It will be of interest to compare the above list, very imperfect as it is, with that for the neighbouring group of coral islands, the Laccadives, of which Dr. Prain has given an exhaustive account in a valuable paper.* This group consists of sixteen or seventeen islands off the Malabar coast of Peninsular India, the most easterly of them being only 120 miles from it, and they are extended between 10° and 14° N. lat. Several of the islands are much larger than any of the Maldives, and appear to possess a richer and more varied flora.

As many as 192 species of Phanerogams are included in Dr. Prain's list, of which 50 are cultivated, leaving 142 wild species. Yet it is remarkable that in the above list of 40 wild Maldive plants as many as 15 are not in this much more extensive Laccadive list; these are the following:—*Vitis Linnæi*, *Dolichos Lablab*, *Cassia auriculata*, *C. Sophera*, *Adenanthera pavonina*, *Sonneratia acida*, *Pemphis acidula*, *Oldenlandia umbellata*, *Jasminum* sp., *Justicia procumbens*, *Vitex Negundo*, *Nothosærra brachiata*, *Fimbristylis spathacea*, *Zoysia pungens*, *Macaranga tomentosa*. Of these, *Sonneratia*, *Pemphis*, *Oldenlandia*, *Fimbristylis*, and *Zoysia* are littoral plants, and the others, except *Vitis Linnæi*, mostly weeds or escapes from cultivation.

Minikoi I. is included politically with the Laccadives, but it is isolated in 8° 30′ N. lat., and is thus rather nearer the Maldives, and it has also a Maldive population. It is five miles long by half a mile broad. It has a rich flora, and no less than forty-five of the species included in the Laccadive list are recorded from it *only*. Of these, seventeen or eighteen are cultivated plants, and nine or ten of these are also cultivated in the Maldives; *Triphasia trifoliata* and *Terminalia Catappa* are, however, considered to be wild in Minikoi. It is probable that many of its plants have been imported directly from Ceylon, there having been much intercourse with Colombo, especially during the building of the great lighthouse. Some sixty species are given for Minikoi which are not as yet recorded for the Maldives, but many doubtless occur there, such as the littoral species *Suriana maritima*, *Canavalia obtusifolia*, *Sesuvium*, *Wedelia biflora* (*W. scandens* Clarke), *Ochrosia borbonica*, *Ipomœa biloba*, *Boerhaavia diffusa* (*B. repens*), and *Thuarea sarmentosa*, and many weeds of cultivation. The only Minikoi plant absent from Ceylon is *Canavalia turgida* (which is doubtfully a distinct species), with a wide range as a littoral plant in the Eastern Tropics.

SOME NEW BRITISH MARINE ALGÆ.

By E. A. L. Batters, B.A., LL.B., F.L.S.

In this Journal for 1895, pp. 274–276, I gave a list of the more important species of *Chlorophyceæ* and *Phæophyceæ* added to the British Marine Flora during the last twelve months; the present

* *Journ. Bombay Nat. Hist. Soc.* v. and vi. (1892–3), reprinted in his 'Memoirs and Memoranda' (1894).

list therefore deals only with the recent additions to the *Myxophyceæ* and *Florideæ*. I am greatly indebted to M. Gomont, of Paris, for assistance with the *Myxophyceæ*, and owe the identification of the first six species recorded below to his kindness.

Myxophyceæ.

Lyngbya Agardhii Gomont, *Monogr. des Oscillariées*, p. 144. *Calothrix Agardhii* Crn. Liste des Alg. Mar. Finist. in *Bull. Soc. Bot. de France*, vii. p. 372. Margate, on *Polysiphonia nigrescens*, October, 1894, *W. Boyd, Esq.* Plymouth, Dec. 1895, *G. Brebner*. In the autumn of 1894 my friend Mr. W. Boyd was good enough to send me, in a fresh state, a quantity of sea-weed gathered at random on the shore at Margate, amongst which I was fortunate enough to find this interesting *Lyngbya*.

L. Meneghiniana Gom. in Morot, *Journal de Botanique*, iv. p. 354, 1890. Firth of Forth, opposite Caroline Park, August, 1887. This and the above-mentioned *L. Agardhii* are the only British representatives of the subgenus *Leibleinia*, composed of epiphytic species, in which the filaments are attached by the middle, both ends being erect. *L. gracilis* must, for the present at any rate, be deleted from the List of British Algæ, for M. Gomont informs me that *L. gracilis* of Holmes's *Algæ Britannicæ Rariores Exsiccatæ*, No. 165 (vide *Grevillea*, xxii. p. 51), is but a form of *Oscillatoria Corallinæ* Gom. The same fate must befall *L. confervoides*, the plant so called in *Grevillea*, l. c., being in M. Gomont's opinion a form of *L. semiplena*.

L. Rivulariarum Gom. *Monogr. des Oscill.* p. 168. Studland and Swanage, Sept. 1894. In the sheaths of *Microcoleus chthonoplastes*, rare, *E. A. B.*

Phormidium tenue Gom. *Monogr. des Oscill.* p. 189. Muddy estuary of the Tweed, Oct. 1883, *E. A. B.*

P. ambiguum Gom. *l. c.* p. 198. In deep rock pools near high-water mark, Farland Point, Cumbrae, August, 1891, *E. A. B.*

P. uncinatum Gom. in Morot, *Journal de Botanique*, iv. p. 355, 1890. Muddy estuary of the Tweed, July, 1884. Ballachulish, July, 1885, *Dr. Otto Nordstedt* (vide *Grevillea*, xxii. p. 52). I am uncertain whether Dr. Nordstedt's specimens were gathered in brackish or fresh water; there is, however, no doubt about my Berwick specimens.

P. corium Gom. in Morot, *Journ. de Bot.* iv. p. 355. Burnham, May, 1894, *T. H. Buffham.* In crevices of rocks near high-water mark. Swanage, Sept. 1894, *E. A. B.*

P. persicinum Gom. *Monogr.* p. 184. *Lyngbya persicina* Reinke, *Algenflora der West. Ostsee*, p. 91. On old Solen shells dredged from 6–8 fathoms, Cumbrae, August, 1891, *E. A. B.* Plymouth, Oct. 1895, *G. Brebner*.

Florideæ.

Erythrotrichia Boryana Berthold, *Bangiaceen*, p. 25. Eastbourne, June, 1889, *E. A. B.* My specimens of this species are narrower than in the typical form, usually being from 18 to 120 μ

wide. There are from 1 to 6 or more cells in the width of the frond. In *E. investiens* there are never more than 2 cells in the width of the filament. From *Bangia ciliaris* it is easily distinguished by its monostromatic frond.

Colaconema, nov. gen. Thallus microscopic, consisting of rose-red, creeping, irregularly branched, jointed filaments, living in the cell-walls of various algæ. Filaments often anastomosing, sometimes loosely united laterally. Monosporangia formed from portions either of the terminal cells of the principal axes, or of short swollen 1- or few-celled lateral branches, or even from a portion of a cell in the continuity of the filament. The undifferentiated portions of the cells forming cup-like bases for the sporangia.

C. Bonnemaisoniæ, nov. sp. Filaments flexuous, much and irregularly branched, anastomosing so as to form an irregular network between the cortical cells of the host-plant. Cells very variable in shape, simple, furcate, cruciate or irregular, swollen here and there, varying in length from one to six or eight, or even more times longer than broad, usually 3–6 μ in diameter. Sporangia lateral, nearly globular, 9–12 μ in diameter, usually in clusters of from 2 to 6, cup-like base conspicuous, about one-third the size of the sporangium. Growing in the cell-wall of *Bonnemaisonia asparagoides*. Plymouth, Sept. 1895, *G. Brebner*. Berwick-on-Tweed, *E. A. B.*

C. Chylocladiæ, nov. sp. Filaments slender, straight or very slightly flexuous, subsimple or sparingly branched, two filaments sometimes united by one or more lateral branches; cells nearly cylindrical, very long, often eight to ten or twelve times longer than broad, 2·5–3 μ in diameter; sporangia terminal or lateral, oval, 6–8 μ long by 4–6 μ wide, cup-like base of sporangium not conspicuous. In the cell-wall of *Chylocladia ovalis*. Torquay, *E. A. B.* Plymouth, Sept. 1895, *G. Brebner*.

C.? reticulatum, nov. sp. Filaments much and irregularly branched, anastomosing so as to form a more or less regular network between the cells of the host-plant; owing to the very limited space in which they grow, the side branches are frequently so closely pressed against the principal branches that they appear to form one filament, composed of a double row of cells. Cells short, angular, about as long as broad or a little longer, 6–8 μ in breadth. Sporangia unknown. In the cell-wall of *Desmarestia Dudresnayi*. Moville, North Ireland, Oct. 1852, *comm. Dr. D. Robertson*. Plymouth, Oct. 1895, *G. Brebner*. Montagne describes and figures Callithamnoid filaments as part of his *Desmarestia Gayana* (vide Ch. Gay, *Histoire de Chile*, viii. p. 242, Atlas Pars. Crypt. tab. xiv. fig. 1), and it is far from improbable that the plant described above is related to the parasite mistaken by Montagne for part of the *Desmarestia*. I am indebted to Mr. George Brebner, who did such excellent algological work at Cumbrae in 1893, and is now with equal success investigating the Marine Algæ of Plymouth Sound, for beautiful specimens of *C. Bonnemaisoniæ* and *C. Chylocladiæ*, both species bearing monospores. The former, when I received it from Mr. Brebner, was quite new to me, although I afterwards

found it plentifully on specimens of *Bonnemaisonia* gathered at Berwick several years previously. Had I not seen Mr. Brebner's specimens, I certainly should not have ventured to describe the genus *Colæonema*, which I have founded on the parasite on *Bonnemaisonia*.

Chantransia cæspitosa (*Callithamnion cæspitosum* J. Ag. *Spec. Alg.* xi. p. 18; Crn. *Alg. Finist.* 121). On *Codium tomentosum*, Fuci, &c. Swanage, April, 1899, *E. M. Holmes*. I have compared Mr. Holmes's specimens with No. 121 in his copy of Crouan's *Algues Marines du Finistère*, and find the two plants precisely similar. Prof. J. Agardh (*Analecta Algologica*, p. 48) thinks this may be the same as *C. corymbifera* Thur.; but Crouan's plant is a much larger, coarser plant, with filaments frequently 24 μ in diameter, of a quite different habit, and no trace of either antheridia or cystocarps. From *C. Daviesii* the present species may at once be distinguished by the pseudo-parenchymatous basal disc of that species being replaced by creeping filaments.

C. microscopica Foslie, *Contrib.* i. p. 54. On *Porphyra*, Berwick-on-Tweed, June, 1895, *E. A. B.* My specimens of this interesting little species, which is at once recognisable by its unicellular basal disc, bear both antheridia and cystocarps in addition to the monospores. The antheridia form very compact clusters at short intervals along the main axes and branches, the cystocarps are clustered near the basal disc, and are very large in proportion to the tiny plant that bears them.

C. mirabilis (*Callithamnion mirabile* J. Ag. *Spec. Alg.* ii. p. 15). On *Desmarestia aculeata*, Swanage, August, 1894, *E. A. B.*

Polysiphonia opaca Zan. *Syn.* p. 63; J. Ag. *Spec. Alg.* p. 1055. Mr. E. D. Marquand records this species from Guernsey (*Transactions* of the Guernsey Society of Natural Science, 1894), but I have had no opportunity of verifying the record.

Rhodochorton pallens Hauck, *Meeresalg.* p. 69. Seaton, Devonshire, July, 1895. I owe to the generosity of my friend Mr. T. H. Buffham, to whom I am indebted for many valuable specimens of our native algæ, and for still more valuable advice and criticism, a beautiful tetrasporic specimen of this interesting plant, which was gathered by his daughter at Seaton last July. The Devonshire specimen exactly agrees with Hauck's description and figures (*Oesterr. Bot. Zeitschrift*, 1878, p. 187, tab. ii. figs. 4–6).

Callithamnion lepadicola J. Ag. *Spec. Alg.* iii. p. 12. On limpet-shells, Swanage, August, 1894, *E. A. B.* My specimens of this plant agree well with the specimens in the British Museum copy of Welwitsch's *Phyc. Lusitan.* No. 23, on which the species is founded, but I must confess that the plant appears to be more nearly related to the *Bangiaceæ* than to the *Ceramicæ*. I believe I have seen specimens of this species from Guernsey, but I cannot be certain, as I now have no specimen from that locality.

Bonnemaisonia hamifera Hariot, Liste des Algues Marines rapportés de Yokaska (Japon), par M. le Dr. Savatier, in *Mém. de la Soc. Nat. des Sc. Nat. &c. de Cherbourg*, xxvii. 1891, p. 223. Mr. Buffham exhibited a specimen of this very interesting alga, which he had

found at Falmouth, at the meeting of the Linnean Society on Nov. 21st, 1895.

Trailliella, nov. gen. Fronds composed of monosiphonous, branching, jointed filaments. Primary filaments procumbent, attached to the substratum by disc-shaped cells. Secondary filaments arising from the primary filaments, erect, branching. Tetraspores immersed, formed from a portion of the cell-contents of cells in the continuity of the frond, irregularly cruciate; cystocarps and antheridia unknown. The tetraspores are formed in an analogous manner to the monospores of *Rhodochate* (*vide* Bornet, *Les Algues de P. K. A. Schousboe*, p. 361). The cell in which a tetraspore is formed swells, and its cellular contents divide longitudinally into two parts of unequal size, the larger of the two parts becomes darker in colour, more opaque and granular, and at the same time increases in size until finally it fills almost the entire cell, when it divides into two parts by a transverse division, and ultimately forms an irregularly cruciate tetraspore. The systematic position of the genus must of course remain doubtful so long as the cystocarps are unknown, but in the meantime the genus may be placed next to *Spermothamnion*.

Trailliella intricata, nov. sp. Fronds forming dense, rose-red or brownish-red tufts. Primary filaments 30–40 μ thick, irregularly branching, attached by disc-shaped cells. Secondary filaments erect, $\frac{1}{2}$–$1\frac{1}{2}$ in. high, and of nearly equal diameter (30–45 μ) throughout, simple or branching, more or less naked below, pinnate above, with alternate or subsecund spreading branches of almost the same diameter as those from which they arise, tapering at the apex to about 20 μ. Cells of both the primary and secondary filaments $1\frac{1}{2}$–$2\frac{1}{2}$ times longer than broad, more or less swollen in the middle; in most of the cells one of the upper corners is occupied by a small roundish or triangular refractive colourless body 12–15 μ in diameter, which is probably analogous to the refractive bodies so often found in species of *Antithamnion*. Tetraspores immersed in the swollen cells of the secondary filaments, 50–60 μ in diameter, solitary or 3–6 together, formed from successive cells of the filament, separated from the apex of the filament by from 3 to 15 unchanged cells. Plymouth, October, 1895, *G. Brebner*. Studland, Sept. 1890, *E. M. Holmes;* Sept. 1895, *E. A. B.*

This very interesting species has long been known in a barren condition, and is the *Spermothamnion Turneri* f. *intricata* of Mr. Holmes's and my Revised List, and I have every reason for believing that it is *S. intricatum* J. Ag. It was reserved for Mr. Brebner, however, to discover the tetraspores, which are placed quite differently from those of any other member of the *Ceramieæ* known to me, thus necessitating the removal of this plant to a new genus; and I have seized the opportunity to connect the name of my friend Mr. G. W. Traill, the well-known algologist of Edinburgh, with the British Marine Flora for which he has done so much. I must here express my regret that Mr. Brebner has not seen his way to allow any of the new genera discovered by him to bear his name. If Mr. Brebner goes on as he has commenced at Plymouth, however,

it seems likely that many more opportunities may arise of connecting his name with the sea-weeds of Britain.

In his recent *Analecta Algologica;* Continuatio, ii., Prof. J. G. Agardh, besides raising the varieties *vimineum*, *corymbosum*, and *botryocarpum* of *Ceramium rubrum* to specific rank, records three new *Ceramia*, i. e., *C. Crouanianum*, *C. fruticulosum*, and *C. arborescens* from Britain. As the specimens were in most cases sent to Prof. Agardh by Mrs. Griffiths, we presume the new species were found on the coast of Devonshire or Cornwall.

Rhododiscus pulcherrimus Crn. *Ann. Sc. Nat.* 4th ser. xii. pl. xxii. figs. 29–33. On an old Solen shell, Plymouth, Oct. 1895. I was fortunate enough to find a specimen, now in the Herbarium of the British Museum, of this most interesting plant when examining some old Solen shells from Plymouth Sound, which Mr. George Brebner had sent to me to examine for perforating algæ. I trust that before long Mr. Brebner will be able to send me some more specimens of this plant, which perhaps, when specially sought for, may not be so rare as is generally supposed.

Peyssonnelia Rosenvingii Schmitz, in Rosenv. *Groenlands Havalger*, p. 782. Near low-water mark, Berwick-on-Tweed, February, 1888. From an examination of the figure and description of this species it appeared to me so probable that this species might be mistaken for *P. Harveyana* that I re-examined all my specimens so named, with the result that I actually found one or two specimens of *P. Rosenvingii* amongst them.

P. rubra J. Ag. *Spec. Alg.* ii. p. 502; iii. 386. Birturbui Bay, on the Scallop Bank, August, 1846, *William McCalla & Prof. W. H. Harvey*. Harvey's figure and description of *Peyssonnelia* (*Cruoriella*) *Dubyi* in *Phycologia Britannica* always appeared to me so different from that given by the brothers Crouan of their plant, that I was doubtful whether both authors referred to the same species. Through the kindness of Prof. E. P. Wright, I have been enabled to examine Harvey's original specimens, and I have no hesitation in saying that all his Birturbui Bay specimens are referable to *P. rubra*. The specimens in the collections presented to Kew and the Linnean Society by Prof. Harvey are also referable to *P. rubra*. Although there are no specimens from the West of Scotland in any of the collections which belonged to Harvey, I have no doubt that the specimens from that locality mentioned by him in *Phyc. Brit.* are referable to *Cruoriella Dubyi*, a species which is by no means uncommon at Cumbrae and elsewhere on the west coast.

P. atropurpurea Crn. *Alg. Mar. Finist.* 23; *Florule du Finistère*, p. 148. Penzance, August, 1889, *A. H. Teague*.

Cruoria rosea Crn. *Fl. Finist.* 147. Plymouth, Nov. 26, 1895. Simultaneously detected by Mr. Brebner and myself on old shells dredged from "The Queen's Ground," Plymouth Bay.

In conclusion, I may say that Mr. Brebner purposes to publish shortly figures of the species of *Colaconema* and *Trailliella*, and that Mr. Buffham similarly purposes to publish a description and figure of *Bonnemaisonia hamifera*.