Finally, the genus *Catasetum* is interesting in an unusual degree in several respects. The separation of the sexes is unknown in other Orchids, excepting probably in the allied genus *Cycnoches* and in one other member of the *Vandeæ*, namely, *Acropera*. In *Catasetum* we have three sexual forms, generally borne on separate plants, but sometimes mingled together; and these three forms are wonderfully different from each other—much more different than, for instance, a peacock is from a peahen. But the appearance of these three forms on the same plant now ceases to be an anomaly, and can no longer be viewed as an unparalleled instance of variability.

Still more interesting is this genus in its mechanism for fertilization. We see a flower patiently waiting, with its antennæ stretched forth in a well-adapted position, ready to give notice whenever an insect puts its head into the cavity of the labellum. The female *Monachanthus*, not having pollinia to eject, is destitute of antennæ. In the male and hermaphrodite forms, namely *Catasetum* and *Myanthus*, the pollinia lie doubled up like a spring, ready to be instantaneously shot forth when the antennæ are touched. The disk end is always projected foremost, and is coated with viscid matter, which quickly sets hard and firmly affixes the hinged pedicel to the insect's body. The insect flies from flower to flower, till at last it visits a female or hermaphrodite plant; it then inserts one of the balls of pollen into the stigmatic cavity. When the insect flies away, the elastic caudicle, made weak enough to yield to the viscidity of the stigmatic surface, breaks, and leaves behind the pollen-mass; then the pollen-tubes slowly protrude, penetrate the stigmatic canal, and the act of fertilization is completed. Who would have been bold enough to surmise that the propagation of a species should have depended on so complex, so apparently artificial, and yet so admirable an arrangement?

Notice of a Collection of Algæ made on the North-West Coast of North America, chiefly at Vancouver's Island, by David Lyall, Esq., M.D., R.N., in the years 1859–61. By W. H. Harvey, M.D., F.R.S. & L.S., Professor of Botany in the University of Dublin, &c.

[Read February 20, 1862.]

Several parcels of Algæ, collected by Dr. David Lyall on the coasts of Vancouver's Island and in the neighbouring seas, and

communicated by him to the herbarium at Kew, have been placed in my hands for determination. In the subjoined descriptive catalogue I have given the results of my examination, and shall merely preface the technical matter by a few general observations.

The whole number of species ascertained is 107, of which 100 are marine, and 7 freshwater species. The latter are as follows :—

A Vaucheria (*undeterminable*).
Batrachospermum moniliforme.
Cladophora glomerata.
Conferva rivularis.
Conferva floccosa.
A Zygnema (*undetermined*).
Hydrurus penicillatus.

All of these (including probably the undeterminable ones) are also British, and only one of them, *Hydrurus penicillatus*, is of local distribution. Dr. Lyall's specimens of this plant are of small size; but at Santa Fé, in New Mexico, Mr. Fendler has collected it in great abundance and of gigantic size, his specimens being sometimes two feet in length.

Of the 100 marine Algæ, *eleven* are either new species or well-marked new forms to which I have given specific names, namely these :—

Agarum fimbriatum, *H.*
Laminaria apoda, *H.*
Ectocarpus oviger, *H.*
Rhodomela Lyallii, *H.*
Polysiphonia senticulosa, *H.*
Hymenena latissima, *H.*
Cystoclonium gracilarioïdes, *H.*
Callophyllis flabellulata, *H.*
Prionitis Lyallii, *H.*
Schizymenia coccinea, *H.*
Callithamnion subulatum, *H.*

Of these the most remarkable is *Laminaria apoda*, which differs, as its name imports, from all other species of *Laminaria* in absolutely wanting a stipes. In other species, indeed, the stipes varies from less than half an inch to 12–15 feet in length; but in all cases a more or less obvious stipes interposes between the root and the lamina, and the new portion of frond grows between the apex of the stipes and the base of the lamina. In our *L. apoda* the stipes is represented by a basal callosity or thickening of the lamina, from which a fascicle of fibrous branching roots directly springs. Dr. Lyall has sent numerous specimens of various ages and sizes, and all have precisely similar characters; I do not doubt, therefore, that this is a well-marked and limited form. The nearest approach to *L. apoda* that I have seen occurs in some of the shorter-stemmed varieties of *L. dermatodea*; but I am not possessed of any specimen which could be regarded as intermediate.

I am not so confident of the distinctness of my *Agarum fimbriatum* from *A. pertusum*. The fimbriated character is not a very cer-

tain one; for it occurs occasionally in Algæ when developed under unusual circumstances; or it may arise from proliferous growth, after wounding at an early age. More specimens, and specimens of various ages, are required fully to establish this species.

Of *Hymenena latissima* many specimens were collected, but comparatively few of them were of adult age. The younger are undistinguishable from some *Nitophylla* in structure, the generic distinction not generally becoming obvious till fruit begins to be formed. Then the long lines of tetraspores are obviously separated by immersed and anastomosing veins, as in the original *H. fissa*, from which species and from *H. fimbriata* our plant is quite distinct.

Of the other new species, *Callophyllis flabellulata* is remarkable for closely simulating *Euthora cristata*; *Prionitis Lyallii* for its extraordinary variations in ramification and size; and *Callithamnion subulatum* for combining the characters of *C. americanum* and *C. floccosum*.

The species peculiar to the North-west Coast of America are 32, of which 7 are Melanosperms and 25 Rhodosperms, viz.—

Cystophyllum Lepidium, *P. & R.*
Phyllospora Menziesii, *Ag.*
Nereocystis Lütkeanus, *P. & R.*
Alaria marginata, *P. & R.*
Agarum fimbriatum, *H.*
Laminaria apoda, *H.*
Ectocarpus oviger, *H.*

Rhodomela Larix, *Ag.*
R. floccosa, *Ag.*
R. Lyallii, *H.*
Polysiphonia Californica, *H.*
P. senticulosa, *H.*
Amphiroa Californica, *Dcne.*
Hymenena fimbriata, *P. & R.*
H. latissima, *H.*
Rhabdonia Coulteri, *H.*
Rhodymenia pertusa, *Ag.*
Cystoclonium gracilarioïdes, *H.*
Callophyllis flabellulata, *H.*
Constantinea Sitchensis, *P. & R.*
Gigartina mollis, *Bail. & Harv.*
Chondrus affinis, *H.*
Endocladia muricata, *Ag.*
Halosaccion Hydrophora, *J. Ag.*
Prionites Lyallii, *H.*
P. lanceolata, *H.*
Schizymenia Mertensiana, *P. & R.*
S. coccinea, *H.*
Microcladia Coulteri, *H.*
M. borealis, *P. & R.*
Ptilota Californica, *P. & R.*
Callithamnion subulatum, *H.*

The following, from among the peculiar North-west American species are "represented" by allied species in other seas, viz.—

Phyllospora Menziesii, by Phyllospora comosa, in Australia.
Alaria marginata, by Alaria esculenta, in Europe.
Rhodomela Larix, by Rhodomela lycopodioïdes, in Europe.
Hymenena fimbriata, by Hymenena fissa, at the Cape of Good Hope.
Rhodymenia pertusa, by Rhodymenia polymorpha, in Australia.

Callophyllis flabellulata, by Callophyllis coccinea, *var*. pusilla, in Australia.
Constantinea Sitchensis, by Constantinea Rosa marina, Kamtskatka.
Chondrus affinis, by Chondrus crispus, in Europe.
Halosaccion Hydrophora, (an *analogous* species to) Gloiosaccion Brownii, in Australia.
Prionitis Lyallii, by Prionitis crinita, in Kamtskatka.
Callithamnion subulatum, by Callithamnion floccosum, in Europe.

The following 43 species are common to the Atlantic Coasts of North America, and those marked with an asterisk are peculiarly American:—

*Fucus furcatus, *Ag*.
F. vesiculosus, *L*.
Desmarestia viridis, *Lx*.
D. aculeata, *Lx*.
*Alaria Pylaii, *Grev*.
Laminaria saccharina, *Ag*.
*L. dermatodea, *De la Pyl*.
L. fascia, *Ag*.
Striaria attenuata, *Grev*.
Chorda lomentaria, *Lgb*.
Ectocarpus siliculosus, *Lgb*.
E. littoralis, *Lgb*.
Odonthalia angustifolia, *Suhr*.
*Chondria atropurpurea, *H*.
Polysiphonia atrorubescens, *Grev*.
P. urceolata, *Grev*.
Corallina officinalis, *L*.
Delesseria Hypoglossum, *Ag*.
D. alata, *Ag*.
Gracilaria confervoïdes, *Grev*.
Plocamium coccineum, *Lyngb*.
Rhodymenia palmata, *Grev*.
Rhodymenia Palmetta, *Grev*.
Ahnfeldtia plicata, *Ag*.
Callophyllis laciniata, *Kg*.
Gigartina mamillosa, *Lx*.
Halymenia ligulata, *Ag*.
Gloiosiphonia capillaris, *Carm*.
Ceramium rubrum, *Ag*.
C. diaphanum, *Ag*.
C. tenuissimum, *Ag*.
Callithamnion polyspermum, *Ag*.
*C. Americanum, *H*.
C. floccosum, *Ag*.
Porphyra vulgaris, *Ag*.
Enteromorpha compressa, *Lk*.
E. intestinalis, *Lk*.
Ulva latissima, *Ag*.
U. Linza, *L*.
Cladophora arcta, *H*.
C. glaucescens, *Griff*.
C. lætevirens, *Kg*.
Hormosira Carmichaëlii, *Kg*.

The following 45 are natives of the British Islands, and generally of the Atlantic Coasts of Europe; those marked with an asterisk have not yet been found on the Atlantic Coast of America:—

Fucus vesiculosus, *L*.
Desmarestia viridis, *Lx*.
D. aculeata, *Lx*.
*D. ligulata, *Lx*.
*Carpomitra Cabreræ, *Kg*.
Laminaria saccharina, *Ag*.
L. fascia, *Ag*.
Striaria attenuata, *Grev*.
Chorda lomentaria, *Lx*.
Ectocarpus littoralis, *Lgb*.
E. siliculosus, *Lgb*.
Polysiphonia atrorubescens, *Grev*.
P. urceolata, *Grev*.
*Laurencia pinnatifida, *Lx*.
Corallina officinalis, *L*.
Delesseria Hypoglossum, *Ag*.
D. alata, *Ag*.
Gracilaria confervoïdes, *Grev*.

Plocamium coccineum, *Lyngb.*
Rhodymenia palmata, *Grev.*
R. Palmetta, *Grev.*
Ahnfeldtia plicata, *Ag.*
Callophyllis laciniata, *Kg.*
*Kallymenia reniformis, *Ag.*
Gigartina mamillosa, *Ag.*
Halymenia ligulata, *Ag.*
*Schizymenia Dubyi, *Ag.*
Gloiosiphonia capillaris, *Carm.*
Ceramium rubrum, *Ag.*
C. diaphanum, *Ag.*
C. tenuissimum, *Ag.*
*Callithamnion Arbuscula, *Lgb.*
Callithamnion polyspermum, *Ag.*
*C. thujoideum, *Ag.*
C. floccosum, *Ag.*
*Codium tomentosum, *Ag.*
Porphyra vulgaris, *Ag.*
Enteromorpha compressa, *Lk.*
E. intestinalis, *Lk.*
Ulva latissima, *Ag.*
U. Linza, *L.*
Cladophora arcta, *H.*
C. glaucescens, *Griff.*
C. lætevirens, *Kg.*
Hormosira Carmichaëlii, *Kg.*

The two following are natives of the Mediterranean Sea, but not of the British Isles nor of the Atlantic Coasts of Europe :—

Amphiroa palmata, *Kg.*
Ulva fasciata, *Del.*

The following 20 are found on the West Coast of South America ; those marked with an asterisk are also British :—

*Desmarestia viridis, *Lx.*
Macrocystis pyrifera, *Ag.*
*Laminaria saccharina, *Ag.*
*Chorda lomentaria, *Grev.*
*Ectocarpus siliculosus, *Lyngb.*
Polysiphonia dendroïdea, *Mont.*
*Corallina officinalis, *L.*
*Gracilaria confervoïdes, *Grev.*
*Plocamium coccineum, *Lyngb.*
Rhodymenia corallina, *Bory.*
*Ahnfeldtia plicata, *Ag.*
Callophyllis variegata, *Kg.*
Gigartina radula, *Ag.*
Iridæa cordata, *Bory.*
*Ceramium rubrum, *Ag.*
*C. diaphanum, *Ag.*
*Codium tomentosum, *Ag.*
*Porphyra vulgaris, *Ag.*
*Enteromorpha compressa, *Ag.*
*Ulva latissima, *Ag.*

The following 20 are common to Australia ; those marked with an asterisk are also British :—

*Desmarestia ligulata, *Lgb.*
*Carpomitra Cabreræ, *Kg.*
Macrocystis pyrifera, *Ag.*
*Chorda lomentaria, *Grev.*
*Ectocarpus siliculosus, *Lgb.*
*Amphiroa corymbosa, *Lx.*
*Corallina officinalis, *L.*
*Gracilaria confervoïdes, *Grev.*
*Plocamium coccineum, *Lgb.*
Gigartina radula, *Ag.*
*Halymenia ligulata, *Ag.*
Ceramium cancellatum, *Ag.*
*C. rubrum, *Ag.*
*C. diaphanum, *Ag.*
*C. tenuissimum, *Ag.*
*Codium tomentosum, *Ag.*
*Porphyra vulgaris, *Ag.*
*Enteromorpha compressa, *Ag.*
*Ulva latissima, *Ag.*
Ulva rigida, *Ag.*

From the foregoing lists it appears, taking Dr. Lyall's collections for a fair specimen of the marine botany of Vancouver's Island, that,

1st. There are no local species of *Chlorospermeæ*. The few species that were found by Dr. Lyall are all plants of very wide distribution.

2nd. The species of *Melanospermeæ* and *Rhodospermeæ* that are peculiar to the North-west Coast of America amount to about one-third of the whole number collected.

3rd. About one-third of these peculiar species have representatives in other countries; namely, four in Australia, four in Europe, two in North-eastern Asia, and one at the Cape of Good Hope.

4th. Forty-three per cent. of the whole number collected are common to the East Coast of North America, 45 per cent. to the Atlantic Coasts of Europe, 20 per cent. to the West Coast of South America, and 20 per cent. to the Australian shores. This comparison shows that there is greater affinity between the marine vegetation of the Western Coasts of America and of Europe than between the Western and Eastern Coasts of America.

5th. Out of those common to West and East America, all except six are also British; while of those common to West America and to Britain, eight have not yet been recorded from the East Coast of America.

6th. Of those common to South America, three-sevenths are also British; and of those common to Australia, four-fifths are British. But of those species which are common to Britain and either to South America or to Australia, all but one (*Carpomitra Cabreræ*) are so widely diffused that they may be regarded as almost cosmopolitan.

On the whole, the collection does not give evidence of a very extensive marine flora, but rather of a vegetation abounding in species of larger and coarser growth, and deficient in those delicately organized species which frequent shallow bays and estuaries. The most remarkable and characteristic of the Vancouver-Island Algæ are the *Laminariaceæ*, many of which are of such gigantic size that full-grown specimens can hardly be expected ever to be seen in Europe. The *Nereocystis* has a stipes said to attain the length of 300 feet. The *Alariæ* probably have fronds of 20 to 30 feet in length—an enormous size for an undivided lamina of cellular tissue; and the *Costaria* and *Agarum*, though much smaller, still reach dimensions which appear extraordinary when compared with the dwarfer Laminarioid plants of the British shores. The selecting of herbarium specimens, characteristic without being inconveni-

ently large, of such unwieldy objects is no easy task; and Dr. Lyall deserves thanks and praise for the manner in which he has performed it, nor less for the great care with which he has preserved all his specimens, the minute localization of each, and the pains bestowed in furnishing extensive suites of each species. So variable are some of these Algæ in form, that, without examining long suites of specimens of different sizes and ages, it would be difficult or impossible to say what was a species and what a variety. Even with the ample materials supplied to me by Dr. Lyall, I fear that I have not in every case succeeded in unravelling this tangle.

MELANOSPERMEÆ.

1. Fucus vesiculosus, *var.* evesiculosus, *J. Ag. Sp. Alg.* i. 210.
Common between tide-marks. Vancouver's Island; Esquimalt and Victoria Harbours.

A narrower form on the outer sea-coast; a broader within the harbour. Also a very dwarf form from the outer sea-coast, 1–2 inches high, once-forked and fruiting; very similar to the dwarf variety from the Canary Islands, described by Montagne, 'Crypt. Canar.'

2. Fucus furcatus, *Ag.*? *Ic.* t. 14; *J. Ag. Sp. Alg.* i. p. 209.
Between tide-marks. Esquimalt; Vancouver's Island.

Of Agardh's plant I have seen no authentic specimen. Dr. Lyall's specimens differ from *F. vesiculosus*, var. *evesiculosus*, chiefly in the more immersed, less defined midrib, the uniformly narrower frond, 2–3 lines, rarely 4 lines wide, and the more slender, compressed, not turgid receptacles. My *F. Wrightii*, from Japan, scarcely differs. I fear that neither ought to be regarded as other than local varieties of *F. vesiculosus*, which sometimes, even in Europe, occurs with as narrow fronds. The elder Agardh's figure, above quoted, is worthless as a guide to the species described by J. Agardh.

3. Cystophyllum Lepidium (*Rupr.*). Caule crasso brevi, frondibus elongatis teretibus (crassiusculis) inermibus pinnato-ramosissimis, ramis undique egredientibus geminatis sparsisque basi sæpe foliosis, foliis lineari-lanceolatis enerviis planis acutis, ramulis vesiculiferis subcorymbosis, vesiculis sub apice ramuli indivisi solitariis ovalibus mucronatis, receptaculis ..... ?—*Cystoseira Lepidium*, *Rupr. Alg. Mar. Ochotzk*, p. 155.
On rocks below low-water mark. Entrance of Esquimalt Harbour; also dredged in 14 fathoms at St. Juan Island, 48° 30′ N., 132′ W.

Stem 2–3 inches long. Fronds numerous, closely inserted, 2–3 feet long, 1–1½ line in diameter, in outline of branches lanceolate. Lateral branches 4–6 inches long, in pairs or irregularly scattered, patent, sub-bipinnate; the lower pinnules leaf-bearing, the upper vesiculiferous, each ramulus having a vesicle below its apex. Vesicles 1–1½ line long, like the pods of some *Lepidium*. No fruit on our specimens, which quite agree with those distributed by Dr. Ruprecht, from the Sea of Ochotzk. Though nearly allied to *C. geminatum*, J. Ag., it appears to be distinct.

4. Phyllospora Menziesii, *Ag.*; *Harv.*; *Ner. Bor. Amer.* i. p. 62, t. 3. f. B.

Rocks at low tide, outer sea-coast; Esquimalt and Fuca Strait. *Dr. Lyall & C. Wood.*

5. Desmarestia viridis, *Lamour.*; *Ner. Bor. Amer.* i. p. 77.

Rocks below low-water mark; Esquimalt Harbour and Fuca Strait, *Dr. Lyall*; cast ashore, Esquimalt, *C. Wood*; dredged in 6–8–10 fathoms *Dr. Lyall & C. Wood.*

6. Desmarestia aculeata, *Lamour.*; *Ner. Bor. Amer.* i. p. 78.

Rocks at low water; Esquimalt Harbour, and dredged in 8–10 fathoms, *Dr. Lyall & C. Wood.*

7. Desmarestia ligulata, *Lamour.*; *Ner. Bor. Amer.* i. p. 78.

Rocks below low-water mark; Esquimalt Harbour, *Dr. Lyall & C. Wood*; Burrard's Inlet, Br. Columbia, *C. Wood*; dredged in 10 fathoms in sea water, sp. gr. 1·016, a low sp. gr. caused by admixture of water from the melted snows of the surrounding mountains. Sp. gr. in Straits of Georgia, 1·026, *C. Wood.*

Some of the specimens are of ordinary breadth; others are of the widest variety constituting the *D. herbacea* of authors (*Fucus herbaceus*, *Turn.* t. 99).

8. Carpomitra Cabreræ, *Kütz*; *Harv. Phyc. Brit.* t. 14.

Fuca Strait, *Dr. Lyall.*

A new and unexpected habitat for this local plant. Dr. Lyall's solitary specimen is in fruit, and does not materially differ from British specimens.

9. Macrocystis pyrifera, *Ag.*; *Harv.*; *Ner. Bor. Amer.* i. p. 84.

Fuca Strait and outer sea-coast; Esquimalt, *Dr. Lyall.*

10. Nereocystis Lütkeana, *Post. & Rupr. Illustr.* t. 8, 9; *Ner. Bor. Amer.* i. p. 85.

Rocks at low water; Esquimalt and Fuca Strait, *Dr. Lyall*; dredged in Burrard's Inlet, in 10 fathoms, *C. Wood.*

Besides a large specimen sent in a cask to the Kew Museum,

Dr. Lyall has communicated numerous well-dried herbarium specimens of the young plant, which well illustrate the progressive development of the frond. The youngest specimen sent has a stem two inches long, tipped by a bulbous vesicle 2–3 lines in diameter, carrying at its summit two falcate-lanceolate leaves, which show a tendency to split from the base upwards, the line of future separation being indicated nearly to the middle of each leaf. In the next stage the stem has grown but little; but the apical bulb has attained the diameter of 4–5 lines, and the two leaves have, by medial splitting, become four, of which two are perfectly free, and two still connate for a short space near the base—thus showing (as is also more clearly seen in older plants) that the fissure takes place both from the base upwards and from the apex downwards. Other specimens, in which the stem is 6–8 inches long, the bulb 1–1½ inch in diameter, and the leaves 14-16 inches long, are not more advanced in subdivision than the first here described. The age and size at which splitting begins probably depend on the depth at which a specimen grows, those in shallow water beginning to divide at an earlier age. All after-growth consists in the lengthening of the stem till it reaches from 200 to 300 feet, in the increasing size and hollowing out of the apical vesicle till it becomes six feet or more in length, and in the multiplication of leaves, by continual bisection, until there results a huge, geminate tuft of foliage, always separated at base into two distinct bundles by the true apex of the vesicle, from which no leaves spring. Eventually each leaf is 20–30 feet long. In Dr. Lyall's larger herbarium specimens there are eight leaves, each partially bisected.

11. Alaria Pylaii, *Grev.*; *Harv.*; *Ner. Bor. Amer.* i. p. 89.
On stones at the mouth of the Esquimalt Harbour and St. Juan de Fuca, *Dr. Lyall & C. Wood.*

Most of the specimens are immature. The few that produce pinnæ have them broadly obovate, broader in proportion to their length than on specimens from Newfoundland. In other respects the plants agree.

12. Alaria marginata, *Post. & Rupr.*? *Harv.*; *Ner. Bor. Amer.* i. p. 89.
Esquimalt Harbour, &c.

The specimens are immature, without pinnæ, though some are of large size, 5–6 feet long. Even in the youngest state, this differs from the preceding by the very broad midrib, 1–1½ inch wide in fronds where the stipes is 3–4 lines wide; and half-an-inch wide in younger fronds, with stipes two lines wide.

13. **Costaria Turneri**, *Grev.* (C. Turneri *and* C. Mertensii, *J. Ag. Sp. Algæ*, i. p. 139, 140; *Harv.*; *Ner. Bor. Amer.* i. p. 90.)
Rocks at low water; Fuca Strait and Esquimalt, *Dr. Lyall.*

The numerous and beautifully preserved specimens sent vary with fronds cordate-ovate, ovate, ovato-lanceolate, and lanceolate, these forms passing insensibly one into another. The largest sent by Dr. Lyall are upwards of a foot wide and $2\frac{1}{2}$ feet long, and are frequently perforated toward the base. When full-grown, the fronds measure 10–12 feet in length.

14. **Agarum fimbriatum**, n. sp. Stipite compresso-plano demum fimbriato-pinnato, costa latiore continuato, lamina membranacea bullata hic illic foraminibus irregularibus raris pertusa, basi subcordata, margine crispato eroso-fimbriato.
Dredged in 4–10 fathoms; Esquimalt Harbour, *Dr. Lyall & C. Wood.*

Stipes 1–2 inches long, flattened, 3–4 lines wide, at first simple, afterwards pinnated with horizontally patent, root-like, subulate processes, continued through the frond as an immersed costa, 4–6 lines wide. Fronds 2–3 feet long, 1–$1\frac{1}{2}$ wide, cordate at base; the margin strongly curled, and in all the older specimens jagged and fimbriated with irregular excurrent processes. The younger fronds are very much blistered (bullated), but have few foramina. The older are irregularly perforated with holes of unequal size and different shape, more abundant toward the margin. This must be near *A. pertusum*, P. & R., but differs in the fimbriated margin and stipes, if these be constant characters. More specimens are needed to ascertain this point.

15. **Laminaria saccharina**, *Ag.*; *Harv.*; *Ner. Bor. Amer.* i. p. 92.
Esquimalt Harbour, &c., common, *Dr. Lyall.*

Of this common plant many varieties are sent; some with very broad, others with narrow fronds, both varying greatly in proportionate length to breadth. Some have *strictly ovate* fronds, not more than once and a half as long as broad; others *ovato-lanceolate*, four times as long as broad; and others *lanceolate* and *linear-lanceolate*, many times as long as broad. One has a nearly *orbicular* frond! The substance varies from membranous to coriaceous, and the colour from olive-green to dark brown.

16. **Laminaria dermatodea**, *De la Pyl.*; *Ner. Bor. Amer.* p. 92.
Fuca Strait and Esquimalt, *Dr. Lyall & C. Wood.*

A series of specimens, young and mature. The younger and uncloven specimens differ from *L. saccharina* in their flattened,

widened-upward stipe and less wavy frond; the mature ones from *L. digitata* in the stipe, &c.

17. LAMINARIA APODA, n. s. Stipite nullo!, lamina basi calloso-radicante late cordata coriacea demum apice in lacinias numerosas plus minus fissa v. omnino multipartita, radice ramosissima.

Rocks between tide-marks, Fuca Strait, *Dr. Lyall.*

Frond originating in a callus (or bulbiform stipe) attached to the rocks by many branching fibres, as in other species. Lamina sessile, a foot wide or more, 1-2 feet long (or more?), cordate at base, ovate or ovato-lanceolate in outline, coriaceous, at first probably undivided, but in all our specimens more or less split, as in *L. digitata*. Some are cleft quite to the base into many narrow segments. A very remarkable species, characterized by the absence of stipe, unless the hardened and thickened base of the lamina be so called. Some specimens of *L. dermatodea* have very short stipites, not more than half an inch long; and such serve to link our present plant with the stipitate species.

18. Laminaria fascia, *Ag.*; *Harv. Ner. Bor. Amer.* i. p. 91.

Esquimalt and Fuca Strait, *Dr. Lyall & C. Wood.*

19. Striaria attenuata, *Grev.*; *Harv. Ner. Bor. Amer.* (*Suppl.*) iii. p. 123.

Orcas Island, Vancouver, *Dr. Lyall.*

20. Chorda lomentaria, *Grev.*; *Harv. Ner. Bor. Amer.* i. p. 98.

In rock-pools, Esquimalt and Fuca Strait, *Dr. Lyall.*

21. ECTOCARPUS OVIGER, n. sp. Filis (3–5-uncialibus) decomposito-ramosissimis viridibus, ramis ramulisque alternis v. secundis erectis, ultimis longiusculis vagis, sporis ovoideis ad ramos subsessilibus sæpe secundis.

Hab. Stems of *Nereocystis*; Esquimalt, *Dr. Lyall.*

This has the aspect of *E. littoralis*, Ph. Br. (*E. firmus*, J. Ag.), but differs in the fruit, which is abundant in our specimens, and very like that of *E. granulosus*, from which our *E. oviger* differs in ramification.

22. Ectocarpus littoralis, *Ner. Bor. Amer.* i. p. 139.

On rocks and Fuci, Fuca Strait and Esquimalt, *Dr. Lyall & C. Wood.*

23. Ectocarpus siliculosus, *Lyngb.*; *Ner. Bor. Amer.* i. p. 139.

On stems of *Nereocystis*, Esquimalt, *Dr. Lyall.*

24. Ectocarpi sp.

Nanaimo, on rocks, *Dr. Lyall.*

Not in fruit, and overgrown with parasites; may be a var. of *E. littoralis*.

RHODOSPERMEÆ.

25. Rhodomela larix, *Ag.*; *Harv. Ner. Bor. Amer.* ii. p. 24.
On rocks and drifted, Fuca Strait; Point Roberts; Esquimalt; St. Juan de Fuca, *Dr. Lyall & C. Wood.*

26. Rhodomela floccosa, *Ag.*; *Harv. Ner. Bor. Amer.* ii. p. 24.
Fuca Strait and Point Roberts, *Dr. Lyall & C. Wood.*

27. RHODOMELA LYALLII, n. sp. Fronde valde compressa elata decomposita pinnata disticha, pinnis pinnulisque in ambitu lanceolatis, ramulis subulatis alternis brevibus, ceramidiis ovatis subsessilibus stichidiisque racemulosis.
Adrift on the beach, Fuca Strait, *Dr. Lyall.*

12–20 inches high, regularly pinnate 3–4 times, all the divisions lanceolate (not corymbulose or fastigiate) in outline; the ramuli of the minor pinnules subequal, the lowest not conspicuously longer than the rest. In fruit, every ramulus of each ultimate plumule is generally converted into either a conceptacle or a stichidium, without any shortening of the rachis; hence the arrangement is racemulose, rather than corymboso-fasciculate, by which character, together with the larger size, more compressed frond, and more regular ramification, this plant differs from *R. floccosa.*

28. Odonthalia angustifolia, *Suhr.*?
On the beach, Esquimalt, *Dr. Lyall.*

29. Chondria atro-purpurea, *Harv. Ner. Bor. Amer.* ii. p. 22, t. 18. E.
Fuca Strait, *Dr. Lyall.*

30. Polysiphonia dendroidea, *Mont. Syllog.* p. 421, No. 1491; *Fl. Boliv.* p. 16, t. 5. f. 1.
Dredged in 10 fathoms, and cast ashore, Esquimalt, *Dr. Lyall.*

Nearly allied to *P. parasitica* and *P. pennata*, but more robust.

31. Polysiphonia atrorubescens, *Grev.*; *Harv. Ner. Bor. Amer.* ii. p. 40; *Ph. Br.* t. 172.
Esquimalt, and Fuca Strait, dredged in 10 fathoms, and cast ashore, *Dr. Lyall.*
Var. β. *minor.* Filis tenuioribus brevioribusque; Orcas Island, *Dr. Lyall.*

32. Polysiphonia Californica, *Harv. Ner. Bor. Amer.* ii. p. 48.
Esquimalt, &c., common, *Dr. Lyall.*

A very abundant species. The herbarium contains upwards of 100 specimens of all sizes, from 1 to 10–12 inches high. The more pinnated specimens pass, by slight changes, into the following. Perhaps all might be united with *P. gemmifera*, P. & R.

33. POLYSIPHONIA CALIFORNICA, var. β. PLUMIGERA. Filis rigidiusculis distanter ramosis, ramis primariis alternis infra longe nudis supra crebre alterne plumuligeris; plumulis bi- tri-pinnatis subfasti-

giatis, pinnulis ultimis flexuoso-alternis subulatis erecto-patentibus; articulis 14–16-siphoniis, ramorum diametro 8–12-plo v. multoties longioribus, ramulorum diametro æqualibus v. vix brevioribus.

Sandy beach near low water, Point Roberts, lat. 49° N., *Dr. Lyall.*

Filaments 5–6 inches long, flaccid, but not softening, sparingly divided into a few, long, naked primary branches, which sometimes have one or two small subulate ramuli below, and are closely set near the apex with bi-pinnate branchlets or plumules. Each plumule is 3-4 lines long and 2–3 broad, with a circumscribed outline. Colour, brown-red. A distinctly marked form, but not specifically different from the common *P. Californica.*

34. Polysiphonia urceolata, *Grev.*; *Harv. Ner. Bor. Amer.* ii. p. 32; *Ph. Br.* t. 167.

Esquimalt; Fuca Strait; Point Roberts: common.

35. Polysiphonia senticulosa, n. sp. Filis 2–3-uncialibus pellucide articulatis capillaribus mollibus cæspitosis siccitate badiis decomposite ramosissimis, ramis alternis secundisve bis terve divisis, secundariis strictis virgatis ramuliferis, ramulis brevibus subuliformibus alternis erecto-patentibus, articulis 4-siphoniis ramorum diametro 4–6-plo longioribus, ramulorum diametro æqualibus v. brevioribus.

Orcas Island, *Dr. Lyall.*

36. Laurencia pinnatifida, *Lamour.*; *Harv. Ner. Bor. Amer.* ii. p. 70; *Ph. Br.* t. 55.

Low-water rocks, St. Juan de Fuca Strait, *C. B. Wood*; Victoria Harbour, *Dr. Lyall.*

37. Amphiroa Californica, *Deane*; *Harv. Ner. Bor. Amer.* ii. p. 86.

Imbedded in roots of *Laminariæ*, Fuca Strait, *Dr. Lyall.*

38. Amphiroæ sp. indeterminata.

St. Juan de Fuca, S.W., *C. Wood*; Esquimalt, *Dr. Lyall.*

39. Amphiroa corymbosa, *Harv. Ner. Austr.* p. 99. t. 38.

Fragments only.

40. Amphiroa (Arthrocardia) epiphlegnoides, *J. Ag. MSS., fide Lenorm.* Fronde dichotoma v. vage ramosa flabelliformi, articulis difformibus, aliis oblongis vix compressis v. teretibus, aliis cuneatis v. polyhedris margine obtusis, ceramidiis paucis articulis latioribus insidentibus.—*A. rudis*, Harv. in Herb. D.C.D.

Rocks near low-water mark, Fuca Strait, *Dr. Lyall.*

3-4 inches long. Lower and some of the upper joints like those of *Corallina officinalis*; the medial generally broad, short, and compressed, triangular or oblate, always rounded at the edge. A native also of Tahiti.

41. Corallina officinalis, *L.*; *Harv. Ner. Bor. Amer.* ii. p. 83.

Rocks between tide-marks, Esquimalt, *Dr. Lyall.*

42. Delesseria hypoglossum, *var.* arborescens, *Lamour.*; *D. arborescens, De la Pyl.*
Fuca Strait, *Dr. Lyall.*

Fine specimens, not unlike some from the North of Ireland, or the "*D. arborescens*" of the French coast.

43. Delesseria alata, *Lamour.*, var. latissima.
On stems of *Nereocystis*, *Dr. Lyall.*

The fronds, though evidently not fully developed, are of extraordinary width; the broadest $\frac{1}{2}$–$\frac{3}{4}$ inch, the narrower $\frac{1}{4}$ inch wide.

44. Hymenena fimbriata, *P. & R.*; *Harv. Ner. Bor. Amer.* ii. p. 102.
On the beach, Victoria Harbour; Esquimalt, *Dr. Lyall & C. Wood.*

45. HYMENENA LATISSIMA, n. s. Fronde latissima, juniore flabelliformi, adulta vage partita v. laciniata infra venulosa sursum subavenia, laciniis latissime cuneatis v. flabellatis inciso-lobatis, lobulis rotundatis, cystocarpiis sparsis, soris totam frondem demum percurrentibus.
Esquimalt Harbour, dredged and adrift, *Dr. Lyall, C. Wood.*

Fronds 12–15 inches long and wide, variously cleft, the segments fan-shaped, cut at the apex into many, short, round-topped lobes. The lower half of the frond is traversed with many conspicuous, subparallel, anastomosing veins; the upper apparently nerveless, until the tetrasporic fruit is formed, when the interspaces of the sori indicate the lines of nervation; and in older specimens anastomosing nerves may be clearly traced, even to the extremities. Colour, a bright red. The herbarium contains specimens with both kinds of fruit; but the bulk of those sent are without fructification, and consequently not clearly distinguishable from a *Nitophyllum*.

46. Nitophylli? *v.* Hymenenæ species?
Victoria Harbour, in deep water, *Dr. Lyall.*

Specimens without fruit, much torn, and proliferous from the wounds, and therefore not determinable. Some look as if they belonged to *Nitophyllum laceratum*, and others like a divaricated state of *Hymenena*.

47. Gracilaria confervoides, *Grev.*; *Harv. Ner. Bor. Amer.* ii. p. 108.
Esquimalt, *Dr. Lyall.*

A deep-water variety, very much resembling, in ramification and aspects, our *Cystoclonium gracilarioides*, but quite distinct in structure.

48. Rhabdonia Coulteri, *Harv. Ner. Bor. Amer.* ii. p. 154, t. 23. B.
Esquimalt, *C. B. Wood.*

A single specimen, in fruit (*cystocarpia*).

49. Plocamium coccineum, *Lyngb.*; *Harv. Ner. Bor. Amer.* ii. p. 153.
Dredged in 6–8 fathoms, Esquimalt, *Dr. Lyall*; low-water rocks, Fuca Strait, *C. Wood.*

Apparently common; several specimens sent.

50. Rhodymenia pertusa, *J. Ag.*; *Harv. Ner. Bor. Amer.* ii. p. 147.
Cast ashore, Point Roberts; and on rocks at low water, Fuca Strait, *Dr. Lyall.*

Fine specimens; some with *cystocarpia*.

51. Rhodymenia palmata, *Grev.*; *Harv. Ner. Bor. Amer.* ii. p. 148.
On rounded pebbles, on an exposed beach, Esquimalt, *Dr. Lyall.* Also cast ashore, and on rocks at low water, in Fuca Strait, *Dr. Lyall.*

Common, and quite like the ordinary broad-leaved European form.

52. Rhodymenia corallina, *Bory* ?
Dredged in 14 fathoms, St. Juan de Fuca, *Dr. Lyall.*

Fragments, apparently of this species.

53. Rhodymenia palmetta, *Grev.*; *Harv. Ner. Bor. Amer.* ii. p. 149.
Fuca Strait, on stones, *Dr. Lyall.*

A single specimen.

54. Ahnfeldtia plicata, *J. Ag.*; *Harv. Ner. Bor. Amer.* ii. p. 168.
Esquimalt, and Fuca Strait, *Dr. Lyall.*

55. Gymnogongri species.
Esquimalt, *Dr. Lyall.*

One small specimen with *favellidia*. It agrees in several respects with *G. linearis* (*Turn. Hist. Fuc.* t. 220), but is much smaller and more ramulous, and may be distinct.

56. CYSTOCLONIUM GRACILARIOIDES, n. sp. Fronde longissima simpliciuscula crassa alterne v. vage v. secunde ramosa, ramis cylindraceis basi vix attenuatis simplicibus omnino nudis v. ramulos perpaucos ferentibus, cystocarpiis?
Dredged in 10 fathoms, Esquimalt Harbour, *Dr. Lyall.*

Fronds 12–18 inches long, 1–1½ lines in diameter; very like the cord-like varieties of *Gracilaria confervoides*, but with the cellular structure proper to *Cystoclonium*. Lateral branches numerous, 5–6 inches long, patent, quite simple, mostly naked, rarely with a few ramuli. Fruit a desideratum.

57. CALLOPHYLLIS FLABELLULATA, n. s. Fronde pusilla (1–4-unciali) flabelliformi coccinea subdichotome v. digitatim multipartita et fastigiata, laciniis linearibus raro cuneiformibus patentibus sensim an-

gustioribus, apicibus acutis, cystocarpiis in discum v. ad marginem laciniarum sessilibus.

Dredged in 8–10 fathoms, and cast ashore, Esquimalt, *Dr. Lyall.*

The smaller specimens so exactly resemble *Euthora cristata*, that it is difficult to persuade oneself, without dissection of frond and fruit, that they belong to a different genus. The larger look like small varieties of *Callophyllis variegata*, and yet are not identical; some very narrow ones are equally like the narrow and dwarf states of *C. coccinea*. The colour is a bright red. The substance is somewhat rigid, but very imperfectly adhering to paper. The average width of the segments is 1–2 lines.

58. Callophyllis variegata, *Kütz. Sp. Alg.* p. 745.
Open beach, Esquimalt, *Dr. Lyall.*

A few small specimens. They are less fastigiate and broader than *C. flabellulata*, with more cuneate and obtuse or truncate segments, and of much softer substance.

59. Callophyllis laciniata, *Kütz.*; *Harv. Ner. Bor. Amer.* ii. p. 171; *Ph. Br.* t. 121.
Esquimalt, *Dr. Lyall.*
Fragments only.

60. Constantinea Sitchensis, *Post. & Rupr.*; *Harv. Ner. Bor. Amer.* ii. p. 173.
Adrift on the beach, Victoria Harbour, *Dr. Lyall.*

Perhaps this is only a luxuriant state of *C. rosa-marina*. The lamina in our specimens is torn, but must have been 6–8 inches in diameter when perfect.

61. Kallymenia reniformis, *J. Ag. Sp. Alg.* ii. p. 286.
Dredged in Esquimalt Harbour, 10 fathoms, *Dr. Lyall.*
A single specimen.

62. Gigartina radula, *J. Ag.*; *Harv. Ner. Bor. Amer.* ii. p. 178.
Fuca Strait and Victoria Harbour, *Dr. Lyall, C. Wood.*

63. Gigartina mamillosa, *J. Ag.*; *Harv. Ner. Bor. Amer.* ii. p. 175.
Var. *a. vulgaris.* Repetite ramosa, laciniis angustis cuneatis linearibusve.
Var. *β. latissima.* Parce dichotoma, laciniis latissime cuneatis truncatis.
Esquimalt Harbour, *Dr. Lyall.*

Between the broadest and simplest and the narrower forms there seems a direct passage; nor can I distinguish such varieties, more than similar states of *Chondrus crispus*. I have seen no authentic specimen of Agardh's "*G. papillata*" (from the Sandwich Islands); but his description agrees well with the broader and simpler of the Esquimalt specimens.

64. Gigartina mollis, *Bail. & Harv.*; *Harv. Ner. Bor. Amer.* ii. p. 175.
Rocks at low water, Fuca Strait, and dredged in 5 fathoms, *Dr. Lyall.*

65. Chondrus affinis, *Harv. Ner. Bor. Amer.* ii. p. 181.
Esquimalt, *Dr. Lyall.*

66. Iridæa cordata, *J. Ag.*; *Turn. Hist.* t. 116; *Ner. Bor. Amer.* ii. p. 180.
Esquimalt and Fuca Strait: common, *Dr. Lyall.*

Many specimens, of various ages, extremely varied in form; some with strictly cordate base, and others gradually passing off toward the obovate basally attenuated form called *I. laminarioides.* Substance in the younger plants thin and glossy, bright purple; in the older thick and fleshy, dull red-brown.

67. Endocladia muricata, *J. Ag.*; *Harv. Ner. Bor. Amer.* ii. p. 182, t. 28. B.
Rocks between tide-marks; Esquimalt, *Dr. Lyall*; in 5–9 fathoms, *C. Wood.*

68. Halymenia ligulata, *J. Ag.*; *Harv. Ner. Bor. Amer.* ii. p. 192.
Esquimalt Harbour, 4–6 fathoms, *Dr. Lyall.*
Two specimens only; a broad, flat, nearly regularly dichotomous form.

69. Halosaccion hydrophora, *Ag.*; *Harv. Ner. Bor. Amer.* ii. p. 194.
Esquimalt, on rocks and in tide-pools, *Dr. Lyall*; on floating wood, *C. Wood.*
Old fronds 10–12 inches long, 1–1½ inch in diameter. Injured specimens are frequently proliferous from the wound, or the broken sac throwing out numerous sacs from the side.

70. Prionitis Lyallii, n. sp. Fronde polymorpha membranaceo-coriacea siccitate badia sæpissime plana plus minus pinnatim et dichotome ramosa; nunc subsimplici lanceolata pinnis lanceolatis utrinque marginata; nunc ramosissima, ramis lineari-cuneatis, basi longe angustatis margine foliiferis pinnulatisve, pinnis ciliæformibus; nunc di-pollachotoma laciniis linearibus patentibus apicibus acutis v. explanatis.
Esquimalt, on tidal rocks and rock-pools, *Dr. Lyall*; Fuca Strait, *C. B. Wood.*

Between extreme states of this most variable species nothing but an extensive suite of specimens can suggest a connexion; and yet I find it impossible to fix limits to the following varieties:—

Var. *α. lanceolata.* Fronde 12–14 uncias longa, unciam lata, subsimplici lanceolata, pinnis minoribus foliaceis marginata et e disco prolifera.
Var. *β. ornata.* Caule compresso-filiformi tenui parce ramoso, ramis latissimis 6–8 uncias longis margine et disco foliiferis.
Var. *γ. normalis.* Fronde ramosissima digitato-pinnatim ramosa, ramis majoribus minoribusque lineari-cuneatis, basi angustatis, 2–4 uncias

longis, 3–5 lineas latis, plus minus margine pinnulatis, pinnulis subhorizontalibus anguste linearibus v. apice dilatatis.

This seems to be the central or typical form of the species. The larger fronds are 12–14 inches in the expansion of the branches.

Var. δ. *densissima*. Fronde creberrime ramosissima pluries pinnatim ramosa, pinnis pinnulisque linearibus basi angustatis.

A narrower and more densely branched state than the preceding.

Var. ϵ. *intermedia*. Fronde ramosissima angustata, ramis superioribus plus minus dilatatis.

Between δ & ζ.

Var. ζ. *dilatata*. Fronde plus minus ramosa vix pinnulata, ramis superioribus dilatatis foliaceisve lanceolatis.

Var. η. *depauperata*. Parvula, debilis, sæpius di-pollachotoma et fastigiata.

Numerous other minor and connecting states might be named.

71. PRIONITIS LANCEOLATA? var. FILICINA. Fronde creberrime bi-tripinnata, pinnis pinnulisque horizontalibus.

On rocks, Esquimalt, *Dr. Lyall.*

Two specimens only. In substance, colour, and structure these specimens agree with the Californian *P. lanceolata*, than which, however, they are much more densely branched and more pinnated. I do not venture to propose them as specifically different.

72. Schizymenia Dubyi, *J. Ag.*; *Harv. Ph. Br.* t. 123.

On rounded pebbles, on an exposed beach, Esquimalt, *Dr. Lyall.*

Very similar to some of the larger English specimens.

73. Schizymenia Mertensiana, *P. & R.*? *J. Ag. Sp.* ii. p. 174.

Adrift, Victoria Harbour, *Dr. Lyall.*

A fragment only. The substance resembles parchment.

74. SCHIZYMENIA? COCCINEA, n. sp. Fronde.....maxima rubro-coccinea gelatinoso-membranacea tenui, siccitate chartæ arcte adhærente, structura laxa, filis medullaribus paucis arachnoideis.

Dredged in 14 fathoms, Griffin Bay, St. Juan Island, *Dr. Lyall.*

Fragments only, from which the outline can be but vaguely guessed at. The largest piece is about 16 inches long and a foot wide, and presents a bright-crimson, glossy, soft membrane closely adherent to paper. Its cellular structure is rather that of *Halymenia*; but the habit is more that of *Schizymenia*, where I provisionally place it.

75. Gloiosiphonia capillaris, *Carm.*; *Harv. Phyc. Bor.* t. 57.

On stems of *Nereocystis*, *Dr. Lyall.*

Two specimens only.

76. Microcladia Coulteri, *Harv. Ner. Bor. Amer.* ii. t. 33. A.
Rocks at low water, Esquimalt, *Dr. Lyall.*

77. Microcladia borealis, *P. & R.*; *Harv. Ner. Bor. Amer.* ii. p. 210.
Rocks at low water, Fuca Strait, *Dr. Lyall.*

78. Ceramium cancellatum, *Ag.*
Rocks and larger Algæ, at low water, Esquimalt, *Dr. Lyall.*

79. Ceramium rubrum, *Ag.*; *Ner. Bor. Amer.* ii. p. 213.
Esquimalt, *Dr. Lyall.*

80. Ceramium diaphanum, *Ag.*; *Ner. Bor. Amer.* ii. p. 215.
Rock-pools, Esquimalt and Port Roberts, *Dr. Lyall.*

81. Ceramium tenuissimum, *Ag.*; *Ner. Bor. Amer.* ii. p. 216. (C. nodosum, *Kütz.*)
Dredged in 10 fathoms, Esquimalt, *Dr. Lyall.*

82. Ptilota Californica, *Rupr.*; *Ner. Bor. Amer.* ii. p. 222.
Esquimalt, *Dr. Lyall.*

Fragments only, much battered.

83. Callithamnion arbuscula, *var.* Pacificum. (C. Pikeanum, *Harv. Ner. Bor. Amer.* ii. p. 230.)
Tidal rocks, Esquimalt, *Dr. Lyall.*

The specimens so nearly coincide with Orkney specimens of the European *C. arbuscula* that I cannot keep them specifically apart. The branching of the ramuli is less pectinate and more regularly pinnate than in the specimen from California on which my "*C. Pikeanum*" was founded.

84. Callithamnion polyspermum, *Ag.*; *Harv. Ner. Bor. Amer.* ii. p. 234.
On rocks, Esquimalt, *Dr. Lyall.*

85. Callithamnion thuyoideum, *Ag.*; *Phyc. Brit.* t. 269.
On dead shells, in 10 fathoms, Esquimalt, *Dr. Lyall.*

There are several specimens of this elegant species, very closely similar to those from the West of Ireland, in Herb. T. C. D. One of Dr. Lyall's shows a tendency to pass into "*C. tripinnatum*" or *C. gracillimum.*

86. Callithamnion Americanum, *Harv. Ner. Bor. Amer.* p. 238, t. 36. A.
On stems of *Nereocystis*, and dredged in 8–10 fathoms, Esquimalt, *Dr. Lyall.*

87. CALLOTHAMNION SUBULATUM, n. sp. Fronde rigidiuscula erecta alterne decomposita ramosissima, ramis ramulisque opposite pinnatis; pinnis subulatis acutissimis, junioribus nudis, adultis basi intus ramulo multifido auctis demum fasciculato-ramulosis; tetrasporis triangule divisis ad ramulos secundarios sessilibus.
On small stones, sandy beach, Esquimalt, *Dr. Lyall.*

More rigid than *C. Americanum*, but seemingly intermediate

between the less ramulose states of that species and the following. The larger are 6–8 inches long and broad, their divisions having a pyramidal outline.

88. CALLITHAMNION FLOCCOSUM, var. PACIFICUM. Pinnis omnibus longis filiformi-subulatis simplicissimis.
On stems of larger Algæ, Orcas Island and Esquimalt, *Dr. Lyall.*

Much more densely branched and with much longer pinnæ than the usual Atlantic variety, and with more the aspect of *C. Americanum*; but some Scotch specimens in Herb. T. C. D., by the length of their pinnæ and general habit, come near the present.

CHLOROSPERMEÆ.

89. Codium tomentosum, *Harv. Ner. Bor. Amer.* iii. p. 29.
Esquimalt Harbour, &c., on rocks, *Dr. Lyall.*

90. Porphyra vulgaris, *Ag.*; *Ner. Bor. Amer.* iii. p. 53.
On rocks and Algæ, Esquimalt, &c., common.

Several varieties. Some are 3–4 feet long, and 1 foot wide; others are beautifully marbled with green and purple.

91. Enteromorpha compressa, *Link*; *Harv. Ner. Bor. Amer.* iii. p. 57.
On rocks and dredged, Esquimalt, &c., very common.

92. Enteromorpha intestinalis, *Link*; *Ner. Bor. Amer.* iii. p. 57.
Strait of Georgia, in 8 fathoms, *C. B. Wood.*

93. Ulva latissima, *Linn.*; *Ner. Bor. Amer.* iii. p. 59.
Esquimalt, &c., common.

94. Ulva fasciata, *Del.*; *Ner. Bor. Amer.* iii. p. 58.
Pools between tide-marks, outer sea-coast and adrift, *Dr. Lyall.*

95. Ulva rigida, *Ag.*
Esquimalt, *Dr. Lyall.*

96. Ulva Linzæ, *Ag.*; *Ner. Bor. Amer.* iii. p. 59.
Rock-pools, Esquimalt and Orcas Island, *Dr. Lyall.*

97. Vaucheriæ sp.
In running streams, Esquimalt and Lake Schweltza, *Dr. Lyall.*
The species is not determinable from dried specimens.

98. Batrachospermum moniliforme, *Ag.*
Stones in running streams, Chilukweynk Valley, *Dr. Lyall.*

99. Cladophora arcta, *Phyt. Br.* t. 135; *Ner. Bor. Amer.* iii. p. 75.
Orcas Island, Esquimalt, &c., *Dr. Lyall & C. Wood.*

100. Cladophora glaucescens, *Griff.*; *Ner. Bor. Amer.* iii. p. 77.
Nanaimo, Vancouver's Island, *C. Wood.*

101. Cladophora lætevirens, *Dillw.*; *Ner. Bor. Amer.* iii. p. 82.
Fuca Strait, *Dr. Lyall.*

Young specimens, about an inch in height.

102. Cladophora glomerata, *Linn.*; *Ner. Bor. Amer.* iii. p. 84.
Lake Scheveltza, *Dr. Lyall.*

103. Conferva rivularis, *Ag.*
In running streams, Sumas Prairie, Br. Columbia, *Dr. Lyall.*

104. Conferva floccosa, *Ag.*
In pools above high water, Esquimalt, *Dr. Lyall.*

105. Zygnematis sp.
Pools, Esquimalt.

A moderately robust species, with short joints.

106. Hormotrichum Carmichaelii, *Harv.*; *Ner. Bor. Amer.* iii. p. 90.
Rock-pools between tide-marks, Fuca Strait, *Dr. Lyall.*

107. Hydrurus penicillatus, *Ag.*; *Ner. Bor. Amer.* iii. p. 118.
On stones in streams, Chilukweynk Valley, *Dr. Lyall.*

On the Discovery of *Gladiolus Illyricus* (Koch) in the Isle of Wight. By Alexander G. More, F.L.S.

[Read April 3, 1862.]

Through the kindness of my friend the Rev. E. Venables, I have lately obtained the loan of a specimen and drawing of a wild *Gladiolus* gathered by a lady near Shanklin, in the Isle of Wight; and in answer to some inquiries addressed to her, Mrs. Phillipps, the discoverer, has informed me that it was found growing in the midst of a wild tract of copse and heath, called the "Apse" or "America" woods. Only one plant was noticed: it was in bud on the 7th of July 1855, and, having been carried home, afterwards flowered, when the drawing was made.

The *Gladiolus* found at Shanklin evidently belongs to the same species as that which grows in the New Forest, as I have ascertained by comparing Mrs. Phillipps's specimen with a series collected at Lyndhurst, by Mr. John T. Syme; but in the characters afforded by the stigma, whose lobes are suddenly (not gradually) enlarged upwards, the English plant from both localities appears to agree better with *Gladiolus Illyricus* (Koch) than with either *G. imbricatus* (Linn.) or *G. communis* (Linn.); and I therefore venture to propose a change of name, which, I am glad to say, has the approval of my friend Professor Babington, who further allows