XVII.—LIST OF THE SEA-WEEDS OR MARINE ALGÆ OF THE SOUTH COAST OF NEW ENGLAND.

BY W. G. FARLOW, M. D.

The following list of algæ has been arranged from collections made in the summer of 1870 and spring of 1871, at Greenport and Orient, Long Island, but more especially at Wood's Hole and vicinity in the summer of 1871. I am indebted to Professor S. F. Baird for opportunities for collecting at the last-named station such as no American algologist has ever before enjoyed. Mr. S. T. Olney, of Providence, Rhode Island, has been so kind as to place at my disposal his extensive collections of Rhode Island algæ, made during the years 1846–'47–'48. The collections of 1846 and 1847, examined and named by Harvey, contained the types of *Polysiphonia Olneyi* and other species. The collection of 1848 contained some novelties, which are mentioned in the following list. Since my own list was prepared, Mr. Olney has published a complete list of Rhode Island algæ, entitled *Algæ Rhodiaceæ*. For specimens from New Haven and Watch Hill I am indebted to Professor D. C. Eaton, of Yale College; and the albums of Miss Fisher and Miss Pease, of Edgartown, have furnished choice specimens from that region.

As long ago as 1852, when the first volume of the Nereis Boreali-Americana appeared, it was understood, in a general way, that Cape Cod was the dividing line between the northern and the southern marine ora. The question has since been raised whether Cape Cod is as strictly the dividing line as Harvey had supposed; whether northern species do not occur at exposed southern points, as Gay Head and Monoeuk, and southern species wander northward to Cape Ann. Most decidedly, I think, such is not the case. In the first place, none of the characteristic algæ of the north, with a solitary exception, are found south of Cape Cod. The characteristic algæ of our northern coast are *Alaria esculenta*, GREV.; *Laminaria longicruris*, DE LA PYL.; *Agarum Turneri*, P. & R.; *Halosaccion ramentaceum*, J. AG.; *Euthora cristata* J. AG.; *Ptilota serrata*, KÜTZ.; *Delesseria alata*, LAM., and *D. sinuosa* LAM. These are all common as far south as Nahant, except *Halosaccion* which is common on the coast of Maine, but does not occur south of Rye Beach, New Hampshire. From Boston Harbor to Cape Cod is a desert, as far as marine vegetation is concerned, except for a short interval at Hingham, where rocks afford a foot-hold for fucoids and chondrus, which are there gathered for the market in large quantities. Not one of the algæ above mentioned, except *Delesseria sinuosa*, is found south of

Cape Cod. *Agarum Turneri* is exclusively American, eastern and western and northern. *Alaria esculenta*, *Laminaria longicruris*, and *Euthora cristata*, are found in Europe on the northern shores of Scotland and Norway. *Euthora cristata* is rare as far south as Edinburgh, 56° N., and *Alaria esculenta* is rare in the south of England. *Ptilota serrata* and *Halosaccion ramentaceum* occur on the coast of Norway. Both *Delesseriæ* occur farther south, *D. sinuosa* in particular, which grows with subtropical sea-weeds on the southern coast of England and on the opposite shore of France. It will be seen, then, that the flora, as far south as Boston, 42½° N., resemble most strongly that of the north of Scotland and Norway, which, at its southernmost point, reaches only 58° N.

The characteristic algæ of Southern Massachusetts and Long Island Sound are *Sargassum vulgare*, AG., and *S. Montagnei*, BAIL., (an American variety of the last;) *Chordaria divaricata; Grinnellia Americana*, HARV.; *Dasya elegans*, AG.; *Chylocladia Baileyana*, HARV.; *Solieria chordalis*, AG.; *Gracilaria multipartita*, AG.; *Ptilota elegans*, BONNEM.; *Chondria Baileyana*, MONT., and *Champia parvula*, HARV. Of these, excepting one extremely doubtful case of *Grinnellia*, none have ever been found north of Cape Cod, except *Ptilota elegans*, which occurs at Beverly, Massachusetts, and *Chylocladia Baileyana*, found at Quincy, Massachusetts, by Dr. Durkee. Of *Ptilota elegans* it may be remarked, that this plant, although abundant south of Cape Cod, is local, occurring only in the more exposed places, as Gay Head, No Mans Land, and Newport. *Chylocladia Baileyana* and *Grinnellia Americana* are exclusively American, the former found as far south as Charleston, the latter on the coast of North Carolina. *Dasya elegans* is Mediterranean, and extends to the Canaries. *Solieria chordalis*, first found at Cadiz, and *Chondria Baileyana*, on the supposition that it is identical with *Chondriopsis striolata*, J. AG., are Mediterranean. *Sargassum vulgare* and *Gracilaria multipartita* are rare as far north as the south of England, where many subtropical algæ flourish. *Chordaria divaricata* is an anomaly, being local in Great Britain and common in the Baltic, while it has not been found north of Cape Cod in America. The flora of Southern New England is much like that of the Mediterranean.

But it may be asked why the appearance of the vegetation at Gay Head and Wood's Hole is so different. It is not because we have at Gay Head an offshoot of the northern flora. The false resemblance is caused by the immense quantities of *Laminaria*, composed almost entirely of *L. saccharina*, common throughout the Sound; *L. longicruris*, the distinguishing northern species, being entirely absent. *L. digitata*, a northern species, is also found, but I have hesitated to count it as northern, because I have information from New Haven, not very definite to be sure, that it is found there also. The reason is, because at Wood's Hole, Greenport, and Peconic Bay, we have an extremely southern flora, which in fact, botanically, does not belong to Long Island Sound. Gay Head does not produce northern species, but the last-mentioned localities

are more favorable to the growth of warm-water species than any other parts of Long Island Sound, and at those points we meet a vegetation which we must go as far south as the Carolinas to find normally. *Sargassum vulgare*, pre-eminently a southern species, abounds at Wood's Hole and Greenport; at the latter place almost takes the place of *Fucus*. *Hypnea musciformis*, a very common West Indian species, is found near Wood's Hole and New Bedford, again at Charleston Harbor and on the coast of North Carolina. This state of things seems to be owing to the shallowness of the water in Vineyard Sound and Peconic Bay, and the southern exposure of the shore, thus allowing the water of the smaller bays to become quite warm, so that the spores of the southern algæ might pass through the colder waters of Gay Head and Montauk without germinating till they reached a more congenial home in Wood's Hole and Peconic Bay.

In examining the following list one cannot fail to notice the very small number of species added to the flora since Harvey's Nereis was published. This is in striking contrast to the experience of the zoologists, who seldom allowed a day of this summer to pass without additions to the fauna. Of the species added, seven are common to Europe; three forms, found by Harvey, only at Key West, were found at Wood's Hole. The actual number of species on the eastern coast is, probably, not greater than Harvey estimated, since recent additions are counterbalanced by the union of some of Harvey's species with older ones. No facts were obtained as to the greatest depth at which algæ will grow, as the dredgings were carried on in comparatively shallow water, but the depth at which several grow was found to be greater than Harvey had supposed, as in the case of *Chrysymenia rosca*, described as growing in tide-pools, which I have only found in six or eight fathoms of water, on shells, in company with *Scinaia furcellata*.

The following table has been prepared from Harvey's Nereis and Agardh's Species Algarum, and represents, as far as is known, the number of species found on different parts of our coast:

	From Key West north.	From Cape Cod north.	From Cape Cod to Charleston.	From Charleston to Key West.	Common to Europe.	Common to west coast.
Melanospermeæ	72	56	28	13	50	4
Rhodospermeæ	150	63	72	91	92	19
Chlorospermeæ	85	30	35	47	49	9
Total	307	149	135	151	191	32

From this table it will be seen that over sixty-two per cent. of our algæ are common to Europe. This refers to our whole eastern coast. The table, however, does not show the fact that the number of common

species gradually diminishes as you proceed southward. At Nahant, out of eighty-six species, seventy-nine are common to Europe. The last column includes only those common species that are actually known to occur on the west coast; in reality, there are probably many more. The diminution of species between Cape Cod and Charleston is owing to the extent of sandy shore, on which very few algæ grow. Harvey estimated that there were about three hundred conspicuous sea-weeds in Great Britain, and counting the minute, not far from four hundred. Even allowing that our coast has not been as thoroughly explored as the British, it will be seen that, considering its great extent, it is not so rich in species as the latter coast. This is, in part, owing to the sandy shore of the Middle and Southern States. Compared with the western coast of Europe, the localization of our floræ will be noticed. They do not gradually pass into one another, but are much more sharply limited, particularly near Cape Cod.

From our coast, between Maine and Key West, little is to be expected hereafter in the way of new species, and the attention of algologists will be turned to a search for the smaller European species, and to a more accurate study of the difficult genera *Callithamnion* and *Cladophora*, and the order *Oscillatoriaceæ*. There is a lack of information about the winter state of our algæ, and this can only be supplied by residents on the shore. At present I know of no winter collections except those made by ladies of Edgartown, Massachusetts. On the coast of the extreme eastern part of Maine and the shore of the British provinces much more of novelty may be expected. Many species have been described from single or very few specimens from the Gulf of St. Lawrence, and more extensive suites than have yet been obtained are necessary for the complete establishment of the species.

MELANOSPERMEÆ.

FUCACEÆ.

1. *Sargassum vulgare*, AG. Common at Wood's Hole in warm, shallow coves. Very variable in the length and breadth of leaves, and in the ramification of the fruit-bearing branchlets, characters on which Harvey relies in separating this from the next species.

2. *S. Montagnei.* Greenport, Long Island. Probably only a variety of the last, although my Greenport specimens have narrower leaflets than any *Sargassum* gathered by me at Wood's Hole.

   S. bacciferum I have never found washed ashore, and during the summer months it is undoubtedly rare, if found at all. Said to be found in great patches off Nantucket, but I have never seen specimens.

3. *Fucus vesiculosus*, LINN. } Both species common as far as New York, but by no means as luxuriant as north of Cape Cod.
4. *F. nodosus*, LINN. }

SPOROCHNACEÆ.

5. *Desmarestia aculeata*, LAM. Common at Gay Head, Nantucket, (Miss Mitchell.)

6. *D. viridis*, LAM. Orient Point, Long Island. June, 1871.

LAMINARIACEÆ.

7. *Laminaria saccharina*, LAM. Very common at Gay Head and Montauk, Long Island; Wood's Hole, Orient Point, Newport.

8. *L. digitata*, LAM. Gay Head, Montauk. Probably the southernmost habitat of this species.

L. trilaminata, OLNEY. In August, 1870, I picked up on the north beach, Orient Point, a fragment much decayed, which, at the time, I thought belonged to this species. Professor Gray having mentioned that he had seen, several years ago, at Gay Head, a plant which might possibly have been this species, I visited that spot several times, but found no trace of *L. trilaminata*, although there was abundance of *L. saccharina*. The specimens, supposed to have been *L. trilaminata*, were probably nothing more than a monstrous form of *L. saccharina*. This view is strengthened by the fact that I have seen, at Mount Desert, *Agarum Turneri* with three alæ; and I have seen two specimens of *L. saccharina*, in which one edge of the frond had become thickened like a cord, and at the apex the cord was beginning to split into two layers, at right angles to the frond itself.

9. *Chorda filum*, STACK. Very common in shallow water.

10. *C. lomentaria*, LYNGB. Orient Point. June, 1871.

DICTYOTACEÆ.

11. *Stilophora rhizodes*, J. AG. Waquoit. A few specimens floating near Wood's Hole, in July; near Providence, (S. T. Olney.) Nowhere common. I have lately seen a specimen sent from Lenormand to Dr. Hillebrand, marked *Stilophora Lyngbyei*, AG. New York Bay. By some this species is considered a variety of the last named.

12. *Dictyosiphon fœniculaceus*, GREV. A few specimens floating off Naushon.

13. *Punctaria tenuissima*, GREV. Dredged in three or four fathoms. Wood's Hole. Common at Orient Point. June, 1871.

14. *P. plantaginea*, GREV. With the latter, and equally common at Orient Point.

CHORDARIACEÆ.

15. *Chordaria flagelliformis*, AG. Nobska, Gay Head. Not so abundant as farther north.

16. *C. divaricata*, AG. Wood's Hole, Orient, Greenport. Very common all summer in warm, shallow bays. To the eye this would appear to include two species. The young and growing parts are solid and very tortuous, and resemble, when dried, a *Mesogloia*. As the plant grows older the stem often becomes hollow, and many of the branches fall off, giving the plant a coarse appearance.

17. *Leathesia tuberiformis*, S. F. GRAY. Washed ashore on Buzzard's Bay and Orient Point, but not seen growing.

18. *Elachista fucicola*, FRIES. Wood's Hole. Parasitic on *Fuci*.

ECTOCARPACEÆ.

19. *Cladostephus verticillatus*, AG. Orient, Gay Head. Very common toward No Mans Land.

20. *C. spongiosus*, AG. Newport.

21. *Sphacelaria cirrhosa*, AG. Common at Wood's Hole and Weepecket Islands, Greenport, Orient.

22. *Myriotrichia filiformis*, GRIFF. On *Chorda lomentaria*. Point Judith, (S. T. Olney.) The only recorded case of this plant being found in America is that of Mr. Hooper, mentioned in the appendix to Harvey's Nereis, who found it in Penobscot Bay on *Dictyosiphon*. In Europe it is almost always found on *Chorda lomentaria*.

23. *Ectocarpus littoralis*, LYNGB. Everywhere common on *Fucus*.

24. *E. fasciculatus*, HARV. Gay Head and Nobska.

25. *E. Durkeei*, HARV. Gay Head.

25.* *E. viridis*, HARV. Wood's Hole, (*fide* D. C. Eaton.)

RHODOSPERMEÆ.

RHODOMELACEÆ.

26. *Chondria* (*Chondriopsis*, AG.;) *dosyphylla*, AG. Common on stones and the larger algæ at low-water mark. Wood's Hole, Orient.

C. dasyphylla, var. *sedifolia*. Not noticed by Harvey north of Key West, but not uncommon at Wood's Hole.

27. *C. Baileyana*, HARV. Very common, and with the last. Agardh refers this with a query to his *Chondriopsis striolata* of the Adriatic. I have compared my specimens with one of *C. striolata* from Agardh in the herbarium at Cambridge, and it seems to be the same, but further comparison is needed.

28. *C. littoralis*, AG. Wood's Hole. Not at all common; a species easily recognized when seen, but difficult to describe. Not noticed by Harvey north of Key West.

29. *Rhodomela subfusca*, AG. Gay Head, Vineyard Sound.

30. *Polysiphonia urceolata*, GREV. Government Wharf, Wood's Hole, Orient Point. Var. *formosa*. Orient, Nantucket.

31. *P. Olneyi*, HARV. Wood's Hole, (common,) Waquoit.

32. *P. Harveyi*, BAIL. Very common on eel-grass; the bottom of the small harbor at Wood's Hole sometimes covered with this plant after a southerly wind; washed up so abundantly at Southold, Long Island, in the autumn, as to be used for manure. It must be confessed that this species is not well defined, passing, on the one hand, into *P. Olneyi*, and, on the other, into *P. Harveyi* var. *arietina*, HARV., which seems to me to be full as clearly a distinct species as *P. Harveyi* itself. Bailey so regarded it. This plant is called on Long Island "nigger-hair;" at Wood's Hole, "dough-balls." I have fine specimens a foot in diameter, whereas in var. *arietina* the tufts are seldom over two inches in diameter. This variety is very common on the south side of Lynn Beach on eel-grass.

33. *P. subtilissima*, MONT. Seekonk River, (S. T. Olney.)

34. *P. elongata*, GREV. Common at Gay Head, and floating near Menimshi Bight. I did not collect this species until August, when many of the terminal fibrils had fallen off, leaving the ramuli rather bare. Also at Lynn Beach, but neither so luxuriant nor abundant.

35. *P. fibrillosa*, GREV. Greenport.

36. *P. violacea*, GREV. Orient Point, Gay Head, and Menimshi. Not uncommon.

37. *P. variegata*, AG. Very common in all warm, shallow water, on piers, in company with *Solieria chordalis*. Wood's Hole, Weepecket Islands, Greenport, Orient, New Haven, (Professor Eaton.)

38. *P. atrorubescens*, GREV. Gay Head and Menimshi Bight, floating with *P. elongata* and *violacea*. Not very common. Some specimens collected in July are a foot long, and the branches are covered with subulate ramuli, while others, gathered in September, are not more than two or three inches long, nearly destitute of lateral ramuli, and look like black horse-hair.

39. *P. nigrescens*, GREV. Wood's Hole, Gay Head, Orient. Var. *fucoides* common on fucus at low-water mark at Weepecket Islands, New Haven, (Professor Eaton,) Gay Head. Dredged in ten fathoms near No Mans Land.

40. *P. fastigiata*, GREV. Notwithstanding the common occurrence of *Fucus nodosus*, on which this is generally parasitic, I have found at Wood's Hole only a few specimens of this species, and those faded and greenish. New Haven, (Professor Eaton.)

41. *Dasya elegans*, AG. Very common from New York to Nantucket, being one of the most striking and abundant rhodosperms during the latter part of August and September. Washed ashore at Gay Head.

LAURENCIACEÆ.

42. *Champia* (*Lomentaria*, AG.) *parvula*, HARV. Very common on eel-grass and the larger algæ throughout Long Island Sound. When dredged in fine to ten fathoms it is flatter and more gelatinous than in shoaler water. I have a specimen from Watch Hill, collected by Professor Eaton, which seems to me to be the same as Harvey's Key West species, *C. salicornioides*, and I have numerous specimens connecting the two species, which are probably forms of the same.

CORALLINACEÆ.

43. *Corallina officinalis*, L. Common. Wood's Hole, Gay Head. The classification of this order is indeed wretched, when the fruits characteristic of three different genera are all found on a single specimen, as is the case with one from Gay Head.

44. *Melobesia membranacea*, LAM. Common along the coast on zostera.

45. *M. farinosa*, LAM. on *Sargassum vulgare*. Cuba, (C. Wright.)

46. *M. pustulata*, LAM. On *Fuci* and *Chondrus*. Cape Ann, Gay Head, Wood's Hole, Weepecket.

SPHÆROCOCCOIDEÆ.

47. *Grinnellia Americana*, HARV. On sheltered piers, below low-water mark, and on stones and sponges as low as six fathoms. Wood's Hole, Orient, Greenport, Watch Hill, (Professor Eaton,) Edgartown, Buzzard's Bay. Washed ashore at Gay Head and Nantucket. This, perhaps the most beautiful rhodosperm south of Cape Cod, is a very rapid grower, two or three crops being produced during the summer in favorable localities. It is supposed to require warm water for its perfection, but the ladies of Edgartown collect this plant in midwinter, as it is only at that time that it grows high up on the piers. I am informed by Miss Fisher that, after high tides in winter, the flats in the vicinity of Edgartown are covered with this seaweed. Harvey described the harbor of Greenport as carpeted with *Grinnellia*. In August, 1870, I dredged that harbor in every direction, but found no trace of it, though there were a few specimens on the north beach. It is possible that the numerous fish-oil factories may have driven it away. I have never seen but one specimen of *Grinnellia* purporting to have been found north of Cape Cod; that was a water-worn fragment, supposed to have been collected at Pigeon Cove, Cape Ann. But, as the lady who showed me the specimen was not sure of the locality, and had other specimens from Long Island Sound, I think there must have been some mistake. The southernmost locality from which I have received specimens is Norfolk, Virginia.

48. *Delesseria sinuosa*, LAM. Gay Head and No Mans Land; abundant in company with *Ptilota elegans*. Watch Hill, (Professor Eaton,) Newport. Although identified by Harvey with the European plant, it seems to differ in several respects from the descriptions of that plant. The conceptacles are described as being on the midrib, or lateral nerves, in the European plant. In ours, although sometimes found in a similar position, they are more frequently scattered, and the tetraspores are frequently dispersed instead of being confined to the marginal leaflets. It generally fruits in winter and early spring, but I have one specimen fruiting in September. I have no specimen of *D. quercifolia* of the southern hemisphere with which to compare mine.

49. *Gracilaria multipartita*, J. AG. Wood's Hole, Hadley Harbor. On small stones and gravel, just below low-water mark. Our broadest specimens are considerably narrower than the European; some are so narrow as to resemble *Solieria chordalis*, and are var. B. HARV. In September, 1870, I found large masses of a *Gracilaria*, which I picked up by the armful at East Marion, Long Island. I think likely it was *G. confervoides*, GREV., but have misplaced my specimens.

GELIDIACEÆ.

50. *Gelidium corneum*, LAMOUR. This alga, so common throughout Europe, is only occasionally seen on our coasts, and then only in a very insignificant form. My specimens are not more than two inches high, and seem to belong to the variety *crinalis*, AG.

51. *Solieria chordalis*, J. AG. Very common and characteristic. Wood's Hole, Greenport, Orient, in company with *Polysiphonia variegata* and *Gracilaria multipartita*, the narrow forms of which it much resembles. Is not *Rhabdonia tenera*, J. AG., the same as this plant? There is in the herbarium at Cambridge, a specimen from Lenormand, marked *R. tenera*, J. AG., New York Harbor. It is without fruit, and the structure of the stem is that common to both *Solieria* and *Rhabdonia*. As I have never seen American specimens of *R. tenera* in fruit, while *Solieria* is very common, I think it is probable that what has been described as *Rhabdonia* is merely a sterile plant of *Solieria*.

Hypnea musciformis, LAM. Fine specimens and not uncommon at Nobska and the adjoining Falmouth shore. A common plant of the Mediterranean and the West Indias. There are, however, in the herbarium at Cambridge, no specimens from either of those localities as luxuriant as those from Nobska, some of which are a foot long.

SPONGIOCARPEÆ.

52. *Polyides rotundus*, GREV. Common at Gay Head, Newport, Orient, and Greenport, also on the rocky shores of Massachusetts Bay, though not so luxuriant there as south of the cape.

SQUAMARIÆ.

53. *Hildenbrandtia rubra*, MENEG. In fruit at Wood's Hole. Common between tide-marks and below, at Wood's Hole, Nahant, Rockport, Massachusetts, New Haven, (Professor Eaton.) This species, I believe, has never before been recognized in America, where it will probably be found to be as common as in Europe.

HELMINTHOCLADEÆ.

54. *Nemalion multifidum*, J. AG. One specimen bearing tetraspores picked up at Gay Head. It was of larger diameter and more beautiful rose color than usual.

55. *Scinaia furcellata*, BIVON. Fruiting, and not uncommon at Gay Head. Washed ashore, and also dredged in six or eight fathoms.

RHODYMENIACEÆ.

56. *Rhodymenia palmata*, GREV. Common at Gay Head, Wood's Hole, Newport, Orient, and Greenport.

CRYPTONEMIACEÆ.

57. *Phyllophora membranifolia*. Dredged at Gay Head, Newport, Orient.

58. *P. Brodiæi*, J. AG. Fine specimens, a foot long, dredged in ten fathoms off Sheep Pen Cove. Common at Gay Head, Newport, and Orient.

59. *Ahnfeltia plicata*, FRIES. Common at Gay Head, Newport, Orient.

60. *Cystoclonium purpurascens*, KÜTZ. Extremely common, in summer, in pools, and washed ashore. Gay Head, Wood's Hole, Newport, Orient, Watch Hill, (Professor Eaton.) Var β. HARV. equally common.

61. *Chondrus crispus*, LYNGB. Very common and with the last.

62. *Chylocladia Baileyana*, HARV. This plant was placed by Harvey conditionally in the genus *Chylocladia*, he having seen only the tetrasporic plant. I believe I was the first who saw the conceptacular plant, which I found growing on the Government Wharf, Wood's Hole, in July. The fruit is external and contained in a cellular pericarp. The nucleus, surrounded by a hyaline mucous envelope, consists of a mass of spores grouped without order. The plant varies very much in color, according to locality and season, and the three varieties described by Harvey run constantly into each other. Common at Wood's Hole, Buzzard's Bay, Orient, Greenport, Weepecket, New Haven, (Professor Eaton.)

63. *C. rosea*, (*Chrysimenia, Phyc. Britt.*,) HARV. This rare and beautiful alga I have found only by dredging in the region of the Devil's Back, Gay Head, in eight or ten fathoms. The tetraspores only were found.

SPYRIDIACEÆ.

64. *Spyridia filamentosa*, HARV. Common on eel-grass at Wood's Hole, Waquoit, Weepecket, and Greenport.

CERAMIACEÆ.

65. *Ceramium rubrum*, AG. Common everywhere.

66. *C. diaphanum*, ROTH. Common and luxuriant on eel-grass. Wood's Hole, Weepecket, Edgartown.

67. *C. fastigiatum*, HARV. Common on eel-grass in August and September at Wood's Hole, Weepecket, Newport, Orient, and Greenport.

68. *C. arachnoideum*, (?) AG. Wood's Hole, Orient Point. There grows in abundance on fuci, at Wood's Hole, a *Ceramium* without fruit of either kind in September. It grows in long patches on the stems of fuci near low-water mark. The filaments are rather robust, not more than an inch long, scarcely branching and forcipate at the tip. The internodes are diaphanous, and I am not certain that it is not a young state of *C. diaphanum*. At any rate I will not confuse an already sufficiently subdivided genus by adding a doubtful species.

69. *Ptilota elegans*, BONNEM. Common between Gay Head and No Mans Land, Newport. Wherever found, abundant.

70. *Griffithsia corallina*, AG. This charming plant is not uncommon during July in Buzzard's Bay, Wood's Hole, and Weepecket Islands; at the latter station I have seen the water full of it. Var. *globifera* I have found only on the Government Wharf, Wood's Hole, and once or twice in Buzzard's Bay. It is coarser in color and texture, and is not so easily dried on paper as the ordinary form. If merely a variety, it seems to owe its form to its exposed place of growth.

71. *Callithamnion tetragonum*, AG. Wood's Hole, Martha's Vineyard, Newport. Common on the larger algæ and wood-work just below low-water mark.

72. *C. Baileyi*, HARV. Not to be distinguished, in my opinion, from *C. tetragonum*, except by being less robust and somewhat more compoundly branched. It seems to me to be merely a variety grown early in the season while the water is warm.

73. *C. Borreri*, AG. Greenport, Wood's Hole. My specimens are softer than European, and seem too near *C. polyspermum*.

74. *C. byssoideum*, ARN. Orient Point, (not uncommon,) Wood's Hole, Weepecket. Specimens from the latter place are fastigiate and belong to Harvey's third variety.

75. *C. corymbosum*, AG. Wood's Hole, Gay Head, Edgartown, (Miss Pease,) Weepecket.

76. *C. seirospermum*, GRIFF. The commonest of the subgenus *Rosea*. Orient, Menimshi, Gay Head.

77. *C. Plumula*, LYNGB. Rare. Dredged near Devil's Back, Gay Head, in company with *Chylocladia rosea*, July; Orient, June; one specimen.

78. *C. cruciatum*, AG. Wood's Hole, Vineyard Sound, Weepecket. Not uncommon, but generally overlooked from its being parasitic on other species of *Callithamnion*.

79. *C. Turneri*, AG. One of the commonest species of the genus south of Cape Cod, growing in dense tufts on other algæ at low-water mark and below. Throughout Vineyard Sound, Watch-Hill, (Professor Eaton,) Orient, Siasconsett, where in July the water was completely filled with it. Beautiful while in the water, but not making handsome specimens.

80. *C. luxurians*, J. AG. On zostera. Edgartown, Massachusetts, (Miss Fisher.)

CHLOROSPERMEÆ.

SIPHONACEÆ.

81. *Bryopsis plumosa*, LAM. Greenport, Wood's Hole, Edgartown. Common on wharves and stones between tide-marks.

ULVACEÆ.

82. *Porphyra vulgaris*, AG. Common. Wood's Hole, Newport, Greenport, New Haven, (Professor Eaton.)

83. *Bangia fuscopurpurea*, LYNGB. Wood's Hole, Newport. On piers and rocks.

84. *Enteromorpha intestinalis*, LINK. Common along the whole shore.

85. *E. compressa*, GREV. With the last, and equally common.

86. *E. clathrata*, GREV. Wood's Hole. Common.

87. *E. Hopkirkii*, MCCALLA. Edgartown, (Miss Pease.)

88. *Ulva Linza*, L. Orient. Probably along the whole coast.

89. *U. latissima*, L. Everywhere.

CONFERVACEÆ.

90. *Cladophora rupestris*, L. Gay Head, Vineyard Sound. A condensed depauperate form.

91. *C. uncialis*, FL. DAN. Orient Point, June, 1871.

92. *C. Rudolphiana*, AG. Wood's Hole.

93. *C. fracta*, FL. DAN. Wood's Hole, in Eel Pond.
94. *C. flexuosa*, GRIFF. Wood's Hole, Government Wharf.
95. *Chætomorpha Piquotiana*, MONT. Gay Head, Montauk.
96. *C. ærea*, DILLW. Gay Head.
97. *C. sutoria*, BERK. Gay Head.
98. *C. litorea*, HARV. Gay Head.
98. *C. tortuosa*, DILLW. Wood's Hole.

OSCILLATORIACEÆ.

100. *Lyngbya majuscula*, HARV. Wood's Hole, Naushon, Edgartown, called by lady collectors mermaid's hair.
101. *Calothrix confervicola*, AG. Wood's Hole.
102. *C. scopulorum*, AG. Very common everywhere on rocks.

RIVULARIACEÆ.

103. *Rivularia atra*, ———. Though not noticed before in America, I found it not uncommon on shells and stones at Wood's Hole.

Besides the list above given there remain a number of *Callithamnia* and *Cladophoræ* of doubtful species, not an uncommon occurrence with collectors. It is also probable that there are other species of *Lyngbya* and *Calothrix* to be found at Wood's Hole.

Localities of algæ, either rare or new to American localities, not included in the preceding list.

Ralfsia verrucosa, AG., (*R. deusta*, BERK.) For the first time in America found by me at Little Nahant, October, 1871. Insignificant looking, but probably not uncommon.

Calliblepharis ciliata, KÜTZ. Collected by Professor Eaton, Mr. Whitney, and myself, at Straightsmouth Island, off Cape Ann, Massachusetts, September, 1871; not very abundant. Conceptacular fruit forming on some of the specimens.

Sphacelaria radicans, AG. Doubtfully located by Harvey at Beverly. In fruit at Little Nahant, October, 1871.

Gymnogongrus Norvegicus, GREV. Lynn Beach, November, 1871. A single specimen covered with conceptacles. Narrower than most European specimens, which was also the fact in the specimen sent to Harvey from Penobscot Bay, by Mr. J. Hooper.

Ceramium Hooperi, HARV. Straightsmouth Island.

Fucus distichus, L. An alga, which I regard as undoubtedly this species, I found growing in patches near high-water mark, at Marblehead, Massachusetts, in May, 1871. I have seen growing, in considerable abundance at various stations of our coast, a *Fucus* which I supposed at first to be an unripe state

of *F. vesiculosus*, but now think must be *F. furcatus*, Ag. This is well marked by the flat receptacle which, according to Agardh, is repeatedly forked, rarely simple. In the plant of our coast the receptacle is quite frequently simple. I have not yet been able to see a dried specimen of *F. furcatus*, or the figure of Agardh. Should my view of this plant be correct the supposed poverty of our coast in species of *Fucus*, as compared with the English, will prove to be not so very striking after all.

Melobesia polymorpha, L. Dredged at Robbinstown, Maine, by Mr. Howe. Not before noticed in America.

Nostoc sphæroides, Kütz. Sent by Professor Eaton from a pond near New Haven. Not before noticed in America.