An Account
of the
Botanical collections
made in
Kerguelen's Land
during the
Transit of Venus Expedition
in the years 1874-5.

(From the Philosophical Transactions
of the
Royal Society
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The history of the botany of Kerguelen Island (also called Kerguelen's Land, and Desolation Island), previous to the visit of the Rev. Mr. Eaton, the last and most complete explorer of its flora, is a very brief one. It commences with the visit of Capt. Cook during his third voyage, in the narrative of which the vegetation of the island is thus described by Mr. Anderson, the surgeon of the "Resolution:"

"Perhaps no place hitherto discovered in either hemisphere, under the same parallel of latitude, affords so scanty a field for the naturalist as this barren spot. The verdure which appears, when at a little distance from the shore, would flatter one with the expectation of meeting with some herbage; but in this we were much deceived. For on landing we discovered that this lively colour was occasioned only by one small plant, not much unlike some sorts of Saxifraga, which grows in large spreading tufts, to a considerable way up the hills." Mr. Anderson proceeds then to give some particulars of this plant (Azorella Selago, Hk. f.), of the cabbage (Pringlea antiscorbutica, Br.), of two small plants found in boggy places, which were eaten as salad, one "almost like garden cress and very fiery" (probably Rannunculus crassipes, Hk. f.), the other very mild and "having not only male and female, but what botanists call androgynous plants" (Callitriche). He adds to these a coarse grass (Poa Cookii, Hk. f.), and a smaller sort which is rarer (probably Deschampsia antarctica, Hk.); a sort of goose-grass (? Cotula plumosa, Hk. f.), and another small plant much like it (this I do not recognise). "In short," he says, "the whole catalogue of plants does not exceed 16 or 18, including some sorts of moss and a beautiful Lichen" (Neuropogon Taylori, Hk. f.) "which grows higher upon the rocks than the rest of the vegetable productions. Nor is there the least appearance of a shrub in the whole country."

The date of Cook's visit was the summer of 1776, and the specimens obtained by Mr. Anderson were deposited in Sir Joseph Banks' Herbarium, which subsequently became the property of the nation, and is preserved in the British Museum. Not having been poisoned, all the Kerguelen Island plants were, when I examined them in 1843, much injured by insects, and many were entirely destroyed.

From 1776 till 1840, when the Antarctic Expedition under Capt. (afterwards Admiral Sir James) Ross, anchored in Christmas Harbour, Kerguelen Island is not known to have been visited by any ship of war, or by the Discovery or Surveying ships of any nation, though it had become the frequent resort of English and
American sealers. During the stay of the above-named expedition all the plants enumerated by Anderson as found by him in mid-summer were refound in mid-winter, together with many more, amounting to nearly 150, of which 18 were flowering plants; the other large classes being mosses and Hepatice 35, Lichens 25, and Alge 51. These have all been described in the botany of the voyage (Flora Antarctica, Part II., 1847).

The next visit of naturalists to Kerguelen's Land was that of the "Challenger" Expedition in January and February 1874, when Mr. Moseley collected most diligently, both in Christmas Harbour and on the east coast 60 to 70 miles south-east of it. He found 23 flowering plants in all, including three European weeds, all annuals and doubtless imported by sealing parties (Cerastium triviale, Poa pratensis and annua), and three species not in the collections of the Antarctic Expedition (two Ranunculi and an Uncinia). He also procured flowering specimens of the two endemic genera Pringlea and Lyallia, and made large accessions to the cryptogamic flora, especially from the southern localities visited. Mr. Moseley had also the good fortune to land upon Marion Island, 1,650 miles to the west of Kerguelen Island; and on Yong Island (of the Heard group), about 120 miles to the south-east of it, neither of which had been previously visited by any naturalists, and in both of which he found some of the most peculiar of the Kerguelen plants.

Mr. Eaton arrived at Kerguelen Island with the Transit of Venus Expedition early in October 1874, and left towards the end of February 1875, during which time he collected diligently, chiefly at Royal Sound, Swains' Bay, and Observatory Bay. He obtained nearly all the flowering plants of previous explorers, and added very largely in the Cryptogams, especially to the Alge.

Nearly contemporaneous with Mr. Eaton's visit was that of the American Transit Expedition, on which Dr. Kidder was the naturalist. He arrived in September 1874 and left in January of the following year, having explored some of the same localities as Mr. Eaton. His collections, amounting to about 90 species, are described in the bulletin of the U. S. National Museum, No. 3, issued in 1876 by the Government Printing Office of Washington. The flowering plants and ferns are revised by Prof. A. Gray; the mosses are described by Thos. P. James; the Lichens by Prof. E. Tuckerman, and the Alge by Dr. W. G. Farlow. Except amongst the Lichens, there are very few novelties. Dr. Kidder adds a list of seven plants from the Crozets, all identical with Kerguelen Island species.*

The botanical results of the German Transit Expedition to Kerguelen Island are not yet published.

The three small archipelagos of Kerguelen Island (including the Heard Islands), Marion and Prince Edward's Islands, and the Crozets, are individually and collectively the most barren tracts on the Globe, whether in their own latitude or in

* He also mentions "a small vine with blue flowers growing amongst scoriae," of which no specimens were collected. This is probably some endemic plant unknown to botanists.
any higher one, except such as lie within the Antarctic Circle itself; for no land
even within the N. Polar area presents so impoverished a vegetation.

The chief interest attached to the flora of these archipelagos lies in the indication
it affords of their being, in all probability, the remains of a much larger land area,
which, though peopled with plants mainly from the southern extreme of S. America,
4,000 miles to the westward, possessed an endemic flora of its own, which included
forest trees of considerable dimensions. Before, however, proceeding to discuss the
relationships of their floras, I shall describe that of the largest and the only one that
is at all well known.

As pointed out in the "Flora Antarctica," the prevalent features of the vegetation
of this island are those that are not peculiar to the island, being characteristic of any other flora,
namely, the Cotula plumosa, which is found elsewhere only in the Auckland and
Campbell Islands, south of New Zealand. More recent collections have con-
firmed and even strengthened this Fuegian affinity, for of the three additional
flowering plants procured by subsequent explorers, one is Fuegian (Ranunculus
trullifolius), another (R. Moseleyi) is closely allied to a Fuegian species, and the
third one, Unenia compacta, is a native of the mountains of New Zealand and
Tasmania, and this is so nearly allied to a Fuegian species that it may prove to be a
form of a plant common to all high southern latitudes.

Not only has a further knowledge of the Kerguelen Island flora strengthened its
known affinities with the Fuegian, but recent discoveries in the latter flora have done
so too; some of the Kerguelen's grasses especially proving to be more closely allied
to Fuegian species than was suspected. The discovery of the flowers of the endemic
Kerguelen genus Lyallia is another instance of this affinity. In the Flora Antarctica,
judging from the fruit alone, the flowers being unknown, this remarkable plant was
 provisionally placed in Portulaceae, its resemblance in habit and foliage to the
andine genus Pycnothyllum being indicated. Complete specimens collected by
Moseley prove its close relationship to the latter genus, in juxta-position with
which it had indeed been placed in the Genera Plantarum, where both had been
referred correctly to Caryophyllum.

The elements of the Phanogamic flora of Kerguelen Island may be thus
classified:

1 Endemic genus, which has no near ally—Pringlea antiscorbutica.
1 Endemic genus allied to an Andean one—Lyallia kerguelensis.
6 Endemic species allied to American congener—Ranunculus crassipes and
Moseleyi, Colobanthus kerguelensis, Acena affinis, Poa Cookii, Festuca
kerguelensis.
5 species common to Fuegia but not found elsewhere: Ranunculus trullifolius,
Azorella Selago, Galium antarcticum, Festuca erecta, Deschampsia ant-
arectica.

A 2
BOTANY OF KERGUELEN ISLAND.

6 species common to America, and also to New Zealand and the islands south of it. *Tillaea moschata*, *Montia fontana*, *Callitriche obtusangula*, *Limosella aquatica*, *Juncus scheueroiides*, *Agrostis Magellanica*. (Most of these are aquatic or marsh plants, and those marked with an asterisk are also European, and very widely dispersed.)

2 species found elsewhere but not in Fuegia, *Cotula plumosa*, common to Lord Auckland's group and Campbell's Island south of New Zealand, and *Uncinia compacta*, a native of the mountains of Tasmania and New Zealand.

This American affinity of the Kerguelen Island flora thus clearly established by its flowering plants is very strongly manifested by its Cryptogams, amongst which, however, the only evidence of migration from South Africa occurs. This is the case of *Polypodium vulgare*, a widely distributed fern in the north temperate zone, but known in the southern only from the Cape Colony, Marion, and Kerguelen Islands; what is further curious respecting it is, that the Kerguelen Island individuals are referable to a variety with pellucid veins, hitherto known only from the Sandwich Islands.

As to the local grouping of the Kerguelen Island plants, that of the Phænogams is not altogether in harmony with the Cryptogams, the former seeming to be by far the most ubiquitously dispersed of the two groups.

All the plants hitherto collected have been from two areas, one, Christmas Harbour, in the extreme north, extending about five miles either way; the other, considerably larger, occupies the south-east coast, and following it extends for about 40 miles. The distance between these areas is about 60 miles in a N.W. and S.E. direction. Of the Phænogamic plants, 19 were found in the northern area, nearly every one of which was also found in the south-eastern one, where but two additional species were collected; whereas of the 150 Cryptogams found in the northern area, a large proportion were not found in the south-eastern, where, however, nearly four times the number of species were obtained. Again, whilst but one fern was found in the north, four occur in the south-east. Of 35 *Muscë* and *Hepaticæ* collected at Christmas Harbour by the Antarctic Expedition, hardly half were found at Swain's Bay, Betsy Cove, or Royal Sound, which localities yielded about 80 additional species. Nearly 50 marine Algae were collected at Christmas Harbour, of which 18 did not occur in the south-eastern coasts, where upwards of 30 additional species were obtained. In the case of the *Lichenes*, the discrepancy is still more marked, but this is possibly more apparent than real, and is to be attributed in part to the difficulty of defining the species and recognizing them from descriptions; and in part to the difficulties caused by the irreconcilable views of Lichenologists as to the limits of the species of this order.

Whatever other causes there may be for this anomalous distribution, one, no doubt, is the nature of the Christmas Harbour area. This is almost occupied by transverse valleys that run east and west completely across the north tip of the
island, from sea to sea, are bounded by hills 1,200 feet high, and are perennially swept by terrific blasts from the westward. There are, hence, no shelter on land for the terrestrial flora, and no quiet bays for the proper development of a varied marine vegetation; facts which may very well account for the paucity of Cryptogams in Christmas Harbour, but not for the presence there of nearly all the flowering plants of the island. Turning again to the south-eastern area, its more sheltered valleys and land-locked harbours favour not only a greater development of Cryptogams, but also a far greater luxuriance of the Phanogams than obtains in Christmas Harbour; which last fact renders the absence of additional species of Phanogams to the south-eastward all the more remarkable.

The question remains, granting that the great majority of the Phanogams of Kerguelen Island are derived from South America, how was their transport effected? Though this question cannot be satisfactorily answered by a reference to the facilities for distant transport possessed by the fruiting organs of the Kerguelen Island plants, it is only proper to refer to these organs in some detail. Obviously, regarding the whole flora, the plants with the most minute seeds or spores and the water-plants are the most widely distributed. Under these categories come—1. The Fungi, of which all but 2 of the 8 species found are widely dispersed over the globe. 2. The marine Algae, of which only 8 out of the 71 are peculiar to the island. 3. The fresh water Algae, of which 28 out of 80 are regarded as endemic. 4. The aquatic and marsh Phanogams, 8 in all, of which 6 are widely dispersed.

Of the Phanogams, whether aquatic, marsh, or terrestrial, none have appliances for wide dispersion except the hooked style of the Remumulimus, the reversed barbs of the Acana (a most powerful aid), and the hooked organ attached to the fruit of Uceinia, also a very adequate aid. None of the others have any aid to dispersion, though they have small seeds or fruits.

Turning to the natural agents of dispersion, winds are no doubt the most powerful, and sufficient to account for the transport of the Cryptogamic spores; these, almost throughout the year, blow from Fuegia to Kerguelen Island, and in the opposite direction only for very short periods, but appear quite insufficient to transport seeds over 4,000 miles. Oceanic currents have, doubtless, brought the marine Algae; but the transport of the seeds of the freshwater plants, of the grasses, and of the two plants with hooked and barbed appendages to the fruit, is not apparent in the case of a country that has no land birds but an endemic one (the Chionis), and of which the water birds come to land only or chiefly at the breeding season, and this after long periods of oceanic life in a most tempestuous ocean. Even supposing that the sea birds which habitually breed in Kerguelen Island did visit Fuegia between the periods of incubation, it is difficult to imagine that any seeds that had adhered to their beaks, feet, or bodies on leaving the latter country would not have been removed by the buffets of winds and waves over upwards of 4,000 miles of ocean.

The supposition that more land formerly existed along the parallels between
Fuegia and Kerguelen Island, possibly in the form of islands, remains as the forlorn hope of the botanical geographer. By such stepping stones the land birds, so numerous in the Falkland Islands (which lie in the direction of such hypothetical islands), and of which the vegetation is identical with that of colder South America, might, favoured by the prevalent westerly gales, have passed from thence to Kerguelen Island, having adhering to them fruits and seeds. The absence of such birds from the present Avi-fauna of Kerguelen Island offers no obstacle to such a speculation, as such immigrants would on arrival speedily be destroyed by the predatory gull and petrels of the island.

Various phenomena, of very different relative value and nature, but common to the three archipelagos, Kerguelen, the Crozets, and Marion, favour the supposition of these all having been peopled with land plants from South America by means of intermediate tracts of land that have now disappeared; in other words, that these islands constitute the wrecks of either an ancient continent or an archipelago which formerly extended further westwards, and that their present vegetation consists of the waifs and strays of a mainly Fuegian flora, together with a few survivals of an endemic one.

The extreme southern point of South America, from lat. 52–54° and long. 70° W. comprising Fuegia, is deflected to the eastward. Following its general direction, the Falkland Islands group is the first land met with (in long. 60° W.); its vegetation is comparatively rich and exclusively Fuegian; it has, no doubt, been brought mainly by the land and freshwater birds which abound there, and are identical with Fuegian ones. South Georgia is the next land met with to the eastward, in long. 35° W. and 51° S.; of its vegetation nothing is known except for the scanty observations recorded in Cook's voyage, which indicate its botanical identity with the Fuegia.

Of Bouvet Island, the assumed position of which is long. 5° E. and 54° S., nothing is known; it was searched for in vain by the Antarctic Expedition in 1843. Marion Island is 37° E. and 46° S., and the Crozets, in 48° E. and 47° S., are respectively about 1,650 and 1,200 miles west of Kerguelen Island, and there is no land intermediate between them. Now, from such specimens as have been obtained of the vegetation of the first of these Islands by Mr. Moseley,* it appears to be almost identical with that of Kerguelen Island; that is, to be Fuegian with the addition of some of the peculiar Kerguelen Island types;† and the same remark applies to the Crozets;‡ facts from which Mr. Moseley has drawn identically the same conclusions as those to which I had arrived thirtyfive years previously from a consideration of the Kerguelen Island flora alone. He says, speaking of Marion Island (Linn. Journ. XV.,

* Journ. Linn. Soc. XII., 387 and XV., 484.
† Marion Island contains several Fuegian species not hitherto found in Kerguelen Island, namely, RHAMNUS biternatus, HYMENOPHYLLUM tunbridgens, and probably a Hierochloe (the scented grass mentioned by Moseley), together with a Cope fern ASPIDIUM mohrioides and an ASPLENIUM.
485), "the occurrence of Pringlea on the island, as also on the Crozets and Kerguelen Island, point to an ancient land connection between these islands, which the " antiquity and extent of denudation of the lavas would appear to bear out. It is " difficult to see how such seeds as those of Pringlea could have been transported " from one island to another by birds; and the seeds seem to be remarkably " perishable; besides the distinctness of the genus points to a former wide extension " of land on which its progenitors became developed. The existence of fossil tree " trunks in the Crozets and Kerguelen Island points to similar conditions.

In the Flora Antarctica, I say, p. 220, referring to the time required for the formation of the innumerable superimposed beds of volcanic rocks, as observed by me in Kerguelen's Land, and for the growths and destructions of successive forest vegetations that once clothed the island, and are now imbedded in strata at great depths, that this time is sufficient " for the destruction of a large body of land " to the northward of it, of which St. Paul's and Amsterdam Island may be the " only remains; or for the subsidence of a chain of mountains running east and " west, of which Prince Edward's Island, Marion, and the Crozets, are the exposed " peaks." And, at p. 240, when discussing the structural peculiarities of the Pringlea, I say, " However loth we may be to concede to any of our vegetable pro- " ductions an antiquity greater than another, or to this island (Kerguelen) a position " to other lands wholly different from that it now presents, the most casual " inspection of the land where this plant now grows will force one of the two " following conclusions upon the mind, either that it was created after the extinc- " tion of the now buried and for ever lost vegetation, or that it spread over the " island from another and neighbouring region, where it was undisturbed during " the devastation of this, but of whose existence no indication remains."*

It remains to indicate the faint traces of relationship which the Kerguelen Island vegetation presents with those of a few other spots of land in a lower latitude, and that might be supposed to share some of its peculiarities. Of these the nearest are Amsterdam and St. Paul's Islands, the names of which are often transposed in our best maps (even in the Admiralty South Polar Chart of 1839). They lie about 800

* These ideas, suggesting the hypothesis that the existing distribution of plants is dependent on former geographical relations of land and sea, suggested themselves to me during my visit to Kerguelen Island in 1840. The first attempt to apply similar views in extenso to the conditions of a botanically well-known country was in the late Professor Edward Forbes' paper " on the distribution of endemic plants, more especially those of the British Islands, considered with regard to geological changes." Brit. Assoc. Reports " for 1845." It had, however, been previously enunciated by Lyell, who thus accounted for the identity of the Sicilian animals and plants with those of the surrounding Mediterranean shores.

He supposes these to have "migrated from pre-existing lands, just as the plants and animals of the " Phlegrean fields have colonised Monte Nuovo since that mountain was thrown up in the 16th century," and further he says, "we are brought therefore to admit the curious result, that the flora and fauna of " the Val di Noto, and some other mountain regions of Sicily, are of higher antiquity than the country " itself, having not only flourished before the lands were raised from the deep, but even before they were " deposited beneath the waters." Principles of Geology, Ed. v. iii., p. 444, &c.
miles to the N.E. of Kerguelen Island, in 75° E. long.; the northernmost, Amsterdam Island, is nearly on the 38th and St. Paul's on the 39th parallel of latitude, so they both are very little south of the latitude of the Cape of Good Hope.

I have brought together, in a paper published in the Journal of the Linnæan Society (vol. xiv. p. 474), all the little that was then known of the flora of these islands, which, like Kerguelen, are volcanic.

Their scanty vegetation is on the whole more temperate than antarctic, and approximates to that of S. Africa in containing such genera as *Phyllica*, *Spartina*, and *Dianthus*. Their fern flora is very interesting; one fern only is common to Kerguelen (*Lomaria alpina*), one (*Nephrodium antarcticum*) is peculiar, though allied to a Manritian species, and two others (*Ilechnum austrole* and *Aspelenium furcatum*) are natives of the Cape and other countries; but what is most singular is, that neither the *Polypodium vulgare* nor *Aspidium mohrioides* have been found in either island, though the former is common to the Cape, Marion Island, and Kerguelen's Land, and the latter to the two first of these localities.

Tristan d'Acunha, in 12° W. long. and 37° S. lat., and the adjacent islets called Nightingale and Inaccessible, all nearly in the latitude of Amsterdam Island and the Cape of Good Hope, are the only other islands whose vegetation demands a passing notice here.* Their flora is essentially Fuegian, with an admixture of Cape genera, but with none of those characteristics of Kerguelen Island. Of Cape types, it contains a *Peltargonium* and an abundance of both the *Phyllica* and *Spartina* of Amsterdam Island, together with species of *Oxalis* and *Hydrocotyle*. The Fuegian and Falkland Island plants of Tristan d'Acunha and its islets, which have not hitherto been found in the islands south and east of them, are however more numerous than are the Cape genera even, and include *Cardamine hirsuta*, *Nertera depressa*, *Emetrum nigrum*, var. *rubrum*, *Lagenophora Commersoniana*, and *Apium austrole*; and it contains besides the strictly American genus *Chevreulia*. Two land birds, both peculiar, are common in the Tristan group, and they possess a water hen, which has a representative in Africa and S. America. I am not aware whether land birds are found in Amsterdam Island; if so, they may help to account for the wonderful fact of the Tristan d'Acunha *Phyllica* and *Spartina* being found also in it, though separated by 3,000 miles of ocean.

In conclusion, I have to state that no trace of the mountain flora of S. Africa has been found in any of the southern groups of islands.

* For the latest account of this group see Moseley in Journ. Linn. Soc. XIV., 377.
Enumeration of the Plants hitherto collected in Kerguelen Island by
the "Antarctic," "Challenger," and "British Transit of Venus"
Expeditions.

I.—Flowering Plants, Ferns, Lycopodiaceae, and Characeae.
By J. D. Hooker, P.R.S.

Christmas Harbour, Observatory and Swain's Bay, Royal Sound (a form with
petioles 5-7 inches long).
I have nothing to add to what I have said of this species in the Antarctic Flora,
beyond that I can hardly doubt its being a derivative form of the Fuegian R. bilateralis, Sm., with which it agrees in habit and its thick-walled beaked carpels, but
differs chiefly in its robustness and simple leaves. R. bilateralis has been found by
Moseley in Marion Island, where it presents every character of the American plant.

2. Ranunculus trullifolius, Hook. f. Fl. Antarct. 226, t. 82 A.
In streamlets and lakes, Royal Sound, Swain's Bay, Betsy Cove; Moseley,
Eaton, Kidder. (Fuegia and the Falklands).
Glaberrimus, caulibus prostratis radicantibus. Folia longe crasse petiolata, obovato-
oblonga trulliformia v. fere orbicularia, apice obtuse 3-5-dentata v. lobata, carno-
sula, nervis obscuris; auriculis petiolaribus membranaceo-dilatatis. Flores ad nodos
solitarii, brevissimae pedicellati. Sepala 3, orbicularia, concava, membranacea. Pe-
tola 3, sepalis æquilonga, obovato-oblonga v. spatulata, 3-nervia, nervo medio
medium versus fossa nectarifera instructo. Stamina pauca. Carpella numerosa;
matura euneiformia, compressa, dorso incassata, stylo gracili subulato.
I described this species in the Flora Antarctica from very imperfect specimens
gathered by myself in the Falklands in mid-winter, along with the very similar R.
hydrophilus, Gaud., and from a careful examination of the remains of the only flower
found, which resembled in petals, sepals, and stamens those of its neighbour, I
supposed it to be closely allied to it. Good specimens gathered by Cunningham in
the Straits of Magallanaens, and by Eaton in Kerguelen, prove that it belongs to another
section of the genus, differing from R. hydrophilus in the usually trimerous perianth
and the long style of the flattened ripe carpels. R. trullifolius is, in fact, referable
to St. Hilaire's genus Cosotia (now reduced to Ranunculus), and its nearest ally is
R. bonariensis, Poiret (R. Kunthii Triau. and Planch.), which differs by its ovate
crenate leaves, long-peduncled flowers, and absence of style in the ripe carpels.
R. hydrophilus, again, is probably a form of R. adscendens, St. Hila. (R. humilis,

*R. monanthos*, Philippi of Chili, and *R. hemignostus* Steud. of Peru, are probably forms of *R. trullifolius*, which, as our figure shows, is a very variable plant in foliage and structure.

The *Ranunculus*, sp. 3, not in flower, of Kidder (Bull. U. S. Nat. Mus. 3, 21), of which Gray says it can hardly be a form of *trullifolius*, no doubt is this, if, as I apprehend, the term cundate as applied to the leaves is a misprint for cordate.

Plate I., Figs. 1–5.—Plants in different states; of natural size; 6, 7, reduced leaves and stipules; 8, sepal; 9, petal; 10 and 11, stamen; 12, immature, and 13, mature carpels:—all enlarged.


In the lake at Christmas Harbour, Moseley.

A very diminutive species, resembling in size and habit *R. limoselloides*, Muell, of Australia, but differing in the carpels, &c. In the latter respect it more nearly approaches *R. crossipes*, from which it differs in all other respects. Its allies are, no doubt, to be found amongst the S. American water-loving species.

Plate II., Fig. 1—1 and 2, plants of natural size; 3, leaf; 4, flower; 5, sepal; 6, petal; 7, stamen; 8, immature; and 9, mature carpel:—all enlarged.


Throughout the island.—(Marion, Crozet, and Heard Islands).

*Sepala* lineari-oblonga, obtusa, membranacea, pilosa. *Petala* 0 in exemplaribus perplurimis a nobis scrutatis, in paeois 1–4, unguiculata, apice roseo-tineta, inconspicua, caduca. *Stamina* 6, subaequalia, filamentis elongatis complanatis, 4 longioribus per paria sepalis antecis posticisque opposita; antherae magnae, lineari-oblongae, virescentes; pollen sphericum. *Disci* glandulae 0 v. valde inconspicuae. *Ovarium* oblongum, hirsutum, 2-loenlare, carpellis lateralibus; stylus brevis, validus, glaber, stigmatic capitato obscure 2-lobo dense villose.

In the Proceedings of the Linnaean Society 1874, p. xxxiv, I have indicated the evidence of *Pringlea* being a wind-fertilized member of a natural order most or all the species of which are insect-fertilized. These indications are the usual absence of petals and disk-glands, the exerted anthers and long-tufted papilla of the stigma, to which is to be added the absence of winged insects in Kerguelen Island. In reference to the last statement, it is a curious fact that wingless flies abound in the
island, and on this very plant. Moseley, *Journ. Linn. Soc.* xv., 54, in his notes on Kerguelen botany, mentions an apterous fly as big as a blow-fly, nestling at the base of the leaves of *Pringlea* and laying its eggs in the fluid which is caught there; every cabbage yielding ten or a dozen specimens. He adds that he did not observe whether it climbs to the inflorescence in sunny weather.

Mr. A. W. Bennett, *Proc. Linn. Soc.* 1874, xxxix., has described the pollen of *Pringlea* as differing from that of nearly all other Crucifers in being much smaller and perfectly spherical, instead of ellipsoid with three furrows. This he considers to be a striking confirmation of my suggestion that the plant is wind-fertilized, and which is further confirmed by the total absence of hairs on the style.

Moseley found one plant with 28 flower-stalks, three of the one season growth, the others appearing to belong to eight preceding seasons.

It is a remarkable fact that all attempts to grow this plant in England, Scotland, and Ireland have failed; the young plants, after attaining a height of a few inches and a good crown of leaves, have invariably succumbed to the combined effects of summer’s heat, and the attacks of the common parasite fungus, *Cystopus candidus*, which infests the *Capsella Bursa-pastoris*. Some few, out of many hundreds, sown at different seasons and under very varied conditions, survived one winter, but perished in the following summer.

**Plate II., Fig. 3.—**1, 2, 3, apetalous flowers; 4, monopetalous, and 5, tripetalous flowers; 6, petal; 7, ovary; 8, the same laid open; 9, ovule:—all enlarged.


Christmas Harbour, Swain’s Bay, &c. (Heard Island, Moseley.)

(*Stellaria media L.*)

Introduced by sealers.

(*Cerastium triviale, Link.*)

Introduced by sealers.


Christmas Harbour and Royal Sound.

The flowers have been described from Kidder’s specimens by Asa Gray, and from Moseley’s by Oliver and Dyer, the descriptions agreeing well. The stamens, which appear to be almost constantly three and hypogynous, are stated by Oliver to be variable in position. Kidder retains it in *Portulaceae*, but Bentham and I had long previously placed it in *Caryophyllae* in the Genera Plantarum and next to *Pyneophyllum*, a position which the discovery of the flowers confirms. It has many of the characters of *Colobanthus*, especially the androecium.

**Plate II., Fig. 2.—**1, plant, of natural size; 2, leaves; 3, flower and bract; 4, flower laid open; 5, stamen:—all enlarged.
7. **Montia fontana, L.**

Common in wet places. (Marion Island, Moseley, and widely distributed in the N. and S. temperate regions).

8. **Acena affinis,** Hook. f. Fl. Antarct. 268, t. 96 B.

Common throughout the island. (Marion and the Crozet Islands).

Called Kerguelen’s tea, and used as a febrifuge by whalers (Kidder).

Unlike the *Pringlea* and *Cotula*, this plant has grown and flowered at Kew from roots sent by Moseley.


Common in wet places. (Marion and Heard Islands, Moseley, and widely distributed in the N. and S. temperate regions).

From a drawing of the ripe fruit which I made when in Kerguelen in 1840, I have no hesitation in referring this to Subspecies *obtusangula*, as Hegelmeyer did from his examination of my dried specimens. The fruit lobes are nearly semi-circular, and each pair is united by about two thirds of their faces. The free portions are obtusely trigonous at the back. Two forms are common in Kerguelen, as elsewhere in the south temperate zone, one aquatic with long stem and proportionally large spatulate leaves, the other smaller, terrestrial, suberect, with obovate or oblong leaves; this flowers the most abundantly.

10. **Tillaea moschata, D.C.** Bulliarda moschata, D’Urv.

Abundant in moist places near the sea. (Marion Island, Moseley, Crozet, Kidder; widely spread in high southern latitudes).


Very abundant throughout the island. (Marion and Heard Islands, Moseley; Crozet, Kidder; Fuegia; Mac Quarrie Island.)

Kidder remarks that the flowers are greenish yellow, not pale pink as I found them to be in winter. Also, that the leaves have not the bristles on the faces of the lobes as figured in the Flora Antarctica. I find them on specimens from all localities.

Moseley observes, in reference to this plant at Marion Island, that the mounds it forms evidently retain and store up a considerable amount of sun’s heat, and that this fact probably explains its peculiar mode and form of growth, and that of many otherwise widely different Antarctic plants. He found that a thermometer plunged into the heart of a hummock rose to 50°, when the temperature of the air was 45°.


Common, but not found at Christmas Harbour. (Crozet, Kidder; Fuegia and Falkland Islands.)

Kidder remarks that the flowers are distinctly pedicelled, and as often 4- as 3-merous, and even 5-merous ones occur. Eaton’s specimens confirm this.

On cliffs, especially near the sea, often forming immense luxuriant blue-green patches where the soil is enriched by the dung of birds and seals. (Crozets, Kidder; Lord Auckland, Campbell’s, and Mac Quarrie Islands.)

Reputed by the whalers to be a prompt and effectual emetic. Through a typographical omission of the word *not* at p. 308 of the Antarctic Flora, this plant is stated to be found on the continent of America. The genus *Leptinella* is reduced to a *Cotula* in the Genera Plantarum. This plant, like the *Pringlea*, proved so impatient of heat in this country, that of innumerable seedlings raised at Kew to several inches high all perished.

14. **Limosella aquatica**, *L.*

Common in the freshwater lagoon at Christmas Harbour. (Fuegia and all temperate regions.)

A very small form, with the leaf-blade hardly broader than the petiole. *Stamens* included. *Ovary* globose; style rather long.


Common in spongy places. (Fuegia, the Falkland, Lord Auckland, and Campbell’s Islands.)


Royal Sound and Observatory Bay, *Moseley, Eaton.* (Mountains of Tasmania and New Zealand.)


Common and ascending to considerable altitudes. (Fuegia, Falkland Islands, South Shetlands.)

A true *Deschampsia*, as that genus is now defined, by its 4-toothed flowering glume and free caryopsis, *Munro*.


Common throughout the island. (Marion and Heard Islands, *Moseley*; Chili, Fuegia, Falkland, and Campbell’s Islands.)

Since the publication of this plant as *A. antarctica*, I have examined a specimen of Lamarek’s *A. magellanica* named by Nees in Arnott’s Herbarium, and find it to be identical. Further, *Munro* informs me that it is fairly described by *Trinius* in his “*Agrostidea*,” and by *Kunth* in his supplemental volume (p. 175) from a Lamarekian specimen; he adds that the Kerguelen specimens agree with these descriptions, except in the flowering glume being larger and much longer than the ovary. This glume is sometimes obtuse or rounded, at others deeply divided. The beard on the callus, which is very indistinct on the Kerguelen’s plant, is conspicuous on some Fuegian ones.
   Forma 1.; folis culmum superantibus, panicula elongata interrupta.
   Forma 2.; folis culmum superantibus v. æquantibus aequinatis pungentibus,
         panicula densa sub-cylindracea.
   Forma 3.; folis æquantibus subaequis v. obtusis, panicula minore laxiore,
         spiculis paucifloris coloratis.

   Abundant and ascending to a considerable height:—Forma 1. Christmas Har-
   bour; Forma 3. Royal Sound, on a high hill, Eaton. (Marion and Heard Islands,
   Moseley).

   This fine grass should, unquestionably, be referred to Poa (as now defined by
   the compressed flowering glume, &e.), along with its near congener Dactylis cespitosa *
   of Fuegia and the Falklands, from which it differs, amongst other characters, in never
   forming tussocks. It is scarcely specifically distinct from P. foliosa, Hook. f. Hand-
   i. 308); and this, again, from the Fuegian Poa lanigera, Nees (Festuca fuegiana, Fl.
   Antarct. 380). The flowering glumes are often obscurely, or not at all toothed. The
   spikelets are 3-5-flowered and ½-⅓ in. long (not eight lines as misprinted for three
   lines in the Antarctic Flora). A. Gray remarks of Kidder's specimens that they
   seem to be male only.

   Poa pratensis, L.
   Introduced by sealers.

   Poa annua, L.
   Introduced by sealers.

20. Festuca erecta, D'Urv.

   Common and ascending to a considerable elevation. (Fuegia and the Falkland
   Islands.)

   Often forming tussocks; panicles green or purplish.

   379, t. 138 (Poa).

   Common and ascending to 2,000 feet.

   Spikelets sometimes 1-flowered. A very variable grass in stature, evidently
   allied to F. erecta, and more nearly still to F. scoparia (Fl. Antarct. 98; Fl. Nov.
   Zeland. i. 308), of which possibly it is a dwarf form, as suggested in the Handbook
   of the New Zealand Flora, p. 341. The naked base of the flowering glume, however,
   will always distinguish all the specimens I have examined.

Filices.

1. Cystopteris fragilis, Bernh.

   Crevices of rocks near the hill-tops, Royal Sound, Kidder, Eaton. (Fuegia,
   Falklands, and N. and S. temperate regions generally.)

* The name Poa cespitosa being occupied by Forster, though it is doubtful to what species it applies, I
propose that of flabellata for the tussock grass, which is the Festuca flabellata, Lamk.
Common, often forming large beds, but not found at Christmas Harbour.
(Marion Island, Moseley; Crozets, Kidder; all the colder S. temperate regions.)

Crevices of rocks, Observatory Bay, Kidder, Eaton. (Marion Island, Moseley;
Fuegia, and all the colder S. temperate regions.)

Crevices of rocks by running streams, Observatory Bay, Kidder, Eaton. (Marion
Island, Moseley; S. Africa; Sandwich Islands, and N. temperate hemisphere.)
This pellucid-nerved variety only occurs elsewhere in the Sandwich Islands.

**Lycopodiaceae.**

Not uncommon throughout the island, but not met with at Christmas Harbour.
(Var. *magellanicum*, Marion Island, Moseley; Fuegia, and all the colder S. temperate regions. The typical *L. clavatum* inhabits all northern cold damp climates.

Not uncommon throughout the island. (Var. *Saururus*, Marion Island, Moseley;
Tristan d’Acunha, St. Helena, Bourbon, Peru. The typical form inhabits all damp
cold climates.)

**Characeae.**

    In the Lake at Christmas Harbour; and in that next but one to the Observatory,
in Observatory Bay, *Eaton.*
II.—Musi.

By William Mitten, A.L.S.

The first investigation of the mosses of Kerguelen was made by Dr. J. D. Hooker during the voyage of the "Erebus" and "Terror" in the winter of 1840.

From the collections made by him there were described 31 species and varieties, which were arranged as 25 species in 11 genera. Of the whole number six species were considered to be new and undescribed, and the remainder to have been found in other regions. The most remarkable species contained in this collection are the Schistidium marginatum, Weissia stricta, and W. tortifolia.

During the visit of the Challenger, there were collected by Mr. Moseley, in the summer of 1874, 28 species, of which number 20 were additional to those discovered by Dr. Hooker. Sufficient materials were obtained to establish the presence of eight more genera, all previously known to occur in austral lands, four of the species appearing to be new. Twenty-eight species were obtained by Dr. Kidder of the American Transit Expedition, of which number 12 were additions to the Flora, two being described as new. Following the above come the collections made by the Rev. A. E. Eaton, pending the observations of the transit of Venus, which include 38 species, of which 17 were additional to the Flora of Kerguelen Island, three being undescribed, and by this collection three genera were also added; thus raising the whole number of the species of mosses inhabiting the Island to 74. This, considering how much has been added by each collector to those which were previously known, is probably a low estimate of the entire moss flora.

No genera peculiar to Kerguelen are observable in the collections, unless a species here referred to Blindia and the Schistidium marginatum (here placed in Streptopogon) should be so considered. The remaining genera are universal in boreal as well as austral regions, with the exception of the three species of Didranum, all which belong to extra-European sections of that genus. Twenty-three of the Kerguelen mosses are considered identical with species found in the north of Europe and America, of these Bryum alpinum and Brachythecium salebrosum had not before been identified in the southern hemisphere.

A few distinct and well-marked species have been gathered in Kerguelen Island which are also found at great elevations on the Andes of Quito and of New Grenada. Of these Miclechkoferia campylocarpa and Psilotilum trichodon are conspicuous instances; they probably inhabit the whole Andine chain. Bartramia appressa, Brachythecium paradoxum, and Tortula Princes are found also in New Zealand and Tasmania; but with the exception of Didranum kerguelense there is no species which points to any connexion with the mosses of South Africa.

In dense fulvous tufts, with old capsules, *Moseley*. (Lord Auckland’s and Campbell’s Islands.)

In all the specimens referred to this species the dry young foliage is fulvous, the older brown or black; the terminal leaves are frequently longitudinally twisted, otherwise their direction is the same as when wet; the lower portion of the leaf is in outline of an elliptic oblong figure, from which the nerve is continued in a straight line, and is rather suddenly carried out so as to appear without a margin of leaf; a transverse section shows it to be concave above and convex beneath; the apex is abrupt, rounded, and nearly flat, so as to appear as if dilated, and, as stated in the *Flora Antarctica*, the species is distinguished from most of its allies by this particular: The substance of the base of the leaf is composed of elongated cells which, although shorter towards the top of the dilated portion, are not dense, so that the entire expansion is of a pellucid fulvous colour, the nerve being everywhere smooth, with a few small teeth at its apex.*


Royal Sound, with old capsules and young setae, *Eaton*.


Near Vulcan Cave, barren, *Eaton*.

The imbrication of the leaves at the apices of the stems, when dry, so as to form an erect or curved point, renders this species not difficult to recognise in a barren state.


* In the *Journal of the Linnean Society*, Sept. 1859, there was confused with the *Leptotrichium australae*, therein mentioned, the following apparently distinct species,—*D. punctulaturn*, *Mitt.*; *dioecum*? *dense capsitum*, dichotome ramosum, folia inter se remotissima a basi erecta amplexante oblonga cellulis inferiores elongatis superioribus abbreviatis rotundatis obscuriusculis veluti punctatis, subtus in subulatum patentem inferius canaliculatum apice angustum planiusculum dentiulatum minutissima sebaridan sublimvem cellulis punctulatis arcuatum products, perichasii alia basi latiora et longiora parte subulato patentiora, theca in polunculo breviusculo rubro parva ovali-cylindracea erecta leptoderum fulvo-fusca. *Flos masculus in rami terminalis, ovatus, e basibus foliorum dilatatis apice rotundatis vaginatus involucratus. Distichicum capillaceum, Fl. N. Zealand, II., 73.*


In size colour and general appearance very similar to *D. australae*, having also the same, but narrower, flattened apices to its leaves; in the recurrvation of the subulate portion from the top of the erect base it resembles *D. capillaceum*, and for this species *Dr. Lyall’s* barren specimens were mistaken, although the leaves are not distinctuous, but so disposed that each fifth leaf occupies the same vertical position on the stem as the first counted from; the outline of the dilated base is not oval-elliptic as in *D. australae*, but oblong obtuse. The fruit in an old state is present on *Dr. Haast’s* specimens; accompanying these fertile stems were many conspicuous male flowers, which do not appear to arise from the lower parts of fertile stems, but seem to be really distinct male plants.
Swain’s Bay, Eaton.
Small barren stems, but not different from specimens from the Bogotian and Quitenian Andes.


Royal Sound, in lakes, with young and nearly ripe fruit, Eaton.

Stems 2–4 inches long, forming loose tufts, the upper portions red, the lower black, denuded of leaves, and forming a loose entangled mass. Leaves at the apices of the stems fulvous and shining, the lower all blackened; in their direction the upper leaves are but little changed when wet or dry; they are 1½–2 lines long; the areolation consists of elongate cells separated by pellucid walls; at the angles of the base of the leaf the alary cells are distinct and red. The nerve becomes indistinguishable at four-fifths of the whole length of the leaf, and is thence continued, and ends without forming a pungent point; leaves of the perichaetium longer, and their dilated bases about twice the width of the cauline leaves. Seta 2–2½ lines, straight in its lower half, thence to the capsule twisted and variously curved. Capsule erect when dry, when wet with a swan’s-neck-like curve, and so bent as to become horizontal; when mature spherical without any neck where it is affixed to the seta; colour reddish brown; substance thin but firm. Operculum always obliquely beaked, at length of the same colour as the capsule. Peristome perfectly formed; teeth red, broad at the base, thence with an even outline narrowed to their points, with the exception of a rare perforation there is no trace of their being composed of a double row of cells; at the base of the teeth the transverse divisions are close together, but above this they are much wider, and on turning the tooth on edge it is seen that each dissemination of the articulations is prominent on the outer side, but not on the inner. Spores small, round. Calyptra coriaceous, brownish-green, deeply cleft, with a spreading base.

Tab. III., Fig. 1, plant of natural size; 2, cauline leaf; 3, perichaetium with capsule; 4, portion of peristome; all magnified.

anguste attenuato, integerrima, nervo angusto percursor, cellulis elongatis alaribus in auriculam parvam fuseam dispositis areolata; perichaetia brevia, parva, ovata, convoluta, in acumen subulatum producta. Theea in pedunculo gracili foliis caulinis dimidio breviora erecta, parva, ovalis; operculo subulato oblique demum ort dilatato eyathiformi fusca; peristomii dentibus teneris; calyptra parva, dimidiata. Flos mascenus folis propriis perichaetialibus similibus inclusus.

Kerguelen Island, Moseley.

This is the species mentioned in the Flora Antarctica, p. 128, under Weissia conrecta, as being present in the Hookerian Herbarium, its habitat unknown.

In compact, but not coherent tufts. Stems fastigiatly branched, about an inch high. Foliage shining, but little altered in direction wet or dry. The minute capsule is scarcely conspicuous amongst the leaves. Leaves at the tops of the stems yellowish green, below brown, erect or slightly falcate, about 2½ lines long, composed of elongate cells with pellucid walls; nerve pale brown and with the pagina gradually attenuated into a very narrow flat entire point; alar cells at the angles of the base distinct, brown, forming sub-quadrate masses. Leaves of the perichaetium ¼ to ½ as long as those of the stem, and quite concealed amongst them. Seta about 1 line long, straight, pale brown. Capsule as it reaches maturity appearing to pass from oval to nearly globular; after the fall of the operculum by the dilatation of its mouth it becomes eyathiform, with no distinct neck. Operculum with a very oblique subulate beak which is longer than the capsule. Peristome-teeth very thin, broad at base, narrowed upwards into entire points; transverse articulations remote. Calyptra small, coriaceous, brownish, scarcely reaching the base of the operculum. Male inflorescence in a small bud below the base of the perichaetium.

Tab. III., Fig. ii.: 1, plant of natural size; 2, cauline leaf; 3, perichaetium with comal leaf, capsule, and male flower; 4, old capsule; 5, portion of peristome; all magnified.


Christmas Harbour, on rocks, barren, Hooker.

In this species the perichaetium is composed of enlarged leaves as in Stylostegium, Schimp., but the capsule which is immersed has a peristome.*

* These three species afford some considerations respecting their mode of fructification. The genus Blindia, Bruch et Schimp., at first included only the European B. acuta, with the "perichaetium vaginans distinctum," the perichaetial leaves being as large as the cauline and dilated below. To this was added by C. Müller (in the Synopsis) B. coepiticia, which had been made into the genus Stylostegium in the Bryologia Europea, differing from Blindia in its gymnostomous capsule immersed in enlarged but not vaginant perichaetial leaves, in these particulars analogous to some species of Grimmia of the section Schistidium, in which B. coepiticia had itself sometimes been placed. The distinction between Blindia and Stylostegium is reduced by the presence of a peristome in B. conrecta (which may be said to be a Stylostegium with a peristome) by the immersed capsule in Stylostegium, and the exerted one in Blindia. In B.
   Habit, Christmas Harbour, on gravelly banks, Hooker. Under the shoot of a waterfall near Vulcan Cove, with old capsules and young setae, Eaton.
   In compact tufts 1-1½ inch high. Foliage very green above, below becoming brown. Old capsules black and shining; young calyptras orange brown.

   Christmas Harbour, on rocks near the sea, Hooker.
   This has been described as dioecious, but the male flower is terminal on a branch arising some distance below the perichaetium. The peristome has rather broad thin teeth; in the solitary example which could be examined, the teeth appeared to be partly adherent in pairs, the median line is obsolete. This species is closely related to D. tortifolium.

   Habit, Christmas Harbour, Hooker, Moseley.
   Known only in a barren state.


microcarpa the perichaetium is formed of leaves reduced in size like those which usually include the antheridia, and thus another modification of the perichaetium is produced, all other particulars being as in Blindia proper. Thus, by the difference in the leaves of the perichaetium, the species are separable into several groups:—

Stylostegium, B. & S. ; theca in perichaetio e foliis cauliniis ampliatis immensa.
Blindia, B. & S. ; theca e perichaetio e foliis basi vaginantibus caulinoribus magnitudinis exserta.
Homogastriati ; theca e perichaetio microphylllo exserta.

The differences in the leaves of the perichaetium between Stylostegium and Blindia are analogous to those which exist between the Grimmia of the sections Schistidium and Grimmia; between Hedicidium and Brachia; between some Bartramia of the section Leucotria and Eubatrani; and also between the Schlothium of the sections Stegotheca and Eusclothecia. States of the perichaetium analogous to that observable in Bl. microcarpa occur chiefly in mosses which produce their fruit from the side of the stem, as Aneetangium, and in some species of Fissidens. Amongst the Neckeroide mosses perichaetia may be observed in otherwise closely resembling species which are analogous to all three of the states here left in Blindia. Much time and many words might be saved in the description of mosses in which the perichaetium is an important character, if some term at once conveying the essential part of the above information were employed, thus:—

Chnanogastriati ;—perichaetium e foliis elongatis ampliatisque hians = Stylostegium, Schistidium (Grimmien), Hedwigia, Hedicidium, Cryptum, Neckera.
Heterogastriati ;—perichaetium e foliis clungatis inferne convolutis clausum = Blindia, Dicranum, Hynum, &c.

Homogastriati ;—perichaetium e foliis abbreviatis iis perigonii similibus formatum = Blindia microcarpa, Aneetangium, Pyrrhobryum, &c.
In extensive tufts, with stems from 3–4 inches high, and fulvous green foliage, becoming when older, brown.

So far as can be seen from the small specimen in the Hookerian Herbarium of Cephalotus dichotomum, it appears to be the same as the Kerguelen moss, as it was considered by Mr. Wilson. The chief distinction ascribed to D. kerguelense is to have the nerve vanishing towards the narrow flat point, and not as in D. dichotomum to have the nerve continued into the point and dentate on the back.


Kerguelen Island, in dense tufts, barren, Moseley. By some error this was enumerated in the Linn. Soc. Journal as C. appressifolius.


Hab.—Royal Sound and near Swain’s Bay, in a dark purple almost blackened state, all barren, Eaton. (Heard Island, Moseley.)

This moss appears to be as common throughout the southern regions as it is in the northern. The southern states have generally a more robust appearance, but when C. brasiliensis, Hampe, from Brazil, C. croscinervis, Lorentz, from Valdivia, C. capensis, Schimp., from the Cape of Good Hope, and C. convolutus, Reichardt, from New Zealand, are compared side by side, the conclusion seems irresistible, that they are all forms of one species.


Christmas Harbour, Hooker. Cat Island, Royal Sound, Eaton.

A very small state; all the specimens unlike European, but not appearing to be really different.


Christmas Harbour, on rocks and stones near a waterfall, Hooker.

This is either an aquatic species or an aquatic form of a species of which the form corresponding to rupestral states of G. apocarpa is unknown.


Heard Island, Moseley.


Near Swain’s Bay, Eaton.

In small dense black cushions. Stems 3–4 lines high, with a few branches near the base, made up of repeated innovations from the base of the male flower, consisting of closely set widely ovate leaves, without diaphanous points, including a few antheridia. Leaves very small, canaliculate, margins erect, terminated by a short, nearly smooth hyaline point.

This ambiguous moss may be conjectured to represent a species near to the European G. montana.


Very closely related to *G. Symphyodon* and *G. emersa*, C. Müller, and also to *D. crispus*, Hook. *f. et Wils.*; all are possibly forms of one species.


Christmas Harbour, in gravelly beds of rivulets, *Hooker*.

7. **Grimmia (Rhacomitrium) lanuginosa**, Dill.; Brid. i. 215.


All the specimens are less robust than those collected by Dr. *Hooker* in Hermite Island; from the whitening of the tips of the leaves they are very hoary.

Many of the specimens brought from southern regions which appear to differ in only slight particulars from northern states have been described as distinct; of these, *Rhacomitrium firmum* De Notaris, from Chili, is a fulvous brown moss, *R. Goronicicum*, C. Müller (*Hedwigia*, 1870), is possibly the same. *R. senile*, Schimp. (*Leclher*, 1859, from Magellan), with leaf points crisped and hoary, *R. incanum*, C. Müller (*Hedwigia*, 1870), from Cape of Good Hope, is, if specimens from the top of Table Mountain belong to it, scarcely in any particular different from Arctic examples.


Christmas Island, barren, *Hooker*.

9. [*G. frondosa*, *James in Bull. U. S. Nat. Mus.* 3, 25, is another Kerguelen Island species, found by Kidder.]


The specimens from Kerguelen have the points of the perichaetial leaves reaching to three-fourths of the length of the capsule, which is thus only emergent, and in this respect they agree with some of the specimens gathered in Hermite Island by Dr. *Hooker*. No importance can be attached to this particular character, as in Dr. *Hooker*’s specimens from Lord Auckland’s Islands, emergent and exserted capsules may be seen on the same stems.

The capsules are either smooth or with a few folds regularly placed on one side, the remainder being smooth, and are more urceolate than any of the specimens collected by Dr. *Hooker*.

The inflorescence consists, as usual in the genus, of a male flower near the base of the perichaetium in all the specimens.

fere ubique parvis rotundatis obscuris; perichaetialia majora. Theca in pedunculo longitudine perichaetii subaequali ovalis, laevis, sicea infra os contracta, inferne collo crasso; operculo convexo, rostro angusto; peristomii dentibus 16, vel plus minus coharentibus 8. Calytra nigro-fusea, calva, ad medium usque thece descendens, nitida.

Kerguelen Island, Moseley.

Stems not more than half an inch high. Leaves a line long; a few of the youngest greenish, the rest all black, coriaceous. Capsule pale straw-coloured, somewhat fleshy, smooth when deoperculate, very slightly contracted just below the mouth at the base, when dry shortly plicate.

In all its parts larger than O. crozifolium, with leaves twice as wide, and without the horny appearance; it is, however, more nearly allied to that species than to any other, and approaches in some respects the O. anomalum, Hedw., which ascends far towards the Polar regions.

3. Orthotrichum rupestre, Schlech.; Brid. i. 279.

Royal Sound, with fruit nearly mature, Eaton.

The specimen is in good state, and appears to agree in all respects with the European, except that no internal peristome has been found; it does not correspond so well with either of the very closely allied species, O. Sturmii or O. cupulatum, which agree in being destitute of cilia.


Kerguelen Island, Moseley.

The minute scrap rather establishes the fact that a species of the genus inhabits Kerguelen Island than provides materials for identifying with certainty that to which it is here referred.


Royal Sound, with abundant mature capsules; Observatory Bay, with older fruit, Eaton.

The first examination of the Kerguelen specimens yielded no male inflorescence, they were therefore considered to be T. fuegiana, with which in size, colour, and appearance they appeared to be identical, this being supposed to be a dioicous species, as no male flowers were observed in Lefelher’s Magellanic specimens No. 1088, from Cabo Negro. The same specimens were again described by C. Müller as dioicous, under the name of Barbula S. magellanica. In seeking for the male flowers amongst Mr. Eaton’s abundant specimens, it was, after the examination of many stems, ascertained that although no antheridia were present in the fertile flowers, a small proportion of the stems had a male flower without archegonia, either
terminal on a short branch, or lateral from the growth of innovations. Finally it was discovered that there might be present on the same stem, flowers containing antheridium accompanied by others containing archegonia, and above both these another flower in which both organs were intermixed. Thus, with specimens in small quantity to examine, the inflorescence might be described as monoicous dioicous or synoicous, as might chance to happen to the investigator.

The European *T. Princeps* was at first correctly described by De Notaris as polygamous in the *Bryologia Europea*, where it is figured as *Barbula Müller*. It is there described as hermaphrodite, with a remark in a subsequent note that it occasionally produced flowers containing archegonia only. In Schimper’s *Synopsis* and in the *Bryologia Britannica* it is simply stated to be synoicous. An examination of De Notaris’s original specimen shows synoicous fertile flowers with innovations of the stem terminated by flowers with archegonia alone; in this particular coinciding with British specimens.

The distribution of this species appears to be very wide, and it would seem to be the preponderating if not the only species of the genus in southern regions. From N.W. America it extends to Mexico, Chili, and the Straits of Magellan; in Africa it is found at the Cape of Good Hope, and may be identical with the *Barbula mollis*, Schimp., of the Abyssinian Mountains; it occurs in N.W. India; it inhabits also New Zealand, Tasmania, and Australia, from whence several species have been described as dioicous, viz., *Barbula Latrobeana*, C. Müller (Bot. Zeit. 1864, 358), *B. Preissiania* (eiusd. Synops. I. 642), *B. panduriformis* (eiusd. et Hampe, Linnæa 1853, 493). No specimen, however, amongst those sent by Baron E. von Mueller to the Kew Herbário has been examined without finding its inflorescence monoicous or synoicous. There is also *Tortula S. pusilla*, J. Angstr. from Magellan, described as dioicous; and *Barbula Lechleri*, C. Müller (Bot. Zeit. 1859, 229), as monoicous. All these species or supposed species may be well distinguishable, but if the certainty of the condition of their inflorescence is removed from their descriptions, the remainder becomes applicable to *T. Princeps*, in which the outline of the leaves even on the same stems is, as in the European *T. ruralis*, subject to a great amount of variation.

Kerguelen Island; a few small barren stems with other mosses, Moseley.

Kerguelen Island; a few fragments, Moseley.

Very closely related to the *T. rubella* so widely distributed in northern regions, differing chiefly in the longer operculum and larger size of the whole plant.

sineate, margine apicem versus denticulata; superioria duplo latiora, a basi erectiore sensim recurva, patentia, apice cum nervo in acumen longitudine variabile sensim educto, margine superne serrulata.

Royal Sound; a single stem, _Ealon_. Two small stems amongst other mosses without precise locality, _Moseley._

The small quantity found of this moss would be insufficient to give any idea of what might be supposed to be the usual appearance of the species were it not evidently a close congener to a very ambiguous moss found on thatch in the south of Britain, and which has been known first as a supposed gemmiferous variety of _Leptodontium flexifolium_ (Sm.), and since as _Didymodon gemmascens_, _Mitt._ MSS. From this the Kerguelen species differs in the form of its lower leaves. In the British moss all the leaves are acuminate and tipped with a globular mass of individually obovate green gemma of a loose cellular substance, and gemmae of the same form are present on the points of some of the upper leaves of _S. australis._

Both species appear to be small, the British one is seldom more than half an inch in height; the entire plant, excepting a few rootlets, and the rarely present archegonia, which are red, is of a yellowish green. In the dry state it affords nothing to attract observation, but when wet, every leaf being terminated by its mass of gemmae, it is unlike any other European moss, excepting the more robust _Orthotrichum phyllanthum_ (Brid.). It comes nearer to some species of _Streptopogon_; the areolation of the leaves of _Calypneceras_ or of _Syrrhopodon_ are widely different. The genus _Streptopogon_ founded on _S. erythrodontus_ (Tayl.), with the additional species discovered in the Quitenian Andes by Dr. Spruce, and those from the Bogotian Andes by Lindig and Weir, contains a number of species all seeming to have a tufted Orthotrichoid habit. They differ among themselves considerably, some of the Andean species having the leaf with a callous margin which is wanting in others, and the capsule immersed or shortly exserted from pericharial leaves which are not very different from the cauline. _S. mnioides_, Schw. t. 310 (_Barbula_), however, has the perichaetium leaves much elongated, and different from those of the stem, simulating those of _Hotomilium_, and on this account should stand apart from the other species, thus—

_Streptopogon_, _Wils._ Theca in perichaetio e foliis caulinis subsimilibus immersa, emergens, vel breviter exserta. _Calyptra_ breviter multifida.

_Calypnogon_, _Mitt._ Theca in perichaetio e foliis elongatis a caulinis difformibus exserta. _Calyptra_ profunde plurifida.

The first group contains all the species of which the fruit is known, and which correspond to the typical _S. erythrodontus_, together with probably some others which are known only in a barren state, including the two ambiguous species _S. australis_ and _S. gemmascens._

The second group consists of _S. mnioides_ alone.


**
Christmas Harbour, forming large patches on wet rocks, Hooker.

This, which appears destitute of peristome, is in other respects more nearly related to *Streptopogon* than to any other genus, and if included in it would occupy a position analogous to that of *Styllostegium ecaudatum* and *S. coniclerum* before mentioned under *Blindia*.


Traces of an internal peristome are present within the external teeth.


Royal Sound, barren; Observatory Bay, with a few nearly ripened capsules; and hill N. W. of Mount Crozier, a tall barren slender state, Eaton.


Swain’s Bay and Royal Sound, all barren, Eaton.

The few small stems growing among other mosses appear to belong to this species.


Kerguelen Island, Moseley. Royal Sound; hill N. W. of Mt. Crozier; near Vulcan Cove, with abundant immature fruit, Eaton.


Kerguelen Island, Moseley. Royal Sound, with old fruit; and hill N. W. of Mt. Crozier, Eaton.


Kerguelen Island, Moseley. Royal Sound, with old capsules and young setae rising, very fine tall specimens, and Swain’s Bay, Eaton. (Heard Island, Moseley.)

[B. flavicans, Mitt., is enumerated by James as amongst the U. S. collections, collected at the rear of the American Transit House.]


Near Vulcan Cove; hill N.W. of Mt. Crozier, a small state with unripe fruit growing amongst *Psilopilum trichodon*, Eaton.

2. **Bryum** (*Webera*) **elongatum**, Diels.

Swain’s Bay, a single stem with ripe capsule, Eaton.


Kerguelen Island, Moseley. Swain’s Bay, with fruit just mature, Eaton.


5. **Bryum** (*Eccremothecium*) **pendulum**, Hornsch.

Royal Sound; and Cat Island, Royal Sound, Eaton.
The inflorescence, which is usually synoicous in capsuliferous flowers, is sometimes accompanied by unisexual flowers upon the same stem.


Synoicous. Caulis humulis, gracilis, innovationibus infra conalibus paucis ramosus. Folia creeto-patentia, inferiores minora, superiora elliptico-lanceolata, nervo in acetum tenue vel denticulatam paucis asperum excurrente, margine limbo tenui, et seriis cellularum elongatarum 4–5 composito anguste reflexo integerrima, cellulis angustis limitibus teneris areolata; folia comalium longiora, basi subauriculato-dilatata, angulis rotundatis laxis areolatis. Seta elongata, recta, apice anguste curvata. Theca pendula, sporangio ovato collo subaequilongo; operculo depresso conico acuminulato; peristomio parvo, dentibus pallidis subsubulatis, apice punctulatis, processibus apice punctulatis eiliisque in unum angustissimum conflatis in membrana usque ad dentium longitudinis 1/4 exserta impositis, annulo tripli e circumdato.

Swain's Bay and Royal Sound, with fruit ripened, *Eaton*.

The very narrow leaves retain the same position in both the wet and dry state, they are narrower than observed in any form of *B. pendulum*.

Tab. III. f. iv.; 1, natural size; 2, cauline leaf; 3, leaf from perichaetium; 4, capsule; 5, portion of peristome; all magnified.


The specimens vary in size, the stems in some being nearly three inches high, the lower leaves are all blackened.

8. **Bryum** (Ecremothecium) *alpinum*, *Linn*.

Royal Sound, with shining red foliage; and Swain's Bay, all barren, *Eaton*.

The red-leaved specimens are exactly similar to those states of this species which are found in sub-alpine regions in Europe; those states which are found in the plains have never the lustrous appearance which adorns this handsome moss.

The small specimen from Swain's Bay was mistaken for *B. levigatum*, *Hook. f.* et Wils. (also a Kerguelen species), to which in colour it has a great resemblance, and the similarity was increased by the points of the upper leaves being broad and obtuse; the lower leaves are, however, of the usual form.

9. **Bryum** (Ecremothecium) *argenteum*, *Linn*.

On sea cliffs near Observatory, barren, *Eaton*.

A small silverly state with the leaf points not produced.


Monoicum, caespitosum. Caulis brevis, ramosus. Folia creeto-patentia, imbricata, inferiores rameaque ovali-lanceolata, acuta, carinato-concava, nervo rubro percursora, margine integerrimo, cellulis angustioribus in scribus duabus limbus subindistinctum formantibus; reliquis suboblongis; comalium longiora latiora; perichaetialia interna minora. Theca in pedunculo breviusculo rubro superne flexuoso...
curvato horizontalis, tenui-membranacea, nitida; sporangio ovali collo recto aequilongo sensim angustato; ore satis parvo coaretato; operculo convexo apie brevissime acuto; peristomii dentibus pallidis interni fragmentis externo usque ad medium adhaerentibus.

Kerguelen Island, Moseley.

Stems including the numerous branches about 3 lines high, and with the foliage about half a line wide. Leaves appressed when dry, a few at the apices of the branches green, the lower all dark brown. Seta 3 lines long. Capsule about 1½ lines long, obovate-rhaceous, almost shining. The male flowers are terminal on branches arising below the perichaetium.

This small species appears to be nearly allied to B. demissum, Hook., but its capsule is symmetrical, and the peristome is different.

Tab. III. fig. iii.; 1, plants nat. size; 2, entire plant; 3, cauline leaf; 4, perichaetial and comal leaves; 5, portion of peristome; all magnified.

Christmas Harbour, barren, Hooker.

Christmas Harbour, common, Hooker.

[B. Warneum, Bland.; Gayanum, Mont.; Torquescens, Br. and Sch.; and Pallescens, Schweg., are all enumerated by James as found by Kidder (Bull. U. S. Nat. Mus. 3, 26.)

Kerguelen Island, Moseley. Near Swain's Bay, with unripe fruit, Eaton.

First described from the Andes, where it was gathered by Jameson; it was afterwards found in Mexico, and may be one of those species extending throughout the Andine chain. M. basilaris, Bruch et Schimp., from the Abyssinian mountains, with entirely the same stature and appearance, differs in some particulars of the peristomial teeth, and in the nerve of the leaf vanishing below the point.

Plagiothecium antarcticum, Mill. in Journ. Linn. Soc. xiv. 71. Monocicum, cespitosum, ramis ascedentibus. Folia compressa, subfaealata, nitida; caulina ovata, acuminata, integerrima, enervia; ramae ovato-lanceolata, tenuiter aeuminata, subenervia; omnis basi subcordata, cellulis angustis elongatis arcuata; perichaetialia convoluta, late ovata, breviter acuminata. Theca in pedunculo elongato rubro ovalis, inaequalis, suberecta inclinatae; operculo breviter eonicie; peristomio interno ciliis in unum coalescit inter processus cerinatos dentium longitудinis impositis in membranam usque ad dentium dimidiam longitudinem exsertam insidentibus.

Royal Sound, with mature and old fruit, Eaton. Marion Island, Moseley.

Stems forming extensive soft patches, with shining foliage about half a line wide. Seta about half an inch long, when dry twisted. Capsule obovate, the neck collapsing plicate, and so curved that the whole capsule is inclined; mouth large;
pale peristome prominent. The male flower, as is frequent in this genus, forms
one of a cluster of small bud-like flowers at the base of the perichaetium.

Closely resembles the European P. nilidium, Wahl., scarcely differing except
in the base of its leaves. This is the species which is mentioned in Hooker's Hand-
book of the New Zealand Flora, ii. 476, as Hypnum pulchellum Dicks? from the
Canterbury Alps.

Tab. III. Fig. v.; 1, plant nat. size; 2, canline leaf; 3, perichaetium with male
flower at base; 4, capsule; 5, portion of peristome—all magnified.

[P. donnanum, Sm., is enumerated by James as having been collected by Kidder
in the U. S. Transit Expedition.]

(Hypnum). *Mitt.* l. c.

Hab.—Christmas Harbour, slender, tufted state, *Hooker*. Royal Sound, small
and barren, *Eaton*.

This moss resembles some species of *Plagiothecium*, but seems to differ in habit,
its branches with conduplicate bifarious leaves having so close a resemblance to
those of *Phyllogonium elegans*, *Hook. f.* et *Wils.*, that it is frequently mistaken for
that plant. In the review of the genus *Orthorynechum*, Reich. by C. Müller
(Linnaea Band, 36, p. 28), one of the species to be referred to this genus, the
*O. Hampeanum*, C. Müller, sent from Australia Felix by Baron F. von Mneller,
mnst, from the description, be *Aerocladium politum*, of which specimens have been
seen from Von Mueller, not however exactly corresponding in locality.

1. **Stereodon cupressiformis**, Linn. (Hypnum).

Base of sea cliff, Royal Sound, barren, *Eaton*.

The small specimens obtained exhibit this variable species in that form which
in Europe is found on the roofs of buildings or on the ground; they are very unlike
*S. ehrysogaster*, C. Müller, so common in New Zealand.

1. **Amblystegium uncinatum**, *Hedw*.

Christmas Harbour, *Hooker*. Near Vulcan Cove, a tall robust form with
nearly mature fruit; and Royal Sound, a similar state, but barren, *Eaton*.

2. **Amblystegium fluitans**, Dill.

West side of Swain’s Bay, barren, *Eaton*.

A large state, with all but the terminal leaves of a brown colour.

3. **Amblystegium riparium**, Linn.

In the lake at Christmas Harbour, *Hooker*.

Specimen in a very imperfect state. Also found by the U. S. Transit Expedition
growing with *Ramunculus erassipes*.

4. **Amblystegium kerguelense**, *Mitt.* Dioecian? Caulis decumbens,
ramis confertis ascendentibus pinnatim ramosis. Folia canina laxe imbricata,
stricta vel envrata, ovata-lanceolata, subnatae-auminata, integerrima, nervo basi
lato sensim angustato et in acumen evanido percura; cellulis parvis oblongis limiti-
busque pellicidis ad angulos panicis rectangulis latioribus areolata; folia ramea


The single patch of this moss gathered by Mr. Eaton exhibits the species as very closely resembling *A. filicinum*, Linn., when it has not assumed a pinnate form; it is larger than *A. serpens*. The foliage is fulvous, neither wet nor dry is it altered in appearance.


Royal Sound, a slender straggling state, with irregular branches and an upright form, amongst *Bryum pendulum*; near Swain’s Bay, an upright state more robust and more branched; near Vulcan Cove, a still larger state, with stems three inches high; all barren, *Eaton*.

All the specimens referred to this species have but little external resemblance to the complete state found fertile in New Zealand, but they agree very closely in the areolation of their leaves, and it is probable they are only slender forms similar to those produced by *A. filicinum*.


Christmas Harbour; *Hooker, Moseley*. A short barren state.

All the Kerguelen specimens are smaller than those from the Falkland Islands.


Kerguelen Island, *Moseley*.

More robust than the original specimens from Cape Horn, and in this respect nearer to the *Hypnum rutabulum*, var. 5, *Fl. Antarct.*, from the Falkland Islands, which has since been named *H. subpilosum* Hampe. If, however, the species may be supposed to vary as much in aspect as the European *B. rutabulum*, these slightly larger forms may be fairly considered within the limits of probable variation. Intermediate between the Hermite Island specimens and those from Kerguelen are some barren msses from Otago, New Zealand, and some others collected in the Australian Alps by Von Mueller, to which it is probable the description of Dr. Hampe’s *Hypnum austro-alpinum* may apply, as he says that the seta is thick and rough, and the capsule short, which are the most prominent characters appertaining to *B. subpilosum*.


Christmas Harbour, *Hooker*. Hill N.W. of Mount Crozier, a fine silky state in large tufts, with stems 2–3 inches long; Swain’s Bay, in boggy ground on the west side, a smaller state, all barren, *Eaton*.

This species is distinguished from *B. rutabulum* by the form of the leaves on the principal stems, which are not so dilated at their base, the outline being more nearly...
ovate and not deltoid. Specimens collected by Dr. Lyall in the Arctic regions at Beechy Island, correspond very nearly with the Kerguelen moss.


Royal Sound, and Swain's Bay, with mature fruit, *Eaton*.

This species, which is found also in New Zealand and Fuegia, varies in size; the Kerguelen specimens are smaller than those from New Zealand; its affinity is with the European *B. velutinum* (Linn.), which is sometimes seen with falcate leaves, and then presents an appearance very different from its more usual state.


Hill N.W. of Mount Crozier, with narrow capsules, *Eaton*.

Originally described from the Andes of New Grenada, where it was found near the snow by Purdie; it was afterwards gathered by Jameson in a similar situation in the Andes of Quito.

**Pogonatum alpinum**, *Dill*.

Swain's Bay, with unripe fruit, *Eaton*.

This species occurs also in Australia, and has been described as *P. pseudoalpinum* (C. Müller, Bot. Zeit. 1855, 750), but it is admitted that the southern specimens differ scarcely if at all from those of the boreal regions.

[Catharina compressa, *C. Müll.*; Polytr. compressum, *Hook. f. et Wils.*, is enumerated amongst the United States Expedition collections.]


In the outline of its leaves this species resembles *A. marginata*, *Hook. fil. et Wils. Fl. Antarct.* 396, t. 151, f. 1., but the areolation of their upper portion is different, the cells being about $\frac{1}{2}$ of an inch long by $\frac{1}{3}$ wide, those in the corresponding portion of the leaves of *A. marginata* being about $\frac{1}{5}$ wide, and $\frac{1}{6}$ long.


Christmas Harbour, *Hooker*.

This species has the perichaetial leaves in the Kerguelen specimens of the same form as in those collected by Prof. Jameson in the Andes of Quito.

[A. marginata, *Hook. f. et Wils. Flor. Antarct.* 396, t. 151, fig. 1., has been found in Kerguelen Island by Kidder.]
III. Hepaticae.

By William Mitten, A.L.S.

Nine species of Jungermannia and one Marchantia, were gathered by Dr. Hooker. These were arranged in 5 genera, and 5 of the species were described as new, the remainder being similar to species found elsewhere; none of the species were especially remarkable. Mr. Moseley collected at the time of the "Challenger's" stay 12 species, 7 of which were different from those obtained by Dr. Hooker, and 6 genera were also added to the flora. Fourteen species were found by Mr. Eaton; of these 8 species and 2 genera were additional to those previously known, bringing the whole number of the Hepaticae up to 25.

The Hepaticae of Kerguelen are allied most nearly to those of the Auckland and Campbell's Islands, and of Fuegia.

Notroclada porphyrorhiza, Leioscyphus pattens, and Teinnoma quadripartita, are found also in Fuegia. Jungermannia colorata, and Symphyogyna podophylla, are found at the Cape of Good Hope. The former is, however, very widely distributed in austral regions. As with the mosses, it is remarkable how many additions were made to the flora by the small number of specimens obtained by each collector.


Christmas Harbour, on moist rocks, Hooker. Royal Sound, barren, Eaton.

The specimens closely resemble those gathered by Dr. Hooker; it appears to be always a small species.


Christmas Harbour, on rocks and the ground, Hooker.

1. Leioscyphus turgescens, Hook. f. et Tayl. Fl. Antarct. 150, t. 64, f. 2.

Hab. Royal Sound, amongst Ditrichum Hookeri, Eaton. (Lord Auckland's group).


Royal Sound, associated with L. turgescens, barren, Eaton.

Stems from an inch to an inch and a half long, seldom branched, with the leaves \( \frac{1}{2} \) line wide. Leaves pale olive-green, becoming in age brown, rather firm, not
HEPATICÆ.—W. MITTEN.

33

effecting when dry, composed of rounded cells which at first contain small round granules that disappear in the older leaves. Stipules ½ line long, the one immediately under the perianth is small and easily overlooked. Perianth compressed. No capsuliferous stems have been seen.

It appears that in this species, and in some others of the same genus, the compressed truncate perianth is the result of the small size of the involucral stipule, which in the coalescence of the leaves of which the perianth is theoretically formed, is too small to affect its form, the reverse of which is so evident in the perianth of Lophocolea.

Tab. III., Fig. vi., plant nat. size; 2. leaf detached; 3. stipule from the stem; 4. perianth as seen laterally with involucral leaves; 5. stipule next the perianth; all magnified.


Christmas Harbour, Hooker; near Observatory Bay, barren, Eaton.

The specimens are pale yellowish green, and seem not different from *L. bidentata*, with which it agrees in perianth.


Kerguelen Island, a few small fragments, Moseley. Gathered also amongst Dierana at Christmas Harbour by Hooker.


Royal Sound, in very small quantity with perianths amongst Ditrichium Hookeri, and hill N.W. of Mount Crozier, with Scapania etaldestina, Eaton.

Stems about 2 lines long. Leaves ⅔ line long, brownish green. Perianth 1 line long, of the same colour as the leaves. This minute plant is nearly related to *J. inflata*, Huds., having the same cylindrical perianth, and involucral leaves not much different from those of the stem, which are the characters of the genus Gymnolea, Dumort, which comprises besides the European *J. inflata*, and the *J. turbinata*, Raddi.

Tab. III., Fig. vii.; 1, plant nat. size; 2 and 3, perianth and involucral leaves, dorsal and lateral view; 4, cauline leaf, expanded; all magnified.

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Kerguelen Island, in very small quantity amongst mosses, barren, *Moseley*.

Stems less than 1 inch long, with the leaves $\frac{1}{2}$ line wide. Leaves green, tinged with brown.

Incomplete specimens of a species not before noticed in the Antarctic regions, but which appears to be near to the European *J. ventricosa*, Dicks, and to some states of *J. barbata*.


Christmas Harbour, abundant on the hills, *Hooker, Moseley* (with perianths).


Both *S. humilis* and *J. inundata* were originally described as stipulate species, no amphigastria have, however, been since found on the specimens. It is probable that the figure of the supposed stipule of *J. humilis* may have been drawn from a fragment of *Leioscyphus turgescens*.


This description is that of the *Synopsis Hepaticarum*, with slight modification, it applies to *S. densifolia*, *vertebralis*, and *chloroleuca*, all so intimately related that the possibility of their being forms of one species may be conjectured. These differ from the chief European species which were included in the original idea of *Scapania*, and which are now by right of priority assigned to *Martinellia*, Gray, in having leaves not keeled in the space between the equal lobes, a peculiarity which gives the plants a different aspect. The perianth known from a single example on *S. vertebralis*, is like that found in *Martinellia*, but is narrowed upwards, truncate, the mouth bent over and denticulate.

1. **Scapania densifolia**, *Hook. Musc.* Exot. 36 (Jungermannia).

Kerguelen Island, *Moseley*.

The specimens agree with those gathered by Menzies, and are of the same brown colour. The distinction between *S. densifolia* and its congeners may be thus stated:— *S. densifolia*, *Hook.*, lobis foliorum apice integris rarius emarginatis.—*S. vertebralis*, Tayl., lobis apice exsectis.—*S. chloroleuca*, *Hook.* f. et Tayl., lobis apice bifidis.

Hill N.W. of Mt. Crozier, in very small quantity with *J. cylindriformis*, Eaton.

The stems of this small plant are about \(\frac{1}{2}\) inch high, and with the leaves \(\frac{1}{2}\) line wide. Leaves firm, with small round cells; lobes unequal and differing in their direction, the dorsal patent, the ventral nearly twice as large and divergent. In the Kerguelen specimens the space between the lobes is keeled and curved, and both the lobes are denticulate, except the superior edge of the ventral lobe which is only denticulate towards the apex, and like that of the dorsal lobe is terminated by two larger teeth (hence bidentate, with a small rounded sinus). In this particular they nearly resemble the leaves of *Balanotiopsis diplaphylla* and *B. crinaea*, Tayl. (Scapania), but differ in their dense areolation. No authentic specimen has been seen of *S. clandestina*, Mont., but the figure quoted agrees except in the areolation of the carina. A single stem picked from a tuft of *Aneura* from New Zealand has the lobes more nearly equal, the carina straight, very much longer, and all the marginal teeth more spiniform; it is probable as suspected in the Synopsis Hepaticarum, that the plant in a complete state would be different from the imperfect specimens yet seen. This species departs from *S. densifolia* and its allies in the leaves being carinate, and thus corresponds to *Martinellia*; it has, however, the apices of its leaves bedentate, which give it a different look from any of the species referred to that genus.


Foul haven, on clay banks, *Hooker*; in small blackish patches closely inter-woven, *Moseley*.

From the examination of some branches of the specimens collected by Dr. Hooker it appears that fertile shoots would have their upper leaves nearly or quite entire and nearly orbicular in form.


Hill N.W. of Mt. Crozier, in dense tufts on the earth, with capsules just rising, *Eaton*.

In extensive brownish olive-green patches. Stems about 4 lines high, with the leaves scarcely \(\frac{1}{2}\) line wide, closely congested and cohering with very slender
hyaline rootlets. Perianth large for the size of the plant, arising from the apex of a thickened branch; apex obtuse before the egress of the rather large spherical capsule, but afterwards sub-truncate. Spores minute, round, smooth, brown, accompanied by fusiform moniliate fibres.

L. nutans, Hook. f. et Tayl. Fl. Nov. Zeland. 169, t. 65, f. 8, is a larger species, and appeared by itself different from any genus that has been described, whereas L. centrosum resembles the Jungermannia Francisci of Hooker's Brit. Jungermanniae, t. 49, a species which also produces thickly fleshy stolons, is irregular in the emargination of its leaves, has the same kind of stipules as well as perianth, and is therefore a species of Lembidium. How this genus or group of species may be distinguished from the Cephalozia of Dumortier must remain for examination.

Tab. III., Fig. viii.; 1, plant of nat. size; 2, portion of stem with leaves and stipules; 3, perianth and involucral leaves on lateral branch;—all magnified.


Kerguelen Island, Moseley.

Stems 3–4 lines long, with the leaves $\frac{1}{4}$ line wide. The entire plant almost black.

Tab. III., Fig. ix.; 1, plant of nat. size; 2, portion of stem, with leaves and stipule from the dorsal side; 3, lateral view of leaf and spreading stipule; 4, leaf detached and expanded;—all magnified.


Royal Sound, and hill N.W. of Mount Crozier, all barren, Eaton.

Stems $\frac{1}{2}$ inch high, green, with the leaves scarcely 2 lines wide. Leaves green, frequently convex from the recurvation of the margin. This nearly resembles T. tenellus, Tayl. (Gymnanthe) from Tasmania, but it seems to be a smaller species.

Tab. III., Fig. x.; 1, plant of nat. size; 2, portion of stem with leaves enlarged.


Royal Sound, with Acrocladium politum and Pogonatum alpinum, barren, Eaton.
Primary stems of the same colour as the leaves, fleshy, obscure, creeping; from these arise erect or ascending simple or branched shoots, which are areuate, their points attenuated and decurved. The leaves where largest are about ½ line long, and when flattened of the same width, of a pale obscure olive-green; bases not decurrent; insertion variable but generally oblique; margins entire, or obtusely sub-crenate; areolation of hexagonal or rounded cells with thin walls, enclosing a few green granules and projecting on both surfaces, but most on the external, as hyaline papulae. Papulae of the same kind are also present on the younger stems, but less prominent.

No kind of inflorescence has been seen on this species, and its location here is conjectured from its having the same habit as M. Knightii, from New Zealand.

Tab. III., Fig. xi.; 1, plant of nat. size; 2, part of stem with leaves; 3, cells from middle of leaf; both magnified.


Kerguelen Island, Moseley. Royal Sound, and near Vulcan Cove, with young capsules, Eaton (Heard Island, Moseley).

Some of the specimens are very large, with areuate stems more than an inch long, producing many purple rootlets. The leaves are 1 line long by about 1½ wide, green, with pellucid cells.

2. **Fossombronia pusilla**, Linn.

Christmas Harbour, amongst moss, Hooker.

1. **Noteroclada porphyrorhiza**, Nees; N. confluens, Fl. Antarct. 446, t. 161, f. 7.

Christmas Harbour, on moist banks, Hooker.

1. **Symphogyna podophylla**, Thunb. (Jungermannia); Gottsche, Lindenb. et Nees Syn. Hepat. 481.

Near Vulcan Cove; Royal Sound; hill N.W. of Mount Crozier; all without fructification, Eaton.

1. **Aneura multifida**, Linn. (Jungermannia).

West side of Swain’s Bay, on boggy ground, and near Vulcan Cove, all barren, Eaton.

2. **Aneura pinguis**, Linn. (Jungermannia).

West side of Swain’s Bay, small and barren, Eaton.

1. **Marchantia polymorpha**, Linn.

Christmas Harbour; Hooker, Moseley; Royal Sound and Swain’s Bay, Eaton. All the specimens produce scyphi, but are otherwise barren.
V.—Lichens.

By the Rev. J. M. Crombie, F.L.S.

The first record that we can find of the Lichen-flora of this remote island, is contained in a preliminary account of the Antarctic Lichens collected by Dr. J. D. Hooker * during the voyage of the “Erebus” and “Terror,” which was published by him and Dr. Thomas Taylor in the “London Journal of Botany” (1844), vol. iii. pp. 634–658. The Kerguelen Island lichens there enumerated amount in number to 17 species, named by Dr. Taylor; but at least one half of the names attributed to them are misapplied, and therefore must be excluded, owing chiefly to the determinations having been attempted in the absence of such microscopical analysis of the specimens as is now found to be essential for their discrimination. The number was subsequently raised to 27 species and varieties, when the list was revised by the Rev. Churchill Babington for publication in Dr. Hooker’s “Flora Antarctica” (1847), vol. ii. pp. 519–542. A considerable proportion of the names in this later list must however be rejected for the same reason as those erased from the previous one. Fortunately authentic examples of several of Dr. Taylor’s critical species are wanting in the Kew Herbarium; † and his collection (now in the Herbarium of the Boston Society of Natural History), according to Professor Edw. Tuckerman, contains very little that is illustrative of his Kerguelen Island determinations. I have lately published a further revision of the Kerguelen Island Lichens collected by Dr. Hooker, in the “Journal of Botany” for April 1877, wherein the number of the species is reckoned to be 18 or 19 besides 2 named forms.

Mr. Moseley of the Challenger Expedition gathered in this island upwards of 13 species and 1 named form. (*Vide* Crombie in Journ. Linn. Soc. Bot. 1877.)

Dr. Kidder of the American Transit of Venus Expedition collected in the vicinage of Molloy Point 13 or 14 species and 1 named form. These with others from the Taylor collection are specified by Prof. Ed. Tuckerman in Bulletin U.S. Nat. Mus. No. 3 (1876), and are noticed by me in the “Journal of Botany” for April 1877.

The collection made by Mr. Eaton between the end of October 1874 and the end of February 1875, in the district immediately to the westward of Dr. Kidder’s station, comprises 50 or 51 species and 9 named forms. Of these about 30 were

* One (or more) species of Lichens was obtained in Kerguelen Island in 1776 by Mr. Anderson, the Surgeon and Naturalist who accompanied Captain Cook.—A. E. E.

† Dr. Taylor died shortly after the publication of his first rough determination of the Antarctic Lichens, and it was impossible to recover from the heap of his unarranged materials, which were in a confused state, all of the specimens which should have been returned. I strongly suspect, from the state of his notes sent to me from time to time, that he did not attend sufficiently to localities, and that some of the specimens in the Herbarium labelled as from Kerguelen Island did not come from that island.—J. D. H.
described as new species referred to known genera, in the Journal of Botany for November 1875 and January 1876, and again with fuller diagnoses with which Dr. Nylander (who most kindly assisted me in their determination) favoured me in the Journal of the Linnaean Society (Botany) for July 1876. Though several of the new species bear a superficial resemblance to some of our northern lichens, yet on analysis they are found to be quite distinct, and for the most part are peculiar to Kerguelen Island.

The results obtained by the German Transit of Venus and Surveying Expedition at Betsy Cove, are not yet published.

The total number of species obtained from the island is 61, and 10 varieties. Traces of a few other species exist in the various collections, consisting either of sterile thalli or undeveloped apothecia which are necessarily indeterminable.


Observatory Bay, on dry rocks near the sea, *Eaton.*


On rocks, altitude 6-1200 feet, Christmas Harbour, *Hooker, Moseley*; top of a hill on west side of Carpenter’s Cove, barren, *Smith Dorien (Eaton).*


Dry slopes, Swain’s and Observatory Bays, *Eaton*; Molloy Point, Kidder.


Kerguelen Island, *Moseley.*


Dry rocks and stony slopes, Swain’s Bay, *Eaton*.


On decayed moss, Observatory Bay, *Eaton*.


On moss and dead stems of *Ascophyllum*, very local, Observatory Bay, *Eaton*.


On stones in moist places, Hooker, Eaton, &c.


On rocks and stones, Christmas Harbour, Hooker; Observatory and Swain’s Bays, Eaton.

Var. lucens, Nyl.; Cromb. l.c. On dead stems of Acana and Pringlea, Observatory Bay, Eaton.


On rocks, Royal Sound, very sparingly, Eaton.


Maritime rocks, Christmas Harbour, Hooker; Observatory and Swain’s Bays, Eaton.


Christmas Harbour, Moseley.


On rocks at low elevations, Observatory Bay, Eaton.


Rocks at Christmas Harbour, Hooker; Observatory Bay and stony slopes at Volage Bay, plentiful, Eaton.


On dead moss, &c., Christmas Harbour, Hooker; Observatory Bay, Eaton.


On dead plants, Observatory Bay, Eaton.


Rocks at Molloy Point, Kidder.


**
On a shaded sea cliff near Observatory Bay, colouring the rock, \textit{Eaton}.

[\textit{L. citrina}, \textit{Aech.}, \textit{L. erythrocarpa}, \textit{Fr.}, and \textit{L. hageni}, \textit{Aech.}, enumerated in the \textit{Flora Antartica}, 536, from very imperfect materials, are too doubtful to be enumerated.]


On rocks, Christmas Harbour, \textit{Hooker}; Observatory and Swain's Bays, \textit{Eaton}.


On rocks, Observatory Bay, \textit{Eaton}.


On rocks, Volage and Swain's Bays, \textit{Eaton}.


On dead stems of \textit{Acaena}, Observatory Bay, \textit{Eaton}.


\textit{Molloy Point}, \textit{Kidder}.


Christmas Harbour, \textit{Hooker}; Observatory Bay in turf, \textit{Eaton}.


Christmas Harbour, \textit{Hooker}.


On dead grasses, \textit{Molloy Points}, \textit{Kidder}.


\textit{On rocks, Christmas Harbour, Hooker}; Observatory Bay, \textit{Eaton}.


\textit{On rocks, Observatory Bay, very sparingly}; also \textit{one mile N.W. of Mount Crozier}, \textit{Eaton}.


\textit{On stones and bare soil, Observatory Bay, sparingly, Eaton}.


\textit{On rocks and stones, Christmas Harbour, Hooker}; Volage and Swain's Bays, \textit{Eaton}. 
10. **Lecidea subassentiens**, Nyl.; Cromb. in Journ. Bot. v. 21 (1876), et in Journ. Linn. Soc. xv. 188.

On rocks, Observatory Bay, very sparingly, Eaton.


On rocks, Christmas Harbour, Hooker; Observatory Bay, Eaton; Molloy Point, Kidder.

12. **Lecidea asbolodes**, Nyl.; Cromb. in Journ. Bot. v. 21 (1876); et in Journ. Linn. Soc. xv. 188.

On rocks, Observatory Bay, Eaton.


On rocks and stones, Christmas Harbour, Hooker; Swain's Bay, Eaton.

Var. *ferrea*, Nyl.; *Cromb. t. c. Swain's Bay, Eaton.*


On rocks and boulders, Observatory, Volage, and Swain's Bays, Eaton.


On rocks and stones, Christmas Harbour, *Hooker.*


On rocks, Christmas Harbour, *Hooker.*


On boulders, sparingly, Observatory and Swain's Bays, Eaton.


Kerguelen Island, *Moseley.*


On rocks, Royal Sound, Observatory, Volage, and Swain's Bays, Eaton.


On stems, Volage Bay, sparingly, Eaton.


Kerguelen Island, *Moseley.*

On rocks, Swain’s Bay, sparingly, Eaton. Molloy Point, Kidder.

Var. erumpens, Crombie, l. c. On dead Acaena stems, Observatory Bay (a single specimen), Eaton.


On rocks, Observatory and Swain’s Bays, Eaton.


On rocks, Observatory Bay, Eaton.


On rocks, Christmas Harbour, Hooker; near Molloy Point, Kidder.


On rocks frequent, Hooker, Moseley, Eaton, Kidder.


On rocks and stones, Volage and Swain’s Bays, and (where overflown by the tides) at Observatory Bay, Eaton.


On stones, hill N.W. of Mount Crozier, Eaton.


On rocks, Observatory Bay, Eaton.


Rocks at Observatory Bay, and ? hill N.W. of Mount Crozier (Eaton).


On rocks, Observatory Bay, sparingly, Eaton.


On rocks and stones, Volage Bay, Eaton.


Kerguelen Island, Moseley.

[Isidium oculatum, I. lutescens, and Lepraria flava, all enumerated in the Flora Antarctica as doubtful, are imperfect states of Lichens.]
V.—Marine Algae (exclusive of the Diatomaceae).

By G. Dickie, A.M., M.D., F.L.S., Professor of Botany in the University of Aberdeen.

The total number of marine species of Algae known to be indigenous to Kerguelen Island (excluding Diatomaceae) is 71. The collections upon which this estimate is based are those made respectively by—

Dr. Hooker (Antarctic Expedition) in the winter of 1871 (May—July), chiefly at Christmas Harbour, comprising 39 species;

Mr. Moseley (Challenger Expedition) in the summer of 1871 (January and February), chiefly at Christmas Harbour and the eastern coast as far as Betsy Cove, comprising 37 species;

Dr. Kidder (American Transit of Venus Expedition) in the spring and first part of the summer of 1871—5 (Sept. to Jan.) near Molloy Point, towards the entrance of Royal Sound, comprising 22 species;

And the Rev. A. E. Eaton (English Transit of Venus Expedition) in the spring and summer of 1871—5 (Oct. 11—Feb. 27), in the interior of Royal Sound (Observatory Bay) and in Swain's Bay, comprising 53 species.

The botanical results of the German Transit of Venus and Surveying Expedition, which was stationed for about two months at Betsy Cove, are not yet made known.

Mr. Eaton was at Observatory Bay during October, November, most of December, and the whole of February, during which time he made frequent use of the grapple. In Swain's Bay he collected Algae on nine occasions between the 15th and the 30th of January inclusive. Of the 53 species in his collection 44 were obtained in Swain's Bay, and only 32 at Observatory Bay: 21 species (probably 27 or 28, vide infra) are common to both of the areas, 21 occurred (to Mr. Eaton) only in Swain's Bay, and 8 (from which 3 or 4 should be deducted, and added to the species common to both) were collected only in Observatory Bay. The preponderance of the Swain's Bay gatherings may partly be accounted for by the distance of Observatory Bay from the open sea. For Mr. Eaton noticed that in some very retired parts of Swain's Bay the components of the Alga flora and their state of growth were very similar to those prevailing at Observatory Bay. In advancing from the more sheltered to more open waters he observed considerable regularity maintained in the rate of change proceeding in the composition of the Alga flora; so that it was possible, while collecting in one place, to conjecture beforehand with tolerable accuracy the number of additional species that would be found in other positions more exposed to the slight swell that enters the bay from the outer sea. And he was of opinion that if it had been possible to have visited the coast external
to the bay, 10 or 12 species would most likely have been added to the 53 in his collection. Judging from the number of species apparently indigenous to unsheltered situations which go to form the 18 that are not represented in his collection, this conjecture may have been not far from the mark.

But the advantages of situation afforded in Swain's Bay for the growth of various Algae absent from the almost waveless shores of Observation Bay would have availed nothing, had it not been for the liberality and kindness of Captain Fairfax, R.N., in command of H.M.S. "Volage." Having invited Mr. Eaton to be his guest for three weeks, he conveyed him in his gig to almost every part of the bay that was accessible by boat in Kerguelen Island weather, and surrendered his cabins without reservation to the reception of buckets and specimens of all descriptions, excluding only seals and cetacea accommodated elsewhere.

The local distribution of the species round the coast may be ascertained roughly from a comparison of the constituents of the collections above mentioned. Of the 71 species, 14 are common to all of the collections, and 8 common to three out of the four, making together 22 species, which may be regarded as plants generally distributed round the island; 14 are common to Mr. Eaton's collection and one of the other three, and 1 species to Dr. Hooker's and Dr. Kidder's,—together making 15 local plants, mostly of frequent occurrence; 5 are common to Dr. Hooker's collection and Mr. Moseley's (gathered in Christmas Harbour), and 29 are in one of the collections only, making 34 scarce or rare species. Of the 29, there are in Dr. Hooker's collection 7 species, in Mr. Moseley's 4, in Dr. Kidder's 1, and in Mr. Eaton's 17.

As to their general geographical range, 20, or rather more than a quarter of them, are found in various parts of the shores of Europe, and some are cosmopolitan. The following 8, so far as is known, are peculiar to the island:—Desmarelia ehordalis, Sphaelearia corymbosa and S. affinis, Melobesia kerguelena, Nitophyllum fusco-rubrum, Epymenia variolosa, Pilota Eatonii, and Callithamnion simile.

The following are the numbers of the species after their respective families:

- Fucaceae, 2.
- Sporochnaceae, 4.
- Laminariaceae, 2.
- Dictyotaceae, 2.
- Chordariaceae, 3.
- Ectocarpaceae, 3.
- Rhodomelaceae, 4.
- Laurenciaeae, 2.
- Corallinaceae, 3.
- Sphaerococcaceae, 8.
- Gelidiaceae, 1.
- Rhodymeniaceae, 4.
- Cryptonemiaceae, 11.
- Ceramiaceae, 7.
- Siphonaceae, 3.
- Ulvaceae, 5.
- Confervaceae, 7.

Of these 16 belong to the Olive, 40 to the Red, and 15 to the Green Series.
There are also included in the present paper, for convenience, 4 freshwater species:—Bostrychia vag?, Vaucheria Dalleyanii, Ulva cristata, and Prasiola flacelatism.


On exposed rocks at and below half-tide level, not in very sheltered situations; abundant.—In the Southern ocean, between lat. 45° and 55° S., reaching to lat. 65° S. in the meridian of New Zealand (Hooker).


In positions still more open than D. utilis. (Cape Horn and the Falklands.)


Swain's Bay on rocks in 3 fathoms, at the end of an island about 2 miles within the entrance of the bay, exposed to a slight swell from the open sea; local and not common, Eaton. (Fuegia, Falkland Islands, Heard Island, Moseley.)


Swain's Bay, in 3 fathoms, with the preceding; very local, Eaton. Christmas Harbour, Hooker, Moseley. (Kerguelen Island only.)

A very graceful species. The fronds, upwards of 4 feet in length, are arranged in a manner similar to those of a fern, and cause the plant, as seen in situ from a boat, to bear a general resemblance in contour to such species as Aspidium filix-mas.


Between tide-marks, Swain's Bay, Eaton. Cockburn Island (Hooker); and in North temperate and Arctic seas.


Christmas Harbour, Hooker, Moseley. In 2 fathoms, Royal Sound and Swain's Bay; common, Eaton. (Marion Island; the Falklands; Cape Horn; American coast from New York northwards; Unalasehka; Hunde Island; W. coast of Europe.)


Abundant along rocky portions of the coast. (Antarctic Sea, from lat. 40° to 60° S.; New Zealand; Indian Ocean; Marion Island; Chili; California.)

In exposed situations; Christmas Harbour, rare, *Hooker* and *Moseley*. (Chili, Fuegia, Falkland Islands, Cookyburn Island, Auckland and Campbell Islands.)


Crevices of rocks between tide-marks, Observatory Bay (two very small specimens), *Eaton*. (Wideiy distributed from the latitude of Spain to the Falklands; Florida; California; Japan.)


Christmas Harbour, *Hooker*. (Falkland and Auckland Islands.)


Between tide-marks, abundant; scarcer but more finely grown in shallow estuaries (there, occasionally, as much as 5 or 6 inches long); Christmas Harbour, Royal Sound, Swain’s Bay, &c. (Cape Horn; Falklands; Cookyburn Island; Auckland and Campbell Islands.)


Christmas Harbour, *Hooker*. (Falkland and Auckland Islands, Pacific Ocean to Japan and S. America; the Atlantic from the Faroe Islands to Cadiz; Mediterranean.)


On *Rhodymenia palmata* in very shallow water along the shore in Observatory Bay, *Eaton*. (Atlantic coasts of France and Britain; Baffin’s Bay.)


Plentiful on *Desmarestia* at Christmas Harbour, *Moseley*. Very slender solitary young plants on Annelid tubes, at 5 fathoms; stronger and more bushy, with trichosporangia only (but these abundant), on *Mylitus* at 1 fathom, and in tide pools, Observatory Bay; frequent in Swain’s Bay among *Cladophora flexuosa* in pools and shallow water, *Eaton*. (Falklands and Cape Horn.)


On shells of *Mylitus* and on Annelid tubes; Swain’s and Observatory Bays, *Eaton*.

The specimens are 2 to 3 inches long, corymbose, but without fruit. Dr. Hooker’s plant obtained at the Falklands, and Dr. Kidder’s from the vicinage of Molloy Point in Royal Sound, are probably the same as the preceding.

2. *Sphacelaria affinis*, *Dickie in Journ. of Bot.* v. 50 (1876), et in *Journ.
Linn. Soc. xv. 199; filis dense cresptosis erectis parce dichotomis, articulis diametro subaequalibus vel pauro longioribus, trichosporangiiis solitariis obovatis breviter pedicellatis.

On shells of *Mytilus* in rather open situations; Swain's Bay, Eaton.

The specimens are about ½ inch in height, and are similar in habit to the British *S. radicans.*


Swain’s and Observatory Bays, frequent, Eaton; near Molloy Point, one specimen, Kidder. (Falklands and Fuegia.)


On roots of *Macrocystis*, and on tubes of Annelides, in 1 to 5 fathoms, Observatory Bay, Eaton. (New Zealand; Tasmania; Fuegia).

There are two forms of this species, one of them smaller and more rigid than the other. The *P. microcarpa* of the *Flora Antarctica* represents one of them, *P. abscissa* the other.


Kerguelen Island, Moseley. (Falklands and Fuegia, Hooker.)


Swain’s Bay, on the seaward sides of islands, Eaton; Royal Sound, Kidder. (Auckland Islands, Marion Island, Falklands, Fuegia, Chiloe.)

Mr. Eaton’s specimens belong to the var. β Davisii, having a habit and colour different from those of the typical plant. There are examples in different stages; but in all the ramuli are heterosiphonous.


Christmas Harbour, on rocks and stones above high water mark, and in damp places a considerable distance from the sea, abundant, Hooker.


Christmas Harbour, Hooker, Moseley. (Heard Island, S. Tasmania, W. and E. Australia.)


Christmas Harbour, Hooker, Moseley. In tideways and on parts of islands open to a slight swell from the outer sea, not in sheltered waters; Swain’s Bay, Eaton; Royal Sound, Kidder. (Falklands and Fuegia.)


On Ballia, &c., Swain’s Bay, Eaton; Christmas Harbour, Hooker. (Fuegia, Falklands, Tasmania, New Zealand, Auckland, Antarctic Seas.)


Swain’s Bay, common, Eaton. The only example preserved was grasped in about 2 fathoms in a tideway between two islands, inerusting two sponges (Microciona atrosanguinea, Bk., and Halichondria inerustans, Jtn.; both British species.) It is normal in habit, texture, and in the character of the keramidia, and is very luxuriant, measuring about 3 inches square. (St. Paul’s Island, Norfolk Island, the Mediterranean, France, Britain, Baffin’s Bay.)


Swain’s Bay in 2–3 fathoms, with the preceding, Eaton.

Mr. Eaton has an impression that this grows upon Ballia or Ptilota, but I should rather be disposed to suspect that it was attached to rocks. The description was taken from an almost complete specimen; there are fragments of others whose contour is less regular, probably through interference of external objects. All of them are in colour of a very pale buff or dull yellowish hue, varied with pale red tints.


Christmas Harbour, Hooker (but not seen attached), Moseley. Observatory Bay (ill grown), and Swain’s Bay (well grown), abundant, Eaton. (Marion Island, Falklands.)

Dr. Hooker obtaining only wrecked specimens at Christmas Harbour, was led to suppose that this species was a resident of the exposed coast. It is however common in the very sheltered waters of Observatory Bay, though it certainly does not thrive there; and it is abundant and luxuriant round the islands in Swain’s Bay, in 3–5 fathoms.

Swain's Bay; normal on *Mytilus* in sheltered places at or just below low-water mark; varying in more open situations, *Eaton*. (Falklands and Fuegia, *Hooker*.)


Swain's Bay, frequent, *Eaton*. (Falklands and Fuegia, *Hooker*.)


Swain's Bay, near the surface of the water; Observatory Bay, only one ill-grown example, *Eaton*. (Falkland, Auckland and Campbell Islands.)


Christmas Harbour (one specimen referred to this species with doubt, *Moseley*). (Falklands and Fuegia, *Hooker*.)


In very sheltered water (one example only) at 6 to 10 fathoms, Swain's Bay, *Eaton*. Royal Sound, *Kidder*. (Falklands, *Hooker*.)


Swain's Bay, frequent, in 3 to 5 fathoms, *Eaton*. (Falklands and Fuegia, *Hooker*.)


Christmas Harbour, very abundant, *Hooker*, *Moseley*. Observatory and Swain's Bays, abundant between tide marks. (Fuegia, Falklands, Auckland Islands.)


Swain's and Observatory Bays, sparingly, on tubes of Annelides, in 3–5 fathoms, *Eaton.* (Table and Simon's Bays.)

The few specimens collected by Mr. Eaton are dwarf and very narrow. They all have the structure of the genus, and must, I think, be referred to the above species.


Swain's Bay and Royal Sound, common in tide pools and shallow water; very luxuriant specimens. Also a dwarf form of olivaceous complexion, growing between tide marks, dry at low water, in Swain's Bay, *Eaton.* (Falkland Islands; Fuegia; Unalaska; Greenland; Newfoundland; Scandinavian, British, and French coasts.)


Christmas Harbour, rare, *Hooker.* Swain's Bay, rare, in very sheltered water, at 5–10 fathoms, *Eaton.* (Falkland Islands.)

Professor Agardh (loc. cit.) considers with the authors of this species that it is probably a form of *P. Brodiei.*


Local, between tide marks near Observatory Bay, *Eaton*; Christmas Harbour, abundant, *Hooker.* (Falkland Islands; temperate and colder seas in the northern hemisphere.)


Christmas Harbour, *Hooker.* Swain's and Observatory Bays, in sheltered situations, *Eaton.* Royal Sound, *Kidder.* (Auckland Islands; New Guinea; Falklands; Fuegia; Chili; Peru; California.)

Mr. Eaton's collection comprises different forms of this very variable species:—from Observatory Bay, on *Mytilus* in sheltered water, a variety with small marginal kalidia; from Swain's Bay var. *β* atro-sanguinea, also a narrow variety (?), torn at the apex and proliferous; and in addition var. *γ* on roots of *Macrocystis* in very sheltered water.

Swain's Bay, one specimen only, *Eaton*. (Marion Island, *Moseley*; Campbell Island, *Hooker*.)

The specimen obtained at Kerguelen Island by Mr. Eaton has the structure and kalidia of *Callotyphillus*. The last are not marginal, and therefore it is not a form of *C. variegata*. [This species was not mentioned in Dr. Dickie's MS., nor in his list in the Linnean Society's Journal; but the name and remarks were noted by him on the sheet containing the specimen in the collection, A. E. E.]


Local in very sheltered water, Swain's Bay, *Eaton*. (South Shetlands.)


Swain's Bay; and (at 1 fathom, of inferior growth) Observatory Bay, *Eaton*. (Cape of Good Hope.)


Christmas Harbour, *Hooker*. Swain's and Observatory Bays, abundant on rocks from low-water mark to 1 fathom or more, *Eaton*. (Cape of Good Hope; New Zealand; Auckland and Campbell Islands; California.)

The collection includes various forms of this species.


Kerguelen Island, *Moseley*. (Cape of Good Hope.)


Kerguelen Island, *Moseley*. (Auckland Islands, and the S.W. shores of Chili.)

Mr. Moseley's collection contains several specimens which belong, I think, to this species.


Swain's and Observatory Bays; common on rocks at low-water mark, and on *Mytilus* at 1 fathom, *Eaton*. (Auckland and Campbell Islands, *Hooker*.)


2. **Ceramium diaphanum**, *J. Ag.; Flor. Antarct. 488.*

Christmas Harbour, abundant, *Hooker*. (Cape of Good Hope and Atlantic coasts of Europe.)


Swain’s Bay, in 2 to 5 fathoms, on the side and end of a promontory and of an island about two miles from the entrance of the bay, exposed to the tide and a slight swell from the outer sea; very local. Usually parasitic upon *Battia*, sometimes attached to *Mytilus*; *Eaton*.

This species resembles *P. Harveyi* in the character of the involuere, but differs from it in general habit, and in the structure of the larger and smaller pinnules. It is also dissimilar in colour, being dull purple.

**Plate V., Fig. iii.** — 1, portion of frond of nat. size; 2, portion of stem with young branch; 3, apex of fully grown branch; 4, ditto with spærospores; 5, splærospores; all much enlarged.


On *Mytilus*, roots of *Macrocystis*, and Annelid tubes, from tide pools down to 6 fathoms; very common in Christmas Harbour, Swain’s Bay, and Royal Sound. (Falklands; Marion Island; Australia; Tasmania; New Zealand; Auckland Islands.)


In tide pools and at the extreme verge of low water, on *Mytilus*, in Swain’s and Observatory Bays, local, *Eaton*. (Atlantic shores from Greenland to Africa; N.E. shores of the United States.)
I can see no essential difference between Mr. Eaton’s specimens and the plant from the northern hemisphere. They agree in habit, and in the arrangement of the tetraspores. The articulations are a little longer than those of British examples.

   
   On rocks in about 2 fathoms in Observatory Bay; frequent, *Eaton*. (Europe; Cape of Good Hope; Mauritius; Ceylon; Australia; Friendly and Loo-choo Islands.)

   
   Christmas Harbour, *Hooker*. (Tongabu; Banda Islands; and the colder seas of both hemispheres).

   
   Dwarf or very young specimens on Annelid tubes in 5 fathoms, Observatory Bay, scarce, *Eaton*. (Greenland; widely distributed throughout both the temperate zones, and even in some of the warmer seas).

   
   On the ground amongst Penguin rookeries, Christmas Harbour, *Hooker*.

   
   Christmas Harbour, very common, *Hooker*. Royal Sound; Swain’s Bay, *Eaton*. (Widely distributed in both hemispheres.)

   
   In moist clefts of rocks overhanging Christmas Harbour, growing with *Tryp-othallus* [*Palmodiectyon*, Ktz.] *anastomosans*, *Hooker*.

   
   Christmas Harbour, very abundant, *Hooker*. Common in shallow water, Observatory Bay. (Temperate and colder seas of both hemispheres.)

   
   Christmas Harbour, very abundant, *Hooker*. (Widely distributed in the northern and southern hemispheres.)

   

   
   Christmas Harbour, *Hooker*. (Cosmopolitan.)

On wet rocks in the bed of a streamlet descending from a patch of snow, about 400 feet above the sea, on the pyramidal hill on the W. side of Swain's Bay. (European Alps to 9,300 ft.; Spitsbergen; streams of W. Greenland.)


Christmas Harbour, on rocks, *Hooker*. (General between the arctic circle and the Mediterranean; only at Kerguelen Island in the southern hemisphere).


Very abundant on *Mytilus* at low-water mark, and in shallow water, Observatory Bay, *Eaton*. (Falkland Islands; Fuegia; German and N. Atlantic Oceans; Greenland.)


One very small specimen, probably very young, too imperfect to be identified with absolute certainty, but which I think may be referred to this species, was obtained on an Annelid tube in Observatory Bay at 5 fathoms, *Eaton*. (Falklands and Fuegia, *Hooker*.)


In tide-pools and at 5 fathoms in Observatory and Swain's Bays, specimens from the deeper water are poor, *Eaton*. (Shores of Europe; Massachusetts Bay.)


Christmas Harbour, *Hooker*. (Cumberland Sound; British coasts, &c.)


Christmas Harbour, in the sea, *Hooker*.


Christmas Harbour, on rocks near high-water mark, *Hooker*. 
VI.—Fresh-water Algae collected by the Rev. A. E. Eaton.

Algae aquae dulcis Insulae Kerguelensis,
auctore

Paulo Friderico Reinsch.

(Cum notulis de distributione geographica a G. Dickie adjectis.)

Tanto ampliores notitiae de plantis simplicissima structura ac simplicissimis organis in terris diversissimis erececentibus, quo evidentius factum agnoscitur notandum: has plantas iidem legibus non subjectas ex quibus dependent plantarum in systemate superiorum diffusio in orbire. Specierum plantarum microscopica rum diffusio universa determinatur rationibus peculiaribus; diffusione aeris meatus in superficie terrae effecta, mobilitate levissima cellulararum propagativarum carumque vi vitali diu permanente in statu ipso siccateo; neque minus efficitur diffusio rationibus vitae multo simplicioribus accommodatis ad diversissima terrae caela.


Omnes in hae enumeratione receptae species sunt conjunctae in præparatorum collectione integra, nunc in Herbario Regio Kewensi deposita.

Insulae Kerguelensis Specierum algarum aquae dulcis hucusque cognitarum numerus totus est 106, numerus generum 67.

Ab his sunt

- Diatomophyceae - - 21 species, 13 generae.
- Phycocromophyceae - - 33 species, 18 generae.
- Chlorophyllumphyceae - - 50 species, 31 generae.
- Melanophyceae et Rhodophyceae - 2 species, 2 generae.

BOTANY OF KERGUELEN ISLAND.

Diatomophyceae.
13 genera, 21 species. (2 Spec. novæ, 3 Spec. ineert.)

Phycochromophyceae.

Chroococcaceae.—5 genera, 6 species (ab his 1 novæ, 1 incerta).
Oscillariaeae.—3 genera, 3 species (ab his 2 novæ, 1 forma nova).
Nostocaceae.—3 genera, 10 species (ab his 7 novæ, 1 forma nova).
Rivulariaceae.—3 genera, 5 species (ab his 2 novæ, 2 formae novæ).
Seytonemaceae.—3 genera, 4 species (ab his 1 nova, 2 formae novæ).
Sirosiphoniaceae.—1 genus, 5 species (ab his 4 novæ, 1 forma nova).

Chlorophyllumophyceae.

Palmellaceae.—7 genera, 9 species (2 novæ formæ).
Protococcaceae.—4 genera, 5 species (1 genus novum, 1 species nova).
Volvocaceae.—1 genus, 1 species. (Spec. nova?)
Desmidiae.—4 genera, 5 species (1 nova, 3 formae novæ).
Zygnemaceae.—4 genera, 7 species (1 nova, 1 forma nova).
Vaucheriaeae.—3 genera, 6 species (2 novæ).
Ulveae.—1 genus, 1 species.
Oedogoniaceae.—2 genera, 5 species (2 species ineertæ).
Chaetophoraceae.—7 genera, 10 species.
  a. Chaetophoreae.—4 genera, 6 species (1 genus novum, 5 species novæ,
     1 forma nova).
  b. Gongrosireae.—3 genera, 4 species (1 nova).

Rhodophyceae.

1 genus, 1 species nova.

Melanophyceae.

1 genus novum, 1 species nova.

Diatomophyceae.*

1. Stauroneis goeppertiana, Bleisch; Rabenhorst Alg. Europ. Nr. 182;
specimina kerguelencis efficacissime consentiunt in magnitudine ae forma
cellularum cum speciminibus Silesiacis in Colleet. Algar. Rabenhorst. communi-
catis. Areola transversalis in speciminibus Silesiacis plurimis paulo est angus-

* Materiam enumerationis Diatomacearum in ampullula majore reperi in singulis terrosis corpusculis
juris radiculis Nitella antarctica partim adhaerentibus partim in liquore fluitantibus.
FRESHWATER ALGÆ.—P. F. REINSCH.

tior,—Longit. 0,0224 mm. (1/14 Engl.) Latit. 0,0058 mm. (3/54 Engl.)—(Distrib. Silesia.—Considered by some authorities to be probably a form of S. dilatata, which is widely distributed in Europe, G. Dickie.)


3. Stauroneis Phenicenteron, Ehrenberg.—Longit. 0,0952 mm. (1/21 Engl.)—(Distrib. Europa frequens, America, Persia.)

1. Aclinanthes exilis, Kützing. Longit. 0,0224 mm. (1/14 Engl.) Latit. 0,0028 mm. (1/57 Engl.) In quoque latere in medio cellulae (a fronte visæ) nodulus singulius; in plurimis specimibus Europæis tantum in interiore latere. In magnitudine ac forma maxime consentient cum speciminibus e Jura Francionia, e Hungaria, et e Falaise (Gallia).

In Vaucheriæ cellularis nidulans.—(Distrib. in Europa vulgaris.)

1. Larirella diaphana, Bleisch. Longit. 0,1008 mm. (3/24 Engl.) Latit. 0,0418 mm. (1/6 Engl.) In speciminius singulis.—(Distrib. Silesia; an forma S. splendidae in Europa vulgaris, G. Dickie.)

1. Campylodiscus, species nova; Reinsch in Journ. Linn. Soc. xv. 205; magna, elliptico-ovalis, utroque polo rotundato-oftuso, costis marginalibus radiibus crassiusque ad tertiam partem latitudinis superficieiis se pertinentibus in quoque latere 22is—24is, areolas 21as—22as rectangulares includentibus, area media laevi; frustulæ a latere visæ simpliciter spiraliter curvatae areolis 21is—22is rectangularibus instructæ.—Diam. longit. 0,132 mm. (1/8 Engl.)—Diam. transvers. 0,0666 mm. (1/4 Engl.)—Costæ in 0,02 mm. (1/60 Engl.) tres.

In speciminius singulis inter Schizosiphonitis kerryelensis capspites.


In Vaucheriæ sessilis et scricæ filis.—(Distrib. in Europa vulgaris, an forma G. dichotomi? G. Dickie.)

1. Amphiprora Spec. nova, Reinsch in Journ. Linn. Soc. xv. 205; parva, rectangularis, subtillisime striata, medio parum constricta, utroque polo late truncato-rotundato, lineis intermediiis duabus in medio cellulae æqualiter extrorsum curvatis arcum medium cruciformem laevem circumcingentibus, nodulo singulo et in quoque latere cellulae in decessi linearum inclusæ et in summo utriusque linæe. Longit. 0,0333 mm. (1/63 Engl.) Latit. 0,0084 mm. (1/93 Engl.)

Amph. Pockornyana Grunow; dimensionibus duplo majoribus cellularis ovato-

2

1. *Navicula elliptica*, Kützing, var. *Cocconeides*; Robenhorst, *Algenfl.* Europ. I., p. 180, dimensionibus duplo minoribus. Longit. 0,0201—0,0224 mm. (1 $\frac{1}{10}$ — 2 $\frac{1}{4}$ " Engl.) Latit. 0,013—0,0185 mm. (1 $\frac{1}{17}$ — 2 $\frac{1}{2}$ " Engl.)

In opere novissimo de Diatomaceis, *Atlas der Diatomaceenkunde*, Heft II. tab. VII., fig. 55, *Navicula* est delineata (e Germania) quæ maxime consentit in forma, magnitudine, ac structura cellulis cum plantula Kerguelensis.— (Distrib. in Europa frequens, Java, Nova Zelandia.)

2. *Navicula dicyphala*, Ehrenberg. Longit. 0,0248 mm. (1 $\frac{1}{2}$ " Engl.)

Specimina ad formam pertinere summiss capitisiformibus distinctius disjunctis.— (Distrib. Europa)

3. *Navicula minutissima*, Grunow. E. minimis cellularis lineari-oblongis, nodulo medio et linea longitudinali distincta, indistincte transversaler striatis.— Longit. 0,0112 mm. (1 $\frac{1}{8}$ " Engl.) Latit. 0,0028 mm. (1 $\frac{1}{8}$ " Engl.)

Hæ *Navicula* in specimins numeros in massa ex Diatomaceis exstitita; non sine dubio *Navicula kerguelensis* ad haec speciem est positum.— (Distrib. Europa orientalis.)

4. *Naviculae Spec.* Cellulis lanceolatis apicibus capitulisiformibus porrectis, nodulo centrali et linea media indistincta, marginibus distincte striatis ad medium non pertinentibus. Longit. 0,0278 mm. (1 $\frac{1}{5}$ " Engl.) Latit. 0,0056 mm. (1 $\frac{1}{8}$ " Engl.)

1. *Amphora gracilis*, Ehrenberg. Longit. 0,0357 mm. (1 $\frac{1}{3}$ " Engl.) Latit. 0,0196 mm. (1 $\frac{1}{17}$ Engl.)


1. *Pinnularia viridula*, Smith Brit. *Diatom.* 57, tab. xviii. fig. 179; *Robenh. Eur. Alg.* i. p. 214. Forma apicibus subito attenuatis, striis transversalibus lineam medium attingentibus distinctissimis. Longit. 0,0357 mm. (1 $\frac{1}{3}$ " Engl.) Latit. 0,0123 mm. (1 $\frac{1}{8}$ " Engl.)

Plantula Falaise (A. de Brebisson, leg.) et plantula Erlangensis in magnitudine consentiunt, sed different polis sensim attenuatis striis subtilioribus. (Distrib. Europa, America.)

2. *Pinnularia viridis*, Ehrenberg. Longit. 0,0648 mm. (1 $\frac{1}{4}$ " Engl.) Latit. 0,0133 mm. (1 $\frac{1}{8}$ " Engl.) Specimina paulo minora specimins formæ apud Erlangam comnunis. (Distrib. Europa, America, Persia.)

3. *Pinnulariae* species; cellulis ovato-ellipticis, polis rotundatis, nodulo cen-
FRESHWATER ALGÆ.—P. F. REINSCH.

1. Synedra Vaucherianæ, Kützing.; forma apicibus obtusis. Longit. 0,0448mm. (47" Engl.) Latit. 0,0028—0,0056mm. (74—78" Engl.)

Individua breviter stipitata basi radiatim conjuncta in Schizosiphonæ kerguelensi, et in Vaucherianæ cellulis. (Distrib. in Europa frequens.)

1. Eunotia pectinalis, Dilthey. Longit. 0,106mm. (10" Engl.) Latit. 0,00398mm. (34" Engl.) (Distrib. in Europa vulgaris.)

1. Denticula thermalis, Kützing., var. minor. Longit. 0,0168mm. (126" Engl.) Latit. 0,0056mm. (78" Engl.) Cellulæ in quoque latere 9is nodulis instructæ. (Distrib. Aquis calidis Galliae, Hungariae, et Italianæ.)

1. Cymbella gastroides, Ehrenberg. Longit. 0,0121mm. (79" Engl.) Latit. 0,0038—0,0056mm. (38—39" Engl.)

Specimina minora speciminibus e locis variis Germaniæ. (Distrib. Per totam Europam.)

PHYCOCHROMOPHYCEÆ.


Formam typicam tantummodo observavi in familia singula tricellulæ inter algas unicellulæres Hormosiphonæ adhaerentes. Diam. cellular. indivis. 0,0478mm. (47" Engl.)


1. Microcystis olivacea, Kütz., Tab. Phyc. i. tab. 9. Diam. cellular. 0,0041mm. (57" Engl.) Diam. familial. 0,006—0,0066mm. (31—33" Engl.)

Observavi tantum familias singulas inter alias algarum unicellulærum muscos adhaerentes. In colore quoque obscure olivaceo cum specim. Europæis consentit. (Distrib. Germania.)

2. Microcystis parasitica, Kütz., Tab. Phyc. i. tab. 9, fig. 1.

In physeumatum structura, magnitudine ac colore cellularum cum speciminiis Europæis et cum icones Kützingianæ maxime consentiens. Physeumata minora et majora, partim cohærentia in Nitellæ antarcticae cellulis affixa.
Diam. cellular. 0,003mm. (\(\frac{1}{8}\)" Engl.)  Diam. physeumatun 0,0278—0,112mm. (\(\frac{1}{8}\)—\(\frac{1}{8}\)" Engl.) (Distrib. Europa.)

1. **Gloethece involuta**, Reinsch in Journ. Linn. Soc. xv. 206; thallo non limitato inter algas minores disperso; cellulis oblongo-cylindricis utroque polo rotundatis, diametro transversali duplo longioribus, singulis aut geminis, tegmentum binis crassissimis distincte pluri lamellosis circum velatis, cytoplasmate pallide-aerugineo subtiliter granulosum, plurumque granulo singulo majore instructo. Longit. cellular. (e. indum. exter.) 0,0278—0,0333mm. (\(\frac{1}{8}\)—\(\frac{1}{8}\)" Engl.) Longit. cellular. (e. indum. inter.) 0,0218—0,0278mm. (\(\frac{1}{4}\)—\(\frac{1}{4}\)" Engl.) Longit. cellul. (siue indum.) 0,0112—0,013mm. (\(\frac{1}{8}\)—\(\frac{1}{8}\)" Engl.)

Inter algas minores muscos aquaticis insidentes. Hae Gloethece aliqua similitudine consentit cum G. monococcæ, Rabenh, Fl. Eur. i. p. 62=Gloeocapsa monococcæ, Kütz., Tab. Phyc. i. tab. 23, itidem reperta plerumque in statu uni- et bicellularis; quae species nova attamen est diversa indumenti structura valde distincte lamellosa et cellulis longioribus a Gloeth. monococcæ, cujus integumentum semper est structura homogenæ.

2. **Gloeocapsa magna**, Kütz., Tab. Phyc. i. tab. 22, fig. 7.

Cellulæ singulæ et geminæ sphæricæ colore intensive aerugineo-viridi densissime positæ phyeumatæ sphærica plerumque coherentia indumento colorato velata formantes. Cellular. diam. 0,028—0,041mm. (\(\frac{1}{4}\)—\(\frac{1}{4}\)" Engl.) Diam. physeumatæ 0,033—0,05mm. (\(\frac{1}{4}\)—\(\frac{1}{4}\)" Engl.)

Inter Scytonema castaneum, Kütz., in massis parvulis Hormosiphonti coriaceo adhaerentibus " prope Vulcan Covc." Non est mihi certissime, hanc plantulam pertinere ad Gl. magnam propter speciminum observatorium minimum numerum. (Distrib. Europa, Greenlandia.)

1. **Anacystis marginata**, Meneghini.

Familiae singulæ quarum diameter 0,17mm. (\(\frac{1}{4}\)" Engl.), inter Algarum massas minores natantes. (Distrib. Europa.)

1. **Leptothrix hyalina**, Reinsch in Journ. Linn. Soc. xv. 206; aggregata, cæspitulos dispersos et radicantes muscos aquaticis affixas formans, trichomatibus hyalinis, vaginis distinctissimis crassiss hyalinis, superne sæpissime vacus et in summo apertis, cellulæ tenuissimæ diametro aequalibus, cytoplasmate punctulato. Diam. trichomat. 0,0028—0,0041mm. (\(\frac{1}{4}\)—\(\frac{1}{4}\)" Engl.) Cæspitulum altitudo, 0,084—0,112mm. (\(\frac{1}{8}\)—\(\frac{1}{8}\)" Engl.)

In foliis muscorum.

Leptothrix radians, Kütz., Tab. Phyc. ii. tab. 59, proxima species distinguitor vaginis multo angustioribus cellulis crassioribus.

1. **Lyngbya major**, Kütz., Tab. Phyc. i. tab. 90, fig. 8; var. kergueleensis; trichomatibus inter alias algas dispersis subrectis, cellulæ intensive aerugineis subtiliter distincte granulata, diametro Splo—10plo brevioribus, vaginis amplis hyalinis (interdum fuscoseentibus) distincte 8—12—lamellosis, cellulæ intersticialibus
nullis. Diam. trichomat. (c. vagin.), 0,0361—0,0448mm. \( (\frac{3}{10} - \frac{1}{12} '')\) Engl.) Vaginar. crassitudo, 0,0084—0,0112mm. \( (\frac{1}{28} - \frac{1}{15} '')\) Engl.) Diam. cellular. 0,0196—0,0224mm. \( (\frac{1}{10} - \frac{1}{15} \) Engl.) Trichomatun longitudo 8—15mm.

Inter alius algas natantes et affixas in dispersis trichomatibus. (Distr. L. majoris in Europa orientali.)

Hujus formas cellulis cellulis interstitiis non interrupte cylindrum continum formant, diametro trichomatum aperture versus non decrescente, ultima cellula late rotundata, vaginae in trichomatum summiss utplurimum sunt apertae et cellulis vacue. In fere omnibus trichomatibus a me visis Microthamnii novi elegantis plantulas observavi, quae Lyngbyae sunt affixa radiculis seppe circum circa trichoma procurentibus.

Speciminae formae typicae ex mari Adriatico trichomata paulo sunt crassiora, saepissime occurrunt cellulas interstitialibus colore rubro-lutescente distinctis cellulis trichomatis.

1. Limnactis minutula, Kütz., Tab. Phyc. ii. tab. 63, fig. 1; var. trichomatibus rectis sensim attenuatis margine crenulatis, cellulis distincte separatis diametro triplo-quadruplo brevioribus, cytioplasmate dense grossius granuloso, cellulis summis diametro usque quadruplo longioribus, hyalinis distinctis, vaginis hyalinis, cellulis perduantibus sphaericis cellularum diametro æqualibus. Diam. trichomat., 0,0056—0,0076mm. \( (\frac{3}{10} - \frac{1}{5} '')\) Engl.)

In Schizosiphontis kerguelenHs trichomatibus in esespitulis parvulis usque 0,28mm. \( (\frac{1}{12} '')\) latis. Distr. Gallia, Germania, Dania, Suecia, Britannia.

1. Dasyactis Kunzeana, Kütz. Diam. trichomat. 0,0056—0,0068mm. \( (\frac{3}{10} - \frac{1}{9} '')\) Engl.) Diam. cum vagin. 0,0112mm. \( (\frac{1}{2} '')\) Engl.)

In physeumatibus parvulis singulis dispersis in Nitella antarcticae cellulis nidulantibus. (Distr. Germania.)

1. Mastigothrix articulata, Reinsch in Journ. Linn. Soc. xv. 207; trichomatibus prolongatis subcylindrica basin versus paulo incrassatis distincte articulatis, articulis inferioribus indistinctioribus, superioribus loculamentis distincte disjunctis diametro subœqualibus, cytioplasmate granulis majoribus instructo, sporis perduantibus obovalibus dimidio (et paulo minus) trichomatis latitudinis æquantibus. Diam. trichom. (in basi) 0,0168mm. \( (\frac{1}{12} '')\) Engl.) Diam. trichom. (in superiore parte) 0,0112mm. \( (\frac{1}{2} '')\) Engl.)

In singulis trichomatibus partim in superficie partim in strato summo physeumatibus Hormosiphonitis leptosiphonitis, s. n., nidulantibus observatum.

Mastigothrichi fuscus, Kützing, simulilla in forma ac crassitudo trichematum distinguatur: cellulis distincte articulatis cellulis perduantibus minoribus a cellula infima sejunctis. Cellularum M. fuscic cytioplasmate subtiliter granulosum, cellula perduanas diametro cellularum æquantibus, basi lata (interdum intus excavata) cellulae infimae trichomatis arctissime adpressa, cytioplasmate homogeneo.

2. Mastigothrix æruginea, Kütz. Trichomata vix discernenda a speci-
minibus Europaeis in thallo Chactophorarum et Nostocidinis nidulantibus. In singulis trichomatibus inter Tolypothrichis flacceidæ, Kütz., caespitulos nidulantibus. In singulis trichomatibus cellulæ inferiores breviiores et indistinctius disjunctæ. (Distribr. Germaniæ.)

3. Mastigothrix minuta, Reinsch in Journ. Linn. Soc. xv. 207; trichomatibus distincte articulatis apicibus rectis, articulis inferioribus dimidio latitudine brevioribus (et paulo magis), sporis perdurantibus obovalibus usque subsphaericis diametro dimidio trichomatum latitudinis sequante. Latit. trichomatum (in basi) 0,0081—0,0097mm. (2\(\frac{1}{3}\)—2\(\frac{1}{3}\)" Engl.) Diam. spora perd., 0,0041mm. (\(\frac{1}{3}\)"

Inter algas minores (Leptothrix, Coleochæte) in foliis muscorum aquaticium insidentes.

A Mastig. ærginæa, Kütz., dimensionibus duplo magis minoribus distincta species. In trichomatibus singulis vaginae insina pars paulo incrementata et lamellosa, sed cellula perdurans non inclusa a lamellis.

1. Hydrocoleum Eatoni, Reinsch in Journ. Linn. Soc. xv. 207; fasciculis liberis inter alias algas dispersis usque ad 18mm. longis in summis sensim attenuatis, trichomatibus olivaceo-viridibus (a latere visis), Sis—12is consociatis et leviter contortis subtillissime distincte articulatis, cellulæ distinctis omnibus homogeneis, diametro quintuplo brevioribus, cytioplasmate dense punctulato, vaginis aehrois membranacæis duris subtilliter lamellosis, trichomatum fasciculi latitudinis dimidio crassis. Diam. fasciculi (in medio parte) 0,056—0,086mm. (\(\frac{1}{8}\)—\(\frac{1}{5}\)" Engl.); (in summis) 0,0221—0,0333mm. (\(\frac{1}{4}\)—\(\frac{1}{3}\)"

Diam. trichomatum 0,0041—0,0056mm. (\(\frac{1}{3}\)7—\(\frac{1}{7}\)" Engl.) Vagin. exsimentulo 0,0028mm. (\(\frac{1}{7}\)"

Inter muscos aquaticæs et allices algæ (Vaucheria, Schizosiphon) immixtum.

Hoc Hydrocoleum consentit cum II. helveciae, Nägeli, in fasciculorum dispositione, sed differt dimensionibus fasciculorum quintuplo magis majoribus, trichomatum diverso colore et cellulis brevioribus.

Tab. IV. Fig. i.—1, fasciculi media pars (\(\frac{3}{6}\)0); —2, fasciculi summa pars (\(\frac{3}{6}\)0).

Nostoc hydrocoleoides, Reinsch in Journ. Linn. Soc. xv. 208; subtillissimum, phuscumate iu modo Hydrocoleorum tertiliforme prolongato peridermate distincto hyalinæ ciuco ex trichomatibus et rectis et paulo contortis (3is—10is) fasciculatim conjunctis formato, trichomatibus pallide ærginæis parallelis leviter contortis vaginulis hyalinæ velatis, cellulæ vegetativis post divisionem diametro paulo longioribus, cytioplasmate punctulato, cellulæ perdurantibus ceteris paulo majoribus sphaericis in trichomatibus sparsi. Diam. trichomat. 0,0022—0,0028mm. (\(\frac{1}{4}\)0—\(\frac{1}{4}\)"

Diam. fasciculi (in media parte) 0,0112—0,224mm. (\(\frac{1}{8}\)9—\(\frac{1}{8}\)"

Inter Tolypothrix Nagelii, Kütz., et in massa parvula Diatomæearum foliis muscorum aquaticium et Nitellæ adhaerente.

Hæc planula paradoxa secundum structuram et phuscumatis et trichomatum
Nostochidis generis bonam speciem se ostendit. Trichomata integamento communii distinctissimae clausa vix sunt discernenda a trichomatibus specierum singularum. Species unica Nostochidis generis hucusque cognita physcumate filamentosa, a ceteris speciebus physcumate sive plano sive sphærico sat distincta.

Tab. IV. Fig. iv. — 1, physcumati pars media (\(\frac{3}{4} \)) ; — 2, physcumatis summa pars, trichoma singulum usque in apicem excurrens (\(\frac{3}{2} \)).

2. Nostoc polysaccum, Reinsch in Journ. Linn. Soc. xv. 208 ; physcumate coriaceo irregulariter sphærico et subrectiformi colore subaurico-fusco magnitudine seminis sinapeos ad Pisi sativi, intus loculamentoso ap dissepimentis coloratis lamillosis et radialiter et transversaliter positis percurso, peridermate firme coriaceo fuscescente, trichomatibus centralibus paulo flexuosis, cellulis sphæricis colore pallide olivaceo, cytiôdermate distincte dupliciter striato, cellulis perdurantibus sphæricis ceteris cellulis paulo latoribus. Diam. cellular. 0,0011mm. (\(\frac{3}{4} \) Engl.) Diam. cellular. perdurant. 0,0056mm. (\(\frac{1}{2} \) Engl.) Diam. physcumatis, 2,5—3mm.

Forma (an status peculiariis evolutionis ?). Physcumate ex trichomatibus brevi oribus vaginis amplis hyalinos homogenis (in modo Hormosiphontia) inclusis laxisse cohœrentibus exstituto.

Tab. IV. Fig. i.— 1, Physcumatis sectionis transversalis pars usque ad peripherym physcumatis se pertincens, vesiculae trichomata includentes, radialiter dispositae, parietes vesiculorum subcolorate (\(\frac{3}{4} \)). 2, Formae physcumatis pars peripherye, sectio transversalis ; physcumam ex vesiculis numerosissimis, trichomatibus singulis inclusis formatum, trichomata breviora in modo Hormosiphontia indumento crasso subhyalino inclusa (\(\frac{3}{4} \)). 3, Specimina plantulae (in spíritu vini asservatae) magnitudine naturali.

3. Nostoc polysporum, Reinsch. in Journ. Linn. Soc. xv. 208 ; physcumate sphæricum magnitudine pisi minoris, indignato crasso hyalino distinctissime plurilamelloso velato, trichomatibus laxius positis subcoentortis pallide ærugineis, cellulis sphæricis aëretissime conjunctis, post divisionem transverse ellipticis, cellulis perdurantibus numerosissimis sphæricis ceteris cellulis duplo majoribus cytiôdermate crasso. Diam. cellular. 0,0028mm. (\(\frac{3}{5} \) Engl.) Diam. cellular. perdurantium 0,0011—0,0055mm. (\(\frac{1}{2} \) Engl.) Diam. physcumatis, 3—4mm.

Inter aliam algas fluitans (in paucis speciminiis observatum).

A persimilibus : N. gymnosophrium et N. corneum, Kützing, Tab. Phycol. ii. tab. 3, fig. 3, 4, differt indumento plurilamelloso, cellulis perdurantibus numerosi oribus.

4. Nostoc species, e minoribus, physcumate irregulariter polyedrico, textura cartilaginea, colore rubro-fusco, trichomatibus contortis, cellulis subsphæricis aëretissime adjacentibus, cellulis perdurantibus sphæricis ceteris cellulis paululo majoribus cytiôdermate crasso distincto. Diam. cellular. 0,003—0,0041mm. (\(\frac{3}{5} \) Engl.) Diam. physcumatis 1,8mm.

N...
Inter Zygnemam. In a freshwater pool, Swain’s Bay.
In textura, forma irregulari physceumatis minus in trichomatum forma N. eduli Berkeley persimilc.
Specimen unicum observationem speciem accuratus constitutendam mihi non permittit.

5. Nostoc paludosum, Kütz., Tab. Phyc. ii. tab. 1, fig. 2. Specimina singula observata insidentia plantulis Bulbochætis foliis muscorum insidentibus et in trichomatum erassitudine et in cellularum forma maxime consentiunt cum specimenibus Germanicis et cum ícono Kützingiana. Diam. cellular. trichomat. 0,0011—0,0018mm. 1590—1390”” Engl.)

6. Nostoc leptonema, Reinsch in Journ. Linn. Soc. xv. 209; physceumatis usque semini sinapeos aequalibus sphæricis paulo elasticis arctissime conjunctis coherentibus, indumento exteriori suberasso hyalino homogeneo, trichomatus prolongatis multipliciter contortis laxius (in majoribus) et densius (in minoribus) intricatis, cellulis oblongis polis attenuatis laxo se adingentibus; cellulis perdurantibus sphæricis usque subovalibus sparsis ceteris cellulis duplo paulo magis majoribus. Diam. cellular. 0,0015—0,0021mm. (1390—810”” Engl.) Diam. cellular. perdur. 0,0056mm. (1390”” Engl.) Diam. physceumatis 0,2—1,5mm.
In muscorum caulibus et foliis physceumatis coherentibus, partim corpora uvaformia formans.

A Nostochidæibis physceumate sphæricie Nostoc auriunc, Kütz., Tab. Phyc. ii. tab. 1, fig. 4 (planta marina) proximum in magnitudine et textura physceumatis ac erassitudine trichomatum; hoc Nostoc differt trichomatus brevissimis valde curvatis cellulis perdurantibus minoribus.

Inveniuntur interdum muscorum foliis insidentia corpora ex parenchymatico conjunctis physceumatis varia magnitudine formata.

Forma: Crystallophorum. Physceumate corporibus crassissatis subsphaericiis inclusis ex crystallis (Ferri oxydati?) radialiter dispositis formatis. Diam. corpor. crystallisat. 0,0224—0,055mm. (1390—42”” Engl.)

1. Anabaina confovoides, Reinsch in Journ. Linn. Soc. xv. 209; e subtillioribus stratum tenue formanis, trichomatus prolongatis rectissimis parallelijs in muceo communi nidulantibus, cellulis distinctissimis rectangularibus usque subquadricis, spatiiis interloculatis angustioribus distinctis sejunctis, diametro transversali paulo longioribus (usque duplo), cytoplasmate subtilliter granuloso colore pallide aereigineo; cellulis perdurantibus ellipticis ceteris cellulis paulo latioribus et longioribus. Diam. cellular. 0,0022—0,0028mm. (3190—1390”” Engl.)
In stratis tenrioribus inter alias Algas.
Hæc species peculiaris distinguittur ab omnibus hæcusque cognitis speciebus cellulis angulosis (næc-sphaericis næc ellipticis).
2. *Anabaina involuta*, Reinsch in *Journ. Linn. Soc.* xv. 299; libere natans, e tenuioribus, trichomatibus prolongatis multipliciter involutis, cellulis sphaericis et ellipticis (in statu indiviso) intermixtis, cytioplasmate subtiliter granuloso, cytiodermate extrorsum mucro hyalino tenui velato, cellulis perdurantibus (sporis) sphaericis sparsis ceteris cellulis paululo latioribus, cytiodermate crasso distincto, cytioplasmate granuloso. Diam. cellular. 0,0024—0,0032mm. (\(\frac{4}{15}\)—\(\frac{7}{15}\)" Engl.) Diam. cellular. perdurant. 0,0041mm. (3\(\frac{4}{15}\)" Engl.)

In trichomatibus singulis inter alias algas *Phyocolonaceae* interiectis.

Ab *A. circinata* in trichomatium forma persimili differt cellulis quadruplo magis minoribus, cytioplasmate subtiliter granuloso.


In physeumatibus singulis inter *Schizosiphonis kerguellensis* crepitae.

Physeumatum observatum duorum procerant intus physeumata singula filialia ellipsoidica trichomatibus brevissimis subrectis et leviter contortis indumento crasso hyalino decolorato velatis densissime repleta, indumento communi distincto velata. Physeumatibus externa pars plerumque ex trichomatibus physeumatium filiali trichomatibus simillimis formata. Superficies physeumatum est vestita plantulis varis egregie *Stigeoclonio subtili*, n. sp., singulis foliis *Euaecidis Künzelaue* et *Tolythrichis flaccidae*.

Tab. IV. Fig. vii.—1, physeumata duas magnitudinis naturali.—2, trichomatis singulis pars maxime aucta, *a*. cellula perdurans (\(\frac{2}{15}\)°).—3, physeumatis sectionis transversalis pars exterior, eum physeumate filiali singulo trichomatibus brevissimis indumento crasso velatis dense repeleto, *a*. indumentum exterior physeumatis.

2. *Hormosiphon coriaceus*, Kütz., *Tab. Phyce. ii., tab. 14, fig. 1*; var. *kerguellensis*, Reinsch in *Journ. Linn. Soc.* xv. 211; physeumatibus irregulariter expanso subplano subcoriaceo colore obscurum rubro-fusce, in sectione transversali ex stratis 5is—7is formato, peridermato (sectionis transversalis physeum.) lateris superioris cassioide luscelloso fusco, lateris inferioris peridermato tenuore, trichomatibus vermiculiformibus contortis, vaginis fusce amplis distinctissimis pluri-lamellosis, cellulis sphaericis colore pallide aruginceo. Diam. cellular. 0,0041 mm (\(\frac{2}{10}\)° "Engl.) Diam. trichom. (cumin vaginis) 0,0224—0,0278 mm. (\(\frac{3}{15}\)°—\(\frac{7}{15}\)° "Engl.) Physeumatis crassitudo 0,139—0,188 mm. (\(\frac{1}{4}\)°—\(\frac{1}{2}\)° "Engl.)

Specimina majora in spiritu vini asservata ac in eharta intenso.

Marshy ground near Vulcan Cove. (*Distri. Gallia, Germania, Italia.*)
1. **Schizosiphon kerguelensis**, Reinsch in *Journ. Linn. Soc.* xv. 211; cespitosus, cespitulos confertos radialiter dispositus usque 6 mms altos in museis aquaticis affixos formans, trichomatibus radiantibus e basi repetito dichotomoramosissimis in summis fastigiatis, pseudoramulis ultimis eorymbosis fusciculatis apicibus paulatim subangustatis, vaginis pseudoramulorum ultimorum fuscis integerrimis cellularum diametro subequaliter erassis, vaginis trichomatuum inferioris partis crassioribus dense subtiliter lamellosis, cellulis omnibus æqualibus distinctis, diametro subequalibus apicem pseudoramulorum versus non decrescentibus, cytoplasmate colore pallide olivaceo-viridi granulis majoribus distinctis dense repleto, cellulis perduranibus singulis aut compluribus subspatibus diametro cellularum æqualibus. Diam. trichomat. (in diversis locis mensuratus) 0,0168—0,0333 mm. (\[1\frac{1}{4}\]—\[\frac{1}{3}\] mm. Engl.) Diam. pseudoramulorum ultimorum 0,013—0,0168 mm. (\[\frac{1}{3}\]—\[\frac{1}{12}\] mm. Engl.)

Hæc in museis aquaticis caules densissime pelviculae formiter inducens.

Hæc species elegantissima in cæspitulis museis in caliculium vitreo inclusis copiosissima est reperta, in primis speciminiis majoris caules densissime erant obtecti. Cellularum funiculus singulis locis haud raro et simpliciter et dupliciter contortus, quæ partes trichomatuum paulo sunt incerassæ; basin trichomatum versus cellularum funiculi plerumque sunt contorti; trichomatuum infimæ partis vaginarum plurilamellosæ et trichomatuum infima pars cuneiformiter angustata in filum singulum produea.

1. **Tolypothrix flaccida**, Kütz. *Tab. Phyc.* ii. tab. 32, fig. 2. Formæ cellularis diametro transversali æqualibus et paulo longioribus. Diam. trichom. 0,0056—0,0081 mm. (\[\frac{3}{4}\]—\[\frac{1}{8}\] mm. Engl.)

In cæspitulis parvulis in foliis muscorum aquaticorum insidens. (Distrib. T. flaccida, Britannia, Gallia, Germania, Helvetia.)

Hæc formæ sunt peculiæ ut in forma typica, cellulae perdurantes complures postpositae, cellulae complures funiculi trichomatuum sepissime interstitiis hyalinis sunt disjunctæ et trichomatuum summa pars cellulis vacua.

2. **Tolypothrix Nægelli**, Kütz.

Hæc Tolypothrix a forma typica est distincta trichomatibus paulo tenuioribus, pseudoramulis crebrioribus, quæ sunt brevissimæ in singulis trichomatibus; summa pars cellularum perdurantis singulæ in pseudoramulorum basi nonnull quam est truncata.

Inter Schizosiphontia cæspites et affixi et fluctuantæ cæspituli. (Distrib. T. Nægelli, Helvetia.)


Var. ramosissima, Reinsch in *Journ. Linn. Soc.* xv. 211; trichomatibus Schizosiphonti incidentibus subtilissimis, funiculis et submoniliformibus et subcylindraceis pallide ærugineis, vaginulis amplis hyalinis cinetis; pseudoramulis numerosis erectis flagelliforme attenuatis. Diam. trichom. (cum vaginulis) 0,0022—0,0056 mm.
FRESHWATER ALGAE.—P. F. REINSCH. 69

\[ \text{Diam. trichom. intern. } 0,0011 \text{ mm. (} \frac{1}{14} \text{ mm. Engl.)} \]

Altitudo plantulae 0,8 mm. (\( \frac{3}{14} \) mm. Engl.)

In *Schizosiphon* *kerguelensis* trichomatibus in caespitulis dispersis. (Distrib. *S. hyalina*, Montibus Europæ.)

Ille formam peculiarem, verisimile speciem propriam, tantummodo in paucis sed bonis speciminiibus observavi, quae erant apta ad constituendum genus. Est similitudo maxima cum *Schizothr. hyalina* in triebomatum et vaginarum crassitudine et cellularum funiculi forma, quamquam incromenti modus et loci natalis est diversissimus.

1. *Sirosiphon vermicularis*, Reinsch in Journ. Linn. Soc. xv. 211; 8 minimus, caespitulis parvulis trichomatibus subrectis summis attenuatis procumbentibus intertextis, plus minusve ramosis, ramulis alternantibus apicem versus senessim attenuatis ramulis summis diametri trichomatis primarii dimidio tenuioribus, trichomatum cellularum uniseriatis arctissime conjunctis, cytiodeermate suberessente, cytioplasmate subtubulato granuloso, ramulorum cellularum apicem ramulorum versus augulosis confervoideis, vaginis (trichomat. primarior.) tenuioribus (vix cellular. diametri octavam partem) simpliciter striatis cellularis arctissime inclusentibus; cellulis interstitialibus nullis. Diam. trichom. primar. 0,0112 mm. (\( \frac{1}{14} \) mm. Engl.) Diam. ramulorum 0,0056 mm. (\( \frac{1}{14} \) mm. Engl.)

In caespitulis singulis inter alias *Sirosiphon* *Hormosiphonti* coriaceo prope Vulcan Cove adherentes.

Ab omnibus *Sirosiphontibus* lucusque cognitiis species minutissima. *Sirosiphon* in ramulorum cellularis diversis a cellulis trichomatis primarii. *Sirosiphonti* *sylvestri*, Itzigsohn. proximus sed sat distinctus trichomatibus tenuioribus cellularis cytiodeermate tenuiore indistincte articulatis.

2. *Sirosiphon pulvinatus*, Kütz.; var. cellularis trichomatis primarii cytiodeermate crassissimo colorato absque ordine biseriatis cellularum ramulorum uniseriatis aut absque ordine biseriatis. Diam. cellular. 0,0056—0,0068 mm. (\( \frac{1}{14} \) mm. Engl.) Diam. cellular. c. vagina 0,013 mm. (\( \frac{1}{14} \) mm. Engl.) Trichomat. crassit. 0,0224—0,0306 mm. (\( \frac{1}{14} \)—\( \frac{1}{6} \) mm. Engl.) Trichomata perpauca dispersa. Forsan propria species. (Distrib. *S. pulvinati*, Europa, Americ. boreal.)

Var.; trichomatibus irregulariter ramosis, ramulis apice obtusis numerosus subcontortis, cellulis omnibus equalibus subovalibus, cytiodeermate tenuiore hyalin decolorato, irregulariter biseriatis. Dimensionibus isidei praeed.
alibus? Diam. cellular. 0,0041—0,0056 mm. \((\frac{3}{5} - \frac{1}{3})''\) Engl.) Trichomat. crassit. 0,0112—0,013 mm. \((\frac{3}{10} - \frac{1}{10})''\) Engl.)

In trichomatibus singulis inter alias Sirosiphontes et inter Seytonemam castaneum inter Hombosiphontem eoritae (near Vulcan Cove).

S. celutius et S. hormoides Kützing trichomatibus erassioribus fasiculato-ramosis et diehotome ramosis distincti. S. panniformis, Kütz., distinguish ramis elongatis trichomate primario tenuioribus et cellulis interstitialibus.

4. **Sirosiphon kerguelensis**, Reinsch in Journ. Linn. Soc. xv. 212; trichomatibus ramosissimis, trichomate primario proeminenti ramis irregulariter ramosis ramulis ultimis apicem versus æqualiter latis, cellulis trichomatis primarii ac ramulorum ovalibus usque irregulariter sphæricis in seriem simplicem dispositis, intervallis hyalinis usque cellulis hæmis longitudinali æquantibus disjunctis, articularibus tubuliformibus (laenus tubuliformibus in muco vagino) conjunctis, eytioplastate subhomogeneo dilute ærugineo, cytiodermate subtilli deecolorato (cellularum trichom. primar. crassiæ hyalinis deecoloratis subhomogeneis in series cum ram. primar. sublamelliosis anreis). Diam. trichom. primar. 0,0278—0,0333 mm. \((\frac{3}{10} - \frac{1}{10})''\) Engl.) Diam. ramulorum 0,0218 mm. \((\frac{3}{10} - \frac{1}{10})''\) Engl.) Diam. cellular. 0,013 mm. \((\frac{1}{10} - \frac{1}{10})''\) Engl.)

In trichomatibus singulis inter alias Sirosiphontes. Cum precedente.

Hie Sirosiphon primo pro formam propriam Sirosiphontis ocellati habitu, eni est persimilis in trichomatis rami faciatio et erassitudine, sed propter propriam de eeteris Sirosiphontibus discendentem structuram trichomatis propriam speciem se offert.

Tab. IV. Fig. vi.—1, trichomatis pars snmma \(\frac{1}{10}\);—2, trichomatis pars maxime aucta, \(\frac{1}{10}\).

In singulis speciminibus observavi Sirosiphontem sequentem quem haec Sirosiphontis varietatem puto. Trichomata ramosa ramis subintegris adscendentibus, cellulis ovalibus usque subsphæricis, intervallis hyalinis disjunctis. Articuli tubuliformes cellulas singulas conjungentes plurimum desunt.

5. **Sirosiphon Oliveri**, Reinsch in Journ. Linn. Soc. xv. 213; caespitulis parvulis, trichomatibus adscendentibus prolongatis subramosis, ramulis singulis (et raro ramul. complurihibus brevioribus approximatis) et leviter cortortis, e serie simplice cellularum formatis, cellulis ovalibus diametro dimidio brevioribus (et paulo magis et minus), cytiodermate firmo crasso extrorsum frysecente, cytioplastate subhomogeneo obscure ærugineo, vagina membrandacea simplici subtenui, cellulis interstitialibus nullis. Diam. trichomat. (cum vaginis) 0,0196—0,0223 mm. \((\frac{3}{10} - \frac{1}{10})''\) Engl.)

In caespitulis parvulis inter Hombosiphontem eoritae cum caespitulis Seytonem. castanei intermixtis; cum preced.
S. celutino, Kütz., et S. hordioide, Kütz., speciebus proximis in cellularum forma ac dispositione differt trichomatibus subintegris, vaginis teniioribus.

Tab. IV. Fig. ii.—1, trichomatibus summa pars (1<sup>8</sup>'), —2, trichomatibus pars maxime acuta, vaginae duplciiter striata, cellularum cytoiiderma duplciiter striatum, cellula singula longitudinaliter divisa (1<sup>8</sup>'),

6. Sirosiphon secundatus, Kützing, Tab. Phycol. ii. tab. 37, fig. 1; forma trichomatis primario partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongatis apice incrassato; cellularis parvulis trichomatis primarii partim incrassato, ramis prolongati
adhaerentibus. Inveniuntur familiae et viridos et fuscescentes. (Distrib. Germania, Helvetia.)

1. Oocystis Nægeli, Al. Braun. Longit. cellular. 0,0278—0,0306 mm. ($1_{15}^{1} - 1_{9}^{1}$'' Engl.) Latit. cellular. 0,0168 mm. ($1_{12}^{1}''$ Engl.)

Magnitudine ac forma cellularum ac cytoplasmatis textura maxime consentient speciem cum speciminibus Germaniciis. Indumentum familiarum bi- aut quadri-cellularium distincte dupliciter striatum.

In singulis familiae in massa parvula Phycocromophycearum unicellularium Hormosiphonti adhaerente; marshy ground near Vulcan Cove. (Distrib. Germania).

1. Dictyosphærium Ehrenbergii, Nægeli; cellulis paulo majoribus. Diam. cellular. 0,0064—0,0112 mm. ($1_{8}^{1} 0_{0}^{1}$'' Engl.)

Inter algas varias muscorum foliis insidentes. (Distrib. Europa meridionalis.)

1. Pediastrum ellipticum, Ralfs Brit. Desm. ; var. æqualibus; coenobio elliptico continuo, cellulis disci regulariter 5-6-gonis, membrana hyalina achroa laevissima, cellulis periphericiis leviter obtusangulato-obtusangulato-emarginatis, lobulis æqualibus cellulæ dimidio brevioribus apice truncatulis. Longit. maxima coenobii 0,278—0,336 mm. ($1_{8}^{1} 0_{0}^{1}$'' Engl.) Diam. cellular. 0,0278—0,032 mm. ($1_{15}^{1} 0_{0}^{1}$'' Engl.)

In speciminibus duobus inter Hormosiphontis physeumata observatum. (Distrib. P. elliptici, Britannia.)

Asterosphærium, genus novum Protococcacearum. Coenobium sphaericum, intus excavatum, libere natans, e cellulis angulosis parenchymaticæ actissime conjunctis (sient in Pediastris), extrorsum pyriforme ampliatis et subito angustatatis formatum.

1. Asterosphærium elegans, Reinsch in Journ. Linn. Soc. xv. 213. Coenobium sphaericum e cellulis 61 ant 128 formatum. Diam. coenobii ex cellulis 128 formati 0,144 mm. ($1_{8}^{1} 0_{0}^{1}$'' Engl.)

Inter algas minores libere natans (in paucis speciminibus observatum.)

Hoc genus proxime se continuat generibus Protococcacearum coenobio ex cellulis parenchymaticæ conjunctis formato (Hydrodictium, Pediasstrum, Catastrum, Staurogenia). Coenobii dispositio fit in quoque hemisphaera secundum seriem: 1, 6, 11, 16, 21, 26 (seriem arithmetican primo ordinis cum numero differentiali=5). Quo dispositionem modo hoc genus discedit a Pediastris, generi proximo. Pediasstrorum plurimum specierum dispositio eænobiæ fit, in speciminiis regulariter formatiis, secundum seriem: 1, 5, 10, 16 (seriem arithmetican secundae ordinis cum seric differentiali prima: 4, 5, 6, et numero differentiali=1).

In Asterospharii eænobiis legem dispositionis cellularum, ut fere fit, ad explicanda coenobia pervenire in omnibus casibus, certissime puto; sicut per analogiam in Protococcacces eænobio pluricellularii sphaericio (Catastrum et Staurostrum), quorum eænobia abnormiter disposita rarissime observatur possunt.

* άστρα Stella, σφαιρα globus.
Omnium speciminum observatorum cellulae erant vacae, veluti sape observamus in Pediastris majoribus.

Tab. IV., Fig. viii.—1, specimen integrum ex cellulis 128 exstitutum (\(\frac{3}{4}^0\)); — 2, cœnobii marginis pars magis aucto (\(\frac{1}{2}^0\)).

1. Gloeocystis botryoides, Negeti, Gall. einzell. Alg. Cellular. diam. 0,0022—0,004 mm. (\(\frac{1}{4}^0\) — \(\frac{1}{2}^0\)"" Engl.) Thallus gelatinosus, cellulis singulis et quaternatis, tegumentis erasiss hyalinis distinctis.

In massis parvulis cum aliis algis Phycochromaceis inter Hormosiphontem coriaceum var., prope Vulcan Cove. (Distrib. Europa orientalis.)

2. Gloeococcus species. Diam. cellular. 0,004 — 0,0056 mm. (\(\frac{1}{4}^0\) — \(\frac{3}{4}^0\)"") Engl.) Cellulae subsphæricæ in familiis 4- et 8-cellularibus consociatae, cytioplasmate colore intensive viridi, locello hyalino decolorato singulo instructo.

In familiis singulis dispersis inter alias algas Hormosiphonti coriaceo, var. adhaerentes.

1. Polyedrium tetræetricum, Negeti. Cellulae angulis acutiusculis (vix aculeolatis), marginibus lateribus subrectis. Diam. cellular. 0,0224 mm. (\(\frac{1}{4}^0\)"") Engl.)

In speciminibus singulis inter alias unieellulares Hormosiphonti coriaceo var. adhaerentes, prope Vulcan Cove. (Distrib. Europa australis.)

2. Polyedrium minimi, Al. Braun, Alg. unicellul., p. 94, forma; cellulae regulariter tetragono (quadratæ) marginibus lateribus omnibus aequalibus (vix leviter repandis), angulis obtuso rotundatis. Latit. 0,0006—0,0075 mm. (\(\frac{1}{4}^0\) — \(\frac{2}{1}^0\)""") Engl.)

In speciminibus singulis in massa parvula algarum Zygonio toruloso var. adhaerentis. (Distrib. P. minimi Europa orientalis.)

Polyedrium Pynacidium, Reinseh, Algenflora von Franken. 1866, p. 80, tab. iii. a.—d., complures formas comprehendit. Specimen fig. d. delineatum est P. minimum Al. Braun, “lateribus alternis profunde emarginatis;” specimen fig. a. delineatum eum speciminibus Kerguelensibus exacte consentit; specimen fig. b. formam representatun marginis aequaliter emarginatis.

1. Chlamydococci species, Reinseh in Journ. Linn. Soc. xv. 211; cellulis globosis vel ellipticis magnitudine paulo diversis, cytioplasmate et sub-homogeneo et granuloso (granulis amylaceis dense repleto), in statu progressore corpusulis sphæricis majusoribus colore intensive luto-purpurascence binis-quinternis instructo (cellulis filiulisibus, Zoogonidiis), cytiodermae hyalino erassissimo plurilamellosi (interdum unilaterali increassato). Cellulae. diam. (ante divis.) 0,0278—0,0333 mm. (\(\frac{1}{4}^0\) — \(\frac{1}{2}^0\)"") Engl.) Diam. post divisionem 0,0196—0,0224 mm. (\(\frac{1}{2}^0\) — \(\frac{1}{2}^0\)"") Engl.)

Hab. in foliis musci aquatrici.

Hujus plantulae vera natura initio mihi erat aliquid dubia. In cellularum plurimum magnitudine cellulas filias non procercentium, cytioplasmatis colore, cyti-
dermatis structura valde consentiens cum Chroococcus aureo, nihilominus inveniuntur cellulas singulas cytoplasmatibus valde diversa structura a Chroococcus. Sed post observatis cellulis minoribus (Zoogonidiis) sine dubio in cohaerentia organica eum cellulis majoribus Chroococcusoides, hujus plantulce posito in systemate est constituta. Quae cellulae forma late pyriformi, polo subito angustato, cytiomermate tenui, cytoplasmate homogeno colore intensive purpureo erant inventae in consortio cellularum majorum cytoplasmate vacuarum. In singulis cellulis sunt inclusae complures cellulae filiales sphariae colore luteo-purpureo, aliis cellulis sunt eorpuscula bina (interdum singularis, cellulae superiores). Nonnullarum cellularum cytoplasme densissime est repleto corpusculis amylaceis. Chlamydomococii species due cognitae differunt cytiomermate multo tenuiore non lamellosa. Cellulae filiales duae (3/8 mm); cellula singularis cytiomermate unilateraliter incassato, cytoplasmaine cellulis filialibus (gonidiis) a. compluribus (3/6 mm); cellula singularis cytiomermate tenuiore, cytoplasmate corpusculis amylaceis densissime repleta (3/6 mm). Cellulae minor pyriformis (Zoogonidium).

1. Cosmarium pseudo-nitidulum, Nordstedt, Bydr. till Kænnesd. om syd. Norges Desmid. Lund. 1872, tom. ix., p. 46, tab. i., fig. 4); var. semicircularum semicircularum cytiomermata in apice intus nudo singulari incassato. Longit. 0,033 mm. (3/8 mm Engl.) Lat. 0,0248 mm. (3/8 mm Engl.)

In specimine singulo in massis minoribus algarum variarum in muscis aquaticis adhærentibus.

2. Cosmarium crenatum, Bréb. var. kerguelense; cellula in ambitu late ovali, diametro longitudinali diametro transversali paulo longiore (3/8), semicellulis subsemicircularibus basi arctissime se adtingentibus incisura non disjunetis, margine undato exciso, gibberulcis truncatulis 14is—15is instrueto, superficie verruculis in seriebus radialibus dispositis verrueulosa, areola media laxi, semicellulis et vertice visis ambitu ellipticis (in laterum medio leviter tumidis), isthmi latitudo 3 diametri transversalis. Diam. transv. 0,033 mm. (3/8 mm Engl.); diam. longit. 0,039 mm. (3/8 mm Engl.) Isthmi latitudo 0,0067 mm. (3/8 mm Engl.)

In specimen singulo observatum inter Faucheria et Schizothricheae espices. (Distrib. Europæ, America borealis, Greenlaand.)


1. Staurastrum kerguelense, Reinsch in Journ. Linn. Soc. xv. 214; semicellulis a latere late trapezicis angulis longe productis, margine terminali subrecto a vertice visis regulariter trigonis, marginibus lateralius rectis angulis in eornulum rectum margine regulariter crenulatum longe productis, eornulis summis bispinosis, cytiomermate levii seriebus tribus verrucularum marginibus semicellulis
parallelis et in cornulis excurrentibus ornato, isthmī latitudine quinta pars cellular latitudinis. Latit. cellulæ 0,1038 mm. (\(\frac{1}{2}''\) Engl.); isthmī latitudo 0,0146 mm. (\(\frac{1}{11}\)'' Engl.)

Observavi tantum speciminis duæ in massa algarum museis aquaticis adhaerentem.

*S. gracili*, Ralfs. simile semicellularum forma, sed differt dimensionibus duplo magis majoribus, cornulis multo gracilioribus.

E Familia pulcherrima Desmidieae carum specierum numerosissima sunt reperta tantum *Cosmaria* duæ hac Staurastrum Palmoglae species et *Euastrum binale* var.

1. *Euastrum binale*, Turpin, var. gibusum; semicellulis in sciagraphia trapezicibus, margine terminali recto in medio levissime emarginato, angulis obtusis non productis, marginibus lateralis gibberulis binis aequalibus rotundatis, superficie semicellulae in quoque latere gibberulis binis aequalibus instructa, semicellulis a latere apice truncatis. Longit. 0,0306 mm. (\(\frac{1}{9}''\) Engl.) Latit. 0,0221 mm. (\(\frac{1}{9}''\) Engl.) Isthmi latitud. 0,0011 mm. (\(\frac{1}{9}''\) Engl.)

In singulis speciminiis inter algarum uniceellulares *Hormosiphonti* adhaerentem.

(Distrib. Europa, America borealis.)


1. *Palmoglae* species; cellulis ellipticis polis angustatis, diametro transversali dimidio diametri longitudinalis breviori, cytiolodermate suberasso, cytioplasmate granulis singulis majoribus instructo in massa gelatinosa irregulariter exansa nidulantibus. Longit. cellular. 0,0068—0,0081 mm. (\(\frac{1}{2}''—\frac{1}{2}''\) Engl.) Latit. cellular. 0,0041 mm. (\(\frac{1}{2}''\) Engl.)

In massis parvulis *Hormosiphoni* adhaerentibus.

Granulis amylaceis cytioplasmatis ad *Palmoglae* spectans, a *P. macrococea* et micrococe distinguetur cellulis minoribus et polis angustatis.


Filum unicum fructiferum observari potuerat in massa ex algis diversis composita. (Distrib. Europa, America borealis.)


Fila compluria oosporis maturis observata. Oosporarum membrana plurilamellosa duplo erassior membrana *V. sessilis*.

In casiupulo parvulo ex filis intertextis *Vaucheria* specierum variarum composito inter *Nitellae* specimina inclusus, paucta observavi fila quae pertinere ad aliquam *Vaucheria* ad Corniulatas spectantem. (Distrib. Europa frequens.)

De antheridii et oogoniis nondum evolutis non potuerat discerni aliquid eerti, nescioque, haec fila pertinere ad *V. serieeam*, pachydermam an ad speciem propriam.

4. *Vaucheria geminata*, De Candolle. Fila compluria oogoniis immaturis sine dubio ad *V. geminata* spectantia; thalli ramulus lateralis minutus flores evolvens paulo longior et gracilior ramulo speciminum Europaeorum, eornulum jam in posizione propria, sumnum—ad observatum vero—minime laterali ter contorto. *V. hamata* ramulus lateralis dimidio brevier ac ramuli oogonia procreantes duplo longiores. Antheridium a basi curvatum in uno anfractu contortum. (Distrib. Europa, America borealis.)

Status evolutionis partium florum *Vaucheriaria* perfecte congruent eum eodem statu evolutionis florum *Nitellae antarctiae*. Tempus annis, respondens statu analogo vitæ harum plantularum in nostri latitudinibus ver est (menses Aprilis, Maii, usque ad initium mensis Junii). Quorum plantularum phæomena vitalia normam dare ad dijudicandas ulle regionis terce rationes in respetu commutationum temporum quadrupartitarum anni, verisimile videtur.

1. *Olpidiun caudatum*, Reinsch in Journ. Linn. Soc. xv. 215; cellulis sphaericis sine radiculis substrato viventi insidentibus, in polo processu singulo spinorum formi cellulae diametro subequante postremo aperto instructis, cytiodermate distincto suberassso, eytioplasmate dense granuloso.—Diam. cellular. 0,0112—0,013 mm. (1/5,0 — 1/3,7” Engl.)

In *Schizosiphontis kerguelensis* trichomatibus.

*O. ampullaceum* (Chytridium ampullaceum, A. Braun, Ber. d. Berlin. Acad. 1855, p. 66; Rabenhorst, Fl. Eur. Alg. ii. p. 282) est distinctum ab hoe *Olpidion* dimensionibus duplo minoribus (0,0064 mm.; 3/2 " Engl. diam.).

Tab. IV., Fig. vi.—1, *Schizosiphontis* triehomates pars cum plantula parasitica insidente, 34°; —2, cellula singula parasitica major amplificata, 34°.

1. *Chytridium pyriforme*, Reinsch in Journ. Linn. Soc. xv. 215; cellulis zoogoniis nondum egressis operuulose apertis ovato-pyriformibus, basi sensim angustata, in radicule in substrato vivente radicantem prolongatis diametro transversali dimidio diametri longitudinalisi angustiore, eytioplasmate dense subtilliter granuloso, eytiodeermate distincto duplieiter striato, cellulis zoogoniis egressis subcylindricis usque subcuneatis, operuulo transversaliter a cellula se sejungente subhemisphaerico apice rotundato (non aemunato), radicule usque tertiam partem diametri longitudinalis cellulae aquante, in medio plus minusve incrassato apiculo prolongato deorum verso. Diam. transvers. cellulae 0,013—
0,0168 mm. (\(1\frac{3}{4}-1\frac{3}{5}\) " Engl.) Diam. longitud. cellulae 0,0258—0,0278 mm. 
\(\frac{4}{5}-\frac{1}{2}\) " Engl.)

In Vaucheriae cellulæ.


1. Microthamnion cladophoroides, Reinsch in Journ. Linn. Soc. xv. 216; e maximis, fruticulosis, filis solitariis erectis regulariter ramosis, radiculis singulîs contortis in substrato (algis viventibus) insidentibus, ramulis erecto-patentibus attenuatis unilaterali dispositis (in speciminius minoribus) aut verticillatam dispositam (in speciminius majoribus), cellulis fili primarii apicem versus paulo incrassatis diametro 4plo—6plo longioribus, cellularis ramulorum in basi paulo constrictis diametro 10plo—20plo longioribus, cytioplasmate omnium cellularum subhomogeneo, colore pallide luteo-olivaceo, granulis singulîs dispersis instructo. Fili primarii cellularum latit. 0,0056 mm. (\(3\frac{3}{4}\) " Engl.) Ramulorum cellularum latit. 0,0028—0,0041 mm. (\(\frac{1}{16}-\frac{1}{32}\) " Engl.) Plantulae altit. 0,556 mm. (\(\frac{1}{8}\) " Engl.)

In Lymnæae majoris, Kütz. forma trichomatibus et in Chlorococci spec. cellulæ radiculis brevissimis affìxum. Haec plantula elegantissima Cladophoris singulîs in habitu haud dissimiles, sed sat distincta a Cladophoris cytioplasmate subhomogeneo ac dimensionibus minimis, ad Microthamnion spectat quibusque consentit in cytioplasmatis structura. Generis specierum trium hucusque cognitarum nulla aliqua similitudine consentit cum plantula Insulae Insulae Kerguelensis.

1. Stigeoclonium Hookeri, Reinsch in Journ. Linn. Soc. xv. 216; haete viride, parasiticum, caspitulos chlorophoraæformes basi radicante formans; filis octate proiecto inferne nudæc et subintegra superne ramosissimis, basi
radiculis anastomosantibus instructis, ramis spicatis (plerumque) integrerimis approximatis stricte erectis, cellulis filorum primariorum hyalinis cytoplasmate contracto (in statu vegeto?), diametro transversali (inferiorum) duplo—triplo longioribus et æqualibus (superiorum), cellulis ramorum tumidis, omnibus in sporangia zoogonidía evolventia transmutatis diametro æqualibus et dimidio brevioribus. Diam. cellularum filorum primar. 0,0112—0,013 mm. (\(\frac{1}{3}^{3}_{8}\) Engl.) Diam. ramorum sporidiferorum 0,0084—0,0112 mm. (\(\frac{1}{2}^{1}_{8}\) Engl.)

Altitude plantulæ 1—1,5 mm.

In Nitellæ cellulis et in foliis muscorum.


Tab.V., Fig. i.—1, Nitellæ pars cum caespitulo Stigeoclonii insidente (\(\frac{1}{3}^{3}_{8}\));—2, fili singuli summa pars major aucta, omnes cellulae zoogonidía procerantibus (\(\frac{38}{60}\)).

2. Stigeoclonium subtile, Reinsch in Journ. Linn. Soc. xv. 217; minutissimum, parasiticum, ex filis sterilescentibus tenuioribus longioribus integrerimis erectis e filis procumbentibus dense intortextis erassioribus ortis formatum, cellulis ramorum erectorum tenuioribus diametro 4plo–Splo longioribus, cellulis filorum procumbentium latioribus diametro subæqualibus, filis propagativis paulo crassi-oribus, cellulis zoogonidía procerantibus cellulis filorum sterilescentium multo brevioribus subquadriaticis arietissime conjunctis. Diam. filorum erectorum 0,0048—0,0056 mm. (\(\frac{1}{3}^{3}_{8}\) Engl.)

In muscorum foliis, in Nitellæ et Vaucheriæ cellulis, et in Schizosiphontis kerguelensis trichomatiibus.

Hæc Stigeoclonium ramulis prolongatis tenuissimis flagelliformibus erectis ex ramulis crassi-oribus ortis aliqua similitudine consentit cum S. setigero, Kütz. (Tab. Phyc. iii. tab. 5), quod distinguetur caespitisus multo majoribus fluctuantibus (usque tres lineas longis).

Caespituli tantum fili propagativa procerantes haberent possunt pro Speciem propriam. In singulis speciminiibus plantulæ inveniuntur et fili sterilescentia et fili propagativa. Ulteriora paulo crassiora sed breviora saepè inveniuntur ex uno ramulo evoluta cum filis sterilescentibus. Caespitulos quoque singulos in Hormosiphontis sp. n. physeumate crescentes una cum Choreoclonii procumbentis gen. n. caespitisus observavi; in his plantularum durarum infimae partes adeo sunt inter se coalitæ ut plantulas duas valde diversas in cohaesione genetica putare possis.

Choreoclonium, genus novum.* Plantula parasitica ex filis ramosi procumbentibus densius aut laxius intricatis substrato dense adpressis interdum parenchymatici inter se conjunctis formata; cellulae rectangulares usque quadratae.

* kæptæ expando, αλίνες elunis.
Propagatio?—Synon. Genus s. n. in Reinsch, Contribut., p. 76, tab. iv. (Chloroph.) descriptum et delineatum genus ad Chlophoraceas spectans, Stigeoclonio proximum.

   Cellular. diam. 0,0025—0,0041 mm. (\(\frac{41}{3} - \frac{31}{7}''\) Engl.) Cellular. longit. 0,0112—0,0224 mm (\(\frac{11}{9} - \frac{1}{4}'\) Engl.)
   In folis muscorum et in Nitellae cellulis.

Hanc plantulam primo observavi anno 1872 in Germania in plantis aquaticis (Hottonia, Utricularia) crescentem, deinde in compluribus formis variis locis Germaniae. In contributionibus meis formas varias in uno genere conjunctas sive nomine recepi; post plantulam Kergulensem inventam nimirum dubitare possum in identitate plantularum et locis duobus remotissimis.

Tab. IV., Fig. ix.—1, folii musci aquatici pars cum plantula singula minore in nervo folii crescenti (\(\frac{3}{9}''\));—2, alteri folii pars cum plantula majore obtecta (\(\frac{3}{9}''\)).

1. Draparnaldia subtilis, Reinsch in Journ. Linn. Soc. xv. 218; filis ramisque primariis hyalibus, ramis e basi repetito dichotome ramosissimis, ramulis furcatis acutis plerumque in pilum hyalinum ex cellulis compluribus exstitutum longe productis, cellulis inimis fili primarii diametro aequalibus cytiodermata crasso lamellosa, cytioplasmate subbomageneo subtissimis granulato, cellulis superiobibus diametro usque duplo longioribus, cellulis ramulorum diametro usque triplo longioribus, cytioplasmate dense granulose. Diam. fili primarii 0,0168—0,0232 mm. (\(\frac{3}{1}''\) ) Diam. ramulorum 0,0056—0,0084 mm. (\(\frac{4}{1} - \frac{4}{4}''\) Engl.) Plantulae altitudo 1—2 mm.

In Vaucerii cellulis et in muscis aquaticis in plantulis dispersis radiculis numerosis radicantibus. Hanc plantulam elegans tantummodo in speciminibus paucis observata differt a ceteris Draparnaldia et magnitudine et loco natali.

2. Draparnaldia distans, Kütz., Tab. Phyc. iii., tab. 14, fig. 2; forma tenuis, cellulis fili primarii duplo-quadraplo diametro transversali longioribus, ramis primaris perpauciis, ramulis sparsis crebrioribus brevioribus cum ramulis longioribus in ambitu lanceolatis perpauciis intermixtis, ramulis ultimis plerumque in pilum aclorum cellulare attenuatis, cellulis ramulorum tumidis diametro subaequalibus. Diam. cellular. fili prim. 0,0278—0,0536 mm. (\(\frac{3}{1} - \frac{3}{3}''\) Engl.)

In speciminibus exsiccatiis cum Zygnematé intermixtis. "In a freshwater pool on the W. of Swain’s Bay." (Distrib. Europa.)

1. Proterderma vitidae, Kützing. Familiae singularis in foliis musci aquatici laxius insidente, in magnitudine cellularum ac forma (0,0084 mm.; \(\frac{4}{3}''\) Engl. diam.) cum speciminibus Franconici maxime consentiunt.

1. Zyggonium torulosi, Kütz., Tab. Phyc., tab. 14, fig. 1; forma erassior. Cellulae diametra transversalia dimidio brevioribus (ante divisionem usque aequalibus) cytiodermate interiore erassissimo plurilamellosa, cytiodermate exteriore
subtoruloso. Diam. cellular. 0,0168—0,0196 mm. (1\(\frac{1}{2}\)—1\(\frac{1}{10}\)" Engl.) Diam.
filorum (e. indum.) 0,033—0,0393 mm. (\(\frac{1}{6}\)—\(\frac{1}{3}\)"
Engl.)

In eæspitulis inter Hormosiphon coriaceum, var. "In moist places near Vul-
can Cove."—Distrib. Z. torulosi Europa orientalis.

In filis singulis observantur sicut in speciminibus Europæis cellule subsphaericae
latares filis adhaerentes indumento erassissimo velutae. Quæ cellullae—nullo modo
cellule propagativæ—orientur in hoc Zygogonio et in Z. anomalæ divisione longu-
tudinali interdum incideante cellularum singularum fili.—Hæa forma a forma typica
in Tab. Phycol. deliucata cellulis angustioribus cytiomermate crassioet filis eras-
sioribus distinguitur. Z. torulosum, Kütz., cum serie specierum: ; Z. ericorum,
anomalæ, delicalæ, a Cl. Rabenhorst (Pl. Eur. Alg. ii., p. 254) in una specie
contrahuntur, sed characters constanter observatæ horum Zygogoniæm a speciebus
Kützingianis dissecre sé mihi non permiserunt.

2. Zygogonium tenuissimum, Reisch in Journ. Linn. Soc. xv. 218;
filis tenuissimis cellulis diametro duplo longioribus (et pauclo minus) regulariter
rectangularibus, cytiomermate suberasso homogeneo hyaliino, cytiomemate contracto
colore luteo-viridi granulis majoribus instructo. Diam. cellular. 0,0068—0,0084mm.
(\(\frac{1}{2}\)\(\frac{1}{3}\)" Engl.)

In singulis filis inter Scytonemam castaneum dispersis, "near Vulcan Cove."—
Differt a Z. delicalæ et Z. salino cellulis longioribus, a Z. gracili et Z. RaLPsii
cellulis brevioribus, ab omnibus Zygogoniæm autem filis multo tenuioribus.

1. Spirogyra longata, Kütz., Tab. Phyc. v. tab. 20, fig. 1; cellular. diam.
0,039—0,05mm. (\(\frac{1}{4}\)—\(\frac{1}{2}\)"
Engl.) Longitudo cellularum 5plum—7plum latitui-
dinis.

In a freshwater pool W. of Swain’s Bay (specim. cxsiccat.);

Structura fasciæ spiralis latae anfractibus 4is—5is maxime consentit cum
speciminibus Europæis. Fila omnia incoporata sunt latiora (usque duplo) filis
formæ communis Europeæ per totam Europam diffusæ.—(Distrib. Europa, America
borealis.)

2. Spirogyra Spec.; Cellularum diam. 0,0278—0,0393mm. (\(\frac{1}{7}\)—\(\frac{1}{2}\)"
Engl.) Longitudo 4plum—5plum latitudinis. Fila omnia incoporata ad quandam speciem
Spirogyrae spectantia, quæ pertinet ad Spirogyrae cytiomermate in utroque polo
cellulae nec protenso nec replicato; sed structura fasciæ spiralum adeo est
trausmutata ut numerus fasciæm et forma ceter non potest explicari.

Fila dispersa intert Draparnaldium distantem. "In a freshwater pool on the W.
of Swain’s Bay" (specim. cxsiccat.);

1. Sirogonium sticticum, Kütz. Cellular. diam. 0,045—0,050mm.
(\(\frac{1}{4}\)—\(\frac{1}{2}\)"
Engl.) Fasciæ chlorophyllaceæ terææ—quateræ in quaque cellula
nucleis ex substantia proteincicis cum jodinis agentia fuscescentibus majoribus (nunc
decoloratis) instructæ. Quæ nuclei sunt majores nucleis speciminum ex Germania.
In singulis filis incoepulatis inter Zygnemae eavesites. "In a freshwater pool W. of Swain's Bay."—(Distrib. Europa borealis et centralis.)

1. Zygnema Vaucherii, Agardh; Z. subtilne, Kütz., Tab. Phyce. v. tab. 16, fig. 1. Diam. cellular. 0,0168 mm. (\( \frac{1}{10} \)" Engl.) Fila omnia incoepulata.
   "In a stream W. of Swain's Bay, 20. 1. 1875."—(Distrib. Europa.)

Speciminum in charta siccatae cytioplasmati structura distincte non perspiciua, attamen tinctura intensive lutea in charta effusa post aqua conspersa Zygnema certissime indicat.

2. Zygnema affine, Kütz., Tab. Phyce. v. tab. 16, fig. 3.—Diam. cellular. 0,0196—0,0224 mm. (\( \frac{1}{10} \)—\( \frac{1}{14} \)" Engl.) Longitudo duplum usque triplum latitudinis. Structura cytioplasmatis in singulis cellulis bene conspiciua.

In filis dispersis singulis inter Draparnaldium distantem. "In a freshwater pool W. of Swain's Bay."—(Distrib. Europa orientalis.)

1. Bulbochææ Species. Cellular. diam. med. 0,013 mm. (\( \frac{1}{15} \)" Engl.) Cellularum longitudo triplum latitudinis, cellula basalis oblongo-pyriformis pedicello pediformi breviore.

In foliis musci aquatici.

A Bulbochææ genere species observavi tres, specimina omnia sine florescentia et fructificatione. Apud species singulares cellulae filorum et dimensionibus et forma consentiunt; qua de causa difficillime possunt determinari specimina sterilaeceentia. Cellulae basalis et cellularum forma ac magnitudo aliqua similitudine consentit eum B. arenulata, Pringsh.

2. Bulbochææ Species. Cellula basalis pyriformis basi attenuata. Diam. cellular. 0,013 mm. (\( \frac{1}{15} \)" Engl.)—Forsan species propria.

Plantula singula in musci aquatici folio cresceens.

3. Bulbochææ Species. Cellular. diam. 0,0168—0,0224 mm. (\( \frac{1}{15} \)—\( \frac{1}{14} \)" Engl.) Cellulae paulo longiores quam latiores. Cellula basalis late pyriformis basi subito in pedicellum pediforme augustata; ramification repetito dichotome ramosa.

In foliis musci aquatici, in Nitellæ cellulis, et in Schizosiphonte kerguelensi.

Aliqua similitudine consentit eum specie nova descripta et delineata in contributioibus meis, p. 81, tab. xiv. (chlororoph.), fig. 4.

   In singulis filis sterilescentibus in foliis musci aquat., et in *Nitella* insidentibus observatum; cellulae basalis forma filorum latitudo, cellularum longitudo cum speciminibus Europaeis maxime consentit.—(Distrib. Europa, frequens.)

2. **Oedogonium Species.** Diam. cellular. 0,0112mm. (11/9””  Engl.), longitudo 8plum—9plum latitudinis. Non possunt determinari specimina propter penuriam florescentiae et fructificationis. Complures species *Pedogonionum* maxime consentiant in cellularum forma ac magnitudine, ex qua causa non potest dici de carum fila sterilia aliquid certi.

In filis singulis sterilescentibus in foliis musci aquatici.

1. **Coleochæte scutata**, Brébisson; *Phyllactidium setigerum*, Kützing, Tab. Phyto. iv., tab. 87, iii.
   In foliis musci aquatici in familiis planis planiticiformibus plus minusve regulariter circumscripsit forma. Familiae complures in foliis angustioribus et in foliis quibus lamina deest, in massas irregulariter sphæricas aggregate.

   *Phyllactidium setigerum*, Kütz., et *Coleochæte scutata*, Kütz., plantulae synonymicae sunt, prima hacteri potest forma setigera *Coleochæte scutata*. Specimina Kerguelenensis setae paulo sunt longiores et robustiores setis specimen Europæorum. (Distrib. Europa, America borealis.)

   In *Nitelle* superficicem cellularum dense incrustans.—Distrib. Europa, orientalis.

Cum speciminibus Europaeis maxime consentit plantula Kerguelenensis in magnitudine et forma cellularum. Specimina plantulae que observavi et diversis locis Europæis (Galliae et Germaniae) consentiant quoque in loco natali (in *Nitelle cellulis* plurumque in *Nitelle syncarpa*), et in crescedendi modo.

1. **Aphanochæte repens**, Al. Braun. Diam. cellular. 0,011mm. (11/9””  Engl.)
   In foliis musci aquat. Sine *oogonii*, fila in foliis saepi inter Algas minores (*Leptothrix, Tolypothrix*) dispersa. Cum speciminibus Europæis in omnibus partibus consentit.—(Distrib. Europa, America borealis.)

Extra formam typicam filis substrato dense adpressis invenitur quoque forma peculiaris in speciminibus singulis dispersis forma. Filis in corpuscula sphæricas et uviaformia accumulatis (pressione in filis singulis soluta).

æquali). Diam. cellularum (cytioderm. incl.) 0,039—0,051mm. (\(\frac{1}{2}-\frac{1}{2}\) Engl.) Cytiodermatis ecrassitudo 0,0041—0,0056mm. (\(\frac{1}{2}-\frac{1}{2}\) Engl.)


_MELANOPHYCEAE ET RHIODOPHYCEAE._

_Rhizocladia,* Nov. Genus_ (ad _Pheosporaes_ Thuret spectans, _Pleurocladia_ Al. Braun proximum).

Plantula ex strato procumbente ex filis ramosis substrato viventi dense adhaerentibus formato et ex filis erectis ramosis fructiferis exstituta. Cellule filorum procumbentium primo rectangulares, atate provectiore ovales usque lageniformes. Fila erecta singula aut bina ex cellulis filorum procumbentium orta, primo integra et ex cellulis æqualibus formata, demum subramosa et fructifera ex cellulis inæqualibus formata. Trichosporangia in apice filorum erectorum ex 3is—5is cellularis quadratiis usque rectangularibus formata. Oosporangia?

1. _Rhizocladia repens_, Reinsek in _Journ. Linn. Soc._ xv. 220. Character idem generis. Longitudo cellul. explic. filor. repent. 0,0097—0,0112mm. (\(\frac{3}{3}\) - \(\frac{1}{2}\) Engl.) Latitudo cellular. filor. erect. juvenil. 0,0041mm. (\(\frac{1}{2}\) Engl.) Latit. trichosporang. 0,0058mm. (\(\frac{3}{3}\) Engl.) Plantulae explicitæ alto 0,056—0,089mm. (\(\frac{3}{3}\) Engl.)

In foliis muscorum aquaticorum et in cellulis _Nilella_.

Hanc plantulam primo habui proximam alga jam descriptione et delineate in contributionibus meis (p. 76, tab. 14, Chlorophylloph.), quæ planta est constituta ex filis ramosis procumbentibus. Ad hanc plantam nunc ad _Chaetophoraceas_ positam pertinentes formas postea inveni et ex filis procumbentibus et ex ramulis brevissimis erectis exstitutas. Sed per compages peculiare ex cellulis compluribus breveioribus supra positis exstitutæ sine dubio trichosporangiis _Melanophycearum_ proximas hujus plantulæ positionem veram agnoscimus in systemate. Cellulae singulæ dispersæ observantur in filis erectis singulis, ceteris cellulis essiiores et breviores (oosporangia?), quam natura vera in statu vivente tantummodo agnosi potest. A genere _Pleurocladia_ unico aquæ dulcis hucusque cognito _Melanophycearum_ organis peculiariis foecundationis praecipitam eum in apice trichosporangium (a) evolvens (\(\frac{3}{3}\) Engl.).

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* \(\mu\) radix, \(\alpha\) ramus.

M
1. *Batracliospermum minutissimum*, *Reinsch* in *Journ. Linn. Soc.* xv. 220; o minimis, oculis inarmatis vix conspicuum, parasiticum, filis integerrimis erectis singulis aut perpaucis aggregatis, articulis inferioribus subcuneiformibus apice paulo incrassatis, cellulis corticalibus 4is—6is obtectis superioribus nudis rectangularibus, ramulis verticillorum integerrimis (rarius singulis ramulis instructis) æqualibus, apicibus paulo angustatis ex cellulis 5is—7is exstitutis apicem fili versus sensim decresequebus, inferioribus articulorum longitudine subæquantibus, summis duplo-triplo longioribus, cellulis ramulorum rectangularibus usque subquadратieis, cytiodermate exteriore tenuissimo vix conspicuo, cytioplasmate subhomogeneo colore obscuræ olivaceo-viridi; fructificatio?—Diam. articulorum 0,0041—0,0056 mm. (\(\frac{1}{56}\)—\(\frac{1}{56}\) Engl.) Diam. ramulorum 0,0041 mm. (\(\frac{1}{56}\) Engl.) Plantulo altitudo 0,37—0,45 mm. (\(\frac{1}{56}\)—\(\frac{1}{56}\) Engl.)

In *Nitella* cellulis et in muscorum foliis, in filis singulis sparsis cum aliis algis (*Tohypothrix, Leptothrix*) intermixtis, rarius in eespilitus parvulis.

*B. tumidum*, in *Chara vulgaris* crescents (*Reinsch, Contributiones*, p. 69, tab. xliv., *Rhodophyta* fig. 1—5) a speciebus hucusque cognitis proxima species, sed valde diversa dimensionibus omnium partium multo majoribus (3—4 lineas longa), verticillorum ramulis numerosis repetito dichotome ramosis; in ramulorum cellularum forma aliqua similitudine consentit.

[The fresh-water species recorded by *Reinsch* are 106, to these may be added the following mentioned in the Antarctic Flora:—*Oscillatoria purpurea*, H. f. & Harv., *Colothrix olivacea*, H. f. & H., *Ulva eristata*, H. f. & H., *Mastodia tessellata*, H. f. & H., *Trypophallus anastomosans*, H. f. & H., *Nostoc commune*, Vaucher, and *N. microscopicum*, Carm., making a total of 113 species. This interesting Antarctic island, therefore, so far as explored, appears to be very rich in certain forms of fresh-water Algæ.—G. Dickie.]
VII.—Fungi.

By the Rev. M. J. Berkeley, M.A., F.L.S.

[The Fungi collected in Kerguelen Island amount to 9 or 10 (the tenth being still an undetermined form).]*

Dr. Hooker obtained 2 species in the winter (May and June) 1840; Mr. Moseley 3 in addition to the same, during summer (December and January) 1873-4; Mr. Eaton, also in summer, 5 determinable species, and 1 that could not be identified (see footnote), besides the species found by Dr. Hooker.

Until a few days before Midsummer (i.e. Christmas) no Fungi were seen in the vicinage of the English Observatory Bay. The first to appear was the common mushroom, a single specimen of which was found on an island in the sound by some officers from H.M.S. "Volage." Later in the summer the other four species came up in a few places on the mainland. They were not by any means of frequent occurrence, and probably scarcely any of them would be found at the time of year corresponding with the date of Dr. Hooker’s visit to the island.—A. E. Eaton.]

1. Agaricus (Galera) kerguelensis, Berk. in Journ. Bot. v. 51 (1876); et in Journ. Linn. Soc. xv. 22. Caspitosus, fulvus, pileo e breviter campanulato convexo levi carnulose, margine tenui striatæ, stipite equali apice pulvuloventricosis adnatis.

Amongst moss in a bog on the eastward portion of the base of a promontory E. of Vulcan Cove, January 1873, Eaton.

Caspitosus, attached by abundant mycelium. Pileus ½ inch across; stem nearly 1 inch high, ½ to ¾ line thick; principal gills about 12 in number, shortly but truly adnate, and not in the least decurrent.

It is far more fleshy than any variety of A. hypnorum, to which species no doubt it is closely allied; and while agreeing with A. embolus in possessing comparatively few gills, it differs from that species in the mode of their attachment.

2. Agaricus (Galera) hypnorum, Batseh.; Berk. in Journ. Linn. Soc. xv. 53.


Spores 0094 inch long.


* This species is referred to by Mr. Eaton (in Proc. Roy. Soc. 1875, May, xxiii. 355) as "a peculiar parasite on Azorella, which grows out of the rosettes" of the leaves "in the form of a clear jelly, which becomes changed into a firm yellowish substance of indefinite form." It was common on the sides of hills in the neighbourhood of the observatory towards the end of December, and a series of examples was preserved in spirit, but they could not be worked out.


Spores 0.003 inch long.


On an island near Observatory Bay, in Royal Sound, 16th December 1874. A solitary specimen, Eaton. (Almost cosmopolitan.)


Two or three specimens were found singly close to the margins of two of the lakes among the hills near Observatory Bay, in February 1875, Eaton.

2. **Coprinus tomentosus**, Fries; Berk. in *Journ. Linn. Soc.* xv. 53.

On dung, January 1874, *Moseley*.


Christmas Harbour, May and June, on bare boggy ground near the sea, growing amongst *Conferva*, *Hooker*. Amongst dwarfed *Leptinella plumosa*, on wet ground close to the shore, growing in rings, rare. One ring on an island in Swain's Bay, January, and another on the mainland near Observatory Bay, February 1875, Eaton. Royal Sound and Betsy Cove, *Moseley*. (Hermite Island, Cape Horn, alt. 1,000 ft., *Hooker*.)

1. **Sphaeria herbarum**, Pers.

On dead stems of *Pringlea*, Eaton.
RANUNCULUS TRULLIFOLIUS, Hook.f.