the disproportion between the leaves and stipules is very remarkable. The broader and shorter leaves, their larger areolæ and more laciniated stipules, are alone sufficient to distinguish it from the former.

Plate CLIX. *Fig.* VIII.—1, plant of the natural size; 2, back of stem, stipules, and leaves; 3, stem and leaf; 4, stipule:—*magnified.*

60. Jungermannia *fusco-virens*, Hook. fil. et Tayl.; caule implexo procumbente subramoso, surculis ascendentibus, foliis imbricatis verticalibus patentibus secundis rotundatis integerrimis, stipulis bi-quadripartitis, segmentis radiantibus, calyce in ramo brevi terminali oblongo-campanulato triplicato, ore truncato integro. Nobis *in Lond. Journ. Bot.* vol. iii. p. 474. (Tab. CLIX. Fig. VII.)

Hab. Hermite Island, Cape Horn; forming dense tufts on the tops of the mountains, alt. 1,700 feet.

Cæspites parvi, densi, rufo-brunnei, ramis junioribus virescentibus. *Caules* 2 unc. longi, secus totam longitudinem radiculas dense fasciculatas demittentes. *Folia* planiuscula, paria opposita basi valde approximata, opaca, crassiuscula, cellulis parvis. *Stipulæ* basi breves, in segmenta dua v. plura subulata setaceave fissa. *Calyces* bini v. plures, foliis pallidiores. *Seta* fere uncialis. *Capsula* oblongo-rotundata.

The narrow segments of the differently shaped stipules and calyx afford the best means of distinguishing between this, and *J. australis*, nob., of Campbell's Island. The latter is also a smaller plant, of a darker colour. The size, large areolæ of the leaves, and their not being connate at the base with the stipules, at once remove the present from the following species.

Plate CLIX. *Fig.* VII.—1, plant of the natural size; 2, stem and leaf; 3, back view of ditto and stipules; 4, stipule; 5, perichætium, calyx, seta, and capsule:—*magnified.*

61. Jungermannia *surrepens*, Hook. fil. et Tayl.; caule disperso simplici repente, foliis imbricatis patentibus rotundatis integerrimis stipula ovata subquadrifida connatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 475. (Tab. CLX. Fig. I.)

Hab. Hermite Island, Cape Horn; on *J. Magellanica*.

Caules plerumque subsolitarii, supini, pallide brunnei v. albidi. *Folia* opposita, dorso ope stipulæ basi connexa. *Stipula* caule vix latior, ovata, bifida, segmentis subulatis extus dente majuscula auctis.

Near the last, but a very different plant in size, and in the disposition of its leaves.

PLATE CLX. *Fig.* I.—1, plant of the natural size; 2, back view of stem, leaves and stipules; 3, stem and leaf; 4, stipule:—*magnified.*

62. JUNGERMANNIA *retusata,* Hook. fil. et Tayl.; caule implexo procumbente subsimplici rectiusculo, foliis patentibus planis late oblongis obtusis retusisque integerrimis hinc stipulæ minutæ setaceo-bipartitæ connexis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 84. (TAB. CLXI. Fig. III. sub. nom. *J. reclinatæ.*)

HAB. Falkland Islands; on the ground.

Cæspites laxi, pallide fusco-olivacei. *Caules* unciales. *Folia* remotiuscula, late oblonga, obscure emarginata, cum stipula caule æquilata connexa.

Allied to the *Ch. integrifolius,* Gottsche, of Chili, but the leaves are more distant, shorter, and wider; the stipule more divided and the whole plant of a darker colour.

PLATE CLXI. *Fig.* III. (under the name of *J. reclinata*).—1, plant of the natural size; 2, 3, and 4, stem and leaves; 5, stipule:—*magnified.*

63. JUNGERMANNIA *horizontalis,* Hook., *Musc. Exot.* t. 96. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 178.

HAB. Staten Land; *Menzies* (in Herb. Hook.).

Not in the collections of the Antarctic Expedition.

64. JUNGERMANNIA *amphibolia,* Nees, *in Martius, Flor. Bras.* vol. i. p. 334. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 178.

HAB. Hermite Island, Cape Horn; mixed with *J. uncialis.*

Also a native of the Brazils.

(8. LEPIDOZEA, *Nees.*)

65. JUNGERMANNIA *tetradactyla,* Hook. fil. et Tayl.; *in Fl. Antarct.* Pt. 1. p. 158. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 213.

HAB. Hermite Island, Cape Horn; moist places near the sea.

Likewise found both in Lord Auckland's group and New Zealand.

66. JUNGERMANNIA *plumulosa,* Lehm. et Lindb., *Pugill.* p. 30. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 211.

HAB. Staten Land, *Menzies.* Strait of Magalhaens, *D'Urville.* Hermite Island, Cape Horn; on moist banks.

67. JUNGERMANNIA *lævifolia,* Hook. fil. et Tayl.; *in Fl. Antarct.* Pt. 1. p. 157. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 208.

HAB. Falkland Islands; on moist rocks near the sea.

First described from Auckland Island specimens; also found in New Zealand and Tasmania.

68. JUNGERMANNIA *oligophylla,* Lehm. et Lindb., *Pugill.* vi. p. 26. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 201.

HAB. Staten Land, *Menzies.* Hermite Island, Cape Horn; in moist places.

69. JUNGERMANNIA *tridactylis,* Lehm. et Lindb.? *fid.* Montagne, *in Voy. au Pole Sud, Bot. Crypt.* p. 243.

HAB. Strait of Magalhaens; *M.M. Hombron et Jacquinot.*

70. Jungermannia *filamentosa*, Lehm. et Lindb., *Pugill.* vi. p. 29. *Montagne in Voy. au Pole Sud, Bot. Crypt.* p. 246.

Hab. Strait of Magalhaens; *M. Hombron.*

A plant we do not recognize amongst the numerous forms, from Fuegia and Lord Auckland's Island, of this most difficult, and perhaps too extended group.

71. Jungermannia *Javanica*, Mont., *in Voy. au Pole Sud, Bot. Crypt.* p. 246.

Hab. Strait of Magalhaens; Port Famine, *M. Jacquinot.*

This may be one of the above enumerated species, though we have failed in identifying it. It is also a native of Java.

72. Jungermannia *chordulifera*, Tayl., *in Lond. Journ. Bot.* vol. v. p. 371. (Tab. CLXI. Fig. VI.)

Hab. Chonos Archipelago, *C. Darwin, Esq.*

A very handsome species, allied to the *J. pendulina* of New Zealand.

Plate CLXI. *Fig.* VI.—1, plant of the natural size; 2, stem, leaves, and stipules; 4, stipule:—*magnified.*

(9. Mastigophora, *Nees.*)

73. Jungermannia *hirsuta*, Nees; *Fl. Antarct.* Pt. 1. p. 160. Sendtnera ochroleuca, *Nees, in Gottsche, Lindb. et Nees, Syn. Hep.* p. 240.

Hab. Hermite Island, Cape Horn; on roots of stunted trees, &c., alt. 1,000 feet. Falkland Islands; rocks on the hill tops, rare.

A widely distributed plant, being found in Mexico and Java, at the Cape of Good Hope, and Lord Auckland's group.

(10. Radula, *Nees.*)

74. Jungermannia *Helix*, Hook. fil. et Tayl.; parvula, caule repente implexo subflexuoso pinnatim ramoso, foliis remotis alternis oblongis alte concavis integerrimis basi gibbosis, lobo superiori ovato-oblongo obtuso, inferioris ovati tumidi involuti apice subacuto superiori appresso. Nobis *in Lond. Journ. Bot.* vol. iv. p. 475. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 260. (Tab. CLX. Fig. II.)

Hab. Hermite Island, Cape Horn; growing with *J. colorata.*

Cæspites vix $\frac{1}{4}$ unc. lati, pallide straminei. *Folia* pauca, alterna, nisi apicem caulis versus remota.

A very distinct little species, found growing on large masses of *J. colorata*, with the purple colour of which its pale stems contrast conspicuously. It is smaller and has more tumid leaves than any of its congeners; the latter resemble in form the shell of *Helix putris*, whence the trivial name.

Plate CLX. *Fig.* II.—1, plant of the natural size; 2, stem and leaves; 3 and 4, leaves:—*magnified.*

75. Jungermannia *physoloba*, Mont.; *Fl. Antarct.* Pt. 1. p. 161. J. flavifolia, *nobis in Lond. Journ. Bot.* vol. iv. p. 476. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 259. J. complanata, β, *Hook.* (Tab. CLX. Fig. III.)

Hab. Hermite Island, Cape Horn; on trunks of trees.

An abundant boreal plant, inhabiting Europe from Switzerland to Iceland. In the southern hemisphere it has hitherto been seen only in Lord Auckland's group and at Cape Horn. It is rather a variable species, and we have

described it already under two names. The leaf of these specimens is shorter, broader at the upper part and rounded, with the lower lobe shorter than is usual in *J. physoloba*. We add a figure.

PLATE CLX. *Fig.* III.—1, plant of the natural size; 2, branch and leaf; 3, leaf; 4, perichætium and calyx; 5, calyx and capsule:—*magnified*.

(11. POLYOTUS, *Gottsche*.)

76. JUNGERMANNIA *Magellanica*, Lamk. *Fl. Antarct.* Pt. 1. p. 162.

HAB. Hermite Island, Cape Horn; on trunks of trees, abundant. Strait of Magalhaens, *Commerson*. Staten Land, *Menzies*.

Also found in Campbell's Island, Tasmania, and New Holland.

77. JUNGERMANNIA *Menziesii*, Hook., *Musc. Exot.* t. 118.

HAB. Hermite Island, Cape Horn; mossy trunks of trees, wet rocks, &c.; also on the summits of the mountains. Staten Land, *Menzies*.

78. JUNGERMANNIA *palpebrifolia*, Hook., *Musc. Exot.* t. 71. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 246.

HAB. Strait of Magalhaens, *D'Urville*.

(12. FRULLANIA, *Raddi*.)

79. JUNGERMANNIA *cyperoides*, Schwaeg., *Prodr. Hep.* 14. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 420.

HAB. Strait of Magalhaens; (fid. *Schwaegrichen*).

80. JUNGERMANNIA *lobulata*, Hook., *Musc. Exot.* t. 119. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 445.

HAB. Hermite Island, Cape Horn; in woods. Staten Land, *Menzies*. Falkland Islands; on rocks near the hill tops.

81. JUNGERMANNIA *Magellanica*, Spreng., *in Annal. des Wetter. Ges.* vol. i. p. 25. t. 4. f. 10, (fid. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 447.)

HAB. Strait of Magalhaens; on *Drimys Winteri* and *Berberis ilicifolia*; *Forster* (fid. *Gottsche*).

(13. LEJEUNIA, *Spreng*.)

82. JUNGERMANNIA *subintegra*, Hook. fil. et Tayl.; caule breviusculo cæspitoso procumbente elongato subsimplici, foliis subimbricatis erectiusculis integerrimis, lobo superiore oblongo-rotundato, inferiore $\frac{1}{3}$ breviore tumido involuto angulo superiore acuminato, stipulis caule paulo latioribus ovatis acutis integerrimis v. summo apice fissis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 477. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 377. (TAB. CLX. Fig. V.)

HAB. Falkland Islands; in wet places near the sea.

Cæspites late extensi, pallide olivacei. *Caules* vix $\frac{1}{2}$ unc. longi, plerumque simplices. *Folia* amplectantia, suberecta, concava, diametro caulis duplo latiora, laxe cellulosa, areolis majusculis. *Stipulæ* majusculæ, integerrimæ, v. imo apice solum fissæ, segmentis approximatis.

The great size of the stipules comparatively to the leaves and their very obscure division, afford sufficiently distinctive characters of this species.

PLATE CLX. *Fig.* V.—1, plant of the natural size; 2, stem; 3, leaf; 4 and 5, stipules:—*magnified*.

83. Jungermannia *parasitica*, Hook. fil. et Tayl.; caule subimplexo procumbente pinnatim ramoso, foliis subapproximatis patentibus valde concavis integerrimis v. obscure dentatis, lobo superiore triangulari-ovato acuto v. acuminato apice subrecurvo, inferiore oblongo acuminato, stipulis parvis obovato-quadratis bilobis lobis rotundatis integerrimis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 477. J. marginalis, *nobis, l. c.* vol. iv. p. 91. (Tab. CLX. Fig. VI.)

Hab. Hermite Island, Cape Horn; parasitical on *J. uncialis*, and amongst lichens on trunks of trees.

Caules gracillimi, minimi, oculo nudo invisibiles, pallide virides, inter *Lichenes* aliasque *Hepaticas* dispersi, $\frac{1}{10}$ unc. longi, subpinnatim ramosi, ramis suberectis. *Folia* subremota, patentia, basi latiuscula, apicibus acuminatis, incurvis v. recurvis, lobo inferiore margine involuto subundulato.

This has precisely the habit and appearance of the Irish *J. ovata*, Tayl. MSS., an equally minute parasite, with stipules of the same form. The present differs from that in the shape of the more distant leaves, which are shorter, wider at the base, and more acute above. The whole plant is of a paler colour, and from the smaller size of the cells of the leaves their tissue is more dense.

Plate CLX. *Fig.* VI.—1, plant of the natural size; 2, stem, leaves, and stipules; 3, leaf; 4, stipule:—*magnified*.

84. Jungermannia *rufescens*, Lindb., *in Gottsche, Lindb. et Nees, Syn. Hep.* p. 366.

Hab. Staten Land, *Menzies* (in Herb. Hook.).

(14. Diplolæna, *Nees.*)

85. Jungermannia *pisicolor*, Hook. fil. et Tayl.; fronde laxe cæspitosa erecta dichotome divisa basi in stipitem teretem gradatim attenuata, lobis linearibus obtusis emarginatis uninerviis integerrimis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 478. (Tab. CLX. Fig. VII.)

Hab. Hermite Island, Cape Horn; at the bottom of an alpine lake.

Frondes e radice repente elongato erecti, sub 3 unc. lati, pisicolores, demum flavescentes, parte inferiore atra, bis terve dichotome divisi, lobis plerumque madore concavis, e margine proliferi; juniores basi rotundati, primum liberi?, demum radices emittentes. *Nervus* validus, percurrens, siccitate tenuis, albescens, madore dilatatus, fronde concolor, axillis acutis.

A very distinct and curious plant, allied to the *J. tenuinervis*, nob., of New Zealand, from which it may be known by its yellow-green colour, greater size, and taller habit, narrower and more elongated lobes, and, above all, by its being erect, differing remarkably in that respect from its northern allies, *J. Hibernica*, Hook., and *J. Lyellii*, Hook.

Plate CLX. *Fig.* VII.—1, plant of the natural size; 2, apex of frond:—*magnified*.

(15. Aneura, *Nees.*)

86. Jungermannia *multifida*, Linn.; *Fl. Antarct.* Pt. I. p. 166.

Var. β. *submersa*; fronde anguste lineari-elongata pellucida parce ramosa plana, ramis brevibus, perigoniis marginalibus alternis brevissimis, cellulis densis.

Var. γ. *nana*; parvula, ramosa, cellulis latioribus brevioribusque.

Hab. Hermite Island, Cape Horn; var. α and β, very abundant; var. γ, in a fresh-water lake amongst the mountains. Falkland Islands; abundant.

An extremely abundant plant in the southern extra-tropical regions.

87. JUNGERMANNIA *pinguis*, L. Hook. *Brit. Jung.* t. 46.

HAB. Hermite Island, Cape Horn; wet places in the woods.

88. JUNGERMANNIA *alcicornis*, Hook. fil. et Tayl.; fronde cæspitosa erecta alterne bipinnatim ramosa, caule ramisque linearibus laciniis lobisve brevibus subtruncatis, calyptris lateralibus linearibus albidis scabridis apice laceris. Nobis *in Lond. Journ. Bot.* vol. iii. p. 479. (TAB. CLX. Fig. VIII.)

HAB. Hermite Island, Cape Horn; mossy places in the woods.

Frondes cæspitosi, planiusculi, unciales, circumscriptione oblongi, juniores læte virides, demum fuscescentes et siccitate nigrescentes. *Rami* seu laciniæ basi subdichotomi, superne subpinnatim divisi; lobulis brevibus, obtusis. *Calyptræ* parte frondis inferiore laterales, valde elongatæ, cylindraceæ, basi curvatæ, carnosæ, papillosæ. *Seta* sub ½ unc. longa. *Capsula* cylindracea.

A very beautiful little species, allied to the *J. palmata*, Hoffm., of Europe; but much more divided, with the divisions pinnate and not palmate; the lobules also are much narrower, and the calyptra is borne higher up in the frond.

PLATE CLX. *Fig.* VIII.—1, plant of the natural size; 2, ditto; 3, branch and calyptra:—*magnified.*

(16. METZGERIA, *Nees.*)

89. JUNGERMANNIA *furcata*, L. *Flor. Antarct.* Pt. 1. p. 167.

Var. β. *pubescens*, J. pubescens, *Brit. Jung.*

HAB. Hermite Island, Cape Horn; in woods, &c.; both varieties abundant.

90. JUNGERMANNIA *prehensilis*, Hook. fil. et Tayl.; fronde laxe cæspitosa, ramis erectis incurvis alatis, lobis secundis alternis pinnatis, pinnulis linearibus planis crassinerviis, calyptra e basi anguste elongato-obovata basi squamosa, perigoniis clavatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 480. (TAB. CLX. Fig. IX.)

HAB. Hermite Island, Cape Horn; on moist banks near the sea.

Frondes laxe cæspitosi, apicibus latiusculis hamatis. *Caulis* planus, brunneus, pubescens, pinnulis glabratis pallide olivaceis. *Calyptræ* brunneæ, apices versus frondis laciniarum basi superficie inferiore sitæ, hinc occlusæ, interdum binæ. *Perigonia* plantis aliis obvia, clavata, e ramo pinnato frondis constantia, lobulis pinnisve incurvis singulis antheram majusculam sphericam pedicellatam foventibus.

A remarkably distinct and fine species, most resembling the *J. eriocaula*, Hook., of New Zealand; though the frond is of a darker colour and tripinnate, the pinnules much narrower, and the whole plant more elongated and divided. The perigonia and calyptræ occupy similar positions on different plants.

PLATE CLX. *Fig.* IX.—1, plant of the natural size; 2, upper, and 3, under surface of branch with calyptra; 4, calyptra:—*magnified.*

(17. NOTEROCLADA, Tayl.)

Involucrum apicem versus frondis concavi tumidi inflatum, ore libero sub-bilobo. *Capsula* quadrivalvis, seu irregulariter rumpens, pedicellata. *Elateres* spirales seminibus immixtæ. *Antheræ* fronde immersæ. *Frons* pinnatim lobata, v. foliis basi latissimis longe decurrentibus subspiraliter dispositis ornata.—Stirps *inter* Jungermannias *foliosas frondosasque quasi media, his tamen accedens.*—Androcryphia, *Gottsche.*

91. Jungermannia *confluens*, Tayl. *in Lond. Journ. Bot.* vol. iii. p. 478. (Tab. CLXI. Fig. VII. in part.)

Hab. Hermite Island, Cape Horn; on the bare ground in woods. Falkland Islands and Christmas Harbour, Kerguelen's Land; on moist banks.

Laxe cæspitosa. *Frondes* flaccidissimi, 2 unc. longi, erecti. *Caulis* simpliciusculus, foliis imbricatis omnino occlusus, subrufescens, gracilis. *Folia* alterna, tenerrima, madore carnosiuscula, siccitate membranacea, ægre resuscitentia, et inter se quasi confluentia (hinc frons prima visu continua et lobata), basi latissima, bis latiora quam longa, longe decurrentia, fere amplexicaulia, semi-orbicularia, apice rotundata v. retusa, areolis majusculis. *Involucrum* terminale, sessile, erectum, cylindraceum, compressum, ore eroso-dentato. *Seta* uncialis, gracilis. *Capsula* ovato-globosa, irregulariter v. regulariter rumpens. *Elateres* brevissimi. *Calyptra* irregulariter rupta, parte superiore stylo persistente terminata. *Antheræ* ovato-oblongæ, biseriales, substantia frondis immersæ, liquido oleaginoso scatentes.

A genus allied to *Fossombronia*, but the structure of the involucre, apparently formed very much out of the frond itself, is quite dissimilar. The involucre is terminal in this species, but lateral in a Brazilian congener, which was long regarded as identical, and smooth; when terminal, winged from the adhesion to its surface of the upper abbreviated leaves: it is either truncated or obscurely two-lipped. The young spores are united by fours in a transparent membrane. The drawing of the fruit is taken from Brazilian specimens of an allied species, or perhaps variety, collected by Mr. Gardner; the leaves of the Antarctic plant having become so firmly united under pressure, that no maceration would separate them satisfactorily.

In the 'Synopsis Hepaticarum' of Nees, Lindenberg and Gottsche, the generic name has been changed to *Androcryphia*, with the following explanation. "Noteroclada nomen Græce cum sonet neque Græci esse possit originis, (scil. *νῶτος* tergum non dat *νωτερον*, neque *χλάδου* sive rami character hoc loco succurrit); substituere aliud nomen ægre id quidem mecum sustinui." (*l. c.* p. 470.) The derivation of the name being, however, *νοτηρὸς* "madidus," sufficiently vindicates the adoption of *Noteroclada*.

Plate CLXI. *Fig.* VII. (in part.)—1, Brazilian, and 2, Falkland Island specimen, of the natural size; 3, branch, leaves, &c., of the Brazilian specimen; 4, leaf of ditto; 5, corolla of ditto:—*magnified*.

(18. Fossombronia, *Nees*.)

92. Jungermannia *pusilla*, L.

Hab. Kerguelen's Land; on banks amongst moss, &c.

Also a native of New Zealand, and probably not an uncommon plant in the temperate parts of the Southern as it is of the Northern hemisphere.

2. MARCHANTIA, *March.*

1. Marchantia *polymorpha*, L. *Flor. Antarct.* Pt. 1. p. 168.

Hab. Fuegia, the Falkland Islands, and Kerguelen's Land; very abundant.

This is perhaps the most widely dispersed of *Hepaticæ*, ranging from the Arctic circle to the 57th degree of south latitude.

3. ANTHOCEROS, *Michel.*

1. Anthoceros *punctatus*, L.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; very common.

LIV. FUNGI, *L.*

(By the Rev. M. J. Berkeley.)

1. AGARICUS, *L.*

1. Agaricus *longinquus*, Berk.; pileo obliquo suborbiculari albo demum pallide fusco glabro nitente, strato superiore gelatinoso, stipite curto quandoque brevissimo pallide flavo-fusco basi albo-floccoso, lamellis albis subfurcatis, interstitiis lævibus. (Tab. CLXIII. Fig. V.)

Hab. Hermite Island, Cape Horn; on dead wood near the sea.

Pileus $\frac{3}{4}$ unc. et ultra latus, tenuis, oblique ovatus vel semiorbicularis, primum subtiliter pruinosus, mox autem glaberrimus, nitens; margine striato; stratum epidermale gelatinosum. *Stipes* vix lineam exsuperans quandoque obsoletus, æqualis, primum centralis, deinde excentricus aut omnino lateralis, subtiliter pruinosus, demum glaber, pallide flavo-fuscus, ad matricem basi tomentosa affixus. *Lamellæ* albæ, distantiusculæ, subfurcatæ, prope marginem præsertim subventricosæ, decurrentes, interstitiis lævibus, non reticulatis.

The nearest ally of this species is perhaps *Ag. mitis*, Pers., but the stem is not dilated upwards and the pileus is seldom perfectly lateral. Its colour, too, is different, and it has not the same opake appearance when dry. The upper stratum is gelatinous, though the pileus is dry externally; a character common to several closely allied species. It resembles also some smaller forms of *Ag. algidus*, Fr., but that is at first resupinate, whereas in the present species the stem is normal, though, as in most of the smaller excentric Agarics, occasionally obsolete. I do not know any other species with which it is necessary to compare it.

Plate CLXIII. *Fig.* V.—1, *Agaricus longinquus*, Berk., of the natural size, from rather young specimens; 2, another:—*magnified.*

2. Agaricus *exquisitus*, Berk.; minimus, tenerrimus, pileo ferrugineo subtiliter pulverulento, stipite brevi filiformi sursum incrassato pulverulento pileo concolori, basi dilatata irregulariter floccoso-membranacea, lamellis paucissimis ventricosis subliberis albo-marginatis interstitiisque lævibus ferrugineis.

Hab. Port Louis, Falkland Islands; on stems of *Chiliotrichum amelloides*.

Pileus membranaceus, 1 lin. latus, orbicularis, subtiliter pulverulentus, ferrugineus. *Stipes* 2 lin. altus, filiformis, sursum incrassatus, flexuosus, pulverulentus, pileo concolor, basi disco irregulari flexuoso-membranaceo affixus. *Lamellæ* paucæ (6), subliberæ, ferrugineo-fuscæ, interstitiis latis lævibus.

This elegant little Agaric differs from *Ag. horizontalis*, Bull., an imperfectly known species, which I have received from Dr. Léveillé and have myself gathered on the trunks of trees in the park at Burleigh, near Stamford, in being altogether more delicate, in the membranaceous pileus, and especially in the absence of smaller gills between the larger. The pileus of *Ag. horizontalis* also is much darker when dry.

3. Agaricus *Glebarum*, Berk.; pileo carnoso late umbonato glabro pallide fusco, stipite brevi glabro sursum subincrassato solido, basi mycelio floccoso affixa, lamellis latiusculis adnatis horizontalibus fulvis. (Tab. CLXII. Fig. III.)

Hab. Berkeley Sound, Falkland Islands; growing out of tufts of *Bolax* on the hills, where it endures a great degree of wet and cold.

Pileus $\frac{3}{4}$ unc. latus, glaberrimus, subhemisphericus, umbonatus, pro ratione valde carnosus, senectute rugosus; nequaquam viscidus. *Stipes* $\frac{3}{4}$ unc. altus, $1\frac{1}{2}$ lin. crassus, solidus, subtiliter fibrillosus, sursum incrassatus, basi ad

surculos foliaque marcida mycelio floccoso affixus. *Lamellæ* latiusculæ, horizontales, dente obscuro adnatæ, subdistantes, quandoque furcatæ. *Sporæ* oblique ellipticæ, sub lente aureo-fuscæ, nucleo parvo globoso. *Margo* pilei interdum reflexus discusque exinde depressus, tunc etiam lamellæ, ni caute perscrutentur, liberæ habeantur.

This species is allied to *Ag. innocuus*, Tasch, and *Ag. cerodes*, Fr. From the latter it differs in its solid stem; from the former, in its decidedly carnose umbonate pileus.

Plate CLXII. *Fig.* III.—1, *Ag. Glebarum*, Berk., of the natural size, on tufts of *Bolax*; 2, vertical section of the same; 3, spores:—highly *magnified*.

4. Agaricus *fascicularis*, Huds., *Fl. Angl.* p. 615. *Fries, Ep.* p. 222.

Hab. Hermite Island, Cape Horn; on the trunk of a dead tree, *Mr. Davis.*

A single specimen only was found.

5. Agaricus *papilionaceus*, Bull., t. 561. f. 2. *Pers. in Freyc. Voy.* p. 168. Ag. fimetarius, *Gaud. in Ann. des Sc. Nat.* vol. v. p. 97.

Hab. Falkland Islands; *Gaudichaud.*

This species was not met with during the visit of the Erebus and Terror. *Ag. Glebarum* could not have been considered as belonging to the subdivision of *Coprini*. The pileus is said by Persoon to be broader, and the stem shorter than in Bulliard's figure.

2. COPRINUS, *Pers.*

1. Coprinus *Flosculus*, Berk.; minimus, tenerrimus, pileo glabro ovato demum expanso hemispherico fisso sulcato vertice depressiusculo, stipite brevi, lamellis liberis paucis linearibus remotis. (Tab. CLXII. Fig. II.)

Hab. Berkeley Sound, Falkland Islands; on dung.

Pileus 1½ lin. altus, 1 lin. latus, ovatus, profunde ex ipso vertice sulcatus, interstitiis striatis, glaber, subgriseus, margine crenulato, demum expansus, hemisphericus, fissus. *Stipes* ½ lin. altus, filiformis, primum leviter ad basin turgidus, demum æqualis. *Lamellæ* primariæ subdecem, liberæ, remotæ, lineares. *Sporæ* ovatæ, atro-purpureæ.

A minute *Coprinus*, belonging to the same section with *Coprinus Hemerobius*, but differing from it and from the other species of the section in various characters. It resembles in habit *C. Hendersonii*, Berk., but wants the ring which is characteristic of that species.

Plate CLXII. *Fig.* II.—1, *Coprinus Flosculus*, of the natural size; 2, ditto:—*magnified*; 3, hymenium, viewed vertically with the spores on the sporophores; 4, spores:—*highly magnified.*

3. POLYPORUS, *Fries.*

1. Polyporus *versicolor*, Fr., *Ep.* p. 473. *Berk. in Ann. Nat. Hist.* vol. iv. p. 292.

Hab. Falkland Islands; on the underside of timber, *C. Darwin, Esq.*

This can scarcely be considered indigenous. The mycelium in all probability existed on the timber when imported.

4. CORTICIUM, *Fries.*

1. Corticium *tremellinum*, Berk.; confluenti-effusum, gelatinosum, pellucidum, candidum, quandoque opacum, subtiliter pruinosum, siccum non rimosum decoloratum.

Hab. Hermite Island, Cape Horn; on bark of the Deciduous Beech in damp woods.

Primum maculas orbiculares exhibens, quæ demum confluendo areolas tenues longe effusas omnes matricis inæqualitates observantes efficiunt; album, ut plurimum pellucidum, quandoque opacum, tenue gelatinosum, subtiliter pruinosum atque exinde nitidulum, inodorum, insipidum; exsiccatum sordide umbrinum. Margo tenuis, nequaquam fimbriatus, hic illic exsiccatione liber. *Sporæ* ellipticæ, majores.

Nearly allied to *Corticium viscosum*, but not in the least cracked when dry. I have found the same species, apparently, in Sherwood Forest, which I had referred to *C. viscosum*; but the characters given by Fries, in his 'Epicrisis,' indicate a distinct species.*

5. TREMELLA, *L.*

1. Tremella *mesenterica*, Retz, *in Vetensk Ac. Handl.* 1769, p. 249. *Engl. Bot.* t. 709.

Hab. Hermite Island, Cape Horn; on a dead trunk of Deciduous Beech, almost covered with former winters' snow, 1,200 feet above the sea, in an exposed place.

The only specimen seen.

6. EXIDIA, *Fries.*

1. Exidia *Auricula Judæ*, Fries, *Ep.* p. 590.

Hab. Port Famine; on Beech, *C. Darwin, Esq.* Hermite Island, Cape Horn; *J. D. H.*

The specimens collected in the latter locality are small and less tomentose than the more usual state of the species.

7. CRUCIBULUM, *Tul.*

1. Crucibulum *vulgare*, Tul. *Ann. Sc. Nat.* Ser. 3. vol. i. p. 90. Cyathus Crucibulum, *Pers. Syn.* p. 238. *Grev. Scot. Crypt. Fl.* t. 34.

Hab. Hermite Island, Cape Horn; on moss near the sea, always solitary.

The specimens differ from the ordinary form, which occurs in the southern as well as in the northern hemisphere, in their solitary habit, more conical peridia, which are of a semi-transparent dirty orange-yellow, and in the more irregular sporangia. In structure I find no difference.

8. LYCOPERDON, *Tourn.*

1. Lycoperdon *cælatum*, Bull. *Champ.* vol. i. p. 156. t. 430.

Hab. Falkland Islands; on a tuft of *Bolax*.

One specimen only was met with.

It is not possible to speak very positively of a single old specimen and which had been evidently much exposed to the weather. It is, however, certainly neither *L. gemmatum*, nor *L. pyriforme*, and appears to me to be a state of *L. cælatum*. *L. arenarium*, Pers., will be found under the genus *Bulgaria*.

9. LEPTOTHYRIUM, *Kze.*

1. Leptothyrium *decipiens*, Berk.; suborbiculare, atrum, nitidum, sporis tenerrimis irregulari-subfusiformibus quandoque curvatis. (Tab. CLXIII. Fig. III.)

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* An authentic specimen, however, received from Mons. Lindblad, since the above was printed, is not more cracked than the Antarctic plant. *Corticium tremellinum* must be considered, therefore, merely a highly developed form of *C. viscosum*.

Hab. Falkland Islands; on dead stems of *Rostkovia grandiflora*.

Puncta irregularia suborbicularia picea nitida in culmos exsiccatos efformans. *Perithecia* valde depressa, demum basi squamæ instar dehiscentia. *Sporæ* irregulares, fusiformes, quandoque curvatæ, tenerrimæ, albæ, pellucidæ; endochromium varie partitum, non autem septatum.

A species which, examined superficially, may be passed over as *Leptostroma junceum*, differing merely in its more shining perithecium. The spores are, however, of a very different form, and many times larger. In that species, as published in 'British Fungi' (No. 197), and by Madame Libert (No. 260), they are extremely minute and obtuse at either extremity; the perithecium also is more closely cellular. In the specimens published by Klotzsch and Fries (in my copy at least), there is no fructification. It resembles also, externally, *Leptostroma vulgare*, but there is as decided a difference as in the former case between the spores.

Plate CLXIII. *Fig.* III.—*Leptothyrium decipiens*, Berk., of the natural size; 2, portion of stem of *Rostkovia grandiflora*, with base of peridium adhering to it:—*magnified*; 3, spores:— highly *magnified*.

10. SPHÆRONEMA, *Fries*.

1. Sphæronema *sticticum*, Berk.; minutissimum, punctiforme, innatum, atrum, nitidum, demum collapsum, sporis minutissimis ellipticis. (Tab. CLXIII. Fig. I.)

Hab. Hermite Island, Cape Horn; on dead leaves of the Deciduous Beech (*Fagus Antarctica*.)

Minutissimum, punctiforme, atrum, nitidum, demum collapsum, præcipue venis foliorum innatum, unde dispositionem reticulatam exhibit. *Sporæ* minutissimæ, sporophoris brevibus filiformibus affixæ.

Not to be confounded with *Sphæria punctiformis*, Pers., (Fr. Se. Suec. No. 56), which has true asci, assuming the production published by Fries, which exactly accords with specimens gathered in Northamptonshire, to be the type of the species. Both Desmazière's (No. 984), and Mougeot's, and Nestler's (No. 662) plants appear to me quite different. Unfortunately in neither have I been able to detect fructification. In Mougeot's plant the perithecia are strongly collapsed, which is by no means the case with that of Fries; and that of Desmazière approaches *Sp. maculæformis*.

The genus *Sphæronema* is here considered as comprising such species of the genus *Sphæria* as have simple spores, never included in asci, such as *Sp. acuta*, &c.

Plate CLXIII. *Fig.* I.—1, *Sphæronema sticticum*, Berk., upon leaves of *Fagus*, of the natural size; 2, portion of leaf and fungus; 3, spores on their sporophores; 4, spores:—all highly *magnified*.

11. SPORIDESMIUM, *Lk.*

1. Sporidesmium *adscendens*, Berk., *in Ann. Nat. Hist.* vol. iv. p. 292. t. 8. f. 1. 1840.

Hab. Falkland Islands; on the underside of *Polyporus versicolor, C. Darwin, Esq.*

The species is nearly allied to *Sp. vagum*, Nees, from which it differs merely in having constantly a single globose nucleus in each articulation, presuming that Corda's figure, published in the same year with that in the Annals of Natural History, is the plant of Nees.

12. ÆCIDIUM, *Gmel.*

1. Æcidium *Magellanicum*, Berk.; hypophyllum, totam faciem inferiorem occupans inque petiolos sparsum, rarissime epiphyllum, maculis rubellis, peridiis urceolatis elongatis, sporis pallidis irregulariter orbicularibus. (Tab. CLXIII. Fig. II.)

Hab. Strait of Magalhaens; Port Famine; on *Berberis ilicifolia, Capt. King*.

Maculæ rubellæ; peridia plus minus elongata, urceolata, sursum leviter constricta, vel omnino cylindracea, fragilia, totam superficiem inferiorem investientia, plus minus in petiolos descendentia. *Sporæ* pallidæ (saltem in exemplaribus exsiccatis) irregulariter subglobosæ, angulatæ. Rarissime pauca peridia epiphylla sunt.

Resembling much in external appearance *Æc. sambucinum*, Schwein. It is at once distinguished from *Æcidium Berberidis* by its very different habit.

Plate CLXIII. *Fig.* II.—1, leaves of *Berberis* and *Æcidium Magellanicum*, of the natural size; 2, portion of leaf and fungus; 3, spores:—*highly magnified.*

13. UREDO, *Pers.*

1. Uredo *candida*, Pers., *Syn.* p. 223.

Hab. Falkland Islands; on *Arabis Macloviana, Capt. Sulivan.*

The mycelium is very visible in these specimens. There is no difference in the spores.

14. MORCHELLA, *Dill.*

1. Morchella *semilibera*, Dec., *Fl. Fr.* vol. ii. p. 212.

Hab. Falkland Islands; on the ground.

I have seen a single imperfect specimen only, which is scarcely more than sufficient to determine the genus. I believe it, however, to be the species of De Candolle, above cited.

15. PEZIZA, *Dill.*

1. Peziza *Kerguelensis*, Berk.; media, cupula plana adnata coccinea extus setis brevioribus obsita. (Tab. CLXIV. Fig. III.)

Hab. Hermite Island, Cape Horn; on dead branches amongst the snow, alt. 1,000 feet. Christmas Harbour, Kerguelen's Land; May and June; on bare boggy earth near the sea, growing amongst *Confervæ*.

Cupula $\frac{1}{2}$–$\frac{3}{4}$ unc. lata, plana, adnata, margine tantum ut plurimum libero, coccinea, externe setis brevioribus subflaccidis plus minus contextis primum pallidis deinde saturate rubris vestita, dissepimentis demum absorptis. *Asci* lineares, obtusi; *sporidia* late elliptica, glabra, nucleo unico globoso; *paraphyses* apice clavulatæ.

Allied to *P. scutellata* and *P. umbrosa*, but larger than either. The bristles are short and somewhat flaccid, in which it differs strikingly from the former species, as also in its broader sporidia. From the latter it differs principally in its larger size and less conspicuous hairs. I am not able, in the absence of authentic specimens, to compare the sporidia; but if that species be the same with *P. trechispora*, Berk., and Broome, which is not impossible, the difference is considerable.

Plate CLXIV. *Fig.* III.—1, Kerguelen's Land, and 2, Cape Horn specimens; of the natural size; 3, setæ:—*magnified*; 4, asci, sporidia and paraphyses; 5, sporidia:—very highly *magnified.*

2. Peziza *stercorea*, Pers. *Obs.* vol. ii. p. 89. (Tab. CLXIII. Fig. IV.)

Hab. Port Louis, Falkland Islands; on cow-dung.

Not distinguishable from European specimens. I cannot detect *Ascobolus furfuraceus*, which is so generally its companion in Europe.

Plate CLXIII. *Fig.* IV.—1, bristles from cup; 2, asci and paraphyses, in the broken ascus the inner membrane is visible, projecting below; 3, sporidia:—all highly *magnified.*

16. BULGARIA, *Fries.*

1. Bulgaria *arenaria*, Lév., *Ann. Sc. Nat.* Ser. 3. vol. v. p. 253. Lycoperdon arenarium, *Pers. in Freyc. Voy.* p. 179. t. 1. f. 2. *Gaud. l. c.*

Hab. Falkland Islands; "très-commun en Mars et Avril, au sommet des dunes de sable qui bordent le contour de la baie Francaise au Camp de l'Uranie."

This species unfortunately was not found during the visit of the Erebus and Terror. M. Léveillé has had an opportunity of inspecting an original specimen, and finds its slender asci to contain simple sporidia.

17. CYTTARIA, *Berk.*

1. Cyttaria *Hookeri*, Berk.; parva, turbinato-obovata, obtuse papillata, pallide fusca, cupulis paucis. (Tab. CLXII. Fig. I.)

Hab. Hermite Island, Cape Horn; on living branches of the Deciduous Beech.

Receptacula communia obovata, e disco oblongo corticali enata, $\frac{3}{4}$–1 unc. alta, $\frac{1}{2}$–$\frac{3}{4}$ unc. crassa, basi attenuata, apice obtuse papillæformi, pallide fusca, glabra; contextu ut in aliis speciebus gelatinoso-carnoso, e fibris anastomosantibus; cupulis paucis, primum materie gummosa repletis, demum vacuis; ascis linearibus truncatis, paraphysibus linearibus quandoque furcatis immixtis. *Sporidia* ignota.

The genus *Cyttaria* is peculiar to the Southern hemisphere, and unless Commerson's habitat, to be mentioned presently, should prove correct, to the more temperate latitudes. All the species known at present grow on living beech; *Cyttaria Berteroi* on *Fagus obliqua*, the Fuegian species on *Fagus betuloides*, that of Tasmania on *Fagus Cunninghami*, and *Cyttaria Hookeri* on *Fagus Antarctica*. The species, on which *Cyttaria disciformis*, Lév., grows, has not been ascertained. It is probable that the genus occurs also in New Zealand, where there is a species of beech closely allied to *Fagus Cunninghami*. There exists, indeed, in Monsieur B. Delessert's Herbarium, a species purporting to have been collected in the Isle of Bourbon, by Commerson, but though the locality* is very precisely indicated, it is probable, both on account of the difference of climate and the absence of the genus *Fagus* in that island, that there is some mistake about the specimen.

All the species seem to grow from a distinct disc, which doubtless, as in *Podisoma*, produces a fresh crop every season. The disc bursts through the cuticle, and is formed either entirely of the lower portion of the bark, or of that and the upper stratum of the wood, which are split longitudinally or in the direction of the medullary rays, the fissures being traversed by loose threads of mycelium. Sometimes, also, there are traces of mycelium in portions of bark where no disc has been protruded. The structure of the bark is often much deranged, and sometimes quite disorganized. The base of the receptacles is attenuated, and penetrates generally to the dotted vessels. In *Cyttaria Gunnii*, which seems more truly cortical, there appears always to be a fascicle of such vessels in connexion with the base penetrating through the cortical stratum. I do not find this to be the case in *Cyttaria Hookeri*. The structure of the substance of the receptacles is so different in the plant when dry, from that in the same species when

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* The label attached to the specimen is literally as follows:—

"Elvela Clathrus: sessilis scutellæ instar concava, brunnea subterius murina Commerson. Vel acaulis scutelliformis in concavitate fusca subterius e murino cinerascens. Comm. Entre la Rivière du Rampart et Langevin St. Vincendan, à Bourbon.

Envoié à M. Linné sous le No. 1 (inconnu à M. Linné) An. 1779." (Such appears to be the date, but Commerson died at the Isle of France, in 1773, and the elder Linnæus in 1778.

preserved in spirits, as to be scarcely recognizable. I had, at first, on examining dried specimens of *Cyttaria Gunnii*, fancied that I had made some mistake in the analysis given in my paper in the 19th volume of the Linnean Transactions. The fact is, that when a very thin slice of the dried plant is placed on the field of the microscope, the gelatinous coat of the threads of which it is composed becomes visible; while in the plant preserved in spirits, the jelly seems to form one common mass in which the central tube alone is exhibited, and when the plexus of filaments is drawn out with the point of a lancet, they appear far less curled than they do *in situ*. Perfect sporidia have not at present been observed in any species.*

PLATE CLXII. *Fig.* I.—1, *Cyttaria Hookeri*, Berk., of the natural size, on a living twig of *Fagus Antarctica*; 2, vertical, and 3, transverse sections of a single plant, of the natural size; 4, asci and paraphyses; 5, curious state of asci; 6, part of the tissue from the darker part of a specimen preserved in alcohol; 7, ditto from lighter part artificially extended; 8, portion of intercellular tissue of *Cyttaria Gunnii* as seen in a dry specimen; (the same structure is found in dry specimens of *Cyttaria Hookeri*, and in *Cyttaria Darwinii*, after it has been preserved in alcohol and dried for the Herbarium); 9, horizontal slice from portion of bark nearest to the wood, in a part of a twig not externally attacked by *Cyttaria*, to show the mycelium penetrating the cells; 10, slice of fructifying disc, showing two sorts of tissue of the bark, interrupted by a cavity which is traversed by mycelium; 11, slice of bark infested with mycelium; 12, slice from the outer surface of the wood; 13, section through a fructifying disc, showing fissures radiating from wood through the spongy portion of the bark, which is greatly increased in volume, and also a cavity traversed by mycelium parallel to the cuticle. The lower portion of the fungus penetrates in this case to the wood; occasionally, however, it does not penetrate quite so far:—all the above figures, with the exception of the first two, are more or less *magnified*.

18. ASTERINA, *Lév.*

1. ASTERINA *pelliculosa*, Berk.; effusa, tenuissima, peritheciis punctiformibus depressis atro-fuscis in mycelio fusco a matrice solubili sparsis. (TAB. CLXIV. Fig. I.)

HAB. Chonos Archipelago; on leaves of an *Eugenia*; *C. Darwin, Esq.*

Amphigena, atro-fusca; maculæ irregulares, varie effusæ punctiformesque, e fibrillis radiantibus intertextis ramis patentissimis formatæ, demum e matrice solubiles; interstitiis sæpe strato celluloso tenuissimo repletis.

I have not detected fructification; but the species certainly belongs to the genus *Asterina*, which is very properly separated from *Dothidea* by Léveillé. The cells of which the perithecium is composed are elongated, but very irregular, and I find similar cells often filling up the interstices left by the crossing of the radiating threads. Sometimes the mycelium is very obscure and the species then assumes quite a different appearance, the fructifying cells predominating and the patches presenting merely a brown stain studded with darker specks.

PLATE CLXIV. *Fig.* I.—1, leaves of *Eugenia*, with *Asterina pelliculosa*, Berk., of the natural size; 2, part of perithecium seen from the under side; 3, filaments of mycelium:—highly *magnified*.

2. ASTERINA *stictica*, Berk.; minutissima, omnino punctiformis, mycelio obscuro, peritheciis depressis atro-fuscis margine membranaceo pellucido. (TAB. CLXIV. Fig. IV.)

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* The Tasmanian species, of which I have seen dried specimens only, differs from *Cyttaria Darwinii* in the total absence of the granulations at the base of the receptacle. It may be characterized,—

CYTTARIA *Gunnii*, Berk.; receptaculo subgloboso demum cavo, basi non primum distincte stipitiformi nec scabra, cupulis parvis.

HAB. Tasmania; on *Fagus Cunninghamii, R. C. Gunn, Esq.*

The specimens are hollow when dry. I cannot say whether such is also the case in *Cyttaria Darwinii*.

Hab. Hermite Island, Cape Horn; on leaves of *Viola tridentata*.

Amphigena, punctiformis. Mycelium valde obscurum, e filamentis paucis brevibus parce ramosis. *Perithecia* depressa, atro-fusca, e cellulis radiantibus elongatis subregularibus formata; margine tenui lacerato membranaceo pellucido.

Neither have I been able to detect fructification in this plant, but the genus is I believe certain.

Plate CLXIV. Fig. IV.—1, *Viola* attacked with Fungus of the natural size; 2, leaf of ditto and Fungus; 3, perithecium; 4, portion of edge of ditto:—highly *magnified*.

3. Asterina *Darwinii*, Berk.; epiphylla, maculis parvis orbicularibus e fibrillis radiantibus articulatis inarticulatisque, peritheciis irregularibus demum depressis centralibus margine laciniato. (Tab. CLXIV. Fig. II.)

Hab. Cape Tres Montes; on *Azara lanceolata*; *C. Darwin, Esq.*

Maculæ epiphyllæ, orbiculares, $\frac{1}{2}$–1 lin. latæ, e fibrillis radiantibus reticulatisque, partim e margine perithecii, partim e superficie inferiore enatæ, breviter articulatæ, aut omnino simplices. *Perithecia* primum irregularia, subelevata, demum depressa, margine laciniato laciniis denticulatis. *Asci* ut in reliquis speciebus globosi; *sporidia* oblonga, biloculata.

Apparently different from *A. Azaræ*, Lév., in its perithecia, which are not depressed in the centre, as in that species. Unfortunately I have no opportunity of comparing them. The perithecium, both here and in *Asterina microscopica*, splits from the centre in a radiating manner when slightly pressed.

Plate CLXIV. *Fig.* II.—1, *Asterina Darwinii*, Berk., on leaves of *Azara lanceolata*, of the natural size; 2, perithecia and mycelium; *a*, cuticle of matrix; *b*, incipient perithecium; *c*, curious processes given off from threads of mycelium; 3, fibres of mycelium; 4, portion of border of perithecium; 5, processes on threads of mycelium; 6, asci; 7, sporidia:—all very highly *magnified*.

19. EUROTIUM, *Lk.*

1. Eurotium *herbariorum*, Lk., *Obs.* vol. i. p. 29. f. 44.

Hab. On biscuit on board the 'Erebus', Jan. 3rd, 1841.

The sporangia in the specimens before me, which are very scanty, are almost destitute of flocci, but accompanied by an abundant tawny mycelium, thus confirming the opinion of Fries and Corda, that *Eurotium epixylon* is not really a distinct species. I cannot, however, think with Corda that it has the slightest affinity with *Physarum*. The morphosis has not at present been traced, and till this is done it appears better to let it remain where Fries has placed it, in the neighbourhood of *Mucor*.

The peridium is lined with a stratum of gelatinous cells, which vanish in a great measure as the plant approaches maturity. The flocci in Kze. and Schm., n. 83, are rough and dark, but I find great variation both of surface and colour.

LV. ALGÆ, *L.*

1. D'URVILLÆA, *Bory.*

1. D'Urvillæa *utilis*, Bory, *in Duperrey Voy. Bot.* p. 65. t. 1 et 2. f. 2. *Fl. Antarct.* Pt. 1. p. 167.
Laminaria cæpæstipes, *Montagne in Voy. D'Orbigny, Bot. Crypt.* p. 11. t. 2.

Hab. Tierra del Fuego, the Falkland Islands, and Kerguelen's Land; very abundant at half-tide mark and below it; also in the open ocean, between lat. 45° and 55° S., reaching the 65th degree of south latitude in the meridian of New Zealand.

This, the *Lessonia*, and *Macrocystis* are the three most remarkable *Algæ* of the Antarctic regions, especially on account of their size; the present exceeding any sea-weed, except the *Lessonia* and the *Ecklonia buccinalis* of the Cape of Good Hope, in bulk; while the *Macrocystis*, to which we shall afterwards allude, is the longest vegetable production known.

The nearest affinity of *D'Urvillæa* was considered, in the 'London Journal of Botany' (vol. ii. p. 325), to be with *Himanthalia* of the Northern and Arctic seas, an opinion to which one of us was led by observing how, in habit and locality, these species represented each other in the opposite Polar oceans. Wahlenberg, Bory de St. Vincent and Greville, all regard the curious pezizæform organ of *Himanthalia* as the frond, and the deciduous strap-shaped laciniæ as receptacles, which view is also maintained in the 'Phycologia Britannica' (t. lxxviii.) Lyngbye (the founder of the species) and Agardh, on the other hand, pronounce the frond to be swollen at the base into a bladdery stipes, furnished with strap-shaped laciniæ, over whose surface the conceptacles are scattered as in *D'Urvillæa*; and in *Xiphophora*, a genus (as pointed out by Montagne) nearly allied to the present, and which represents it in a lower latitude of the Southern Ocean. In the 'London Journal of Botany' the true analogy to the bladder of *Himanthalia* was sought in the *trumpet-shaped* stipes of *Ecklonia buccinalis*, but in that plant the growth of stipes and frond proceeds from the earliest stage, *pari-passu*, whilst the bladder of *Himanthalia* is fully developed before the straps appear.

We have nowhere seen a good representation of the beautiful cellular tissue of *D'Urvillæa utilis*, which, in its fresh state, is so regular and large as to resemble perfectly in size and structure one of the two layers of cells found in honey-comb. Most of the specimens brought to Europe are injured by pressure, which can however hardly have caused the total obliteration of structure which M. Bory's plate represents; the most accurate figure we know is given in the beautiful plate accompanying M. Decaisne's 'Essay on the fructification of Algæ'.

The spores of this and the following species are divided into four, and we cannot doubt but that this division is followed by the complete breaking up of the organ into four sporules, whose future germination resembles that described by MM. Decaisne and Thuret in *Fucus serratus* ('Annales des Sc. Nat.' Ser. 3. vol. iii. p. 10. t. 2). The conceptacles contain probably both antheridia and spores, so far as we can judge from drawings taken from the living plant, though at the time these bodies were not recognized as belonging to two differents classes of organs.

The northern limit of *D'Urvillæa* will probably be found to be the latitude of Valparaiso, or 33° S., on the West coast of South America, and 50° S., on the opposite shores of the same continent. In New Zealand it attains the parallel of 40°, but whether it inhabits any of the shores of Tasmania, or is there represented by the *Fucus potatorum*, is a question we cannot answer. Though carried by the currents along the ocean to the south of the Cape of Good Hope, (for it was collected in that meridian in the 51st degree, floating in the open ocean,) it does not appear to inhabit or be cast upon the southern extremity of Africa; and in the Indian Ocean, again, its range is not likely to be north of the Islets of Prince Edward's, the Crozet group and Kerguelen's Land. On the other hand, the south latitude it attains is probably regulated by the position of the Pack Ice, to within a few miles of which it was traced by the Antarctic Expedition, on one occasion, south of New Zealand to the 65th degree, which is probably its "ultima Thule" in any longitude; for it was there the last trace of vegetation. It grows invariably accompanied by the *Macrocystis pyrifera*.

Bory de St. Vincent states, on the excellent authority of D'Urville, that the poorer classes of West Chili use this plant for food, and that when made into soup it is very palateable, being sweet and mucilaginous. In Kerguelen's Land its enormous and weighty fronds, sometimes ten feet long, and almost too heavy for a man to lift, form the only shelter for the shells and soft animals, which there find a refuge from the flocks of aquatic birds that cover the shores and follow the receding tide.

2. D'Urvillæa *Harveyi*, Hook. fil.; radice e fibris crassis demum anastomosantibus constante, stipite perbrevi valido compresso in laminam subsolidam coriaceam apice laciniatam gradatim dilatato. Nobis *in Lond. Journ. Bot.* vol. iv. p. 249. Himanthalia D'Urvillæi, *Bory? in Duperrey Voy. Bot.* p. 135. (Tab. CLXV, CLXVI.)

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant.

Radix fibrosus, fibris crassis, inter se intricatis, demum anastomosantibus, discum callumve pertusum 2–4 unc. diametro efficientibus. *Stipes* 3–4-uncialis, $\frac{1}{2}$–$\frac{3}{4}$ unc. diametro, valde compressus, in laminam forma variam gradatim dilatatus. *Lamina* 4–8-pedalis, supra medium 1–2 ped. lata, plerumque late lanceolata, basi angustata, apicem versus in lacinias plures lineari-elongatas ligulatas abbreviatasve acutas truncatasve fissa, siccitate atro-fusca v. subpicea, opaca, dura, subfragilis, lineis superficialibus striata, v. subreticulata, e conceptaculis prominulis mamillosa; madore olivaceo-brunnea, coriacea v. flaccida, plana, lævis, intus solida, 1–4 lin. crassa. *Conceptacula* sphærica, per totam frondem sparsa, poro inconspicuo pertusa, filis articulatis sporisque basifixis repleta. *Sporæ* ut in *D. utili*, varie quaternatim divisæ, limbo hyalino cinctæ.

Always considerably smaller than the *D. utilis*, of a much thinner texture, and readily distinguishable by its fibrous root. I have never observed the frond of even the largest state of this species to be filled with those elongated transverse cells which distinguish the former.

The structure of the fronds is seen to consist, on a transverse section, of a dense narrow layer of cortical substance, which gradually becomes more open inwards, and there breaks up into parallel lamellæ projecting towards the centre of the frond. These are less densely packed inwards, and are united at right angles by similar very short plates, together forming a loose cellular tissue, whose walls are thickened at the angles; which, again, at the very centre of the frond, are gradually resolved into a mass of slender, short, waved filaments, free or anastomosing and floating in a gelatine.

The affinity of the *Laminaria potatorum* is probably with this genus; it is described, by M. Kützing, under the generic name of *Sarcophycus* (Phycologia, p. 392). I have examined a very small fragment of the plant, and find the spores to be contained in cysts, altogether like those of *D' Urvillæa* and *Xiphophora*.

Plates CLXV, CLXVI.—1, transverse slice of frond; 2, vertical section of ditto; 3, spores and antheridia; 4, spores:—highly *magnified*.

2. SCYTOTHALIA, *Grev.*

1. Scytothalia *Jacquinotii*, Mont., *in Voy. au Pole Sud, Bot. Crypt.* p. 86. t. 5.

Hab. Graham's Land; lat. 63° S., floating in the ocean, *Dr. Lyall.* Deception Island, New South Shetlands; *Mr. Webster.*

An accurate description of this noble sea-weed is given by its discoverer, Mr. Webster, R.N., in the Appendix to the Narrative of Capt. Foster's Voyage; though nothing was known of the species, botanically, until specimens were received by Dr. Montagne, from the Herbarium of the French South Polar Expedition, collected within a very few miles of the spot where it was again seen by the Antarctic Expedition, and obtained by our indefatigable friend, Dr. Lyall.

The existence of this sea-weed on the Icy shores of an Antarctic land, in the longitude of Cape Horn, is a most singular and anomalous fact; for I believe it to be the only species of the tribe *Cystoseireæ*, which inhabits the colder or Antarctic seas of South America; though many abound in similar temperate latitudes of New Zealand, Lord Auckland's group, New Holland, and Tasmania. We have thus, under the most rigorous skies, the representative of a group, the total absence of whose other species in warmer seas of the same longitude, was supposed to be owing to a low degree of temperature being destructive to its life. The said group of *Cystoseireæ* is not here represented by a species in any way indicative of its habitat being far removed from its congeners, or of its locality being uncongenial,

except by one of its own aspect; for its nearest and, indeed, very near ally, is a native of New Holland; whilst in size, luxuriance and beauty of growth, the present surpasses not only all other species of the genus, but almost the whole of the group *Cystoseireæ*.

We are accustomed to regard the ocean as so ever-active and powerful an agent in facilitating migration, and its uniform temperature is so conducive to the general diffusion of species, that it seems almost wonderful that *Algæ* should have limits to their distribution, especially in waters which gird the globe on the same parallel of latitude, and whose unchecked swells and currents literally extend over every degree of longitude. The remarkable increase in temperature of the tropical over the polar seas of the Atlantic may, and probably alone does, check the progress of the *Macrocystis* in its course from Cape Horn to the Equator in that ocean, for, as I shall afterwards show, the same sea-weed can float with the colder currents of the Pacific from the same Cape to Behring's Straits; but no such obstacle prevents the fullest interchange of *Cystoseireæ* between New Zealand and the temperate seas of South America. It, however, is the fact, that whilst this group literally abounds in certain latitudes and longitudes, which are those of New Holland and the West Pacific, they are nearly absent from analogous positions in the longitude of South America.

Throughout all latitudes the two tribes *Fucoideæ* and *Cystoseireæ* form that prevailing marine vegetation to which the name *sea-weed* is commonly applied; and the different genera so far arrange themselves within geographical limits as to present, with such few exceptions as the *Scytothalia Jacquinotii*, a most harmonious assemblage. Thus, in the opposite colder and frigid zones the waters are inhabited by certain genera of *Fucoideæ* which are in a great measure representatives of one another; as, in

the north cool zone	*Fucus* proper, and *Himanthalia*,	are represented in analogous southern zones, by	*D'Urvillea*, and *Sarcophycus*, Kütz.

None of these genera approach the tropics, for the *Fucoideæ* abound towards the poles, and there attain their greatest bulk, diminishing rapidly towards the Equator, and ceasing some degrees from the Line itself. The representatives of the *Cystoseireæ* in the higher latitudes of the opposite hemisphere, are equally appropriate with those of *Fucoideæ*, for we have in

the north cool zone	*Cystoseira*, and *Halidrys*,	represented in the south cool zone, by	*Blossevillea*, and *Scytothalia*;

whilst the immense genus *Sargassum* finds its maximum in lower latitudes, and under the Equator itself.

Such are the salient features of the distribution of these tribes, which are not influenced by the minor divisions, chiefly local assemblages of small genera, affecting exclusively certain coasts or bays.

3. LESSONIA, *Bory*.

1. Lessonia *fuscescens*, Bory, *in Duperrey Voy. Bot. Crypt.* p. 75. t. 2. f. 2. et t. 3. *Post. et Ruppr. Illust. Alg.* p. 2. t. 3 et p. 4. t. 39. f. 14–18. L. flavicans, *D'Urville, in Mém. Soc. Linn. Paris,* vol. iv. p. 594. (Tab. CLXVII., CLXVIII. *A.*, and Tab. CLXXI. *D.*)

Hab. Hermite Island, Cape Horn, and Falkland Islands; most abundant, always far beyond low-water mark. Christmas Harbour, Kerguelen's Land; rare

The fructification of the species of *Lessonia* occurs, as in *Macrocystis*, upon the surface of the fronds, and there forms large patches. In the present species the sori are situated beyond the middle of the leaf, they are oblong and nearly as broad as the lamina, of which they carry away the upper part when decaying, causing their broad apices to be two-horned. In none of our specimens is the point perfect, all the spores we have seen being situated on the edges of the sorus, which has itself fallen away from the frond. The air-cells are less numerous, and the spores are smaller, shorter, more densely packed than in the following species, and covered

with a very thin cuticular layer of the frond. The presence of this cuticle is owing to the peculiar manner in which the superficial or sporiferous cells of the frond dehisce transversely, allowing the dispersion of the spores (shown in the dissection of *Macrocystis*, given at PLATE CLXIX., CLXX. *Fig.* 2).

This and the following are truly wonderful *Algæ*, whether seen in the water or on the beach; for they are arborescent, dichotomously branched trees, with the branches pendulous and again divided into sprays, from which hang linear leaves 1–3 feet long. The trunks usually are about 5–10 feet long, as thick as the human thigh, rather contracted at the very base, and again diminishing upwards. The individual plants are attached in groups or solitary, but gregarions, like the pine or oak, extending over a considerable surface, so as to form a miniature forest, which is entirely submerged during high-water or even half-tide, but whose topmost branches project above the surface at the ebb. To sail in a boat over these groves on a calm day affords the naturalist a delightful recreation; for he may there witness, in the Antarctic regions, and below the surface of the ocean, as busy a scene as is presented by the coral reefs of the tropics. The leaves of the *Lessonia* are crowded with *Sertulariæ* and *Mollusca*, or encrusted with *Flustræ*; on the trunks parasitic *Algæ* abound, together with *Chitons*, *Patellæ*, and other shells; at the bases, and amongst the tangled roots swarm thousands of *Crustacea* and *Radiata*, whilst fish of several species dart amongst the leaves and branches. But it is on the sunken rocks of the outer coasts that this genus chiefly prevails, and from thence thousands of these trees are flung ashore by the waves, and with the *Macrocystis*, and *D'Urvillea*, form along the beach continued masses of vegetable rejectamenta, miles in extent, some yards broad, and three feet in depth; the upper edge of this belt of putrefying matter is well in-shore, whilst the outer or seaward edge dips into the water, and receives the accumulating wreck from the sub-marine forests throughout its whole length. Amongst these masses the best *Algæ* of the Falklands are found, though if the weather be mild, the stench, which resembles putrid cabbage, is so strong as to be almost insufferable. The ignorant observer at once takes the trunks of *Lessonia* thus washed up for pieces of drift-wood, and on one occasion, no persuasion could prevent the captain of a brig from employing his boat and boat's crew, during two bitterly cold days, in collecting this incombustible weed for fuel!

The trunks, which contract to one-fourth of their original dimensions when dry, and become deeply furrowed, are perfectly smooth and cartilaginous when fresh. On being cut across, the curious appearance of concentric elliptical rings, in many respects similar to, though very different from, those of an Exogenous trunk, is very evident. These rings surround a lance-shaped pale line, which occupies the broad axis of the compressed stem, without reaching across it, and appears to afford some rude indication of the age of the plant, though of this we could by no means satisfy ourselves. It is singular that this, the most arborescent of the *Algæ*, and the beautifnl *Usnea melaxantha*, the most tree-like in form of the *Lichens*, are nearly the only plants of the Orders to which they respectively belong, conspicuously presenting even a semblance, if it be no more, to a growth that indicates an increase by periodical accessions to the circumference.

The substance of the trunk of the *Lessoniæ* is very usefully employed by the Gauchoes, for knife-handles*; the haft of the instrument is plunged into a rudely-shaped piece of this weed, which contracts into a substance harder than horn. The range of the present species is from the Falkland Islands to Cape Horn, and thence north along the coasts of South America probably to Valparaiso.

PLATE CLXVII.—CLXVIII. *A.*—apex of a branch and fronds, of the natural size; *A.* 1, portion of stem showing layers of cellular tissue and air-cell:—*magnified.*

2. LESSONIA *nigrescens*, Bory, *in Duperrey Voy. Bot. Crypt.* p. 80. t. 5. *Post. et Ruppr. Illust. Alg.* pp. 2 et 4. t. 4 et 39. f. 11 et 13. (TAB. CLXVII.—CLXVIII. *C.*)

HAB. Hermite Island, Cape Horn, and the Falkland Islands; very abundant, with the former species.

A species very similar to the preceding in general appearance, but of a different consistence and colour.

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* The stipes of *Laminaria digitata* is used by the Orkneymen for similar purposes, as is noticed by our excellent friend Dr. Neill, in his interesting account of the Orkney Islands.

Fructification forming a large oblong or linear sorus between the base and middle of the frond, of a rich red-brown colour when held between the eye and light, imbedded in the thickened substance of the frond, which decays with it. On a transverse section the soriferous lamina is seen to be hollow in the centre; or rather the sorus is formed of two parallel plates, each covered externally with densely aggregated spores, which occupy what are the superficial cells of other parts of the frond. Below the superficial series of cells, and especially in fertile specimens beneath the spores, are several, 4–6 or many more, air-cavities, reposing on, and separated from each other by a loose cellular tissue, which is hexagonal, transparent, the cells becoming transversely elongated and finally towards the centre of the frond breaking up into a layer of matted filaments, which surrounds the cavity, a structure resembling very closely that of *Fucus confluens* as given by Turner. When dry, the surface of the plant is covered with white efflorescence, similar to that of *Laminaria saccharina*, it has been analysed by my friend Mr. Stenhouse of Glasgow, who finds it to contain excellent Manna, and who further informs me that this and the other larger Antarctic *Algæ* are peculiarly rich in Iodine.

The *Lessonia quercifolia* of Bory, is described and figured as having the frond covered with cavities containing spores, whence it would appear to belong to *Fucoideæ*, and to be more allied to *D'Urvillea* than to this genus.

Lessonia ciliata of Postel and Rupprecht, is certainly only the young state of *Macrocystis pyrifera*.

Plate CLXVII.—CLXVIII.—*C.* transverse section of frond in fructification:—highly *magnified*.

3. Lessonia *ovata*, Hook. fil. et Harv.; stipite brevi vage dichotome ramoso, ramis brevibus divaricatis, frondis laciniis breviter petiolatis, petiolo in laminam ovatam lineari-ovatamve olivaceo-fuscescentem submembranaceam dilatato. (Tab. CLXVII.—CLXVIII. *B*; et Tab. CLXXI. *C.*)

Hab. Hermite Island, Cape Horn, and the Falkland Islands; very abundant.

Radix e fibris perplurimis crassis intricatis massam 1–2 ped. latam efficientibus. *Stipites* e radice plurimi (ut in *Macrocysti*) 4–6 unc. longi, torti v. flexuosi, crassitie pollicis humanæ, dichotome fissi, demum solitarii, incrassati, subarborescentes. *Laminæ* pedales, colore et substantia *L. fuscescentis*, juniores basi obscure sinuato-dentatæ; adultæ integerrimæ.

Certainly very near *L. fuscescens*; but as far as could be judged on examining the plant, both on the shores it inhabits and in the herbarium, it has good claims to be considered a distinct species, especially in the many short stipites, short branches and broad leaves. Never having seen the fruit, however, it may prove the young of *L. fuscescens*, for we can well suppose only one out of the many stems of that plant to attain any great dimensions, and the lamina of the young state to be broader than that of the adult.

The ramification of all the species of *Lessonia* is dichotomous; each plant in a young state consists of a few rooting and clasping fibres, giving off a single stem (or petiole) and frond. This frond splits at the base, and as the growth proceeds, the fissure extends vertically upwards, till the original frond is bisected; each of the two parts is now a complete frond, altogether similar to the primary one, and provided with a petiole of its own: these again divide, and the process is repeated. Hence the rapid growth of this genus, and hence the origin of the flattened form of ramuli and elliptic core which is placed in the long axis of these ramuli and across the axis of the terete stem. It was not observed whether any relation existed between the number of branches on the whole frond and of concentric rings in the trunk. The latter are probably the indices of the number of times that a subdivision of the laminæ has occurred, supposing that all split at about the same epoch, rather than a register of the years the vegetable has existed; as the following account of the anatomy of this species will show.

A branched portion of the plant, terminated by four laminæ, necessarily presents subdivisions of three periods of growth: 1st, the petioles of the four laminæ; 2nd, the two ramuli from which the four are given off; and 3rd, the one branch which gives off the two latter: these were successively examined.

1. The base of the lamina or petiole is exceedingly compressed, and composed of a mass of cellular tissue of

different textures, all, however, very gelatinous, and modifications of the three layers forming the leaf, there are 1st, the superficial tissue (or cortex) consisting of small cells, closely packed and full of chromule, gradually opening out into, 2nd, an intermediate tissue of much larger cells more loosely placed, with little or no contained chromule, separated by much gelatine; and 3rd, an elliptical core placed in the long axis of the petiole, composed of still smaller cells, separated by broader masses of gelatine, which latter is permeated by canals, full, as are the small cells, of chromule.

2. Each ramulus, from which proceed the two petioles, whose structure we have just described, presents no very important difference from them; the core no longer stretches across it, however, but the whole petiole within the superficial portion is augmented by a newly developed though indistinct zone of cellular tissue, thus deposited between the superficial (or cortical) and intermediate tissue. At this period the cortex is somewhat broader, and the intermediate tissue has become, through the absorption of the gelatine, much more conspicuous; the cells being larger and the spaces between them narrower; little or no change is perceptible in the core itself.

3. The branch is very materially different from either of the above, for what was hitherto the petiole is now enclosed (all but its cortex) in a very broad zone of cellular tissue, whose cells are large and thin towards the old tissue, elongated and of a different shape, so as to show the line of separation between the two periods of growth (see *B* 1, of the plate *Lessoniæ*).

From this time forward the normal mode of growth followed by the stem exhibits an additional layer or zone of cellular tissue for every subdivison of the frond, (shown at *A* 1, where six are interposed between the cortex and core). It is not probable, however, that this numerical relation can be always evident, or that the number of subdivisions of the frond will indicate the rings of growth in a large stem. This uncertainty arises from the branches being frequently broken off; added to which, the growth of the sea-weed is very rapid, and there being no period of rest, irregular zones may be expected, or their absence from those branches of the plant whose leaves are injured.

In their anatomy the stems of *L. fuscescens* and *L. nigrescens* do not differ much from that of this species, except that the air-cells are copious in the stems of the former, and much rarer in the latter; in which also the cortical substance is much broader.

In the elegant *Lessonia Sinclairi*, Harv. MSS., from California, the stipes (which bears but a solitary linear frond) is terete, and in the specimen we examined, contains a central core, reaching half-way across the diameter. There are apparently two rings of tissue beneath the cortex, separated by a zone of very large cells (air-cells?); whence it is difficult to account for the stem being terete, for the frond is plane, and the core three times longer than broad. Nor is it easy to explain the origin of the two zones surrounding the core; if they really be successively deposited, it is possible that the frond is two years old; if not, that the large cells are air-cells, and do not indicate a line of separation between two successive deposits.

I have stated the growth of the *Lessonia* to be very rapid; this is proved by the zones of a five-ringed stem being progressively broader towards the circumference. The probability, too, of one being added for every time the laminæ divide, and the fact that the process of subdivision is continued in geometrical progression, all favour the opinion that these *Algæ* attain their enormous bulk in a very few months. The vast masses washed up on the outer eastern shores of the East Falkland Island, and the rapidity with which they decay, are additional proofs of a singularly rapid development.

The analogy between the mode of growth exhibited by this genus and an Exogenous tree, is, though incomplete, very obvious; both increase by layers deposited outside one another, within a cortical substance, and both contain an axis of tissue different from that forming the greater part of the trunk: here, however, there are no traces of medullary rays. We conclude this subject with the observation, that the periodical increment of the trunk being dependent on, or coincident with, the formation of the laminæ, these appear to perform the office of the leaves in the higher order of plants; and that the *Lessonia* is also in this respect analogous to an Exogenous plant,

deprived of its woody tissue, for it is a stem composed of layer upon layer of cellular tissue, deposited round an axis, which, like the pith, when once formed, is afterwards but slightly modified.

PLATE CLXVII.—CLXVIII. *B.* apex of branch and frond of the natural size; *B* 1, transverse section of young stem:—*magnified.*

4. MACROCYSTIS, *Ag.*

1. MACROCYSTIS *pyrifera*, Agardh, *Sp. Alg.* vol. i. p. 47. *Nov. Act. Nat. Cur.* vol. xix. p. 297. t. 26 f. 2. *Post. et Ruppr. Illust. Alg.* p. 9. t. 6; et p. 4. t. 39. f. 22, 23. *Fl. Antarct.* Pt. 1. p. 178. M. communis, *Bory, in Dict. Class.* v. x. p. 8. M. planicaulis, *Agardh in Nov. Act. Nat. Cur. l. c.* Lessonia ciliata, *Post. et Ruppr. l. c.* (young state).

Var. β. *integrifrons*; foliis fere integerrimis planis rugoso-plicatisve. M. integrifrons, *Bory, l. c.* t. 6.

Var. γ. *angustifrons*; vesiculorum parietibus tenuibus, foliis ut in *M. pyrifera*. M. angustifrons, *Bory, l. c.* t. 8. *Agardh, l. c.* t. 26. f. 4 and 5. *Post. et Ruppr.* t. 5.

Var. δ. *zosteræfolia*; foliis anguste lineari-elongatis planis. M. zosteræfolia, *Bory, &c.*

Var. ε. *luxurians*; foliis 3–8-pedalibus 8 unc. latis basi cordatis membranaceis plicatis margine longe ciliato-dentatis, vesiculis late obovatis parietibus tenuibus, caule gracili. (TAB. CLXIX.—CLXX.)

Var. ζ. *membranacea*; foliis ut in *M. pyrifera* sed tenuissime membranaceis planis, vesiculis parvis elliptico-ovatis utrinque subacutis.

Var. η. *Humboldtii*; foliis lineari-elongatis planiusculis, vesiculis globosis tenuibus. M. Humboldtii, *auct.* M. pomifera, *Bory.*

HAB. Throughout the Antarctic seas, between the parallels of 40° and 64°, both attached, and floating over the whole ocean.

After a very attentive examination of many hundreds of specimens, we have arrived at the conclusion that all the described species of this genus which have come under our notice may safely be referred to *Macrocystis pyrifera*. Nor can these variations excite surprize, when it is considered that this gigantic weed is subject to every vicissitude of climate, of temperature, and exposure; that it literally ranges from the Antarctic to the Arctic circle, through 120 degrees of latitude; that it lives and flourishes, whether floating or attached, growing in bays, harbours, or the open sea when most distant from land; and, lastly, that it equally adapts itself to the calmest or most tempestuous situations, to waters of uniform depths or those which rise and sink with the tide, to dead water or to strong currents. One thing alone it requires, and that is, a mean depth of six or more fathoms; for, like the *Laminariæ* of our own shores, it, and others of the same tribe in the south, invariably form the outer belt of marine vegetation.

A few remarks upon the above varieties may be interesting; showing how much their characters depend upon natural causes, and how much more upon mutilations of the specimens, or changes during the operation of drying.

Variety β. *integrifrons*. This we have received from various parts of the west coast of South America; its characters rest almost entirely on the want of ciliation at the margin of the frond, which is much dependent upon the portion of the plant from which the specimen is taken, the lower leaves being always nearly entire; also on the state of the waters, those plants which grow in quiet bays having very much developed ciliæ, whilst those from the main ocean or stormy coasts are generally more entire.

Variety δ. *zosteræfolia*, is a plane and narrow-leaved state of *M. pyrifera*; we have traced all the changes in one specimen of *M. pyrifera*, from very rugose to perfectly plane. Young specimens and terminal leaves are generally

plane, and it often depends on the smoothness of the water how long they may remain so. This variety is abundant everywhere in the Antarctic seas.

Variety γ. *angustifrons*. The character, drawn from the tenuity of the vesicles, is utterly unsatisfactory, being attributable to the drying of the specimen, and the locality of the live plant. Besides the Antarctic habitats of this variety, it has been found in Chili, New Zealand, and the Indian Ocean.

Varieties ϵ. *luxurians*, and ζ. *membranacea*. If any form of this genus deserves specific distinction it is surely the noble one we have designated ϵ. *luxurians*; and yet permanent characters, distinguishing it from *pyrifera*, were vainly sought in plants gathered on the shores of Berkeley Sound. Both there and at Cape Horn these two states inhabited deep and still waters, where, as might be expected, the *Macrocystis* would acquire its greatest development, where its substance would be most membranous, its stems most slender, and the vesicles broad with thin walls, and the base of the frond broadest. We have seen no specimens of these varieties except what were brought home by the Antarctic Expedition.

Variety η. *Humboldtii*, at first sight appears different, and the specimens found on the outer shores of the Falklands we once thought might belong to a distinct species. The rounded form of the vesicles, however, which affords the main character, is not constant on specimens collected in the Coral Islands by Captain Beechey. It has been gathered at various places along the west coast of South America, from Cape Horn to the Equator, and far westward in the Pacific amongst the Coral Islands.

With regard to other states, which we have not seen, the most remarkable is the *M. Orbignyana* of Montagne (Sert. Patagon. p. 12. t. 1.), which has the vesicles remarkably lengthened and the leaf attenuated at the base above the vesicle into a distinct petiole. The *M. latifolia*, Bory, is intermediate between our ϵ. *luxurians* and *pyrifera*. *M. tenuifolia*, Post. and Ruppr., is apparently between *M. pyrifera* and *M. zosteræfolia*. The character of *M. planicaulis* is founded on the compression of the stem, produced by drying, and we have therefore quoted it as a synonym.

In thus bringing together under one, the ten species which have been described by five authors, of whom hardly one has ever seen even the genus in a living state, we are only taking advantage of opportunities which a long residence in the Southern Hemisphere has afforded. Without studying these plants on the coasts they inhabit, it is impossible to judge of the influence of local causes on their plastic forms. We venture to say that few botanists in Europe have seen even tolerable specimens from one single plant of this *Alga*, such, we mean, as give a fair idea of the differences between the leaves and bladders, along, perhaps, 300 feet of stem, with the submerged fructifying fronds from the root. Out of some thirty specimens brought home by ten different collectors and preserved in the Hookerian Herbarium previous to our visit to the seas which *M. pyrifera* inhabits, not one conveys any notion of the variations which even a solitary individual can assume.

The fructification of this plant appears to be produced only on the young newly-formed submerged leaves, where it forms large irregular brown patches or sori, causing the frond to separate into two laminæ, as in *Lessonia*. The spores are fusiform, first divided into four, each afterwards breaking up into as many sporidia. Under a high power the surface of the fertile frond is seen generally to be covered with anastomosing raised lines of a dark colour, on which the spores are placed; the spaces between are pale and transparent. We have not noticed spores, like what are figured by Agardh (l. c. t. 28. f. 11), but plenty of the kind he represents at f. 10^b of the same plate, though not contained in sporangia. These, magnified as highly as his f. 10^b, are evidently divided, as in *D'Urvillæa*. The granules also, which occur abundantly with the spores, are surrounded by a hyaline border, and divided into two to four sporidia; we suppose them to be merely small spores.

It is seldom that the history of an *Alga* is likely to afford interest or amusement to the general reader, unless it be a positively valuable plant in an economic point of view. Like the Sargasso-weed of the Tropics, however, the *Macrocystis* is so conspicuous, and from its wandering habits, often occurs so unexpectedly, that the attention of our earliest voyagers has been directed to it, and we are consequently led back by our enquiries into its first

discovery, to the annals of those perils and privations which have ever marked the progress of discovery or enterprize in the stormy seas of the south. "Nihil vilior Alga", is a saying more trite than true, and one which a seaman can never use; for these weeds often prove his unerring guide towards land, as they surely are to the direction of the currents; or become of more importance still in the case of the present plant; for it is, where growing, not only the infallible sign of sunken rocks, but every rock that can prove dangerous to a ship is conspicuously buoyed by its slender stem and green fronds, and we may safely affirm that without its presence many channels would be impracticable, and numerous harbours in the south closed to our adventurous mariners.

The first notice of the *Macrocystis*, with which we are acquainted, is of so early a date as the middle of the 16th century, and occurs in a copy of sailing directions for mariners, with the title "A Ruttier from the River of Plate to the Streight of Magelana", and forms part of "A special note concerning the currents of the sea between the Cape of Buena Esperanza and the coast of Brazilia, given by a French pilot before Sir John Yorke, Knt., before Sebastian Cabote, which pilot had frequented the shores of Brazilia eighteen voyages." (Hakluyt, ed. 2. vol. iv. p. 219). In describing the above-mentioned route, after passing Cape Sta. Martha, the trusty pilot's direction to the mariner is to "goe S.W. by W. until he be in 40 degrees, where he shall find great store of weedes which come from the coast"; and again, in pursuing the voyage after entering the Straits, "if you see beds of weede, take heed of them and keep off from them." Now, both the position assigned to the great masses of floating weed and the value of those which are attached in denoting hidden dangers, are conclusive as applying to the *Macrocystis*. These directions bear no date; but the discovery of the Strait of Magalhaens was in 1520, and the death of Sebastian Cabote took place in 1556, so that we have sufficient proof that this plant attracted the attention of the earliest Antarctic voyagers in the longitudes of Cape Horn; though it may have been noticed previously on the southern extreme of Africa or the China seas. Nor can we wonder that the attention of our forefathers should have been so early called to it, when even now it is of the first importance that the look-out man should use his utmost vigilance to detect, and promptitude to report, this weed, on approaching any of the straits and bays of the shores of Tierra del Fuego and similar latitudes. In the latest voyages that have been published, those of Capts. Foster, King, and Fitz-Roy, we find a constant watch for the "kelp" to have been kept, and caution used to avoid the "moored" pieces, together with instructions how to distinguish them from those which are floating.

The earliest scientific notice which we find of it, consists of a rude figure and description in Bauhin's "Historia Plantarum," published in 1651, where it is designated "Fucus marinus crinitus." In the year 1764, the French Navigator, Bougainville, fell in with the *Macrocystis*, Lat. 42° S., Long. 57° W., and a long description appeared in 1771, by Don Pernetty, the historiographer of that voyage, together with a sketch, when it was published as a native also of the Falkland Islands. (Pernetty Voy., vol. ii. p. 67. t. ix. f. 5.) About the same period (1771) specimens were collected by Emmanuel Kœnig (of Bale) on his voyage to India, and transmitted to Linnæus, with this observation, "Habitat in oceano Æthiopico e profundissimo mari sæpe enatans insulasque quasi formans," (MSS.); it was then published in 1771, as *Fucus pyriferus* (Linn. Mantiss. p. 311,) with the additional remark of "maximus forte omnium Fucorum." We are not sure of the precise habitat of Kœnig's specimens; but by "oceanus Æthiopicus" he probably alluded to the seas of the Cape of Good Hope, which he doubled on his way to India, and where this weed abounds.

So remarkable a plant was not likely to escape the notice of Cook, and especially of the illustrious companion of that navigator's first voyage, and we accordingly find in his narrative repeated allusions to it. It engaged the attention of Banks when entering the Straits of Le Maire in 1769, and frequently afterwards in the cooler latitudes of the southern ocean. To him we owe the first account of its gigantic dimensions. Captain Cook says, on the authority of Banks and Solander, who called it *Fucus giganteus*, that the stems attain a length of 120 feet. That these dimensions are considerably under the mark there is little doubt; though the report that specimens have been measured upwards of 1000 feet is perhaps as much of an exaggeration. Still it must be remembered that, provided the water be smooth and of sufficient extent, there are no impediments to the almost indefinite

elongation of the upper part of a plant which never branches, and whose growth is independent of all below it, even of the root. Specimens measuring between 100 and 200 feet are common in the open ocean, and these are always broken off at the lower end, either from the division of the frond by sea-animals, through whose agency the plant increases and the floating island it forms dilates, or from the impossibility of securing the whole mass from the motion of the vessel or the swell of the sea, in latitudes where no boat can be lowered. Again, D'Urville, upon whose observations in natural history the utmost reliance may be placed, states it to grow in eight, ten and even fifteen brasses of water, from which depth it ascends obliquely and floats along the surface nearly as far: this gives a length of 200 feet. In the Falkland Islands, Cape Horn and Kerguelen's Land, where all the harbours are so belted with its masses that a boat can hardly be forced through, it generally rises from eight to twelve fathom water, and the fronds extend upwards of one hundred feet upon the surface. We seldom, however, had opportunities of measuring the largest specimens, though washed up entire on the shore; for on the outer coasts of the Falkland Islands, where the beach is lined for miles with entangled cables of *Macrocystis*, much thicker than the human body, and twined of innumerable strands of stems coiled together by the rolling action of the surf, no one succeeded in unravelling from the mass any one piece upwards of seventy or eighty feet long; as well might we attempt to ascertain the length of hemp fibre by unlaying a cable. In Kerguelen's Land, the length of some pieces, which grew in the middle of Christmas Harbour, was estimated at more than three hundred feet; but by far the largest seen during the Antarctic Expedition, were amongst the first of any extraordinary length which the ships encountered, and they were not particularly noticed, from the belief that the report of upwards of 1000 feet length was true; or, at any rate, that better opportunities of testing its truth would arise in the course of a three years' voyage, than the first week of our explorations could afford. These occurred in a strait between two of the Crozet Islands, where, very far from either shore, in what is believed to be forty fathoms water, somewhat isolated stems of *Macrocystis* rose at an angle of 45° from the bottom, and streamed along the surface for a distance certainly equal to several times the length of the 'Erebus';—data, which if correct, (and we believe them so) give the total length of the stems as about 700 feet.

That isolated patches of weed should rise through such a volume of water is not incompatible with the statements we have elsewhere made, that eight or ten fathoms is the utmost depth at which, judging by our experience, submerged sea-weed vegetates in the Southern temperate and Antarctic Ocean. These exceptional cases are probably due to the parent plant having attained such a size in its birth-place near shore, as to weigh its stony moorings and deposit itself in deeper water, where an increase of the roots would unite the original base to other rocks, and thus gain a footing that defies the power of the elements.

We have stated that the elongation of the *Macrocystis* may be indefinite; but this is only true partially and in the case of detached patches: for the stem of the attached plant does not gain bulk or tenacity, after a certain period; whilst the growing dimensions of the floating portion are increasing the difference between the specific gravity of the vegetable and the element it inhabits, and consequently augmenting the strain upon the slender stem by which it is attached. At some period or other, the resistance is overcome and the floating part detached from the submerged: though at what epoch this may take place, or whether it be coincident with other phases in the life of the plant, is beyond our conjecture.

The fact that fructification is produced only on the submerged young bladderless and small frond, within a few inches of the very root, is highly remarkable. What then is the function of the floating mass of the plant? to one of whose thousand leaves, each four to six feet long, the fructifying part bears an inconceivably small proportion. Were this a phænogamic plant, we should recognize, in such foliaceous expansions, organs which fulfil a respiratory and digestive office and are subservient and necessary to the development of the more important parts of the vegetable; but in this case such a mutual dependency is not so easily traced. As in *Lessonia* the multiplication of the leaves is intimately connected with the development in diameter of the stem, so in *Macrocystis* the development of fructifying fronds may take place only at the root of the barren ones, on whose previous existence they may be dependent for their origin. These are, however, questions which propose themselves to us in the closet only,

when the prospect of solving them is gone by; and when they but add to the thousand regrets over lost opportunities, the remembrance of which weighs so heavily on the mind of every naturalist, that the brightest prospects of discovery in the fair future can never obliterate them.

So many interesting points are connected with the *Macrocystis*, that a book might be instructively filled with its history, anatomy, physiology and distribution; whilst its economy, its relation to other vegetables and to the myriads of living creatures which depend on it for food, attachment, shelter and means of transport, constitute so extensive a field of research that the mind of a philosopher might shrink from the task of describing them. We conclude with an outline of its dispersion over the surface of the globe, which is wider than that of any of the large *Algæ*.

As already mentioned, the *Macrocystis* girds the globe in the Southern temperate zone, but not in the Tropics or Northern Hemisphere, and this is a most curious trait in its history. We may first, however, trace the southern edge of the belt which it forms, and we are the better enabled to do so, because the limits of its existence, as a floating plant, were observed in six different longitudes in the passage of the Antarctic Expedition as often between the Southern Sea and the Southern Ice, within which there is no vegetation. The southern boundary of the "*Macrocystis* sea" is very much determined by the position of the ice, and the northern by the currents and temperature of the water. Thus, in the longitude of New Zealand, where open sea extends to the 65th degree, this plant is found as far as 64°, the specimens having probably been drifted originally from Kerguelen's Land or the Crozets, which are the great nurseries for it in the Eastern Hemisphere, and from whence all those drifting islets have been wafted which occur between their longitude and Cape Horn. In the longitude of Cape Horn, 58° or 60° is the highest parallel it attains, for it has not been found amongst the South Shetlands; further east, in the South Atlantic, its parallel is probably still lower; till in the meridian of the Cape of Good Hope it is 40 degrees removed from the Pole, being seen no further south than 50° 30′. There the Atlantic Ocean specimens are derived from the southern extreme of America and the neighbouring islands. Its northern range on the other hand is dependent, 1st, on the temperature of the ocean;—for it neither enters the Tropics of the Atlantic, nor passes up the shores of Africa or into the Indian Ocean; whilst it does inhabit the whole surface of the Pacific Ocean and the west coast of both Americas: 2ndly, on the currents, for when north of the influence of the uniform westerly movement of the waters in the Antarctic Ocean, it is deflected with their courses and carried, while temperature allows, to whatever seas receive those waters. Thus, the South Polar current divides at Cape Horn, one portion following the west coast of South America to Cape Blanco and the Galapagos Islands under the Equator, carrying the *Macrocystis* with it, which then enters the cold waters which flow from the Arctic Islands of the Pacific, and over whose entire surface it is spread, reaching Kamtschatka, New California, and the Aleutian Islands: so that in the longitude of Western America the *Macrocystis* ranges from the Arctic to the Antarctic circle. The eastern branch of the Cape Horn current passes between the Falkland Islands and Fuegia, conveying vast masses of this sea-weed 200 miles north of the Falklands, as low as the 44th degree, and some even reaching the Plate river in 35°, its northern limits in the Western Atlantic. Further west in the Antarctic ocean its distribution is less known; but since it does not occur far north of the Cape of Good Hope in that meridian, we may conclude that it ceases about the 34th degree. With regard to the South African habitat, it is difficult to account for so vast a quantity as the Agulhas Bank exhibits, for these waters, 130 miles in breadth, flowing with a rapid stream from the N.E. or Indian Ocean, literally swarm with *Macrocystis*, which possibly is taken up from the northern edge of the westerly Polar current (which flows along the parallel of 45° S.) by the Indian (or N. E.) current in question.

Its northern limit in the Indian Ocean is not ascertained, but it lies probably south of a line drawn north-east from the Cape of Good Hope to Australia, upon whose western shores the plant is found, as also in New Zealand, and on the coast of China to the north, to which sea it perhaps migrates from the North Pacific Ocean, Kamtschatka, &c.

PLATE CLXIX., CLXX. Frond of *M. pyrifera*, var. *luxurians*, of the natural size; 1, thin slice of fructifying

frond; 2, portion of ditto showing the two modes of escape of the spores, either free or contained in the original cells :—very highly *magnified*. (The quaternary division of the spores was not seen in this dissection.)

5. LAMINARIA, *Lamourx.*

1. Laminaria *fascia*, Ag., *Syst.* p. 273. *Harv. Phyc. Brit.* t. 45.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; not common.

These specimens do not appear to differ from British ones in any particular. The *L. fascia* is a northern, but not Arctic species, found along the shores of England, Ireland, and the German Ocean; and under the name of *L. debilis*, it also inhabits the Mediterranean Sea.

6. CAPEA, *Montagn.*

1. Capea *biruncinata*, Montagn. *in Flor. Canar. Crypt.* p. 140. t. 7. Laminaria biruncinata, *Bory in Duperrey Voy. Bot. Crypt.* p. 101. t. 10. L. radiata, β. exasperata, *Turner Hist. Fuc.* vol. ii. p. 16.

Hab. Hermite Island, Cape Horn; *J. E. Davis, Esq.*

Our solitary specimen is barren, and does not appear different from the plant of the Canary Islands, New Holland, and New Zealand.

We quite agree with Dr. Montagne as to the propriety of separating this genus from *Laminaria* and *Ecklonia*, which latter is its Cape of Good Hope representative, and is reported to be a native of the Falklands, probably erroneously; as is the station assigned to the *Macrocystis* of the Canary Islands. On the other hand, there is no reason why the *Macrocystis* should not accompany the *Capea*, whose principal parallel is certainly in the Southern Hemisphere.

The fructification of *Ecklonia* is scarcely known; we have seen what appear to be young sori in the form of opaque thickened spots on the frond. A transverse section shows the cortical layer to be thickened and formed of parallel tubes full of granules, analogous to what such fructification as Montagne's beautiful analysis of *Capea* represents would be in an immature state, but we are extremely doubtful of our analysis.

7. DESMARESTIA, *Lamourx.*

1. Desmarestia *media*, Grev., *Synops.* p. 40. Sporochnus medius, *Agardh, Ic. Alg.* p. 259. t. 16. D. anceps, *Montagne in Voy. au Pole Sud, Bot. Crypt.* p. 51?

Hab. Cockburn Island, (lat. 64° 12′ S., long. 57° W.); floating in the sea, abundant.

One of the most Antarctic of plants and probably common in many latitudes; for, under other names, it has been noticed as a native of Peru, of various parts of the Pacific Ocean, and even north to the Arctic circle. It is singular that a plant of this small genus, and from which the present is perhaps not specifically distinct, the *D. aculeata*, should be among the highest Arctic *Algæ*, inhabiting Spitzbergen in 80° N. lat. Montagne's *D. anceps*, confessedly described from imperfect specimens, is very probably this plant, having been gathered in nearly the same locality: or else it is the *D. ligulata*, a Cape Horn species.

2. Desmarestia *viridis*, Lamourx.—*Flor. Antarct.* Pt. 1. p. 178.

Var. β. *distans*; ramis remotioribus.

Hab. Hermite Island, Cape Horn, Falkland Islands, and Kerguelen's Land; very abundant. Var. β, Kerguelen's Land.

The range of *D. viridis* in the Northern Hemisphere is not extensive, and almost confined to the shores of England and of the German Ocean. It is, however, found at Unalaschka, according to Postel and Rupprecht.

3. Desmarestia *ligulata*, Lamourx. *Grev. Alg. Brit.* p. 37. t. 5. *Turner Hist. Fuc.* t. 99.

Hab. Hermite Island, Cape Horn; rare.

Our specimens in no way differ from European ones. It is probably a common Antarctic species, for we have received it from the east coast of Patagonia.

4. Desmarestia *herbacea*, Lamourx. *Montagne in Voy. au Pole Sud, Bot. Crypt.* p. 50.

Hab. Port Famine, Strait of Magalhaens; *M. Hombron*.

We have seen no Antarctic specimens of this plant, which is also a native of the Cape of Good Hope, Concepcion on the west coast of South America, and of North-west America.

5. Desmarestia *chordalis*, Hook. fil. et Harv.; fronde coriaceo-cartilaginea compressa anguste lineari tri-quadripinnata, pinnis pinnulisque longissimis oppositis distantibus apice longe nudis, pinnulis sæpe alternis elongatis inermibus chordiformibus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 249.

Hab. Christmas Harbour, Kerguelen's Land; very abundant, in two to five fathom water.

Alga socialis, rupicola, cæspitem gramineam submarinam late extensam efficiens. *Frondes* e radice anguste scutata valde elongatæ, 3–5-pedales. *Stipes* 1–1½ lin. diametro. *Pinnæ* paulo angustiores, pinnulis ½ lin. latis.

A very noble species, recognizable at once by the long whip-like naked apices of its pinnæ. In the great abundance of this *Alga* consists one of the peculiarities in the submarine vegetation of Kerguelen's Land.

6. Desmarestia *Rossii*, Hook. fil. et Harv.; fronde coriaceo-cartilaginea compressa lineari bi-tripinnata circumscriptione anguste lanceolata, pinnis pinnulisque omnibus oppositis basi apiceque attenuatis acutis erectis v. ultimis appressis margine integerrimis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 249. (Tab. CLXXII., CLXXIII.)

Hab. Staten Land, *A. Menzies, Esq.* Hermite Island, Cape Horn, and the Falkland Islands; very abundant.

Frondes 4–8 ped. longæ, anguste lanceolatæ, nunc apices versus dilatatæ, inferne bipinnatæ, supra medium tripinnatæ, valde coriaceæ. *Caules* stricti, 2–3 lin. lati. *Pinnæ* 1 lin. latæ pinnulæque oppositæ, suberectæ, axillis acutis, basi apiceque attenuatæ.

Even a nobler species than the last, from its great size and opposite ramification. In general form it resembles the *D. ligulata*, but is of a totally different consistence, being much more rigid, coarser, and thicker. The fronds are sometimes curiously dilated towards the apex, when they are generally linear below the expanded portion. This appearance is produced by the upper pinnæ elongating and becoming thrice pinnated; they are then also of a paler colour than the lower ones.

Plate CLXXII., CLXXIII. *Fig.* 1, transverse section of stem; *fig.* 2, horizontal, and *fig.* 3, vertical slice of the same:—*magnified*.

8. DICTYOSIPHON, *Grev.*

1. Dictyosiphon *fasciculatus*, Hook. fil. et Harv., *in Fl. Antarct.* Pt. 1. p. 178. t. 49. f. 1.

Hab. Berkeley Sound, Falkland Islands, and Christmas Harbour, Kerguelen's Land.

We have before noticed this plant, which is the Southern representative of the Northern and Arctic *D. fœniculaceus*.

9. STEREOCLADON, *Hook. fil. et Harv.*

Frons solida, olivacea, filiformis, ramosissima, e cellulis endochromate repletis longitudinaliter seriatis formata. *Sporidia* solitaria, sparsa, in frondis peripheria immersa, nigro-olivacea, elliptica.—*Genus dubiæ affinitatis, vix in tribu* Dictyotearum *includendum.*

1. Stereocladon *Lyallii.* (Tab. CLXXIV.)

Hab. Cape Horn, and the Falkland Islands; thrown up on the beach, rare.

Frons 5–6 unc. longa, setacea, decomposito-ramosissima, ramificatione valde irregulari. *Caulis* percurrens v. parce divisus, vix dichotome ramosus. *Rami* alterni, patentes, flexuosi, decompositi; *ramuli* omnes patentes, flexuosi v. squarrosi, multifidi, apices acuti. *Substantia* rigidula, chartæ laxe adhærens. *Color* olivaceus. *Sporidia* numerosissima, per frondis partem superiorem dense sparsa, immersa.

This remarkable plant resembles, to the naked eye, *Dictyosiphon fæniculaceus*; but its stem and branches are solid throughout, and the seeds are immersed endwise, in the substance of the branch.

Plate CLXXIV. *Fig.* 1 and 2, portions of branch and ramuli; *fig.* 3, segment of ramulus; *fig.* 4, transverse section of fructifying stem:—*magnified.*

10. CHORDA, *Stackh.*

1. Chorda *lomentaria,* Grev., *Alg. Brit.* p. 50. t. 9. *Fl. Antarct.* Pt. 1. p. 179.

Hab. Berkeley Sound, Falkland Islands, and Christmas Harbour, Kerguelen's Land; abundant.

Very abundant on the shores of Europe, from the Mediterranean Sea to the German Ocean. Also found in Lord Auckland's Group, but not, that we are aware, within the Tropics.

11. ASPEROCOCCUS, *Lamourx.*

1. Asperococcus *sinuosus,* Bory, *Morea,* p. 326. Encœlium sinuosum, *Ag. Sp. Alg.* vol. i. p. 136.

Hab. Falkland Islands; abundant. Hermite Island, Cape Horn.

The distribution of this species is very wide, continuing through the Tropics from the latitude of Spain to the Falkland Islands. We have specimens from the collections of Humboldt; also from Vogel, gathered in Tropical Africa, and from the Red Sea and Persian Gulf. It neither inhabits Northern Europe nor is found on any shores south of the Falklands.

12. ADENOCYSTIS, *Hook. fil. et Harv.*

1. Adenocystis *Lessoni,* Hook. fil. et Harv., *Fl. Antarct.* Pt. 1. p. 179. t. 69. f. 2.

Hab. Hermite Island, Cape Horn; Falkland Islands; Kerguelen's Land, and Cockburn Island, lat. 64° 12′ S., long. 57° W.; very abundant.

Apparently quite an Antarctic species, though much resembling some of the *Dumontiæ* figured in Postel and Rupprecht's great work on the *Algæ* of the Arctic and Pacific Oceans.

2. Adenocystis *D'Urvilleæi,* Hook. fil. et Harv. Asperococcus D'Urvillæi, *Bory in Duperrey Voy. Bot.* p. 200. t. 11. f. 3.

Hab. Berkeley Sound, Falkland Islands; with the former.

We are inclined to regard this as a slender state of the *A. Lessonii,* which is exceedingly variable when young.

13. SPHACELARIA, *Lyngb.*

1. Sphacelaria *obovata*, Hook. fil. et Harv.; parvula, gracilis, pallide viridis, stupa nulla, fronde circumscriptione obovata, caule gracili articulato basi longe nudo supra medium ramis plurimis tenuibus elongatis erecto-patentibus laxe distiche pinnatis ornato apicibus sphacelatis. Nobis *in Lond. Journ. of Bot.* vol. iv. p. 251.

Hab. St. Martin's Cove, Hermite Island, Cape Horn, in about eight fathom water; very scarce.

Cæspitosa, superne fastigiatim ramosa. *Frondes* 1–1½ unc. longæ, caule ramisque gracilibus, per totam longitudinem articulatis.

We have seen no specimens of this, but what were dredged up from a considerable depth; and, if fully grown, the outline of the frond alone is sufficient to distinguish it from its congeners.

2. Sphacelaria *funicularis*, Mont. *Fl. Antarct.* Pt. 1. p. 180.

Hab. Cape Tres Montes, South Chili; *C. Darwin, Esq.*

The representative of the European *S. scoparia*. We have a note, unaccompanied, however, by any specimen, purporting that this species was also found in the Falkland Islands.

14. CLADOSTEPHUS, *Ag.*

1. Cladostephus *spongiosus*, Agardh, *Sp. Alg.* vol. ii. p. 15. *Engl. Bot.* t. 2427. f. 1.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant.

This plant varies considerably at several periods of the year, becoming bare of ramuli in the winter. It is abundant in the German Ocean and on the Atlantic shores of Europe, and extra tropical North America, in the Mediterranean Sea and Canary Islands, but has not been hitherto found within the Tropics. We regard these specimens as specifically identical with others of British growth.

15. ECTOCARPUS, *Lyngb.*

1. Ectocarpus *tomentosus*, Lyngb. *Grev. Crypt. Flor.* t. 316.

Hab. St. Martin's Cove, Hermite Island, Cape Horn; rare.

The European shores of the Atlantic Ocean and the German Sea are the only previously recorded habitats for this species.

2. Ectocarpus *siliculosus*, Lyngb. *Engl. Bot.* t. 2319.

Hab. Hermite Island, Cape Horn, and Berkeley Sound, Falkland Islands; abundant.

Apparently a much more widely distributed species than the former, ranging from the Baltic Sea and German Ocean to the Mediterranean and Canary Islands, also along the shores of the United States. In the Southern hemisphere it has been found at the Cape of Good Hope and New Zealand.

3. Ectocarpus *geminatus*, Hook. fil. et Harv.; cæspite basi intricato ramoso olivaceo v. virescente, filis majusculis tenuibus ramosissimis apice liberis plumosis, ramis ramulisque patentibus oppositis quaternisve ultimis brevibus, utriculis sessilibus oppositis conicis basi sæpe ramulo brevi bracteæformi suffultis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 251.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant.

Cæspites 4–5 unc. longi, basi e ramulis perplurimis implexis intricati. *Rami* primarii circumscriptione lineari-obovati, plerumque quaterni, secundarii ramulique ultimi oppositi, patentes. *Utriculi* semper oppositi, ramulo bracteæformi duplo longiores.

In habit and general appearance resembling the European *E. granulosus*; but abundantly different in the constantly opposite sessile conical capsules or utricles, which are generally subtended by a minute ramulus half their own length.

16. MESOGLOIA, *Ag.*

1. Mesogloia *linearis*, Hook. fil. et Harv.; virescens, fronde circumscriptione lineari, caule gracili indiviso v. rarius diviso ramis brevibus ornato, ramis alternis crebris abbreviatis flexuosis erecto-patentibus, ramulis subsecundis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 251.

Hab. Hermite Island, Cape Horn; rare.

Frondes 4–6 unc. longi, vix $\frac{1}{2}$ lin. diametro, pallide flavo-virescentes. *Caulis* gracilis, indivisus v. basi ter quaterve divisus, rarius medium versus in ramos 2 primarios fissus. *Rami* perplurimi, $\frac{1}{4}$–$\frac{1}{2}$ unc. longi, flexuosi, interdum basin versus caulis nudi v. ramulis paucis aucti. *Ramuli* secundarii plerumque e margine inferiore seu exteriore ramorum orti. *Peripheriæ filamenta* moniliformia, e substantia gelatinosa vix exserta.

Probably the representative of the European *M. vermicularis*, from which it may be at once distinguished by the ramification.

17. DELESSERIA, *Lamourx.*

1. Delesseria *sanguinea*, Lamourx. *Engl. Bot.* t. 1041.

Var. β. *lancifolia*; fronde elongata anguste lineari-lanceolata ligulatave utrinque angustata.

Hab. Hermite Island, Cape Horn; on rocks, abundant near the shore, also dredged up in five or six fathom water.

Hitherto known only as an inhabitant of the seas of the Northern hemisphere; where its range is not wide. In the southern it appears to be confined to the extreme south of America, flourishing in the deep bays which indent the coasts of Fuegia. Some specimens are altogether similar to those of European growth; others, of which we have constituted the var. *lancifolia* are larger, longer, sometimes almost a foot long, much narrower, and more attenuated at both ends. It is a very handsome variety.

2. Delesseria *Davisii*, Hook. fil. et Harv.; caule cartilagineo alato, lamina profunde pinnatifida v. pinnata, laciniis pinnisve cultrato-lanceolatis obliquis costatis penninerviis, nervis alternis, demum inter nervos alterne v. secunde lacerato-laciniatis, lacinulis erecto-patentibus costatis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 52. (Tab. CLXXV.)

Hab. Hermite Island, Cape Horn; abundant. Falkland Islands, Berkeley Sound, *Dr. Lyall.*

Frons 5–7-uncialis, alata v. latiuscule marginata, basi in caulem brevem abrupte attenuata, circumscriptione late ovato-rotundata, in lacinias perplurimas simplices v. partitas distichas costatas divisa, rosea, membranacea. *Laciniæ* plerumque secus marginem exteriorem oblique ad costam fissæ, $\frac{1}{4}$–$\frac{1}{2}$ unc. latæ, obtusæ v. subacutæ.—Inter *D. alatam* et *D. sanguineam* quasi media, sed utraque sat diversa.

This is perhaps most closely allied to *D. sanguinea*, from which it may be distinguished by the alternate nervation and dividing of the frond. The *D. alata*, which it is also near, differs in the texture and colour of its frond. No fruiting specimens were found.

Plate CLXXV. The absence of fructification precludes the necessity of dissections.

3. Delesseria *platycarpa*, Lamourx., *in Ann. du Mus.* vol. xx. p. 124. *Agardh, Sp. Alg.* vol. i. p. 188. *Turner, Hist. Fuc.* t. 144.

Hab. Falkland Islands; abundant in Berkeley Sound and Port William.

Originally discovered at the Cape of Good Hope, where it is very abundant. More recently it has been gathered on the coast of California, whence its existence in the Falkland Islands might have been considered probable, even before its recent discovery in that part of the Southern Ocean. It is very plentiful on the long shelving beaches of the islands in question, but was not seen on the deeper and more rocky shores of Fuegia.

4. Delesseria *crassinervia*, Mont. *Fl. Antarct.* p. 184.

Var. β. costa angustiore.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; both varieties abundant. Kerguelen's Land; Christmas Harbour, var. α only.

Were the var. β. found upon the coast of Europe, it would be undoubtedly referred to *D. hypoglossum*, and it may well be considered very doubtful whether the *D. crassinervia* of the Southern Hemisphere be the representative of its northern congener, into the likeness of which it varies; or whether, as is perhaps more probable, both are not varieties of the same species. The true *D. ruscifolia* is a native of the Cape of Good Hope, of Tasmania, and, according to Gaudichaud, of the Falkland Islands also.

5. Delesseria *quercifolia*, Bory *in Duperrey Voy. Bot.* p. 186. t. 18. f. 1.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; most abundant both on the outer coasts and in the harbours.

A very handsome species, of which M. Bory gives a sufficiently characteristic but discoloured figure. The original colour of the plant is a rosy or vinous red. In every respect, except the position of the granules, which are here scattered over the surface of the frond, this is very nearly allied to *D. sinuosa*, Ag.

6. Delesseria *Lyallii*, Hook. fil. et Harv.; fronde lineari-oblonga obtusa costata penninervi argute serrato-dentata, nervis oppositis, margine incrassato folia consimilia petiolata emittente, dentibus subulatis simplicibus v. latere inferiore plerumque erosis, coccidiis frondis pagina sparsis, granulis in soros inter nervos laciniarum sitos dispositis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 252. (Tab. CLXXVI.)

Hab. Falkland Islands; on the outer coast only, probably washed ashore from the exposed rocks. Kerguelen's Land; Christmas Harbour, washed up on the shores.

Frons primaria exemplaribus Kerguelensibus 9 unc., Falklandicis 4–5 unc. longa, 1–1½ unc. lata, in petiolum cylindraceum gradatim angustata, oblonga v. linearis, apice rotundata, costa valida percursa, venosa, venis oppositis, erecto-patentibus, margine argute serrato-dentata, sed non sinuata, incrassata, foliola seu frondes secundarias emittens? *Frondes secundariæ* primariis consimiles, sed plerumque minores, omnes evidenter petiolatæ, e margine incrassato frondis primariæ ortæ, venis ejus oppositæ v. alternæ. *Color* luride sanguineus.

D. sinuosæ habitu formaque frondis colore et substantia simillima: differt margine incrassato, dentato, non sinuato, et præsertim frondibus secundariis evidenter petiolatis, nunquam e laciniis frondis primariæ ortis.

A very noble species, of which fine specimens were collected, thrown up on the stony shores of Kerguelen's Land and the outer coasts of the Falkland Islands; and which, as it was never seen attached, either in the shallow or deep bays of any of the coasts visited by the Expedition, finds, we conclude, a congenial home amongst the wild breakers that fringe many parts of these iron-bound coasts. Specifically it is allied to the European *D. sinuosa*,

from which it differs remarkably in the thickened margin of the frond not being sinuated, but proliferous; in the leaves all being petiolate and arising from the margin, and not from laciniæ of the frond; and in the position of the fructification.

We have, in figuring the nobler species of this and some other genera, endeavoured to commemorate the services rendered to the botany of the Antarctic regions by those officers of the Antarctic Expedition who particularly devoted themselves to increasing the botanical collections. Their names appear to be more properly associated with the *Algæ*, than with any other tribe of plants; comprising, as these do, the greater part of the vegetation of that element which these gentlemen have adopted for their home, and being natives of the regions they have so successfully explored.

PLATE CLXXV. *Fig* 1, apex of frond and sori; *fig.* 2, portion of ditto showing the spherospores:—highly *magnified.*

18. NITOPHYLLUM, *Grev.*

1. NITOPHYLLUM *lividum,* Hook. fil. et Harv.; fronde e stipite brevi filiformi cartilagineo late expansa tenerrima basi vix venosa furcata v. dichotoma margine undulata livido-purpurea, laciniis patentibus oblongis obtusis, soris minutissimis punctiformibus coccidiisque perplurimis per totam frondem sparsis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 253. (TAB. CLXXIX.)

HAB. Falkland Islands; Berkeley Sound and Port William, not uncommon.

Stipes cartilagineus, filiformis, $\frac{1}{2}$–1 unc. longus, ad basin frondis evanidus. *Frons* 4 unc. longa, 6 v. plures lata, in lacinias paucas latiusculas furcatas apice obtusas divaricatas divisa, avenia, nisi ad imam basin, ubi stipes in venas breves evanidas abiit. *Substantia* tenerrima. *Color* livide purpureus, ut in *Porphyra*, sed vix nitens.

The colour affords a very distinctive character for this species, in which particular it resembles only one of its congeners, the *N. Gunnianum*, Harv., of Tasmania. But that plant, is of a much thicker texture and less lubricous. A single imperfect specimen from Cape Horn probably belongs to the *N. lividum*. Of the mass of radiating spores contained in the capsules of the species, only those at the base of the cavity are fertile.

PLATE CLXXIX. *Fig.* 1, sori; *fig.* 2, capsule; *fig.* 3, vertical section of the same; *fig.* 4, portion of ditto:—all highly *magnified.*

2. NITOPHYLLUM *fusco-rubrum,* Hook. fil. et Harv.; stipite filiformi elongato nunc dichotome ramoso nudo, ramis frondiferis, frondibus flabelliformibus lobatis v. longitudinaliter fissis crasso-membranaceis fusco-rubris, basi cuneatis in stipitem gradatim angustatis tenuiter venosis, margine plano subintegerrimo, apicibus (exemplaribus nostris) laceris, soris minutissimis punctiformibus coccidiisque numerosissimis per totam frondem sparsis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 254.

HAB. Kerguelen's Land; parasitical on larger sea-weeds in Christmas Harbour.

Stipes 1–8 unc. longus, simplex v. irregulariter ramosus, ramis in frondes cuneatas elongatas exeuntibus. *Frondes* 3–5 unc. longæ, latitudine variæ, ima basi obscure venosæ, irregulariter profunde fissæ, laciniis cuneatis linearibusve. *Sori* minimi, inconspicui. *Sphærosporæ* plerumque solitariæ, per totam paginam frondis creberrime sparsæ. *Coccidia* frondibus distinctis numerosa. *Substantia* firma, basi subcartilaginea. *Color* luride fusco-ruber.—Stirps *N. ulvoideo,* Hook. similis, sed abunde differt colore, sphærosporis sparsis, stipiteque ramoso elongato.

Apparently a native of Kerguelen's Land only, where it was found sparingly, adhering to the stems of larger *Algæ*. The colour, texture, and branching stem at once distinguish this from its congeners.

3. NITOPHYLLUM *Crozieri,* Hook. fil. et Harv.; fronde basi longe cuneata in stipitem angustata linearilanceolata v. ovata v. late ovato-lanceolata integerrima v. in lacinias plurimas longitudinaliter fissa enervi

tenerrima rosea, soris majusculis oblongis coccidiisque per frondem sparsis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 254. (Tab. CLXXVII.)

Hab. Hermite Island, Cape Horn; abundant in deep water.

Radix discus cartilagineus. *Stipes* gracilis, $\frac{1}{2}$–$\frac{3}{4}$ unc. longus, cartilagineus, superne alatus, basin in frondem cuneatam abeuns, deinde gradatim evanescens. *Frons* 8–12 unc. longa v. longior, latitudine varia, lineari-oblonga v. late ovato-rotundata, integerrima v. in lacinias fissa, adultior punctis crebriformibus pulcherrime terebrata, apice exemplaribus normalibus attenuata, margine integerrima, undulata, plus minusve in lacinias fissa, subavenia v. basi solum nervis indistinctis e apice stipitis ortis notata. *Sori* numerosissimi, per totam frondis paginam sparsi. *Substantia* tenerrima. *Color* pulcherrime roseus.

One of the most beautiful of the genus, and probably the southern representative of the European *N. punctatum*, chiefly distinguishable from it by the long cuneate base of the frond passing into a filiform stem and by the absence of dichotomous divisions with wide axils. The traces of the stem become gradually more faint at a short distance from the base of the frond, but do not break up into numerous veins. The normal form of the frond is broadly lanceolate, tapering to an acute point; with waved but entire margins, which are, however, often split and torn into numerous linear ribbon-like segments, caused by injury and not the natural divisions of the frond.

Plate CLXXVII.—*Fig.* 1, portion of frond and sorus:—*magnified.*

4. Nitophyllum *multinerve*, Hook. fil. et Harv.; fronde breviter stipitata elliptica v. ovata subintegerrima v. lobata, nervis pluribus parallelis distinctis dichotomis apicem versus frondis evanescentibus, soris? Nobis *in Lond. Journ. Bot.* vol. iv. p. 255.

Hab. Hermite Island, Cape Horn, and Falkland Islands; Berkeley Sound, on rocks, not common.

Stipes plerumque $\frac{1}{8}$–$\frac{1}{4}$ unc. longus, nunc pollicaris, simplex. *Frons* in lacinias plurimas obtusas cito fissa, 2–4 unc. longa, basi rotundata v. cuneata; nervis plurimis, validis, ad apicem frondis evanidis. *Substantia* membranacea. *Color* roseus.

Of this plant we have not very satisfactory specimens, or which may not belong to the *Delesseria dichotoma*: except that in the present species the nerves are much fainter, less distinct from the lamina, and vanishing further from the apex of the frond, which evinces no tendency to form distinct leaves.

5. Nitophyllum *Smithii*, Hook. fil. et Harv.; fronde stipitata flabelliformi lobata basi cuneata superne divisa et lacera, apicibus laciniarum obtusis, marginibus planis, colore rubro subfuscescente, nervosa, nervis gradatim evanescentibus basilari centrali crasso lateralibus radiantibus tenuibus nunc evanidis, soris minutis rotundatis margines versus laciniarum frondis densissime sparsis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 256. (Tab. CLXXVIII.)

Hab. Falkland Islands; in the bays and along the outer sea coast, growing on the roots of larger *Algæ*.

Frons 4–7 unc. longa, angusta v. latiuscula, in stipitem simplicem v. ramosam $\frac{1}{2}$ unc. longam et ultra desinens, forma varia; nunc elongatæ, laceræ; juniores latiores, lobatæ: laciniis latis, obtusis, emarginatis retusisve. *Nervus* centralis elongatus, basi latus, frondibus senioribus ultra medium extensus, junioribus cito evanidus; laterales ad basin frondis flabellatim expansi, oblique arcuati. *Substantia* crassiuscula. *Color* ruber, demum fuscescens.

This is a very distinct species; but, like its congeners, so variable in form that little dependence can be placed on the characters drawn from its outline, or from the length of the stipes. Our figure gives a very faithful representation of the colour and normal form of the old and young states, both veined and nearly veinless.

Plate CLXXVIII.—*Fig.* 1, portion of frond and tetraspores; *fig.* 2, ditto with coccidium:—both *magnified.*

6. Nitophyllum *Bonnemaisoni*, Grev.; *Alg. Brit.* p. 81.

Var. *laciniatum*, fronde flabelliformi profunde digitatim lobata v. subdichotome pinnatifida, laciniis inciso-dentatis. N. laciniatum, *nobis in Lond. Journ. Bot.* vol. iv. p. 256.

Hab. var. *laciniatum*. Hermite Island, Cape Horn; on rocks in deep water. Falkland Islands; not common.

Though not exactly identical with our European *N. Bonnemaisoni*, we cannot consider this as more than a variety of that plant, which is occasionally found in Britain nearly as much laciniated as the specimens before us are. Stipes, in the Antarctic specimens, $\frac{1}{4}$–$\frac{1}{2}$ inch long, terminating in the thickened cuneate base of the frond, which is 4–5 inches long, and deeply cleft into 5–9 segments, either radiating from the centre in a digitate manner, or springing like pinnules from a lengthened rachis. Colour, a pale brownish-red at the base, becoming rosy upwards.

The *N. Bonnemaisoni* in the Northern Hemisphere inhabits the Orkney Islands, the west coasts of Scotland and Ireland, and the south-western shores of England.

19. PLOCAMIUM, *Lyngb.*

1. Plocamium *coccineum*, Lyngb.; *Harv. Phyc. Brit.*, t. 44. *Fl. Antarct.* p. 186.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; very abundant.

The present is one of the most widely diffused of the *Florideæ*, both in the Northern and Southern Hemisphere. In Europe it ranges from the shores of the Mediterranean Sea to the North Cape. In Africa it occurs at the Cape of Good Hope, in North America on the coast of California, and it is abundant, on the Atlantic shores of the United States. It inhabits both coasts of South America, but particularly the western; Tasmania, New Zealand, and the Auckland Islands. The Antarctic specimens are equally luxuriant with those of the Northern Hemisphere.

2. Plocamium *Hookeri*, Harv.; fronde cartilaginea anguste lineari compressa plana distiche decomposite ramosa, ramis primariis subdichotomis patentibus, secundariis alternis flexuosis folia ramulosque alterne gerentibus, foliis planis aveniis oblique obovato-lanceolatis obtusis basi angustatis cultratis integerrimis v. margine exteriore crenatis, ramulis linearibus alterne et secunde pectinato-multifidis, stichidiis brevibus lateralibus dense fasciculatis digitatis laciniatis simplicibus obtusis, coccidiis lateralibus sessilibus sparsis. *Harv. in Lond. Journ. Bot.* vol. iv. p. 257.

Hab. Kerguelen's Land; Christmas Harbour; thrown upon the beach, rare.

Frons 8–10 unc. longa, vix lin. diametro, plano-compressa, cartilaginea, nunc subdichotome nunc pinnatim ramosa. *Rami* primarii patentes; secundarii circumscriptione lineares, alterni, flexuosi, ramulos decompositos foliaque gerentes: foliis $\frac{1}{2}$ unc. longis, $1\frac{1}{2}$–3 lin. latis, anguste obovatis lanceolatisve, obtusis, aveniis, integerrimis v. rarius secus marginem exteriorem crenatis. *Color* luride roseus.

One of the most singular species of the genus, from the curious leaf-like appendages on the secondary and lesser branches. It is a very rare plant in Christmas Harbour, and cannot be confounded with any of its congeners.

3. Plocamium? *Magellanicum*, Hook. fil. et Harv. Thamnophora Magellanica, *Montagne in Voy. au Pole Sud, Bot. Crypt.* p. 142. t. 8. f. 2.

Hab. Hermite Island, Cape Horn; the Falkland Islands, and Kerguelen's Land; very abundant.

Of this plant we have very copious suites of specimens, gathered in the localities above enumerated and varying in length from 2 or 3, to 4 or 8 inches; most of them are covered with coccidia, though none presents us with a single stichidium; which is the more remarkable, because, in other species of this genus the latter description of fruit is the most general.

Under the *P. coccineum*, in the first portion of this work, the reasons for abandoning the genus *Thamnophora* are detailed; whether or not the present plant belongs to *Plocamium* even, must remain uncertain until the nature of the stichidia is known.

20. RHODYMENIA, *Grev.*

1. Rhodymenia *palmata*, Grev.; *Alg. Brit.* p. 93. Fucus palmatus, *Engl. Bot.* t. 1306.

Hab. Berkeley Sound, Falkland Islands; abundant. Hermite Islands, Cape Horn; rare.

The Dulse, so commonly eaten on the coasts of Scotland, is not an unfrequent sea-weed on the shores of the Falkland Islands, where it was quickly recognized by some of the north-country seamen of the 'Erebus' and 'Terror.' In Europe its distribution is from the Canary Islands and Mediterranean Sea, to the coasts of Norway and Ireland. Dr. Greville mentions that it is a native of the shores of Brazil.

2. Rhodymenia *sobolifera*, Grev.; *Alg. Brit.* p. 95. Fucus soboliferus, *Eng. Bot.* t. 2133.

Hab. Falkland Islands; in Berkeley Sound, and on the exposed outer sea-coast; abundant.

Apparently identical with a sea-weed which inhabits the western shores of Ireland, Scotland, and the Orkney Isles, and has also been gathered on the west coasts of France. It is scarcely more than a variety of *R. palmata*, whether occurring in the north or south temperate oceans.

3. Rhodymenia *corallina*, Bory; *in Duperrey Voy. Bot. Crypt.* p. 175. t. 16.

Hab. Christmas Harbour, Kerguelen's Land; rare.

We have referred our single specimen, without fruit, to this species; with which it appears entirely to agree. The species is not uncommon along the Pacific shores of South America, between the latitude of Concepcion and the Equator.

4. Rhodymenia *Palmetta*, Grev.; *Alg. Brit.* p. 88. t. 12.

Hab. Straits of Magalhaens, *D'Urville*; Falkland Islands, *Gaudichaud.*

Of this species we have seen no southern examples.

5. Rhodymenia *fimbriata*, Grev.; *Synops.* p. 48. Sphærococcus fimbriatus, *Agardh, Spec. Alg.* vol. i. p. 299.

Hab. Falkland Islands, *Gaudichaud.*

This again is a plant which we do not recognize amongst the collections brought from the Southern Hemisphere.

6. Rhodymenia *variegata*, Montagne; *in D'Orbigny Voy.* p. 22. and 116 *in Obs.* Halymenia variegata, *Bory in Duperrey Voy. Bot. Crypt.* p. 179. t. 14. R. Hookeri, *Harv. in Lond. Journ. of Bot.* vol. iv. p. 258. R. glaphyra, *Suhr, in Flora*, 1839, vol. i. p. 69. t. 2. f. 43.

Var. *a. flabellata*; fronde stipitata rosea v. sanguinea flabellata fere ad basin partita, laciniis manifeste flabelliformibus basi cuneatis repetite di-tri- vel palmatim dichotomis, laciniis linearibus $\frac{1}{4}$–$\frac{1}{2}$ unc. latis,

margine lacinulis brevissimis truncatis quadratis alternis ornato, axillis rotundatis:—*R. Lambertæ* forma similis, sed substantia differt.

Var. β. *atro-sanguinea*; fronde substipitata atro-sanguinea palmato-fissa, laciniis obtusis erectis subdichotome v. alterne divisis margine proliferis, axillis rotundatis. Color luridior quam in var. α.

Var. γ. *latissima*; fronde 10 unc. longa ad pedalem, laciniis parum divisis apice truncatis 1–4 unc. latis. Varietas a cæteris valde diversa, sed certe nil nisi forma gigantea.

Var. δ. *lacerata*; inter varietates α et β media:—frons subsessilis divisa.

Var. ε. *prolifera*; fronde 1½–2 unc. longa subdichotoma, laciniarum marginibus proliferis lacinulas numerosas angustissimas furcatas v. irregulariter ramulosas acutas emittentibus.

Var. ζ. *pulcherrima*; laciniis angustis decomposito-ramosis, pinnulis ultimis elongatis emarginatis.

Hab. Hermite Island, Cape Horn; var. α. Falkland Islands; var. α. β. (on the outer sea-coast) and ζ. (in Berkeley Sound) Kerguelen's Land; vars. α. γ. δ. and ε. All very abundant in Christmas Harbour.

A more variable species can scarcely be imagined: so dissimilar are its forms that the more distinct of them were unhesitatingly pronounced to be different species, before the whole suites of specimens were collated. In Kerguelen's Land it is one of the most common of *Algæ*; and the varieties, collected there and noted as belonging to the one species, are connected by various links with one another, and with the forms of Cape Horn, the Falkland Islands, and of the American coast. The dark coloured variety, β. *atro-sanguinea*, is evidently sea-beaten, and though generally destitute of the marginal tooth-like laciniæ, so conspicuous in α, there are specimens possessing them, which connect the two forms. The var. γ. *latissima* is the best marked, more, perhaps, by its great size than by its presenting any positive characters: it was gathered along with α and δ, and referred when fresh to the same species. In the Falkland Islands the var. ζ. is conspicuous for having few, and but sparingly divided principal segments, about ¼ inch wide, suddenly passing into narrow much-divided minor segments from ½–1 line broad. Though at first sight abundantly distinct from β. or γ., it is immediately connected with them both through var. α.

We follow Endlicher in quoting Suhr's figure of *R. glaphyra* as a synonym of this species: the representation is, however, anything but characteristic of an *Alga*.

7. Rhodymenia *variolosa*, Hook. fil. et Harv.; fronde carnoso-membranacea sanguinea in lacinias plures late lineares v. cuneatas elongatas furcatas dichotomasve ad basin fere divisa, laciniis basi angustatis erectis apice obtusis emarginatisve, coccidiis? superficialibus densissime conspersis sessilibus pedicellatisve deciduis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 259. (Tab. CLXXX.)

Hab. Christmas Harbour; Kerguelen's Land.

Frons 2–3 v. 7–8 unc. longa, ad basin fere in lacinias fissa. *Laciniæ* ½–1 unc. latæ, e basi angustata sensim latiores, furcatæ, bis terve dichotome divisæ, sinubus latis obtusis, margine integerrimo v. parce prolifero, super subterque corporibus granuliferis (coccidia?) sparsæ. *Coccidia?* (in genere abnormalia) superficialia, subglobosa, basi angusta frondis affixa, cito decidua.

Allied to the *R. variegata*, especially in form, but of a firmer texture and brighter colour; and very different in the nature of the fructification, which is easily detached, leaving only a small puncture on the surface of the laciniæ: this constitutes the peculiar character of the species. In the structure and form of the frond there is some affinity with the *Gracilaria polycarpa* of the south of England and California; but the fruit of that plant is quite different.

PLATE CLXXX.—*Fig.* 1, portion of frond and coccidia; *fig.* 2, portion of ditto vertically sliced; *fig.* 3, spores from the same; *fig.* 4, immature ditto:—all highly *magnified.*

21. ACANTHOCOCCUS, *Hook. fil. et Harv.*

Frons linearis, compressa, distiche ramosa, cartilagineo-carnosa, rosea. *Axis* solidus, densus, e cellulis minutissimis formatus, tubulis magnis pluriseriatis extus sensim minoribus circumdatus. *Peripheria* celluli parvis reticulata. *Coccidia* globosa, in apicibus ramulorum immersa, sporis numerosissimis repleta.

1. ACANTHOCOCCUS *Antarcticus*, nobis, *in Lond. Journ. Bot.* vol. iv. p. 261. (TAB. CLXXXI.)

HAB. Cape Horn and the Falkland Islands; not uncommon, and parasitic.

Frons 4–8 unc. longa, compressa, anguste linearis, basi semilineam vix lineam latitudine, sursum sensim angustata, distiche ramosissima. *Rami* patentes vel divaricati, nunc flabellatim multifidi, nunc pinnati et bipinnati; secundarii nunc breves subsimplices, nunc longissimi, ramosissimi. *Ramuli* per totam frondem sparsi, apicem versus crebriores, erecti et erecto-patentes, subulati, 1–3 lineas longi, alterni vel sæpius secundi, simplices vel parum divisi. *Coccidia* solitaria, globosa, spinis 4–6 magnis subulatis armata, in apicibus ramulorum immersa, sporis numerosissimis minutis repleta. *Tetrasporæ* ignotæ. *Color* intense ruber, siccitate obscurior. *Substantia* firma, cartilagineo-carnosa:—chartæ adhæret.

We cannot satisfactorily include this plant under any established genus. It belongs, unquestionably, to the *Sphærococceæ* and will stand near *Hypnea*, from which it differs in the structure of the frond, as well as in the fructification. The densely cellular axis, surrounded by large empty cellules or tubes, is seen in *Hypnea musciformis*, and also in *Gracilaria purpurascens*. Outwardly there is a close resemblance between our plant and *Heringia rostrata*, J. Ag., (*Gelidium? rostratum*, Griff.; *Fucus alatus*, and *angustissimus*, Turn.); but, besides the dissimilar fructification, the structure of that plant is uniformly dense, without a trace of large cellules, or tubes. Again, the present plant may be compared with *Microcladia*, which it approaches in habit; and to a certain extent, the spinous *coccidia* may be deemed analogous to the involucrated *favellæ* of that genus; but, in *Microcladia*, the axis, far from being the most dense part of the frond, is tubular.

PLATE CLXXXI.—*Fig.* 1, ramulus; *fig.* 2, apex of ditto with coccidium; *fig.* 3, transverse section of ramulus; *fig.* 4, longitudinal section of coccidium:—all *magnified.*

22. GRACILARIA, *Grev.*

1. GRACILARIA (?) *nigrescens*, Hook. fil. et Harv.; radice fibrosa, frondibus purpurascentibus cæspitosis e basi irregulariter dichotoma et intricata ramosissimis gracilibus subcylindraceis obscure compressis flexuosis flaccidis carnoso-membranaceis, axillis obtusis sæpissime latis, ramis decompositis sensim angustatis, ramulis filiformibus v. subulatis acutis, ultimis sæpe secundis. G. obtusangula, *nobis in Lond. Journ. Bot.* vol. iv. p. 260. Sphærococcus subulatus, β. nigrescens, *Agardh, Sp. Alg.* p. 329.

Var. β. *tenuior*, ramis strictioribus divaricatis, axillis patentibus.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; not uncommon. Var. β. Falkland Islands.

Frons basi repens et fibrosa, filiformis, 4–6 unc. longa, $\frac{1}{4}$ lin. lata, subcompressa. *Color* luride purpureus, ut in *G. purpurascente.*

In the absence of fructification we refer this doubtfully to the genus *Gracilaria*, chiefly from its close resemblance to the *G. purpurascens* in the essential characters of the frond. We have never seen original or any other specimens of the *Sphærococcus subulatus*, var. *nigrescens*, and owe the identification of our specimens with that plant to the kindness of our friend Dr. Montagne.

2. Gracilaria (?) *aggregata,* Hook. fil. et Harv.; cæspitosa, nigrescens, frondibus fastigiatis e basi communi late scutata carnosa ortis plurimis filiformibus, primariis cylindraceis cartilagineis vage subdichotome ramosis, axillis angustis, ramis erectis simplicibus furcatisve omnibus compresso-cylindraceis filiformibus superne subfastigiatis apicibus obtusis, fructu ——? Nobis *in Lond. Journ. Bot.* vol. iv. p. 261.

Hab. Falkland Islands; on rocks in Berkeley Sound, *Dr. Lyall.*

Frondes 3–4 unc. altæ, vix $\frac{1}{2}$ lin. diametro, e basi scutata, $\frac{1}{2}$ unc. latæ, dense fastigiatæ, siccitate rigidæ, madore cartilagineæ, irregulariter superne præcipue ramosæ, basi cylindraceæ, interdum simplices, nunc e basi regulariter dichotome ramosæ. *Rami* omnes erecti, axillis angustis, sinubus obtusiusculis, ultimi paulo latiores. *Color* nigro-purpurascens, siccitate ater;—chartæ non adhæret. Habitu *Polyidis rotundi.*

Of this, again, we have seen no fruit; but the structure of the frond is exactly that of the genus *Gracilaria*, to which we consequently refer it.

23. POLYSIPHONIA, *Grev.*

1. Polysiphonia *atro-rubescens,* Grev. *Harv. in Brit. Fl.* vol. ii. p. 331.

Hab. Berkeley Sound, Falkland Islands; scarce.

Only a few specimens of this species, and in an immature state, were procured: they very closely approach British ones in structure, but are, perhaps, more branched; though we can detect no specific differences between them. They differ from the following species in substance and in wanting the fibrillous apices of the ramuli; the latter, however, is an unimportant character.

The species ranges from the Mediterranean Sea to the coasts of Scotland.

2. Polysiphonia *fusco-rubens,* Hook. fil. et Harv.; atro-rubescens, obscure articulata, rigidiuscula, multistriata, frondibus irregulariter dichotomis, caule angulatim flexuoso gracili sensim attenuato, ramis majoribus dichotomis, minoribus alternis strictis elongatis, ramulis paucis subulatis erecto-patentibus, axillis primariis patentibus secundariis acutis, articulis e tubulis octo radiantibus coloratis formatis, ramorum diametro duplo-triplo-quadruplove, ramulorum sesquilongioribus. (Tab. CLXXXII. Fig. I.)

Hab. Falkland Islands; *Mrs. Capt. Sulivan.*

Caules primarii ramosissimi, fasciculati, 6–8-unciales, graciles, filiformes, basi nudi, superne sub-angulatim flexuosi, ad angulos ramos 2 unc. longos emittentes, rigiduli. *Rami ramulique* erecto-patentes, laxe pluries divisi, fasciculati, ultimi longitudine varii, $\frac{1}{4}$–2 lin. longi, elongati v. subulati, omnes rigidiusculi. *Color* atro-rubescens:—chartæ laxe adhæret.

Very similar indeed to the *P. atro-rubescens*, but differing in the flexuose stem; also allied to *P. anisogona*, nob., but of a totally different texture and consistence.

Plate CLXXXII. *Fig.* I.—1, ramuli; 2, apex of ditto; 3, transverse section of ditto:—all *magnified.*

3. Polysiphonia *anisogona,* Hook. fil. et Harv.; atro-rubescens, flaccida, madore fragillima, frondibus cæspitosis irregulariter ramosissimis equalibus setaceis articulatis vix attenuatis, ramis ramulisque alternis subdichotomisve erectis v. appressis, axillis angustissimis, articulis variis inferioribus diametro sextuplo, superioribus duplo triplove longioribus, ultimis sesquilongioribus v. quadratis, omnibus striis sex notatis e tubulis duodecim tenuibus radiantibus endochromate repletis formatis, ceramidiis ——? Nobis *in Lond. Journ. Bot.* vol. iv. p. 268. (Tab. CLXXXII. Fig. II.)

Hab. Hermite Island, Cape Horn, and the Falkland Islands; not common.

Dense cæspitosa. *Cæspites* 4–5 unc. longi, intricati. *Articuli* longitudine varii, inferiores valde elongati, supremi brevissimi, omnes striis sex rectis spiralibusve notati, e tubulis duodecim tenuibus coloratis circa cavitatem centralem dispositis conflata.

A fine species, and evidently quite distinct from any previously described; but unfortunately so tender that it cannot be removed from the paper without breaking; for which reason our description of the ramification is not so perfect as is desirable. It differs, in the substance especially, from the British *Polysiphonia atro-rubescens*, being more fragile and tender.

Plate CLXXXII. *Fig.* II.—*A.* and *B.* different states of *P. anisogona*; 1, ramulus; 2, apex of ditto; 3, transverse section of ditto:—all *magnified*.

4. Polysiphonia *tenuistriata*, Hook. fil. et Harv.; rubescens, articulata, multistriata, frondibus gracillimis capillaceis flaccidis elongatis circumscriptione ovato-lanceolatis, caule primario subsimplici flexuoso alterne irregulariter dichotome ramoso, ramis remotis circumscriptione ovatis ramulisque erecto-patentibus sensim attenuatis apice fibrillosis, axillis acutis, articulis ramorum diametro multiplo, ramulorum duplo triplove longioribus sex-striatis e tubulis duodecim tenuissimis radiantibus coloratis formatis, geniculis incrassatis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 266. (Tab. CLXXXII. Fig. III.)

Hab. Hermite Island, Cape Horn; dredged up in about six fathom water.

Basis frondis deest. *Caulis* primarius solitarius? 4–6 unc. longus, capillaris, flexuosus, alterne ramosus. *Rami* 2–3-unciales, ramulique tenuissimi.

A very elegant species, allied to *P. anisogona*, but much more slender, very differently branched, and not fragile when moistened after being once dried.

Plate CLXXXIII. *Fig.* III.—1, plant of the natural size; 2, branch and ramulus; 3, ramulus; 4, transverse section of ditto:—*magnified*.

5. Polysiphonia *Sulivanæ*, Hook. fil. et Harv.; pusilla, badia, articulata, flaccida, multistriata, frondibus flabellatim ramosis, ramis alterne decompositis fastigiatis, ramulis sparsis alternis subulatis simplicibus subquadrifariis, articulis ramorum diametro subduplo, ramulorum sesquilongioribus omnibus e tubulis duodecim angustis radiantibus formatis. (Tab. CLXXXII. Fig. IV.)

Hab. Falkland Islands; *Mrs. Capt. Sulivan*.

Radix? *Frondes* cæspitosæ, 1 unc. longæ, e basi valde fastigiatim ramosæ, flabellatim expansæ. *Caulis* primarius brevissimus, ramos plurimos capillares repetitim divisos fasciculatos emittens, rami penultimi subpectinati, ultimi curvati patentes, axillis obtusiusculis, supremi ramos ramulosque terminantes arcte incurvi sese invicem amplectentes, apices frondium hinc nodosi v. incrassati apparent. *Color* badius. *Substantia* flaccida, tenax:— chartæ adhæret.

A pretty but small species, allied to the Auckland Islands *P. ceratoclada*, Mont., but slenderer; with the stem formed of a greater number of tubes, more flaccid, &c. The ultimate ramuli are longer in proportion than those they spring from, they are slender, patent, rather uniform in length, and curve upwards, hence giving a somewhat pectinated appearance to the ultimate divisions of the frond. The hue, which is pale brown in this specimen, may be somewhat faded, and here and there shows indications of the plant having been originally rose coloured.

Plate CLXXXII. *Fig.* IV.—1, branch and ramuli; 2, apex of branch:—both *magnified*.

6. Polysiphonia *microcarpa*, Hook. fil. et Harv.; atro-rubescens, cæspitosa, frondibus tenuissimis capillaribus membranaceis flaccidis tenacibus oligosiphoniis equalibus vix attenuatis irregulariter repetitim dichotomis, ramis ramulisque erecto-patentibus crebre divisis, articulis bistriatis e tubulis quatuor formatis, ramorum majorum diametro multiplo, minorum triplo quadruplove, ramulorum sesqui duplove longioribus,

ceramidiis pusillis ovatis breve pedicellatis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 265. (Tab. CLXXXII. Fig III.)

Hab. Hermite Island, Cape Horn; very rare.

Fil. 3–4 unc. longa, capillaria, flaccida, tenacia sed non fragilia, dense cæspitosa, basi irregulariter dichotome ramosa, ramis omnibus diametro æqualibus. *Ceramidia* minima, lateralia, elliptico-urceolata. *Color* luride ruber.

Plate CLXXXII. Fig. III.—1, portion of branch; 2, ditto with ceramidium:—both highly *magnified.*

7. Polysiphonia *abscissa,* Hook. fil. et Harv.; coccinea, frondibus circumscriptione ovatis tenuibus membranaceo-gelatinosis flaccidis tenacibus oligosiphoniis, caule primario parce diviso flexuoso ramos secundarios alternos multifidos circumscriptione obovatos emittente, ramis filiformibus minoribus alternis subdichotome divisis, ramulis fastigiatis (quasi abscissis) fibrilliferis, articulis ramorum diametro quadruplo v. sextuplo, ramulorum duplo triplove longioribus bistriatis, ceramidiis pusillis ovatis breviter pedicellatis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 266. (Tab. CLXXXIII. Fig. II.)

Hab. Hermite Island, Cape Horn; dredged up in about six fathom water.

Frons seu ramus primarius 3–4 unc. longus, filiformis v. capillaceus, flexuosus, alterne ramosus, ramis gradatim brevioribus, hinc circumscriptio frondis totius ovata evadit. *Rami* inferne nudiusculi, superne fastigiatim ramulosi; ramulis ultimis tenuissimis, confertis. *Caulis* tubuli sub quatuor. *Color* roseus v. coccineus.

A beautiful species, of which the only specimens were procured with the dredge in St. Martin's Cove. The fastigiate branching of the ramuli and the colour are, of themselves, sufficient to distinguish this from the *P. microcarpa,* to which it is most nearly related. The principal stem is very conspicuous though slender, and the branching regular and tolerably uniform.

Plate CLXXXIII. *Fig.* II.—1, plant of the natural size; 2, branch and ramuli; 3, portion of ramulus; 4, portion of ramus; 5, ditto, with ceramidium:—all highly *magnified.*

8. Polysiphonia *flabelliformis,* Hook. fil et Harv.; pusilla, setacea, badia, rigidula, fronde brevi basi simplici stipitiformi apice flabellatim ramosa, ramis irregulariter dichotomis multifidis apice subfastigiatis, ramulis ultimis erectis longe nudis, axillis angustis, articulis multistriatis inferioribus diametro multiplo superioribus sesquilongioribus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 266. (Tab. CLXXXIII. Fig. I.)

Hab. Crozet Islands; on *Macrocystis pyrifera.*

Frons uncialis, solitaria, rigida, crassitudine setæ porcinæ, inferne simplex, superne distiche flabellatim ramosa, crassiuscula, circumscriptione orbiculari. *Rami* multifidi, irregulariter dichotomi, fastigiati, ramulis erectis. *Articuli* rami valde elongati, striis numerosis notati. *Color* badius, vix rufescens:—chartæ vix adhæret.

Only one specimen of this very distinct species was procured, from a piece of *Macrocystis* floating off the Crozet's Islands, of which group the present, the *Callithamnion Ptilota,* nob., and *Ballia Brunonis,* are the only known vegetable productions.

Plate CLXXXIII. *Fig.* III.—1, plant of the natural size; 2, branch and ramuli; 3, portion of ramulus, and 4, of stem:—highly *magnified.*

9. Polysiphonia (Heterosiphonia) *Berkeleyi*; Het. *Berkeleyi,* et Pol. *punicea,* Mont. *Voy. au Pole Sud, Bot. Crypt.* p. 128. t. 5. f. 3. *Fl. Antarct. Pt.* 1. p. 182.

Var. β. *Davisii*; robustior, caule primario regulariter ramoso, ramis erecto-patentibus sub-bipinnatim ramulosis, ultimis erectioribus densioribus parciusque divisis. P. Davisii, *nobis in Lond. Journ. Bot.* vol. i. p. 267.

Hab. Hermite Island, Cape Horn; Falkland Islands, and Kerguelen's Land; abundant. Var. *Davisii*, Hermite Island; rare.

The somewhat different habit, more regular primary ramification, and more erect, denser, and less divided ramuli, had induced us to separate the var. β. from the original *P. Berkeleyi*: an opinion we have now abandoned, after a careful examination of very many specimens; amongst which, forms connecting the two may be found.

Though not included by Montagne under his genus *Heterosiphonia*, the structure of the tubes forming the frond of *P. punicea* is the same with that of *Heterosiphonia Berkeleyi*, of which we have examined an authentic specimen, communicated by our friend the Rev. M. J. Berkeley, and differing in no respect from *P. punicea*. We scarcely, however, think that the varying diameter of the tubes in the genus *Polysiphonia* authorizes a division of the genus; for, in some species, as the present, the increased size of two of the tubes, though conspicuous under favourable circumstances, affords but an obscure character; and in some species the difference of diameter is trifling.

24. RHODOMELA, *Ag.*

1. Rhodomela *patula*, Hook. fil. et Harv.; fronde cylindracea brunnea cellulis irregularibus notata vage bipinnatim ramosa, ramis alternis elongatis horizontalibus suberecto-patentibusve minoribus elongatis patentibus subsimplicibus alternatis nudis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 264. (Tab. CLXXXIII. Fig. IV.)

Hab. Falkland Islands; Port William and Berkeley Sound, rare.

Frons 4–6 unc. longa, basi diametro ½ lin., vage et patentim ramosa. *Caulis* primarius subsimplex, ramos alternos, patentes, elongatos emittens. *Rami* laxe ramulosi, ultimi breviusculi, e tubulis 4 magnis circa cavitatem centralem dispositis extus strato cellulorum confertorum circumdatis conflati. *Substantia* membranacea. *Color* luride brunneus v. fuliginosus:—chartæ adheret.

Similar to the following, and, perhaps, not specifically distinct: it differs in the ramification; and in the absence of the very numerous short ultimate ramuli so copiously scattered over the branches of *R. Gaimardi*.

Plate CLXXXIII.—*Fig.* IV.—1, portion of plant of the natural size; 2, portion of stem and ramulus:—*magnified.*

2. Rhodomela *Gaimardi*, Ag.; fronde cylindracea flabellatim ramosissima, stipite simplici filiformi, ramis primariis divaricatis, secundariis patentibus bipinnatim multifidis segmentis alternis, ramulis brevibus setaceis simplicibus furcatis quadrifidisve sæpe secundis per totam frondem sparsis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 264. *Agardh, Spec. Alg.* vol. iv. p. 380. (*non Mont. in Voy. au Pole Sud*). (Tab. CLXXXIV.)

Hab. Hermite Island, Cape Horn, and in Berkeley Sound, Falkland Islands; not uncommon.

Frons 4–6 unc. longa, crassitudine setæ porcinæ, basi simplex, superne in ramos 3–4 primarios flabellatim divisa. *Rami* primarii subdichotomi v. irregulares, divaricati, repetitim bifarie ramulosi; rami secundarii tertiariique elongati, simpliciusculi, filiformes, ramulis brevibus ornati. *Ramuli* 2–3 lin. longi, sæpissime secundi, tenuissimi. *Structura* ut in *R. patula*. *Color* luridus.

This, which we doubtfully referred in the London Journal of Botany to the *R. Gaimardi*, Ag., appears to us decidedly the plant of Agardh; and our friend, Dr. Montagne, has kindly furnished us with a specimen of the Auckland Island species, to which he had applied this name, and which belongs to another plant. The *R. Gaimardi* of Dr. Montagne is assuredly our *Polysiphonia botryocarpa*, (Pt. 1. p. 181.) and has very much the appearance of a *Rhodomela*. The specimens, from which the above description is taken, were gathered in the same locality as that from whence the typical plant of Agardh was brought by Gaudichaud; and they agree with

the description of that author in every particular: except that the compression attributed to the frond is certainly not a character of our specimen, and most probably originated in that of Gaudichaud from bad drying.

PLATE CLXXXIV.—Two states of *R. Gaimardi*, of the natural size. *Fig.* 1, ramuli and stichidia; *fig.* 2, tetraspores; *fig.* 3, section of stem:—*magnified.*

3. RHODOMELA? *comosa*, Hook. fil. et Harv.; ramosissima, atro-rubescens, caule cylindraceo frondem percurrente ramis crebris alternis ornato, ramis cylindraceis elongatis pluries alterne divisis erecto-patentibus sensim utrinque attenuatis, ramulis ultimis setaceis acutis abbreviatis vagis, capsulis ovatis breve pedicellatis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 263. Harv. *Ner. Aust.* t. xi. (TAB. CLXXXV.)

Var. β. *fibrillifera*; fronde tenuiori laxius ramosa, apicibus fibrilliferis.

HAB. Berkeley Sound, Falkland Islands; both varieties abundant.

Caulis cylindraceus, 6–9 unc. longus, 1–1½ lin. diametro (in var. β gracilis) indivisus v. e basi in ramos primarios 3–4-divisus. *Rami* primarii secundariis perplurimis aucti, secundarii ramulis brevibus setaceis ornati, ultimis in var. β. fibrilliferis: omnes e tubulis septem circa axin centralem articulatam dispositis et strato externo cellulorum densorum circumdatis conflati. *Ceramidia* numerosa, secus ramulos ultimos tertiariosque disposita, parva, ovata, breviter pedicellata. *Substantia* flaccida, opaca, primo visu inarticulata, sed vere articulata. *Color* luride rufo-brunneus:—chartæ arcte adhæret.

A very much branched species, variable in size and in the density of the ramification. In old specimens the stem becomes considerably incrassated and constricted at irregular intervals. Being unacquainted with the secondary fructification, we doubtfully refer this plant to *Rhodomela*: it may belong to *Dasya*.

PLATE CLXXXV.—Two vars. of *R. ? comosa*, of the natural size. *Fig.* 1 *a*, branch and ramuli of var. *a*; *fig.* 2 *a*, section of ditto; *fig.* 3 *a*, tissue of ditto; *fig.* 1 *b*, portion of branch and ramulus of var. β. with ceramidia; *fig.* 2 *b*, fibrilliferous apex of ditto:—highly *magnified.*

25. MELOBESIA, *Lamx.*

1. MELOBESIA *verrucata*, Lamx. *Polyp. flexibles*, p. 315. *Decaisne in Ann. Sc. Nat.* Ser. ii. vol. xviii. p. 126.

Var. *Antarctica*; fronde circumscriptione orbiculari lobata medio adnata margine integerrima libera superficie lævi lineis concentricis undulata, ceramidiis depresso-hemisphæricis:—an species distincta?.

HAB. Var. β. Hermite Island, Cape Horn; the Falkland Islands, and Kerguelen's Land; encrusting shells, and the stems of *Algæ*, particularly of *Ballia Brunonis*.

The *M. verrucata* is a native of the Atlantic Ocean and Mediterranean Sea; the var. β. of the Antarctic Ocean; of Lord Auckland's Group, New Zealand and Tasmania. The ceramidia are intermediate in size between those of *M. verrucata* and *M. pustulata*, Lamx. We have little doubt of this being a new species; but the materials for its determination are wanting.

26. DASYA, *Ag.*

1. DASYA *pectinata*, Hook. fil. et Harv.; setacea, rigida, purpurea, fronde basi nuda superne distiche decomposito-pinnata, ramis articulatis tri-striatis pectinato-pinnatis, ramulis (v. pinnulis) simplicibus alternis brevibus subulatis articulatis monosiphoniis, articulis diametro sesquilongioribus, ceramidiis urceolatis pedicellatis. Polysiphonia pectinata, *nobis in Lond. Journ. Bot.* v. iv. p. 267.

Hab. Hermite Island, Cape Horn; dredged up from about six fathom water, and on rocks at low-water mark, very rare; Falkland Islands, *Mrs. Capt. Sulivan.*

Species pulcherrima, habitu *Bonnemaisoniæ asparagoidis*. *Frons* 2–4 unc. longa, circumscriptione late ovata, 2 unc. lata, rigida, distiche ramosa, v. ramosissima, ramis setaceis decomposito-pinnatis. *Caulis* primarius simpliciusculus, basi inarticulatus, superne articulatus, tri-striatus, compressus v. angulatus. *Rami* minores ramulis alternis ornati, omnes breves, subulati, e singulo serie cellularum formati, hinc monosiphonii. *Articuli* omnes breves, caulini e tubis quatuor inæqualibus (quorum 2 lateralibus latioribus,) circa cavitatem centralem dispositis conflati; *articuli* ramulorum *Callithamnio* forma et structura simillimi. *Ceramidia* secus ramulos disposita. *Color* pulchre purpureo-roseus.

A very beautiful and rare species: distinct from any of its European and exotic congeners that have been described. Mrs. Sulivan's specimens are much finer and more branched than those from Cape Horn.

27. STICTOSIPHONIA, *Harv.*

Frons purpurea, filiformis, cylindracea, ramosa, tubulosa, extus stictis quadratis notata, intus diaphragmatibus septata. *Peripheria* e cellulis quadratis tubum centralem cavum radiatim cingentibus formata. *Ceramidia*? *Stichidia* lanceolata, ramulos terminantia, tetrasporas pluriseriatas foventia.—Algæ *pusillæ, cæspitosæ, e filis repentibus ortæ, rupes marinas* Antillanas, Austro-Atlanticas, Antarcticasque *vix demersas v. ad limitem pleni maris æstus sitas incolentes*.— Genus *Bostrychiæ*, Mont. valde affine.

A very natural little group: composed of a few species, which occupy the same position with regard to the high-water mark in the Southern Ocean, that *Lichina* and *Catenella* do in the Northern. As a genus it differs from *Bostrychia*, Mont., only in the more simple internal structure of the frond, and broad, apparently septate, tubes, surrounded by only one row of cells occupying the centre of the frond: in habit and other respects they are so closely allied, that it is doubtful whether *Stictosiphonia* should not rather be regarded as a subgenus of *Bostrychia*. The structure of the frond is very similar to that of *Polysiphonia*, differing chiefly in the cellules of the periphery being very short; whilst those constituting the axis are lengthened.

1. Stictosiphonia *Hookeri*, Harv.; caulibus indivisis curvatis apice involutis, ramis lateralibus abbreviatis alternis subquadrifariis erecto-patentibus, inferioribus subulatis simplicibus furcatisve, superioribus alterne multifidis, ramulis subulatis acutis erectis, axillis acutis, stictis subtriseriatis, stichidiis lanceolatis acutis ramulos minores terminantibus. Bostrychia Hookeri, Harvey *in Lond. Journ. Bot.* vol. iv. p. 269. (Tab. CLXXXVI. Fig. II.)

Hab. Hermite Island, Cape Horn; and the Falkland Islands: on rocks close to high-water mark; abundant.

Frons 1–1½ unc. longa, dense cæspitosa, rigida, atro-purpurea. *Caulis* plerumque simplex, per totam longitudinem ramulis brevibus lateralibus ornatus. *Rami* nunc omnes ½ lin. longi et indivisi v. superiores elongati 2–4 lin. longi, repetitim ramosi. *Ramuli* ultimi subulati, erecti erecto-patentesve. *Rami ramulique* omnes apicibus plerumque arcte involutis:—chartæ laxe adhæret.

A beautiful little plant, marked all over, under the microscope, with three rows of dark purple dot-like cells.

Plate CLXXXVI. *Fig.* II.—1, plant of the natural size; 2, stem, &c.; 3, ramulus and stichidium; 4, portion of stem; 5, longitudinal and 6, horizontal section of ditto; 7, tetraspores:—all *magnified*.

2. Stictosiphonia *fastigiata*, Hook. fil. et Harv.; caulibus fastigiatis multifidis apicibus involutis,

ramis æquilongis curvatis, ramulis alternis subulatis furcatis v. alterne multifidis, axillis acutis, stictis 3–4- v. pluriseriatis. Bostrychia fastigiata, *nobis in Lond. Journ. Bot.* vol. iv. p. 269.

Hab. Hermite Island, Cape Horn; on stones near high-water mark.

Pusilla, dense fastigiata. *Frondes* ½ unc. longæ, e basi in ramos plurimos primarios divisæ, rubro-purpureæ. *Caulis* brevissimus. *Rami* elongati, curvati, apicibus arcte incurvis, ramulis simplicibus multifidisve ornati:—chartæ laxe adhæret.

Possibly only a variety of the preceding; from which, however, it differs conspicuously in the very abbreviated stem, the consequently longer, more divided branches and the duller colour.

3. Stictosiphonia *vaga*, Hook. fil. et Harv.; caulibus flexuosis vage dichotome ramosis, ramis paucis nudis simplicibus filiformibus subcapillaribus arcuatis medio incrassatis apicibus incurvis, ramulis nullis, axillis patentibus, stictis minutis multiseriatis, stichidiis longissime pedunculatis lanceolatis acutis. Bostrychia vaga, *nobis in Lond. Journ. Bot.* vol. iv. p. 270. (Tab. CLXXXVI. Fig. I.)

Hab. Christmas Harbour, Kerguelen's Land; on rocks and stones above high-water mark, and in damp places at a considerable distance from the sea; abundant.

Dense cæspitosa, filis intertextis quasi crinita. *Frondes* ½–1 unc. longæ, flexuosæ, irregulariter ramosæ, capillares. *Stictæ* parvæ, 6–8-seriatæ. *Substantia* rigida. *Color* luride purpureus:—chartæ laxe adhæret.

A remarkably distinct little species, of very simple structure. It is abundant in Kerguelen's Land, sometimes inhabiting places some hundreds of feet above the sea, but probably always within reach of the spray.

Plate CLXXXVI. *Fig.* I.—Plant of the natural size; 2, rami of ditto; 3, portion of ditto; 4, incrassated ramulus; 5, ramulus and stichidium; 6. tetraspores:—all *magnified*.

28. LAURENCIA, *Lamx.*

1. Laurencia *pinnatifida*, Lamx. *Var. γ. angustata*, Hook.; *Fl. Antarct.* Pt. 1. p. 184.

Hab. Berkeley Sound, Falkland Islands; abundant on the beach.

One of the most widely dispersed of the *Algæ*, inhabiting the shores of Europe from Norway to the Mediterranean; the Canary Islands; west coast of Africa, and Cape of Good Hope; the Peninsula of India; Australia and New Zealand; the Pacific Islands, and both coasts of North and South America. This very extended range has, however, its limits; the plant is neither found so far north as Iceland in the Arctic Sea, nor in the south is it known to inhabit Cape Horn or Kerguelen's Land.

29. DELISEA, *Mont.*

1. Delisea *pulchra*, Mont. *in Ann. Sc. Nat. Ser.* iii. vol. i. p. 158. Bowiesia pulchra, *Grev. Synops. Alg.* p. 57. Bonnemaisonia elegans, *Endl. Suppl.* vol. iii. p. 44. Calocladia pulchra, *Grev. Herb.* Sphærococcus flaccidus, *Suhr.* (*fid. Mont.*)

Hab. Christmas Harbour, Kerguelen's Land; common.

Magnificent specimens of this noble *Alga* were collected by the Antarctic Expedition, though only in Kerguelen's Land. The previously assigned habitat for the species is New Holland or Tasmania; but we have seen no other specimens than Mr. Fraser's original one, labelled as from that quarter of the world. It therefore appears to us probable, that the specimen sent by Mr. Fraser, may have been collected in Mc'Quarrie's Island; whence other Antarctic plants were brought to that gentleman in Sydney, some of which have since found their way into our Herbaria as of Australian origin.

30. IRIDÆA, *Bory.*

1. Iridæa *Radula*, Bory; *Fl. Antarct.* Pt. 1. p. 188.

Hab. Hermite Island, Cape Horn; Falkland Islands and Kerguelen's Land, very abundant. Cockburn Island; at the limits of southern vegetation, on the beach, rare and bleached.

So abundant are the *Irideæ* in the South Polar Ocean, and so variable in their form and texture, that we can scarcely hope to arrive at any accurate knowledge of the species until they shall have been studied in a living state; and then it is not improbable that the genus will be considerably reduced; and one or two of the more common species be found to assume forms as dissimilar as those of our *Laurencia pinnatifida*.

There exist in the Hookerian Herbarium, authentic specimens of the *Fucus bracteatus* of Gmelin, as figured in Turner's 'Historia,' collected both at the Cape of Good Hope and in North West America, by Mr. Menzies. These are (as is generally the case with the specimens of the larger *Fuci*, preserved in our Herbaria) smaller and of that lanceolate form which other *Irideæ* present in a young state. Their texture is very thick, densely cartilaginous, opaque; and covered with tubercles which fall away, leaving a cribriform frond both when immature and older. This great density is a very remarkable character, and observable in the plant here referred to that species, which, when full grown, becomes broadly ovate, or orbicular, and cordate or rounded, or narrowed at the base; with the lamina more or less and variously divided, sometimes three feet broad, or upwards. The largest specimens we have never seen attached, though they are abundant, washed up on the beach, and probably attain their great size on the outer rocks.

Since the publication of the first part of this work, we have, through Dr. Montagne's kindness, had the opportunity of inspecting the *I. laminarioides*, Bory, of Lord Auckland's Group: specimens of which are in our Herbarium from the same island; but which we had previously regarded as a more delicate state of *I. Radula*. Even what we consider the true *I. Radula* of Lord Auckland's Group and Kerguelen's Land, is not so dense in the frond as the specimens of the Falkland Islands and Cape of Good Hope are. Both this and the following species have the surface frequently covered with granules, tubercles or pedicellate pear-shaped organs; or in the young state with elongated fleshy bodies similar to those of the *I. stiriata*, Bory. The *I. stiriata*, according to the descriptions, may belong to a state of this, or the following, or many other forms of the genus: it is, however, a narrower, smaller species, with a much more dense frond than even *I. Radula*.

2. Iridæa *cordata*, Bory, *in Duperrey Voy. Bot.* p. 104; *et* I. micans, p. 110. t. 13 et 13 *bis*. Halymenia cordata, *Agardh, Sp. Alg.* p. 201. Fucus cordatus, *Turner Hist. Fuc. t.* 116.

Var. β. *ciliolata*; stipite brevi cartilagineo cuneato ciliato-dentato mox in frondem simplicem ovato-lanceolatam desinente, fronde latissima basi cuneata v. cordata apice obtusa v. acuta v. emarginato-bifida membranacea rubra plana nitente lævi margine vix undulata. Nobis *in Lond. Journ. Bot.* vol. iv. p. 263.

Var. γ. *dichotoma*; stipite brevi mox cuneato furcato v. pluries dichotomo sensim in frondem late cuneatam obovatamve desinente, segmentis integris vel divisis margine dentatis lobatis proliferisve.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; both varieties very abundant.

This species, when fresh, well deserves the brilliant description of its beautiful tints, given by M. Bory on the authority of Admiral D'Urville and M. Gaudichaud. It is one of the most common *Algæ* of the southern extremity of America and the Falklands. In its younger state, the fronds are obovate or spathulate, like those of *I. laminarioides*, figured by Bory, and soon expand into laminæ, variously modified, according to situation and exposure, with relation to the force of the sea, the nature of the bottom, the currents, depth, and protection afforded by other *Algæ*; for no two fronds of a similar shape are usually to be found within a few yards. Indeed,

I question whether *I. micans* be more than a membranous form of *I. Radula*: the former always preferring the quieter harbours, where its fronds are sometimes as thin as those of a *Delesseria*, quite unfitted to withstand the rough seas of the outer coasts, which wash the almost uninjured fronds of the *I. Radula* ashore in broad sheets, as large and as red as an ordinary pocket-handkerchief.

Though sometimes almost equally thin, the substance of the *I. micans* is never so membranous as that of a *Delesseria*. The colour, though not so bright a rose, or so delicate when the plant is dried, is, when seen in the living state, much more varied and more beautiful. The texture is such that the slightest motion of the water causes the frond to undulate throughout from the base upwards without falling into folds: each portion of the surface, when presented at a certain angle to the eye, reflecting back the most brilliant metallic tints of azure, steel-blue, pink, and purple. A more beautiful object in the water is not to be found in the whole order of *Algæ* than this, when seen from a boat in calm weather and sunshine; though it is seldom that such opportunities occur in the latitudes it inhabits. I have not been able to detect any striæ on the surface of the frond, which is formed of cells so densely packed that they coalesce into a homogeneous cartilaginous tissue.

We have no hesitation in pronouncing this as identical specifically with the *I. cordata* of the Banks of Newfoundland and the Cape of Good Hope; of which species there is an excellent figure in the 'Historia Fucorum', coinciding with that of Bory in Duperrey's Voyage. The descriptions, both of Agardh and Turner, particularly mention the iridescence of their specimens. The only differential characters noted by Bory, who justly indicates the close affinity of *I. micans* with *I. cordata*, are the slight discrepancy in the bluntness of the apices of the fronds and depth of the lobes at the cordate base. We are, however, well assured that such characters are all too slight; for we could not, either at the Cape of Good Hope or the Falkland Islands, distinguish between the forms of this *Iridæa* with a cordate and those with a cuneate base to the frond. We are, however, far from asserting that there may not be from the two last-named localities two species here confounded (one of which, the *I. micans* of Bory, is the same with the *F. cordatus* of Turner), though we strongly incline to the opposite opinion.

31. PHYLLOPHORA, *Grev.*

1. Phyllophora *cuneifolia*, Hook. fil. et Harv.; fronde stipitata basi ramosa lato-cuneata prolifera integra emarginata v. biloba e margine disco v. apice frondes consimiles emittente.

Hab. Port William and St. Salvador Bay, Falkland Islands; Christmas Harbour, Kerguelen's Land; rare.

Frondes omnes stipitatæ. *Stipes* compressus interdum subplanus, ima basi plerumque angustissima, sensim in laminam latam cuneatam deltoideamve dilatatus, basi divaricatim ramosus, bis, ter pluriesve divisus. *Frondes* primariæ 1–2 unc. longæ, 1–1½ latæ; apice latiore late rotundato, emarginato, retuso v. bilobo; segmentis rotundatis, rarius erosis; secundariæ primariis omnino similes sed colore pallidiores et basi simplices, sæpe frondes tertiarias emittentes, hinc planta vetusta catenatim ramosa evadit. *Fructus* —— ? *Substantia* tenuiter cartilaginea, subcornea, basi opaca. *Color* ut *P. Brodiæi*.—Chartæ vix adhæret.

Certainly distinct from *P. obtusa*, the only one of the genus hitherto described as a native of the southern temperate hemisphere, but perhaps not equally so from *P. Brodiæi*. Still our specimens are very different from the ordinary British form of that plant, in the much shorter stipes, and larger broader frond, which is much less lobed and the lobes are not so narrow or elongated, or separated by so deep a sinus.

2. Phyllophora *obtusa*, Grev. *Fl. Antarct.* Pt. 1. p. 187.

Hab. Hermite Island, Cape Horn; dredged up from five fathom water, very rare.

The specimens of this species are sufficiently characteristic, though few in number. It is also a native of the Cape of Good Hope and Lord Auckland's Group.

32. NOTHOGENIA, *Mont.*

1. Nothogenia *variolosa*, Mont. *Fl. Antarct.* Pt. 1, p. 188.

Hab. Hermite Island, Cape Horn; the Falkland Islands; and Christmas Harbour, Kerguelen's Land; on rocks, very abundant.

An exceedingly variable plant in size and in the breadth of its fronds, simulating in the high southern latitudes the *Chondrus crispus*, as far as locality and abundance are concerned. The southern species representing our *Chondrus crispus* is the *C. tuberculatus* in Lord Auckland's Group, (where the *Nothogenia* also abounds,) and at the Cape of Good Hope the *C. dilatatus*.

33. DUMONTIA, *Lamx.*

1. Dumontia *filiformis*, Grev. *Fl. Antarct.* Pt. 1. p. 189.

Hab. Berkeley Sound, Falkland Islands; rare.

Apparently identical with the European plant, which ranges from the Mediterranean to the British coasts.

34. GIGARTINA, *Lamx.*

1. Gigartina *plicata*, Grev. *Alg. Brit.* p. 15. Fucus plicatus, *Engl. Bot.* t. 1089.

Hab. Cape Pembroke, Falkland Islands; Christmas Harbour, Kerguelen's Land; abundant.

These examples so entirely accord with others of British growth, that it is unnecessary to separate them specifically. No specimens considered by any systematic botanist to belong to this *Gigartina* have been found between the latitudes of the south of Europe and Kerguelen's Land, except (according to Montagne) at Callao: yet the genus, under one or other of its Protean aspects, abounds throughout all tropical and temperate seas.

35. PTILOTA, *Ag.*

1. Ptilota *Harveyi*, Hook. fil.; caule compresso cartilagineo inarticulato anguste lineari furcato inordinateve ramosissimo, ramis distichis pinnatim decomposito-ramosis majoribus minoribusque pectinatim pinnulatis costa articulata percursis, pinnulis creberrimis simplicibus articulatis monosiphoniis abbreviatis subulatis oppositis, pinnularum articulis quadratis, favellis in ramulos terminalibus ramellis pinnatis involucratis, tetrasporis ad apices pinnularum aggregatis nudis breve pedicellatis. Hook. fil. *in Lond. Journ. Bot.* vol. iv. p. 271. (Tab. CLXXXVII.)

Var. β. pinnulis subdistantibus.

Hab. Hermite Island, Cape Horn, and on the outer coasts of the Falkland Islands; abundant.

Species pulcherrima, prima visu *P. plumosæ* referenda, sed distinctissima. *Frons* 8 unc. ad pedalem, e ramis patulis ejusdem latitudinis. *Stipes* gracilis, $\frac{1}{2}$ lin. diametro, et per totam frondem æquilatus, irregulariter furcatim v. dichotome v. sub-pinnatim ramosissimus. *Rami* minores majoresque (juniores præcipue) ramulis creberrimis articulatis 1 lin. longis pulcherrime pectinati. *Ramuli* simplices, serie unica cellularum quadratarum endochromate roseo repletarum constantes, ramis *Callithamnio* subsimiles.

This lovely plant is the Cape Horn and Falkland Island representative of the Boreal and Arctic *P. sericea*, Harv. (*P. elegans*, Kutz., *Fucus sericeus*, Gmel.) and of the Auckland Island *P. formosissima*, (t. LXXVII.) From

the former of these it differs in being larger, more rigid, and having ramuli of much greater diameter, so that under the microscope it is impossible to confound them. Its Cape of Good Hope representative, and indeed, very near ally, is the *P. setigera*, Harv. (Nereis Australis.)

PLATE CLXXXVII.—*Fig.* 1, branch and ramuli; *fig.* 2, portion of a ramulus; *fig.* 3, another ramulus; *fig.* 4, favella; *fig.* 5, spores from ditto; *fig.* 6, tetraspores :—all *magnified*.

36. CERAMIUM, *Adans.*

1. CERAMIUM *rubrum*, Ag. *Fl. Antarct.* Pt. 1. p. 191.

HAB. Hermite Island, Cape Horn; Falkland Islands, and Christmas Harbour, Kerguelen's Land; very abundant.

These two *Ceramia* (*rubrum* and *diaphanum*) are very widely distributed throughout the temperate regions of both hemispheres: they are also found on the shores of Peru and Brazil.

2. CERAMIUM *diaphanum*, Ag. *Fl. Antarct.* Pt. 1. p. 191.

HAB. Hermite Island, Cape Horn; Falkland Islands; and Christmas Harbour, Kerguelen's Land; abundant.

37. GRIFFITHSIA, *Ag.*

1. GRIFFITHSIA *Antarctica*, Hook. fil. et Harv.; filis cæspitosis dichotome ramosis flaccidis, axillis inferioribus patentibus, superioribus acutis, ramis elongatis ramulisque nudis ad nodos constrictis, articulis cylindraceis superne paulo incrassatis, ramorum diametro sextuplo, ramulorum subtriplo longioribus;—fructificatio deest.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; on rocks.

Fila sub 3 unc. longa, fastigiata, parce ramosa, ramis elongatis, distanter ramulosis, ramulis brevibus. *Color* roseus :—chartæ arcte adhæret.

Allied to the *G. secundiflora*, J. Ag., but smaller in all its parts.

2. GRIFFITHSIA *corallina*, Ag. Conf. corallina, *Engl. Bot.* t. 1815.

HAB. Hermite Island, Cape Horn; dredged up in about seven fathom water.

A solitary barren specimen, resembling the British *G. corallina*, which is also a native of the Mediterranean Sea, Canary Islands, and Cape of Good Hope.

3. GRIFFITHSIA *equisetifolia*, Ag. Conf. equisetifolia, *Engl. Bot.* t. 1479.

HAB. Falkland Islands; (*Agardh.*)

38. BALLIA, *Harv.*

1. BALLIA *Brunonis*, Harv. *Fl. Antarct.* Pt. 1. p. 190.

Var. β. *Hombroniana*, Fl. Antarct. l. c.

HAB. Hermite Island, Cape Horn; Falkland Islands; Christmas Harbour, Kerguelen's Land, and the Crozet Islands; most abundant; always (?) parasitical.

One of the handsomest, and certainly the most common and widely distributed of the Antarctic *Florideæ*: its northern limit in the New World is Patagonia, and the Bay of Islands in New Zealand in the Old. With regard to the adoption of the trivial appellation of "*Callitricha*," which Agardh proposed for this species (under *Sphacelaria*), it was waived in compliance with the wish of the first discover of the plant, whose name it now bears.

39. CALLITHAMNION, *Lyngb.*

1. Callithamnion *Plumula,* Agardh, *Sp. Alg.* vol. ii. p. 159.

Hab. Hermite Island, Cape Horn; dredged up from about seven fathom water; very rare.

Decidedly the same as the European and North American plant.

2. Callithamnion *simile,* Hook. fil. et Harv.; fronde subsolitaria rigidiuscula ramosissima, ramis alternis v. subdichotomis articulatis enerviis, ramulis brevissimis oppositis distichis crassis sursum pectinatis e quoque ramorum articulo horizontaliter porrectis, pinnulis robustis simplicibus ramosisve, articulis ramorum diametro sesqui-duplo longioribus, ramulorum diametrum subæquantibus.

Hab. Christmas Harbour, Kerguelen's Land; rare.

Frons 2–5 unc. longa, gracilis, rigidiuscula, repetitim distiche ramosa; ramis omnibus articulatis, æquilatis. *Ramuli* $\frac{1}{2}$ lin. longi, distiche oppositi, e medio articuli cujusvis per totam frondis longitudinem orti, robusti, subacuti, horizontaliter patentes, secus marginem superiorem dispositi, ramulis secundariis obsiti. *Color* fusco-ruber.

C. Plumulæ simillimum, sed rigidiusculum, ramis latioribus, ramulis robustioribus articulisque brevioribus.

This so closely resembles the *C. Plumula*, that it is difficult by mere words to discriminate them; yet, on comparing them under the microscope, they are obviously distinct. *C. simile* is a much coarser and more rigid plant, with the ramuli more robust in proportion to the diameter of the articulation they spring from, and the articulations themselves are shorter. Again, from the circumstance of the true *C. Plumula* occurring at Cape Horn, where this, (the only Kerguelen's Land species), does not appear, we incline to regard the present as a representative species rather than a variety.

3. Callithamnion *Ptilota,* Hook. fil. et Harv.; parvum, rigidulum, setaceum, fronde pinnatim ramosissima, ramis vix distichis venoso-striatis subopacis, secundariis opposite pinnulatis, pinnulis simplicibus patentibus subulatis e quoque ramorum articulo ortis, articulis diametro duplo longioribus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 272. (Tab. CLXXXIX. Fig. I.)

Hab. Crozet Islands; on a floating mass of *Macrocystis pyrifera.*

Frons 1–2 unc. longa. *Caulis* crassitudine setæ equinæ, repetitim pinnatim ramosus; ramis suboppositis patentibus demum deflexis, inferioribus subuncialibus; secundariis breviusculis pinnatis, pinnis plurimis densis, oppositis, simplicibus, subulatis, e omni articulo rami ortis. *Color* fusco-ruber:—chartæ vix adhæret.

Only one specimen of this very distinct little species was found: it grew on a piece of floating sea-weed, picked up at a considerable distance from the shore.

Plate CLXXXIX. *Fig.* I.—1, plant of the natural size; 2, ramuli; 3, ditto with sphærospores:—all *magnified.*

4. Callithamnion *ternifolium,* Hook. fil. et Harv.; perpusillum, vage dichotome ramosum, ramis pellucide articulatis, ramulis sæpissime ternis e omni ramorum articulo ortis erecto-patentibus brevibus gracilibus simplicibus, articulis ramorum diametro 4–5-plo ramulorum subduplo longioribus, favellis magnis bilobis ramos terminantibus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 272. (Tab. CLXXXIX. Fig. II.)

Hab. Hermite Island, Cape Horn; dredged up from about eight fathom water; parasitic on other *Algæ.*

Species perpusilla, parasitica, cæspitosa, sub $\frac{1}{2}$ unc. longa, vage ramosa, rosea, flaccida et membranacea. *Ramuli* plerumque e quoque articulo terni, raro bini quaternive, graciles, breves, simplices. *Articuli* caulis ramorumque elongati. *Favellæ* magnæ.

A very small plant, of which but few specimens were obtained, and by the dredge only: they are in a good state of fruit, and probably characteristic of the species.

PLATE CLXXXIX. *Fig.* II.—1, plant of the natural size; 2, portion of ditto; 3, ramuli; 4, ditto, with favella; 5, tetraspores:—*magnified.*

5. CALLITHAMNION *flaccidum*, Hook. fil. et Harv.; gracillimum, flaccidum, membranaceum, fronde laxe et vage decomposite ramosa, ramis primariis et secundariis oppositis alternisve distichis elongatis patentibus, ramulis ultimis brevibus simplicibus patentibus oppositis secundisve apice incurvis, articulis ramorum primariorum diametro multoties secundariorum 6–10-plo ramulorum sesquilongioribus pellucide roseis enerviis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 273. (TAB. CLXXXVIII. Fig. I.)

Var. β. *alternifolium*; ramis ramulisque alternis secundisve rarissime paucis oppositis.

HAB. Hermite Island, Cape Horn; dredged up from about seven fathom water; abundant.

Frons 2–4 unc. longa, laxe ramosa, membranacea, flaccida, rosea. *Caules ramique* gracillimi, filiformes.

A very beautiful and delicate species, remarkable for the ramification being often truly opposite, always so in var. α, two branches springing from opposite points of the same articulation. On the other hand, when, as in var. β. they are alternate or secund, it is owing to the inner ramuli on the branches becoming abortive, those along the outer edge alone being developed. There is no other difference between the two varieties. Specifically the present is most closely allied to the *C. Turneri*, but it is much larger and more branching. The colour is a very bright rose, and from the delicacy of the filaments, the plant forms a beautiful object when properly displayed upon paper. The articuli of the stem are often singularly elongated.

PLATE CLXXXVIII. *Fig.* I.—1, plant of the natural size; 2, ramus and ramuli; 3, apex of ramulus; 4, favella:—*magnified.*

6. CALLITHAMNION *scoparium*, Hook. fil. et Harv.; cæspitosum, caulibus fastigiatis, primario crasso inarticulato fibris intertextis flexuosis stuposis vestito flabellatim ramoso, ramis primariis cauli similibus, secundariis strictis gracilibus pellucidis creberrime pinnatis bipinnatisve quadrifariis e primariorum apicibus fasciculatim ortis fastigiatis, articulis diametro duplo triplo longioribus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 173. (TAB. CLXXXIX. Fig. III.)

Var. β. *ramulosum*; pinnis apice ramulis secundis ornatis.

HAB. Var. α. Berkeley Sound, Falkland Islands; on rocks. Var. β. Hermite Island, Cape Horn; rare.

Frons 2–3 unc. longa, dense fastigiata. *Caules* robusti, inarticulati, basi integra, fibris stuposis dense vestiti, in discum latiusculum expansi. *Rami* cauli subsimiles, per totam longitudinem ramulis strictis dense fastigiatis quadrifariis vestiti (ut in *Sphacelaria scoparia*); secundarii articulati, vage ramosi, pinnati v. dichotomi secundive; omnes erecti, ramulique plerumque appressi; apicibus obtusis v. acutis simplicibus v. ramulis brevibus pectinatis ornati. *Substantia* rigida. *Color* luride purpureus.

A densely tufted species, with the habit of *Sphacelaria scoparia*, resembling amongst its congeners the *C. tetricum* of Britain, but abundantly different under the microscope. It has also been found in Tasmania.

PLATE CLXXXIX. *Fig.* III.—1, plant of the natural size; 2, ramus and ramuli; 3, apex of the latter; 4, fibres at the base of the stem:—*magnified.*

7. CALLITHAMNION *Montagnei*, Hook. fil.; fronde fruticosa ramosissima, caulibus primariis decompositis sensim alternatis crassis quadrifariis inarticulatis opacis, ramis inarticulatis striatis ramulis quadri-

fariis plumosis densissime obsitis, ramulis (seu pinnulis) brevibus pinnatis bipinnatisve articulatis pellucidis roseis, pinnulis patentibus, inferioribus simplicibus elongatis subulatis superioribus furcatis v. iterum pinnulatis, articulis diametro subduplo longioribus. C. Gaudichaudii, Ag.? Nobis *in Lond. Journ. Bot.* vol. iv. p. 274. (Tab. CLXXXVIII. Fig. II.)

Var. β. caulibus elongatis laxius ramosis basi nudis, ramulis paucioribus gelatinosis.

Hab. Hermite Island, Cape Horn; and Berkeley Sound, Falkland Islands. Var. β. Falkland Islands.

Radix scutata. *Frons* 2–3 unc. (in var. β. 4–5 unc.) longa, fruticulosa, ramosissima. *Caulis* crassiusculus, ½ lin. fere diametro, e basi ramosus v. nudus superne præcipue in ramos undique patentes divisus. *Rami* primarii pluries divisi; secundarii ramulis pinnulisve parvis 1–1½ lin. longis undique vestiti. *Favellæ* magnæ, 2–3-lobatæ, lobis granulis plurimis farctis. *Color* siccitate atro-purpureus, madore sub lente roseo-purpureus. *Substantia* caulis ramorumque cartilaginea, ramulorum tener, chartæque adhærens.

In the London Journal of Botany we referred this plant with a mark of doubt, (and erroneously as it subsequently appears) to the *Cal. Gaudichaudii* of Agardh: a Falkland Island species, with which it seemed to agree in many particulars. Our kind friend, Dr. Montagne, has, with his usual liberality, supplied us with a portion of the original specimen of *C. Gaudichaudii*, which proves to be quite distinct. Its nearest northern allies are *C. Arbuscula* and *C. Brodiæi*, between which it appears almost intermediate, having the large size and robust habit of the former, with longer and more compound pinnules, and being much stouter than *C. Brodiæi*, having more opaque stems. The var. β. may be only an advanced state, having been gathered in the same locality with var. α., but three months later in the season. It chiefly differs in its more tender and gelatinous substance, and in the branches being less densely clothed with ramuli, and nearly naked at the base. Its outward appearance is very much that of *C. tetragonum*, Ag.

Plate CLXXXVIII. *Fig.* II.—1, plant of the natural size; 2, branch and ramuli; 3, ditto with favella:—*magnified.*

8. Callithamnion *Gaudichaudii*, Ag. *Sp. Alg.* vol. ii. p. 173.

Hab. Falkland Islands; *Gaudichaud.*

9. Callithamnion *leptocladum*, Montagne *in Voy. au Pole Sud, Bot. Crypt.* p. 91.

Hab. Strait of Magalhaens; *D'Urville.*

40. CODIUM, *Stackh.*

1. Codium *tomentosum*, Stackh.; Fucus tomentosus, *Engl. Bot. t.* 712.

Hab. Hermite Island, Cape Horn; and the Falkland Islands; abundant. Kerguelen's Land?

This curious plant is equally widely diffused in the southern as in the northern and tropical zones; and the specimens from the different localities are very similar. What we believe to have been this species was collected in Kerguelen's Land, but no specimens appear to have been preserved.

41. CLADOTHELE, *Hook. fil. et Harv.*

Frons cylindracea, filiformis, viridis, solida, ramosa, extus papillosa. *Axis* cellulosa, densa, e cellulis magnis hyalinis vacuis cellulam centralem radiatim cingentibus formata. *Peripheria* cellulosa, cellulis coloratis (viridibus) pluriseriatis. *Utriculi* papillæformes, totam superficiem vestientes.—Alga *marina* Falklandica, *irregulariter ramosa, sordide viridis, ecorticata.*

1. Cladothele *Decaisnei*, Hook. fil. et Harv.; *in Lond. Journ. Bot.* vol. iv. p. 293. (Tab. CXC.)

Hab. Berkeley Sound, Falkland Islands; in the sea.

Radix fibrosa? *Frondes* 4–6 unc. altæ, cæspitosæ, filiformes, seta porcina crassiores, cylindraceæ, flexuosæ, plus minusve ramosæ, ramificatione valde irregulari. *Rami primarii* elongati, sæpe simplices, ramulis longis simplicibus sæpissime secundis curvatis v. incurvis vix attenuatis laxe donati. *Substantia* tenax. *Color* sordide viridis, siccitate cinerascens:—chartæ laxe adhæret.

A very curious plant, certainly related to *Codium*, especially to *C. simpliciusculum*, by the structure of the papillæ that cover its surface, and from which we have derived the generic name. The axis is, however, of very different structure from that of *Codium* or of any other genus of *Siphoneæ*, and more closely resembles that of *Polysiphonia*. In the specific name we wish to pay a deserved compliment to our friend M. Decaisne, who has thrown much light on the affinities of the corallinoid *Algæ*, especially those related to *Siphoneæ*.

Plate CXC.—*Fig.* 1, plant of the natural size; 2 ramus and ramuli; 3, longitudinal, and 4, vertical section of branch; 5, cellular tissue of ditto:—*magnified*.

42. BRYOPSIS, *Lamx.*

1. Bryopsis *plumosa*, Grev. *Alg. Brit.* p. 187.
Var. β. *Arbuscula*, J. Agardh, *Alg. Medit.* p. 21. B. Arbuscula, *Ag. Sp. Alg.* p. 451.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant, both varieties.

The branches of the frond are narrower and pinnated nearer to the base, with the ramuli more uniform and shorter in some of the specimens than in others.

2. Bryopsis *Rosæ*, Ag. *Syst. Alg.* p. 179. *Bory in Duperrey Voy. Bot.* p. 211. t. 24. *fig.* 1.

Hab. Hermite Island, Cape Horn, and the Falkland Islands.

None of our specimens equal those figured by Bory in size, though they coincide in all other respects with the descriptions published by that author and Agardh. Our opinion is, that the present plant is not distinct from the *B. plumosa*, but is a large state of that very sportive species, depending probably on the temperature of the ocean it inhabits for its development. Some other species of this highly Protean genus are equally difficult to define; and we cannot but expect that a copious suite of specimens from different shores and depths will considerably diminish it.

43. VAUCHERIA, *DC.*

1. Vaucheria *Dillwynii*, Ag.; *Grev. Alg. Brit.* p. 191. t. 19. Conferva frigida, *Dillwyn*, t. 19.

Hab. Christmas Harbour, Kerguelen's Land; on the ground amongst the Penguin Rookeries.

The patches are very extensive and rather more glaucous than others collected near Edinburgh, with which the Antarctic specimens appear otherwise entirely to agree. The capsules are not always globose, as figured by Mr. Hassall, (Brit. Fresh-water Algæ) but often, if not more generally, horizontally elongated and gibbous; as shown in Greville's 'Algæ Brit.' (l. c.) where there is an excellent figure of this species.

2. Vaucheria *cæspitosa*, Ag.; *Grev. Alg. Brit.* p. 194.

Hab. Berkeley Sound, Falkland Islands; on the moist borders of fresh-water lakes, and in pendent masses from dripping rocks.

These specimens are dried very badly, so that we have not much confidence in our identification of the species.

44. BATRACHOSPERMUM, *Roth.*

1. Batrachospermum *vagum*, Ag.; *Harvey, Manual*, p. 119. *Lyngb. Hydroph. Dan.* t. 44.

Hab. Hermite Island, Cape Horn; in an alpine pool.

We cannot distinguish these from British specimens; an alpine locality is common to both, the English plant having been gathered on the summit of Snowdon.

45. DRAPARNALDIA, *Bory.*

1. Draparnaldia *pusilla*, Hook. fil. et Harv.; filis perpusillis densissime cæspitosis gelatinosis parce vage ramosis flexuosis, ramulis perpaucis brevibus apice non setigeris simplicibus, articulis coloratis luteo-viridibus diametro sub-duplo longioribus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 296. (Tab. CXC. Fig. II.)

Hab. Berkeley Sound, Falkland Islands; growing on the roots of *Crantzia lineata*, in fresh-water.

Fila sub $\frac{1}{4}$ unc. longa, radices radiculasque submersas vestientia, diametro *D. tenuis*, cui verosimiliter species affinis; differt præcipue filis rigidioribus ramulisque non setigeris.

We have referred this and the following species to the genus *Draparnaldia* with little hesitation, from their affinity with *D. tenuis*, Ag. Those naturalists, however, who know the great difficulty of examining such things in a dried state, will best understand the uncertainty which attaches to all determinations of species belonging to these tribes which are not from the fruit, or from characters of higher importance than the filamentous branches, evidently referable to known forms.

Plate CXC. *Fig.* II.—1, plant of the natural size, on roots of *Crantzia lineata*; 2 and 3, threads;—highly *magnified*.

2. Draparnaldia *sp.?*

Hab. Hermite Island, Cape Horn; in stagnant water on the hills.

The filaments of this species are infinitely more slender than those of the last, but similarly gelatinous and of the same structure.

46. CONFERVA, *Ag.*

1. Conferva *clavata*, Ag.? *Syst. Alg.* p. 99.

Var. *Darwinii*; pro genere maxima, filis 2 uncialibus e basi gradatim incrassatis, articulis ad nodos constrictis diametro paulo longioribus, inferioribus longioribus, supremis $\frac{1}{5}$ unc. latis. (Tab. CXCII. Fig. I.)

Hab. Cape Tres Montes, on *Sphacelaria funicularis*; *C. Darwin, Esq.*

Of this variety we have seen but one specimen and refer it doubtfully to the *C. clavata* of the Cape of Good Hope and New Zealand, to which it is certainly very closely allied.

Plate CXCII. *Fig.* I.—Plants of *C. clavata*, var. *Darwinii*, of the natural size, parasitical on *Sphacelaria funicularis*, Mont.

2. Conferva *Linum*, Ag.; *Harv. Man. Brit. Alg.* p. 128.

Hab. Christmas Harbour, Kerguelen's Land; in the sea, on rocks near high-water mark.

A widely distributed species, found from the Canary Islands, Mediterranean and Black Sea, to the coasts of

Scotland, also on the east coast of North America, the West Indies, and on the west coast of South America. It is singular that Kerguelen's Land should be its only hitherto recorded locality in the Southern Hemisphere.

3. Conferva *Sandvicensis*, Ag.; *Syst. Alg.* p. 92. (Tab. CXCII. Fig. II.)

Hab. Berkeley Sound, Falkland Islands; in pools of fresh water, and hanging from wet rocks.

Massa pedalis et ultra, mollissima, pallide sed læte viridis, e filis tenuissimis arachnoideis densissime fastigiatis constans. *Fila* hyalina, flaccidissima, simplicissima, vix intertexta, aciem oculorum fugientia. *Articuli* diametro duplo longiores, subvitrei; sacculo endochromatis interno medio constricto, læte virente, pellucido.

Our specimens entirely agree with Agardh's description of a plant brought from the Sandwich Islands by M. Gaudichaud.

Plate CXCII. *Fig.* II.—1, plant of the natural size; 2, portion of a thread; 3 & 4, other portions of ditto:—both very highly *magnified*.

4. Conferva *angulata*, Hook. fil. et Harv.; fluitans reptansve, filis simplicibus tenuissimis brevibus strictiusculis hic illic incrassatis angulatisque angulis radiculo ramulove abnormali auctis, articulis diametro 3–5-plo longioribus coloratis, endochromate siccitate contracto. Nobis *in Lond. Journ. Bot.* vol. iv. p. 295. (Tab. CXCI. Fig. II.)

Hab. Christmas Harbour, Kerguelen's Land; common in streams, pools, and lakes of fresh water.

Fila intertexta, tenuissime capillacea, in massam pallide virescentem subnitentem conferta. *Articuli* siccitate contracti, æquales, nunc medio incrassati, nucleati, rarissime ramum emittentes, sæpissime radicula parva uniarticulata aucti, nunc geniculatim curvati.

Allied to the British *C. bombycina*, but readily distinguishable by its greater rigidity, angular flexures, radicles and different incrassations, which do not appear to us of the same character as those of Mr. Hassall's genus '*Vesiculifera*.' The filaments are sometimes ramified, though very rarely, and perhaps only at the very base: the branch is always at right angles to the filament.

Plate CXCI. *Fig.* II.—1, plant in mass, of the natural size; 2, thread of ditto; 3, portion of ditto with branch; 4, ditto with rootlets?; 5, ditto with swollen joint:—all very highly *magnified*.

5. Conferva *ambigua*, Hook. fil. et Harv.; filis basi intertextis adnatis? capillaribus rigidulis nigro-virescentibus longe fluctuantibus simplicibus hic illic spurie? ramosis radicantibus, nunc processubus lateralibus anastomosantibus auctis diametro 2–3-plo longioribus opacis sacculo endochromatis repletis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 295. (Tab. CXCI. Fig. I.)

Hab. Christmas Harbour, Kerguelen's Land; in the sea.

Fila 4–5 unc. longa, basi in stratum densum intertexta, deinde libera, elongata, massam crinitam efficientia.

Plate CXCI. *Fig.* I.—1, plant of the natural size; 2, filament from ditto:—*magnified*.

6. Conferva *quadratula*, Hook. fil. et Harv.; pusilla, filis tenuibus pallide viridibus flexuosis intricatis cylindraceis, articulis quadratis siccitate endochromate collapso notatis. (Tab. CXCI. Fig. IV.)

Hab. Christmas Harbour, Kerguelen's Land; in pools and streams of fresh water; very common.

Fila simplicissima, sub $\frac{1}{2}$ unc. longa, in strato dilute viridia, implicata, crispata, diametro *C. floccosæ* duplo triplove superantia. *Articuli* longitudine diametrum æquantes, cylindracei, ad nodos non constricti, pellucidi, endochromate plerumque in massam linearem viridem collapso medio notati.

Plate CXCI. *Fig.* IV.—1, plant of the natural size; 2, thread from ditto; 3, portion of ditto:—both very highly *magnified*.

7. Conferva *podagraria*, Hook. fil. et Harv.; filis simplicibus basi intertextis breviusculis fluctuantibus flexuosis flaccidis flavo-viridibus cylindraceis, articulis opacis elongato-quadratis diametro ½–2-plo longioribus sacculo endochromatis repletis integumento externo sæpissime incrassato nodoso. (Tab. CXCI. Fig. III.)

Hab. Christmas Harbour, Kerguelen's Land; in streams of fresh water, attached to stones or earth.

Massæ unciam latæ, nunc latius extensæ, pallide virescentes. *Fila* flexuosa, ¾ unc. longa, laxe intertexta, opaca, e basi simplicissima, cylindracea, subæquilonga. *Articuli* cylindracei, sacculo endochromatis repleti, sæpissime, ob tegumentum externum morbo affectum, incrassati et nodosi.

A remarkably distinct little species, forming patches in the water. The threads are densely tufted, curled, and ascending, rather stout in proportion to their length, but flaccid and somewhat soft in consistence; they are generally covered at some part of their length with a thickened opaque substance, of irregular form, extending over several of the joints at once, but more or less evidently protuberant on one side of the thread. This appearance seems due to a diseased condition of the outer membrane; for the sac of endochrome is often seen to be unchanged beneath this thickening, which sometimes increases the filament to twice its usual diameter.

Plate CXCI. *Fig.* III.—1, plant of the natural size; 2, healthy filament; 3, portion of altered ditto:—highly *magnified*.

46. CLADOPHORA, *Kütz.*

1. Cladophora *rupestris*, Linn.; *Dillw. Hist. Brit. Conf.* t. 23.

Hab. Christmas Harbour, Kerguelen's Land; on rocks in the sea.

These specimens are very characteristic of the northern *C. rupestris*, which inhabits all latitudes between the Arctic Circle and Mediterranean Sea on the west coast of Europe.

2. Cladophora *flexuosa*; *Dillw. Hist. Brit. Conf.* t. 10.

Berkeley Sound, Falkland Islands; in the sea.

Specimens not very satisfactory, but we think referable to this species. The ramuli are secund, and the other characters of *C. flexuosa* are tolerably evident.

3. Cladophora *arcta*; *Dillw. Brit. Conf. Suppl.* t. E.

Var. *centralis*, Conferva centralis, *Lyngb.* et auct.

Hab. Hermite Island, Cape Horn, and in the Falkland Islands; very abundant, in the sea.

Decidedly the European plant of the name, which is a native of the German and North Atlantic Ocean.

4. Cladophora *riparia*, Roth; *Engl. Bot.* t. 2100.

Hab. Christmas Harbour, Kerguelen's Land; on rocks near high-water mark.

A native also of the German Ocean, the North Sea, and West Indian Islands.

5. Cladophora *Falklandica*, Hook. fil. et Harv.; filis densissime cæspitosis flaccidis flexuosis intricate ramosissimis læte virescentibus, ramis secundariis longissimis subsimplicibus undulatis flexuosis brevibus secundis, ramulis patentibus distantibus, articulis granuliferis diametro triplo-quintuplo longioribus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 294. (Tab. CXCIII. Fig. I.)

Hab. Berkeley Sound, and St. Salvador Bay, Falkland Islands; on muddy rocks in the sea, abundant.

Cæspites 6–10 unc. longi, densissime fastigiati, e filis flexuosis intertextis gracillimis quasi crinitis formati. *Rami* flexuosi, elongati: secundarii valde elongati, simplices, ramulis brevibus longioribusve patentibus secundis ornati.

Apparently very distinct from any hitherto described species: its remarkable characters are its wavy habit, and the great length and simplicity of the upper branches, which are furnished with more or fewer, short, patent, secund ramuli.

PLATE CXCIII. *Fig.* I.—1, plant of the natural size; 2, branch and ramuli; 3, apex of branch; 4, portion of ditto:—very highly *magnified.*

6. CLADOPHORA *incompta*, Hook. fil. et Harv.; filis intricatis incomptis atro-viridibus opacis rigidis setaceis tortuosis vix ramosis, ramis longe nudis v. ramulis brevibus pectinatis circinato-inflexis ornatis, ramulis ultimis secundis v. alternis patentissimis obtusis approximatis remotisve, articulis diametro brevioribus quadratis v. $\frac{1}{2}$ longioribus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 294. (TAB. CXCII. Fig. III.)

HAB. Hermite Island, Cape Horn; in the sea.

Cæspites intertexti, horizontaliter extensi, atro-olivacei, rigidi. *Fila* intricata, irregulariter parce ramosa, latiuscula, *C. simpliciusculæ* diametro duplo excedentia. *Rami* flexuosi, sæpe nudi, non raro ramulis involutis pectinatis obsiti, ut in *C. flexuosa*. *Color* luride ater v. virescens, opacus. *Substantia* siccitate rigida:—chartæ minime adhæret.

PLATE CXCII. *Fig.* III.—1, plant of the natural size; 2, portion of ditto, highly *magnified*, with abbreviated ramuli; 3, another portion of ditto and branch:—still more highly *magnified.*

7. CLADOPHORA *simpliciuscula*, Hook. fil. et Harv.; filis intricatis incomptis atro-viridibus opacis flexuosis rigidiusculis capillaribus irregulariter subramosis, ramis valde remotis elongatis simplicibus, ramulis perpaucis patentissimis filiformibus sæpe secundis articulis diametro æqualibus v. $\frac{1}{2}$–2 plo longioribus, saculum endochromatis intus foventibus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 295. (TAB. CXCII. Fig. IV.)

HAB. Hermite Island, Cape Horn, and the Falkland Islands; on sea-weeds, stones, and shells.

Cæspites intertexti, opaci, luride virides, subhorizontaliter extensi. *Fila* 1–2 unc. longa, remote et irregulariter ramosa; rami ramulis perpaucis aucti:—chartæ non adhæret.

Allied to *C. riparia*, but more robust, also near the *C. flagelliformis* of the Cape of Good Hope, but with a very different habit from that plant.

PLATE CXCII. *Fig.* IV.—1, plant of the natural size; 2, portion of thread and branch; 3, cells of ditto:—very highly *magnified.*

8. CLADOPHORA *glaucescens*, Griff.? *Harv. Manual*, p. 139.

HAB. Hermite Island, Cape Horn; rare.

We are not at all satisfied with the reference of the Antarctic plant to the British *C. glaucescens*, which has slenderer filaments. The specimens resemble that species more nearly than any other, and are not in a sufficiently good state for a proper comparison.

48. OSCILLATORIA, *Vauch.*

1. OSCILLATORIA *purpurea*, Hook. fil. et Harv.; strato gelatinoso tenaci siccitate translucente purpureo, filis violaceis omnium tenuissimis dense intertextis curvatis longe radiantibus, striis inconspicuis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 297.

HAB. Kerguelen's Land; in alpine rivulets, alt. 300–700 feet.

Species admodum singularis, *Lyngbyæ prolificæ*, Grev. (Scot. Crypt. Flor. t. 303,) plerisque notis affinis, nec

non (suadente clariss. Berkeley), cum *Bysso aquatico*, *D.C.*, (Geneva Trans. vol. ii. p. 29,), *Oscillatoria rubescente*, Bory et cum *Conferva purpurea* quoque conferenda. *Fila* muscos submersos strato gelatinoso translucente vestientia, dum maxime amplificata lineis transversis obscure notata.

2. Oscillatoria *autumnalis*, Agardh *Syst.* p. 62.; *Harvey, Manual of Brit. Alg.* p. 165.

Hab. Falkland Islands; on wet rocks; Cockburn Island, Graham's Land (Lat. 64° S. Long. 57°.W.) in moist places.

We have carefully compared this with Captain Carmichael's Appin specimens of *O. autumnalis*, and find them to be quite the same species, which is considered common in England, though Mr. Hassall quotes Captain Carmichael's habitat as the only one. The figure in the last named author's 'British Fresh-water Algæ,' is very unlike either Captain Carmichael's or the Antarctic specimens; in both of which the striæ are nearer to one another than the filament is broad. The diameter of the Cockburn Island filaments is $\frac{1}{2000}$ of an inch.

49. CALOTHRIX, *Alg.*

1. Calothrix *olivacea*, Hook. fil. et Harv.; cæspite majusculo intense olivaceo v. ærugescente erecto strictiusculo, filis basi dichotome v. alterne divisis luteis flavidisve superne strictiusculis flexuosisve in funiculos crispatos tenaces cohærentibus per totam longitudinem connexisve apice liberis obtusiusculis, endochromate opaco obscure striato, articulis diametro longioribus brevioribusve. Nobis *in Lond. Journ. Bot.* vol. iv. p. 296. (Tab. CXC. Fig. III.)

Hab. Christmas Harbour, Kerguelen's Land; in alpine rivulets, adhering to stems and leaves of mosses, &c.

Cæspites fasciculati, interdum extensi, $\frac{1}{2}$ unc. longi, intense colorati, olivacei læte ærugescentesve, siccitate vix nitentes. *Fila C. distorta* multoties latiora, flexuosa sed non torta, sæpissime in fasciculos siccitate crispatos connexa, circa $\frac{1}{2000}$ unc. lata, basi flavescentia, ramosa v. divisa.

A very pretty species and quite distinct from any European one with which we are acquainted.

Plate CXC. *Fig.* III. —1, plant of the natural size; 2, filaments; 3, upper, and 4, lower portion of ditto:—much *magnified*.

2. Calothrix distorta, *Harvey, Manual of Brit. Alg.* p. 158. *Engl. Bot.* t. 257.

Hab. Falkland Islands; in pools of fresh water.

The specimens, though in a very indifferent state, are clearly referable to the English *C. distorta*.

50. LINGBYA, *Ag.*

1. Lyngbya *muralis*, Agardh; Conferva muralis, *Dillwyn, Brit. Conferv.* t. vii.

Hab. Falkland Islands; on the ground, abundant.

These we have carefully compared with original British specimens of *L. muralis*, and find them to differ only in having the filaments rather broader and more opaque.

2. Lyngbya *fragilis*, Hook. fil. et Harv.; filis minutis tenuissimis fragilibus flavo-viridibus tortuosis implexis in stratum tenue lutescens cohærentibus, striis densissimis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 296. (Tab. CXCIII. Fig. II.)

Hab. Berkeley Sound, Falkland Islands; on the fur of a dead rabbit.

Fila L. murali subsimillima, sed diametro $\frac{1}{2}$ angustiora, fragillimaque. *Stratum* tenue, lutescens v. flavo-virescens, vix nitens.

A plant so nearly related to the common *L. muralis*, of Britain, as to require no detailed description.

PLATE CXCIII. *Fig.* II.—1, plant of the natural size; 2, thread, highly *magnified*; 3, portion of ditto:—still more highly *magnified*.

3. LYNGBYA *subarticulata*, Hook. fil. et Harv.; filis tenuissimis laxe implexis vix tortis hic illic obscure subarticulatis, sporidiis disciformibus diametro variis filum vix $\frac{1}{2}$ æquantibus ad articulos spurios fili solutis.

HAB. Christmas Harbour, Kerguelen's Land; creeping amongst *Ulvæ* &c., on wet rocks near the sea.

Fila cylindracea, sub $\frac{1}{1000}$ unc. lata, pellucida, obscure articulata, articulis diametro ter longioribus, intus cum axi e sporidiorum disciformium composito aucti. *Sporidia* læte viridia, opaca, ter quaterve latiora quam longa.

A very different species from either of the two former. Each filament is a transparent tube, very obscurely incrassated, as if jointed here and there, and containing an axis of sporidia about half its own diameter. The sporidia are discoid, of various breadth and length, but always much broader than long, of a bright green colour, and interrupted opposite the spurious articulation of the filament.

51. MICROCOLEUS, *Desmaz.*

1. MICROCOLEUS *repens*, Harvey; *Manual*, p. 168. Oscillatoria repens, *Agardh Syst.* p. 61. O. chthonoplastes β, *Harvey in Hook. Brit. Fl.* vol. ii. p. 373.

HAB. Cockburn Island, Graham's Land; (Lat. 64° S. Long. 57° W.) on the ground.

Our specimens are very poor, as might be expected from the native place being on the limits of vegetation in that quarter of the globe which the plant inhabits.

52. ULVA, *L.*

1. ULVA *Lactuca*, Linn; *Grev. Scot. Crypt. Flor.* t. 313.

HAB. Hermite Island, Cape Horn; sparingly.

2. ULVA *latissima*, Linn.; *Engl. Bot.* t. 1551.

HAB. Hermite Island, Cape Horn; Falkland Islands and Kerguelen's Land; very abundant.

There is probably no shore between that of Iceland and Cape Horn, that does not produce abundantly this species of *Alga*.

3. ULVA *rigida*, Agardh, *? Syst. Alg.* p. 189.

HAB. Port William, Falkland Islands; common.

Our specimens appear to be only a young dark-coloured variety of the former. The species is also a native of Brazil, and the west coast of South America.

4. ULVA *Linza*. Linn.; *Harv. Phyc. Brit.* t. XXXIX.

HAB. Falkland Islands and Hermite Island, Cape Horn; abundant.

An abundant plant in the Atlantic and Mediterranean shores of Europe; it has also been collected in New Zealand.

5. ULVA *crispa*, Lightf.; *Harvey, Manual*, p. 171.

Hab. Berkeley Sound, Falkland Islands; on moist rocks; Cockburn Island, Graham's Land; very abundant.

A highly interesting species, because it is one of the very few terrestrial plants that have been gathered on the limits of vegetation both in the Northern and Southern Hemispheres. It was collected in Spitzbergen, (in 80°. N.) by the officers of Captain Parry's Expedition towards the North Pole, and is a native of many intervening latitudes. We have carefully compared these specimens with Agardh's original ones of *U. crispa*, from Norway, and find them to be identical. The Cockburn Island specimens are in fine fruit.

6. Ulva *cristata*, Hook. fil et Harv.; pusilla, stratum continuum furfuraceum efficiens, frondibus crispatis lacunosis latioribus quam longis supra medium in laciniis perplurimis fissis, laciniis filiformibus fistulosis tortis pluries divisis processubus corniculatis simplicibus ramosisque undique obsitis, substantia tenerrima, sporis confertis irregulariter dispositis rarius quaternis.

Hab. Kerguelen's Land; in moist clefts of rocks overhanging Christmas Harbour, growing with *Trypothallus anastomosans*.

Frondes singulæ 2–6 lin longæ, latiores quam longæ, sessiles, basi contractæ, læte virescentes, fragiles, marginibus crispatis, superficie lacinioso v. profunde rugoso; laciniis perplurimis gracilibus compressis v. teretibus, fistulosis, processubus divaricatis undique ornatis.

A species so closely resembling the *U. crispa*, that we at first sight confounded it with that plant: it is, however, abundantly distinct, in the much smaller spores, and in the curious long and slender laciniæ of the frond, which are tubular in the specimens we have examined, and, as well as the margins of the sessile frond, are studded with short simple or divided horn-like processes, or abbreviated ramuli.

53. MASTODIA, *Hook. fil. et Harv.*

Frons plana, membranacea v. subcarnosa, viridis, late expansa, inordinate areolata. *Fructificatio* duplex: 1°. *Sporidia* granulæformia, in areolis indefinita (ut in *Ulva*) fronde immersa. 2° *Conceptacula* mammæformia, fronde immersa, apice mamilla instructa, materie grumosa repleta, sporasque ellipticas foventia.—*Genus* Ulvæ *proximum, et nisi presentia* conceptaculorum *nullo modo distinguendum.*

1. Mastodia *tessellata*, Hook. fil. et Harv. Ulva tessellata, nobis *in Lond. Journ. Bot.* vol. iv. p. 297. (Tab. CXCIV. Fig. II.)

Var. *α*. fronde tenuissima, laciniis longioribus.

Var. *β*. fronde carnosa siccitate rigida, laciniis rotundatis.

Hab. Kerguelen's Land; var. *α*. in streams of fresh-water. Var. *β*. on stones occasionally exposed in a fresh-water lake.

Frons foliacea, 1–2 unc. lata, luride viridis, subplicata, siccitate rigidiuscula, suberecta v. in var. *β*. horizontaliter expansa, sub lente granulis majusculis opacis in areolas quadratas compositas dispositis pulcherrime quasi tessellata, demum in lacinias plurimas undulato-crispatas rotundatas fissa; areolis quadratis, lineis hyalinis circumscriptis, granulis magnis quaternis. *Conceptacula* exemplaribus omnibus nobis visis perplurima, ad angulos areolarum majorum sita, elevata, mammæformia, apice pallidiore, crassa et carnosa, intus cava, materie grumosa sporisque lineari-ellipticis viridibus immixtis farcta.

Erroneously described as a marine species in the London Journal of Botany. Even when destitute of fruit it is specifically very distinct from any *Ulva*, especially in the great size of the granules, and their comparative remoteness from one another. The curious hemispherical bodies are abundant in all the specimens, and resemble in some degree

the capsules of a *Nitophyllum*: whether they be an abnormal development, or organs of fructification rarely developed in the genus, may be a point of dispute. At first sight they were supposed to be caused by the puncture of an aquatic insect or other animal; but their appearing in specimens from different localities; their position, constantly at the angles of the greater areolæ, where four of these meet; their uniform size; the constant presence of the cavity filled with elliptic spores, taken especially along with the fact, that there is no sign of disease or lesion in the frond, would indicate these to be organs in a normal condition.

PLATE CXCIV. *Fig.* II.—1, Var. *a.*; 2, var. *β.*; both of the natural size; 3, apex of frond; 4, portion of ditto with conceptacles; 5, portion of ditto more highly *magnified*; 6, vertical section of conceptacle; 7, grumous contents from ditto; 8, spores from ditto:—all very highly *magnified*.

54. ENTEROMORPHA, *Link.*

1. ENTEROMORPHA *compressa*, Grev. *Alg. Brit.* p. 180. t. 18.

HAB. Hermite Island, Cape Horn, Falkland Islands, and Kerguelen's Land; very abundant.

2. ENTEROMORPHA *intestinalis*, Link. *Grev. Alg. Brit.* p. 179.

HAB. Hermite Island, Cape Horn; Falkland Islands, and Kerguelen's Land; with the former.

These two species enjoy equally wide ranges with the *Ulva latissima*. I have found it very difficult to distinguish between this and the former species, even when growing, and between *E. compressa* and *Ulva Linza* in a young state. In the Falkland Islands the *U. latissima* abounds in the land-locked Lagoons, and the *U. Linza* in the harbours where no heavy seas run; whilst the *Enteromorpha compressa*, and *intestinalis*, may be collected on the shores of the weather-beaten coasts. Hence it becomes difficult for the collector to regard these species, whose structure and organization are so similar, as anything more than states of one plant, which commences as a pyriform bladder wherever it germinates, but whose future outline is determined by the depth and tranquillity or the reverse of the element it inhabits, and other natural causes. Such specimens as our Herbaria generally afford, are too often, if not fragmentary, immature; the full development of the species being arrested by the collector, who is content with one entire specimen in whatever stage of growth, and generally preserves it without any note of the conditions under which it was gathered. A few observations on the forms which the *Algæ* assume during different stages of their growth, would be eminently useful: portions of a crop of such species as this, which often covers shells or pebbles, might readily be transported to other waters, whose state is very different from what the plant enjoyed before. It cannot be doubted that great changes in form would be the consequence; and it is on outline alone that specific characters are chiefly founded.

55. PORPHYRA, *Ag.*

1. PORPHYRA *vulgaris*, Ag. *Grev. Alg. Brit.* p. 169.

HAB. Hermite Island, Cape Horn; the Falkland Islands, and Kerguelen's Land; very abundant.

This has as wide a range in latitude and longitude as *Ulva latissima*.

2. PORPHYRA *laciniata*, Ag. Ulva umbilicata, *Engl. Bot.* t. 2296.

HAB. Hermite Island, Cape Horn; the Falkland Islands, and Kerguelen's Land; very abundant.

Obviously a variety, or rather state of *P. vulgaris*; of which the *P. Columbina*, Mont., is probably the young, and *P. Capensis*, Kütz. another variety.

56. TRYPOTHALLUS, *Hook. fil. et Harv.*

Frons subcartilagineo-carnosa, vix gelatinosa, undulato-crispata, lobata, e cellulis hyalinis in stratum conglobatis

efformata, primum continua, matura terebrata v. clathrata (cellulis in lineis anastomosantibus dispositis) demum in massam gelatinosam subgranulosam collabens. *Sporæ* (seu granulæ) plerumque binæ, anguste lineari-oblongæ. —*Genus* Palmellæ *affine, sed indole frondis diversissimum.*

1. Trypothallus *anastomosans*; Hook. fil. et Harv.; Palmella? anastomosans, *nobis in Lond. Journ. Bot.* vol. iv. p. 298. (Tab. CXCIV. Fig. I.)

Hab. Christmas Harbour, Kerguelen's Land; in clefts of rocks, and in damp caves, near the sea.

Frons $\frac{1}{4}$–$\frac{1}{2}$ unc. longa, undulato-crispata, pallide viridis, prima facie *Ulvam furfuraceam* referens, e strato unico cellularum formata, translucida; junior continua, suberecta v. horizontaliter extensa, margine lobata; matura (e cellulis in lineas dispositis) pulcherrime clathrata, foraminibus diametro variis pertusa. *Cellulæ* hyalinæ, marginibus sub lente vix distinctis, dense aggregatæ, rotundatæ v. obtuse angulatæ. *Sporæ* axi cellularum immersæ, plerumque binæ, læte virides (sub lente), post marcescentiam frondis diametro auctæ, cellulasque fere implentes.

We referred this plant doubtfully to *Palmella*, in the London Journal of Botany; and now, unhesitatingly, we place it in a new genus, most distinct from any previously defined. Under the microscope it is a very beautiful object, the full grown specimens appearing as a transparent frond, firmer and more membranous than *Palmella*, and much thicker in proportion than any *Ulva*, beautifully clathrate or formed of anastomosing branches: the branches are composed generally of one, or more rarely, of two collateral lines of cells, each containing a pair of parallel minute spores, of a bright green colour, placed at right angles to the axis of the branch.

Plate CXCIV. *Fig.* I.—1, plant in its foliaceous and reticulated condition; 2, the same at a later stage, forming a gelatinous mass; 3, the same with the spores disunited;—all of the natural size; 4, portion of foliaceous state; 5 and 6, portions with anastomosing structure; 7 and 8, spores:—all very highly *magnified.*

57. PROTOCOCCUS, *Ag.*

1. Protococcus *stercorarius*, Berk.; strato aurantiaco demum subrimoso, globulis demum margine pellucidis nucleis subgranulatis conformibus.

Hab. Falkland Islands; on cow-dung; abundant.

P. nivali, Desm., (quæ eadem est ac *P. pluvialis*, Flotow) affinis, sed globulis minoribus saturatius coloratis, *Hæmatococco Orsinii*, Menegh., quoque referens.

This curious vegetable appears abundantly in places frequented by cattle, covering their droppings with a pale orange stratum in a very short space of time. For the identification and description of the species we are indebted to our learned friend Mr. Berkeley, who had previously observed the same plant in England.

58. NOSTOC, *Vauch.*

1. Nostoc *commune*, Vauch. *Conferv.* p. 223. t. 16. f. 1.

Hab. Christmas Harbour, Kerguelen's Land; on wet rocks near the sea.

The Rev. M. J. Berkeley has favoured us by examining this, the following, and several other of the lower forms of *Algæ* collected during the Antarctic Expedition: of the present he says that it scarcely differs from the *N. commune*, of England, which is common throughout Europe, and in Bolivia and the Canary Islands.

2. Nostoc *microscopicum*, Carm.?; Harv. *Man. Brit. Alg.* p. 184.

Hab. Christmas Harbour, Kerguelen's Land; on wet rocks near the sea.

Specimens rather larger than those of British growth, but not otherwise different. Mr. Hassall considers the *N. microscopicum* to be a variety of *N. muscorum*, Ag.

59. ANABAINA, *Bory*.

1. Anabaina *tenax*, Hook. fil. et Harv.; strato globuloso definito lobato gelatinoso fluctuante æruginoso, filis densissime intertextis flexuosis moniliformibus inæqualibus hic illic interruptis, articulis plerumque globosis angulatisve nunc transverse elongatis, majoribus ellipticis oblongis limbo hyalino cinctis solitariis plurimisve. Sphærozyga tenax, *nobis in Lond. Journ. Bot.* vol. iv. p. 298. (Tab. CXCIII. Fig. III.)

Hab. Falkland Islands; in small pools of water on the hills.

Stratum 1–3 unc. latum, e massis $\frac{1}{4}$–$\frac{1}{2}$ uncialibus conglobatis efformatum, gelatinosum, hyalinum, pulchre æruginosum, natans. *Substantia* gelatinosa, sub lente oculum fugiens. *Fila* perplurima, dense aggregata, diametro varia. *Articuli* sub lente glauco-virescentes, opacæ, majores translucidæ.

A very distinct and beautiful species, evidently congeneric with the *Sphærozyga Jacobi*, of which the Rev. M. J. Berkeley has published an excellent figure in the Supplement to English Botany, (t. 2826. fig. 2.) but which we do not consider generically distinct from *Anabaina*. The granular substance of the larger articuli is of a different nature from that filling the smaller one, being more transparent, and confined in a proper cyst, between which and the border of the articulation there is a transparent space. The stratum is as firm as that of *Nostoc cæruleum*, and the specimens preserved resemble a dried mass of *Oscillatoria*.

Specifically this differs from *A. Jacobi* in the form of the stratum, and from *A. flos-aquæ* in the straightness of the larger articulations.

Plate CXCIII. *Fig.* III.—1, plant of the natural size; 2, threads; 3, portion of a thread with spores; 4, spores:—highly *magnified*.

60. CHROOLEPUS, *Ag*.

1. Chroolepus *aureus*, Harv. *in Hook. Brit. Flor.* vol. ii. p. 380. Conferva aurea, *Dillwyn, Hist. Conf.* t. 35.

Hab. Hermite Island, Cape Horn; Kerguelen's Land, and the Falkland Islands; very abundant on the under surfaces of rocks near the sea, &c.

One of the commonest vegetable productions in the Antarctic Islands, growing under circumstances where no *Lichen*, or other cryptogamic plant, flourishes. It was always found near the *Lecanora miniata*, and is very abundant in situations sheltered from the direct rays of the sun. When fresh, or rather during drying, it emits a very evident smell of violets.

2. Chroolepus *ebeneus*, Ag. *Syst. Alg.* p. 36. Conferva ebenea, *Dillwyn*, t. 101. Byssus niger, *Engl. Bot.* t. 702.

Hab. Hermite Island, Cape Horn; in clefts of rocks in the woods.

Like the former, this species, invariably shuns the light in the south. It was found in damper places than *C. aureus*. Both are, very probably, abnormal states of some *Lichen*.

LVI. DIATOMACEÆ, *Ag.*

The Waters and the Ice of the South Polar Ocean were alike found to abound with microscopic vegetables belonging to this Order. Though much too small to be discernible by the naked eye, they occurred in such countless myriads, as to stain the Berg and the Pack-Ice, wherever they were washed by the swell of the sea; and when enclosed in the congealing surface of the water, they imparted to the Brash and Pancake-Ice a pale ochreous colour. In the open ocean, northward of the Frozen Zone, this Order, though no doubt almost universally present, generally eludes the search of the naturalist; except when its species are congregated amongst that mucous scum which is sometimes seen floating on the waves, and of whose real nature we are ignorant; or when the coloured contents of the marine animals who feed on these Algæ are examined. To the south, however, of the belt of ice which encircles the globe, between the parallels of 50° and 70° S., and in the waters comprised between that belt and the highest latitude ever attained by man, this vegetation is very conspicuous, from the contrast between its colour and the white snow and ice in which it is imbedded. Insomuch, that, in the eightieth degree, all the surface-ice carried along by the currents, the sides of every berg, and the base of the great Victoria Barrier itself, within reach of the swells, were tinged brown, as if the Polar waters were charged with oxide of iron.

As the majority of these plants consist of very simple vegetable cells, enclosed in indestructible silex (as other *Algæ* are in carbonate of lime), it is obvious that the death and decomposition of such multitudes must form sedimentary deposits, proportionate in their extent to the length and exposure of the coast against which they are washed, in thickness to the power of such agents as the winds, currents and sea, which sweep them more energetically to certain positions, and in purity to the depth of the water and nature of the bottom. Hence we detected their remains along every ice-bound shore, in the depths of the adjacent ocean, between eighty and 400 fathoms. Off Victoria Barrier (a perpendicular wall of ice, between one and two hundred feet above the level of the sea), the bottom of the ocean was covered with a stratum of pure white or green mud, composed principally of the siliceous cells of *Diatomaceæ*. These, on being put into water, rendered it cloudy, like milk, and took many hours to subside. In the very deep water off Victoria and Graham's Land, this mud was particularly pure and fine; but towards the shallower shores, there existed a greater or less admixture of disintegrated rocks and sand; so that the organic compounds of the bottom frequently bore but a small proportion to the inorganic.

Being indebted to the works of the illustrious Ehrenberg for all I knew of these organisms, previous to the sailing of the Antarctic Expedition, I had supposed the *Diatomaceæ* to belong to the Animal Kingdom *; and as they are unaccompanied in the Antarctic region by any evidence of a higher order of plants, I had always supposed vegetation to cease at a much lower latitude than these productions actually attain. The species were, however, collected on every available occasion, and transmitted, on my return to England, to Professor Ehrenberg, whose determination of the genera and species is here introduced, at the suggestion of the Rev. M. J. Berkeley and other eminent Cryptogamic botanists.

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* It is well known that the true nature of the *Diatomaceæ* has been long and unsuccessfully disputed, being claimed both by botanists and zoologists. No conclusive evidence on this subject had been adduced, till, within these very few days, it was the singular good fortune of my friend, Mr. Thwaites, of Bristol, a most acute observer and profound Cryptogamist, to detect several species of *Diatomaceæ* conjugating, in a manner perfectly analogous to that pursued by the *Zygnemata*: a fact which leaves no doubt of their vegetable origin in the minds of persons acquainted with his interesting observations. I am indebted to Mr. Thwaites for specimens of three British species of *Eunotia*, and *Gomphonema*, illustrating this important discovery, and mounted in fluid, after the beautiful plan invented by that gentleman for preserving vegetable tissues moist, and always ready for the microscope in the form of slides.

I must offer some apology for omitting a class of organisms which have been investigated, and considered of vegetable origin, by Prof. Ehrenberg, and which are almost equally abundant in the Antarctic Ocean with the *Diatomaceæ*, whether on the surface or at the bottom of the sea: these are the *Phytolitharia*, Ehrb. I am not aware of the precise limits of this Order, and of many of the genera composing it; but from casual allusions, I gather that the term *Phytolitharia* is a conventional one, employed to designate the siliceous and other inorganic particles, deposited in plants of a higher structure. Thus, *Lithodermatium* is a genus whose species are represented by modifications of the siliceous epidermis of one or many species of *Equisetum*; and the *Lithostylidia* are the siliceous cells of *Gramineæ* *. It is not my object to discuss in this place the expediency of constituting such orders, genera, and species. The total absence of *Equiseta* from the Antarctic Flora, and of *Gramineæ* or other phænogamic plants from any position within 700 miles of Victoria Barrier where the *Phytolitharia* abound, renders it in the highest degree improbable that the latter should be of vegetable origin.†

A few remarks on the phases and situations under which these curious vegetables occurred, will not be misplaced here, especially as I have little to add to what is already known of their habits and organization.

Scattered on the surface of the ocean, the Antarctic *Diatomaceæ* were seen connected in filaments, or resolved into thesimple frustules, of which they are composed. When entire, they shewed no signs of motion or irritability. The grumous or granular contents of the cells were yellow under the microscope; but in mass the same species assumed an orange-brown, or burnt Sienna colour; the intensity of which depended on the denseness with which they were packed together.

The various means employed for selecting the species varied according to circumstances, as the following enumeration of the processes pursued will show. 1. Sea-water was filtered through closely woven bibulous paper (filter-paper), which latter was folded, dried, and carefully put away. If a certain measure of water be always thus treated, an approximate knowledge of the abundance and scarcity of the various species and genera occurring at different positions, may be gained. 2. The scum of the ocean almost invariably contains many species entangled in its mass; it was preserved in small phials, well secured. 3. A tow-net of fine muslin, used when the vessel's rate does not exceed two or three knots, secures many kinds, which may be washed off the muslin, and collected on filter paper. 4. The stomachs of *Salpæ* ‡ and other (especially of the naked) mollusca, invariably contain *Diatomaceæ*, sometimes several species. These *Salpæ* were washed up in masses on the Pack ice, and in decay they left the snow covered with animal matter impregnated, as it were, with *Diatomaceæ*: the *reliquiæ* were preserved in spirits. 5. The dirt and soil of the *Penguin Rookeries*, and especially their Guano, abound in *Diatomaceæ*, perhaps originally swallowed by the *Salpæ* and Cuttle-fish, which themselves become the prey of the Penguins. 6. Ice encloses *Diatomaceæ*: they are deposited on the already formed ice by the waves, or frozen into its substance during calm weather, when the upper stratum of water rapidly congeals. Ice, so formed, generally breaks up by the swell of the sea into thin angular masses, which become orbicular by attrition, whence the name Pancake-ice. The Pancake-ice was often seen a few hours after a calm, covering leagues of ocean, and uniformly stained brown from the abundance of these plants. It was taken in buckets, and when removed from the water appeared perfectly pure and colourless. On melting, however, it deposited a pale red cloudy precipitate, excessively light, consisting wholly of *Diatomaceæ*. This precipitate was bottled on the spot, and proved

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* See Ehrenberg, in Schrift. Berlin Akad., June, 1841.

† On the contrary, I cannot but suspect that some of these *Phytolitharia* are the remains of *Crustacea*, and especially the siliceous (?) particles, which occur in the tunics of naked *Mollusca*.

‡ I do not remember to have examined the contents of the stomach of any *Salpa* between the latitudes of the N. Tropic and the 80° S., which did not contain the remains of *Diatomaceæ*. *Dictyocha aculeata* was universally found in the stomachs of those I opened when off Victoria Land.

more rich in species than any of the other collections. The specimens were also the best preserved; for Professor Ehrenberg observes, that some* thus obtained, appeared as if still alive, though collected three years previous to his examination, and subjected to many vicissitudes of climate. The snow sometimes falls on the surface of the still ocean-water, and does not freeze, but floats a honey-like substance, often called Brash-ice: treated in the same way as the Pancake-ice it yielded an abundant harvest. 7. The mud and other soundings from the bottom of the ocean, when brought up on the arming of the deep sea-lead, or the chlam or dredge, generally contain the siliceous skeletons or coatings of many species, with the markings on their surface retained.† 8. The fresh and salt waters and muddy estuaries of the Falkland Islands, and similar localities, present us with species, occurring under circumstances, altogether similar to what accompany their allies in Europe.

The universal existence of such an invisible vegetation as that of the Antarctic Ocean, is a truly wonderful fact, and the more from its not being accompanied by plants of a high Order. During the years we spent there, I had been accustomed to regard the phenomena of life as differing totally from what obtains throughout all other latitudes; for everything living appeared to be of animal origin. The ocean swarmed with *Mollusca*, and particularly entomostracous *Crustacea*, small whales and porpoises: the sea abounded with penguins and seals, and the air with birds: the animal kingdom was ever present, the larger creatures preying on the smaller, and these again on smaller still: all seemed carnivorous. The herbivorous were not recognized, because feeding on a microscopic herbage, of whose true nature I had formed an erroneous impression. It is, therefore with no little satisfaction that I now class the *Diatomaceæ* with plants, probably maintaining in the South Polar Ocean that balance between the animal and vegetable kingdoms, which prevails over the surface of our globe. Nor is the sustenance and nutrition of the animal kingdom the only function these minute productions may perform: they may also be the purifiers of the vitiated atmosphere, and thus execute, in the Antarctic latitudes, the office of our trees and grass-turf in the temperate regions, and the broad leaves of the palm, &c., in the Tropics. Though we possess incontestible proofs of the abundance of *silica*, contained in the ocean, from its being secreted so copiously by these plants, we are ignorant of the process by which it is assimilated, and the chemical state in which it is suspended in the sea-water. The end these plants serve in the great scheme of nature is apparent, on inspecting the stomachs of many sea-animals, as above stated. Owing to the indestructible nature of their shields, they tell their own tale.

I shall now notice the most remarkable feature in the distribution of these organisms. They possess more than ordinary interest, many of the species being distributed from Pole to Pole; while these, or others, are preserved in a fossil state, in strata of great antiquity. There is probably no latitude between that of Spitzbergen and Victoria Land, where some of the species of either country do not exist: Iceland, Britain, the Mediterranean Sea, North and South America, and the South Sea Islands, all possess Antarctic *Diatomaceæ*. The siliceous coats of species only known living in the waters of the South Polar Ocean, have, during past ages, contributed to the formation of rocks; and thus they outlive several successive creations of organized beings. The Phonolite stones of the Rhine, and the Tripoli stone, contain species identical with what are now contributing to form a sedimentary deposit (and perhaps at some future period a bed of rock), extending in one continuous stratum for 400 measured miles. I allude to the shores of the Victoria Barrier; along whose coast the soundings examined were invariably charged with Diatomaceous remains, constituting a bank which stretches 200 miles north from the base of Victoria Barrier, while the average depth of water above it is 300 fathoms, or 1,800 feet.‡

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* *Fragilaria pinnulata*, and some *Coscinodisci.*

† The soundings were invariably in greenish mud, into which the lead sometimes sunk for two feet. At times, this mud seemed almost wholly composed of Diatomaceous remains.

‡ This great depth, reaching to within a quarter of a mile of the Barrier, whose height appeared nowhere to exceed 200 feet, proves that the latter does not rest on this bank. The accumulation, however, of snow on the

Again, some of the Antarctic species have been detected floating in the atmosphere which overhangs the wide ocean between Africa and America. The knowledge of this marvellous fact we owe to Mr. Darwin, who, when he was at sea near the Cape de Verd Islands, collected an impalpable powder which fell on Captain Fitzroy's ships. He transmitted this dust to Ehrenberg, who ascertained it to consist of the siliceous coats, chiefly of American *Diatomaceæ*, which were being wafted through the upper regions of the air, when some meteorological phenomenon checked them in their course, and deposited them on the ship and surface of the ocean.

The existence of the remains of many species of this Order (and amongst them some Antarctic ones), in the volcanic ashes, pumice, and scoriæ of active and extinct volcanoes (those of the Mediterranean Sea and Ascension Island for instance), is a fact bearing immediately upon the present subject. Mount Erebus, a volcano 12,400 feet high, of the first class in dimensions and energetic action, rises at once from the ocean, in the 78th degree of south latitude, and abreast of the *Diatomaceæ* bank, which reposes in part on its base. Hence it may not appear preposterous to conclude, that, as Vesuvius receives the waters of the Mediterranean, with its fish, to eject them by its crater'; so the subterranean and subaqueous forces which maintain Mount Erebus in activity, may occasionally receive organic matter from this bank, and disgorge it, together with those volcanic products, ashes and pumice.

Along the shores of Graham's Land and the South Shetland Islands, we have a parallel combination of igneous and aqueous action, accompanied with an equally copious supply of *Diatomaceæ*. In the Gulf of Erebus and Terror, 15 degrees north of Victoria Land, and placed in the opposite side of the globe, the soundings were of a similar nature with those of Victoria Land and Barrier, and the sea and ice as full of *Diatomaceæ*. This was not only proved by the deep-sea lead, but by the examination of bergs, which, once stranded, had floated off and become reversed, exposing an accumulation of white friable mud, frozen to their bases, which abounded with these vegetable remains.

The following systematically arranged catalogue of the hitherto described Antarctic species is drawn up from various papers by Professor Ehrenberg, but principally from that which appeared in the 'Monatsberichten der Berliner Akad. der Wissenschaften" for May, 1841, and which has been reprinted in Taylor's 'Annals of Natural History', and in the Appendix of Sir James Ross' 'Narrative of the Antarctic Expedition'. A few Falkland Island and Kerguelen's Land species have subsequently been examined by Mr. Thwaites, to whom, and to the Rev. Mr. Berkeley, I am much indebted for the assistance they have afforded me in this group. The arrangement of the genera followed is that of M. Kützing's great work on this order.

1. EUNOTIA, *Ehrb.*

1. Eunotia *gibberula*, Ehrb. Epithemia gibberula, *Kütz. Kieselsch. Bacill.* p. 35. t. 29. f. 54, *c.*

Hab. Open Ocean, in Pancake-ice, Lat. 75° S. Long. 170° W.

An inhabitant of the Baltic Sea. Found *fossil* at Newhaven, in Connecticut, in volcanic ashes from the Rhine and amongst an atmospheric dust which fell near the Cape de Verd Islands.

2. Eunotia *amphioxys*, Ehrb. *Kütz. l. c.* p. 44. t. 30. f. 1.

Hab. Falkland Islands, *Lesson.* Cockburn Island, amongst the guano of a Penguin rookery.

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surface of the barrier, in a climate where there is no thaw throughout the year, and where snow lies perennially, will result in the sinking of the barrier and its base becoming imbedded in this stratum of vegetable debris. Supposing the barrier, then, to have a progressive motion, such as smaller but similar glaciers exhibit, the result would be flexures of the pasty stratum of mud upon whose edge it rests, and against whose walls it would in time abut, as the deposit thickens.

Found living in the German Ocean and Sandwich Islands; in the natural paper of Silesia, and dead in the guano of Peru. *Fossil* as floating in the air with the former species. In peat, Iceland; earth, Labrador, and in strata on the banks of the Euphrates and Oxus. In the volcanic tuff of the Rhine and in Phonolite.

3. EUNOTIA *Faba*, Ehrb. Epithemia Faba, *Kütz. l. c.* p. 36. t. 5. f. 21.

HAB. Falkland Islands; on marine *Confervæ, Lesson.*

Abundant both recent and fossil, in Germany, Sweden, Finmark, Newfoundland, Labrador, and the Oregon. Also found in the volcanic tuff of the Rhine.

4. EUNOTIA *biceps*, Ehrb. *Kütz. l. c.* p. 37. t. 29. f. 65. *c.*

HAB. Falkland Islands; on marine *Confervæ, Lesson.*

Found in earth at Labrador and the Oregon.

2. FRAGILARIA, *Lyngb.*

1. FRAGILARIA *amphiceros*, Ehrb. *Schrift. Berl. Akad. Feb.* 1844.

HAB. Victoria Barrier, in Pancake-ice and in mud from 190 fathoms. Graham's Land, in mud from 270 fathoms. In a floating scum, Lat. 64° S. Long. 160° W.

Occurs fossil in Virginia, U.S.

2. FRAGILARIA *acuta*, Ehrb. *Kütz. Kieselsch. Bacill.* p. 46. t. 16. f. 7. *C.*

HAB. In Pancake-ice off Victoria Barrier, and in Lat. 75° S. Long. 170° W. In the stomach of a *Salpa*, taken in the open ocean, Lat. 64° S. Long. 157° W.

Previously only known as a fossil, occurring near Freiberg.

3. FRAGILARIA n. sp.? (indicated by Ehrb.)

HAB. Victoria Barrier; in mud from 190 fathoms.

4. FRAGILARIA *pinnulata*, n. sp. Ehrb. *Schrift. Berl. Akad. May*, 1844.

HAB. Pancake-ice, Lat. 75° S. 170° W., and near the continent of Victoria Land, 76° S., in Brash-ice. Graham's Land, in mud from 270 fathoms.

One of the most abundant Victoria Land *Diatomaceæ*.

5. FRAGILARIA *rotundata*, n. sp. *Ehrb. l. c.*

HAB. Pancake and brash-ice off Victoria Land and Barrier. In the stomachs of *Salpæ*, taken in Lat. 66° S. and Long. 170° W. Graham's Land, in mud from 207 fathoms.

6. FRAGILARIA n. sp.? (indicated by Ehrb.)

HAB. Victoria Land; in Brash-ice.

7. FRAGILARIA *granulata*, n. sp. *Ehrb. l. c.*

HAB. In the stomachs of *Salpæ*, Lat. 66° S. Long. 157° W. In the open sea near Cape Horn (*M. Schayer, fid. Ehrb.*). In oceanic scum, Lat. 64° S. Long. 160° W.

Lately indicated to exist as a fossil near the Araxes river.

8. Fragilaria *constricta*, Ehrb. *Kütz. l. c.* p. 46. t. 29. f. 25, *c.*

Hab. Falkland Islands; on marine *Confervæ, Lesson.*

Found in the volcanic tuff of the Rhine, and in Mexico.

9. Fragilaria *rhabdosoma*, Ehrb. F. capreina, *Kütz.* p. 45. t. 36. f. iii.

Hab. Falkland Islands; on marine *Confervæ, Lesson.*

A frequent inhabitant of pools and ditches in England, and many other parts of the world, including Asia, Africa, America and the South Sea Islands. In the sand-hills of Patagonia, and in the volcanic tuff of the Rhine.

10. Fragilaria *Trachea*, n. sp. Ehrb. *Schrift. Berl. Akad. l. c.*

Hab. Falkland Islands; on marine *Confervæ, Lesson.*

11. Fragilaria *Ventriculus*, n. sp. Ehrb. *l. c.*

Hab. Falkland Islands; on marine *Confervæ, Lesson.*

3. MELOSEIRA, *Ag.*

1. Meloseira n. sp.? filis moniliformibus tenuissime striatis pedunculo gelatinoso affixis, frustulis per paria coadunatis, junioribus sphæricis demum compressis, apicibus utrinque convexis. *Thwaites, MS.*

Hab. Kerguelen's Land; in the sea.

M. globiferæ, Harv. simillima, sed frustulis adultioribus semper compressis differt. *Fila* striata ut in *M. globifera*. *Thwaites, MS.*

4. PYXIDICULA, *Ehrb.*

1. Pyxidicula *dentata*, n. sp. Ehrb., *Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier; in Pancake-ice.

2. Pyxidicula *Hellenica*, Ehrb. *l. c.*

Hab. Victoria Barrier; in Pancake-ice. Graham's Land; in mud from 270 fathoms (doubtful as to species).

This has been found fossil in Bermuda, the Ægean Sea, and Maryland, U.S.

3. Pyxidicula n. sp.? Ehrb. *l. c.*

Hab. Victoria Barrier; in mud from 190 fathoms.

4. Pyxidicula sp.?

Hab. In the stomachs of *Salpæ*, Lat. 66° S. Long. 157° W.

5. HEMIZOSTER, n. g. *Ehrb.*

1. Hemizoster *tubulosus*, Ehrb., *Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier and Land; in Pancake-ice.

6. GALLIONELLA.

1. Gallionella *pileata*, n. sp. Ehrb. *l. c.*

Hab. Victoria Barrier; in Pancake-ice.

2. Gallionella *sulcata*, Ehrb., *Schrift. Berl. Akad. April*, 1837.

Hab. Victoria Land; in Pancake-ice (doubtful). Graham's Land; in mud from 270 fathoms.

An Arctic plant, having been observed at Melville Island. Also in the open ocean off Rio de Janeiro. It inhabits Peruvian and African guano; has been found in the sand-hills of Patagonia, fossil in Bermudas, Sicily, Algiers, Maryland and Virginia, *U. S.*; and in volcanic ashes from the Patagonian coast.

3. Gallionella *Sol*, n. sp. Ehrb.; *Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier; in mud at 190 fathoms. Graham's Land; in mud from 207 and 270 fathoms.

4. Gallionella *tympanum*, n. sp., Ehrb. *l. c.*

Hab. Graham's Land; in mud from 207 fathoms.

5. Gallionella *Oculus*, n. sp., Ehrb. *l. c.*

Hab. Graham's Land; in mud from 270 fathoms.

7. CAMPYLODISCUS, *Ehrb.*

1. Campylodiscus *Clypeus*, Ehrb. *Kütz. Kieselsch. Bacill.* p. 59. t. 2. f. v. 1–6.

Hab. Graham's Land; in mud from 270 fathoms.

Found fossil in Germany and Italy, in the Bermudas and in the *Mastodon* earth of the Plate river, in African guano, in the atmospheric dust near the Cape de Verd Islands, and in the volcanic tuff of the Rhine.

8. SURIRELLA, *Ehrb.*

1. Surirella (?) *australis*, Ehrb.; *Schrift. Berl. Akad. l. c.*

Hab. Falkland Islands; on marine *Confervæ*, *Lesson*.

9. SYNEDRA, *Ehrb.*

1. Synedra *Ulna*, Ehrb.; *Infus.* t. 17. f. 1. *Kütz. l. c.* p. 66. t. 30. Exilaria Ulna, *Hassall, Brit. Fresh-water Alg.* p. 433. t. 97. f. 2.

Hab. Victoria Barrier; in Pancake-ice (doubtful). Graham's Land; in mud 270 fathoms.

One of the most abundant and easily recognized of the *Diatomaceæ*, not only in Europe but throughout the globe. Mr. Hassall states it to be of very frequent occurrence in fresh-water ponds and ditches of England. It is also found in Icelandic peat, in marine mud from Spitzbergen, in the natural paper of Silesia, and in the Tropical Ocean off Rio. As a fossil or dead, it has occurred in Oran and Sicily, the United States, in alluvial deposits in Brazil, the Euphrates River, and in atmospheric dust off the Cape de Verd Islands. It is also found in the volcanic tuff of the Rhine and in Peruvian guano.

10. DICLADIA, *N. G. Ehrb.*

1. Dicladia *antennata*, Ehrb.; *Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier; in Pancake-ice.

2. Dicladia *bulbosa*, Ehrb. *l. c.*

Hab. Victoria Barrier; in Pancake-ice.

This and the preceding always occurred abundantly in the stomachs of the Victoria Land *Salpæ*.

11. SCHIZONEMA, *Ag.*

1. Schizonema *sp.?* filis ramosis siccitate luride viridibus, frustulis ovato-oblongis siccis collapsis. *Thwaites, MS.*

Hab. Kerguelen's Land; abundant in the sea.

Very similar to, and possibly not distinct from, the British *S. implicatum*, Harv.

12. EXILARIA, *Grev.*

1. Exilaria, n. sp.? frustulis linearibus striatis e dorso visis leviter versus apices truncatos attenuatis, e latere visis utrinque obtuse apiculatis. *Thwaites, MS.*

Hab. Kerguelen's Land; on marine *Confervæ.*

G. truncatæ forma accedit, sed frustulis striatis ut in *Synedra Ulna.*

13. COCCONEIS, *Ehrb.*

1. Cocconeis *Placentula*, Ehrb. *Kütz.* p. 73. t. 28. f. 13. *c.*

Hab. Falkland Islands; on marine *Confervæ, Lesson.*

Found living in the fresh waters of Europe; also in Iceland, Mexico and the Oregon river, Chili, the Sandwich Islands, and in African (?) guano.

2. Cocconeis *Scutellum*, Ehrb. *Kütz. l. c.* t. 5. f. vi. 3–6.

Hab. Falkland Islands; on marine *Confervæ, Lesson.* Kerguelen's Land, also on marine *Confervæ.*

Found living in the Atlantic, German, and Mediterranean Seas; on the coast of Iceland, in Peruvian guano and in volcanic tuff.

14. ACHNANTHES, *Ag.*

1. Achnanthes *pachypus, Kütz.* p. 76. t. 21. II. f. 3 and 29. f. 83.

Hab. Falkland Islands; on marine *Confervæ, Lesson.*

Recorded by Montagne to be a native of Callao, in Peru.

2. Achnanthes *longipes*, Ag. *Harv. Man. Alg. Brit.* p. 200.

Hab. Kerguelen's Land; on *Algæ.*

Specimen in a very bad state, but probably referable to this species. *Thwaites, MS.*

3. Achnanthes *turgens*, Ehrb. *l. c.*

Hab. Graham's Land; in mud from 270 fathoms.

15. LICHNOPHORA, *Ag.*

1. Lichnophora *abbreviata*, Ag. Podosfenia abbreviata, *Ehrb. Infus.* p. 24. t. 18. f. 7.

Hab. Kerguelen's Land; in the sea.

Frustula omnino ut in exemplaribus ab Ehrenberg depictis, sed plura, stipiteque majore. *Thwaites, MS.*

Occurs as a parasite on *Ceramium rubrum*, in the Mediterranean Sea.

16. DIATOMA, *Ag.*

1. Diatoma, n. sp.? frustulis angustissimis omnino aut fere lævissimis e dorso visis versus apices truncatos sub-dilatatis, e latere visis infra apices rotundatos constrictis.

Hab. Falkland Islands; on marine *Confervæ.*

D. elongata, Ag. simillima, differt frustulis nunquam aut vix striatis. *Thwaites, MS.*

17. COCCONEMA, *Ehrb.*

1. Cocconema *Lunula*, Ehrb. Cymbella maculata, *Kütz.* p. 79. t. 29. f. 32. *c.*

Hab. Falkland Islands; on marine *Confervæ, Lesson.* In a white pigment used by the Fuegians, *C. Darwin, Esq.*

Found throughout Europe, in Mexico and Chili, the Ægean Sea, the Oregon River, and in earth from Labrador. It also occurs in the white pigment used by the natives of Fuegia, and in atmospheric dust at the Cape de Verd Islands.

18. GOMPHONEMA, *Ag.*

1. Gomphonema *clavatum*, Ehrb.; *Infus.* t. 18. f. vi.

Hab. Falkland Islands; on marine *Confervæ, Lesson.*

Throughout the European and North American shores, those of Iceland, the Marian and Sandwich Islands. Fossil in Virginia, *U.S.*

2. Gomphonema *minutissimum*, Grev. *in Hook. Brit. Fl.* vol. ii. p. 209. G. curvatum, *β.* salinum, *Kütz.* p. 85. t. 8. f. 1.

Hab. Falkland Islands; on marine *Confervæ*; *Lesson.*

A British and common Atlantic species; found also in the Oregon territory and fossil in Virginia, U. S.

19. PINNULARIA, *Ehrb.*

1. Pinnularia *borealis*, Ehrb.

Hab. Cockburn Island; in the soil of a Penguin rookery. In a pigment used by the Fuegians; *C. Darwin, Esq.*

Found also in Peruvian guano, in the *Mastodon* earth of the Plate river, and in the Cape de Verd atmospheric dust. Also in volcanic ashes from Ascension Island and Patagonia; in volcanic tuff of the Rhine and Phonolite stone.

2. Pinnularia *peregrina* (?), Ehrb. Navicula peregrina, *Kütz.*

Hab. Cockburn Island; in the dirt of a Penguin rookery. Falkland Islands, *Lesson.*

The true *P. peregrina* is a native of the open ocean near the Brazilian coast, and has been found fossil in Virginia, U. S., and living at St. Domingo, Cuba, and Labrador.

20. NAVICULA, *Bory.*

1. Navicula *elliptica*, n. sp. Ehrb. *Schrift. Berl. Akad. May*, 1844.

Hab. Graham's Land; in mud from 270 fathoms.

2. Navicula *amphioxys*, Ehrb. *Kütz.* p. 91. t. 28. f. 37.

Hab. Falkland Islands; on marine *Confervæ, Lesson.*

This has also been collected living in Chili, Cayenne and Cuba, in various alluvial deposits, as the Brazils, Iceland, and in the natural paper of Silesia.

3. Navicula *Didyma* (?), Kütz.

Hab. Falkland Islands; on marine *Confervæ, Lesson.*

The true *N. Didyma* is a native of a salt-water Lagoon in Germany.

4. Navicula *Lyra*, Ehrb. *Kütz.* p. 94. t. 28. f. 55, *c.*

Hab. Falkland Islands; on marine *Confervæ, Lesson.*

5. Navicula *viridis*, Kütz. p. 97. t. 4. f. 18. and t. 30. f. 12.

Hab. Falkland Islands; abundant on marine *Confervæ, Lesson, J. D. H.*

One of the most widely dispersed of all *Diatomaceæ*, found alive in fresh waters of England, Scotland, and Ireland, in the natural paper of Silesia, in the Sandwich and Marian Islands, and West Tropical Africa, also in alluvial deposits of Iceland, Labrador and Peru.

21. STAUROPTERA, *Ehrb.*

1. Stauroptera *aspera*, Ehrb. *Infus. Amer.* p. 134. t. 1. *Kütz.* p. 106. t. 12, *c.*

Hab. Graham's Land; in mud from 270 fathoms. Falkland Islands, *Lesson.*

This has been collected in Norway, Spitzbergen, Iceland and Labrador, Mexico, Cuba, Peru; on the sand-hills of Patagonia, and in Peruvian guano.

2. Stauroptera *capitata*, n. sp. Ehrb. *Schrift. Berl. Akad. May*, 1844.

Hab. Cockburn Island; on the ground in a Penguin rookery.

22. AMPHORA, *Ehrb.*

1. Amphora *Libyca*, Ehrb. *Kütz.* p. 107. t. 29. f. 28, *c.*

Hab. Graham's Land; in mud from 270 fathoms.

Originally detected in the oasis of Sivah, and since found in various quarters of the globe, as Iceland, Labrador, the Oregon River and United States; at the Euphrates River, in African guano, and in the volcanic tuff of the Rhine.

2. Amphora *navicularis*, Ehrb.; *l. c.*

Hab. Falkland Islands; on marine *Confervæ*: *Lesson.*

23. ASTEROMPHALOS, n. g. *Ehrb.*

1. Asteromphalos *Hookeri*, Ehrb. *Schrift. Berl. Acad. May*, 1844. *cum ic.*

Hab. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. In a scum floating in the ocean, Lat. 64° S., Long. 160° W.

2. Asteromphalos *Rossii*, Ehrb. *l. c. cum ic.*

Hab. Victoria Barrier and Victoria Land; in Pancake Ice. In scum with the previous species.

3. Asteromphalos *Buchii*, Ehrb. *l. c. cum ic.*

Hab. Victoria Land and Barrier, with the *A. Rossii*, also in mud from 190 fathoms and in a floating scum with the two preceding species.

4. Asteromphalos *Beaumontii*, Ehrb. *l. c. cum ic.*

Hab. Victoria Barrier; in Pancake Ice.

5. Asteromphalos *Humboldtii*, Ehrb. *l. c. cum ic.*

Hab. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. In a floating scum with *A. Hookeri.*

6. Asteromphalos *Cuvieri*, Ehrb. *l. c. cum ic.*

Hab. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms.

7. Asteromphalos *Darwinii*, Ehrb. *l. c. cum ic.*

Hab. In a scum floating in the ocean, in Lat. 64° S., Long. 160° W.

24. HALIOMYX, n. g. *Ehrb.*

1. Haliomyx *senarius*, Ehrb. *in Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier; in the Pancake Ice.

2. Haliomyx *duodenarius*, Ehrb. *l. c.*

Hab. Victoria Barrier; in Pancake Ice. In the stomachs of *Salpæ* taken in Lat. 64° S., Long. 157° W.

25. HEMIAULUS, n. g. *Ehrb.*

1. Hemiaulus *Antarcticus*, Ehrb. *in Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier and Victoria Land; in Pancake Ice and in mud from 190 fathoms. Open sea off Cape Horn, *Mr. Schayer* (Ehrb.).

2. Hemiaulus? *obtusus*, Ehrb. *l. c.*

Hab. In a floating scum, Lat. 64° S., Long. 160° W. Graham's Land; in mud from 207 and 270 fathoms.

26. SYMBOLOPHORA, *Ehrb.*

1. Symbolophora? *Microtrias,* n. sp. Ehrb.; *Schrift. Berl. Akad. May,* 1844.

Hab. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. Graham's Land; in mud from 270 fathoms.

2. Symbolophora? *Tetras,* n. sp., Ehrb.; *l. c.*

Hab. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. Graham's Land; in mud from 270 fathoms.

3. Symbolophora? *Pentas,* n. sp., Ehrb. *l. c.*

Hab. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. Graham's Land; in mud from 270 fathoms.

4. Symbolophora? *Hexas,* n. sp., Ehrb. *l. c.*

Hab. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. Graham's Land; in mud from 270 fathoms.

27. CHÆTOCEROS, n. g. *Ehrb.*

1. Chætoceros *Dichaeta,* Ehrb.; *Schrift. Berl. Akad. May,* 1844.

Hab. In a scum floating on the surface of the ocean, in Lat. 64° S., Long. 160° W.

2. Chætoceros *Tetrachæta,* Ehrb. *l. c.*

Hab. In a floating scum with the former species.

Two other species of this new genus have recently been discovered in the Bermuda Islands.

28. ANAULUS, n. g., *Ehrb.*

1. Anaulus *scalaris,* Ehrb.; *Schrift. Berl. Akad. May,* 1844.

Hab. Graham's Land; in mud from 207 and 270 fathoms.

29. RHAPHONEIS, n. g. *Ehrb.*

1. Rhaphoneis *fasciolata,* Ehrb.; *l. c.*

Hab. Graham's Land, in mud from 207 and 270 fathoms.

2. Rhaphoneis *scutellum,* Ehrb.; *l. c.*

Hab. Cockburn Island; in the dirt of a Penguin rookery.

30. PODOSPHENIA, *Ehrb.*

1. Podosphenia *cuneata,* Ehrb.; *Infus.* t. 17. f. viii. *Kutz. Kieselsch. Diat.* p. 121. t. 9. f. 13. 1–4.

Hab. Graham's Land; in mud from 270 fathoms.

Also found in the Atlantic, German, and Mediterranean seas, and in Peruvian guano.

31. GRAMMATOPHORA, *Ehrb.*

1. Grammatophora *parallela*, Ehrb.

Hab. Graham's Land; in mud from 207 and 270 fathoms.

Found fossil in Sicily, Oran and Virginia, U.S.

2. Grammatophora *Africana*, Ehrb.; *Kütz.* p. 129.

Hab. Graham's Land; in mud from 270 fathoms.

Exists also in the Mediterranean Sea and German Ocean; and fossil in Sicily, Oran, and Virginia, U.S., and in Peruvian and African? guano.

3. Grammatophora *serpentina*, n. sp., Ehrb.; *Schrift, Berl. Akad. May*, 1844. (*non Kütz.*)

Hab. Graham's Land; in mud from 270 fathoms.

4. Grammatophora *Oceanica*, Ehrb. G. marina, *Kütz.* Diatoma marinum, *Lyngb. Harv. Brit. Alg.* p. 201.

Hab. Falkland Islands; on marine *Confervæ*: *Lesson.*

Abundant on the Atlantic shores of both the Old and New World, and in the Mediterranean Sea. Found fossil in Virginia, U.S., and Peruvian guano; also in the atmospheric dust of the Cape de Verds.

5. Grammatophora *stricta*, Ehrb.; *Kütz.* p. 129. t. 29. f. 76. *c.*

Hab. Falkland Islands; on marine *Confervæ*: *Lesson.*

This occurs in Peruvian guano, and in deposits at Vera Cruz, in Mexico, and North America.

32. COSCINODISCUS, *Ehrb.*

1. Coscinodiscus? *actinochilus*, n. sp., Ehrb.; *Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier; in Pancake Ice.

2. Coscinodiscus *Apollinis*, n. sp., Ehrb.; *l. c.*

Hab. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. Stomachs of *Salpæ*, in Lat. 64° S., Long. 157° W. Graham's Land; in mud from 207 and 270 fathoms.

3. Coscinodiscus *cingulatus*, n. sp., Ehrb.; *l. c.*

Hab. Victoria Barrier; in Pancake Ice. Graham's Land; in stomachs of *Salpæ* with the preceding.

4. Coscinodiscus? *gemmifer*, n. sp., Ehrb.; *l. c.*

Hab. Victoria Land; in mud from 190 fathoms, and in Pancake Ice. Graham's Land; in the stomachs of *Salpæ* with the preceding.

This species has also been found in the Bermuda Islands, and fossil at Oran and Sicily.

5. Coscinodiscus *Lunæ*, n. sp., Ehrb.; *l. c.*

Hab. Victoria Barrier and Land; in Pancake Ice and in mud from 190 fathoms. In stomachs of *Salpæ*, taken in Lat. 66° S., Long. 157° W. Graham's Land; in mud from 207 fathoms.

6. Coscinodiscus *eccentricus*, Ehrb.; *Leb. Kr.* p. 66. *Kütz. Kiesel. Bacill.* p. 131. t. 1. f. 9.

Hab. Victoria Barrier; in Pancake Ice.

Found on the European shores of the Atlantic, and at Vera Cruz; in deposits at Oran, Bermuda, Virginia, U.S., and in Peruvian and African ? guano.

7. Coscinodiscus *limbatus*, Ehrb.; *Schrift. Berl. Akad.* 1840. *Kütz. l. c.* p. 131.

Hab. Victoria Barrier; in mud at 190 fathoms.

Also found in the Ægean sea.

8. Coscinodiscus *lineatus*, Kütz. p. 131. t. 1. f. 10.

Hab. Victoria Barrier and Land; in Pancake and Brash Ice, also in mud from 190 fathoms. Stomachs of *Salpæ* within the Antarctic circle. In a floating scum Lat. 64° S., Long. 160° W. Graham's Land; in mud from 270 fathoms.

A very widely dispersed species, inhabiting Melville Island, Sicily, Virginia, Maryland, and Peruvian guano.

9. Coscinodiscus *Oculus-Iridis*, Ehrb.; *Leb. Kr. l. c. Kütz. l. c.* p. 132.

Hab. Victoria Land and Barrier; in Pancake Ice. Graham's Land; in mud from 270 fathoms.

Found in the Atlantic Ocean, Bermudas, Mediterranean Sea, and in Peruvian guano.

10. Coscinodiscus *radiolatus*, Ehrb.; *Kütz.* p. 132. t. 1. f. 18.

Hab. Victoria Barrier and Land; in Pancake Ice, and in mud from 190 fathoms. Graham's Land; in mud from 207 fathoms.

This occurs in the Mediterranean Sea, as also in deposits at Oran, Sicily, the Bermudas, the United States, Peru and Cuba.

11. Coscinodiscus *subtilis*, Ehrb.; *Schrift. Berl. Akad. Feb.* 1844. *Kütz. l. c.* p. 132. t. 1. f. 16.

Hab. Victoria Land and Barrier; in Pancake Ice. Stomachs of *Salpæ* and oceanic scums within the Antarctic circle. Graham's Land; in mud from 270 fathoms.

Previously found in deposits only, as in Sicily, the Bermudas, the United States, the *Mastodon* earth of the Plate river, Vera Cruz, and Peruvian and African guano.

12. Coscinodiscus *velatus*, Ehrb.; *Schrift. Berl. Akad. Feb.* 1844.

Hab. Victoria Barrier; in Pancake Ice. Graham's Land; in mud from 207 fathoms.

Known previously only in the fossil deposits of Virginia and Maryland, U.S.

33. FLUSTRELLA, *Ehrb.*

1. Flustrella *concentrica*, Ehrb.; *Schrift. Berl. Akad. Feb.* 1844.

Hab. Victoria Barrier; in Pancake Ice. Graham's Land; in mud from 270 fathoms.

In a fossil state this species occurs in Sicily, Oran, the Ægean Sea, Maryland, U.S, and in the Bermuda Islands.

34. ACTINOCYCLUS, *Ehrb.*

1. Actinocyclus *senarius*, Ehrb.; *Schrift. Berl. Akad. June*, 1844.

Hab. Falkland Islands; on marine *Confervæ*: *Lesson*.

35. ACTINOPTYCHUS, *Ehrb.*

1. Actinoptychus *biternarius*, Ehrb.; *l. c.*

Hab. Victoria Barrier; in Pancake Ice.

Also occurs in tertiary deposits in Virginia and Maryland, U.S., and in the Bermuda Islands.

36. DISCOPLEA, *Ehrb.*

1. Discoplea *Rota*, n. sp., Ehrb.; *Schrift. Berl. Akad. May*, 1844.

Hab. Graham's Land; in mud from 270 fathoms.

2. Discoplea *Rotula*, n. sp., Ehrb.; *l. c.*

Hab. Graham's Land; in mud from 270 fathoms.

37. LITHOBOTRYS, *Ehrb.*

1. Lithobotrys? *denticulata*, n. sp., Ehrb.; *l. c.*

Hab. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. In a floating scum, Lat. 64° S., Long. 160° W.

The only other species of this genus is a Virginian fossil.

38. LITHOCAMPE, *Ehrb.*

1. Lithocampe *Australis*, n. sp., Ehrb.; *Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier; in Pancake Ice.

This genus was known only as a fossil, occurring in the United States and the Mediterranean Sea, previous to the detection of this and the following species.

Lithocampe *Antarctica*, n. sp., Ehrb.; *l. c.*

Hab. Graham's Land; in mud from 270 fathoms.

39. TRIAULACIAS, n.g., *Ehrb.*

I. Triaulacias *triquetra*, Ehrb.; *Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier; in mud from 190 fathoms.

40. BIDDULPHIA, *Gray.*

1. Biddulphia *ursina*. n. sp., Ehrb.; *l. c.*

Hab. Graham's Land; Gulf of Erebus and Terror, in mud 207 and 270 fathoms.

41. ZYGOCEROS, *Ehrb.*

1. Zygoceros *Australis,* n. sp., Ehrb.; *l. c.*

Hab. Victoria Barrier; in Pancake Ice. Graham's Land; Gulf of Erebus and Terror, in mud at 207 fathoms.

42. DENTICELLA, *Ehrb.*

1. Denticella *lævis,* n. sp., Ehrb.; *l. c.*

Hab. Graham's Land; Gulf of Erebus and Terror, in mud at 270 fathoms.

43. MESOCENA, *Ehrb.*

1. Mesocena? *Spongolithis,* n. sp., Ehrb.; *l. c.*

Hab. Victoria Barrier; in mud from 190 fathoms. Graham's Land; in mud at 270 fathoms.

44. ACTINISCUS, *Ehrb.*

1. Actiniscus *lancearius,* n. sp., Ehrb.; *l. c.*

Hab. Open ocean, Lat. 66° S., Long. 157° W., in the stomach of a *Salpa.*

45. DICTYOCHA, *Ehrb.*

1. Dictyocha *aculeata,* Ehrb.; *Leb. Kr.* p. 68. *Kütz. Kiesel. Bacill.* p. 140.

Hab. Victoria Land and Barrier; in Pancake Ice. In the stomachs of *Salpæ,* Lat. 66° S., Long. 157 W. Entangled in a surface scum, Lat. 64° S., Long. 160° W.

Found living in the North Sea, fossil in Sicily, the Ægean, North Africa, and Virginia, U.S.

2. Dictyocha *binoculus,* Ehrb.; *Schrift. Akad. Berl. May,* 1844.

Hab. Victoria Barrier; in Pancake Ice. Entangled in a floating scum, Lat. 64° S., Long. 160° W.

Also occurs in tertiary deposits in the Ægean Sea.

3. Dictyocha *biternaria,* Ehrb.; *l. c.*

Hab. Victoria Barrier; in Pancake Ice.

4. Dictyocha *Epiodon,* Ehrb.; *Schrift. Berl. Akad. Feb.* 1844.

Hab. Victoria Barrier; in Pancake Ice.

Originally described from specimens occurring in a tertiary deposit in Virginia, U.S., also found in Peruvian guano.

5. Dictyocha *octonaria,* Ehrb.; *Schrift. Berl. Akad. May,* 1844.

Hab. Victoria Barrier; in Pancake Ice.

6. Dictyocha *Ornamentum*, Ehrb.; *l. c. Feb.* 1844.

Hab. Victoria Barrier; in Pancake Ice. In a floating scum, Lat. 64° S., Long. 160° W.

Tertiary deposits of Sicily contain this species.

7. Dictyocha *septenaria*, Ehrb.; *l. c.*

Hab. Victoria Barrier; in Pancake Ice, and in mud from 190 fathoms.

Previously found fossil in the tertiary deposits of Oran.

8. Dictyocha *Speculum*, Ehrb.; *Kütz. Kiesel. Bacill.* p. 140. t. 21. f. 22. c.

Hab. Victoria Barrier; in Pancake Ice, and in mud at 190 fathoms. In the stomachs of *Salpæ*, Lat. 66° S., Long. 157° W. In a floating scum, Lat. 64° S., Long. 160° W.

A widely distributed species, found living in the North Sea and Atlantic, fossil at North Africa, Greece, and Sicily, and in Maryland, U.S.

46. RHIZOSOLENIA, *Ehrb.*

1. Rhizosolenia *Calyptra*, n. sp., Ehrb.; *Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier; in Pancake Ice. Graham's Land; Gulf of Erebus and Terror, in mud from 270 fathoms.

2. Rhizosolenia *Ornithoglossa*, n. sp., Ehrb.; *l. c.*

Hab. Victoria Barrier; in Pancake Ice, and in mud from 190 fathoms. Graham's Land; Gulf of Erebus and Terror, in mud at 270 fathoms.

Both these species have recently been detected in the Bermuda Islands.

LVII. DESMIDIEÆ, *auct. recent.*

1. ARTHRODESMUS, *Ehrb.*

1. Arthrodesmus *Tænia*, Ehrb.; *Schrift. Berl. Akad. June*, 1841.

Hab. Falkland Islands; on marine *Confervæ*: *Lesson.*

LVIII. LICHENES,* *L.*

1. USNEA, *Ach.*

1. Usnea *melaxantha*, Ach.; *Lich. Univ.* p. 618. *Syn. Meth.* p. 303. *Brown, Plant. Spitz. in Scoresby Voy.* vol. i. *App.* p. 76. *Kunth. Synops.* vol. i. p. 36. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 596.

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* Since the publication of the "*Lichenes Antarctici*" in the 'London Journal of Botany,' and of those contained in the first part of this work, I have had the advantage of re-studying all the species with my friend, the Rev. Churchill Babington, whose profound knowledge of the forms of this difficult order, and acquaintance with the most recent writings of European Lichenologists, have been most liberally brought to bear upon this part of the 'Flora Antarctica.'

Bory in Duperrey, Voy. Bot. p. 240. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 201. U. sphacelata, *Brown, in Parry, 1st Voy. App.* p. 307. *Hook. Plant. Arct. in Linn. Soc. Trans.* vol. xiv. p. 384. *Bot. Miscell.* vol. i. p. 15. t. 12. U. fasciata, *Torrey, in Silliman Journ.* vol. vi. *cum ic. Hook. Bot. Miscell.* vol. i. p. 14. t. 11. U. aurantiaco-atra, *D'Urv. in Mém. Soc. Linn. Paris,* vol. iv. p. 596. Cornicularia flavicans, *Persoon, in Freyc. Voy. Bot.* p. 210. Lichen aurantiaco-ater, *Jacq. Miscell. (fid. Acharius).*

Var. *α. Acharii*; robusta, thallo scabrido, apotheciorum marginibus nudis.—U. melaxantha, *Ach. l. c.*

Var. *β. Jacquinii*; robusta, thallo lævi.—Lichen aurantiaco-ater, *Jacq. l. c.*

Var. *γ. fasciata*; robusta, thallo tuberculato, ramulis pluries divisis capillaceo-attenuatis, apotheciis extus tuberculatis.—U. fasciata, *Torrey, l. c.*

Var. *δ. sphacelata*; gracilis, thallo lævi pruinoso v. tuberculato fruticuliformi ramosissimo, ramulis capillaribus.—U. sphacelata. *Brown, l. c.*

Hab. Throughout Tierra del Fuego and the Falkland Islands; on exposed rocks, from the sea to 2,000 feet, most abundant. New South Shetlands; *Webster, Dr. Eights.*

Perhaps the handsomest of all Lichens, whether we regard its colour, stature, or mode of growth, and yet so variable in all these points, that the extremes are scarcely recognizable. In size it varies from a few lines or an inch, with capillary stem and branches, to four inches, with a woody stem a quarter of an inch in diameter. The colour is sometimes wholly (especially in var. δ) black, at others uniformly yellow, but most frequently banded with black, especially towards the apices of the ramuli. Old specimens turn tawny red, as do all when, after being dried, they are soaked in warm water. The apothecia are yellow, grey or deep black. The surface of both the stems and the back of the apothecia is more or less tuberculated or pruinose, smooth or much wrinkled, naked or more or less covered with longer or shorter horizontal terete acuminated ramuli. The apothecia vary exceedingly in breadth, from two or three lines to almost half an inch; their margins are smooth, tuberculated or beset with branching ramuli; they are generally terminal, but the younger appear lateral when subtended by a branch.

It is in the Falkland Islands that this species most abounds, covering the surface of the Quartz rocks with a miniature forest, seeking the most exposed situations, and there attaining its greatest size and beauty. In these Islands, too, all the five varieties I have enumerated may be collected within a few feet of one another, and so associated as to leave little doubt that they are states depending on age, rather than marked races. The var. δ. especially, is certainly only an undeveloped state, which does not bear soredia in the Antarctic regions; or apothecia either in Tasmania or in the Arctic latitudes, where soredia are produced.

The structure of the stem of this, and probably of some other Lichens, presents a marked analogy with that of the Laminarioid Algæ described at p. 154. The central thread is very large, composed of concentric layers of dense, horny, red cellular tissue, gradually passing into a soft white pith, enclosing a cavity. Around this horny thread, whose edges are sharply defined, are arranged concentric layers of a spongy cellular substance, which again are enclosed in a cortical layer, as dense as the central, and to which the yellow and black hues of this Lichen are always confined. Thus, proceeding from the circumference, there is—1st, a horny, coloured, cortical layer, answering to what is called the cortical layer of *Lessonia*, and to which, in that plant also, the coloured chromule is chiefly confined; 2nd, the layers of intermediate lax tissue, successively deposited, though much more obscurely so than in *Lessonia*; 3rd, the central thread of *Usneæ* which is a stout axis, answering to the elliptic core of *Lessonia*, but in this Lichen becoming so lax towards the centre as to enclose a cavity in the older stems.

We have never observed spores in any specimens of this Lichen, from whatever place collected, though we have examined very many apothecia in a live state, as well as after being dried, both young and old, and of all colours, both black, grey, or yellow. Dr. Montagne (Voy. au Pole Sud, l. c.) has been similarly unsuccessful.

The range of this Lichen is very wide. It is found in the Arctic regions of both the New and Old World; on the Andes under the Equator, at an elevation of 11,000 feet; on the mountains of Tasmania at 3,000 and 4,000 feet; in Chili, the Falkland Islands, Fuegia, and the New South Shetlands. Now it is worthy of notice, that in none of the Arctic, the equatorial, or south temperate latitudes, does this plant produce apothecia; and that in the Antarctic, where alone apothecia have hitherto been found, these are always barren. Further it is remarkable, that this Lichen grows only where no other *Usnea* is found in fruit; and is, perhaps, the only species of that genus which universally inhabits rocks; circumstances which, taken together with its increasing in luxuriance with the exposure it is subjected to, suggests the possibility of its being a state of some other species of this highly variable and universally diffused genus, and that, distinct as the Antarctic specimens of *U. melaxantha* appear, they may owe their characters to the climate, for there is very great difficulty in defining the species so as to exclude states of *U. florida*. In South Chili, where the *U. florida* commences (proceeding southwards), we have specimens of *U. ceruchia*, Mont., which are, perhaps, states of *U. melaxantha*. Again, in Tasmania I am unable to distinguish some specimens of *U. barbata* and *U. florida* (?), which grow on the trunks of dead trees in the higher parts of the island, from the *U. melaxantha* of the summit of Mount Wellington and other elevated mountains.

2. Usnea *Taylori*, Hook. fil.; thallo erecto lævi pallide citrino dichotomo, ramis erectis gemmis papulosis sparsis, apotheciis terminalibus majoribus demum planiusculis, disco atro, margine integerrimo, dorso lævigato. *Lond. Journ. Bot.* vol. iii. p. 657. (Tab. CXCV. Fig. I.)

Hab. Kerguelen's Land; on rocks from 100 to 1,200 feet of elevation: very abundant.

U. melaxanthæ simillima, differt præcipue thallo lævi polito et colore lætiore nitente.

So closely allied to the *U. melaxantha*, that I advance this species with much hesitation. None of the Kerguelen's Land specimens exactly tally with any of its congeners from other Antarctic localities, but approach them very nearly indeed; so much so, that the present should be perhaps regarded as a permanent variety only. If it be so, it is singular that it is the only one in which asci have hitherto been detected; these are abundant in all the apothecia, and vary much in size, in the form of their contained spores, and in the arrangement or grouping of these, as shown in the accompanying plate.

This is by far the most handsome vegetable production of Kerguelen's Land.

Plate CXCV. *Fig.* I.—1, young, and 2, full grown plants of the natural size; 3, vertical section of young and 4, of old apothecium; 5, lamina proligera, with asci and spores:—very highly *magnified*.

3. Usnea *barbata*, Ach.; *Lich. Univ.* p. 624. *Fl. Antarct.* Pt. 1. p. 194.

Var. *c. articulata*, Ach.; *Syn. Meth.* p. 306.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant on the stems of *Empetrum* and in heathy and rocky places. Var *c.* Falkland Islands, *Mr. Wright.* Hermite Island, Cape Horn; top of Mount Foster and Kater's Peak, &c.

Also a native of Lord Auckland's group, Campbell's Island, and Tasmania. In Europe it is found as far north as Lapland.

4. Usnea *plicata*, Ach.; *Lich. Univ.* p. 622. *Fl. Antarct.* Pt. 1. p. 194.

Hab. Falkland Islands, and Hermite Island, Cape Horn; on twigs of bushes, &c. Strait of Magalhaens, *Jacquinot.*

A more Arctic and Antarctic plant than the following, reaching Cape Horn in 57° S., and the shores of the Polar Sea in Arctic America, or 69° N., beyond which it is succeeded by the *U. melaxantha* in both extremities of the globe.

5. Usnea *florida*, Ach.; *Lich. Univ.* p. 304. *Engl. Bot.* t. 872.

Hab. Chonos Archipelago, on trees; *C. Darwin, Esq.*

A plant evidently impatient of perennial cold; inhabiting none of the Antarctic islands south of New Zealand and Tasmania in the Old World, nor of the Chonos Archipelago in the New. In the northern regions, again, it does not pass the wooded regions (63° N.), in America, or reach Lapland in Europe.

2. EVERNIA, *Ach.*

1. Evernia *Magellanica*, Mont.; *in Voy. au Pole Sud, Bot. Crypt.* p. 198.

Hab. Strait of Magalhaens; *D'Urville* and *Jacquinot.*

A very beautiful and distinct species, which I have seen from no other locality than that indicated by Montagne.

3. RAMALINA, *Ach.*

1. Ramalina *scopulorum*, Ach.; *Lich. Univ.* p. 604. *Engl. Bot.* t. 688.

Var. *α*. thallo 1–1½ pollicari lineari rigido polito utrinque glabro, apotheciis plurimis primum concavis demum convexis marginibus reflexis. R. verrucosa, *nob. in Lond. Journ. Bot.* vol. iii. p. 655.

Var. *β*. thallo fastigiato sub 2-pollicari cartilagineo pallide stramineo lineari v. lineari-obovato laciniato polito obscure lacunoso hic illic terebrato apicibus sub-acutis, apotheciis nullis.

Var. *γ*. thallo elongato 2–6-unciali rigide cartilagineo planiusculo v. lacunoso parce pruinoso pertuso laciniis ½ unc. latis lobulis acutis, apotheciis nullis.

Var. *δ*. thallo flavo dense fastigiato lineari-ligulato 1–5-unciali laciniis flaccidis nunc pertusis pluries divisis acuminatis glabratis punctisve pruinosis sparsis, apotheciis nullis.

Var. *ε*. omnia varietatis *δ*., sed rigida, apotheciis apices versus laciniarum confertis corrugatis plerisque monstrosis.

Var. *ζ*. *terebrata*; thallo elongato 8 unc. ad pedalem flaccido lacunoso et corrugato pertuso pruinoso v. glabrato, margine integerrimo eroso lobulato v. prolifero, apotheciis nullis:—inter var. *γ*. and *δ*. media sed statura proceriore. R. terebrata, *nob. in Lond. Journ. Bot.* vol. iii. p. 654.

Var. *η*. *truncata*; fastigiata, thallo cuneato in lacinias breves truncatas flabellatim expanso laciniis pertusis pruinosis griseis apicibus involutis:—an forma incompleta?

Hab. Var. *α*. Dry quartz rocks, Falkland Islands. Var. *β*. and *γ*. Dry rocks, chiefly of clay slate, Falkland Islands. Var. *δ*. Falkland Islands and Cape Horn; on rocks near the sea. Var. *ε*. Dry granite rocks, Cape Horn; Kerguelen's Land, *Anderson*. Var. *ζ*. Falkland Islands; on moist exposed rocks, near the sea, most abundant. Var. *η*. with var. *ζ*. but in more shady places.

On these varieties, or rather forms, we are enabled to offer the following observations:—

The var. *α*. is exactly the English *R. scopulorum*, and the only one which produces perfect fruit in the Falkland Islands. Var. *β*. is found in New Zealand, and in fruit; also abundantly in Brazil. Var. *γ*. and *ζ*. are scarcely distinguishable from *R. fraxinea* of Norfolk: small specimens exactly resemble *R. membranacea*, Laurer, of New Holland; it is a very common form in the Southern Hemisphere. Var. *δ*. is very similar to the Uraguay *R. prolifera*, of Taylor. Var. *ε*. is a small form of a Chilian variety. The var. *η*. inhabits Chiloe, and approaches near to *R. pollinaria*.

Dissimilar though the states of this plant here brought together are, no one who has collected them together can doubt their all belonging to one species, which, however, seldom fruits.

M. Fries states his conviction of the probability that all the European *Ramalinæ* are varieties of one species, an opinion in which we certainly concur, and we would further add many of the Exotic (except *R. inanis*) to it. The above varieties certainly all belong to one species, as abundant in Cape Horn and Fuegia as the ordinary states of *R. scopulorum* are in Europe, and, however unlike some of these forms are to the English plant of that name, the one called *a* here, and which is the only one that fruits, is in no way to be distinguished from that plant. Considering how plastic the Lichens are in form and texture, and how amenable to the different climatal conditions, it must be admitted that if the *R. scopulorum* of England were to inhabit the maritime rocks of the Falklands, its aspect would be changed; the humidity of the atmosphere near the sea of these islands, being much greater than that of similar situations in our own country. Again, the locality inhabited by the var. *a.*, namely, rocks at a considerable elevation and distance from the ocean, possesses a climate more assimilated to the British habitats of *R. scopulorum* than are the moist rocks at a lower level, and hence it is only natural to suppose, that there the Falkland Island form would assume the English. Lastly, the universally acknowledged difficulty of defining the European species, and the singular abundance of forms of the genus exactly similar to these in all parts of the world, between Lat. 60° N. and 57° S., together with the fact that many other Lichens are equally protean and widely distributed, are all arguments in favour of the Antarctic species having a common origin with other forms of the genus inhabiting the Arctic, Temperate, and Tropical regions.

The genus *Ramalina*, in the Arctic zone, attains the parallel of 69°, on the shores of the Polar Sea in North America, and of Lapland in Europe.

4. CETRARIA, *Ach.*

1. Cetraria *Islandica*, Ach.; *Lich. Univ.* p. 509. *Engl. Bot.* t. 1330.

Hab. Hermite Island, Cape Horn; amongst moss on the tops of mountains only, 1,500–1,700 feet, barren.

One of the most Arctic of plants, having been collected on Ross Islet, the northernmost known land in Europe (81° N.), and in Melville Island (76°), on the limits of Arctic American vegetation. It inhabits the level of the ocean only within the Arctic circle, or in the extremely cold plains of Central Russia (as Moscow, 55° N.) Dahuria in Asia, 50° N., and in North America (as Labrador, 55° N.); thence, in progressing south, it ascends; attaining the tops of our Scotch Alps, 4,000 feet (56° N.), about 10,000 feet on the Swiss Alps (46° N.), 9,000 feet on the top of the Pyrenees, and 4,000 feet on the mountains of North Carolina and Virginia (in 36° N.). The last locality is the lowest latitude it attains in the Northern Hemisphere; in the Southern it re-appears only on the extreme point of America, and there is confined to the pinnacles of the very highest mountains. There is perhaps no vegetable common to both hemispheres more typical of extreme cold than this Lichen, which is further interesting from being the reputed cure for consumption, and the only plant of that order extensively used in medicine.

2. Cetraria *glauca*, Ach.; *Lich. Univ.* p. 509. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 194.

Hab. Hermite Island, Cape Horn; top of Mount Kater, 1,700 feet; on rocks, sparingly. Straits of Magalhaens, *D'Urville* and *Jacquinot*.

This, again, is an instance of the re-appearance of a Northern and Arctic Lichen in the Southern Hemisphere only under Antarctic skies. The *C. glauca* finds its principal parallel in Scotland, central and northern Europe, and sub-arctic America, wandering as far south as the Swiss Alps and mountains of the Canary Islands. It is not nearly so Arctic as the *C. Islandica*, not being found in Spitzbergen or Melville Island, or, according to Richardson anywhere to the northward of 54° in Arctic America. Wahlenberg states it to be rare in Lapland.

3. Cetraria *sepincola*, Ach.; *Lich. Univ.* p. 507. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 195.

Hab. Strait of Magalhaens, on bark of *Berberis ilicifolia*; *M. Jacquinot.*

4. Cetraria *aculeata*, Fries, *Lich. Europ.* p. 35. *Mont. l. c.* p. 194. Cornicularia aculeata, *Ach. Lich. Univ.* p. 612.

Hab. Hermite Island, Cape Horn; on the summit of Kater's peak, and other mountains. Falkland Islands, *Gaudichaud, &c.*; but not common. Strait of Magalhaens; *D'Urville and Jacquinot.*

A very Arctic plant, inhabiting Melville Island in Arctic America, and Lapland in Europe; in the latter continent it extends as far south as the Alps and Pyrenees, and to the Canary Islands in the Atlantic Ocean.

5. NEPHROMA, *Ach.*

1. Nephroma *polaris*, Ach.; *Lich. Univ.* p. 523. N. arctica, *Mont. in Voy. au Pole Sud, Bot Crypt.* p. 192.

Hab. Hermite Island, Cape Horn; moist exposed places on the margins of the woods bordering the sea, abundant. Strait of Magalhaens; *MM. Hombron* and *Jacquinot.*

The most magnificent of Lichens, whether we regard the size of the thallus, which often is a foot and upwards across, the general aspect, or the size and beautiful colour of the frond and copious apothecia. Its European range is very northern, being confined to Scandinavia, reaching Lapland but not the islands beyond, nor inhabiting any countries south of the Baltic. In North America it ranges over the wooded regions and barren lands, 54°–69°, and to the west of the Rocky Mountains descends to Fort Vancouver, in Lat. 46° N.

2. Nephroma *cellulosa*, Ach.; *Lich. Univ.* p. 523.

Hab. Staten Land; *Menzies* (*in Hook. Herb.*)

A very much smaller species than the former, approaching very closely to the *N. resupinata* of Europe. It also inhabits Juan Fernandez and Tasmania.

6. PELTIDEA, *Ach.*

1. Peltidea *polydactyla*, Ach.; *Lich. Univ.* p. 517. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 193.

Hab. Strait of Magalhaens; *MM. Hombron* and *Jacquinot.*

Very abundant in Tasmania and New Zealand, also found in Lord Auckland's group and Campbell's Island. In Europe, it ranges from Switzerland to Sweden and Norway; in America, from Mexico to Sitka, but does not proceed so far north on the east of the Rocky Mountains; it also inhabits the West Indies, Colombia, the Cape of Good Hope, and other warm climates. Altogether it is a plant which does not shun the cold so markedly as do either of the following species, for it (the var. *scutata*) is also found as far as the northern limits of the forest regions of Arctic America.

2. Peltidea *canina*, Ach.? *Lich. Univ.* p. 517. *Engl. Bot.* t. 2299.

Hab. Falkland Islands; on tufts of *Bolax glebaria*, rare.

In the Southern Hemisphere the *P. canina* has been found in Juan Fernandez only. Its range in the Northern is very wide, commencing in Mexico it is dispersed as far north as Canada on the east coast, and Sitka on the west. In Europe it is frequent from the Alps to Lapland, but does not inhabit the Arctic Island of Spitzbergen in Europe, or the shores of the Polar Sea and Islands beyond in America, where the *P. apthosa* abounds, a species not hitherto found in the Antarctic regions. The Falkland Island specimens are in a very imperfect state.

3. Peltidea *venosa*, Ach.? *Lich. Univ.* p. 514. *Engl. Bot.* t. 887.

Hab. Kerguelen's Land; on tufts of moss on the hills.

The specimens are in a very unsatisfactory state, being stunted and barren. They, however, closely resemble dwarf Scotch and Arctic individuals of the plant in question, differing chiefly in the smoother thallus and occasional buds. The range of the species is not wide: Lapland and Switzerland are its Northern and Southern European limits. In North America it inhabits the United States, Canada, and the Columbia river. Kerguelen's Land is the only recorded habitat in the Southern Hemisphere.

4. Peltidea *horizontalis*, Ach.; *Lich. Univ.* p. 515. *Engl. Bot.* t. 883.

Hab. Christmas Harbour, Kerguelen's Land; on wet moss, abundant.

Both in characters and in locality the specimens agree with the European *P. horizontalis*.

This, again, has not been observed elsewhere in the Southern Hemisphere. In the Northern it is confined to the temperate latitudes, both of Europe and North America, ranging in the latter from the middle United States to Canada, and in Europe from Lapland to Switzerland and the Pyrenees, where it is the only species of the genus inhabiting the top of the Pic du Midi (9,000 feet).

7. STICTA, *Ach.*

1. Sticta *crocata*, Linn.; *Engl. Bot. t.* 2110. S. citrina, *Pers. in Freyc. Voy. Bot.* p. 201. S. fuliginosa, *nobis in Lond. Journ. Bot.* vol. iii. p. 646.

Var. β. *gilva*, Ach. *Synops. Lich.* p. 232. S. impressa, *quoad exempl. Falkland. nobis in Lond. Journ. Bot. l. c.* S. Gaudichaudii, *Delise, Monogr. Stict.* p. 80. t. vii. f. 23. *Bory in Duperrey Voy. Bot.* p. 236.

Hab. Strait of Magalhaens; *D'Urville, Hombron.* Hermite Island, Cape Horn, and the Falkland Islands; both varieties on rocks and twigs of shrubs, near the sea.

This species is also found on the west coast of South America, in Tasmania, Swan River, and the Cape of Good Hope. In the Northern Hemisphere it inhabits the United States and West Indian Islands, the Sandwich group, Great Britain and Ireland, attaining its northern limit at Inverary in Scotland (Lat. 56° N.), which singularly coincides with the latitude of the most southern habitat, namely, Cape Horn. The var. *gilva* is certainly only a variety, without the pulverulent lines on the upper surface. The rimæ are sometimes white in this species, when it becomes exceedingly difficult to distinguish it from some of its congeners.

2. Sticta *endochrysa*, Delise; thallo late expanso cartilagineo glauco intus aurato glabro lobato, lobis rotundatis subintegerrimis marginibus gemmis confertis auratis obsitis super cæsiis flavo-virescentibusve subter rufo-flavis glabratis, cyphellis parvis prominulis citrinis, apotheciis sparsis concavis stipitatis, disco atro-rufo, margine elevato inflexo primum lanuginoso demum glabrato et crenulato. S. endochrysa, *Delise, Monogr.* p. 43. t. 1. f. 1. S. D'Urvillei, *Delise, l. c.* p. 170. S. flavicans, *nobis in Lond. Journ. Bot.* vol. iii. p. 648. S. ochracea, *Menzies, MSS. in Hb. Hook.* Parmelia pubescens, *Pers. in Freyc. Voy. Bot.* p. 199. (Tab. CXCV. Fig. II.)

Hab. Hermite Island, Cape Horn; from the sea to the tops of mountains, abundant on rocks and trees. Falkland Islands; very abundant. Staten Land; *Menzies.*

Thallus late expansus, pedalis et ultra, glaucescens. *Lobi* lati, obscure undulati, flavido-marginati v. immarginati; marginibus isidiophoris granulis subfoliaceis dense onustis, rarius denudatis et crenatis; subter lacunosi v. plani, medium versus fusco-flavidi parce tomentosi, ad apices pallidiores et glabrati. *Cyphellæ* plurimæ, papillæformes, rimæque thalli citrinæ. *Apothecia* sparsa, 2–4 lin. lata.

Variat colore superficiei superioris flavido v. cæsio, nunc glauco-virescente; foliis planis v. sublacunosis; marginibus loborum planis v. elevatis, lævibus v. crispatis, nudis v. granulis corniculatis dense obsitis.

This, and the *Nephroma arctica*, are the most noble foliaceous Lichens of the Antarctic regions. The present is particularly so, the brightness of its golden thallus, and its great abundance on the sea-ward edges of the Fuegian forest, rendering it a very conspicuous plant. It is also found in Chiloe and Juan Fernandez, and in the Old World it inhabits New Zealand. Though an ally of *S. aurata*, it is perfectly distinct from that plant, especially in the granular and not powdery margins of the thallus, also in size and general features. It is certainly as well marked as any species of Lichen confined to the southern latitudes.

Plate CXCV. *Fig.* II.—1, plant in usual state; 2 and 3, portions of thallus; 4, plant as covered with granular tubercles of the natural size; 5, granular surface of thallus; 6, apothecia; 7, under surface of thallus; 8, lamina proligera; 9, spores:—all highly *magnified*.

3. Sticta *orygmæa*, Ach.; *Fl. Antarct.* Pt. 1. p. 197.

Hab. Staten Land, (fid. *Acharius*). Strait of Magalhaens, *D'Urville*.

This species was not seen at Cape Horn or the Falkland Islands: but we have specimens from Chiloe and Juan Fernandez. It is singular that a Lichen, which abounds in Lord Auckland's group and Campbell's Island, should not be also found at Cape Horn; and that the *S. endochrysa* of Cape Horn is found in New Zealand, but does not spread so far south as Lord Auckland's group. The much greater cold of Fuegia might be prejudicial to the *S. orygmæa*, but there is no apparent reason for *S. endochrysa* being foreign to Lord Auckland's group. I suspect that the Acharian plant from Staten Land, referred to as *S. orygmæa*, is the *S. endochrysa*, Del.; and that the specimens were received from Menzies.

There are very remarkable differences between the Lichens of those two divisions of Antarctic botany which are here adopted: the most salient features of which consist in the presence or abundance of the following Lichens in only one of the divisions.

Lord Auckland's Group and Campbell's Island.	Cape Horn.
	Usnea melaxantha.
Ramalina inflata.	*Ramalina scopulorum.*
Stereocaulon ramulosum.	*Cetraria Islandica.*
———— *Argus.*	*Nephroma polaris.*
Sticta orygmæa.	*Stereocaulon corallinum.*
—— *Menziesii.*	*Sticta endochrysa.*
—— *Delisea ?*	—— *crocata.*
—— *faveolata.*	—— *Freycinetii.*

This remarkable predominance of certain very widely distributed forms in the southern extremity of the Western Hemisphere, and the absence of the same in similar positions in the Eastern, admit of no explanation, beyond what climate will afford.

4. Sticta *obvoluta*, Ach.; *Lich. Univ.* p. 452 (*vix Delise*). S. hirsuta, *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 188. t. 15. f. 2.

Hab. Staten Land; *Menzies*. Strait of Magalhaens; *M. Hombron*.

Of this we possess an authentically named specimen, gathered and labelled by Menzies himself: in it the cyphellæ are pale yellow; as Montagne describes those of his *S. hirsuta*. M. Delise does not seem to have understood the species, and describes apparently a very different plant under this name. It is closely allied to the *S. cometia* of Peru, in which the apothecia are fringed with much longer hairs, and also to the *S. Humboldtii*, Hook., another Peruvian plant with fringed apothecia; but both of these have white cyphellæ.

Sticta obvoluta is also a native of South Chili and Juan Fernandez.

5. Sticta *Billardieri*, Delise, *Monogr. Stict.* p. 99. t. 8. f. 35. S. Richardi, *nobis in Fl. Antarct.* Pt. 1. p. 198. (*non Mont.*)

Var. β. lobis thalli subter pallidioribus. S. divulsa, *Tayl. in Lond. Journ. Bot.* vol. vi. p. 182.

Hab. Chonos Archipelago; *C. Darwin, Esq.*

A New Zealand and Tasmanian species, agreeing remarkably well with the figure and description of Delise, except in the under surface being more pale than is described by that author. It differs from *S. faveolata*, Delise, in the much longer and narrower lobes and paler under surface, and in the absence of the granulations on the upper. The apothecia are all marginal when young, deeply concave, the older in these specimens convex, with a very narrow margin: this convexity is not a character to which too much importance should be attached, because the apothecia of many allied species vary extremely on the same specimen, from concave to convex; and these differences do not in such species depend on age.

This is the *S. Richardi* of the first part of this work, but not of Montagne, the true *S. Richardi* having much broader lobes to the thallus, more or less rough or even scrobiculate on the upper surface, and almost wholly smooth on the under. It is very nearly allied to the true *S. carpoloma*, but differs in the white cyphellæ, and like many others of the faveolate group it is possibly only a variety of *S. damæcornis*.

We have specimens from the Chonos Archipelago, from Chiloe and the Island of Huaffa (on the coast of South Chili), agreeing entirely with one another in the (when dry) pale yellow-brown shining colour of the upper surface. The New Zealand and Lord Auckland's Island examples are rather paler: in all, the under surface of the lobes is naked and tawny yellow towards the apex.

6. Sticta *faveolata*, Delise; *Monogr. Stict.* p. 101. t. 8. f. 36. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 186.

Hab. Strait of Magalhaens; *Hombron.*

We have thought it possible that what we have called *S. Billardieri*, Del., may be the *S. faveolata* of Montagne (in Voy. au Pole Sud); especially as that author makes no mention of the granular lines on the upper surface so expressly alluded to by Delise (under *S. carpoloma*); and also from this *S. faveolata* of Montagne being found by the officers of the French South Polar Expedition, both in the Strait of Magalhaens and Lord Auckland's group. In the absence, however, of authentic specimens, and of any explanatory note by Montagne (whose specimens were very insufficient) on the species he calls *S. faveolata*, we are obliged to abide by the published figures of Delise.

The lacunose fronded *Stictæ* with white soridia, form a most natural group of species, so inextricably confounded by nature, if they be really and truly species at all, that we have failed in discovering limits to the variations of any of them. Even the colour of the cyphellæ is very unsatisfactory, there being, between the snow-white of the *S. Billardieri* and dirty yellow of some others, all intermediate tints; and in the same species, almost on the same specimen, of Tasmanian examples of *S. faveolata* (?), it is impossible to say whether the cyphellæ are dirty white or pale yellow; whilst other specimens, in all respects similar, have their colour well pronounced.

7. Sticta *variabilis*, Ach.; *Delise, Monogr. Stict.* p. 119. t. 11. f. 48. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 185.

Hab. Strait of Magalhaens; *Jacquinot.*

Possibly these specimens are referable to a state of that highly variable plant which we have referred to the *S. Freycinetii*, Del.

8. Sticta *Thouarsii*, Delise, *Monogr. Stict.* p. 90. t. 8. f. 29. S. scrobiculata, *nobis in Lond. Journ. Bot.* vol. iii. p. 646 (*non Ach.*).

Hab. Hermite Island, Cape Horn, and the Falkland Islands; on rocks, &c. Tristan d'Acunha; *Petit Thouars.*

The specimens examined, when preparing the short notice of the Antarctic Lichens for the London Journal of Botany, were very imperfect; and their under-surface exhibiting no cyphellæ, we referred them to the *S. scrobiculata*, which they considerably resemble, especially in colour, and in their fetid scent when moistened. Other specimens showed white cyphellæ in abundance, and allied the plant so closely to the European *S. limbata*, that we can detect no marked difference between them, beyond what is afforded by the colour of the powdery granulations on the surface.

Delise's description of *S. Thouarsii* leaves no doubt in our mind of this being his plant. The apothecia are unknown. Fuegian specimens are of a paler colour than the Falkland Island ones.

9. Sticta *Freycinetii*, Delise; *Monogr. Stict.* p. 124. t. 14. f. 51 (*non Flor. Antarct.* Pt. 1. p. 196). S. fulvo-cinerea, *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 184? S. glabra, *nobis in Lond. Journ. Bot.* vol. iii. p. 647 (*in part*). Parmelia lactucæfolia, *Pers. in Freyc. Voy. Bot.* p. 200. (Tab. CXCVI.)

Hab. Hermite Island, Cape Horn; trunks of trees and rocks, from the sea to the mountain tops. Falkland Islands; very abundant on maritime rocks, &c. Strait of Magalhaens, Port Famine; *Capt. King.* Staten Land; *Menzies.*

We have added a figure of this much-disputed species, concerning which we have fallen into an error in the previous part of this work, having regarded it as synonymous with the *S. glabra* of Lord Auckland's group and Tasmania (probably the *S. Delisea* Fée,), and which differs from the *S. Freycinetii* principally in the very shallow, not deeply cupped apothecia.

Fuegia and the Island of Juan Fernandez are the only localities in which we know this species to occur.

Plate CXCVI. *Fig.* 1 and 2, portions of thallus of the natural size; 3, apex of ditto, with undeveloped and mature apothecia; 4, ditto with abortive (?) ditto; 5, slice of lamina proligera; 6, ascus; 7, spores:—very highly *magnified.*

10. Sticta *filicina*, Ach.; *Lich. Univ.* p. 145. Platisma Filix, *Hoffm. Plant. Lich.* t. 55.

Hab. Hermite Island, Cape Horn; on dead wood.

Our specimens, which are small and barren, differ in colour and in the less decidedly marked costæ, from those of New Zealand; the lobes also are occasionally furnished with an isidiophorous border. The thallus is about an inch and a half high, the upper surface of a dirty greenish-brown, the under pale yellow-brown and uniformly covered with a short tomentum, into which the concolorous and rather large cyphellæ are sunk. They may, indeed, belong to a state of *S. obvoluta*, Ach., with the upper surface glabrous; but hardly to any of the other species enumerated here.

8. STEREOCAULON, *Ach.*

1. Stereocaulon *corallinum*, Fries; *Lich. Europ.* p. 201. *Moug. et Nestl.* n. 73. S. paschale, *nobis in Lond. Journ. Bot.* vol. iii. p. 653 (*non Ach.*).

Hab. Hermite Island, Cape Horn; on rocks near the sea. Kerguelen's Land; on alpine rocks, 600–1200 feet.

We have before pointed out the singular scarcity, in the Southern Hemisphere, of some of those Lichens which are most abundant in all latitudes of the North Temperate and Arctic Zones. *Stereocaulon corallinum* affords another remarkable instance of this anomalous distribution. Except, perhaps, the *Cenomyce rangiferina*, it is the very commonest of all Lichens in the subalpine districts of Britain and Central Europe, in the Alpine

regions of Southern Europe ascending to the summit of the Pyrenees, and to the level of perpetual snow on the Alps. Again, in the Arctic zone it is found carpeting the otherwise naked steppes of Asia and the barren lands of America, thence reaching the ultima thule of vegetable life in Melville Island and Ross Islet. To the south of its principal parallel it inhabits the Canary Islands, and a variety is seen on the Andes of Mexico and Colombia. Still further south it is replaced in all longitudes by the following species, being itself unknown in the Southern Hemisphere except at Cape Horn and Kerguelen's Land, where it re-appears in abundance. To reconcile this singular fact with the views of those who suppose it to have migrated into Kerguelen's Land, it is almost necessary to consider the *S. ramulosum*, which inhabits Lord Auckland's group, Campbell's Island, Tasmania, and the northern parts of Fuegia, as a southern variety of *S. corallinum*, which has, in Kerguelen's Land and Cape Horn, reverted to the northern form.

2. Stereocaulon *ramulosum*, Ach. *Fl. Antarct.* Pt. 1. p. 195. t. lxxx. f. 1.

Hab. Strait of Magalhaens, *Capt. King*. Chonos Archipelago, *C. Darwin, Esq.*

This widely distributed species replaces in the Southern Hemisphere, to a considerable degree, the *S. paschale* and *corallinum* of the Northern, but not fully; for it only enters what we have elsewhere defined to be the Antarctic zone of vegetation, not reaching the Falkland Islands, the southern parts of the Fuegian Islands or Kerguelen's Land. In the Old World it first appears in Bourbon, thence ranging from the Philippines, through Java, Australia, the South Sea Islands, Tasmania and New Zealand, to Lord Auckland's group and Campbell's Island, abounding in rocky and damp places, also on the trunks of large trees. In the New World it commences in the West Indian Islands, whence Swartz originally procured it, and runs through every parallel of latitude to the Strait of Magalhaens.

As a species *S. ramulosum* appears, at first sight, abundantly distinct from *S. corallinum*, nor does it display a tendency to assume any northern form of the genus in the Strait of Magalhaens. In Tasmania, again, where it ascends the mountains and becomes dwarfish, its lateral ramuli are still slender and fibrous, typical of the species. On the other hand, some of the tropical specimens, especially those from the Equatorial Andes (where both species occur), appear intermediate between *S. ramulosum* and *corallinum*; insomuch that it becomes a matter of opinion alone, whether the *S. ramulosum* should be considered a southern state of *S. corallinum*, owing its greater development to the more uniform temperature and humidity of the localities it affects in the Southern Hemisphere; or whether these are two species, one originating in the Southern Hemisphere, and one in the Northern, meeting under the Line, and there varying into the similitude of one another.

3. Stereocaulon *alpinum*, Fries; *Lich. Europ.* p. 204.

Hab. Hermite Island, Cape Horn; on the summits of the hills.

A native of all the European Alps, also of the Andes of Peru.

4. Stereocaulon *denudatum*, Somm.; *Lapp.* p. 126. *Fries, Lich. Europ.* p. 204. *Moug. et Nestl.* n. 466.

Hab. Hermite Island, Cape Horn; on rocks near the sea.

Also an inhabitant of the Alps of Europe and the Mexican Andes.

We are indebted to the Rev. Churchill Babington for the identification of the species of this difficult genus.

9. SPHÆROPHORON, *Ach.*

1. Sphærophoron *coralloides*, Ach.; *Lich. Univ.* p. 585. *Engl. Bot.* t. 115. *Moug. et Nestl.* n. 262.

Hab. Strait of Magalhaens, throughout Fuegia and the Falkland Islands; on the ground and on trunks of trees, most abundant, ascending to the tops of the mountains.

A common Antarctic American plant, rarer in Tasmania, and replaced in Lord Auckland's group by *S. tenerum*. Its range is very wide in both hemispheres, from within the Arctic circle of the New and Old Worlds, attaining Walden Island north of Spitzbergen, within 9° of the North Pole, stretching south, throughout Europe, to the Asturias, Switzerland, and Madeira, and in America to Newfoundland.

2. Sphærophoron *tenerum*, Laurer. *Fl. Antarct.* Pt. 1. p. 195. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 172. (Tab. CXCVII. Fig. I.)

Hab. Hermite Island, Cape Horn; most abundant on the hills. Chonos Archipelago, *C. Darwin, Esq.*

In the former part of this work we have pointed out the characters which distinguish this species from the *S. coralloides*. It is much more frequent in Tasmania and New Zealand than in South America, in the latter country having been only found at Cape Horn, Fuegia, Chiloe, and the Chonos Archipelago.

I know of no Lichen which exhibits so well the successive development of "laminæ proligeræ" in the same apothecium. A vertical section of the youngest fruit shows two strata, parallel to, or rather concentric with, one another. Of these, the upper is fully ripe long before the bursting of the apothecium. It consists of innumerable filiform asci, containing from eight to thirty and more sporules. The sporules are vertically arranged and so densely packed that each ascus resembles a moniliform filament: the lower are smaller, the upper gradually larger; none however, attain their full size till after the absorption or disappearance of the walls of the ascus; when they escape as spherical bodies, surrounded by a narrow transparent margin.

The thallus of this genus consists of a firm crustaceous transparent cortex, whose inner edge is sharply defined, enclosing a mass of longitudinally arranged, matted, curved, dry filaments. These filaments are cylindrical, terete, sparingly supplied with very short ramuli, and truncate or obtuse at either extremity: they entirely surround the nucleus of the very immature apothecium.

Plate CXCVII. *Fig.* I.—1, fertile, and 2, barren specimens, of the natural size; 3, young, 4, mature, and 5, aged apothecia; 6, 7, and 8, vertical sections of 3, 4, and 5, respectively, showing the formation of successive laminæ proligeræ; 9, asci and spores; 10, young (or possibly abortive) asci; 11, mature ascus; 12, spores; 13, cortical and filamentous substance of thallus; 14, filaments from the latter:—all highly *magnified*.

3. Sphærophoron *compressum*, Ach. *Fl. Antarct.* Pt. 1. p. 196.

Hab. Hermite Island, Cape Horn, and Falkland Islands; on turfy ground, abundant.

These specimens are identical with the English plant so called. It is also an Auckland Island species, and is found in various countries, both within and without the tropics, as far north as the barren lands bordering the Polar Sea in Arctic America. In Europe, Wahlenberg remarks, that it does not occur in any part of Scandinavia. In the Southern Hemisphere it grows on the South American Andes and in Van Diemen's Land.

4. Sphærophoron *australe*, Laurer. *Fl. Antarct.* Pt. 1. p. 195.

Hab. Strait of Magalhaens; Port Famine; *Capt. King*.

Manifestly identical with the Tasmanian, New Zealand, and Lord Auckland's group species of this name, but not hitherto found elsewhere in the New World.

5. Sphærophoron *fragile*, Ach.; *Lich. Univ.* p. 585. *Engl. Bot.* t. 2474. *Mont. in Voy. au Pole Sud*, p. 172.

Hab. Strait of Magalhaens; *D'Urville*.

A frequent Arctic and North Temperate zone plant, reaching the latitude of Igloolik in the American Polar Sea, and, in Europe, Lapland, Spitzbergen and even Ross Islet, the most northern known land in the world.

10. CENOMYCE, *Ach.*

1. Cenomyce *pyxidata*, Ach.; *Lich. Univ.* p. 534. *Engl. Bot.* t. 1393. *Schær. Lich. Helvet.* n. 53–55.

Hab. Strait of Magalhaens; Port Famine, *Capt. King.* Port Gallant; *MM. Hombron* and *Jacquinot.*

Abundant throughout the Tropics, but not observed south of the Strait of Magalhaens in extra-tropical South America. In the Arctic regions it reaches to the very termination of vegetable life at Ross Islet, in 82° N.

2. Cenomyce *gracilis*, Ach.; *Lich. Univ.* p. 550. *Engl.Bot.* t. 1824.

Hab. Falkland Islands; on the ground, not uncommon.

Possibly a state of *C. sparassa*, there being a decided tendency in the podetia to become squamulose. It is also a native of the extreme north, Spitzbergen, Walden, and Ross Islets.

3. Cenomyce *fimbriata*, Ach.; *Lich. Univ.* p. 535. *Engl. Bot.* t. 2438.

Var. *ustulata*; podetiis brevibus lanceolatis fistulosis curvato-decumbentibus basi concoloribus apice nigrescentibus, gemmis pulverulento-granulosis. C. ustulata, *nobis in Lond. Journ. Bot.* vol. iii. p. 652.

Hab. Falkland Islands; abundant on dry heathy soils: Var. *ustulata*, on sand-hills, near Uranie Bay.

The apothecia in these specimens copiously fringe the margins of the cups, and becoming coalescent form a broad lobed mass.

4. Cenomyce *verticillata*, Ach.; *Lich. Univ.* p. 555. *Dill. Hist. Musc.* t. 14. f. 6 *G.*

Hab. Falkland Islands; in heathy places, abundant.

Our specimens entirely agree with others of British growth and with the figure of Dillenius.

5. Cenomyce *cornuta*, Ach.; *Lich. Univ.* p. 545. *Fries, Lich. Europ.* p. 225.

Var. γ. *ramosa*, Delise; *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 174.

Hab. Strait of Magalhaens; on rocks and trunks of trees, *M. Jacquinot.*

6. Cenomyce *furcata*, Ach.; *Lich. Univ.* p. 560.

Var. *squamulosa*, Delise; *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 175.

Hab. Strait of Magalhaens, Port Famine; on dead trunks of trees, *M. Jacquinot.*

7. Cenomyce *coccifera*, auct.; *Engl. Bot.* t. 2051. Cladonia cornucopioides, *Fries, Lich. Europ.* p. 236.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant on the hills.

8. Cenomyce *deformis*, Ach.; *Lich. Univ.* p. 538. *Engl. Bot.* t. 1349. *Schærer, Lich. Helvet.* n. 47–49.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; ascending to the tops of the mountains.

9. Cenomyce *rangiferina*, Ach.; *Lich. Univ.* p. 564. *Engl. Bot.* t. 173. *Schærer, Lich. Helvet.* n. 76, 77.

Var. *alpestris*, Eschw.; *Dill. Hist. Musc.* t. 16. f. 30 *A. B.* *Fries, Lich. Europ.* p. 243.

Var. *sylvatica*, Hoff.; *Dill. l. c.* f. 29 *E. F.* *Fries, Lich. Europ.* p. 243. *Schærer, Lich. Helvet.* n. 78.

Hab. Throughout South Chili, Fuegia, and the Falkland Islands; most abundant.

Though so widely distributed a Lichen, and, as Fries remarks, "omnium Lichenum copiosissima", this species has its limits within the parallels attained by its congeners and other plants. In the south it is stunted at Cape Horn, and neither inhabits Kerguelen's Land or the South Shetlands; whilst, towards the Northern Pole, it was not detected in Melville Island, though attaining a much higher latitude in Spitzbergen.

10. Cenomyce *uncialis*, Ach.; *Lich. Univ.* p. 559. *Engl. Bot.* t. 174. *Schærer, Lich. Helvet.* n. 84.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*.

Not observed in Hermite Island or the Falklands; nor does it extend in the Arctic regions beyond the continents of Europe and America.

11. Cenomyce? *vermicularis*, Ach.; *Lich. Univ.* p. 566. *Engl. Bot.* t. 2029.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; local, but very abundant where it occurs.

We cannot but regard this as the abnormal state of some *Cenomyce* (possibly of *alcicornis* or *endiviæfolia*?); though we have never succeeded in identifying the species. It is a highly Arctic and Antarctic plant, in the northern regions advancing to the extreme limits of vegetation, in islands beyond Spitzbergen. It also has been collected on the Andes of Peru and of Colombia.

12. Cenomyce *aggregata*, Ach.; *Lich. Univ.* p. 563. *Fl. Antarct.* Pt. 1. p. 197. t. lxxx. f. 2.

Hab. South Chili, throughout Fuegia and the Falkland Islands; from the sea to the hill-tops, very abundant.

A very abundant plant in the higher latitudes of the Southern Hemisphere, from Monte Video on the east, Mendoza in Central Chili, Colombia on the Andes, and Juan Fernandez on the west coast of South America to Cape Horn. Its various northern limits in the Old World are the Cape colony in South Africa, Nepaul in Asia, Swan River in Australia, and Norfolk Island in the Pacific. In Tasmania and New Zealand it abounds, reaching 52° S. in Campbell's Island.

13. Cenomyce *bacillaris*, Ach.; *Synops.* p. 266. Cladonia macilenta, *Fries, Lich. Europ.* p. 241.

Hab. Falkland Islands; dry places on the hills.

Probably a state of *C. coccifera*, and the original *C. coccifera*, *a.*, Linn. It is a native both of the Tropics, and north Temperate zones.

14. Cenomyce *sparassa*, Ach.; *Synops.* p. 273. *Engl. Bot.* t. 2362. Clad. squamosa *and* ventricosa *Fries, Lich. Europ.* p. 231.

Hab. Hermite Island, Cape Horn; on the mountain tops.

The *C. ecmocina*, var. *gracilis*, of Lord Auckland's group, should be referred here; its podetia being squamulose, though but slightly so.

11. PARMELIA, *Ach.*

1. Parmelia *enteromorpha*, Ach.; *Synops.* p. 219. P. physodes, *β.* vittata, *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 182. P. lugubris, *Pers. in Freyc. Voy. Bot.* p. 196.

Var. *β. deusta*; parvula, rigida, thallo suberecto brevi subflabellatim diviso, lobis atris patulis angustis canaliculatis utrinque concoloribus.

Hab. Hermite Island, Cape Horn; from the sea to the mountain tops. Falkland Islands; very abundant. Var. β. barren rocks near the top of Kater's peak.

This species was also found abundantly in Lord Auckland's group and Campbell's Island, though omitted in the first part of the Flora Antarctica. It is further a native of New Zealand and Tasmania; of North-west America, from California to Sitka, and we possess a specimen labelled as from the Mauritius.

Specifically, this differs from *P. physodes* only in the length of the lobes of the thallus, and these are so variable as to lead to some doubts of the validity of the species. In Tasmanian specimens the lobes are often much dilated and plane, the membranes of which it is composed, and which are normally inflated, being here, not only in contact, but firmly united together; thus effecting a passage between this species and the forms to which *P. perlata*, &c. belong.

We have authentically named specimens of the North-west American *P. physodes*, β. *vittata*, which is only a narrower state of *P. enteromorpha*. Norwegian specimens also of the latter plant appear to be clearly referable to this.

2. Parmelia *diatrypa*, Ach.; *Syn. Lich.* p. 219. *Engl. Bot.* t. 1248. *Moug. et Nestl.* n. 65.

Hab. Hermite Island, Cape Horn; on stems of bushes and on branches of trees, on the mountains. Chonos Archipelago, *C. Darwin, Esq.*

Probably only a small, or alpine, form of *P. enteromorpha*; it was found in similar situations in Lord Auckland's group, and on the top of Mount Wellington in Tasmania. Besides being a native of Great Britain and alpine situations in northern and midland Europe and of the Sandwich Islands.

3. Parmelia *cincinnata*, Ach.; *Lich. Univ.* p. 495. *Syn. Lich.* p. 219. (Tab. CXCVII. Fig. II.)

Hab. Staten Land, *Menzies*. Hermite Island, Cape Horn; on rocks and trunks of trees above the limit of the evergreen Beech.

By the apothecia this beautiful species may be distinguished, both from *P. diatrypa* and *P. enteromorpha*, some of our specimens, indeed, are on the same piece of wood with *P. diatrypa*, both retaining their characters. They entirely agree in every other respect with one collected by Menzies, except in being of a pale lemon colour.

Plate CXCVII. *Fig.* II.—1, specimen of the natural size; 2, portion of ditto; 3, vertical section of apothecium; 4, slice of lamina proligera; 5, ascus; 6 and 7, spores:—highly *magnified*.

4. Parmelia *saxatilis*, Ach.; *Synops.* p. 203. *Engl. Bot.* t. 603. *Mougeot et Nestler*, n. 347 and 738.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant on alpine rocks. Cockburn Island, Graham's Land; very scarce.

None of these specimens are in fruit, but they accord perfectly with Scottish and other European examples. The lobes of the thallus vary a good deal in size and colour, according to exposure. What is believed to be this plant was seen at Cockburn Island, on the verge of Antarctic vegetation, but, as the specimens were lost previous to comparison, some doubt may be entertained of the correctness of this habitat. Besides being abundant throughout Europe, advancing as far north in Spitzbergen as vegetation extends, and in Temperate and North America, this species has been found on the Mexican Andes, on the barren grounds bordering the Polar Sea, and also in the Arctic Islands.

5. Parmelia *rubiginosa*, Ach.; *Lich. Univ.* p. 467. *Engl. Bot.* t. 983.

Var. β. *sphinctrina*. P. sphinctrina, *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 180. t. 45. f. 3.

Hab. Var. β. Hermite Island, Cape Horn; on trunks of trees.

Chiefly characterized by its much more continuous and leafy thallus. The *P. rubiginosa* is a sub-Arctic species, extending as far north as the region of Willows and Birch in Norway.

6. Parmelia *stellaris*, Ach.; *Lich. Univ.* p. 476. *Engl. Bot.* t. 1351.

Hab. Cockburn Island, Graham's Land; on rocks.

A specimen apparently of this species was found; but in a very insufficient state for determination.

12. LECANORA, *Ach.*

§ I. *Psoroma*, Fries.

1. Lecanora *microphylla*, Ach.; *Lich. Univ.* p. 420. *Engl. Bot.* t. 1247. *Schærer, Lich. Helvet.* n. 160.

Hab. Staten Land; on dead wood, *A. Menzies, Esq.*

Possibly the *L. triptophylla*, Fries, but the specimens are not very satisfactory; they agree tolerably with the plate and specimens quoted. *C. Babington.*

2. Lecanora *paleacea*; (Parmelia), *Fries, Lich. Europ.* p. 97. (Tab. CXCVII. Fig. III.)

Hab. Falkland Islands; on the ground and on Tussock mounds, rare.

A very rare and curious species, hitherto known only as a native of Denmark. The paleaceous apothecia resemble a *Peziza*. We have seen no authentic specimens, and add a figure of the Falkland Island plant.

Plate CXCVII. *Fig.* III.—1, plant of the natural size; 2 and 3, young and mature apothecia; 4, vertical section of portion of apothecium; 5, asci; 6, spores:—highly *magnified*.

3. Lecanora *muscorum*, Ach.; *Syn. Meth. Lich.* p. 193. Lich. carnosus, *Engl. Bot.* t. 1684.

Hab. Falkland Islands; on the ground and on decaying roots of Ferns.

4. Lecanora *Hypnorum*, Ach.; *Syn. Meth. Lich.* p. 193. *Engl. Bot.* p. 740. *Fl. Antarct.* Pt. 1. p. 199.

Hab. Hermite Island, Cape Horn; on mossy trunks of trees. Falkland Islands; on the ground, &c.

§ II. *Placodium*, Fries.

5. Lecanora *chrysoleuca*, Ach.; *Lich. Univ.* p. 411.

Var. β. *Daltoni*; thallo centro affixo, lobis radiantibus cuneatis, gemmis marginalibus granuliferis. Lecanora Daltoniana, *nobis in Lond. Journ. Bot.* vol. iii. p. 641. (Tab. CXCVIII. Fig. I.)

Var. γ. *lignicola*; thallo adnato, lobis cortice appressis.

Hab. Var. β. Cockburn Island, Graham's Land. Var. γ. Hermite Island, Cape Horn; on trunks of trees.

A very rare inhabitant of the Southern Hemisphere, and there confined to the Antarctic regions. The two varieties are certainly not distinct from the European *L. chrysoleuca*, which inhabits mountainous regions from Norway to the Alps and Pyrenees.

Plate CXCVIII. *Fig.* I.—1, mature, and 2, immature specimens of var. β. of the natural size; 3, upper, and 4, lower view of thallus; 5, central portion of ditto, with young apothecia; 6, mature apothecium; 7. vertical section of ditto; 8 and 9, portions of ditto showing the lamina proligera; 10, asci; 11, spores:—all *magnified*.

6. Lecanora *Babingtoni*, Hook. fil. et Tayl.; thallo crustaceo adnato orbiculari subsquamuloso areolato areolis radiantibus albido-glaucescente demum virescente, squamulis diffractis ambitu sub-continuis crenulatis, apotheciis adnatis margine thallode tenuissimo evanescente, disco atro primitus tumido margine subelevato demum planiore immarginato. Lecidea atro-alba, *nobis in Lond. Journ. Bot.* vol. iii. p. 636 (*quoad exempl. Ins. Cockburn*). (Tab. CXCVIII. Fig. II.)

Hab. Cockburn Island, Graham's Land; on volcanic rocks.

Thallus inconspicuus $\frac{1}{2}$–1 unc. diametro, margine definito crenulato, totus in areolas minimas (non nisi ope lentis conspicuas) diffractus; areolis angulatis, albidis, saxæ adnatis, centralibus fertilibus, reliquis radiantibus, extimis subfoliaceis lobatis crenulatisve. *Apothecia* punctiformia, interiora majora subconfluentia.

Although the specimens of this plant brought from Cockburn Island are very perfect and well developed, they belong to so difficult a group of Lichens as to have baffled the Rev. Mess. Babington, Berkeley, and ourselves, in our attempts to reduce it to any known species. Though closely resembling a *Lecidea* in habit, and, indeed, in characters too, it is certainly not of that genus, for though, as Mr. Berkeley remarks, the apothecia of *Lecid. rivulosa* and *confluens* are sometimes obscurely margined (as in this species), yet, Mr. Babington observes, that the thallus here is radiating, which is not the case with the areolate *Lecideæ*, nor has it the carbonaceous margin to the apothecium and substratum of that genus.

Of the tribe in which it should be placed (as a *Lecanora*) there is some doubt: Mr. Berkeley regards it as belonging to the section "*glaucescentes*" of *Placodium*, Fries, and allied to *L. coarctata*, in which the thallodal border of the apothecium is evanescent. Mr. Babington, on the other hand, remarks, that the thallodal border and that of the disc itself place it in *Psora*, Fries, and that it will rank amongst the section "*glaucescentes*" near *L. melanaspis*, of which it may possibly be a variety, or a depauperated and crustaceous form. The figure represents the plant as freshly gathered, before drying; it has since assumed a more obscure, somewhat leaden colour, and the oldest portions of the thallus break up into a greenish mass, which is not given in our plate.

Plate CXCVIII. *Fig.* II.—1, plant of the natural size; 2, portion of ditto; 3, central part of thallus and apothecia; 4 and 5, lateral views of areola and apothecia; 6, vertical slice of two apothecia; 7, portion of lamina proligera:—highly *magnified*.

7. Lecanora *gelida*, Ach.; *Lich. Univ.* p. 428. *Engl. Bot.* t. 699. Urceolaria macropthalma, *nobis in Lond. Journ. Bot.* vol. iii. p. 640.

Var. β. *vitellina*, thallo vitellino.

Hab. Kerguelen's Land; both varieties very common.

The variety β. is probably dependent on the thallus having changed colour. What was described as *Urceolaria macropthalma* is a state noticed by Fries (Lich. Europ. p. 104). *C.Babington.*

8. Lecanora *murorum*, Ach.; *Lich. Univ.* p. 433. *Engl. Bot.* t. 2157.

Var. *farcta*; apotheciis substantia granulata fere clausis.

Hab. Hermite Island, Cape Horn, the Falkland Islands, and Cockburn Island, Graham's Land; on maritime rocks. Var. β. Kerguelen's Land; on rocks near the sea.

9. Lecanora *miniata*, Ach.; *Lich. Univ.* p. 434. *Hoffm. Plant. Lich.* t. 60. f. 1.

Hab. Falkland Islands, and Cockburn Island, Graham's Land; very abundantly on rocks near the sea.

This plant forms the most curious feature in the botany of Cockburn Island, a desolate spot of land on the extreme limit of southern vegetation; for there it abounds so as to stain the rocks, and render the colour thus

produced visible for many miles. It is partial to the effluvium from decaying animal matter, as is the case with other *Parmeliæ* belonging to the citrinous series.

10. Lecanora *citrina*, Ach.; *Lich. Univ.* p. 402. *Engl. Bot.* t. 857. *Moug. et Nestl.* n. 742.

Hab. Kerguelen's Land; on rocks near the sea.

Specimens very imperfect, but, we think, referable to this species.

11. Lecanora *erythrocarpia*, Fries, *Lich. Europ.* p. 119. L. theioclyta, *Ach. Lich. Univ.* p. 425.

Hab. Kerguelen's Land; in a cave near the sea.

Rather a doubtful determination. *C. Babington.*

§ III. *Psora*, Fries.

12. Lecanora *melanaspis*, Ach.; *Lich. Univ.* p. 427. *Fries, Lich. Europ.* p. 122. L. dichroa, *nobis in Lond. Journ. Bot.* vol. iii. p. 643.

Hab. Kerguelen's Land; on hard earth and stones, rare.

13. Lecanora *molybdina*, Ach.; *Lich. Univ.* p. 430. *Fries, Lich. Europ.* p. 126.

Hab. Kerguelen's Land; on bare and hardened earth.

§ IV. *Patellaria*, Fries.

14. Lecanora *tartarea*, Ach.; *Lich. Univ.* p. 172. *Engl. Bot.* t. 156.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant. Kerguelen's Land; rare.

15. Lecanora *parella*, Ach.; *Lich. Univ.* p. 370. *Engl. Bot.* t. 727.

Var. γ. *Upsaliensis*, Ach.; *Lich. Univ.* p. 371. *Engl. Bot.* t. 1634.

Hab. Falkland Islands; on quartz rocks. Var. γ. Hermite Island, Cape Horn, and the Falkland Islands; on the ground.

16. Lecanora *subfusca*, Ach.; *Lich. Univ.* p. 393. *Engl. Bot.* t. 2109.

Var. *epibryon*; Lecanora epibryon, *Ach. l. c.* *Moug. et Nestl.* n. 120.

Var. *albella*, Fries; Lecanora albella, *Ach. l. c.* *Engl. Bot.* t. 2157.

Hab. Strait of Magalhaens; on wood, *Capt. King.* Falkland Islands; on rocks, and on dead twigs of *Acæna*. Var. *epibryon*, Kerguelen's Land; on decayed *Azorella*. Var. *albella*, Hermite Island, Cape Horn; on Winter's bark.

17. Lecanora *atra*, Ach.; *Lich. Univ.* p. 344. *Engl. Bot.* t. 949. *Moug. et Nestl.* n. 458.

Var. β. *confragosa*, Ach.; *l. c.* p. 345.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; on rocks. Var. β. Hermite Island, Cape Horn; on rocks.

18. Lecanora *sophodes*, var. *c. exigua*, Fries, *Lich. Europ.* p. 149. *Engl. Bot.* t. 1849.

Hab. Falkland Islands; on rocks.

19. Lecanora *ventosa*, Ach.; *Lich. Univ.* p. 399. *Engl. Bot.* t. 906. *Moug. et Nestl.* n. 256.
Hab. Falkland Islands; on alpine quartz rocks.

20. Lecanora *hæmatomma*, Ach.; *Lich. Univ.* p. 388. *Engl. Bot.* t. 486.
Hab. Falkland Islands; on clay-slate near the sea and on quartz rocks on the hills.

21. Lecanora *candelaria*, Ach.; *Lich. Univ.* p. 416. *Engl. Bot.* t. 1794.
Hab. Falkland Islands; on twigs of *Acæna*. Kerguelen's Land; on maritime rocks.

22. Lecanora *erythrella*, Ach.; *Lich. Univ.* p. 401. *Engl. Bot.* t. 1993.
Hab. Falkland Islands; on very arid quartz rocks at Port William.

13. URCEOLARIA, *Ach.*

1. Urceolaria *sordida*, Fries; *Lich. Europ.* p. 178. Lecanora glaucoma, *Engl. Bot.* t. 2156.
Hab. Falkland Islands; on rocks.

2. Urceolaria *endochlora*, Hook. fil. et Tayl.; crusta cinereo-albida tenui-rimosa inæquabili nigro-limitata et punctata, apotheciis immersis planis atris rotundato-difformibus, margine thallode tenui madore obsoleto, lamina tenuissima virescenti. *Nobis in Lond. Journ. Bot.* vol. iii. p. 640.
Hab. Kerguelen's Land; on rocks.
Crusta 2-unc. lata, eburnea, demum virescens. *Apothecia* obconica, disco atro-pruinoso.
The lamina proligera rests upon a very thin layer of green matter, which, again, is placed on a black hypothallus. The plant approaches the *Bæomyces anomalus*, Tayl. (in Flor. Hib.)

3. Urceolaria *scruposa*, var. β. *bryophila*, Fries; *Lich. Europ.* p. 101.
Hab. Hermite Island, Cape Horn; rocks on the top of Kater's peak.

4. Urceolaria *erubescens*, Hook. fil. et Tayl.; thallo crustaceo rimoso areolato inæquabili ruguloso albido plerumque rufescente nigro-limitato, apotheciis confertis immersis concaviusculis difformibus subpellucidis olivaceis, disco scabrido nigro-punctato, margine thallode lacero-crenulato. *Nobis in Lond. Journ. Bot.* vol. iii. p. 640.
Hab. Falkland Islands; on rocks.
Thallus albidus, superficie plerumque colorato. *Lamina proligera* pellucida, strato albido insidens.

5. Urceolaria *calcarea*, Ach.; *Lich. Univ.* p. 340. Lichen cinereus, *Engl. Bot.* t. 820. Porina fallax (*in part*), *nobis in Lond. Journ. Bot.* vol. iii. p. 639.
Hab. Hermite Island, Cape Horn; on rocks and stones.

14. BIATORA, *Fries.*

1. Biatora *corallina*. Lecidea corallina, *Eschweiler in Mart. Flor. Bras.* p. 256. L. mamillata, *nobis, et* L. geomæa, *Tayl.*; *nobis in Lond. Journ. Bot.* vol. iii. p. 636 and 637.
Hab. Hermite Island, Cape Horn; on the ground. Falkland Islands; on tufts of *Bolax*.

A true *Biatora*, having the margins of the young apothecia both coloured and soft. It is not a European species, though belonging to Fries' section "fuscescentes" and allied to *B. uliginosa*. I have little doubt of its being the plant of Eschweiler. *C. Babington.*

2. Biatora *pulverea*, (Lecidea) Borr.; *in Engl. Bot. Suppl.* t. 2726.

Hab. Falkland Islands; on rocks.

15. LECIDEA, *Ach.*

1. Lecidea *mamillaris*, Fries? *Lich. Europ.* p. 285. Lichen tumidulus, *Smith in Linn. Soc. Trans.* vol. i. p. 82. t. 4. f. 3.

Hab. Hermite Island, Cape Horn; on the top of Kater's peak.

It is possible that these imperfect specimens may be referable to some paradoxical form of *L. vesicularis*. *C.B.*

2. Lecidea *candida*, Ach.? *Lich. Univ.* p. 212. *Engl. Bot.* t. 1138. *Schærer, Lich. Helvet.* n. 167.

Hab. Hermite Island, Cape Horn; on hard soil.

I am not satisfied with the identification of this with the British *L. candida*: it may be merely a form of *L. vesicularis*. The hypothallus is black. *C. Babington.*

3. Lecidea *vesicularis*, Ach.; *Lich. Univ.* p. 212. *Engl. Bot.* t. 1139. *Schærer, Spicel.* p. 120. *Lich. Helvet.* n. 168.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; on the ground, abundant.

These specimens resemble *Isidium oculatum* when in a young state. I am in doubt whether some may not be referable to *L. epigæa*, which, as well as *L. vesicularis*, is a very polymorphous plant. *C. Babingtoa.*

4. Lecidea *aromatica*, Ach.; *Lich. Univ.* p. 168. *Engl. Bot.* t. 1777.

Hab. Kerguelen's Land; on moist rocks.

Specimens greener and darker than in Schærer's, but still I think referable to that species. *C.B.*

5. Lecidea *albo-cærulescens*, Ach.? *Lich. Univ.* p. 188. Lichen pruinosus, *Engl. Bot.* t. 2244. L. confluens, *nob.* (*in part*), *Lond. Journ. Bot.* vol. iii. p. 636.

Hab. Kerguelen's Land; on rocks near the sea and on the hills.

Specimens very fine, altogether resembling what I have gathered on the Austrian Alps. *C. Babington.*

6. Lecidea *spilota*, Fries; *Lich. Europ.* p. 297. L. rivulosa, *nobis, in Lond. Journ. Bot.* vol. iii. p. 636.

Hab. Kerguelen's Land; on moist rocks.

The specimens, which are rather young, certainly do not belong to *L. rivulosa*, and are, I think, referable to *L. spilota*, with which species, however, I am not sufficiently acquainted. *C. Babington.*

7. Lecidea *contigua*, Fries; *Lich. Europ.* p. 298. L. speirea, var. hydrophila, Fries, *l. c.* Lec. confluens, (*in part*), *Engl. Bot.* t. 1864.

Hab. Hermite Island, Cape Horn; on rocks. Var. *hydrophila*, Kerguelen's Land; also on rocks.

The disc does not appear to be pruinose when young, in which respect only this differs from Fries' plant. It is allied to *L. nitidula*, differing from it only in the apothecia springing from the crust; which is the case also in Schærer's specimens of that plant. *C. Babington.*

8. Lecidea *atro-alba*, Ach.; *Lich. Univ.* p. 162. Lichen Œderi, *Engl. Bot.* t. 1117. *Schærer, Lich. Helvet*, n. 178.

Hab. Hermite Island, Cape Horn; on rocks.

The Cockburn Island plant, referred (in Lond. Journ. Bot.) to this, we have elsewhere described as *Lecanora Babingtoni*.

9. Lecidea *lugubris*, Sommf.; *Lapp.* p. 143. *Fries, Lich. Europ.* p. 314.

Hab. Hermite Island, Cape Horn; on rocks.

I have little hesitation in considering this plant to be that described by Fries; though I know the latter from description alone. It approaches Schærer's *L. atro-alba* (n. 178); but the apothecia do not appear to rise from the thallus. *C. Babington.*

10. Lecidea *fusco-atra*, Ach.; *Lich. Europ.* p. 359. Lichen athrocarpus, *Engl. Bot.* t. 1929.

Hab. Kerguelen's Land; on rocks.

11. Lecidea *stellulata, Tayl. in Flora Hib.* p. 118.

Hab. Kerguelen's Land; on rocks.

12. Lecidea *glacialis*, Schærer; *Spicil.* p. 147. *Fries, Lich. Europ.* p. 323. L. sulphurea, *Ach., nobis in Lond. Journ. Bot.* vol. iv. p. 636.

Hab. Falkland Islands, on alpine quartz rocks.

At first sight this resembles *Lecanora subfusca*, (or rather the var. *orosthea*,) but the hypothallus is quite black. I feel no doubt of its being the *L. glacialis*, which is compared with the above-mentioned species, both by Fries and Schærer. The only difference I can detect between the European and Antarctic specimens, lies in the apothecia of the former being dusky within, and not white.

13. Lecidea *geographica*, Schærer; *Spicil.* p. 124. *Engl. Bot.* t. 245. Var. *urceolata, Schærer, l. c.*

Hab. Hermite Island, Cape Horn, the Falkland Islands, and Kerguelen's Land; very abundant on rocks from the sea to the mountain tops. Var. *urceolata*, Kerguelen's Land; on maritime rocks.

14. Lecidea *parasema*, Ach.; *Lich. Univ.* p. 175. *Schærer, Lich. Helvet.* n. 197–199.

Hab. Hermite Island, Cape Horn; on bark of trees.

15. Lecidea *sabuletorum*, Ach.; *Synops. Lich.* p. 20. L. quadricolor, Borr., *nobis, in Lond. Journ. Bot.* vol. iii. p. 637.

Var. γ. *coniops*, Fries, *Lich. Europ.* p. 340. L. scabra, *Tayl. in Herb. Hib.* p. 121.

Hab. Falkland Islands; on the ground. Var. *coniops*; Hermite Island, Cape Horn; on greenstone. Falkland Islands; on clay-slate rocks.

I am hardly satisfied with the determination of the Hermite Island specimens: they are certainly allied to the *L. sabuletorum* and also to *L. arctica*. They further resemble *Biatora vernalis*, var. *sanguineo-atra*, Fries; but this *L. sabuletorum* is scarcely a *Biatora*, and may be an undescribed species of *Lecidea*. *C. Babington.*

16. Lecidea *arctica*, Sommerf., *Lapp.* p. 156. Fries, *Lich. Europ.* p. 342.

Hab. Hermite Island, Cape Horn; on hard gravelly soil.

17. Lecidea *milliaria*, var. *c. ligniaria*, Fries, *Lich. Europ.* p. 343. Lichen dubius, *Engl. Bot.* t. 2347. Lecidea elæochroma, Ach.; *nobis, in Lond. Journ. Bot.* vol. iii. p. 636.

Hab. Falkland Islands; on dead twigs of *Acæna*.

A very puzzling species, differing from *L. elæochroma* in the pale hypothallus. I am doubtful if the English Botany *L. dubius* be the same plant, or *L. milliaria*, Fries. The only others to which the Falkland Island one can be referred, are *L. dolosa*, Fries, and *L. sabuletorum*, Fr.: but after a careful examination of Schærer's specimen of the former, and Reichenbach's of the latter, I have concluded that this belongs to neither of them. *C.B.*

18. Lecidea *abietina*, var. *rubens*, Eschweiler, *in Mart. Fl. Bras.* p. 251.

Hab. Hermite Island, Cape Horn; on bark.

I doubt not this being Eschweiler's plant, but am not convinced of that being the same with the European *L. abietina*. The hypophlœdal crust appears to indicate its not being a true *Lecidea*, whence it may prove to be a Lecideal form of some *Pyrenotheca*; to which genus the *L. abietina* properly belongs.

16. GYROPHORA, *Ach.*

1. Gyrophora *ænea*, var. *a.* Schærer, *Lich. Helvet.* n. 149.

Hab. Falkland Islands; on quartz rocks; very rare and barren.

It is remarkable that the Antarctic regions should present us with but a solitary species of this curious genus, which abounds so strikingly in the Arctic. In one respect they are replaced by *Stictæ*, which are almost equally rare in the high northern latitudes. These latter affect an equable, as decidedly as the *Gyrophoræ* do an extreme climate; and it is in the Falkland Islands, of all the Antarctic localities, that the Lichens are exposed to the greatest and most sudden vicissitudes. The *G. ænea*, considered by Fries as a variety of *G. hyperborea*, is a Scotch and American plant.

17. OPEGRAPHA, *Ach.*

1. Opegrapha *atra*, Pers.; *Schærer, Lich. Helvet.* n. 93.

Hab. Hermite Island, Cape Horn; on the bark of trees. Falkland Islands; on stems of *Acæna*.

18. ARTHONIA, *Ach.*

1. Arthonia *polymorpha*, Ach.; *Syn. Lich.* p. 7. Eschweiler, *in Mart. Fl. Bras. Crypt.* p. 14. t. 9. f. 3. (*tabula sub. nom. A. tremellosæ.*) Lecanora micropthalma, *nobis in Lond. Journ. Bot.* vol. iii. p. 636.

Hab. Hermite Island, Cape Horn; on Winter's bark.

19. PERTUSARIA, *DC.*

1. Pertusaria *communis, DC.*; *Engl. Bot.* t. 677. *Schærer, Lich. Helvet.* n. 118.

Hab. Hermite Island, Cape Horn; encrusting the bark of trees, abundant. Kerguelen's Land; on rocks near the sea. Cockburn Island, Graham's Land; on rocks.

The Cockburn Island specimens are very imperfect, and may possibly belong to *Umbilicaria sordida*.

2. Pertusaria *Wulfenii*, DC.; *Fries, Lich. Europ.* p. 424. Porina fallax, *Pers.*; *Ach. Synops. Lich.* p. 110. Lichen hymenius, *Engl. Bot.* t. 1731.

Hab. Falkland Islands; on rocks.

20. THELOTREMA, *Ach.*

1. Thelotrema *lepadinum*, Ach.; *Lich. Univ.* p. 312. t. 6. f. 1. *Schærer, Lich. Helvet.* n. 121. *Fl. Antarct.* Pt. 1. p. 200.

Hab. Hermite Island, Cape Horn; on Winter's-bark.

21. VERRUCARIA, *Pers.*

1. Verrucaria *umbrina*, Ach.; *Lich. Univ.* p. 291. *Engl. Bot.* t. 1499. V. gelida, *nobis in Lond. Journ. Bot.* vol. iii. p. 639. (Tab. CXCVIII. Fig. IV.)

Hab. Cockburn Island, Graham's Land; on rocks.

The difference between the apothecia of the Antarctic and European specimens is the same as exists between *V. maura* and *V. umbrina*, plants which I consider as specifically the same. *C. Babington.*

Plate CXCVIII. *Fig.* IV.—1, plant of the natural size; 2, portion of crusti; 3, do with apothecia; 4 and 5, apothecia; 6 and 7, vertical slices of do; 8, portion of lamina proligera; 9 and 10, sporules:—all very highly *magnified.*

22. COLLEMA, *Ach.*

1. Collema *crispum*, Ach.; *Synops. Lich.* p. 311. *Engl. Bot.* t. 834. Parmelia pulposa, *Schærer.*

Hab. Cockburn Island, Graham's Land; on wet earth.

Miserably depauperated specimens, referred both by the Rev. Mr. Berkeley and Babington to this plant.

2. Collema *tremelloides*, Ach.; *Lich. Univ.* p. 455. *Engl. Bot.* t. 1981.

Hab. Hermite Island, Cape Horn; on wet banks.

Possibly the *C. palmatum*, Sm.; my only specimen of which plant (received from Mr. Borrer), may be a dwarf and brown one of *C. tremelloides. C. Babington.*

3. Collema *saturninum*, Ach; *Lich. Univ.* p. 644. *Engl. Bot.* t. 1980. C. myochroma, *Schærer, Lich. Helvet.*

Var. *australe*, thallo subferrugineo. Collema australis, *nobis in Lond. Journ. Bot.* vol. iii. p. 656.

Hab. Hermite Island, Cape Horn; on wet banks in dense woods; abundant.

There is a redder hue about these specimens than I am accustomed to see in British ones of *C. saturninum*, but according to Schærer's description, this is evidently a very variable plant. The characters drawn from the powdery buds, are not available. *C. Babington.*

(*Lichenes imperfecti.*)

23. ISIDIUM, *Ach.*

1. Isidium *oculatum,* Ach.; *Lich. Univ.* p. 570. *Engl. Bot.* t. 1833.

Hab. Hermite Island, Cape Horn, the Falkland Islands and Kerguelen's Land; on the earth.

Various *Parmeliæ* and *Lecanoræ* in a young state, are scarcely distinguishable from one another, and have been referred to *Isidium oculatum*.

2. Isidium *lutescens,* Turn. and Borr. Lepraria lutescens, *Engl. Bot.* t. 1529.

Hab. Kerguelen's Land; on rocks near the sea.

Very probably a state of *Lecanora murorum*.

24. LEPRARIA, *Ach.*

1. Lepraria *flava,* Ach.; *Lich. Univ.* p. 663. *Engl. Bot.* t. 1350.

Hab. Hermite Island, Cape Horn, the Falkland Islands and Kerguelen's Land; abundant near the sea.

Evidently the powdery state of some *Parmelia*, belonging to the citrinous series.

CRYPTOGAMIA ANTARCTICA.

ADDENDA ET CORRIGENDA.

PART I.

p. 7. 5th line from bottom, for "Bruch and Schimper" read "Nees and Hornschuch."

p. 10. In remarks on *Leptostomum gracile*;—the *L. Bridgesii*, Wils. MS., is *L. splachnoides*, Hook. and Arn.

p. 11. Splachnum *octoblepharum*, add synon.:—*S. plagiopus*, Mont. *in Voy. au Pole Sud, Bot. Crypt.* p. 285.

p. 12. To Racomitrium, add

2. Racomitrium *microcarpum*, Brid.; *Mont. l. c.* p. 284.

Hab. Auckland Island; barren: *M. Hombron.*

p. 16. Genus 11. Sprucea, for "*Brid.*" read *Hook. fil. et Wils.*

p. 18. After Dicranum add

5. Dicranum *dichotomum*, Brid.; *Mont. l. c.* p. 298.

Hab. Auckland Island; barren: *M. Hombron.*

p. 18. To Campylopus, add

3. Campylopus *atro-virens*, De Notaris; *Mont. l. c.* p. 300.

Hab. Auckland Island; barren: *M. Hombron.*

p. 20. To Polytrichum, add

2. Polytrichum *juniperinum*, Willd.; *Mont. l. c.* p. 313.

Hab. Auckland Island: *M. Hombron.*

p. 30. For Hypnum *Terræ-Novæ*, Brid., var. β., substitute

20. Hypnum *limatum*, Hook. fil. et Wils.; caule humili prostrato vage ramoso, ramis subfastigiatis, foliis subsecundis lanceolato-acuminatis integerrimis enerviis, capsula suberecta, operculo conico.

Dioicum. *Rami* breves, erecti. *Folia* conferta, suberecta, membranacea, e basi lata gradatim angustata, longe acuminata, subpilifera, siccitate nitida, luteola; *perichætialia* erecta, acuminata, pilifera. *Seta* 3–4 lin. longa, rubra. *Capsula* suberecta, curvula. *Operculum* majusculum, conicum, acutiusculum, rubellum.

Allied to *H. acutifolium*, nob.; but the leaves are narrower, more membranaceous, tapering gradually upwards from a broad base; and the areolæ are larger.

p. 31. To HOOKERIA, add

5. HOOKERIA *crispula*, Hook. fil. et Wils.; *Lond. Journ. Bot.* vol. iii. p. 550. *Mont. l. c.* p. 320.

HAB. Auckland Island; barren: *M. Hombron.*

p. 41. After JUNGERMANNIA *vertebralis*, add

27 *bis.* JUNGERMANNIA *punicea*, Nees; *Mont. l. c.* p. 261.

HAB. Auckland Island: *M. Hombron.*

p. 41. To JUNGERMANNIA *Urvilleana*, add syn.:—*J. abbreviata*, Hook. fil. et Tayl. *in Lond. Journ. Bot.* vol. iii. p. 374.

p. 44. After JUNGERMANNIA *planiuscula*, add

37 *bis.* JUNGERMANNIA *connata*, Sw.; *Mont. l. c.* p. 256.

HAB. Auckland Island: *M. Hombron.*

p. 45. After JUNGERMANNIA *fissistipa*, add

43 *bis.* JUNGERMANNIA *amphibolius*, Nees; *Mont. l. c.* p. 352.

HAB. Auckland Island: *M. Hombron.*

p. 47. JUNGERMANNIA *hippuroides* is *J. capillaris*, Sw., *β. minor*, Lehm. Lind. et Gottsche, *Syn. Hep.* p. 213.

p. 47. After JUNGERMANNIA *albula*, add

50 *bis.* JUNGERMANNIA *filamentosa*, Lehm. et Lind.; *Mont. l. c.* p. 246.

HAB. Auckland Island: *M. Hombron.*

p. 48. After JUNGERMANNIA *nutans*, add

54 *bis.* JUNGERMANNIA *adnexa*, Lehm. et Lind.; *Mont. l. c.* p. 243.

54 *ter.* JUNGERMANNIA *decrescens*, Lehm. et Lind.; *Mont. l. c.* p. 243. t. 19. f. 4.

HAB. Auckland Island: *M. Hombron.*

p. 48. JUNGERMANNIA *hirsuta* is *J. ochroleuca*, Spr.; *Gottsche, Nees et Lind. Syn. Hep.* p. 240.

p. 48. JUNGERMANNIA *mollissima*, is *J. tomentella*, *γ*. Gottsche, Nees and Lind. *Syn. Hep.* p. 237.

p. 50. JUNGERMANNIA *elegantula* is MADOTHECA *Stangeri*, Gottsche, Nees, and Lind. *Syn. Hep.* p. 280.

p. 53. After JUNGERMANNIA *scandens*, add

71 *bis.* JUNGERMANNIA *gracilis*, Nees; *Mont. l. c.* p. 223.

HAB. Auckland Island; *D'Urville.*

p. 55. After JUNGERMANNIA *plicatiloba*, add

77 *bis.* JUNGERMANNIA *cucullata*, Nees; *Mont. l. c.* p. 218.

HAB. Auckland Island: *M. Hombron.*

p. 65. Amongst synonyms to XIPHOPHORA *Billardieri*, dele "CTENODUS, Kütz."

p. 68. RHODOMELA *glomerulata*, Mont., is POLYSIPHONIA *botryocarpa*, nobis.

p. 72. After JANIA insert

1. MELOBESIA *verrucata*, var. *Antarctica*, vide Part II. p. 482.

p. 79. After CALLITHAMNION *gracile*, add

PLATE LXXXVIII. *Fig.* 1.—1, plant of the natural size; 2, ramulus; 3, ditto with sphærospores; 4, articuli of ditto:—very highly *magnified.*

p. 81. After ULVA *latissima* add

1. ZIGNOA *clathrata*, Trevis.; *Mont. l. c.* p. 30. Enteromorpha, *auct.*

HAB. Auckland Island; *D'Urville.*

p. 84. STEREOCAULON *Argus.*

I have examined specimens of *S. ramulosum*, approaching this so very closely, that Mr. Churchill Babington inclines to consider the plants as varieties of one species.

p. 85. CENOMYCE *ecmocyna*, var. *gracilis*, is rather the *C. sparassa*; but the specimens are not very satisfactory.

p. 86. STICTA *Freycinetii*; these specimens probably belong to the *S. Delisea*, Fée., and differ from the true *S. Freycinetii* in the flatter (not concave) sessile apothecia.

p. 86. After STICTA *Menziesii*, add

5 *bis*. STICTA *Richardi*, Mont.; *in Voy. au Pole Sud*, p. 187.

HAB. Lord Auckland's group: *M. Hombron.*

p. 86. For 6. STICTA *Richardi*, substitute

6. STICTA *Billardieri*, see p. 527.

I very much doubt the *S. Richardi*, Mont., being anything more than a larger state of this plant. It is a very frequent and most variable inhabitant of New Zealand.

p. 87. After PARMELIA *sphinctrina*, add

3. PARMELIA *enteromorpha*, Ach.; P. physodes, var. *vittata*, Mont. *in Voy. au Pole Sud, Bot. Crypt.* p. 183.

HAB. Lord Auckland's group and Campbell's Island; not uncommon.

4. PARMELIA *diatrypa*, Ach.; P. physodes, var. *Mont. l. c.*

HAB. Lord Auckland's group; on trunks of trees.

p. 87. For PARMELIA *rubiginosa*, Ach., read

PARMELIA *Mariana*, Fries? *Syst. Orb. Veg.* pp. 245 and 284 (fid. Bab.).

Of the present plant the Rev. C. Babington remarks, "This seems to differ from *P. rubiginosa*, not only in general habit, but most especially in the apothecia being black: the scales, too, are singularly appressed; and the hypothallus is more carbonaceous. If a described plant, it is either *P. pellita*, Ach., or *P. Mariana*, Fries. The Acharian plant is barren, whence the thallus of the fertile might differ from this. Fries' plant exactly agrees in the apothecia and hypothallus; whilst the variation of the thallus to me seems caused by his specimens being more perfect."—*C. Babington.*

p. 87. After LECANORA *Parella*, add

5. LECANORA *varia*, Ach.; *Lich. Univ.* p. 377. *Engl. Bot.* t. 1666.

HAB. Lord Auckland's group; on bark of trees.

p. 200. For LECIDEA *geomæa*, substitute

1. LECIDEA *papillata*, Fries; *Lich. Europ.* p. 336.

"I have little doubt of this being the plant of Fries, judging from the description."—*C. Babington.*

p. 88. Add

3. Lecidea *parasema*, Ach.; *Syn. Lich.* p. 17. *Schærer, Lich. Helvet.* n. 197–199. L. Lightfootii, *Engl. Bot.* t. 1457.

Hab. Lord Auckland's group; on trunks of *Dracophyllum*.

p. 88. Add

1. Verrucaria *punctiformis*, Ach.; *Syn. Lich.* p. 87. V. stigmatella, *Engl. Bot.* t. 1891.

Hab. Lord Auckland's group; on trunks of trees.

p. 88. Porina *granulata*, Hook. fil. and Tayl., is probably a state of *Lecanora tartarea*.

PART II.

p. 97. Orthotrichum *luteolum*, Hook. fil. et Wils.—This approaches very closely the description of *O. germanum*, Mont. (in Ann. Sc. Nat., 3rd Ser. vol. iv. p. 121), a Chilian plant, but the leaves of which are said to be rather obtuse and reflexed at their margins.

p. 102. After Campylopus *flexuosus*, add

3. Campylopus *rigidus*, Hook. fil. et Wils.; caule erecto subramoso rigidiusculo, foliis ovato-lanceolatis acuminatis integerrimis, nervo latissimo.

Hab. Hermite Island, Cape Horn; on the summits of the hills.

p. 103. Tortula *densifolia*, Hook. fil. et Wils., is evidently closely allied to *Barbula mnioides*, Schwaeg. Suppl. t. 310.

p. 104. Polytrichum *compressum*, Hook. fil. et Wils.

Var. β., foliis apices versus obscure serratis lamellatis, capsula longiore.

Hab. Hermite Island, Cape Horn; with var. α.

p. 112. Hypnum *subpilosum*, Hook. fil. et Wils.; (character reformata) caule arcuato parce ramoso, ramis recurvis attenuatis, foliis cordato-ovatis acuminatis subpiliferis concavis striatis serrulatis ruptinerviis, capsula subrotunda cernua, operculo conico, seta scabra.

p. 143. After Exidia *Auricula-Judæ*, add

2. Exidia *flammea*, Berk.; aurantiaca, hemispherica, depressa, substipitata, margine crenulata subtus rugulosa minutissime verrucoso-spiculata, sporis oblongis basi curvatis. (Tab. CLXIV. Fig. III. left hand specimen.)

Hab. Hermite Island, Cape Horn; on dead wood amongst the snow.

Hemisphærica, leviter depressa, vel humore saturata planiuscula, brevissime stipitata; margine læviter crenata; subtus rugulosa, sub lente maxime augente subtiliter verrucosa, hic illic spiculata. *Sporæ* oblongæ, basi curvatæ.

Allied to *Exidia truncata*, but differing remarkably in its bright colour. When first taken out of spirit the hymenium is quite plane, but becomes depressed afterwards. It is doubtful whether the margin be crenate in the living plant, for it is not represented in the drawing made from the fresh specimen.

Plate CLXIV. *Fig.* III.—2, (left hand figure) *E. flammea*, of the natural size.

p. 145. PEZIZA *Kerguelensis*.—The Hermite Island plant is *Exidia flammea*, Berk.; to which also the left hand figure of Plate CLXIV. Fig. III. 2, is referable. The right hand figure (1), which, however, is not represented sufficiently adnate, and the dissections, belong to *P. Kerguelensis*.

PLATES.

PLATE LXI. Fig. IV.—HYPNUM *Terræ-Novæ* is *H. limatum*, Hook. fil. et Wils. (see Suppl.)

PLATE CLVII. Fig. VII.—JUNGERMANNIA *cavispina*, Hook. fil. et Tayl., is a variety of *J. austrigena*, Hook. fil. et Tayl. (see p. 125.)

PLATE CLXI. Fig. III.—For "JUNGERMANNIA *reclinata*," read "*J. retusata* (see p. 135).

PLATE CLXIV. Fig. III.—1, PEZIZA *Kerguelensis*, Berk., to which also the dissections, 3, 4, and 5, belong; 2, is EXIDIA *flammea*, Berk. (see Suppl.)

PLATE CLXIX. and CLXX.—MACROCYSTIS *luxurians* is a variety of *M. pyrifera*, Ag. (see p. 155.)

Acar

Achn

Acros
Actin
Actin
Actin
Aden

Æcidi

Agari

Aglae
Amp

Ana

Ana
Ana
And

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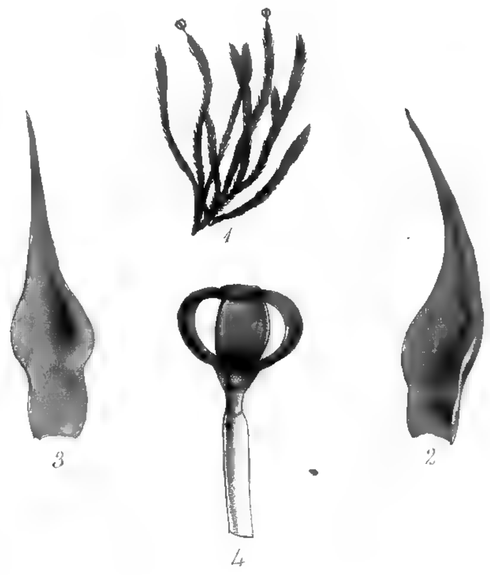

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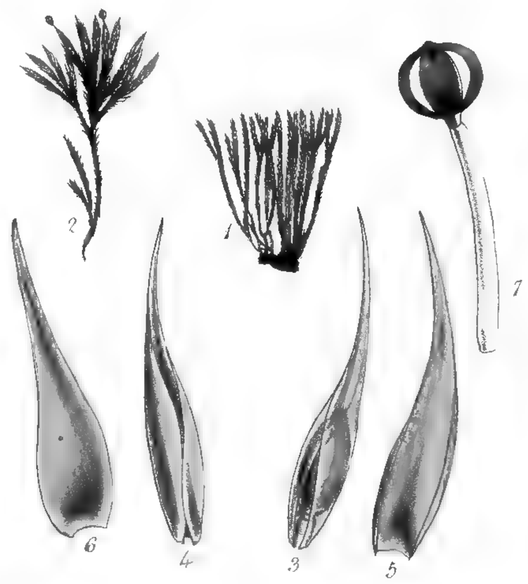

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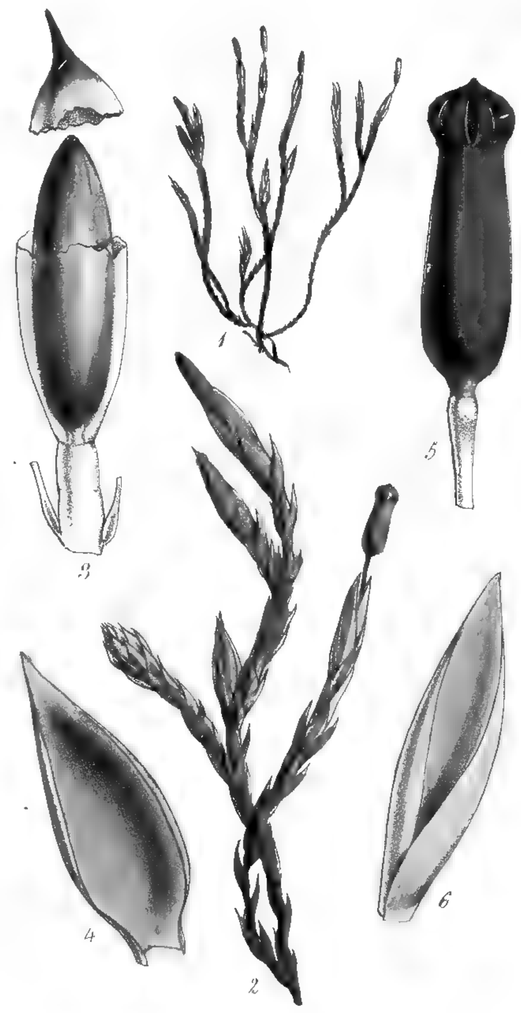
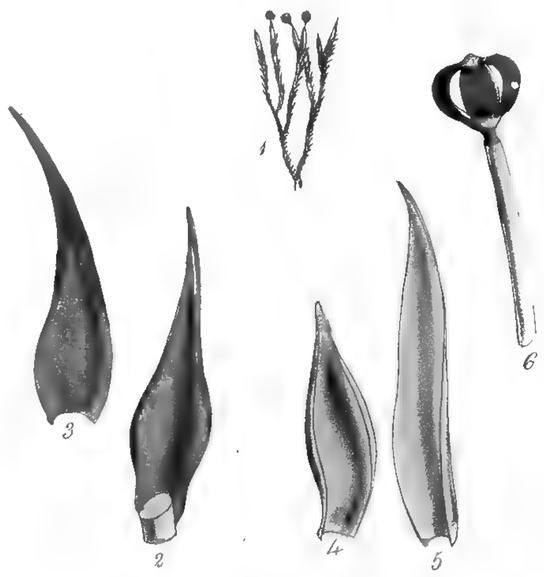


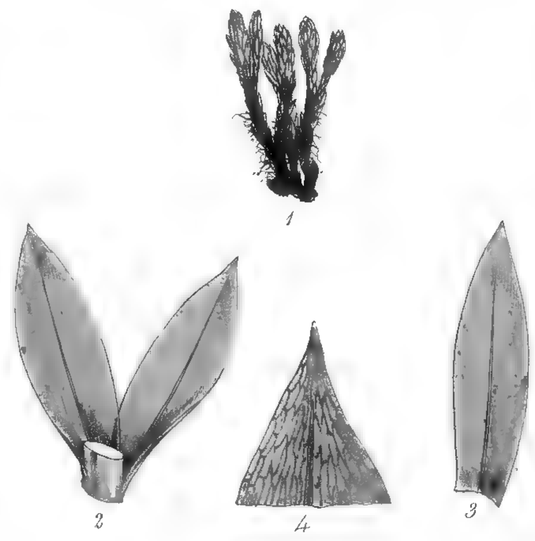
A Wilsoni

IV



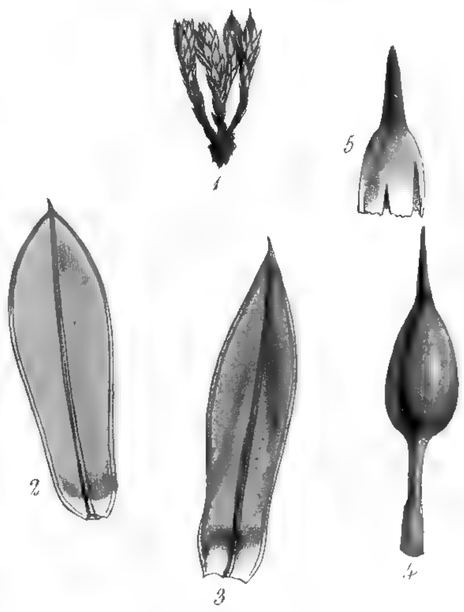
A laxifolia

V.



Physc laxum.

VI



Schist: marginatum.

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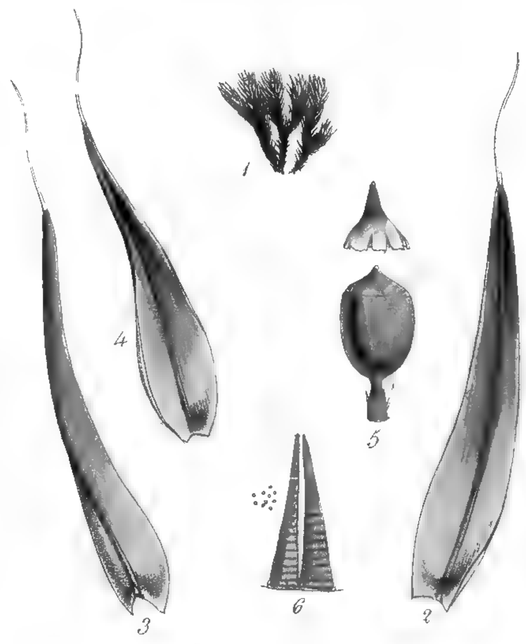


Gr. tortuosa.

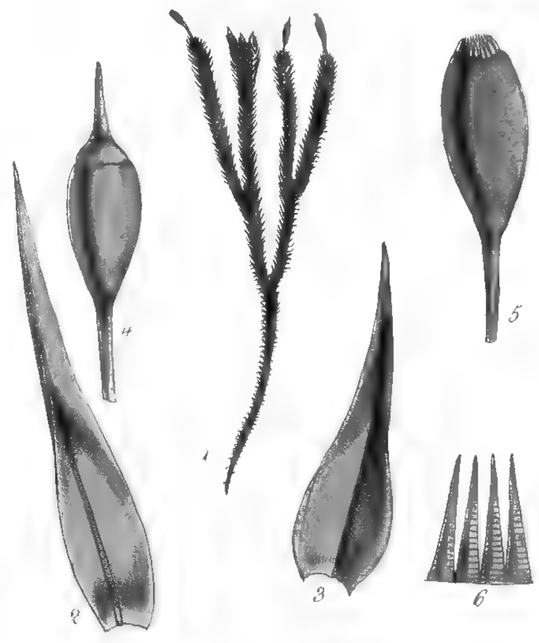
VIII

Grimmia falcata.

W W. and J D Hdel^s W. Fitch lith.og

Printed by Reeve Brothers

I.



Drypt: rupestris.

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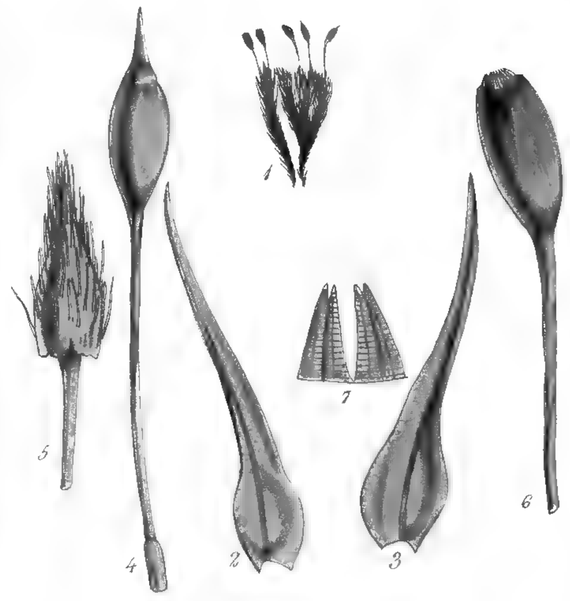


Orthot luteolum

III

Dicran: aciphyllum

IV.

W stricta

V.

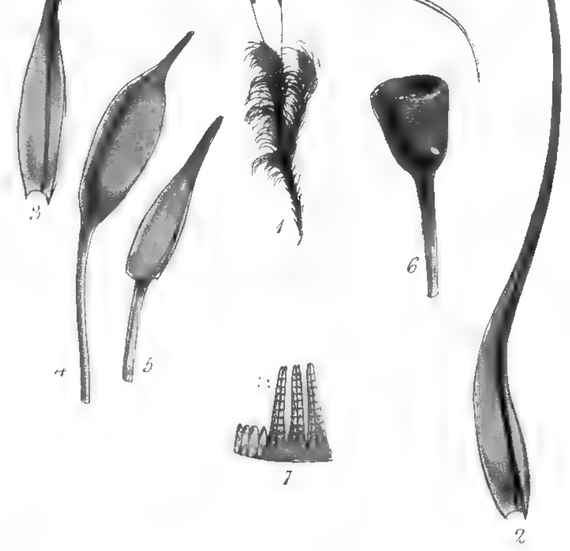
Weisia tortifolia.

VIII.

VI

D.dym glacialis

VII.



Dicr: tenuifolium

Dicr. robustum

W W & J D Hdel[r] W Fitch lithog

Printed by Reeve Brothers

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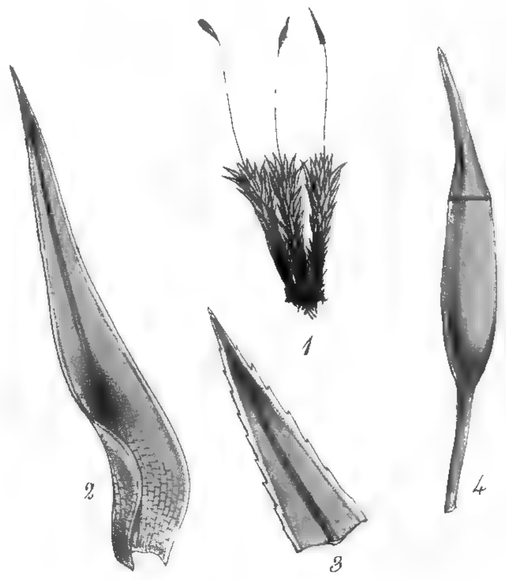


Tortula densifolia

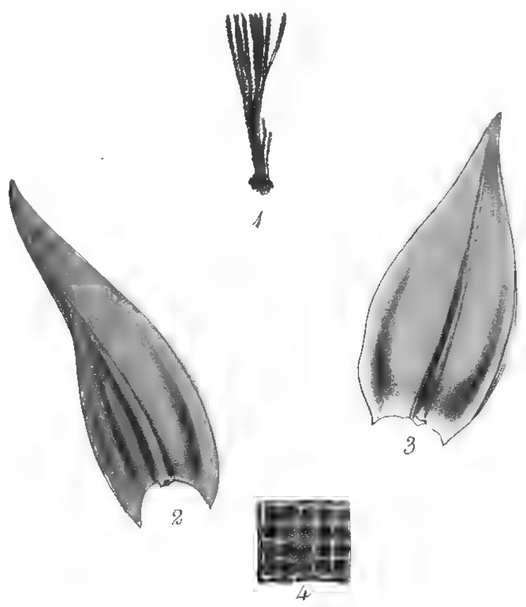
II

T robusta

VII.

Polytr.ᵉ compressum

III



T gracilis

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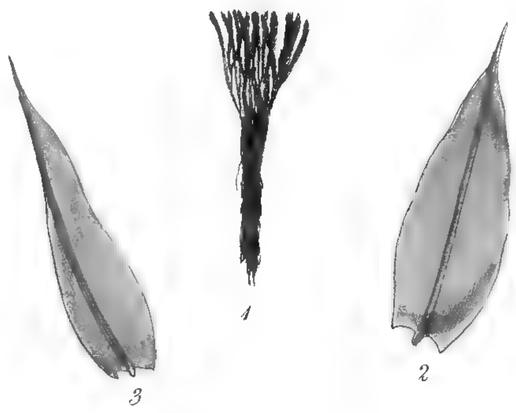
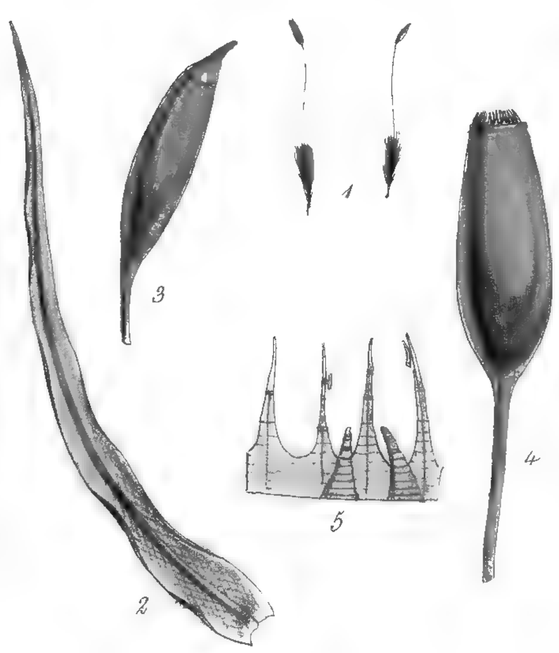


Brachym.ᵍ ovatum

VIII.

P. squamosum

V



Orthodont australe.

VI.

Bryum antarcticum

J.W and J.D.H.delt W.Fitch lithog

Reeve imp

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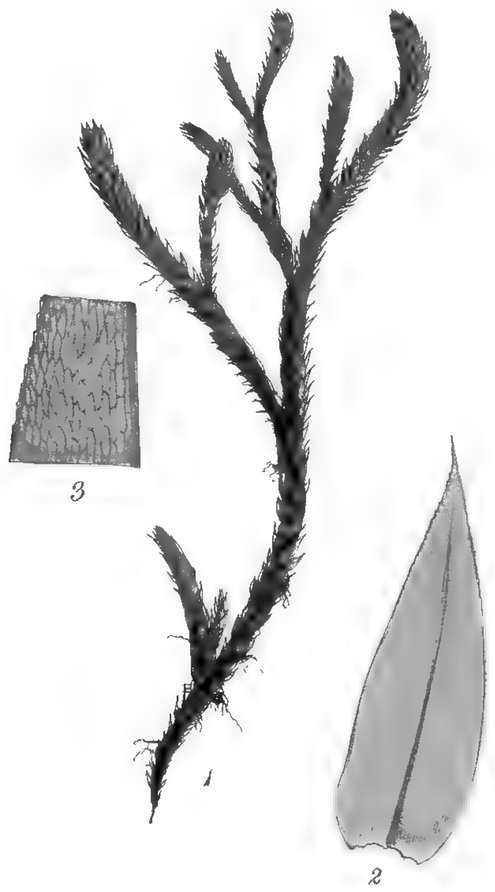

Bryum vagans

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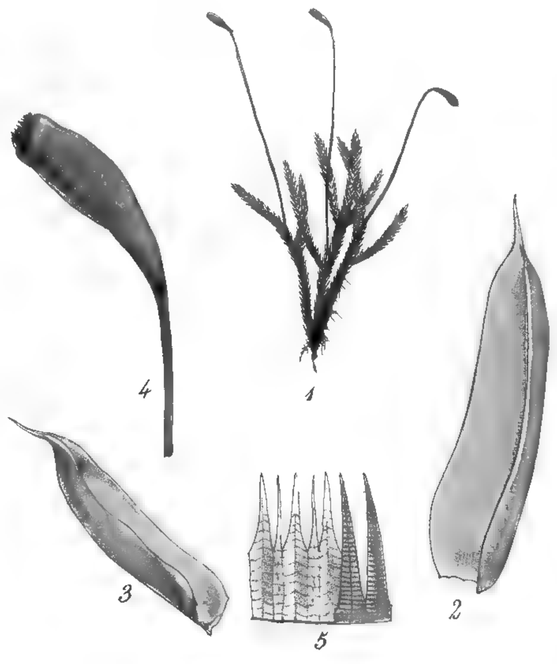
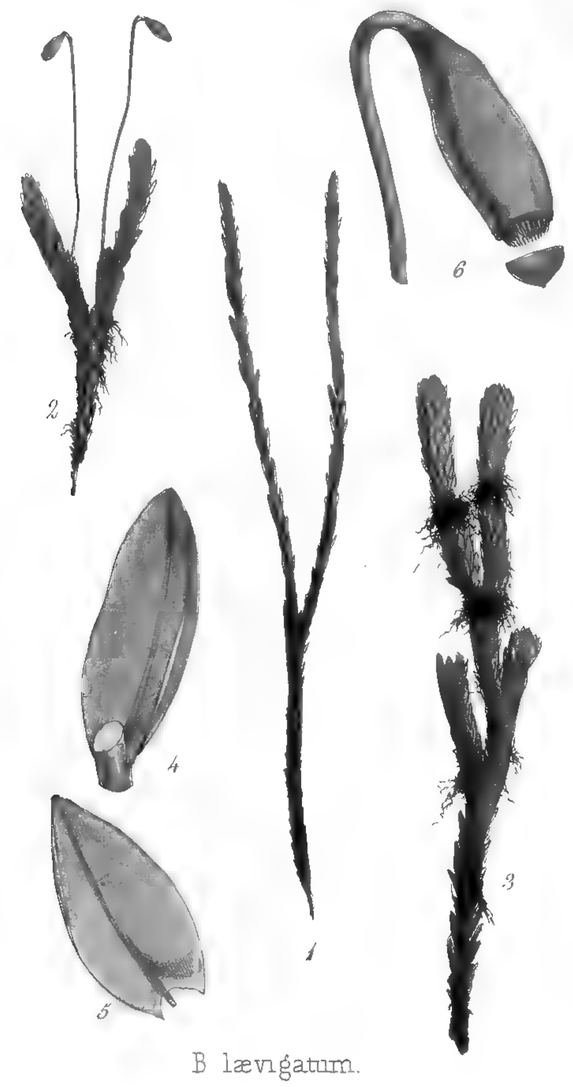


Hypn politum.

III

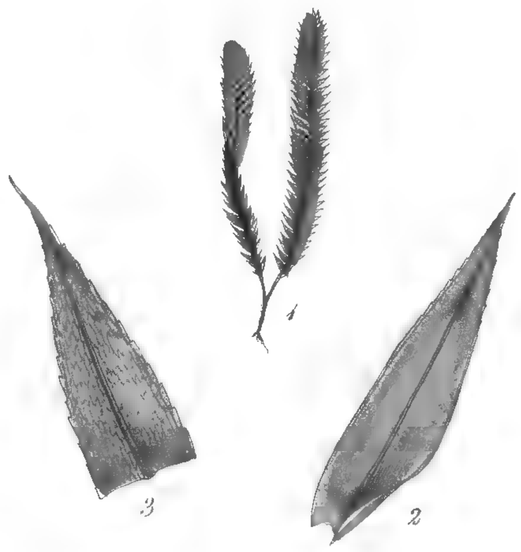


B lævigatum.

IV

H. subpilosum

V.



H reticulatum.

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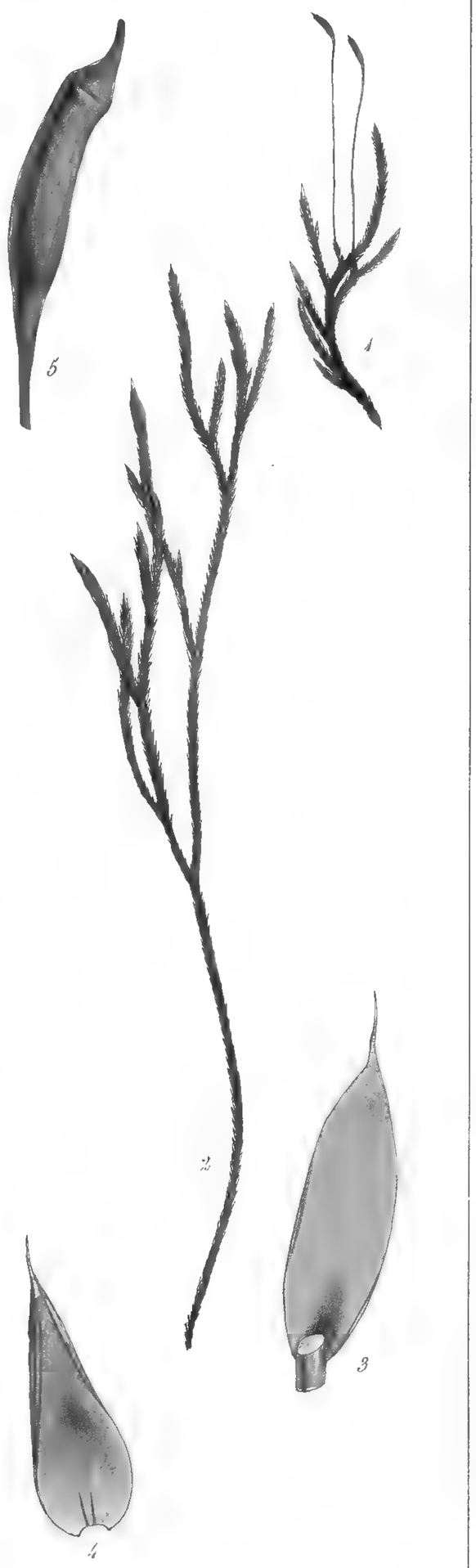

Leskia nitida.

W.W. and J.D.H del. W. Fitch lithog.

Reeve imp

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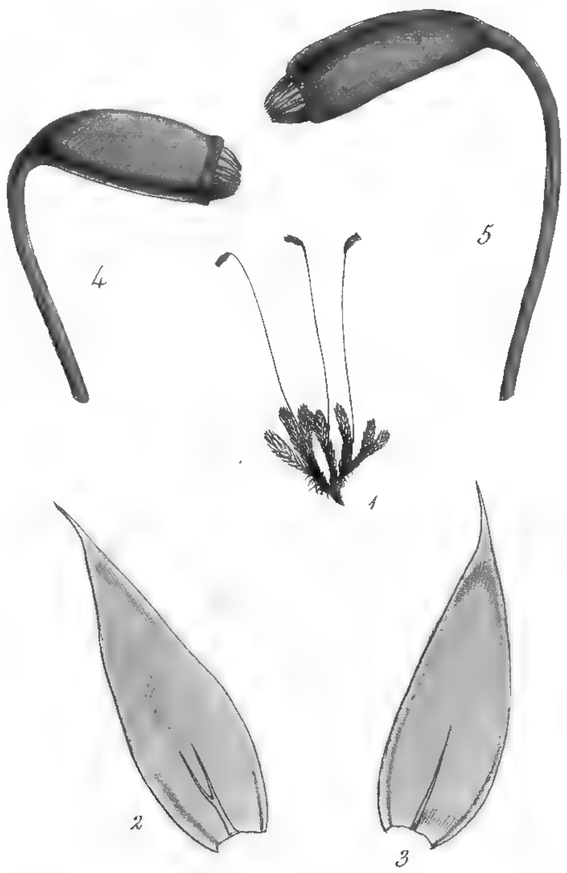

Hypn. luciduhum

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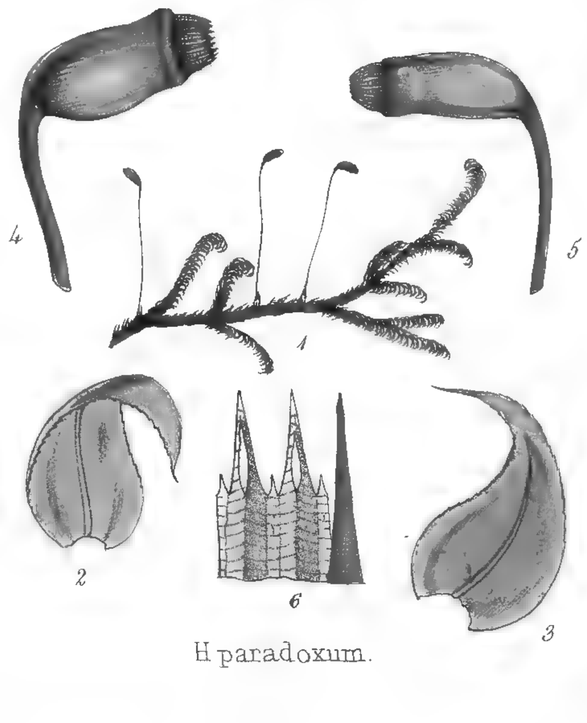

H paradoxum.

III.

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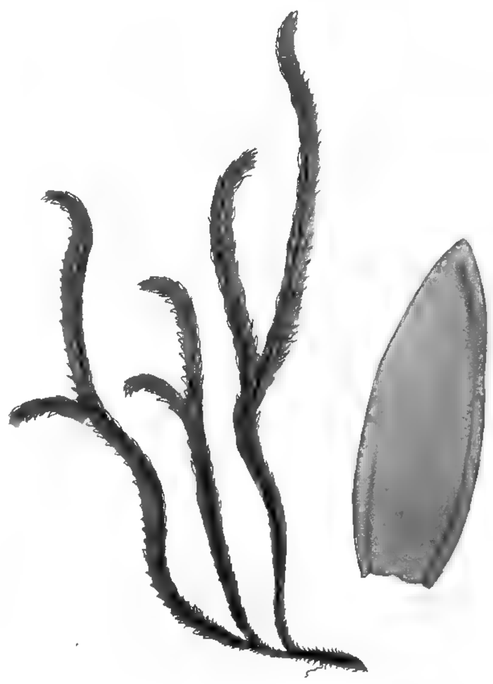

H. lithophilum.

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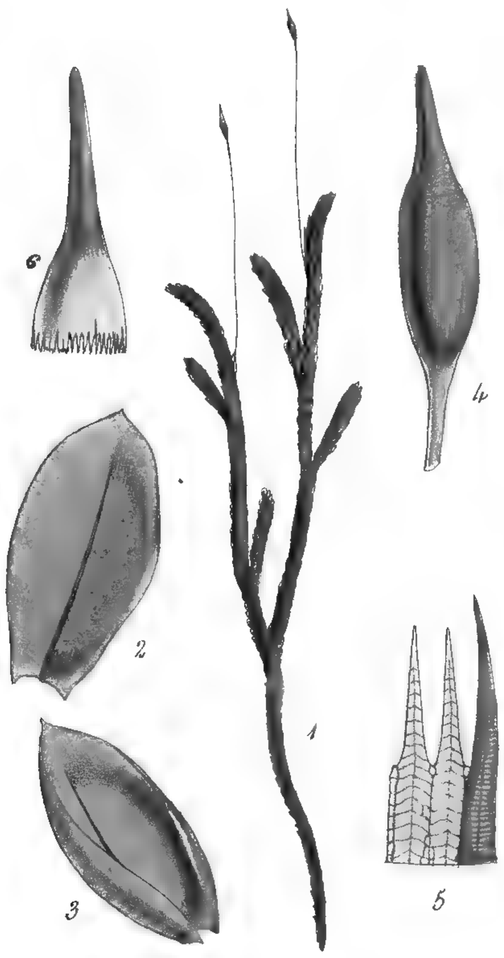


Hook: flaccida

VI.

Hook: apiculata

Hypn: conspissatum.

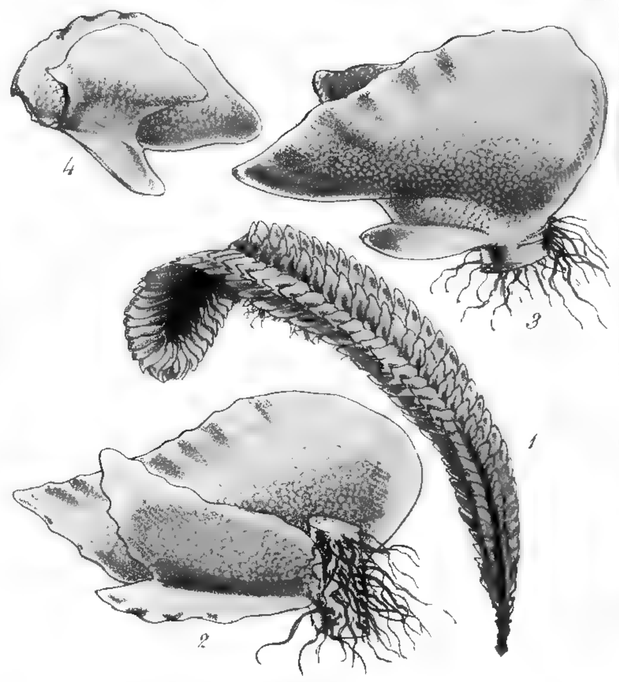
J D Hdes W tch lith.

Reeve imp.

I

J. physocaula

II



J splachnophylla

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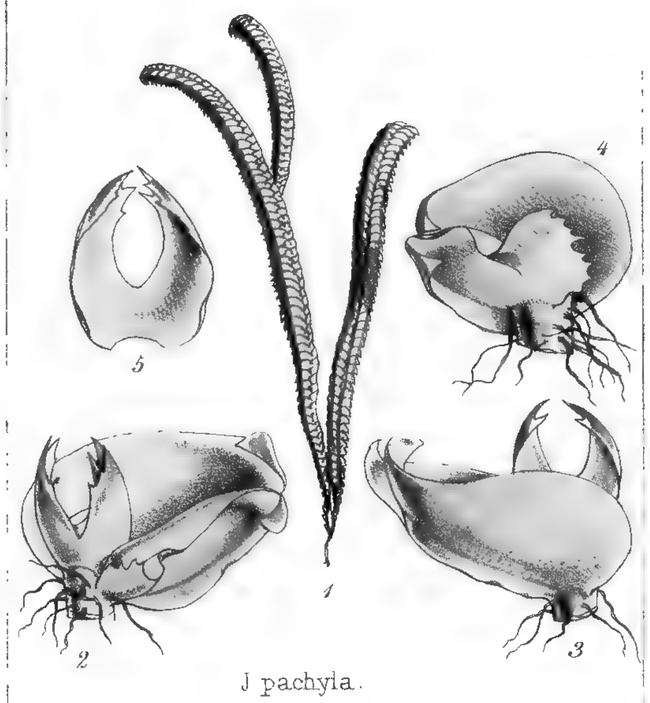

J pachyla.

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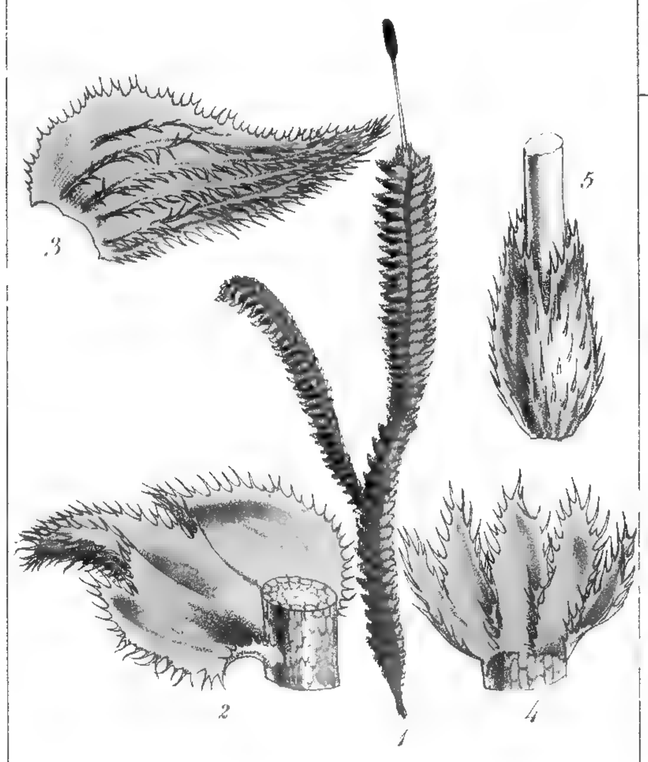

J lamınigera

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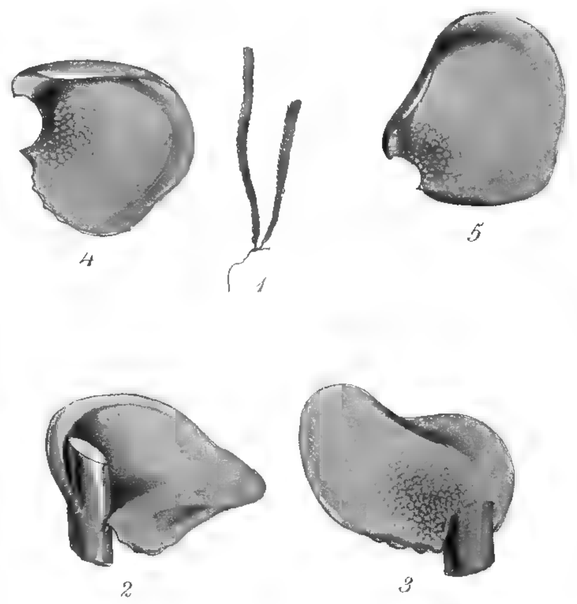

J unciformis

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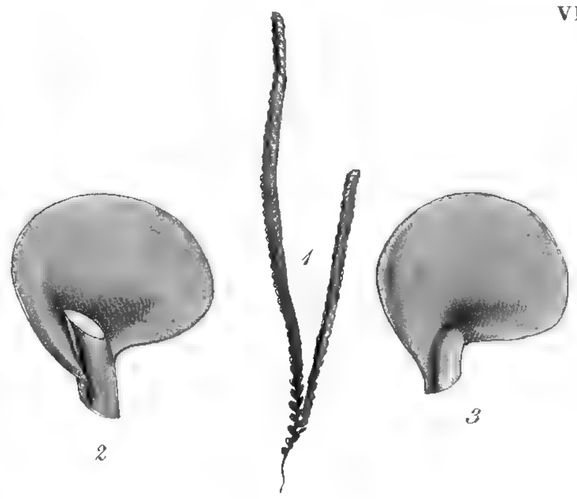

J ansata

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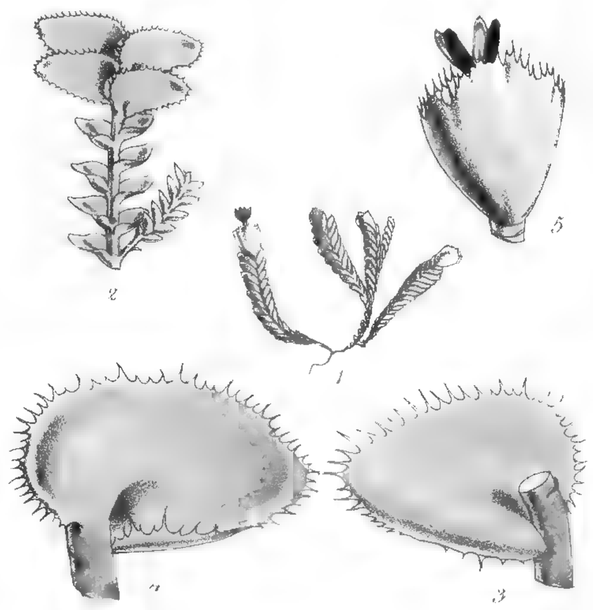

J uncialis

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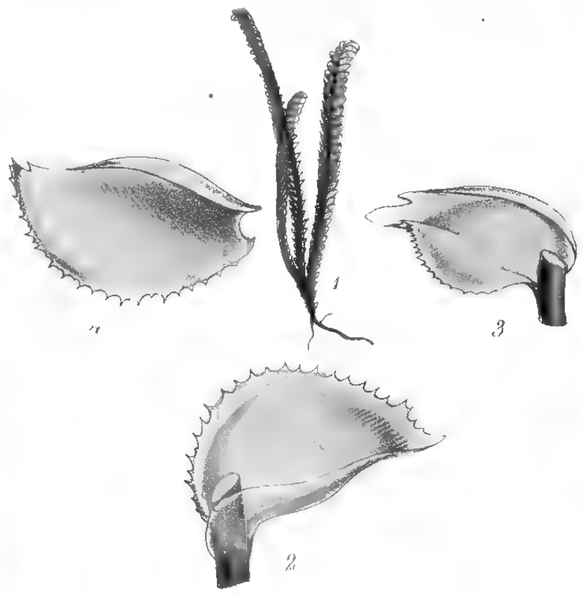

J sphalera

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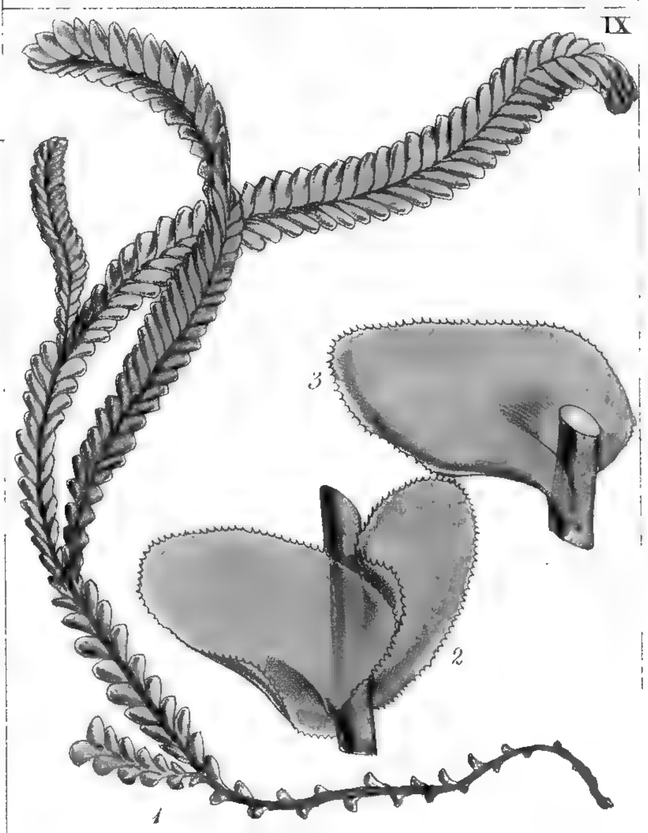
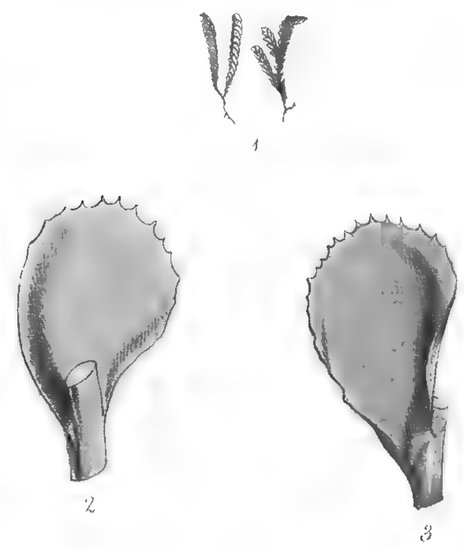


J duricaulis.

J.D.H del. W.Fitch lithog

Reeve imp

I.



J. minutula

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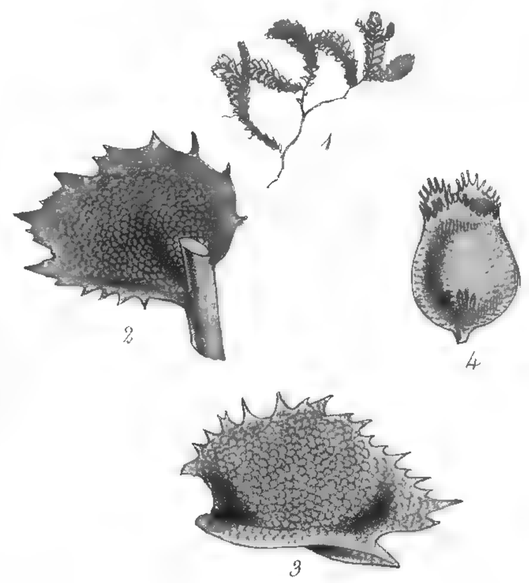

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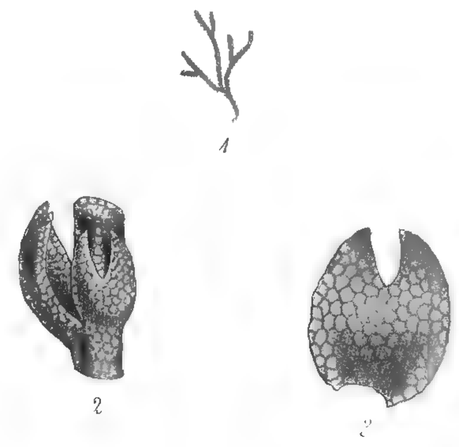

J. rigens.

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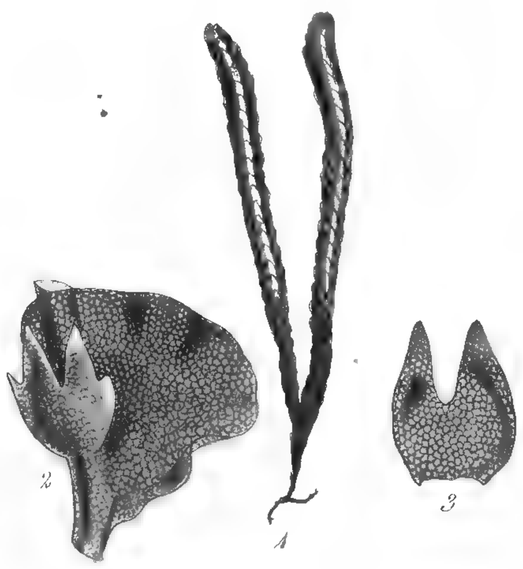

J. vasculosa.

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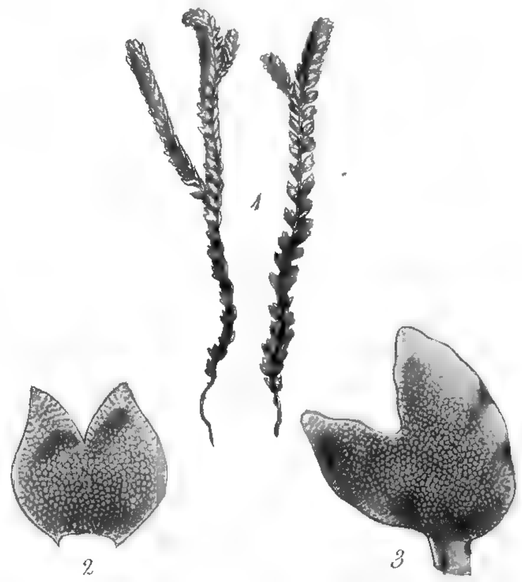

J. humectata.

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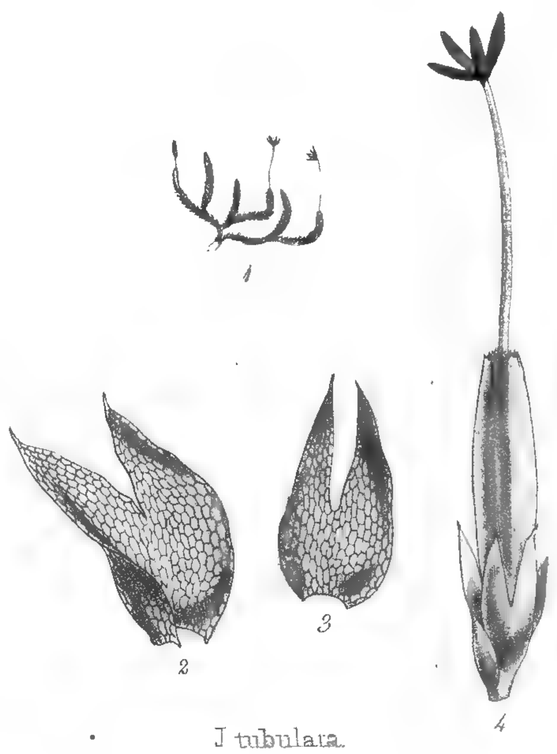

J tubulara.

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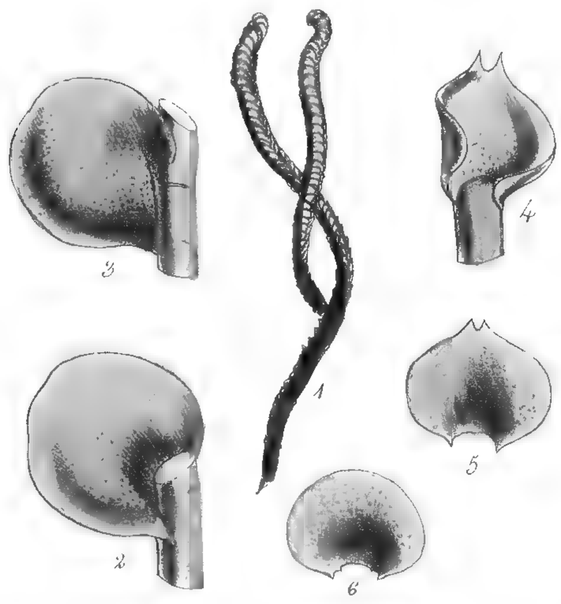

J. cavispina.

VIII

J. palustris.

IX

J. crebrifolia.

J D H del. W Fitch lith

Recve imp.

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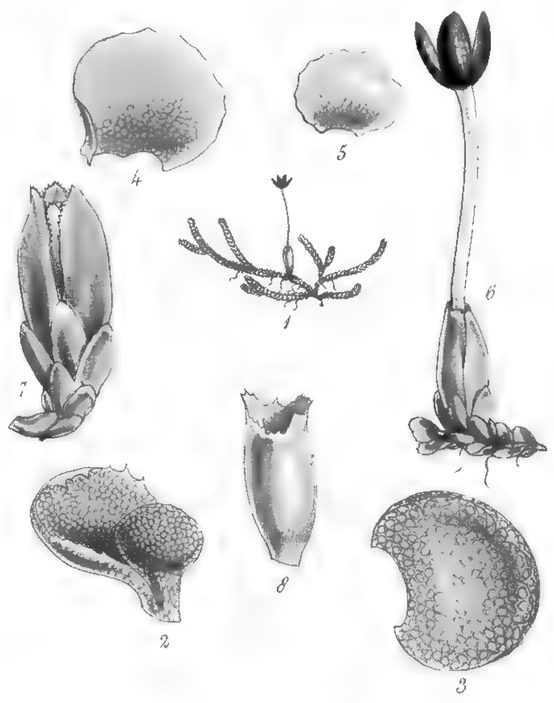

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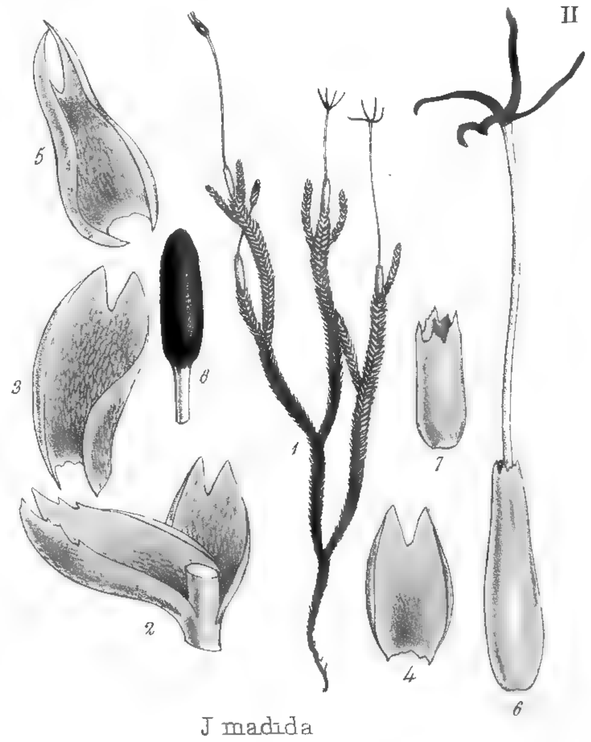

J madida

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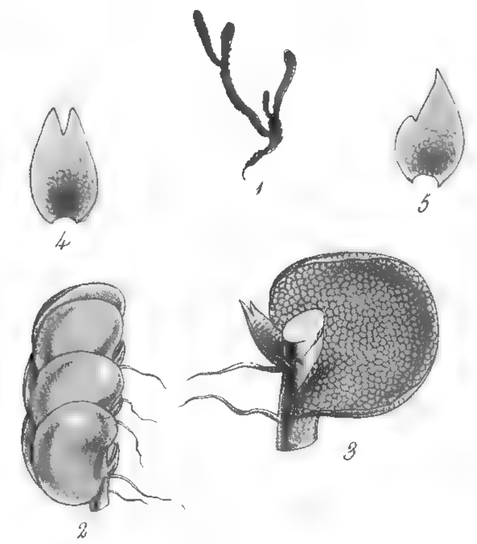

J æquata.

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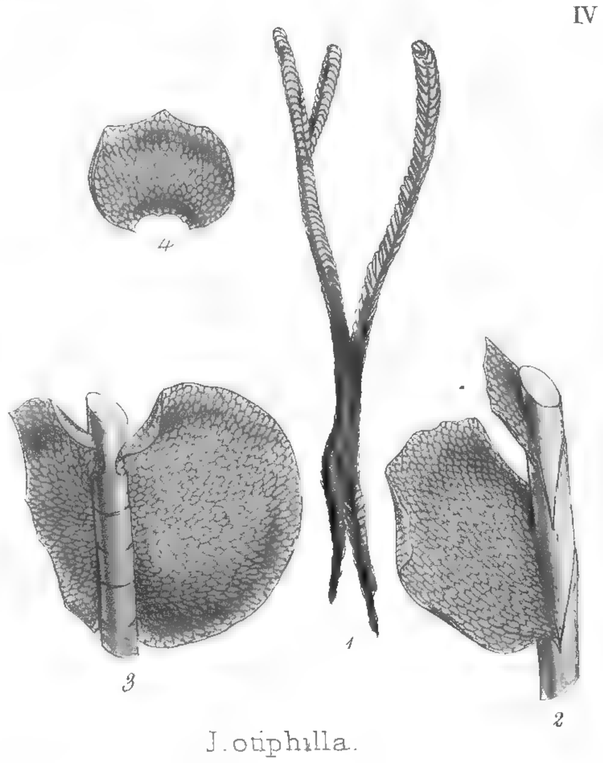

J. otiphilla.

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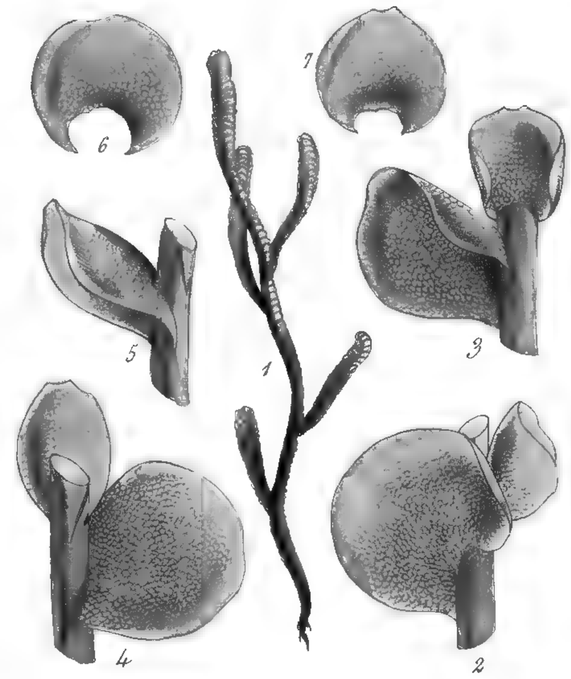

J austrigena.

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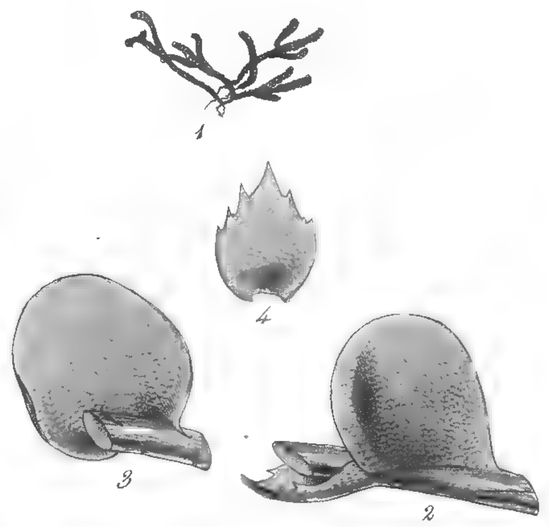

J humilis

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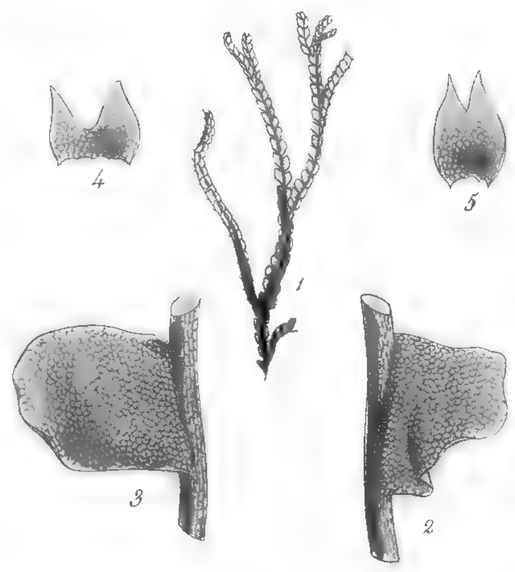

J rivalis

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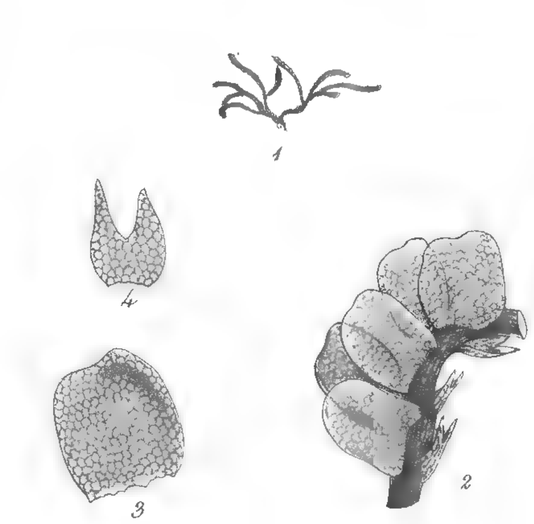

J. sabuletorum

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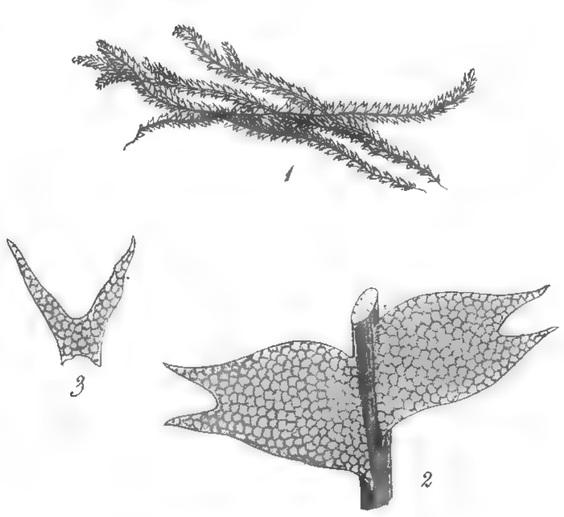


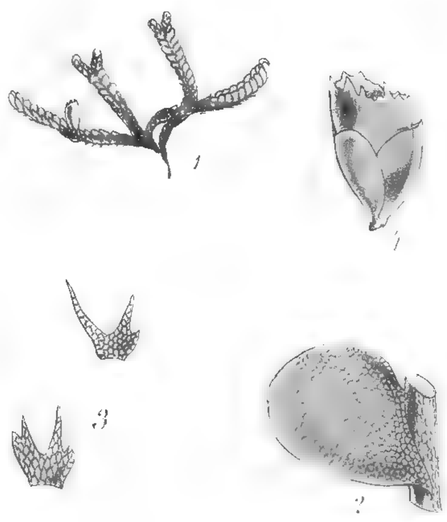
J textilis

J D H del W Fitch lith

Reeve imp

Plate CLIX.

I.



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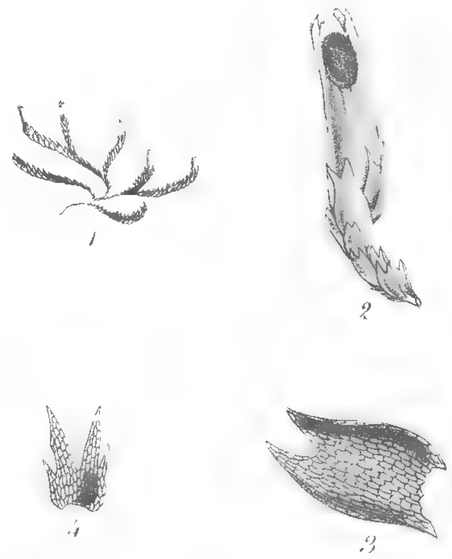

III.

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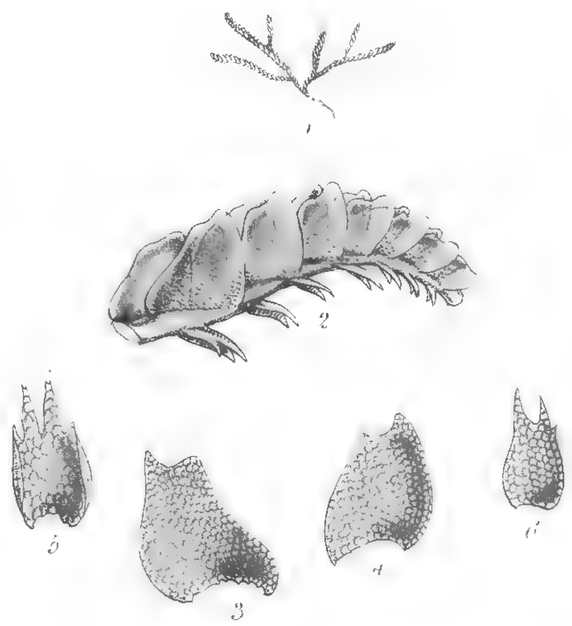

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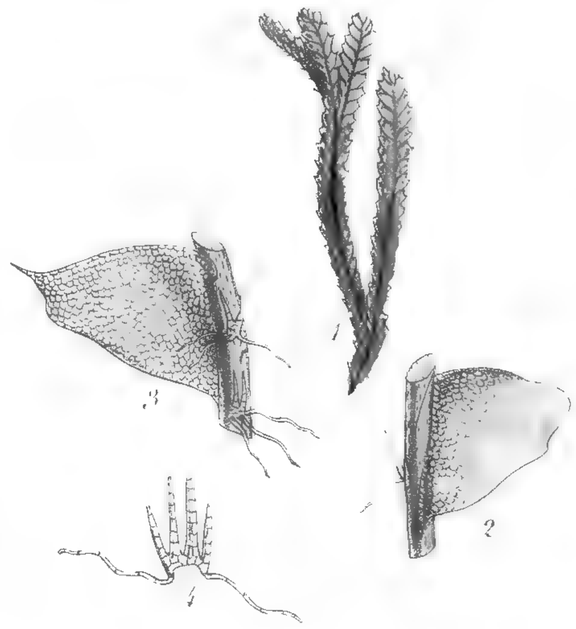

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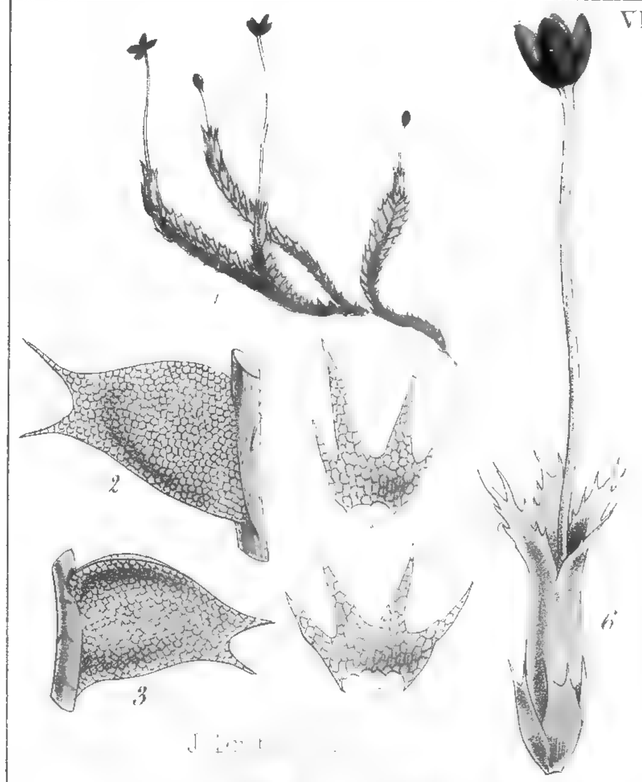

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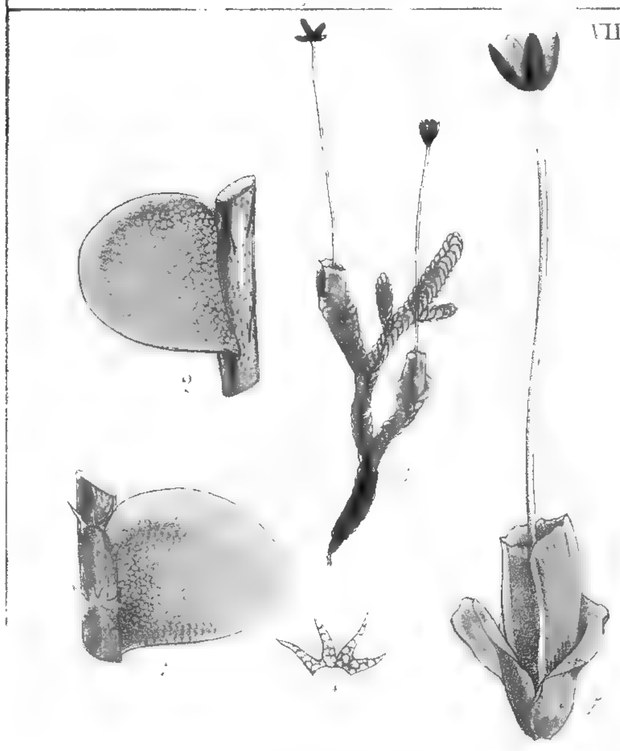

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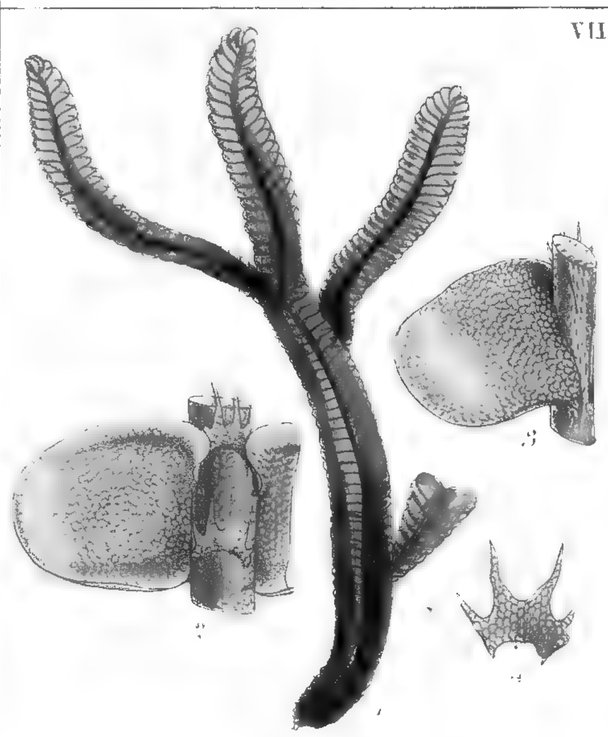

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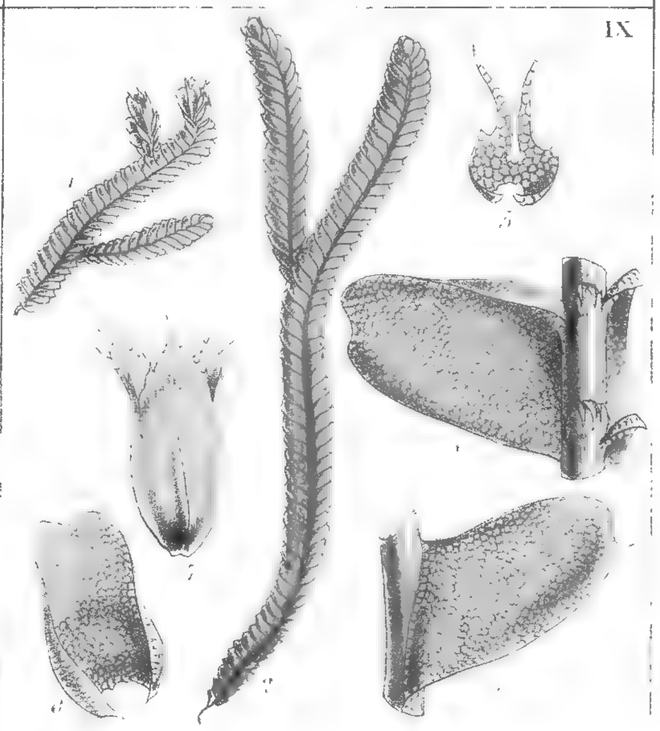

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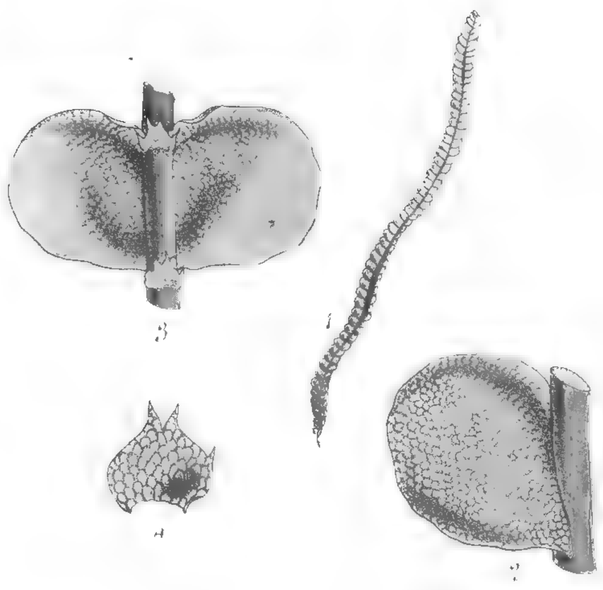
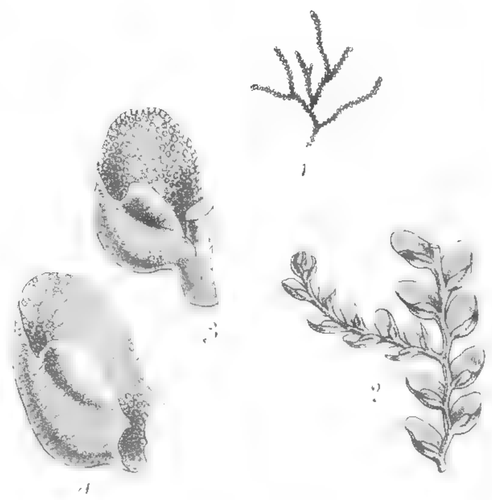


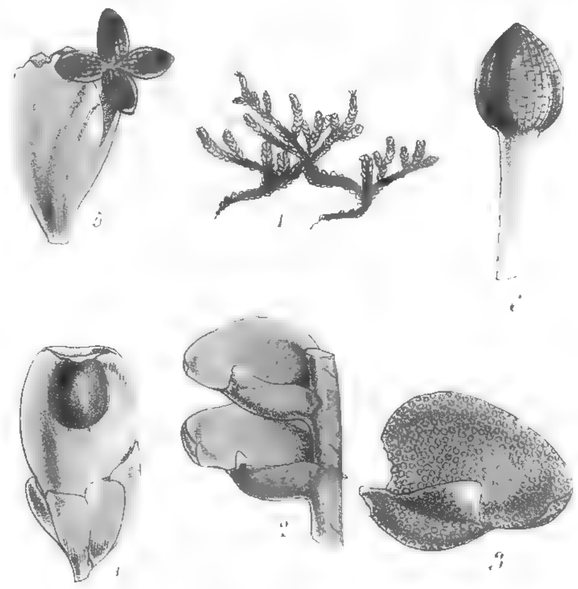
. . surrepens

II



. Helix.

III



. parasitica

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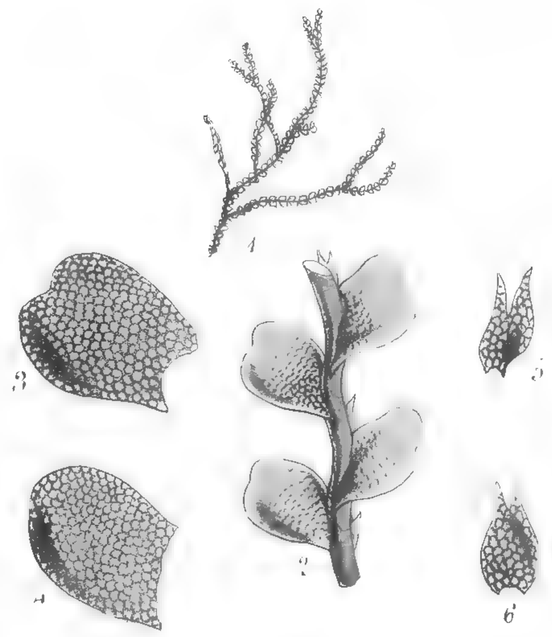
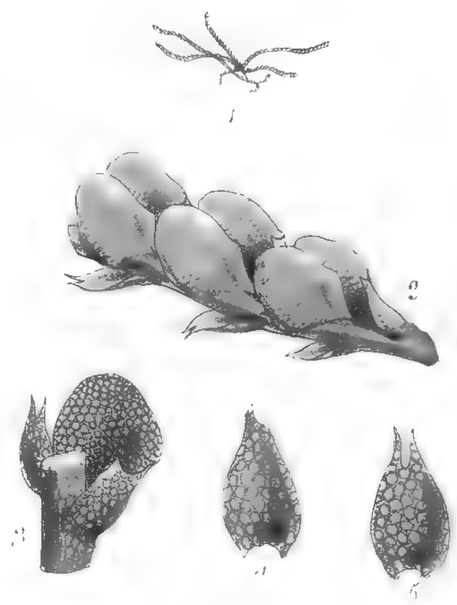


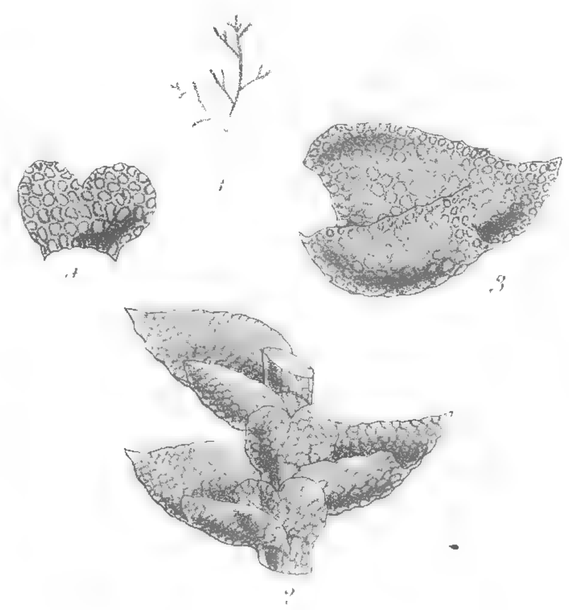
. . grisea

V.



subnegra.

VI.



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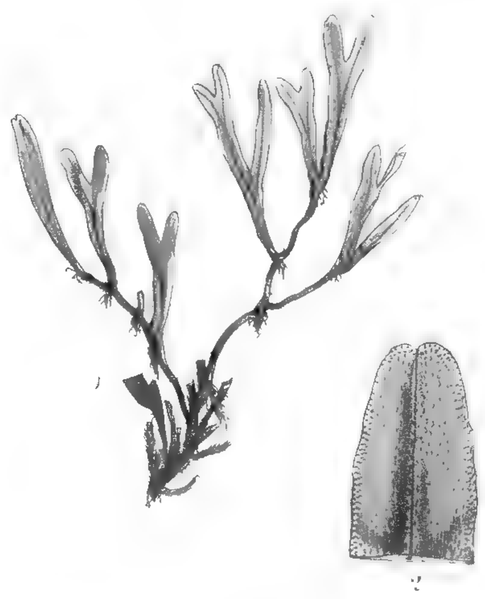

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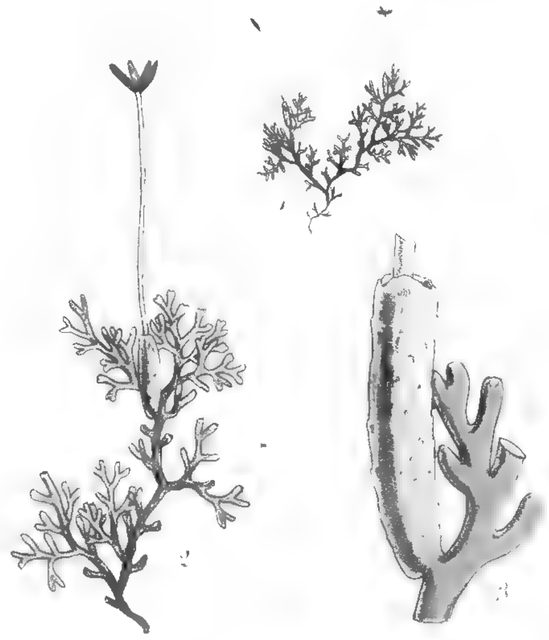
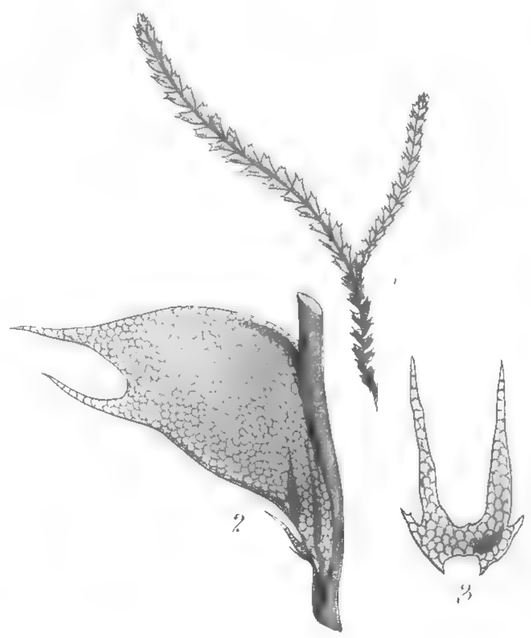


IX.

I.

J. [illegible]

II.



J. alternifolia.

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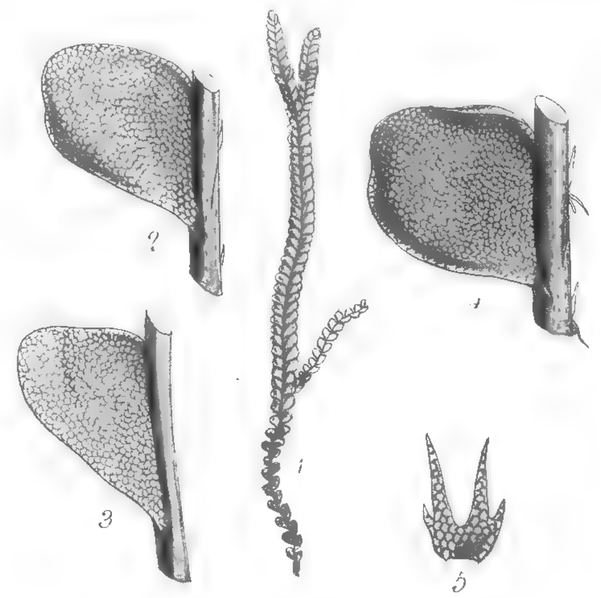
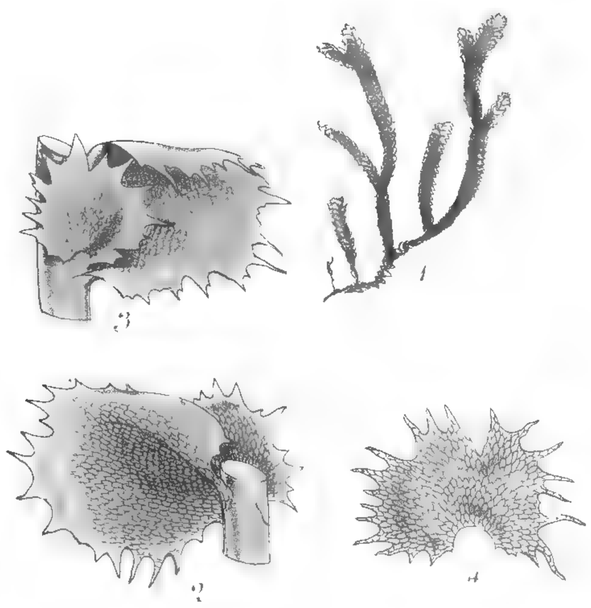


J. reclinata

IV.

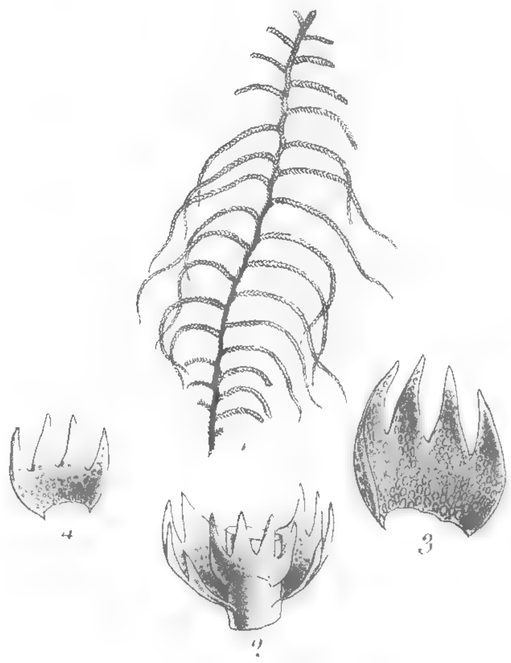


J. crinacea.

V.

J. chlorolepica

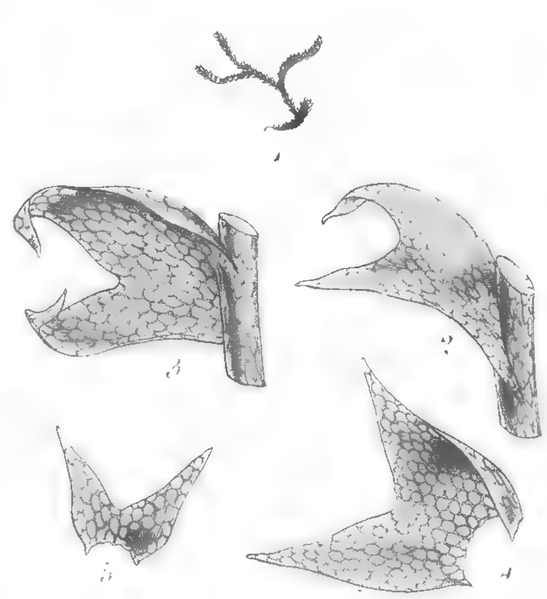
VI.



J. chordulifera

VII.

VIII.



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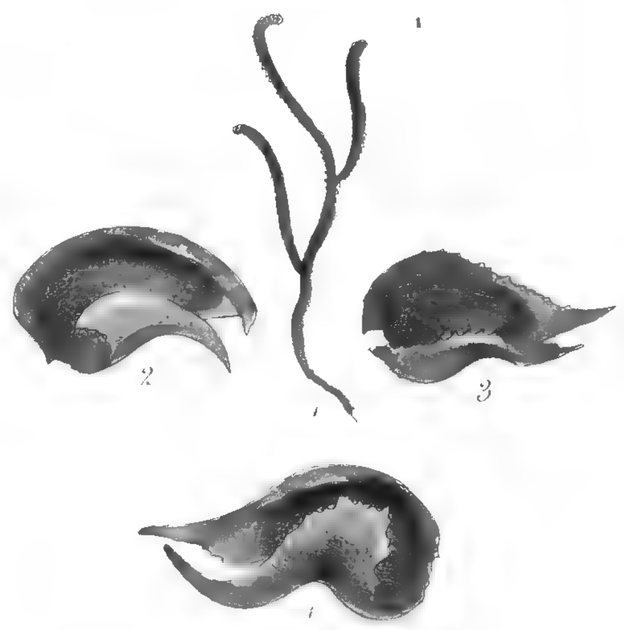
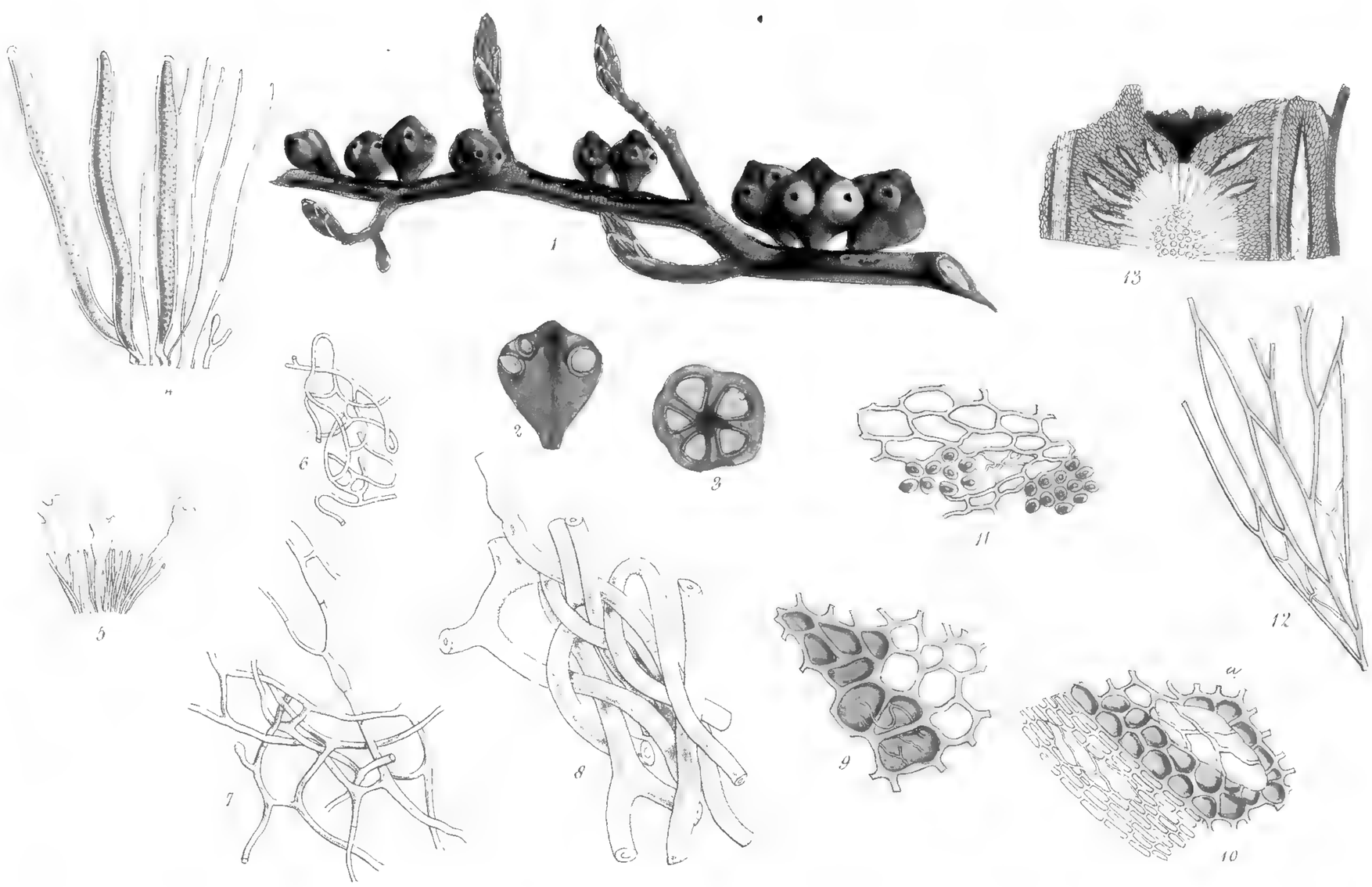
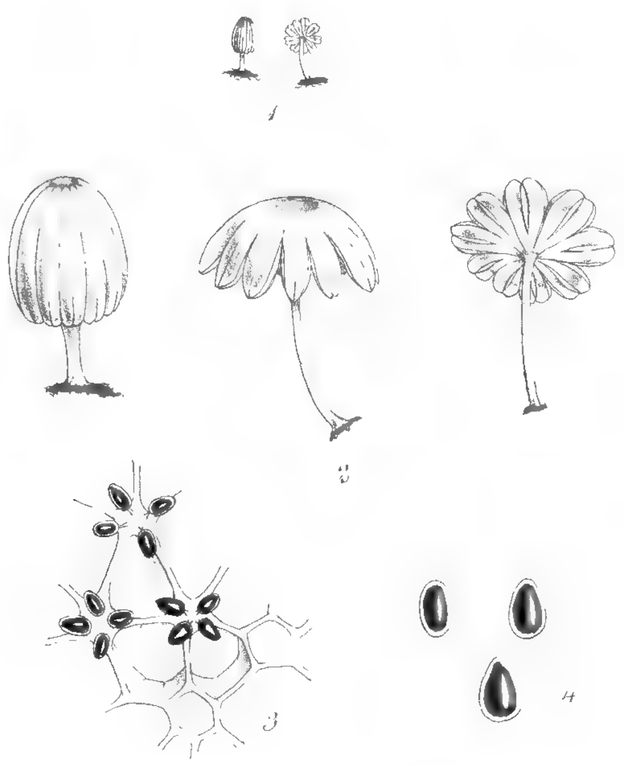




Cyttaria Hookeri Berk

II



Coprinus flosculus. Berk:

III

Agaricus Glebarum Berk:

Reed M J Berkeley del[t] W Fitch lith

Reeve imp.

I.

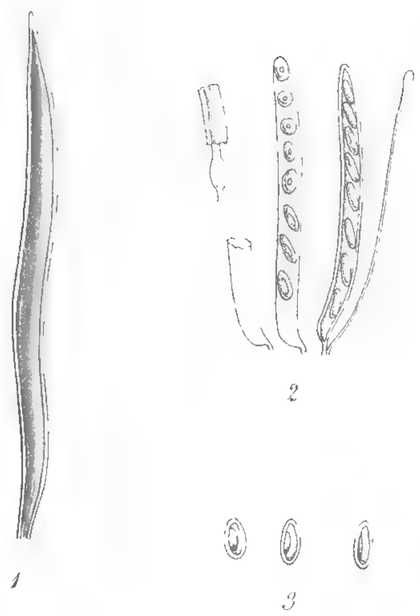
Sphæronema stictcum Berk

II.

Æcidium Magellanicum. Berk

III.

IV.



Peziza stercorea. Pers.

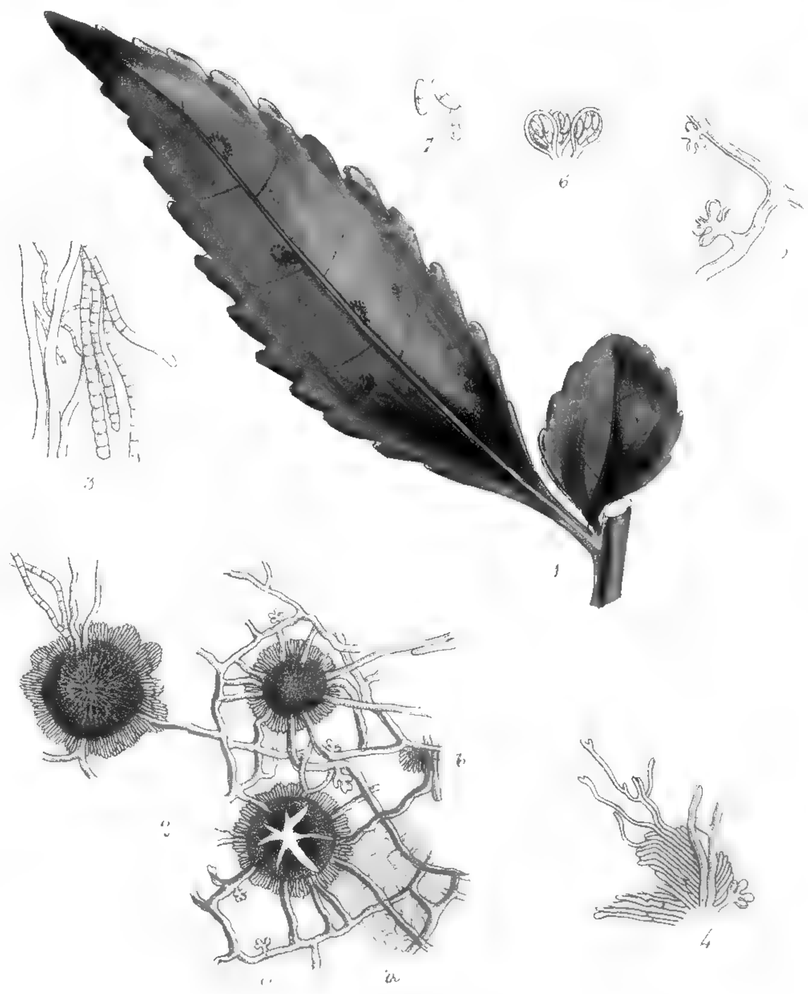
V.

Agaricus longinquus Berk

I.

Asterina pellicolosa Berk

II



Asterina Darwinii Berk

III.

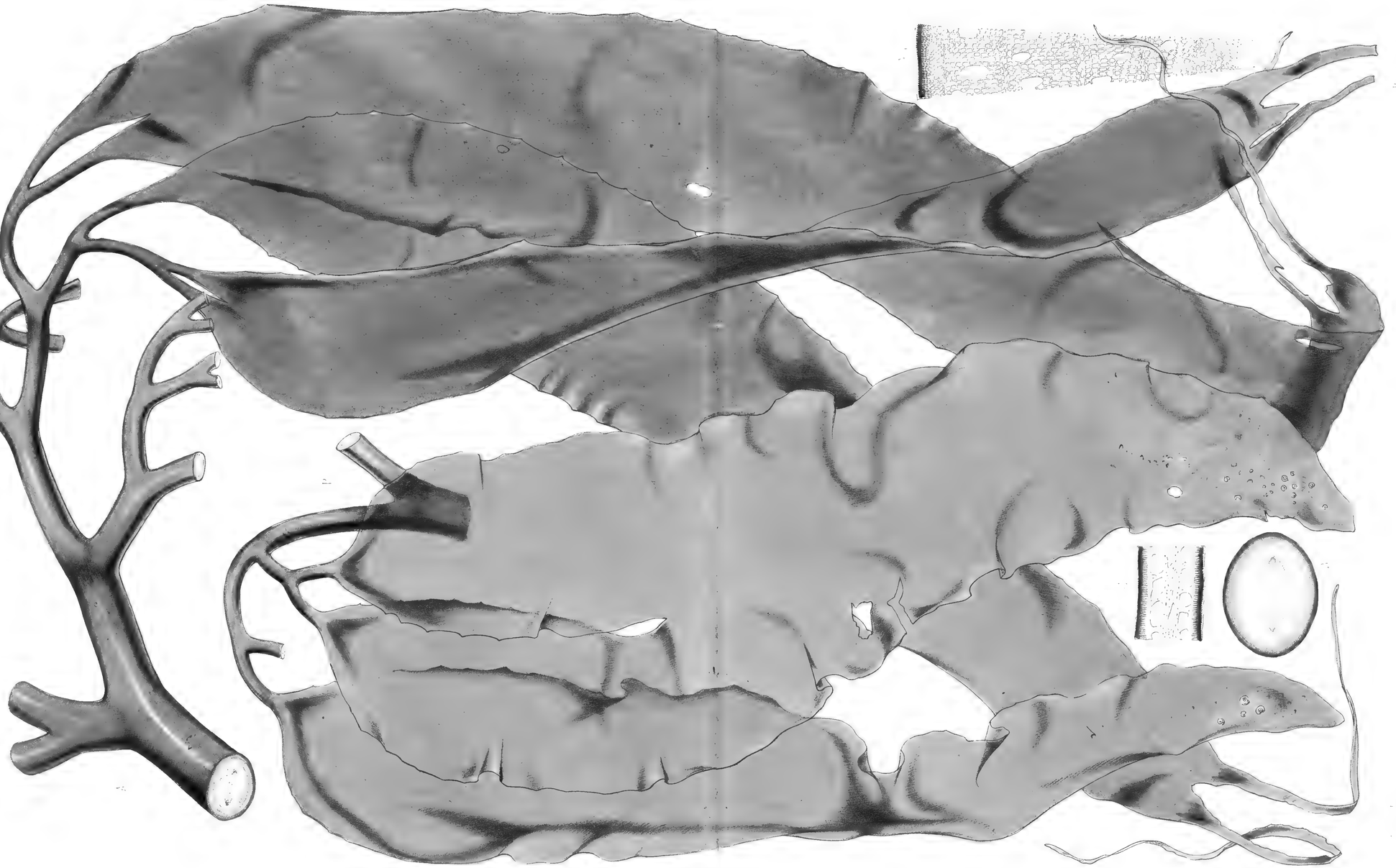
Peziza Kerguelensis Berk

IV

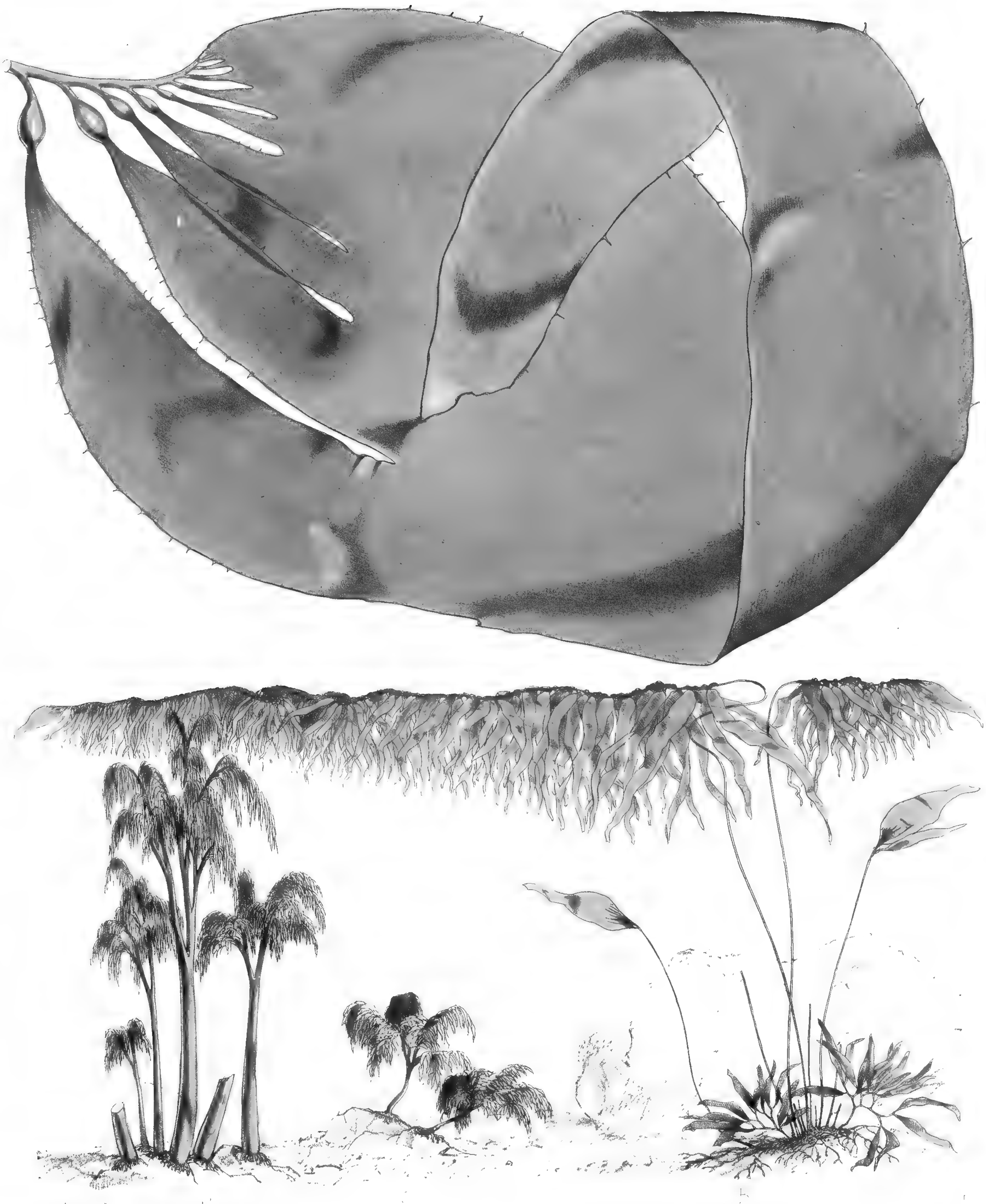
Asterina stictica Berk

Rev^d M J Berkeley del^t W Fitch lith

Plate CLXVIII. CLXVIII.

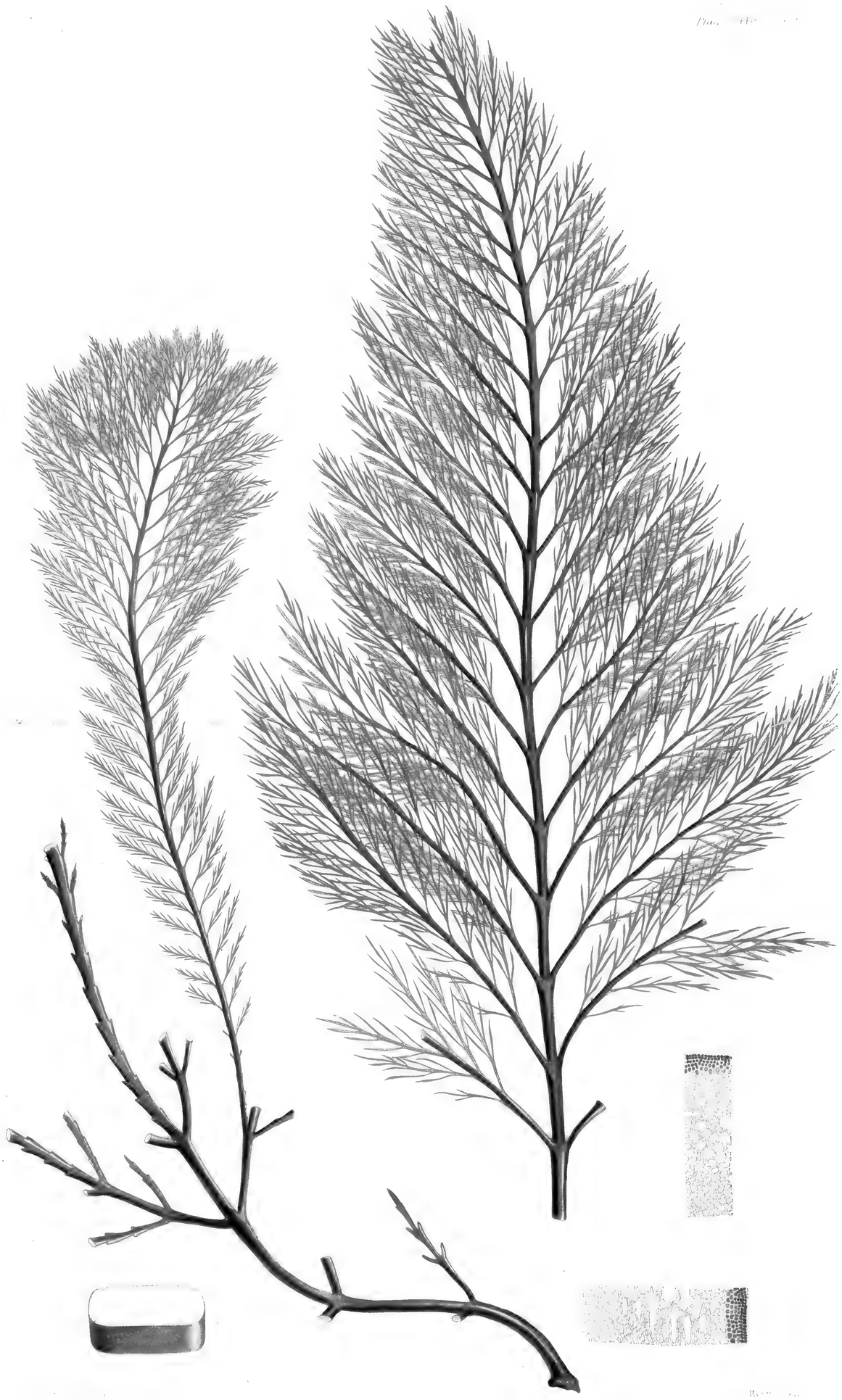


Macrocystis fuxarinus Hook. [illegible]

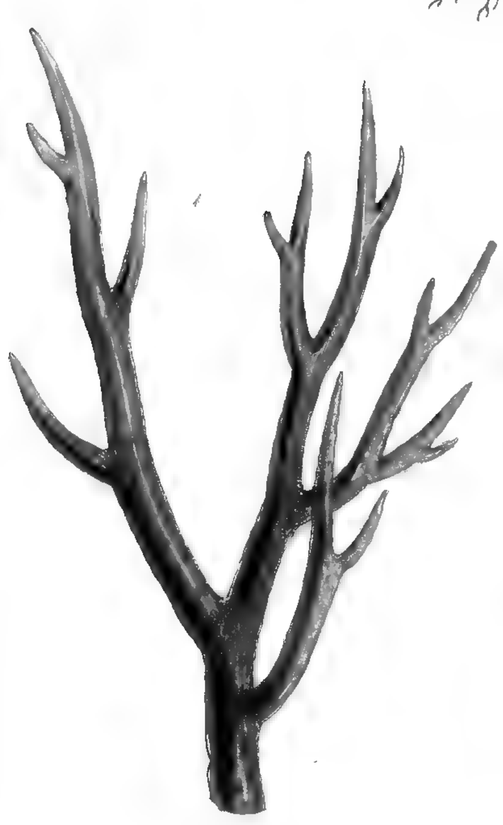


C Lessonia ovata
D " fuscescens

A & B Macrocystis luxurians



Desmarestia Rossii Hook fil et Harv



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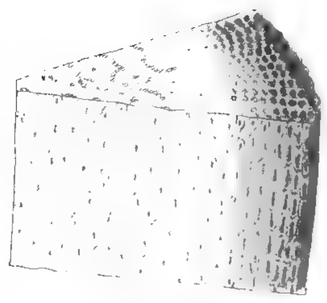
4



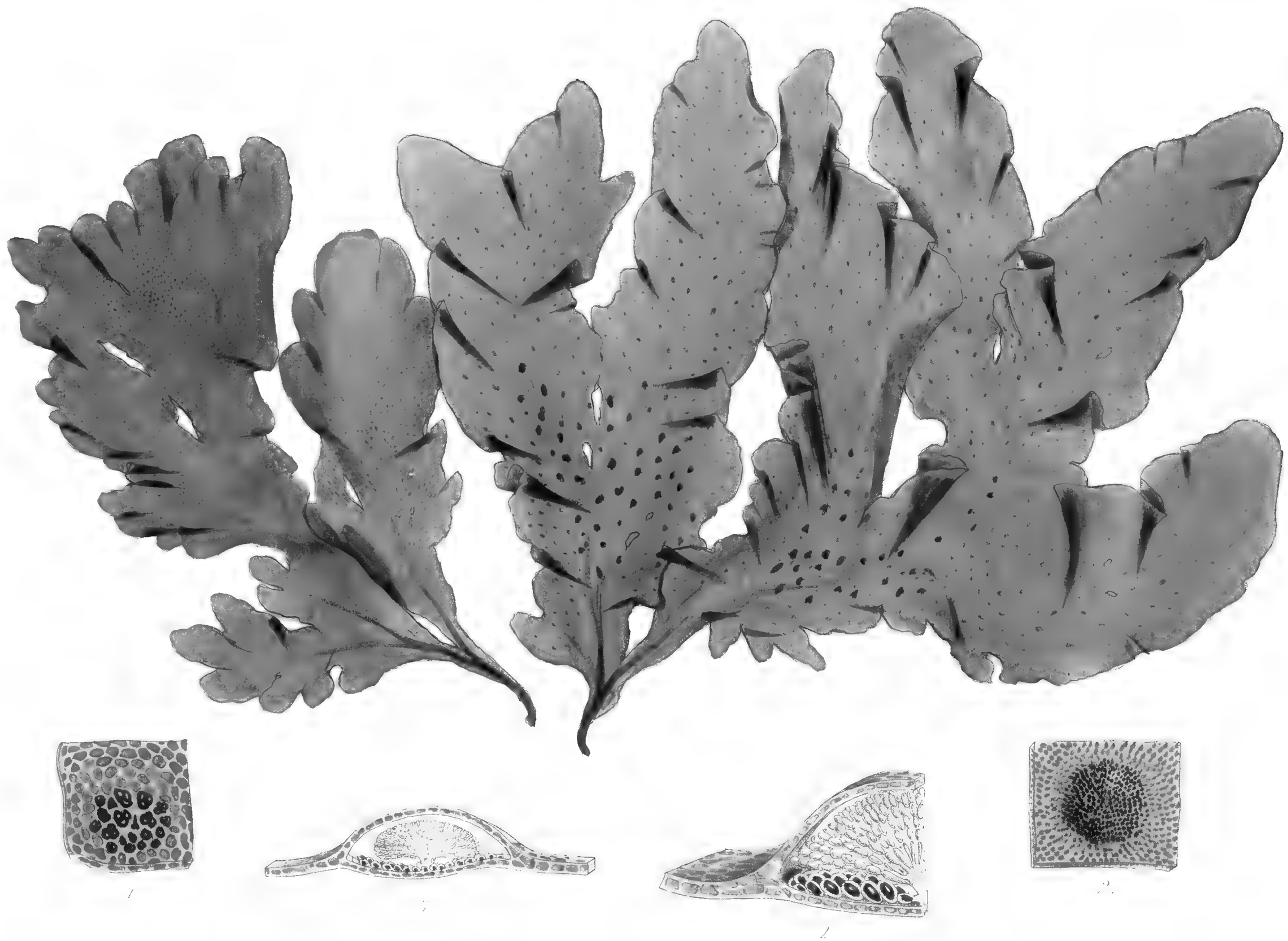
2.

1.

Delesseria Lyallii Hookfil et Harv.

Reeve imp.

Nitophyllum Croziers, Hook nl et Harv



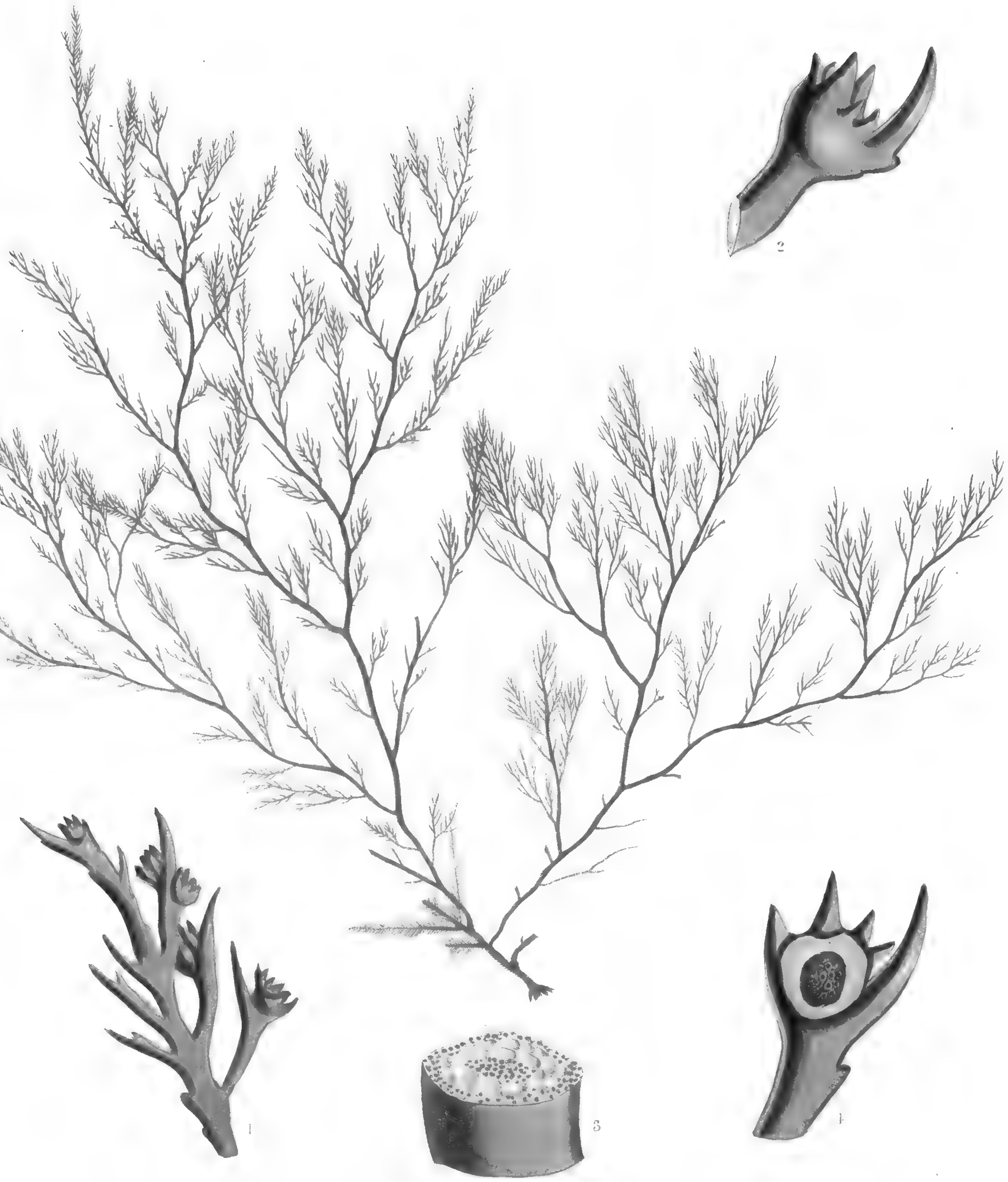
1 2 3 4

[illegible]

Fitch del et lith

Reeve sc.

Rhodymenia variolosa Hook fil et Harv.



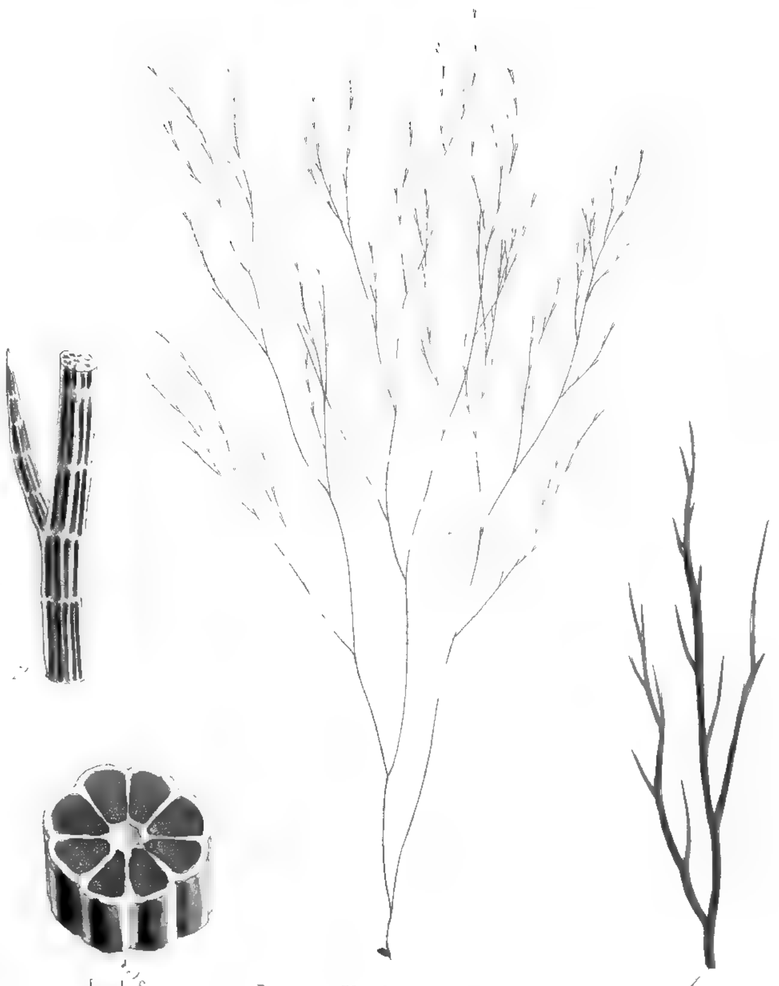
W Fitch Lith.

Reeve imp

Acanthococcus Antarcticus, Hook. fil. et Harv.

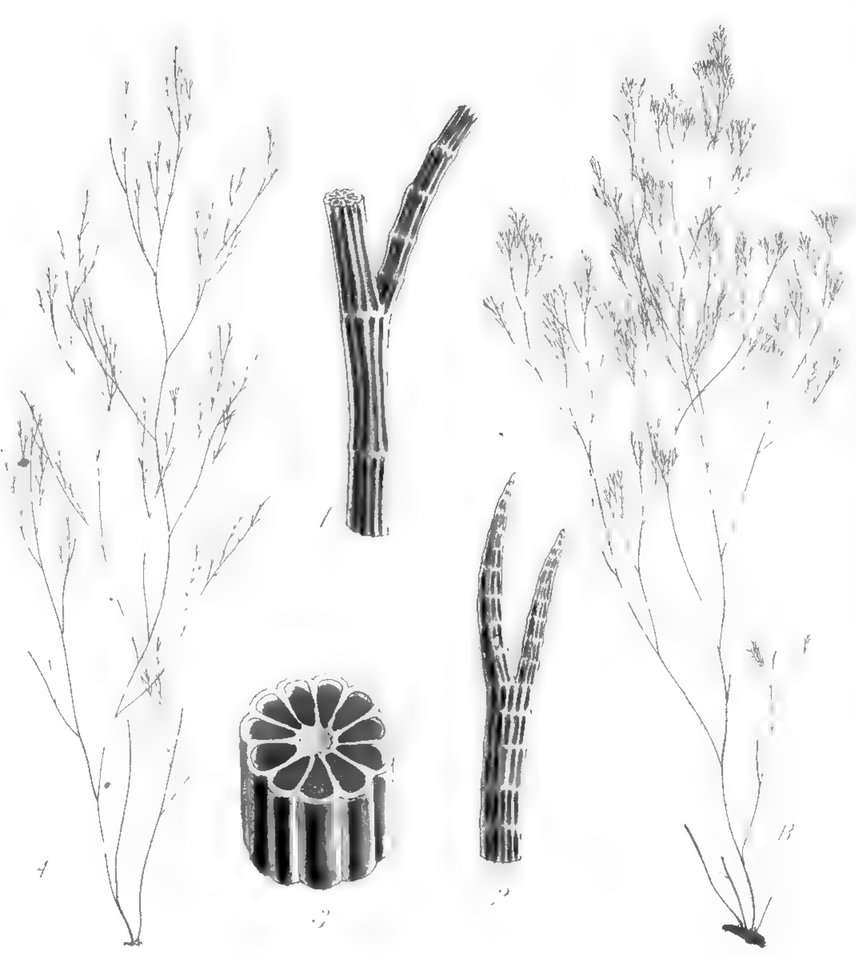
Plate CLXXXII.

1.



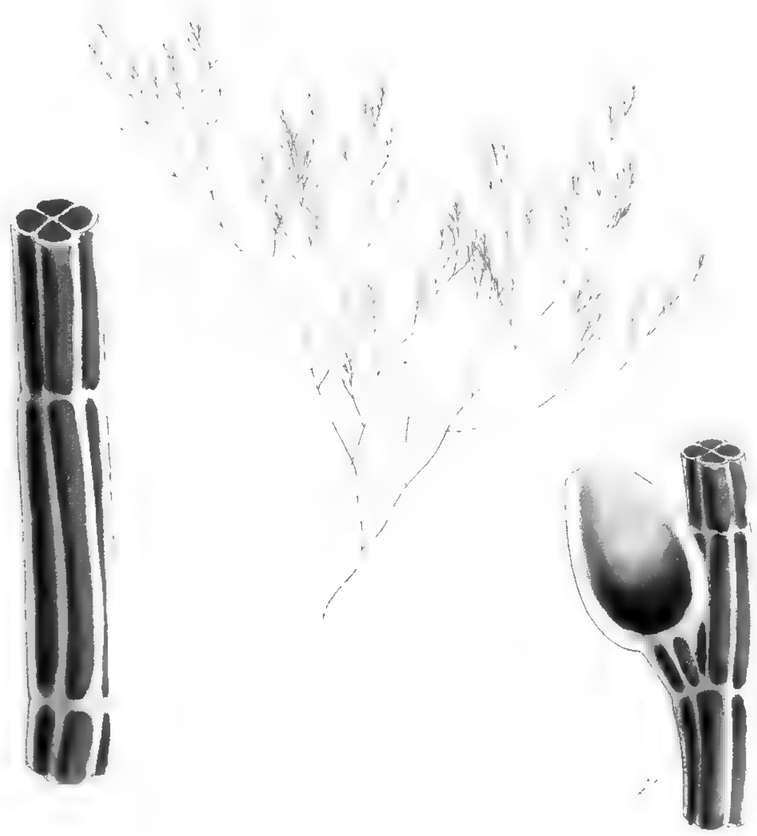
Pol fusco-rubens, Hook fil et Harv

2.



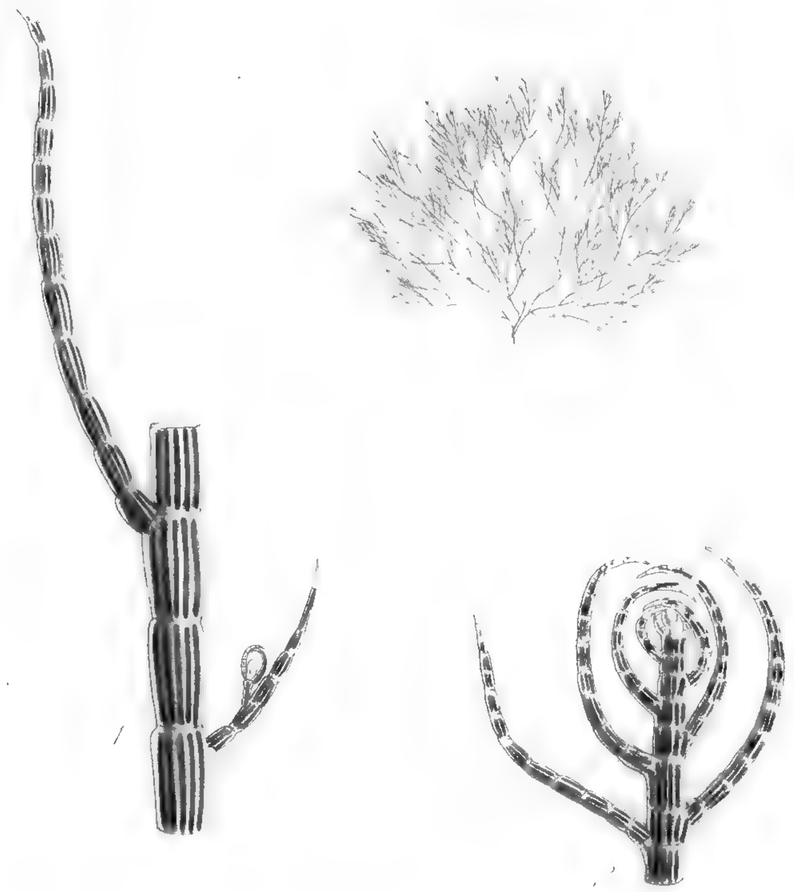
Pol anisogona, Hook fil et Harv

3



Pol microcarpa, Hook fil et Harv

4

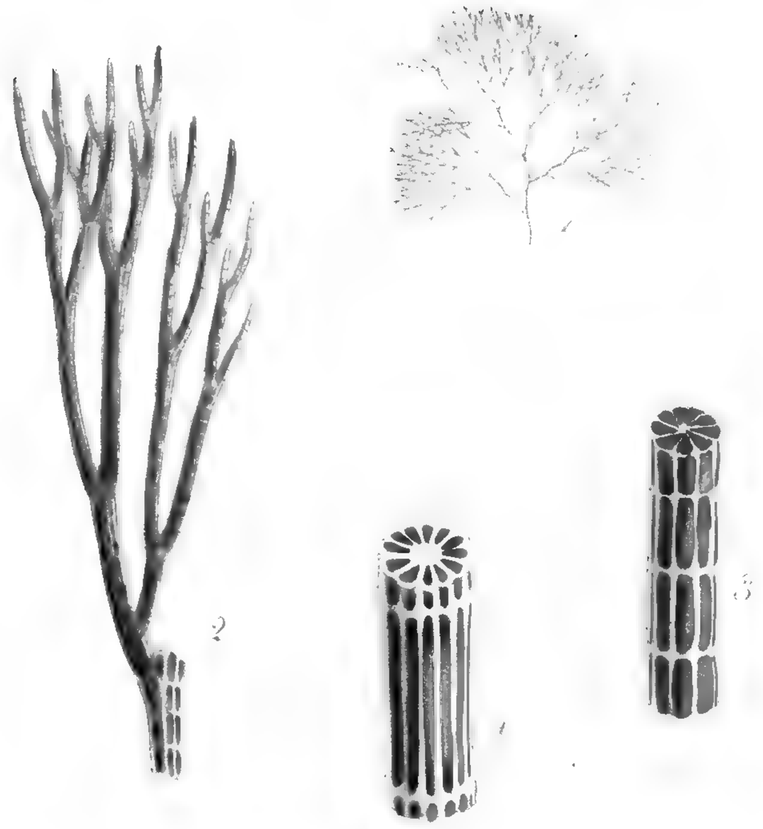


Pol Sulivanæ, Hook fil et Harv.

J D H. del Fitch lith

Reeve imp

I



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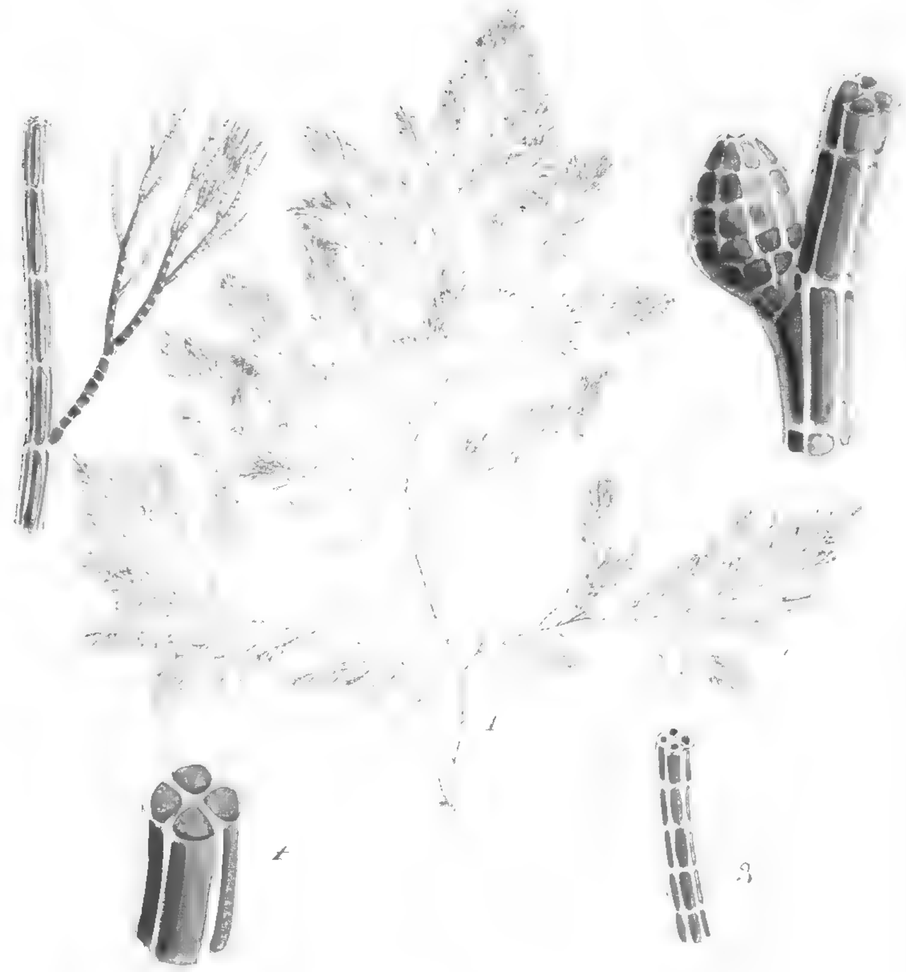
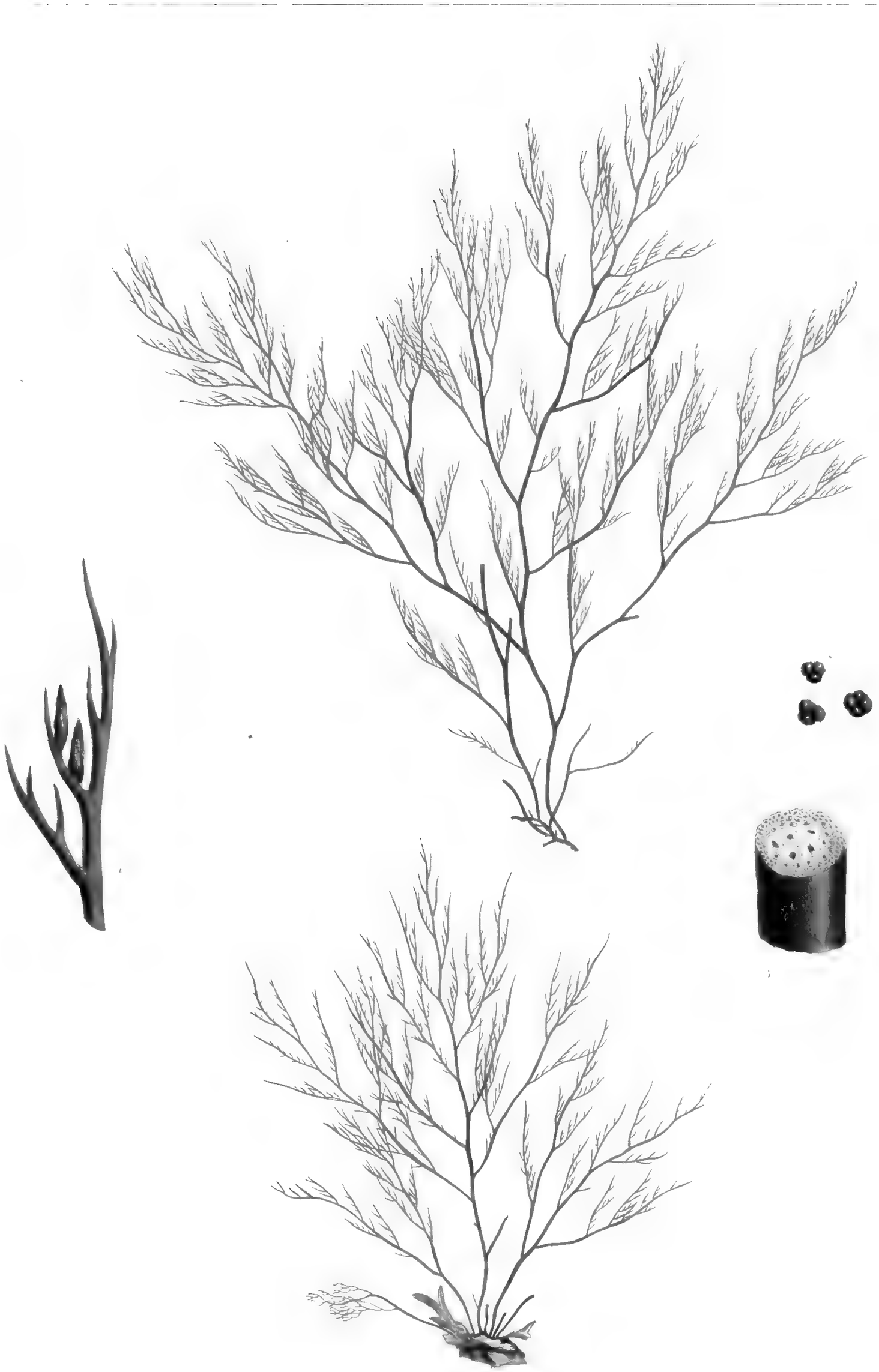
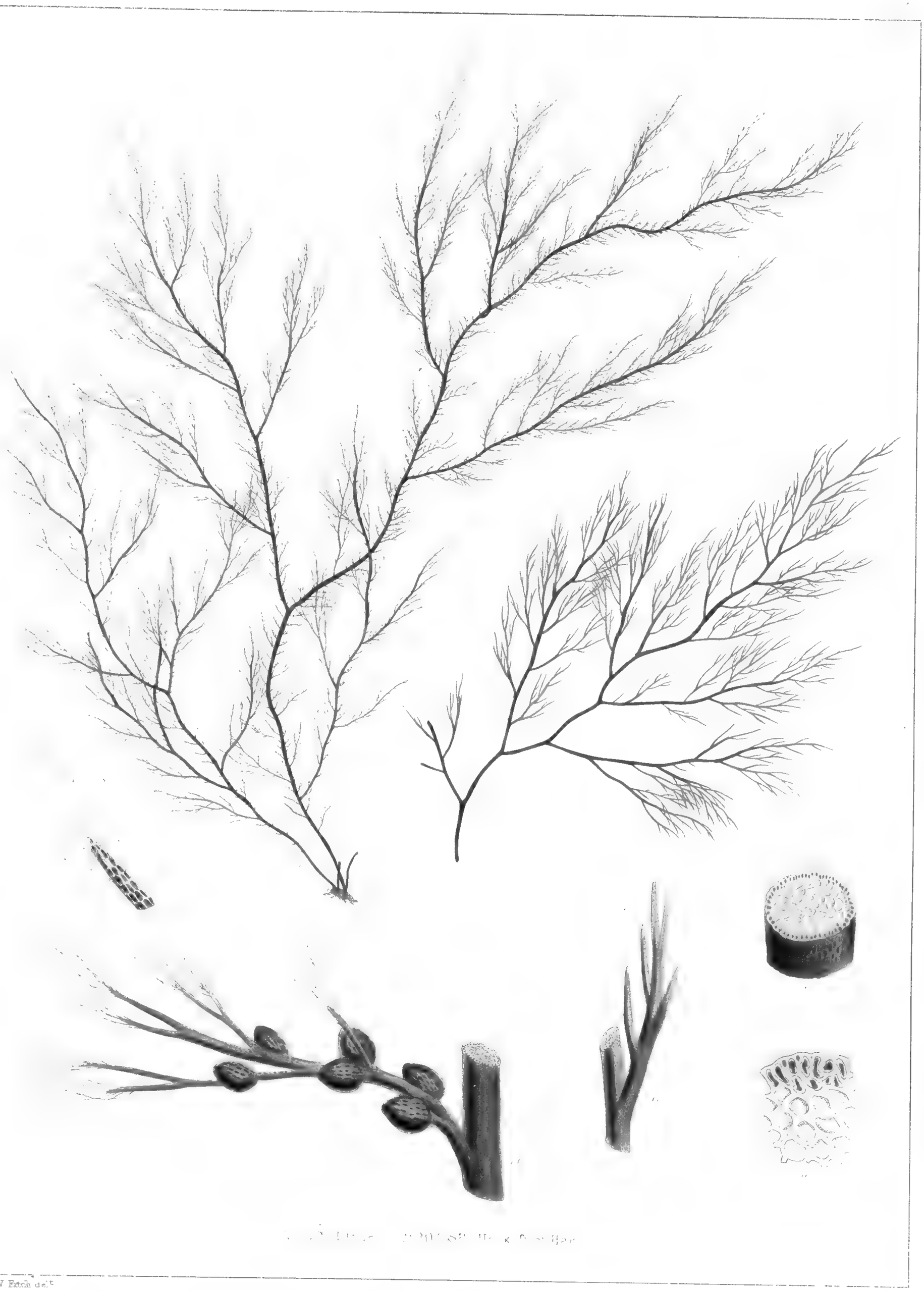


III

IV





J. L. H. & W. Fitch del.t

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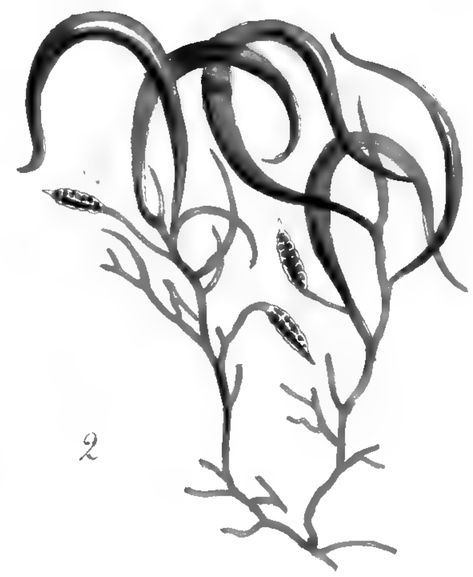
4

1

5

3



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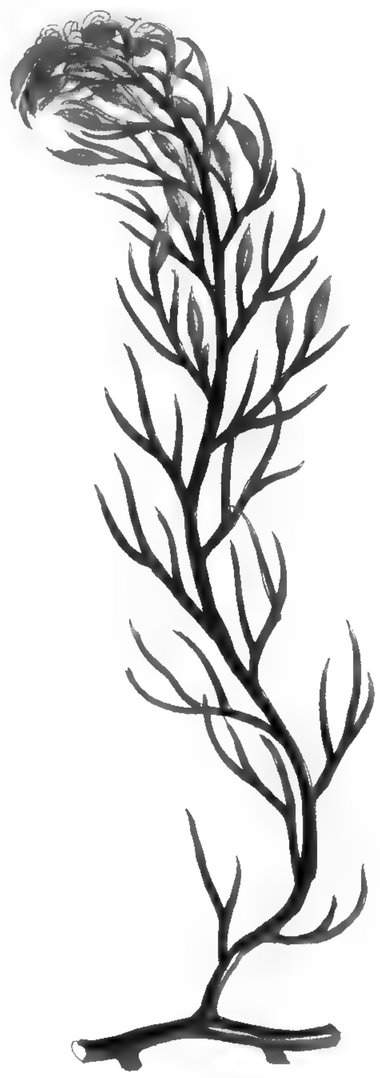

2

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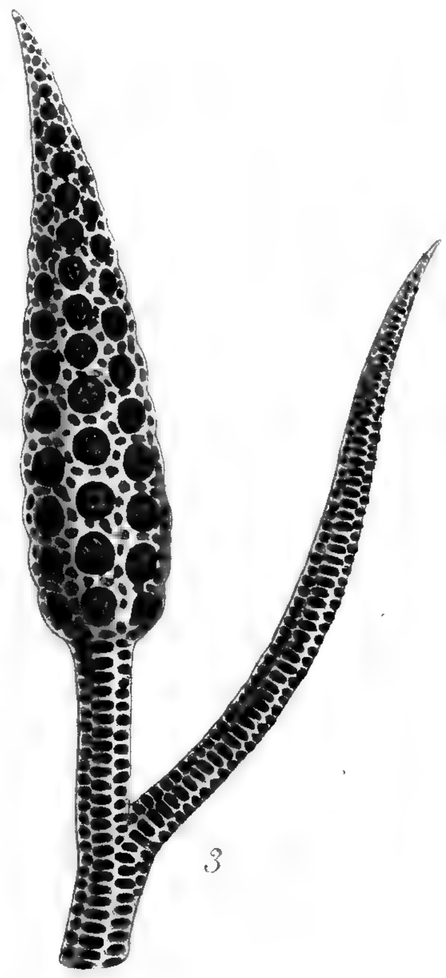

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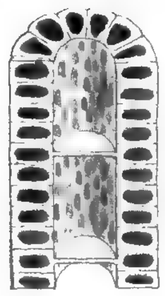

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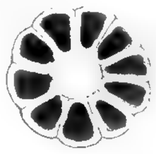

6

7

Stictosiphonia Hookeri, Har.

J.D.H & W.F. delt

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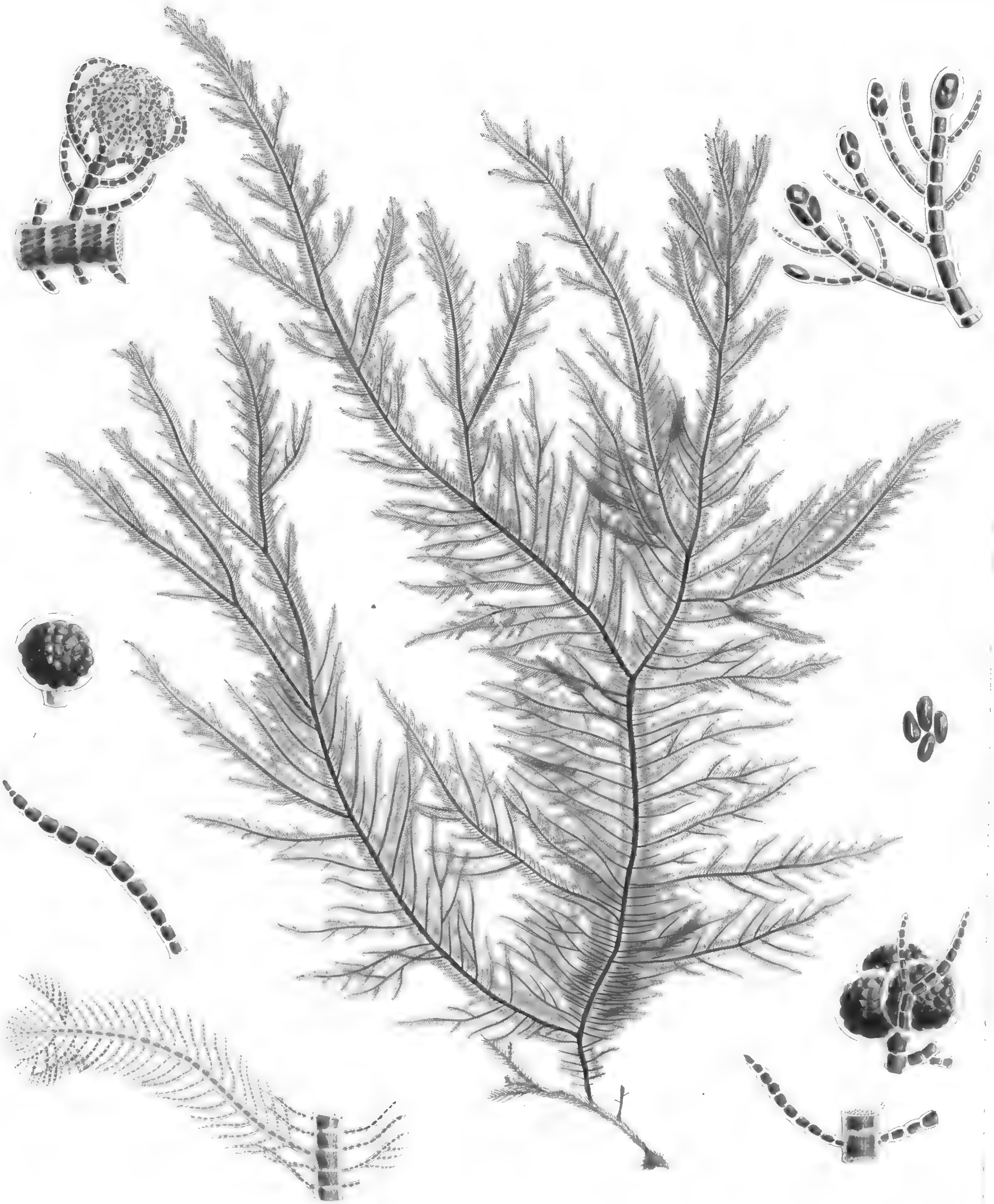
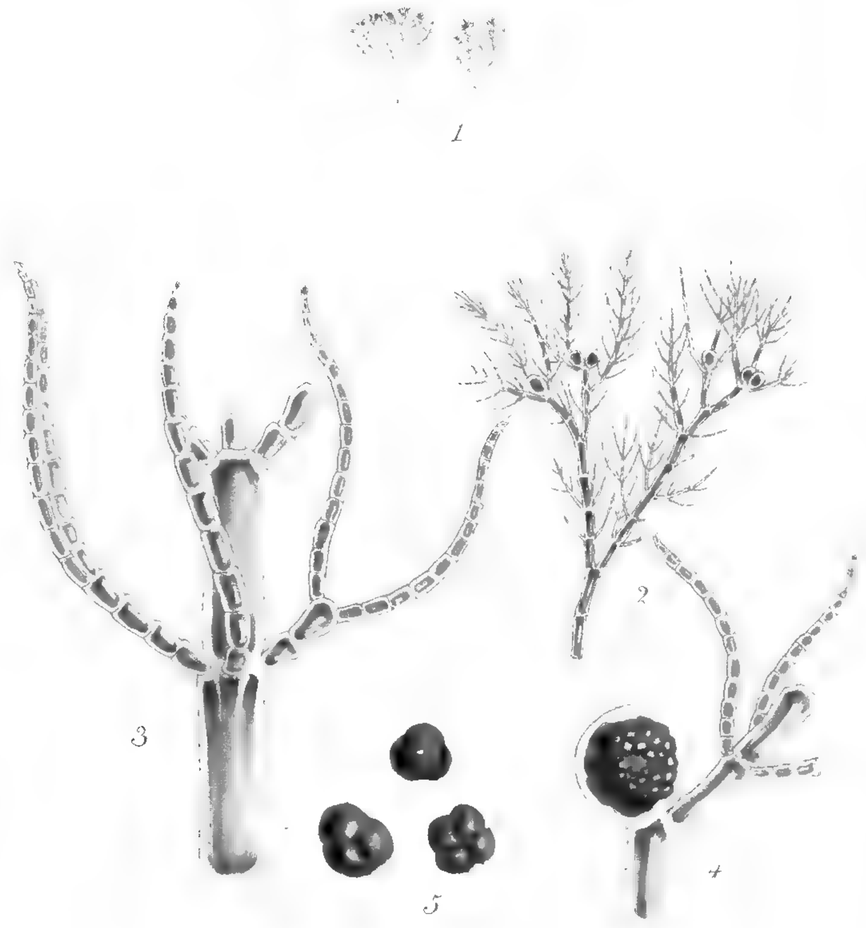


Cal. Pulota. H. f. & H.

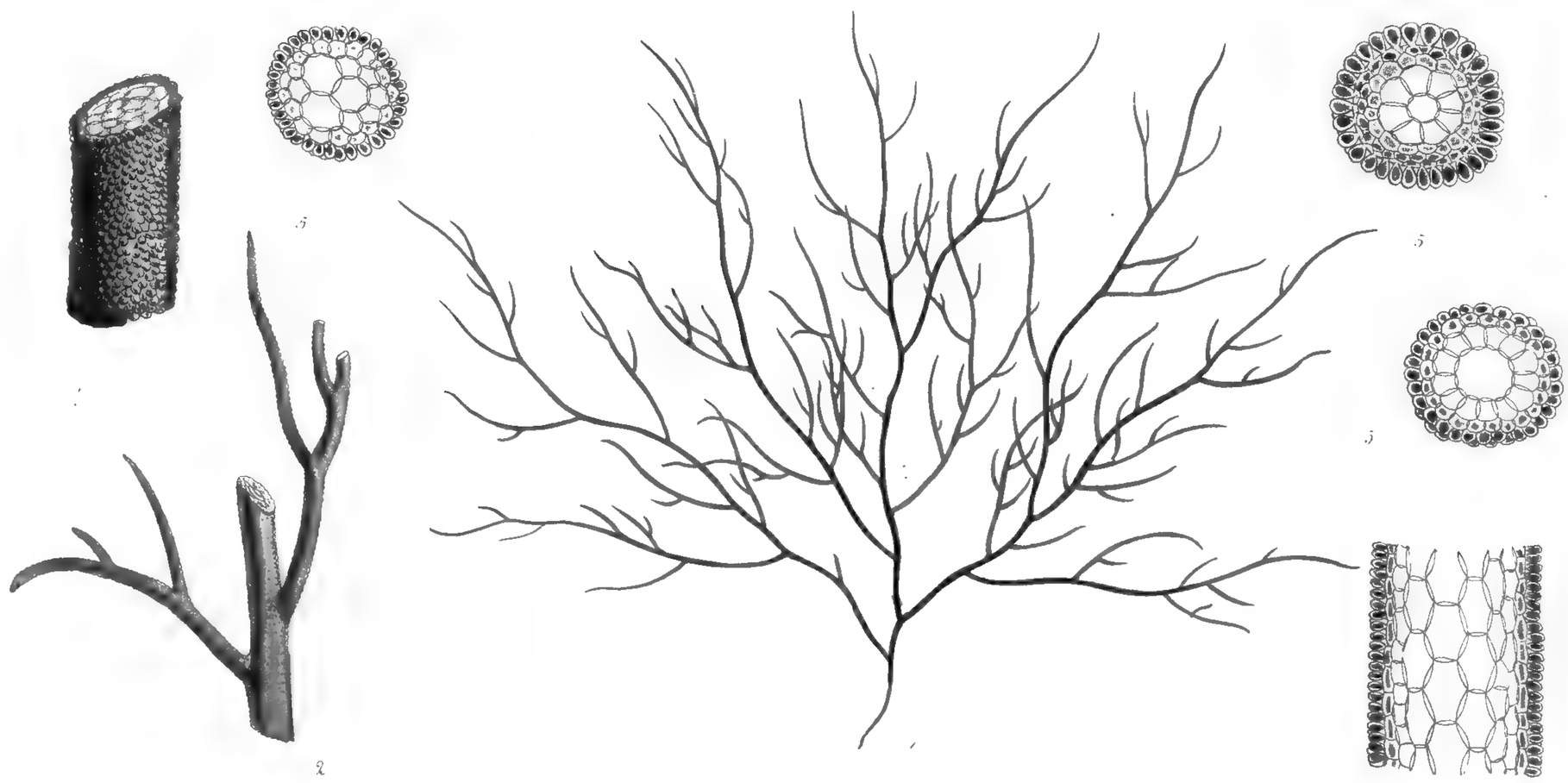


Cal. [illegible] H. f. & H.

4

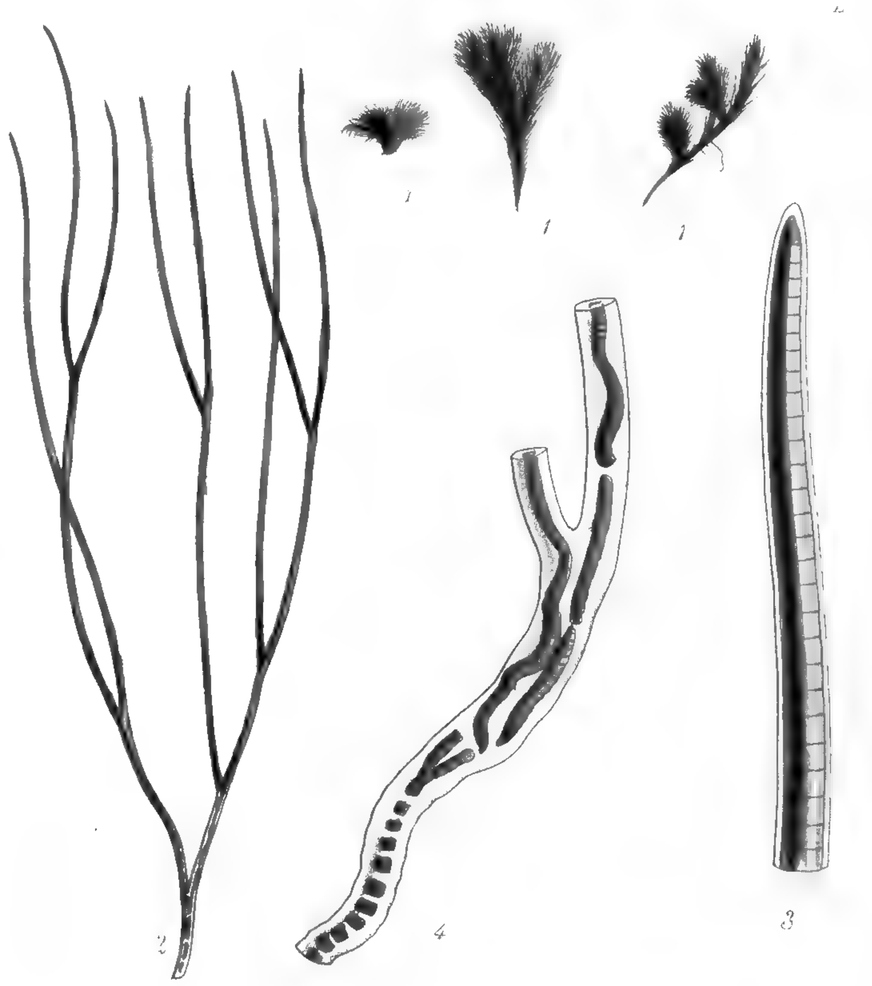
Cal. scoparium. H.f. & H

Fitch, del. et Lith.



Cladothele Decaisnei, H.f. & H.

Draparnaldia pusilla H.f. & H.

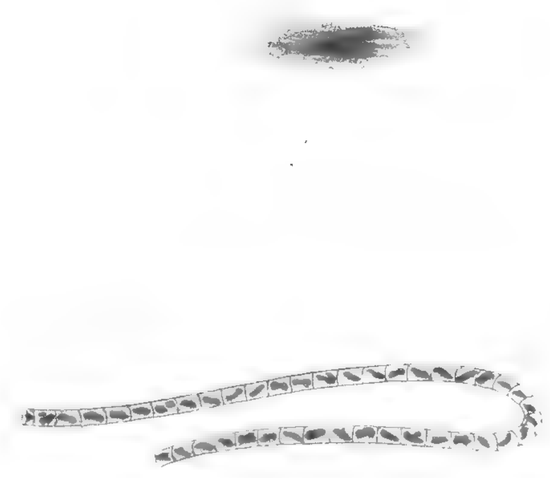


Calothrix olivacea, H.f. & H.

Reeve imp

Conf ambigua H f & H.

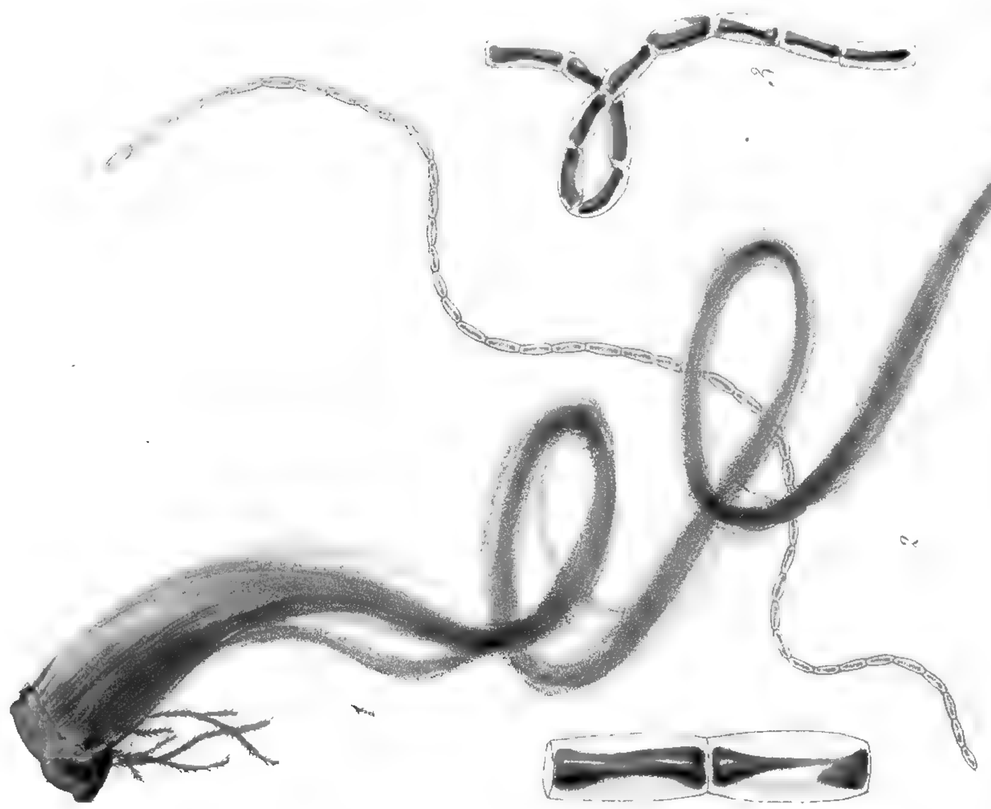
Conf angulata H f & H



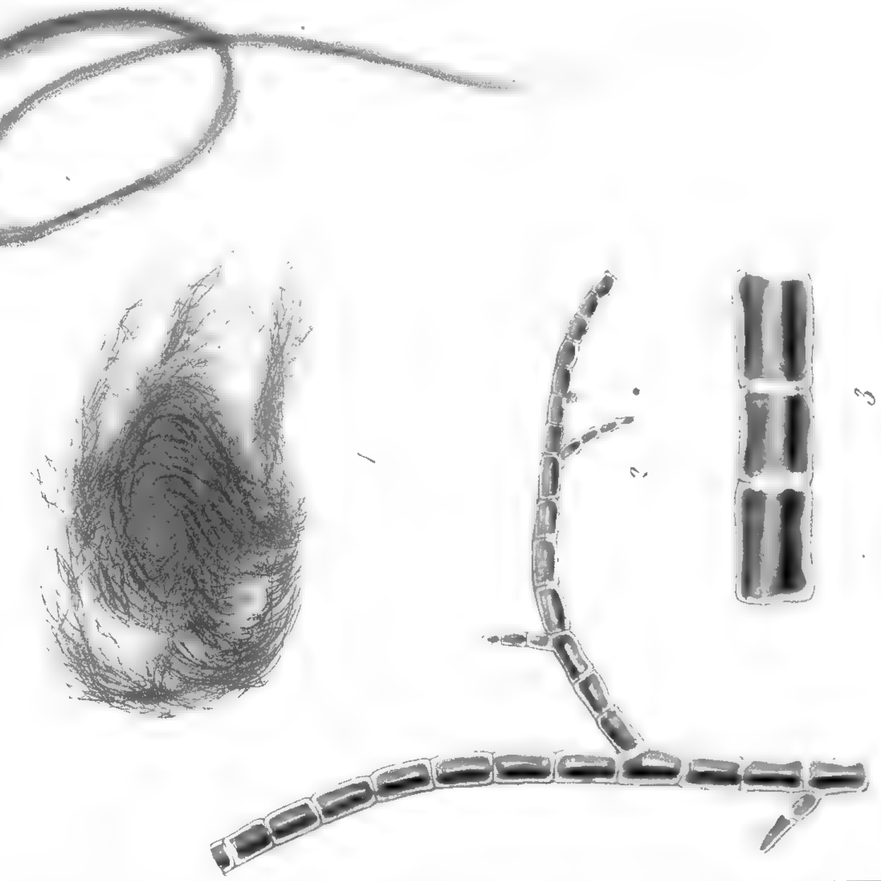
J D.H & W Fitch del[t]

Printed by Reeve Brothers.

II.



IV.



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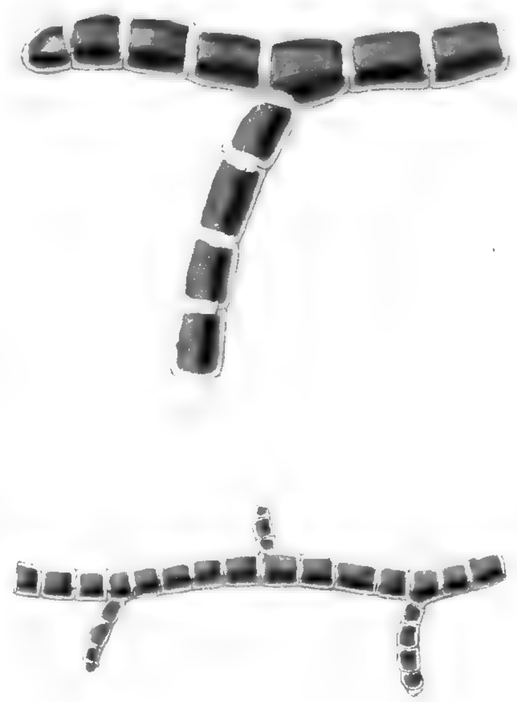

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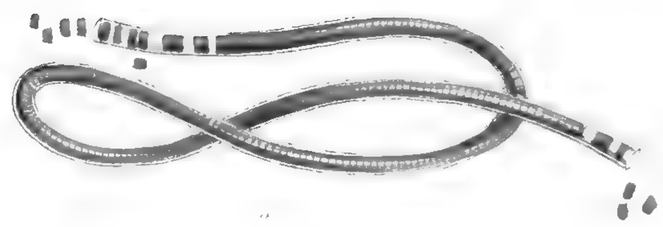

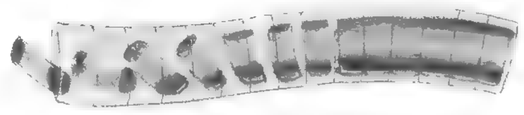

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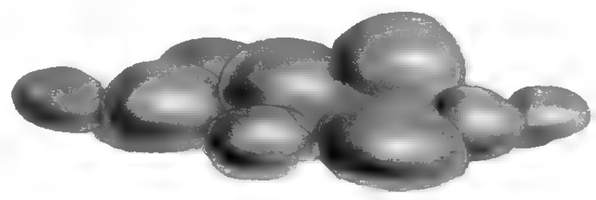

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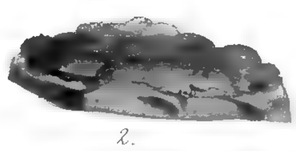
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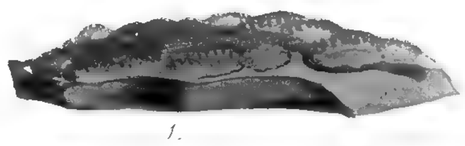
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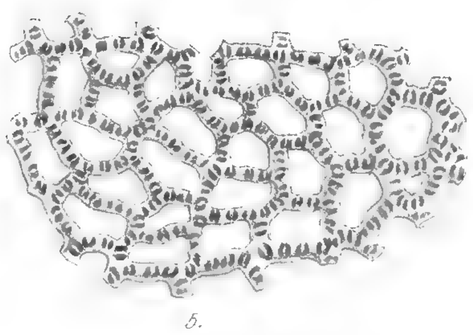
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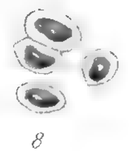
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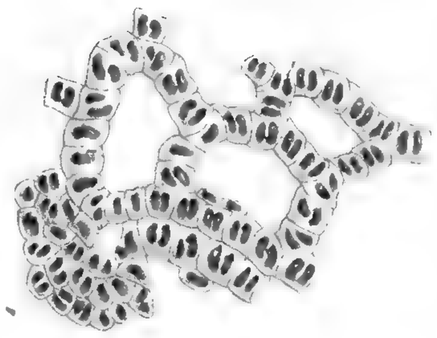
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Trypothallus anastomosans, H.f & H.

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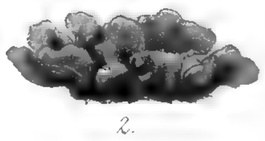
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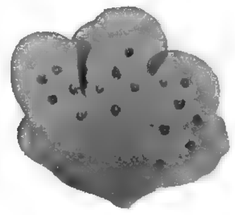

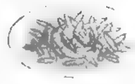

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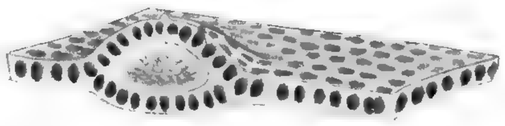
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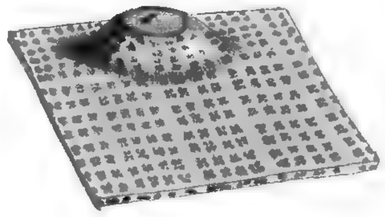
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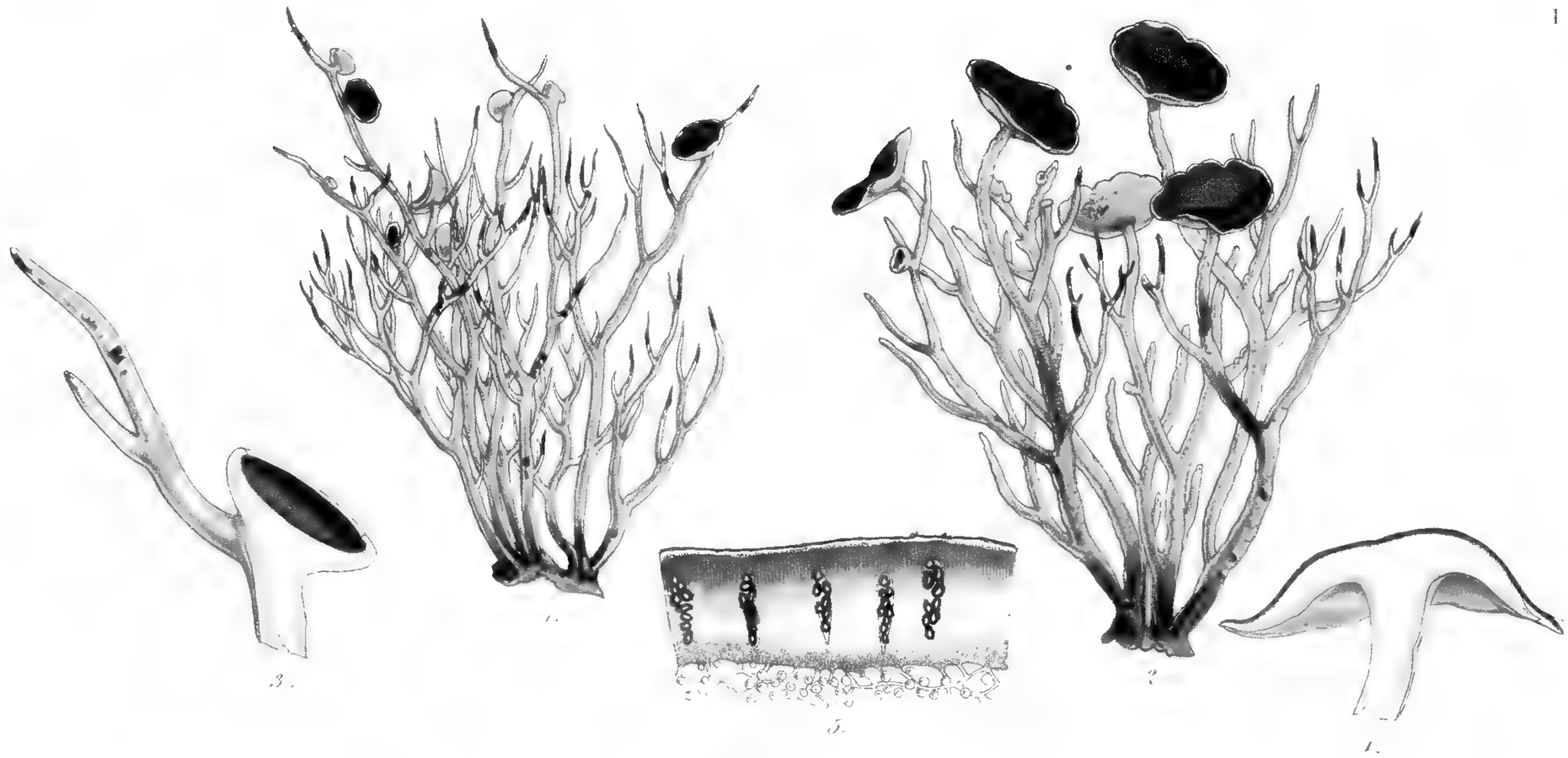
Mastodia tessellata, H.f & H.

J.D.H del.
W. Fitch, lith

Reeve imp



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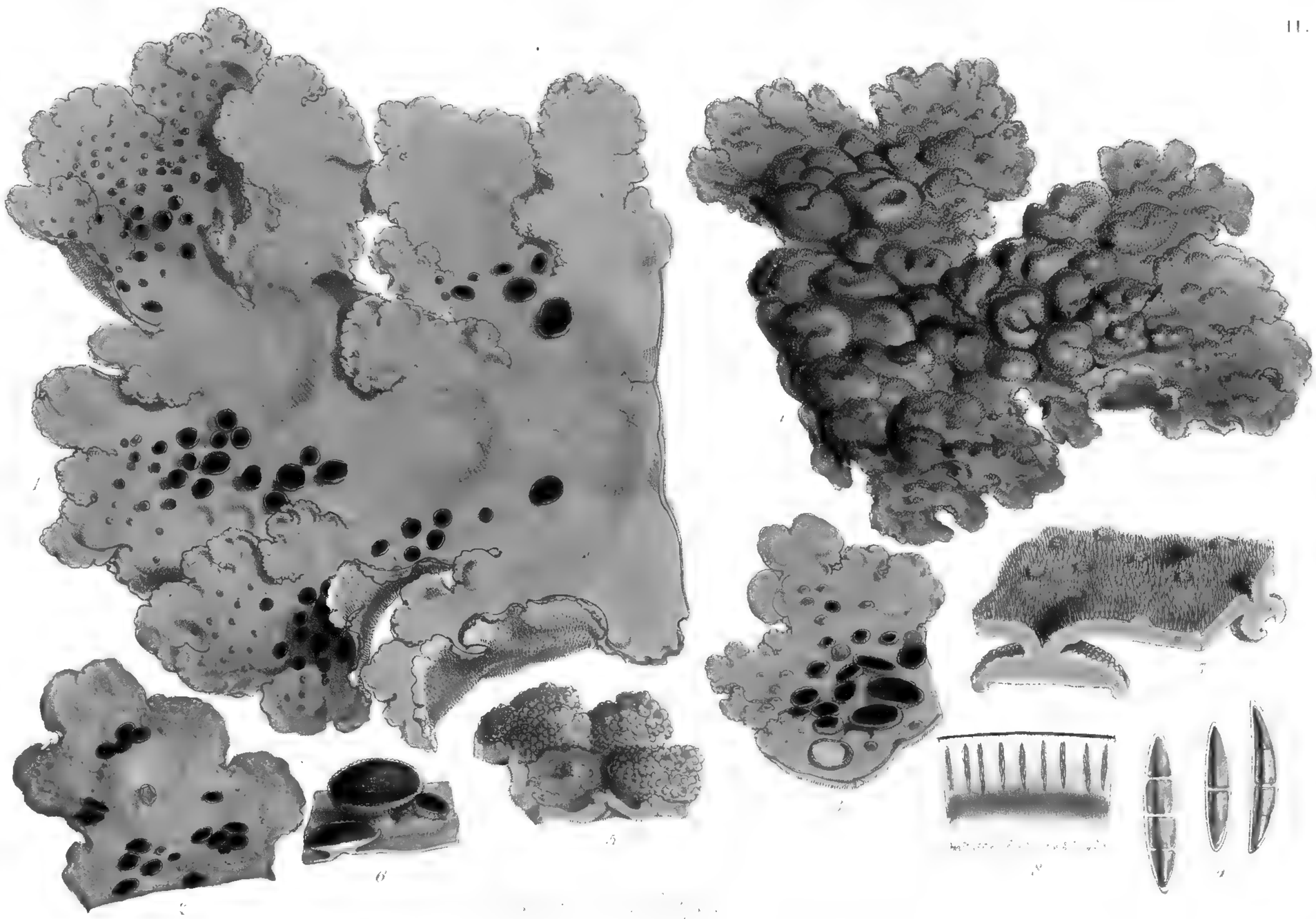

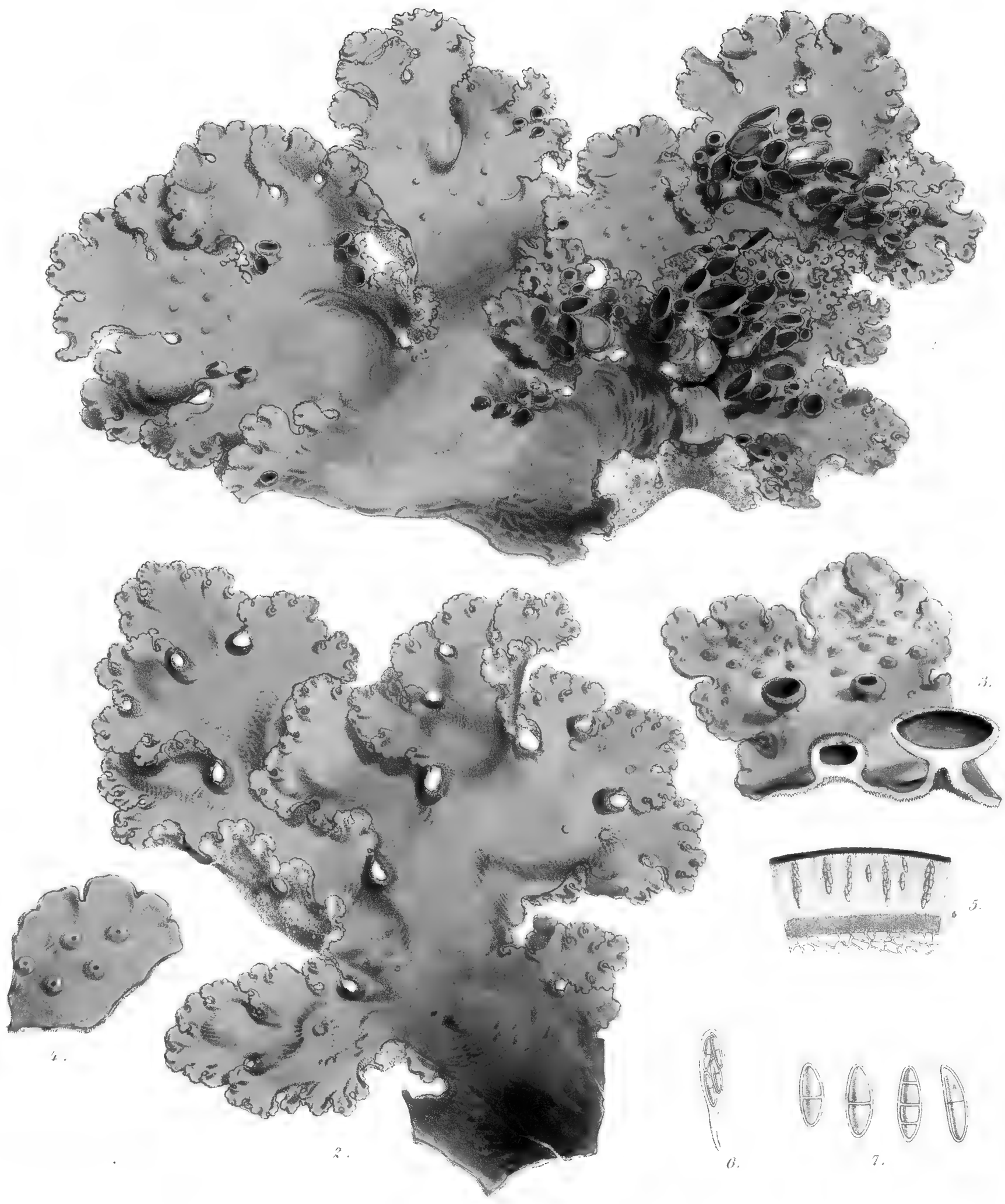

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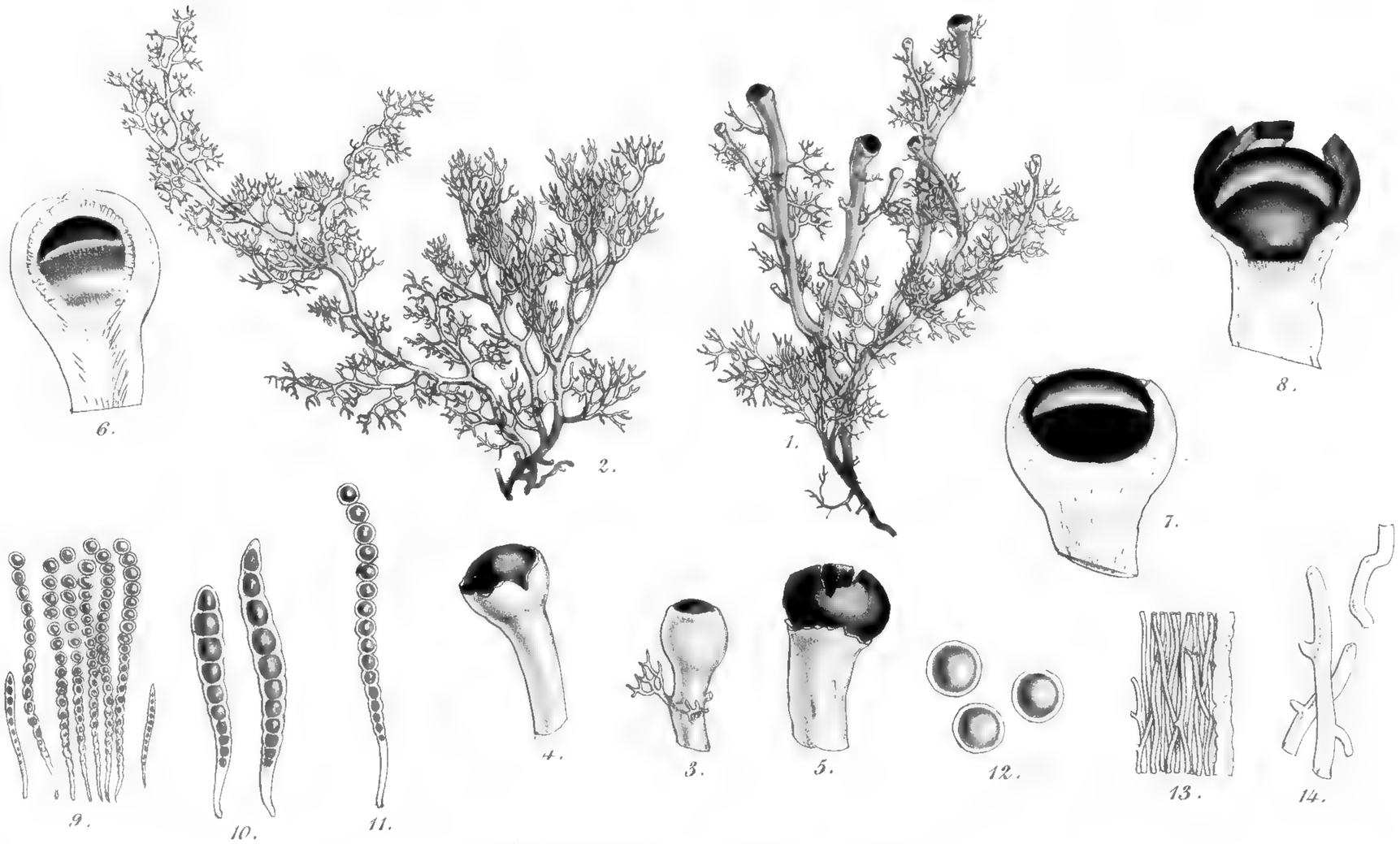
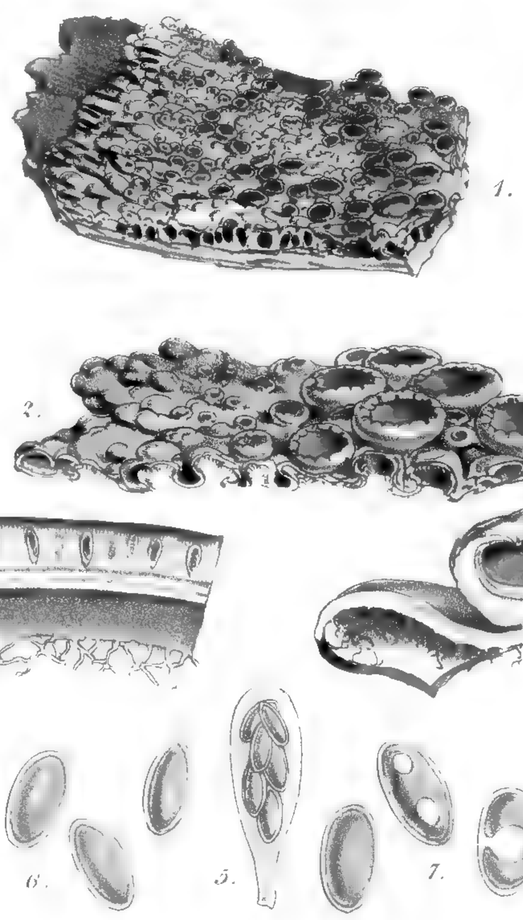
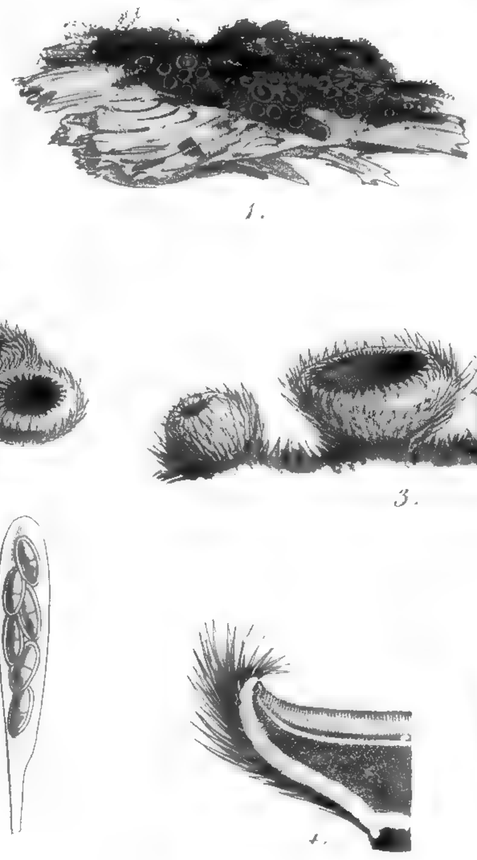




Parmelia cincinnata, Ach.



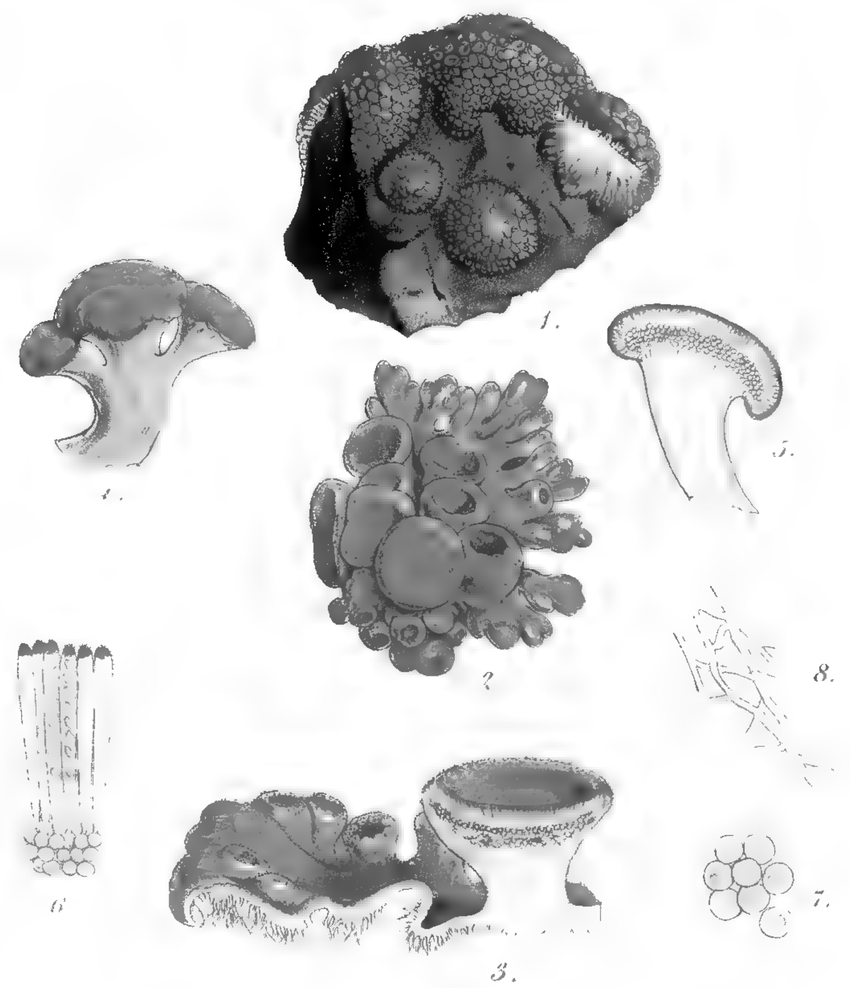
Lecanora paleacea, Fries.

J.D.H. & W. Fitch, del.

Reeve imp.

I.

II.



Lecanora Agardhiana, Ach.

III.

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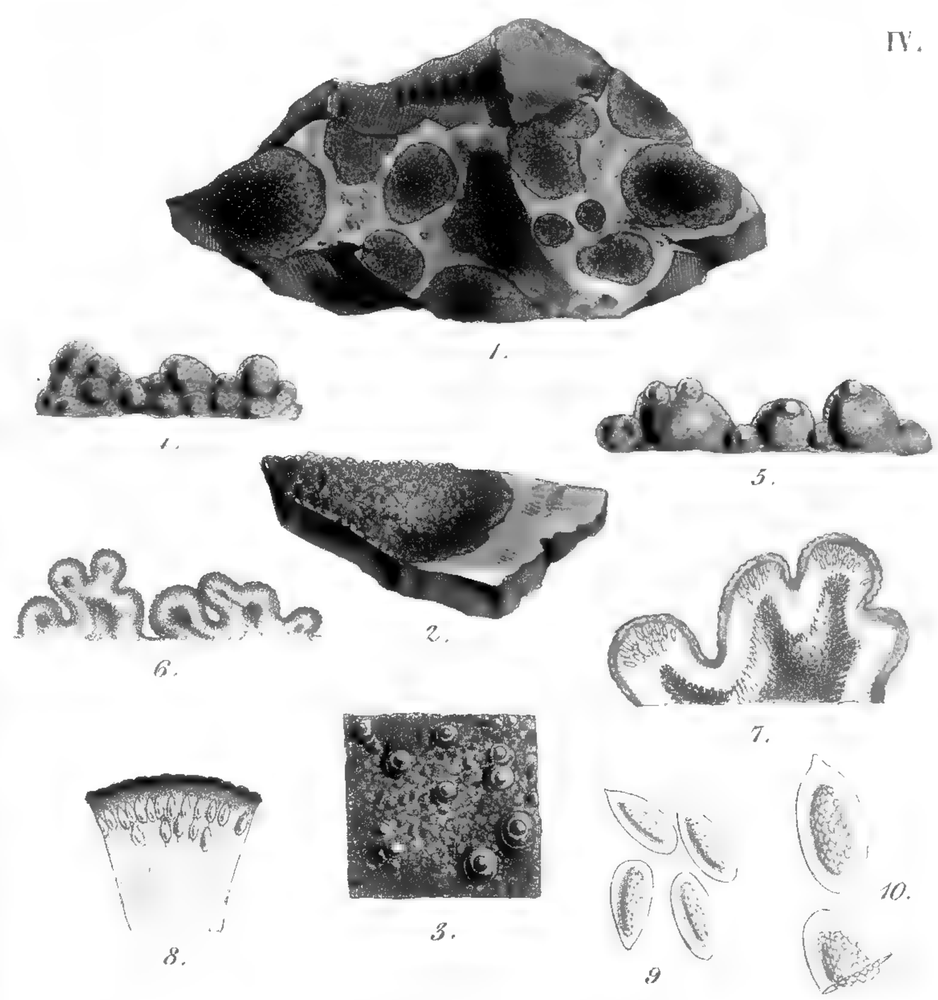
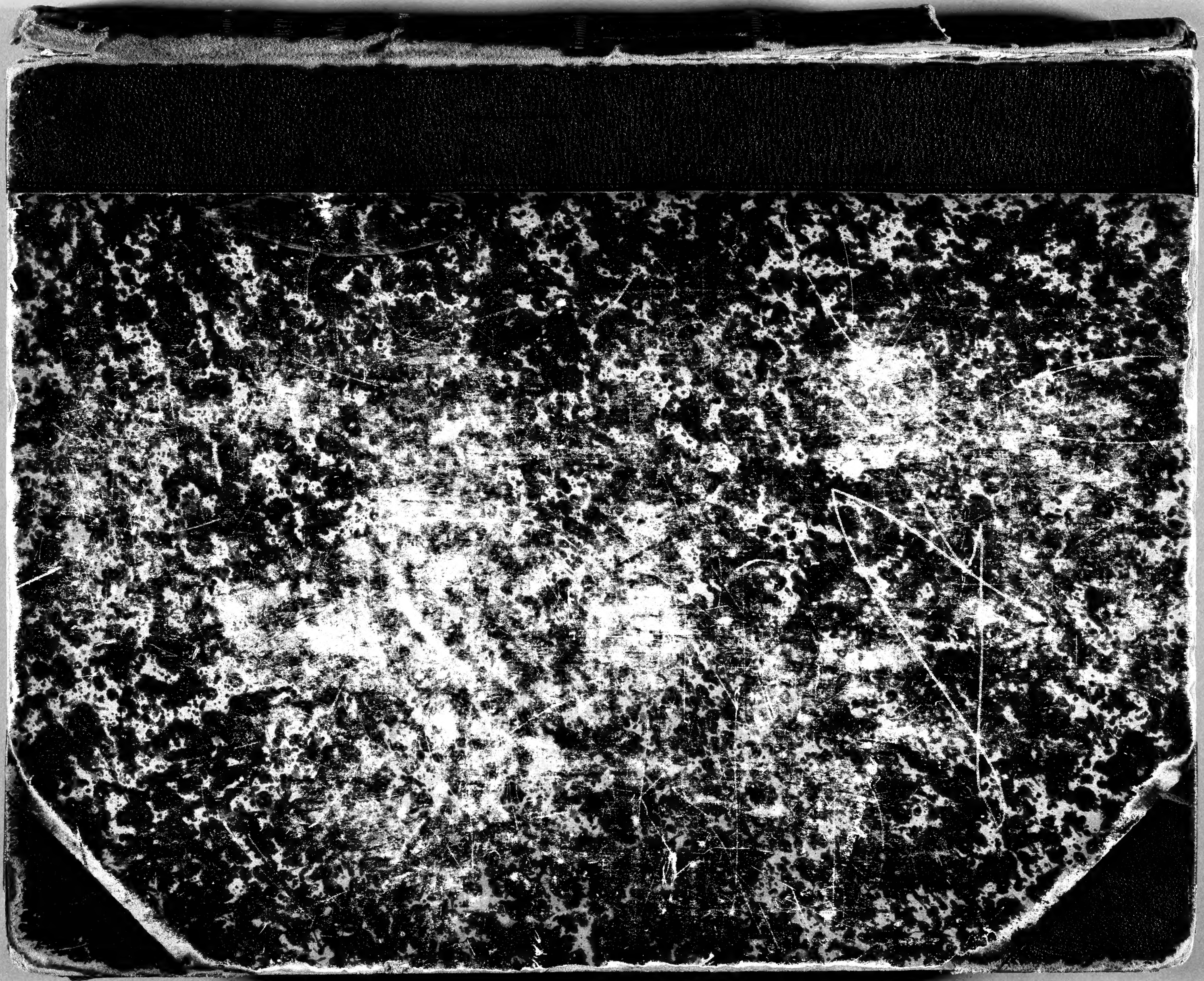
Verrucaria umbrina, Ach.