An Annotated List of Marine Algae from Eniwetok Atoll, Marshall Islands[1]

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The following account is based largely upon collections made by the writer at Eniwetok during the late summer of 1955 and upon collections made on several occasions prior to that time by Dr. Ralph F. Palumbo of the Applied Fisheries Laboratory, University of Washington. The object of the work has been the preparation of a reference collection of algae of the atoll for deposition at the Eniwetok Marine Biological Laboratory (EMBL), where it may be consulted by future biological investigators interested in identifying algal research materials.

There exist only three previous accounts of Eniwetok marine algae, namely, Taylor's *Plants of Bikini* . . . (1950) which treats of 67 species, Palumbo's (1950) brief listing of a few entities, most identified only to genus, and Odum and Odum's (1955) mention of four species by name. The most comprehensive list of Marshall Islands algae to date has just been published by the writer (1956) in *Pacific Science*. It treats of 149 species (exclusive of Myxophyta) for the southern Marshall Islands. All but 43 of these are again listed in the present account, which includes 228 species and varieties. Of these, 36 are Myxophyta, 79 Chlorophyta, 20 Phaeophyta, and 91 Rhodophyta.

Inasmuch as this paper can be of greatest service as an aid to the identification of the algae occurring at Eniwetok, a key to all of the genera is included as well as an illustration for each species of Green, Brown, and Red Algae for which a figure is not to be found among the following accounts of tropical Pacific marine algae: Taylor, 1950; Dawson, 1954; Dawson, 1956. If these three papers are employed in conjunction with the present list, one should find it relatively easy to identify a great majority of the species encountered.

It should be noted that the key to the genera is intended to apply specifically to those algae recorded here from Eniwetok Atoll. It does not necessarily apply to species of those genera from other regions.

The short glossary of certain special phycological terms is intended to aid those of other disciplines in the use of the key.

ACKNOWLEDGMENTS

Nearly all of the algal collections cited here other than the writer's were made by Dr. Ralph F. Palumbo, who kindly contributed much time in preparing them for study in Honolulu. The list is considerably more comprehensive as the result of the availability of his specimens, which provide an excellent supplement to mine.

Dr. Francis Drouet provided identifications for all of the Blue-green Algae, so that this

[1] Contribution No. 87 from the Hawaii Marine Laboratory. Manuscript received January 17, 1956.

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part of the list may be considered entirely his own contribution.

Dr. Harold St. John kindly prepared the Latin diagnoses of new taxa.

Special thanks are due to Dr. Robert W. Hiatt for making all the arrangements for carrying out this study, and to Dr. Maxwell S. Doty for the use of his library and other facilities in Honolulu. Several others contributed help in various ways, especially Mr. Malvern Gilmartin, Mr. A. Dexter Hinckley, Mr. Robert T. B. Iversen, Mr. James Stewart, Dr. Donald W. Strasburg, and Dr. A. J. Bernatowicz.

Photographs are by Mr. George Edelman.

COLLECTING LOCALITIES

Inasmuch as a number of variations occur in the spelling and application of the names of islands in Eniwetok Atoll, a list is presented here to show the equivalents. The list follows the succession of islands in a clockwise manner, beginning with Bogallua in the northwest part of the Atoll. The first name given in each case is that used in the text and in the labeling of specimens, followed by some common variations which may be encountered on United States maps and in geographical publications.

Bogallua
Bogombogo
Eneroul = Eybbiye = Ruchi (often treated as a single island with the next)
Runo = Eybbiye = Ruchi = Cochiti
Bokanjoio = Sanildefenso
Elugelab
Lidilibut = Teiteiripucchi
Bogairik = Bogeirik
Bokaniuar
Bogon
Engebi
Muzin = Mujinkarikku
Kirinian = Biilee
Bokonaarappu
Yeiri
Aitsu
Rujoru = Lujor = Pujiyoru = Rujiyoru
Eberiru
Aomon = Aranit
Biijiri = Biiziri
Rojoa
Aaraanbiru = Arambiru
Piiraai
Runit
Enedrol
Chinieero
Aniyaanii = Japtan
Chinimi
Japtan = Muti
Bogen = Boken = Jieroru
Parry
Eniwetok
Igurin
Mui = Buganegan
Pokon = Bogan
Ribaion = Libiron = Ribairon
Giriinien = Grinem
Rigili

The following is a complete list of the writer's collections made during August and September 1955. The inclusive field collection numbers precede the locality data in each case. It should be noted that where these numbers are cited in the text they are prefixed by "D." Collection numbers by Palumbo are prefixed by "P.," and, because of their smaller number and scattering in time and space, are provided with locality data in the text. Those collections by Taylor which represent species not again collected are cited by his field number prefixed by "T."

A specimen of each of the Dawson and Palumbo collections cited here is deposited in the Eniwetok Marine Biological Laboratory, with the exception of the type specimens of new species and varieties, which are deposited in the Bernice P. Bishop Museum in Honolulu.

13607–13654. Parry Island, outer seaward reef opposite EMBL, Aug. 19.

13655–13679. Parry Island, seaward reef flat between EMBL and south end of island, Aug. 20.

13680–13692. Parry Island, seaward reef flat at extreme south end of island, Aug. 21.
13693. Parry Island, drift in front of EMBL, Aug. 21.
13694–13712. Parry Island, among coral heads in the lagoon near south end of island in 6 to 10 feet of water, Aug. 21.
13713–13716. Aniyaanii Island, inshore lagoon near landing, Aug. 22.
13717–13745. Aniyaanii Island, seaward reef just on or inside of coralline ridge, Aug. 22.
13746–13781. Aniyaanii Island, under coral and rocks in tidal washes at north side of island, Aug. 22.
13782–13798. Aniyaanii Island, lagoon side among coral heads in 3 to 8 feet of water, Aug. 22.
13799–13824; 13855–13858a. Engebi Island, ocean side reef, Aug. 23.
13825–13827. Engebi Island, on a boulder in middle of ocean side reef, Aug. 23.
13828. Engebi Island, lagoon side drift, Aug. 23.
13829–13854. Engebi Island, algal mat area on dead coral and sand bottom of lagoon side, Aug. 23.
13859–13874. Igurin Island, seaward reef, Aug. 24.
13875–13877. Igurin Island, at depth of 20 feet off edge of seaward reef, Aug. 24.
13878. Igurin Island, sand flat on sea side, Aug. 24.
13879–13880. Igurin Island, seaward reef drift, Aug. 24.
13881–13885. Igurin Island, lagoon side drift near north end, Aug. 24.
13888–13897. Igurin Island, mid-island lagoon in 3 to 6 feet of water, Aug. 24.
13893–13899. Runit Island, lagoon side bottom at about 8-foot depth, Aug. 25.
13900–13908. Runit Island, scraped from a *Tridacna* shell from 20-foot depth in the lagoon, Aug. 25.
13909–13910. Runit Island, lagoon side drift, Aug. 25.
13911–13916. Runit Island, from vertical sides of pier piles in the lagoon, Aug. 25.
13917–13925. Runit Island, on a floating bumper log fastened to the pier, Aug. 25.
13926–13936; 13940–13946. Runit Island, ocean reef flat, Aug. 25.
13937–13939. Runit Island, in the lagoon in 10 feet of water, Aug. 25.
13947–13954. Parry Island, in the lagoon among coral heads in 10 to 12 feet of water, Aug. 28.
13955–13956. ¾ mile off Aniyaanii Island, on lagoon bottom in 90 feet (drift), Aug. 29.
13957–13961. Parry Island, lagoon beach in 6- to 8-foot depths, Aug. 29.
13962–13970. ½ mile off Aniyaanii Island, around and on a dead coral head in the lagoon at 35- to 65-foot depths, Aug. 30.
13971. Parry Island, off lagoon swimming beach in 10 feet of water, Aug. 30.
13972–13983. Parry Island, in end of pipe and beneath outfall of salt water from generating plant opposite EMBL, Aug. 30.
13984–13995. Japtan Island, reef along passage opposite Parry Island, Aug. 30.
13996–14000. 1½ miles off Aniyaanii Island, lagoon bottom at a depth of 135 feet, Aug. 31.
14001–14020. Rigili Island, seaward reef near edge at north end of island, Sept. 2.
14021–14032. Rigili Island, sand bottom in lagoon in 3 to 6 feet of water, Sept. 2.
14033–14039. Rigili Island, at small island on lagoon side subject to prevailing winds, Sept. 2.
14040–14041. Rigili Island, seaward reef, Sept. 2.
14042–14043. Parry Island, lagoon swimming area, Sept. 3.
14044–14053. Parry Island, on and around tanker wreckage adjacent to passage, Sept. 3.

GLOSSARY

chromatophore: a pigment-bearing structure within the cell.
corticated: provided with a complete or incomplete layer of superficial cells over the primary axis of the thallus.

distichous: disposed in two vertical rows; two ranked.
endophytic: growing within another plant.
epiphytic: growing on another plant.
heterocysts: cells which are uniformly dissimilar in shape and (or) size from their neighbors.
intercalary: inserted between, as opposed to terminal or basal.
medulla: the central or inner tissue of a thallus as opposed to the cortex.
midrib: a vein-like or rib-like thickened axis of a blade.
monosporangium: an asexual reproductive organ in the red algae which produces a single spore.
multifarious: disposed in many ranks about an axis.
multiseriate: of more than a single row of cells.
rhizoidal filaments: thick-walled, very long cells of exceedingly small diameter running vertically between the larger cortical cells as in *Gelidium*.
rhizoids: small root-hair-like unicellular or multicellular outgrowths for attachment.
saxicolous: growing on rocks.
stichidium: a club-shaped reproductive branch in the red algae producing tetrasporangia.
tetrasporangium: an asexual reproductive organ in the red algae which produces spores in groups of four.
trabeculae: bars or strands running from one side of a coenocytic thallus to the other, as in *Caulerpa*.
trichoblast: a branched, colorless, hair-like outgrowth produced around the apex of certain red algae, usually soon falling away.
trichome: the individual cellular filament of a multicellular blue-green alga, not including the sheath.
tristichous: disposed in three vertical rows; three ranked.
uniseriate: of a single row of cells.
utricles: the enlarged, bladder-like ends of the filaments of *Codium* which are arranged to make up the surface layer of the thallus.

KEY TO THE GENERA OF MARINE ALGAE OF ENIWETOK

1. Plants unicellular, or apparently so, macroscopic or microscopic, spheroidal, ellipsoidal or club-shaped 2
1. Plants multicellular, or, if noncellular the thalli macroscopic and not solid spheroidal, ellipsoidal or club-shaped . 8
2. Plants microscopic, less than 40 μ in diameter, in pairs or colonies within a gelatinous matrix or sheath, sometimes (in *Entophysalis*) arranged in short filaments 3
2. Plants macroscopic, bladder-like 7
3. Colonies showing no particular orientation into basal and apical regions 4
3. Colonies showing orientation of cells into basal and apical regions . . . . . **Entophysalis (deusta)**
4. Colonies without definite shape; cells symmetrically ellipsoidal 5
4. Colonies with a definite shape; cells pear-shaped . . . . . **Gomphosphaeria**
5. Cells spheroidal, or hemispheroidal when divided 6
5. Cells elongate ellipsoidal . . . . . **Coccochloris**
6. Cells usually single or paired, enclosed in a thick, gelatinous sheath . **Anacystis**
6. Cells forming colonies within a gelatinous matrix . . **Entophysalis (conferta)**
7. Thalli spheroidal, attached by small unbranched rhizoids cut off by a septum from the main cell . . . . . **Valonia (ventricosa)**
7. Thalli short club-shaped, attached by branched, nonseptate rhizoids . . . . . **Boergesenia**
8. Thalli multicellular or noncellular, branched if uniseriate 9
8. Thalli multicellular, but each filament consisting of only an unbranched row of cells (the false branching in *Plectonema* and *Scytonema* is the result of protrusion of a broken trichome through a rupture in the sheath) 99

9. Thalli not minute borers through calcareous material 10
9. Thalli boring through coral, shell and other calcareous material . . **Ostreobium**
10. Thalli calcified, either completely so as to become hard and stony, or incompletely so as to appear limy 11
10. Thalli not calcified 24
11. Thalli essentially prostrate, crustose; if erect branches present, these inflexible and stony 20
11. Thalli erect and flexible, not prostrate or crustose 12
12. Thalli not parasol-shaped 13
12. Thalli shaped like a small parasol . . . . . **Acetabularia**
13. Thallus parts of cylindrical shape . . . 14
13. Thallus parts flat or flattened 18
14. Thalli branched 15
14. Thalli unbranched (as viewed macroscopically) . . . . . **Neomeris**
15. Thalli distinctly jointed 17
15. Thalli not distinctly jointed 16
16. Thalli soft and lubricous . . . . **Liagora**
16. Thalli firm, not lubricous . . . **Galaxaura**
17. Thalli large and coarse, the segments 2 to several mm. in diameter . . . . . **Halimeda (monile** forms)
17. Thalli small and delicate, the segments less than ½ mm. in diameter . . . . **Jania**
18. Thalli not jointed, fan-shaped 19
18. Thalli jointed . . . . . **Halimeda** (except **monile** forms)
19. Thalli brownish, with prominent concentric banding . . . . . **Padina**
19. Thalli greenish, not prominently banded concentrically . . . . . **Udotea**
20. Thalli forming thin, adherent crusts . 21
20. Thalli forming massive, stony crusts, sometimes with erect knobs or branches . . . . . **Porolithon**
21. Thalli epiphytic, very delicate 22
21. Thalli saxicolous, coarser 23
22. Thalli in surface view with frequent larger cells (heterocysts) among the otherwise uniform cells . . . . . **Fosliella**
22. Thalli in surface view composed of uniform cells . . . . . **Heteroderma**
23. Underside of thallus of many fan-shaped groups of cells converging and diverging irregularly . . . . . **Cruoriella**
23. Underside of thallus of essentially parallel cell rows . . . . . **Peyssonelia**
24. Thalli filamentous, membranous, or massive, but in any case divided up into cells by cross walls 31
24. Thallus parts not divided up in a cellular manner by cross walls 25
25. Filaments composing thalli dichotomously branched 26
25. Thalli, or filaments composing thalli, not dichtomously branched 29
26. Filaments growing together to form a flabellate or peltate, spongy plant body 27
26. Filaments free, not forming a spongy plant body 28
27. Main forked filaments bearing numerous terminally pronged lateral branchlets . . . . . **Rhipilia**
27. Main forked filaments without such terminally pronged lateral branchlets . . . . . **Avrainvillea**
28. Filaments over 100 μ in diameter above, tending to be larger above than below, not attenuated . . **Pseudochlorodesmis**
28. Filaments usually under 50 μ in diameter above, attenuated or at least of lesser diameter above than below . . **Derbesia**
29. Thallus parts spongy, composed of interlaced filaments forming a surface layer of swollen utricles . . . . . **Codium**
29. Thallus parts not spongy, without a surface layer of swollen utricles 30
30. Thalli consisting of basal, cylindrical rhizoid-bearing parts and erect, specialized branches of distinctive shapes; interior of thallus criss-crossed by trabeculae . . . . . **Caulerpa**
30. Thalli consisting of erect axes bearing pinnate or multifarious branches; interior without trabeculae . . . . **Bryopsis**

31. Thallus essentially of a single branched row of cells 32
31. Thallus filamentous, membranous or massive, consisting of more than a single, branched row of cells 51
32. Filaments prostrate, spreading; plants microscopic, epiphytic or endophytic . . . . . **Entocladia**
32. Not as above; filaments free and more or less erect 33
33. Individual cells mostly essentially cylindrical and symmetrical except for curvature 35
33. Individual cells asymmetrical, mostly not cylindrical 34
34. Cells protruding irregularly on all sides from the axes . . . . . **Siphonocladus**
34. Cells inflated, irregularly clavate to subovate, in short, more or less repent series of only a few cells . . . . . **Valonia** (in part)
35. Thallus filaments branched in one plane in a fan-, or blade-like manner, at least in part 36
35. Thallus filaments variously branched, but not forming fan- or blade-like parts 38
36. Filaments palmately branched . . . . . **Rhipidiphyllon**
36. Filaments not palmately branched; blades of net-like form 37
37. Blades stalked . . . . . **Struvea**
37. Blades without a definite stalk . . . . . **Microdictyon**
38. Branches essentially free, not attached to each other 39
38. Branches attached to each other by small, specialized cells . . . . . **Boodlea**
39. Branching opposite or whorled, at least on main or lower axes 40
39. Branching alternate or irregular, multifarious 41
40. Axes with whorled branchlets; tetrasporangia surrounded by curved filaments . . . . . **Wrangelia (argus)**
40. Main axes (sometimes prostrate) with opposite and distichous or tristichous branchlets; tetrasporangia not associated with curved filaments . . . . . **Antithamnion**
41. Cell wall about as thick as cell cavity, at least in lower parts 42
41. Cell cavity much greater in diameter than cell wall thickness 43
42. Cell cavities oval, longer than broad . . . . . **Asterocytis**
42. Cell cavities more or less quadrangular, broader than long . . . . . **Goniotrichum**
43. Thalli brownish or reddish, bearing specialized external reproductive structures 46
43. Thalli greenish, without specialized external reproductive structures 44
44. Filaments bearing septa at base of branches 45
44. Filaments mostly, or commonly, without septa at base of branches . . . . . **Cladophoropsis**
45. Filaments coarse, 1–2 mm. in diameter . . . . . **Valonia (fastigiata)**
45. Filaments 0.3–1.0 mm. in diameter . . . . . **Valoniopsis**
45. Filaments delicate, less than 200 μ in diameter . . . . . **Cladophora**
46. Thalli brownish, commonly reproducing by means of multicellular gametangia . . . . . **Ectocarpus**
46. Thalli reddish, commonly reproducing by means of tetrasporangia or monosporangia 47
47. Minute epiphytes with main axes less than 15 μ in diameter 48
47. Epiphytic or saxicolous, but main axes over 70 μ in diameter 49
48. Chromatophores stellate . . . . . **Kylinia**
48. Chromatophores not stellate . . . . . **Acrochaetium**
49. Asexual reproduction by tetrasporangia 50
49. Asexual reproduction by monosporangia . . . . . **Neomonospora**

50. Branching regularly alternate and generally spirally arranged; axes less than 100 μ in diameter.... **Callithamnion**
50. Branching irregular; axes over 100 μ in diameter..... **Griffithsia**
51. Thalli consisting of a subcylindrical axis bearing coarse, angular, toothed lateral branches..... **Turbinaria**
51. Thalli not as above..... 52
52. Thallus net-like, at least in part.... 53
52. Thallus not net-like..... 55
53. Thallus reddish, delicate, flat or four-sided..... 54
53. Thallus brown, coarse, convoluted.... **Hydroclathrus**
54. Net-like parts formed as part of flabellate blades..... **Hemitrema**
54. Entire thallus a four-sided net-like form around a central axis..... **Dictyurus**
55. Thallus cushion-shaped or subspherical, solid or hollow, with cells of macroscopic size..... **Dictyosphaeria**
55. Thallus not as above; cells not of macroscopic size..... 56
56. Thallus hollow-tubular or with hollow, vesicular or tubular parts..... 57
56. Thallus without hollow parts..... 62
57. Thallus without regular constrictions or cavity partitions..... 58
57. Thallus regularly constricted and with partitions across the cavity at the constrictions..... **Champia**
58. Thalli hollow essentially throughout.. 59
58. Thalli consisting of a short, solid stipe bearing one or more hollow vesicles... **Botryocladia**
59. Thallus parts long and slender compared to diameter..... 60
59. Thallus parts short and inflated compared to diameter..... **Rosenvingea**
60. Thalli reddish; the tube wall composed of several cell layers..... 61
60. Thalli greenish; the tube wall composed of a single layer of cells..... **Enteromorpha**
61. Tetrasporangia borne in swollen, terminal stichidia..... **Coelothrix**
61. Tetrasporangia borne in sunken cavities in the branches..... **Lomentaria**
62. Thalli flat or markedly flattened, at least in part..... 63
62. Thalli essentially cylindrical (sometimes moderately compressed as in *Hypnea*)..... 75
63. Thalli brownish or reddish, not green, of more than one layer of cells, at least at the midrib if present..... 64
63. Thalli green, of a single layer of cells throughout..... **Anadyomene**
64. Thallus with a midrib (note that the flattened blade part is very narrow in *Taenioma*)..... 65
64. Thallus without a midrib..... 67
65. Color reddish; branching not at all dichotomous..... 66
65. Color brownish; branching subdichotomous..... **Dictyopteris**
66. Apices with two or three terminal hairs..... **Taenioma**
66. Apices with a naked apical cell..... **Hypoglossum**
67. Thallus surface covered with tufts of soft but mostly erect filaments..... **Dasyopsis**
67. Thallus surface without tufts of filaments..... 68
68. Thalli prostrate and fastened by the lower surface..... 69
68. Thalli essentially erect, free, not prostrate..... 71
69. Thalli brown..... 70
69. Thalli red..... **Rhodymenia**
70. Thalli fan-shaped..... **Pocockiella**
70. Thalli dichotomously branched..... **Dictyota (patens)**
71. Growing points not in apical pits... 72
71. Growing points in apical pits..... **Laurencia (parvipapillata)**
72. Growing point consisting of a single apical cell..... 73

72. Growing point without a distinguishable apical cell ..... **Grateloupia**
73. Thalli small, narrow, less than 1 cm. tall; medulla of several layers of small cells 74
73. Thalli moderately large, 3–10 cm. tall; medulla of a single layer of large cells .. .. **Dictyota** (in part)
74. Medulla with rhizoidal filaments running through it ..... **Gelidium**
74. Medulla without rhizoidal filaments running through it ..... **Gelidiella (bornetii)**
75. Axes and branches all similar in appearance and structure 80
75. Axes distinct from ultimate branchlets in appearance and structure 76
76. Branchlets produced in whorls ..... **Wrangelia** (in part)
76. Branchlets produced alternately or irregularly 77
77. Branchlets not banded 78
77. Branchlets banded ..... **Spyridia**
78. Branchlets multiseriate; plants rather large, 6–12 cm. tall ..... **Asparagopsis**
78. Branchlets uniseriate; plants small, usually less than 2 cm. tall 79
79. Main axes completely or incompletely corticated ..... **Dasya**
79. Main axes uncorticated ..... **Heterosiphonia**
80. Thallus parts of essentially uniform cell structure throughout; not banded although sometimes appearing segmented 81
80. Thallus parts provided with discontinuous cortication in the form of bands around a large axial cell row, the bands usually close together above and well separated below ..... **Ceramium**
81. Thalli of various reddish and brownish colors, but not grass green 82
81. Thalli grass green in color, entangled .. .. **Enteromorpha (ralfsii)**
82. Branches provided with whorls of short, tooth-like spines, at least in part .... **Centroceras** (in part)
82. Branches without whorls of spines .. 83
83. Middle and upper thallus parts showing only a few cells (2–5) across the diameter when seen in surface view 84
83. All thallus parts showing many (10 or more) small cells across the diameter when seen in surface view 89
84. Branches termination in a large apical cell of nearly the same diameter as the filament bearing it ..... **Sphacelaria**
84. Branches terminating in an apical cell which is much smaller than the diameter of the filament bearing it 85
85. Thalli with definite axes provided with dense, multifarious, divaricately branched short branchlets which in mature plants become attached to each other ..... **Tolypiocladia**
85. Branching not as above 86
86. All branches essentially of unlimited growth 87
86. Branches of potentially unlimited growth alternating with groups of branches of definitely limited growth .... **Herposiphonia**
87. Erect filaments arising from extensive prostrate creeping filaments .... **Lophosiphonia**
87. Without extensive prostrate filaments. 88
88. Mature filaments composed of cells in tiers of three ..... **Falkenbergia**
88. Mature filaments composed of cells in tiers of four or more .... **Polysiphonia**
89. Surface cells not arranged in regular rows, nor the thallus appearing segmented 90
89. Surface cells arranged in horizontal and vertical rows and the thallus appearing somewhat segmented .... **Centroceras (apiculatum)**
90. Thallus without a central core of small cells in the medulla 91
90. Thallus in cross section showing a core of very small cells in the center of the medulla ..... **Dicranema**

91. Medullary cells all similar and more or less isodiametrical in cross section..92
91. Thallus in cross section showing minute rhizoidal filaments between the medullary cells...**Gelidium (crinale)**
92. Growing points consisting of an apical cell, either emergent or in an apical pit 95
92. Apices without a single apical cell...93
93. Branching irregular, but not markedly divaricate; thalli very slender and wiry 94
93. Branching markedly divaricate; thalli moderately coarse and succulent..... .....**Chnoospora**
94. Tetrasporangia and antheridia borne in swollen, terminal stichidia; thalli forming small tufts and clumps; main branches mostly 175–250 μ in diameter..... .....**Gelidiopsis**
94. Reproduction not to be expected; thalli forming wiry mats; main branches (100) 140–230 μ in diameter..**Wurdemannia**
95. Apical cell in a terminal pit.....96
95. Apical cell emergent.....97
96. Thalli erect or with creeping and erect branches, with many very short ultimate branchlets.....**Laurencia** (in part)
96. Thalli creeping, with few very short ultimate branchlets..... .....**Chondria (repens)**
97. Thalli minute, mostly under 2 mm. high 98
97. Thalli larger, 1–3 cm. high...**Hypnea**
98. Growing points without trichoblasts.. .....**Gelidiella (tenuissima)**
98. Growing points provided with short trichoblasts.....**Chondria** (in part)
99. Individual filaments (trichomes) tapering from base to apex.....100
99. Individual filaments not tapered, of approximately equal diameter throughout 101
100. With intercalary heterocysts.**Calothrix**
100. With basal heterocysts.....**Rivularia**
101. Filaments epiphytic, erect, attached by a single, modified basal cell..... .....**Erythrotrichia**
101. Filaments epiphytic or saxicolous, but entangled and without any evident specialized basal attachment cell on individual filaments.....102
102. Filaments with false branching by protrusion of trichomes through breaks in the sheath; heterocysts present or absent.....103
102. Individual filaments without false branching.....104
103. Heterocysts present.....**Scytonema**
103. Heterocysts not present..**Plectonema**
104. Heterocysts present.**Hormothamnion**
104. Heterocysts not present.....105
105. Without a sheath around the uniseriate filament.....106
105. Uniseriate filaments surrounded by a sheath.....109
106. Filaments straight or curved, but not spirally coiled.....107
106. Filaments spirally coiled....**Spirulina**
107. Cells very short, less than half as long as broad.....**Oscillatoria**
107. Cells not very short, generally longer than broad; filaments generally over 20 μ in diameter.....108
108. Filaments 20–30 μ in diameter..... .....**Rhizoclonium**
108. Filaments 60–90 μ in diameter..... .....**Chaetomorpha**
109. Cells very short, less than half as long as broad 110
109. Cell length about equal to or greater than breadth.....111
110. Sheaths distinct, firm; trichomes single within the sheath.....**Lyngbya**
110. Sheaths more or less mucous, diffluent; trichomes several within the sheath... .....**Hydrocoleum**
111. Trichomes single within the sheath... 112
111. Trichomes many within the sheath, at least in older parts.....115
112. Trichomes 3 μ or less in diameter..113

112. Trichomes 5 μ or more in diameter. **114**
113. Plant body a light colored, cushion-shaped form ..... **Phormidium (crosbyanum)**
113. Plant body a dark colored stratum ..... **Symploca (laete-viridis)**
114. Plant body an erect, spongy, brush-like tuft ..... **Symploca (muscorum)**
114. Plant body a loose, soft group of short, gelatinous strings ..... **Phormidium (penicillatum)**
115. Apical cell blunt-conical. . **Schizothrix**
115. Apical cell acutely conical ..... **Microcoleus**

SYSTEMATIC LIST

GREEN ALGAE

Enteromorpha acanthophora Kützing?
D. 13920a. A few small bits of uncertain identity.

Enteromorpha clathrata (Roth) J. Agardh; Dawson 1954: 384, fig. 6d, e; Dawson 1956: 27
D. 13961.

Enteromorpha intestinalis (Linnaeus) Link; Dawson 1954: 383, fig. 6c
D. 13917.

Enteromorpha kylinii Bliding; Dawson 1954: 384, fig. 5; Dawson 1956: 27
D. 13826. P. 2846, Bokanjoio Is. boat passage at 6 ft., 9/30/54.

Enteromorpha ralfsii Harvey; Dawson 1956: 27, fig. 2
D. 13792, 14024. P. 1187, Bokanjoio Is. tide flats, 4/14/54; P. 2849, Bokanjoio Is. seaward tide flats, 9/29/54; P. 18150, Runo Is. tide flat pool, 2/10/55.

Enteromorpha tubulosa (Kützing) Kützing; Dawson 1954: 384, fig. 6a, b
D. 13920.

Valonia aegagropila C. Agardh; Dawson 1954: 388, fig. 8j; Dawson 1956: 28; Taylor 1950:41
D. 13610, 13736, 13930, 14039.

Valonia fastigiata Harvey ex J. Agardh 1887: 101 (Ceylon)
Fig. 1

P. 29x, Mui Is. seaward tide flats under rocks in large clumps, 3/11/54.
This compares well with the species as understood by Egerod (1952) and with Kanda's fig. 9A (1944) of a plant from Koror.

Valonia utricularis (Roth) C. Agardh; Dawson 1956: 28, fig. 3
P. 7, Rigili Is. under rocks, 8/10/49; P. 2836c, Parry Is. seaward reef edge, 4/4/54.

Valonia ventricosa J. Agardh; Dawson 1954: 388, fig. 8e; Dawson 1956: 28
D. 13751, 13927, 14002.

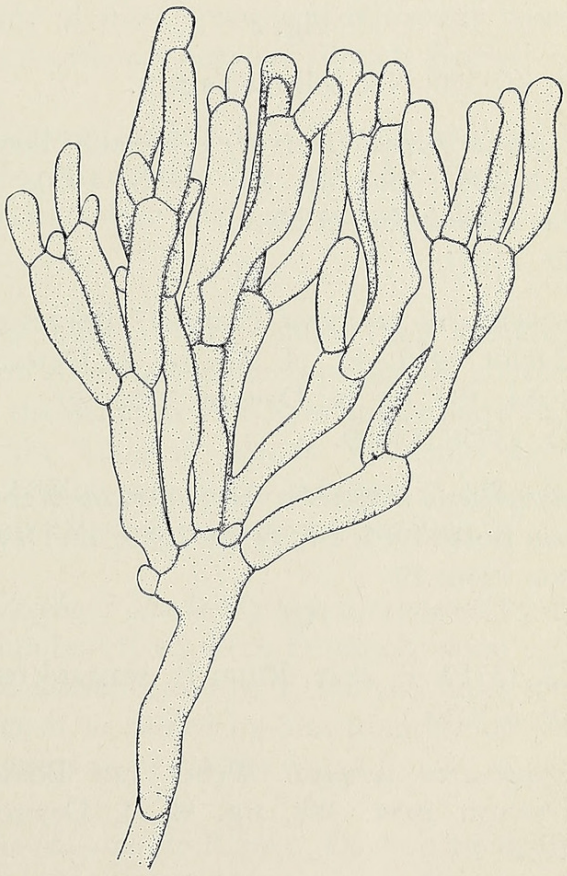


FIG. 1. *Valonia fastigiata*: Habit of part of a plant of P. 29x, × 2.5.

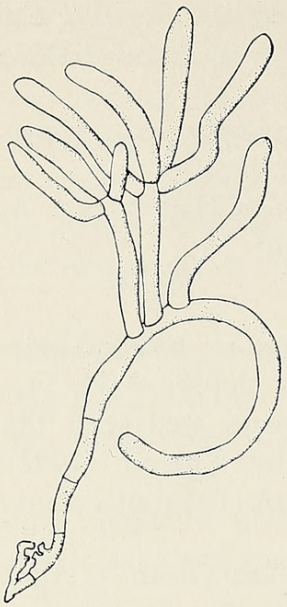


FIG. 2. *Valoniopsis pachynema*: Part of a plant to show branching and septation, × 5 (after Børgesen).

Valoniopsis pachynema (Martens) Børgesen 1934: 10, figs. 1, 2; Taylor 1950: 42. *Bryopsis pachynema* Martens 1866: 24, pl. 4, fig. 2 (Sumatra)

Fig. 2

T. 46–379. Not collected again.

Boergesenia forbesii (Harvey) Feldmann; Dawson 1954: 388, fig. 8d; Taylor 1950: 41 (as *Valonia forbesii* Harv.)
D. 13732.

Dictyosphaeria cavernosa (Forskål) Børgesen; Taylor 1950: 43, pl. 27, fig. 2; Dawson 1954: 388, fig. 8i; Dawson 1956: 29
D. 13758, 14009.

Dictyosphaeria intermedia var. *intermedia* Weber van Bosse 1905: 14; Taylor 1950: 42; Dawson 1956: 29

Fig. 3

D. 13719. P. 2825, Runo Is. seaward reef edge, 3/8/55.

Dictyosphaeria versluysii Weber van Bosse; Dawson 1954: 388, fig. 8k, l; Dawson 1956: 29
D. 13753, 13675. P. 2821, Bokanjoio Is. seaward reef edge, 3/8/55.

Cladophoropsis gracillima Dawson, prox.; Dawson 1956: 30, fig. 7a, b
D. 14049. The material approaches this species closely but does not agree as fully as the specimens reported from Arno Atoll. The filaments are about 40 μ in diameter and have cells 25–50 diameters long.

Cladophoropsis sundanensis Reinbold; Dawson 1956: 30, fig. 8; Dawson, Aleem, and Halstead 1955: 10
D. 13909.

Siphonocladus rigidus Howe; Dawson 1956: 31, fig. 9
D. 13742a, growing in a mat of *Cladophora*.

Boodlea composita (Harvey) Brand; Taylor 1950: 44; Dawson 1954: 390, fig. 9c, d; Dawson 1956: 30
D. 13764, 13777, 13810, 13854, 13873, 13944, 14031. P. 2840, Eneroul Is. seaward tide flats, 9/23/54.

Boodlea siamensis Reinbold 1901: 107 (Thailand); Taylor 1950: 44
T. 46–400. Not collected again.

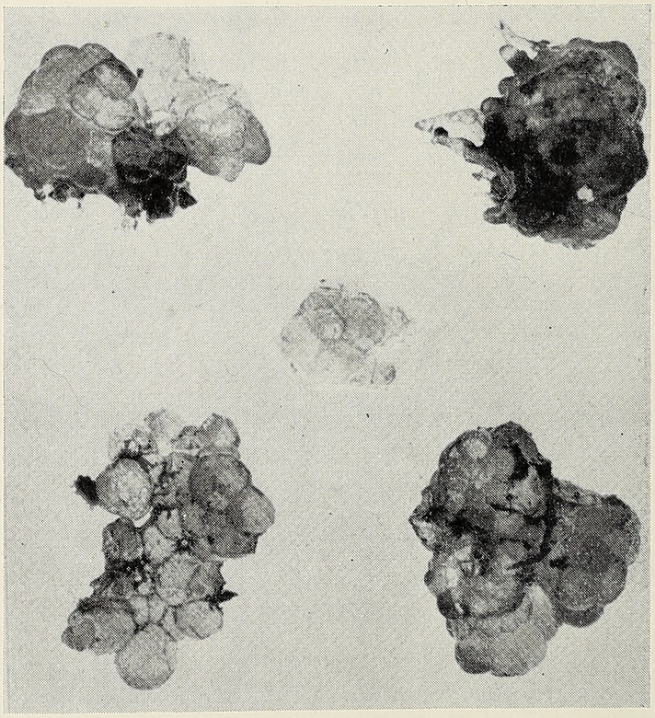


FIG. 3. *Dictyosphaeria intermedia*: Several fresh specimens of D. 13719, × 1.6.

Struvea anastomosans (Harvey) Piccone; Dawson 1954: 390, fig. 8g; Dawson 1956: 30
D. 13650, 13669, 13863, 13989, 14010.

Rhipidiphyllon reticulatum Askenasy; Dawson 1956: 32, fig. 10; Taylor 1950: 45
D. 13778, 14035a.

Microdictyon okamurai Setchell; Taylor 1950: 46, pl. 27, fig. 1; Dawson 1956: 32, fig. 11a
D. 13762, 13945. P. 54–18, Aitsu Is. seaward reef rim, 3/10/54; P. 2844, Bogombogo Is. seaward tide flats, 10/5/54.

Microdictyon japonicum is reported by Palumbo (1950) from Eniwetok without locality, based upon a determination by Lois Eubank Egerod.

Anadyomene wrightii Gray; Dawson 1954: 390, fig. 9e; Dawson 1956: 31
D. 13740.

Chaetomorpha indica Kützing; Dawson 1954: 386, fig. 6f, g; Dawson 1956: 33
D. 13982. P. 2842, Eneroul Is. seaward flats, 9/23/54; P. 2848, Bokanjoio Is. seaward flats, 9/29/54. These are apparently of the same entangled, free form found at Majuro Atoll without holdfast cells.

Rhizoclonium implexum (Dillwyn) Kützing 1845: 206; Smith 1944: 62, pl. 8, fig. 3. *Conferva implexa* Dillwyn 1809: 46, pl. B (England)
Fig. 4*a*

D. 13835, 14049a. This species is treated by Hamel under his genus *Lola*.

Cladophora crystallina (Roth) Kützing; Dawson 1956: 33, fig. 13b, c
D. 13923. The branches in this material range from 85 to 30 μ or less in diameter.

Cladophora inserta Dickie, variations; Dawson 1954: 388, fig. 7d (as *C. inserta* var. *ungulata*)

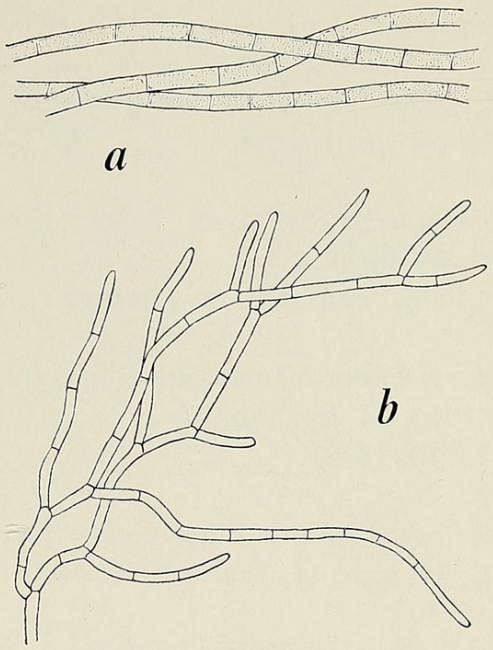


FIG. 4. *a*, *Rhizoclonium implexum*: Parts of filaments, × 80. *b*, *Cladophora socialis:* Part of a plant of D. 13742 near the typical form of the species, × 17.

D. 13837, 13857, 13903b. P. 2813, Bokanjoio Is. lagoon on stake in 3–8 ft., 3/8/55. Some of these specimens apparently correspond with var. *ungulata* (Brand) Setchell.

Cladophora socialis Kützing; Dawson 1956: 34; Dawson 1954: 388, fig. 7e (as *C. patentiramea* var. *longiarticulata* Reinbold)
Fig. 4*b*

D. 13699, 13742, 13806. These specimens seem to represent the same species collected by the writer in Viêt Nam and at Jaluit Atoll in the Marshall Islands. D. 13699 agrees especially well with Børgesen's Mauritius plant called *C. patentiramea* in 1940.

Cladophora luteola Harvey is reported by Palumbo (1950) from Eniwetok based upon a determination by F. Drouet, but a specimen so named by him from Bikini Atoll seems to be *Boodlea*.

Entocladia viridis Reinke; Dawson 1954: 388, fig. 7i
D. 13835a, in the cell wall of *Rhizoclonium*.

Derbesia attenuata Dawson 1954: 390, fig. 9a, b; Dawson 1956: 34
D. 13999b, epiphytic on *Halimeda;* D. 13767a, on small algae.

Derbesia marina (Lyngbye) Solier; Dawson 1956: 34, fig. 15a, b
D. 14006a, epiphytic on *Caulerpa.*

Derbesia ryukiuensis Yamada and Tanaka; Dawson 1956: 34, fig. 14b
D. 13710, 13791.

Bryopsis indica A. and Ethel Gepp; Dawson 1956: 34, fig. 14a; Taylor 1950: 50
D. 13730.

Bryopsis hypnoides Lamouroux 1809: 135, pl. 5, fig. 2 (Mediterranean Sea); Hamel 1931: 394, fig. 20 B; Smith 1944: 73, pl. 9, fig. 2

Fig. 5*a, b*

D. 13977.

Bryopsis pennata Lamouroux; Taylor 1950: 51; Dawson 1954: 393, fig. 11b; Dawson 1956: 34
D. 13703, 13797, 13859, 13907. P. 2855, Bogallua Is. lagoon pavement, 11/17/54. Considerable variation in branching occurs between examples corresponding to the type of the species and those better referred to the following variety.

Bryopsis pennata var. *secunda* (Harvey) Collins and Hervey 1917: 62; Taylor 1950: 52. *Bryopsis plumosa* var. *secunda* Harvey 1858: 31, pl. 45A, figs. 1–3 (Key West, Florida)
P. 52–31, Aomon Is. seaward reef, 10/22/52; P. 52–110, Engebi Is. lagoon, 11/8/52; P. 2585, Aitsu Is. 2/11/55; P. 2851, Bogombogo Is. seaward flats, 10/5/54; P. 2857, Aitsu Is. lagoon, 11/17/54.

Caulerpa acuta (Yamada) Yamada 1944: 34. *Caulerpa filicoides* Yamada 1936: 135, pl. 30, fig. 2. *Caulerpa verticillata* f. *acuta* Yamada 1934: 63, fig. 32 (Naha, Ryukyu Archipelago)

Figs. 6, 7

D. 13875, 13971, 14050.

Caulerpa antoensis Yamada; Dawson 1956: 36, fig. 20; Taylor 1950: 55, pl. 28, fig. 2 (as *C. arenicola* Taylor)
D. 13832.

Caulerpa bikiniensis Taylor 1950: 66, pl. 33 (Bikini Atoll, Marshall Is.)
D. 13774. The material is rather small and incompletely developed, but is apparently identical with Taylor's Bikini and Rogelap specimens. The problem of its relationship and possible varietal status in the *Caulerpa racemosa* complex cannot be taken up here.

Caulerpa brachypus Harvey 1859: 332 (Japan); Taylor 1950: 56, pl. 29, fig. 2
T. 46–422. Not collected again.

FIG. 5. *Bryopsis hypnoides*: *a*, Habit of part of a plant of D. 13977, × 5; *b*, detail of branching of the same, × 45.

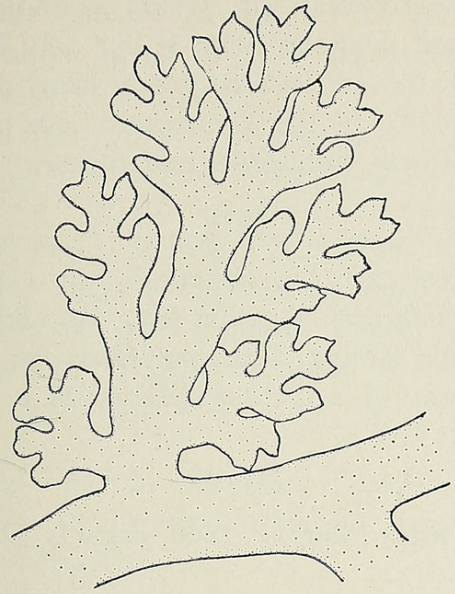


FIG. 6. *Caulerpa acuta*: A small part of a blade of D. 13875 to show ultimate branching, × 100.

Caulerpa elongata f. *disticha* Taylor 1950: 55, pl. 52, fig. 1; Dawson 1956: 37 (as *C. elongata*)

D. 13723. *Caulerpa elongata* is supposed to be distinguished from similar forms of *C. webbiana* by its more lax and erect habit and absence of the abundant ramified filaments from the stolons. However, this specific distinction needs study. Taylor's plant is probably the same as that treated as *C. webbiana* f. *elegans* by Yamada and Tanaka 1938: 62, fig. 4.

FIG. 7. *Caulerpa acuta*: A dry specimen of D. 13875, × 1.2.

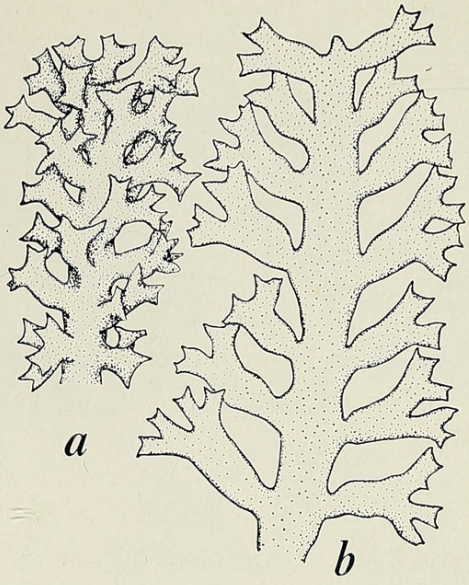


FIG. 8. *a*, *Caulerpa webbiana*: Upper part of a plant of D. 13679, × 22. *b*, *Caulerpa webbiana* f. *disticha*: Upper part of a plant of D. 13892, × 22.

Caulerpa webbiana Montagne 1838: 129, pl. 6 (Canary Islands); Eubank 1946: 415

Fig. 8*a*

D. 13679, 13807. P. 13, Igurin Is. seaward reef, 8/9/49.

Caulerpa webbiana var. *disticha* Weber van Bosse 1898: 270, pl. 21, fig. 1a–c (type locality not indicated)

Fig. 8*b*

D. 13626, 13850, 13864, 13892.

Caulerpa serrulata var. *serrulata* (Forskål) J. Agardh; Taylor 1950: 57, pl. 29, fig. 1, pl. 30, fig. 1; Dawson 1954: 393, fig. 10a; Dawson 1956: 38, fig. 23

D. 13952, 14047. P. 1225B, Parry Is. lagoon in 6 ft., 4/19/54.

Caulerpa racemosa var. *laetevirens* (Montagne) Weber van Bosse 1898: 366, pl. 33, figs. 8, 16–22; Taylor 1950: 64. *Caulerpa laetevirens* Montagne 1845: 16 (Toud Island)

Fig. 9*a*

D. 13628.

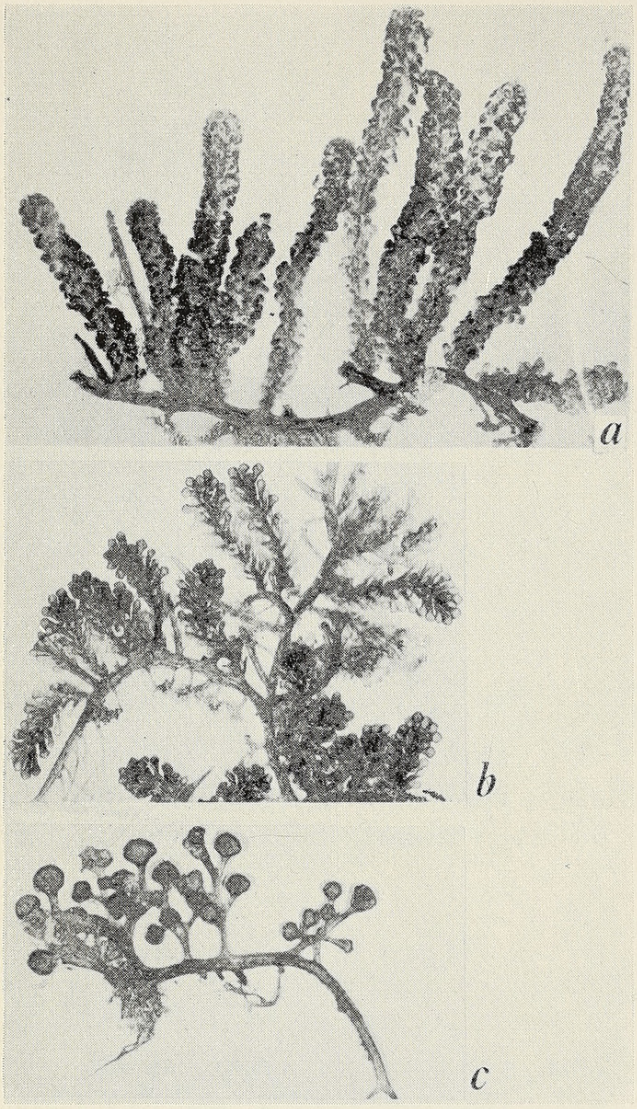


FIG. 9. *a*, *Caulerpa racemosa* var. *laetevirens*: Upper part of a plant of D. 13628, × 0.38. *b*, *C. racemosa* var. *laetevirens* f. *compressa*: Part of a plant of D. 13743, × 0.43. *c*, *C. racemosa* var. *clavifera*: A dry specimen of P. 12, × 0.75.

Caulerpa racemosa var. *laetevirens* f. *compressa* Taylor 1950: 64 (Eniwetok Atoll, Marshall Is.)

Fig. 9*b*

D. 13743, 13812.

Caulerpa racemosa var. *clavifera* (Turner) Weber van Bosse 1898: 361, pl. 33, figs. 1–5; Taylor 1950: 62. *Fucus clavifer* Turner 1808: 126, pl. 57 (Red Sea)

Fig. 9*c*

P. 12, Japtan Is. seaward reef, 8/8/49.

Caulerpa racemosa var. *peltata* (Lamouroux) Eubank; Dawson 1956: 35, fig. 16b; Taylor 1950: 65 (as *Caulerpa peltata* Lamx.)

D. 13735, 13793. The former have peltate foliar ramelli with dentate margins.

Caulerpa racemosa var. *peltata* f. *nummularia* (Harvey ex J. Agardh) comb. nov. *Caulerpa nummularia* J. Agardh 1872: 38 (Friendly Islands,-Tonga) *Caulerpa peltata* var. *nummularia* (J. Agardh) Weber van Bosse 1898: 376

Fig. 10

D. 13612, 13809. P. 2806, Parry Is. seaward reef, 3/6/55.

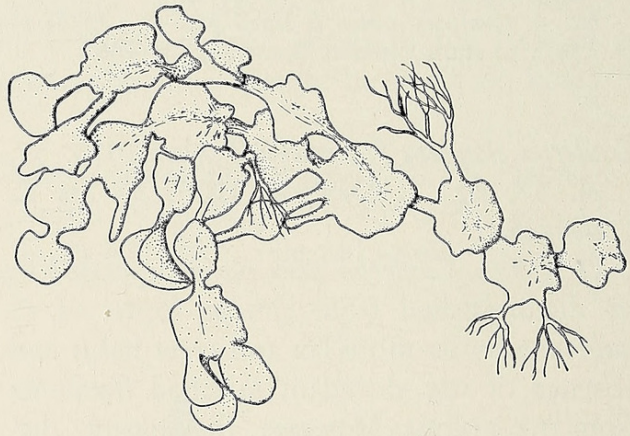


FIG. 10. *Caulerpa racemosa* var. *peltata* f. *nummularia*: Part of a plant of D. 13616b, × 4.5.

Caulerpa racemosa var. *macrophysa* (Kützing) Taylor; Dawson 1954: 393, fig. 10c; Dawson 1956: 35; Taylor 1950: 63

D. 13820. P. 1225, Parry Is. lagoon in 6 ft., 4/19/54.

Caulerpa racemosa (Forskål) J. Agardh near var. *uvifera* (Turner) Weber van Bosse 1898: 362, pl. 33, figs. 6, 7, 23; Taylor 1950: 63. *Fucus uvifer* Turner 1819: 81, pl. 230 (Red Sea)

D. 13635, 14006.

Caulerpa taxifolia (Vahl) C. Agardh; Dawson 1956: 35, fig. 17

D. 14046.

Caulerpa urvilliana Montagne; Taylor 1950: 60, pl. 31, figs. 1, 2, pl. 32, fig. 1; Dawson 1956: 37, fig. 21

D. 13607, 13632, 13674, 13757, 13818, 13845, 13862. P. 2824, Runo Is. seaward reef, 3/8/55; P. 2819, Bokanjoio Is. seaward reef, 3/8/55; P. 1225A, Parry Is. lagoon in 6 ft., 4/19/54. These specimens are variable, but for the most part approach the f. *tristicha* (J. Agardh) Weber van Bosse of the type variety of the species.

Caulerpa vickersiae Børgesen; Dawson 1956: 36, fig. 18; Dawson 1954: 392, fig. 9f (as *C. ambigua* Okam.)

D. 13617a, 13988a.

Codium arabicum Kützing; Dawson 1956: 38, fig. 24

D. 13947, 14004. P. 1220, Bogombogo Is. seaward flats, 4/15/54; P. 2831, off Igurin Is. in lagoon at 50 ft., 3/16/55.

Codium geppii O. C. Schmidt; Dawson 1954: 395, fig. 13 k; Dawson 1956: 39, fig. 26

D. 13722, 13951, 13926, 14003. P. 2593, Bogallua Is. lagoon, 2/11/55; P. 52–25, Aomon Is., 10/22/52.

Dr. Silva, in a personal communication, states that reef material of this plant collected by A. Conger and examined by him certainly belongs to the *C. geppii* complex, but is referable to *C. bulbopilum* Setchell, which he is about to decide to recognize in his monograph on *Codium*.

Codium edule Silva, mentioned by Odum and Odum (1955), has not been examined, but may be referable here.

Codium saccatum Okamura 1915: 145, pl. 135, figs. 1–5 (Futaye, Amakusa Island, Japan)

Fig. 11*a*

P. 2835, Bogombogo Is. on coral of tidal flats, 5/30/54. This plant agrees in size and shape and in the morphology of the utricles except for a slight development of alvaeolae in the utricle end-walls, not shown by Okamura for the type.

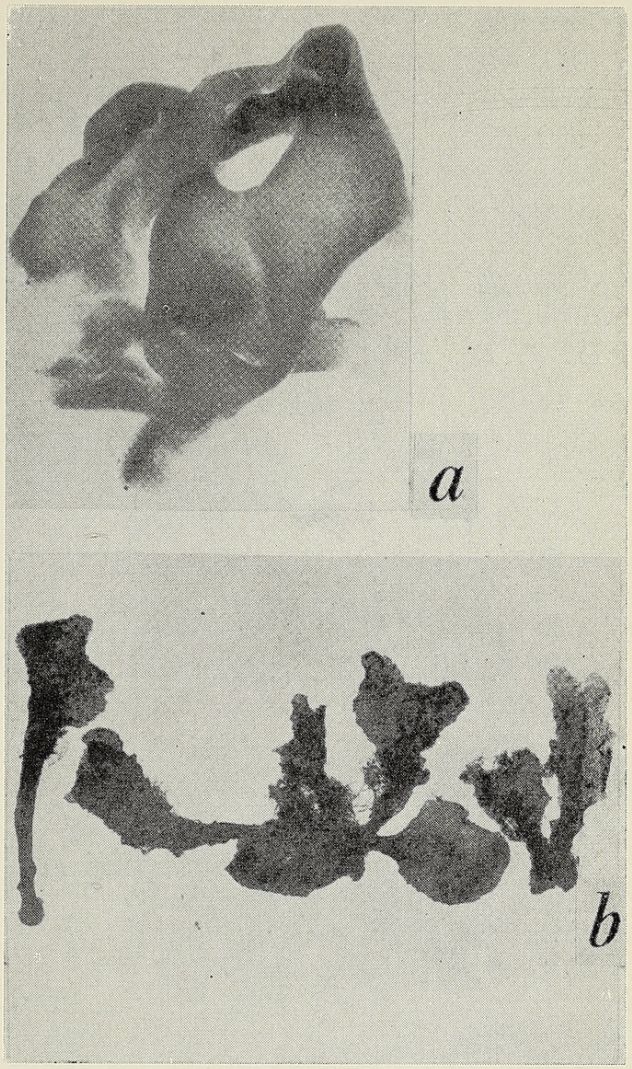


Fig. 11. *a*, *Codium saccatum*: A somewhat damaged plant of P. 2835, × 0.8. *b*, *Avrainvillea lacerata*: Habit of plants of D. 13629, × 1.05.

Codium tenue (Kützing) Kützing 1856, Tab. Phyc. 6: 33, pl. 95, fig. 1; Taylor 1950: 94. *Codium tomentosum* var. *tenue* Kützing 1849: 501 (Cape of Good Hope)

T. 46–436. Not collected again. Dr. Silva has reëxamined some preserved material of this collection and states in a personal communication that he considers it an undescribed species.

Pseudochlorodesmis furcellata (Zanardini) Børgesen; Dawson 1954: 395, fig. 11c

D. 13704b, 13987, 14048.

Avrainvillea lacerata Harvey ex J. Agardh 1887: 54 (Friendly Islands,-Tonga); A. and Ethel Gepp 1911: 38, figs. 105–109; Taylor 1950:70

Fig. 11*b*

D. 13629.

Rhipilia geppii Taylor 1950: 70, pl. 35 (Bikini Atoll, Marshall Islands)

D. 13721, 13889. P. 13x, Aaraanbiru Is. seaward reef margin, 3/7/54.

Rhipilia diaphana Taylor 1950: 72, pl. 37 (Bikini Atoll, Marshall Islands)

T. 46–425. Not collected again.

Rhipilia orientalis A. and Ethel Gepp; Taylor 1950: 72, pl. 36, fig. 1; Dawson 1956: 40

D. 13761, 13877, 13888.

Udotea palmetta var. *marshallensis* var. nov. Dawson 1956: 40, fig. 28a, b, c (as *U. palmetta*); Taylor 1950: 74 (as *U. indica*, at least in part)

Like the type, but the blade filament appendages in a single row, simple, blunt-conical, not forked.

A typo differt in appendiculis filamentae laminae in serie simplici efurcatis obtusi-conicis.

TYPE: Dawson 13727, Aniyaanii Island, seaward reef on the coralline ridge, August 22, 1955.

ADDITIONAL MATERIAL: Kwajalein Atoll. D. 12554; Majuro Atoll. Horwitz 9576, 9599c, 9340a, 9390e; Eniwetok Atoll. T. 46–386, D. 13829, D. 13634, D. 13894, P. 2588a, Bogallua Is. lagoon rock pavement, 2/11/55, P. 54–33, Mui Is. seaward reef, 3/11/54, P. 2581a, Aaraanbiru Is. s.w. tip in channel, 2/11/55.

This considerable number of specimens has been found to show such consistent minor differences in the form of the blade filament appendages from the Indian Ocean type that there appears to be ample justification for its recognition under a distinctive subspecific name. One of Taylor's Eniwetok specimens referred by him to *U. indica* has been examined and found to be identical with the other Marshall Islands material. Presumably, his Rongerik, Rongelap and Bikini specimens treated as *U. indica* are also of this same plant.

Udotea javensis (Montagne) A. and Ethel Gepp; Dawson 1954: 395, fig. 13b, c; Dawson 1956: 40; Taylor 1950: 73

D. 13694, 13787, 13949.

Tydemannia expeditionis Weber van Bosse; Dawson 1956: 41; Taylor 1950: 73, pl. 38, fig. 1

D. 13962, 13997.

Halimeda gigas Taylor 1950: 84, pl. 44, fig. 2 (Eniwetok Atoll)

D. 13948, 13968, 13996. P. 1996, ½ mile off Parry Is. in lagoon at 140 ft., 9/9/54; P. 1947, ¼ mi. off Parry Is. in lagoon at 135 ft., 9/4/54; P. 2625, Parry Is. lagoon at 100 ft., 3/14/55; P. 2688, 1½ mile off Rigili Is. in lagoon at 60 ft., 3/16/55.

Halimeda macrophysa Askenasy 1888: 14, pl. 4, figs. 1–4 (Matuku Is., South Pacific); Barton 1901: 17, pl. 2, figs. 15–18

Fig. 12

D. 13879, 13897.

Halimeda monile (Solander) Lamouroux; Taylor 1950: 92, pl. 50, fig. 1; Dawson 1956: 41

D. 13706, 13836, 13937, 13953, 13969. P. 2828, 1½ mi. off Igurin Is. in lagoon at 50 ft., 3/8/55; P. 1993, ½ mi. off Parry Is. in lagoon at 140 ft., 9/9/54; P. 2687, 1½ mi. off Rigili Is. in lagoon at 60 ft., 3/16/55; P. 2620, 1½ mi. off Aaraanbiru Is. in lagoon at 70 ft., 3/11/55.

Halimeda lacunalis Taylor 1950: 91, pl. 51 (Eniwetok Atoll)

P. 2814, Bokanjoio Is. in lagoon off s.e. end of island at 60 ft., 3/8/55.

Halimeda stuposa Taylor 1950: 90, pl. 43, fig. 1, pl. 49, pl. 50, fig. 2 (Rongelap Atoll, Marshall Islands); Dawson 1956: 41

P. 2807, Parry Is. seaward reef edge, 3/6/55; P. 1200, Eneroul Is. lagoon, 4/14/54; P. 52–23, Aomon Is. lagoon at 5 ft., 10/22/52; P. 2588, Bogallua Is. lagoon rock pavement, 2/11/55.

Halimeda fragilis Taylor 1950: 88, pl. 48, fig. 2; Dawson 1956: 41

T. 46–394. Not collected again.

Halimeda opuntia (Linnaeus) Lamouroux; Taylor 1950: 80, pl. 39, fig. 1; Dawson 1954: 395, fig. 12; 1956: 41

D. 13631, 13700, 13734, 13796. P. 2529, 2530, ¼ mi. off Aaraanbiru Is. in lagoon at 20 ft., 3/9/55.

Halimeda opuntia f. *hederacea* Barton 1901: 21, pl. 3, fig. 23 (East Indies); Taylor 1950: 81, pl. 40, fig. 1; Dawson 1956: 42

D. 13954, 13998. P. 1950, ¼ mi. off Parry Is. in lagoon at 135 ft., 9/4/54.

Halimeda opuntia f. *minima* Taylor 1950: 82, pl. 39, fig. 2 (Bikini Atoll, Marshall Islands)

D. 14001.

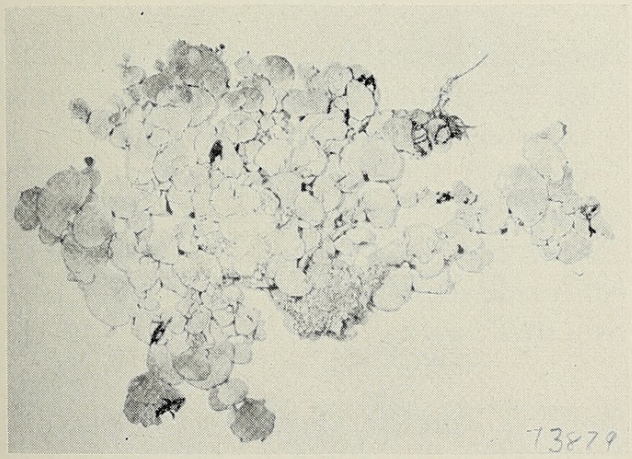


Fig. 12. *Halimeda macrophysa*: Habit of a plant of D. 13879, × 0.5.

Halimeda opuntia f. *triloba* (Decaisne) Barton 1901: 20, pl. 2, fig. 20; Taylor 1950: 81, pl. 40, fig. 2. *Halimeda triloba* Decaisne 1842: 90 (China Sea)

D. 14001a. P. 2618, 1 mi. off Aaraanbiru Is. in the lagoon at 70 ft., 3/11/55.

Halimeda taenicola Taylor 1950: 86, pl. 46, fig. 1; Dawson 1956: 42

D. 13759.

Halimeda tridens f. *lamourouxii* (J. Agardh) Weber van Bosse; Taylor 1950: 93. *Halimeda incrassata* var. *lamourouxii* J. Agardh 1887: 86 ("in mari Antillarum"); Barton 1901: 27, pl. 4, fig. 41

Fig. 13

D. 14044.

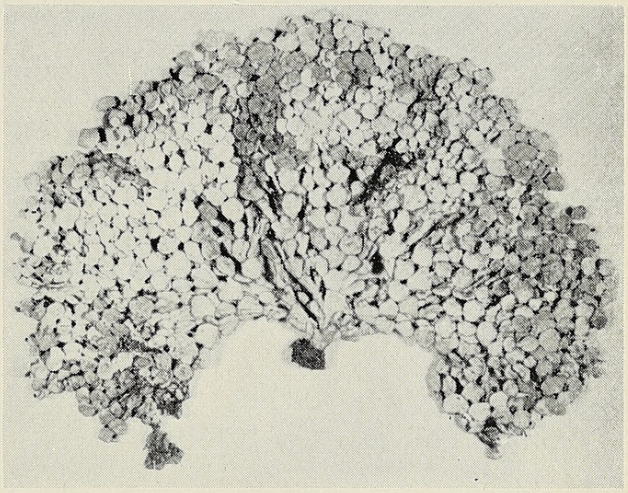


Fig. 13. *Halimeda tridens* f. *lamourouxii*: Habit of a plant of D. 14044, × 0.45.

Ostreobium reineckii Reinbold; Dawson 1954: 396, fig. 13g

D. 13776a, growing in the calcareous material of the lower side of *Peyssonelia rubra* var. *orientalis*.

Neomeris bilimbata Koster; Dawson 1956: 42, fig. 30a, b

D. 13772. Taylor's number 46–557 from Rongerik Atoll has been reëxamined and found to agree with this species rather than with *Neomeris vanbosseae* Howe.

Acetabularia moebii Solms-Laubach; Dawson 1954: 397, fig. 13j; Dawson 1956: 43
D. 13617b, 13660, 13858.

BROWN ALGAE

Ectocarpus breviarticulatus J. Agardh; Dawson 1954: 398, fig. 14a, b; Dawson 1956: 43
D. 13620, 14037. P. 2803, Bokanjoio Is. seaward reef margin, 10/25/54; P. 2804, Parry Is. seaward reef flats, 2/5/55.

Ectocarpus indicus Sonder, in Zollinger; Dawson 1956: 43, fig. 32; Taylor 1950: 95
D. 13766, epiphytic on *Turbinaria*, 13950, epiphytic on *Halimeda* and *Caulerpa*, 13959.

Ectocarpus irregularis Kützing; Dawson 1954: 398, fig. 14e, f; Børgesen 1941: 23, figs. 8–11
P. 2854a, epiphytic on *Dictyota*, Bogallua Is. lagoon pavement, 11/17/54.

Ectocarpus mitchellae Harvey; Taylor 1950: 95; Dawson 1954: 400, fig. 14c, d; Dawson 1956: 43; Børgesen 1941: 7, figs. 1–5
D. 13979.

Sphacelaria furcigera Kützing; Dawson 1954: 400, fig. 14h; Dawson 1956: 44
D. 13696a.

Sphacelaria novae-hollandiae G. Sonder; Dawson 1954: 400, fig. 14g; Taylor 1950: 97
D. 13748, 13768, 13936, all epiphytic on *Turbinaria*.

Sphacelaria tribuloides Meneghini; Dawson 1954: 400, fig. 14i, j; Dawson 1956: 44
D. 13622. P. 2812, Bokanjoio Is. lagoon on stake in 3 to 8 feet of water, 3/8/55.

Pocockiella papenfussii Taylor 1950: 98, pl. 54, fig. 2; Dawson 1956: 44
D. 13720. P. 54–31, Mui Is. seaward reef under rocks, 3/11/54.

Pocockiella variegata (Lamouroux) Papenfuss; Dawson 1954: 400, fig. 14k; Dawson 1956: 44
D. 13775, 13866.

Dictyota divaricata Lamouroux 1809: 331 (Mediterranean coast of France); Taylor 1928: pl. 16, figs. 6–9; Taylor 1950: 101

Fig. 14*a*

D. 13614 (juvenile), 13691, 13883, 13898. P. 2690, 1½ mi. off Rigili Is. at 60 ft., 3/16/55.

Dictyota patens J. Agardh; Dawson 1954: 401, fig. 16c
D. 13938. P. 2854, Bogallua Is. lagoon pavement, 11/17/54.

Dictyota pinnatifida Kützing 1859, Tab. Phyc. IX: 16, pl. 39 (Antigua, West Indies); Taylor 1950: 100
T. 46–416. Not collected again.

Dictyopteris repens (Okamura) Børgesen; Dawson 1956: 44, fig. 34
D. 13611, 13749.

Padina australis Hauck 1887: 44 (Cape York, North Australia); Weber van Bosse 1913: 179, fig. 52

Fig. 14*b*

D. 13678.

Padina commersonii Bory; Dawson 1954: 401, fig. 17; Taylor 1950: 100, pl. 54, fig. 1; Dawson 1956: 44
D. 13830, 14045. In this species the fertile zones alternate with hair zones, while in *P. australis* each fertile zone has a hair zone on either side separated from the next hair zone by a sterile zone.

Hydroclathrus clathratus (Bory) Howe; Dawson 1954: 403, fig. 18b; Taylor 1950: 96
D. 13918, 14021. P. 2845, Bokanjoio Is. seaward boat passage in 6 ft., 9/30/54.

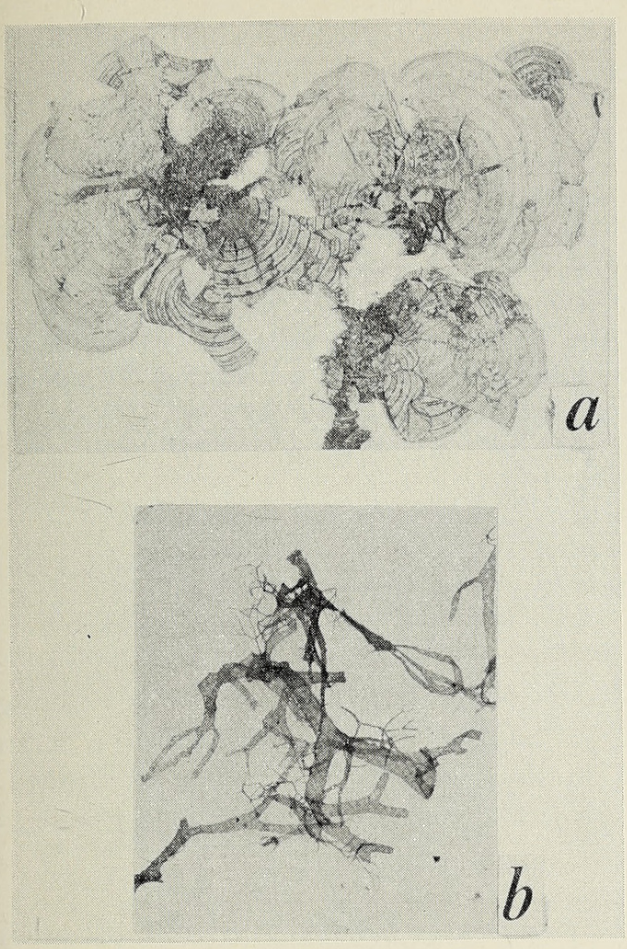


FIG. 14. *a*, *Padina australis*: Habit of a plant of D. 13678, × 0.8. *b*, *Dictyota divaricata*: Habit of parts of plants of D. 13691 showing great attenuation of some segments, × 0.7.

Rosenvingea intricata (J. Agardh) Børgesen 1914: 181; Taylor 1950: 97 *Asperococcus intricatus* J. Agardh 1847: 7 (Vera Cruz, Mexico)

Fig. 15

D. 13919. Rather dwarfish material which most closely resembles plants from the Gulf of California (Dawson 1944).

Rosenvingea fastigiata (Zanardini) Børgesen 1914: 26; Taylor 1950: 96, pl. 52, fig. 2. *Asperococcus fastigiatus* Zanardini 1872: 134, pl. 3, figs. 1–3 (Sarawak)
T. 46–332. Not collected again.

Chnoospora implexa Hering ex J. Agardh; Dawson 1954: 404, fig. 20a, b
D. 14022. P. 1195, Bokanjoio Is., seaward reef margin, 4/14/54.

Turbinaria ornata (Turner) J. Agardh; Dawson 1954: 405, fig. 21; Dawson 1956: 44; Taylor 1950: 100, pl. 53, fig. 2, pl. 55, fig. 2
D. 13693, 13765, 13802, 13935.

RED ALGAE

Goniotrichum elegans (Chauvin) Zanardini 1847: 69. *Bangia elegans* Chauvin 1842: 32 (Arromanches, France). Taylor 1950: 117 (as *G. alsidii* (Zanard.) Howe)

Fig. 16*a*, *b*

D. 13696e, epiphytic on a bit of *Cladophora* among other small algae in mixture.

Asterocytis ornata (C. Agardh) Hamel; Dawson 1954: 411, fig. 23a; Taylor 1950: 116
T. 46–427. Not detected again.

Erythrotrichia carnea (Dillwyn) J. Agardh; Dawson 1956: 45; Taylor 1950: 117; Tanaka 1952: 14, fig. 7B–E

Fig. 16*c*

D. 13906a.

Erythrotrichia parietalis Tanaka; Dawson 1954: 412, fig. 23d, e
D. 13696c.

Acrochaetium gracile Børgesen; Dawson 1954: 414, fig. 25h, i

Fig. 17*b*

D. 13696b, epiphytic on *Lophosiphonia* and

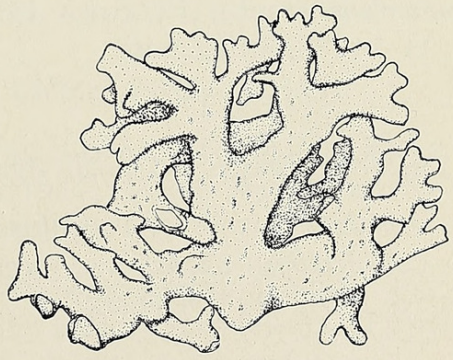


FIG. 15. *Rosenvingea intricata*: Habit of part of a small plant of D. 13919, × 3.7.

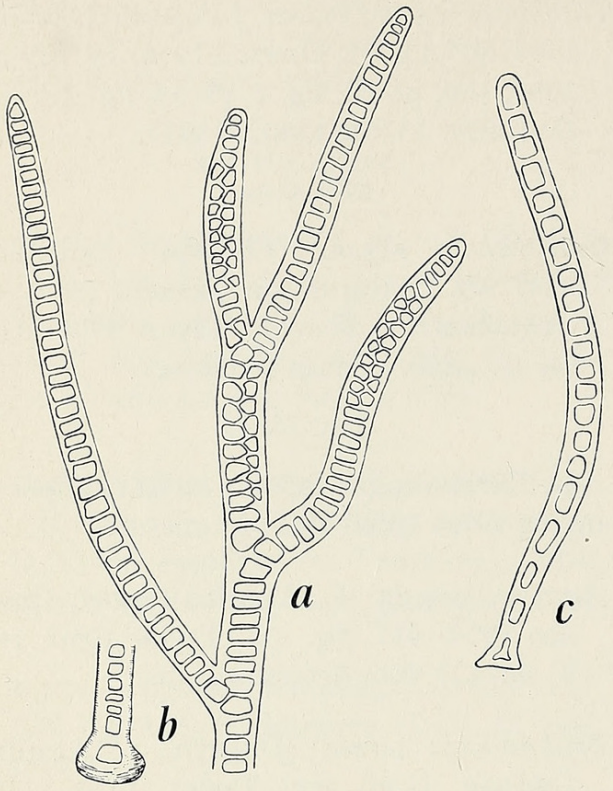


FIG. 16. *a*, *b*, *Goniotrichum elegans*: *a*, Habit of the upper part of a plant; *b*, basal part of same, both × 150 (after Børgesen). *c*, *Erythrotrichia carnea*: Habit of a young plant, × 300 (after Tanaka).

other small algae. This material seems to agree even better with the original account than the Viêt Nam specimens cited above. Attenuated hairs are common.

Acrochaetium robustum Børgesen; Dawson 1954: 414, fig. 25j, k

P. 2847, Bokanjoio Is. lagoon on *Enteromorpha*, 9/29/54.

Kylinia crassipes (Børgesen) Kylin 1944: 13. *Acrochaetium crassipes* Børgesen 1915: 20, figs. 11–13 (Virgin Islands)

Fig. 17*a*

D. 13620b, epiphytic on small algae.

Kylinia secundata (Lyngbye) Papenfuss 1947: 437. *Callithamnion daviesii* var. *secundatum* Lyngbye 1819: 129 (Denmark)

Fig. 17*c*, *d*

D. 13976b. Rather scant material, but fertile and in general agreement with the species as interpreted by the writer in 1953.

Liagora farinosa Lamouroux; Dawson 1954: 415, figs. 25d, 26; Taylor 1950: 119

P. 2820, Bokanjoio Is. seaward reef edge, 3/8/55.

Liagora hawaiiana Butters 1911: 164, pl. 24, figs. 8, 9 (Laie Bay, Oahu, Hawaiian Islands); Taylor 1950: 119, pl. 57, fig. 1; Abbott 1945: 151, fig. 3

D. 13828.

Liagora orientalis J. Agardh; Dawson 1954: 415, fig. 27b

Fig. 19*a*, *b*

A. Conger 4/27/51, Lidilibut Is., among coral heads in sandy channels on the ocean side. Principal specimen in the Bishop Museum. The material is sterile and is not positively identified.

Liagora pinnata Harvey 1853: 138, pl. 31 B, figs. 1–5 (Sand Key, Florida); Abbott 1945: 168

Fig. 18

P. 54–19, Aitsu Is., seaward reef near edge, 3/10/54.

Liagora robusta Yamada 1938: 8, pl. 12, fig. 1, text figs. 3, 4 (Ogasawara Islands)

Fig. 19*c*, *d*

A. Conger 4/27/51, Lidilibut Is. in sandy channels on the ocean reef side. Sterile and not positively identified.

Asparagopsis taxiformis (Delile) Collins and Hervey 1917: 117. *Fucus taxiformis* Delile 1813: 295, pl. 57, fig. 2 (Alexandria, Egypt)

Fig. 20

D. 13627, 13843, 14018. P. 16, Japtan Is. seaward reef, 8/8/49; P. 2601a, Rigili Is., 2/11/55; P. 2501, Engebi Is. lagoon at n.w. tip in 15 ft., 3/2/55.

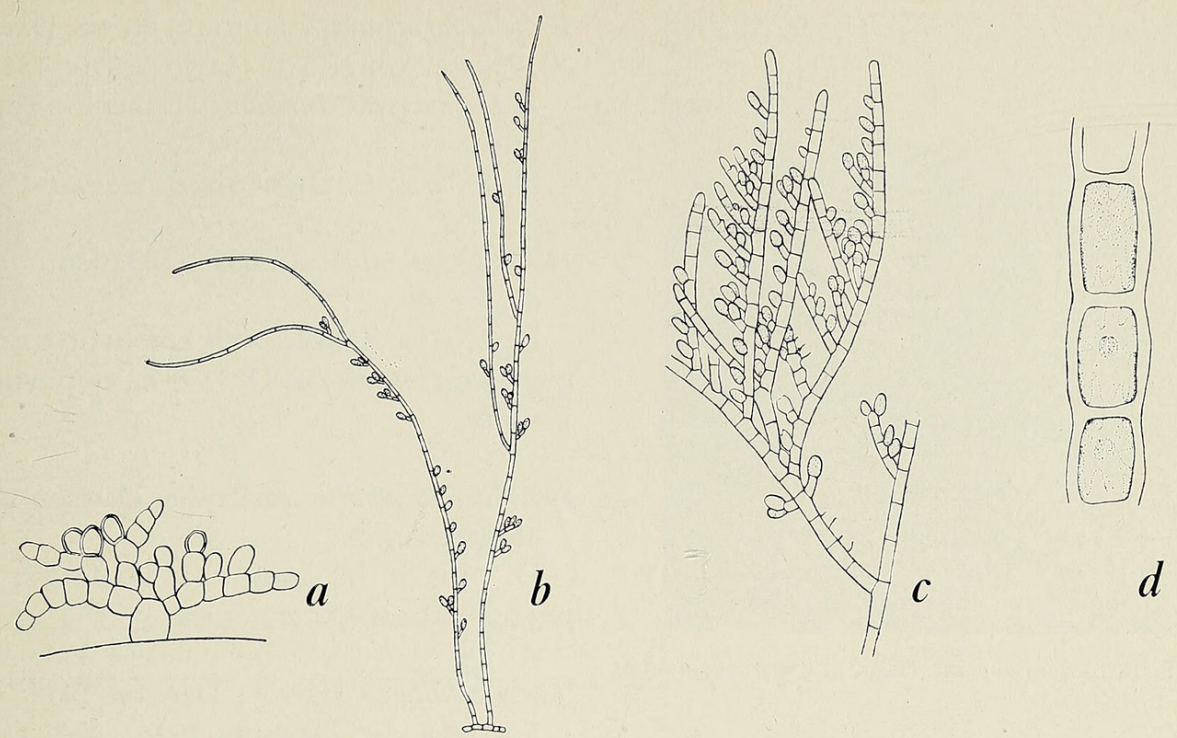


FIG. 17. *a*, *Kylinia crassipes*: Habit of a plant, × 290. *b*, *Acrochaetium gracile*: Habit of part of a plant, × 150 (after Børgesen). *c*, *d*, *Kylinia secundata*: *c*, Habit of the upper part of a plant, × 160; *d*, detail of stellate chromatophores in part of a filament, × 1000 (after Dawson).

Falkenbergia hillebrandii (Bornet) Falkenberg = sporophyte generation of *Asparagopsis taxiformis* (Delile) Collins and Hervey; Dawson 1954: 414, fig. 25l; Dawson 1956: 45

D. 13623, 13913, 14018a. P. 2836b, Parry Is. seaward reef edge, 4/4/54.

Galaxaura fastigiata Decaisne; Dawson 1954: 419, fig. 30b

P. 2805, Bogombogo Is. seaward reef flats, 2/9/55.

Galaxaura filamentosa Chou; Dawson 1954: 419, fig. 30a; Dawson 1956: 46

D. 14005. Rather scant, young material.

Gelidium crinale var. *perpusillum* Piccone and Grunow; Dawson 1954: 421, fig. 31e, f

D. 13798.

Gelidium pusillum (Stackhouse) Le Jolis, formas; Dawson 1954: 420, fig. 31a–c; Dawson 1956: 46

D. 13819, 13841.

Gelidiella bornetii (Weber van Bosse) Feldmann and Hamel 1934: 528; Børgesen 1938: 210, fig. 2a, b. *Gelidium bornetii* Weber van Bosse 1926: 107 (Kei Islands)

Fig. 21

D. 14035 is a good match for Børgesen's 1938 figure. The small size and compressed to flattened branches lacking rhizoidal filaments are distinctive.

Gelidiella tenuissima Feldmann and Hamel; Dawson 1954: 422, fig. 33e; Dawson 1956: 46

D. 13660a, 13908, 14032.

Gelidiopsis intricata (C. Agardh) Vickers; Dawson 1954: 423, fig. 34a–d; Dawson 1956: 46

D. 13903.

Wurdemannia miniata (Lamark and DeCandelle) Feldmann and Hamel: Dawson 1954: 424, fig. 35; Dawson 1956: 47

D. 13640b, 14036.

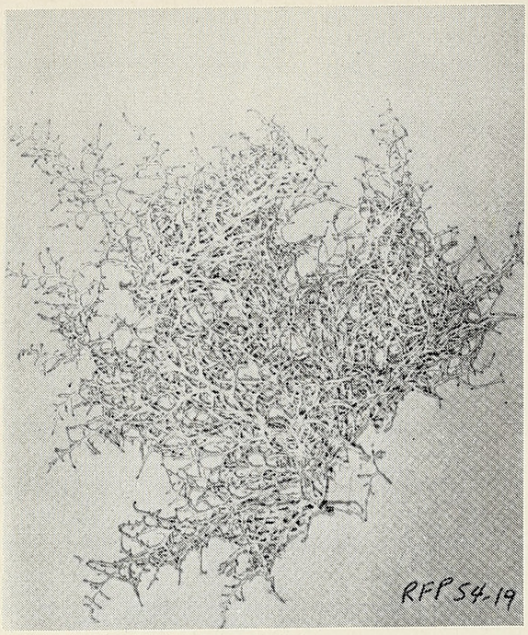


FIG. 18. *Liagora pinnata*: Habit of a dry specimen of P. 54–19, × 0.65.

Cruoriella dubyi (Crouan and Crouan) Schmitz; Dawson 1956: 47, fig. 39
D. 13856.

Peyssonelia rubra var. *orientalis* Weber van Bosse; Dawson 1954: 424, fig. 36c; Dawson 1956: 47; Taylor 1950: 121
D. 13776, 13991.

Porolithon craspedium (Foslie) Foslie 1909: 57; Taylor 1950: 126, pls. 64, 65. *Lithophyllum craspedium* Foslie 1900: 26 (Onatoa, Gilbert Islands)
D. 13717, 13943.

Porolithon oncodes (Heydrich) Foslie 1909: 57; Taylor 1950: 125, pls. 9, 61, 62, 63. *Lithophyllum oncodes* Heydrich 1897: 410 (Tami Island, New Guinea)
D. 13618, 13869, 14019.

Porolithon gardneri f. *subhemispherica* Foslie 1907: 190 (Indian Ocean); Taylor 1950: 129, pls. 5–9, 70, fig. 1; pls. 71–73, 76, fig. 2; pl. 77
T. 46–373, T. 46–306, T. 46–406. Not collected again since 1946.

Fosliella farinosa (Lamouroux) Howe; Dawson 1954: 425, fig. 37c; Taylor 1950: 132 (as *F. farinosa* var. *solmsiana* (Falkenb.) Taylor, prox.
D. 13720a, epiphytic on *Pocockiella*.

Heteroderma minutula Foslie; Dawson 1956: 47, fig. 40
D. 13719a, 13821, both epiphytic on *Dictyosphaeria intermedia*; D. 13994a, epiphytic on *Valonia*.

Heteroderma subtillissima Foslie; Dawson 1956: 48, fig. 41a, b
D. 13857b, in *Jania* turf; D. 13818, epiphytic on *Caulerpa urvilliana*.

Jania capillacea Harvey; Dawson 1954: 432, fig. 41a, b; Dawson 1956: 49; Taylor 1950: 133
D. 13640, 13649, 13692. P. 2858, Runit Is. in channel at n.w. tip, 4/11/54.

Jania decussato-dichotoma (Yendo) Yendo; Dawson 1956: 49, fig. 44
D. 13769, 13805, 13910. The specimens cited by Taylor 1950: 133 under *Jania rubens* Lamx. are presumed to correspond with this common Pacific species.

Jania micrarthrodia Lamouroux; Dawson 1956: 49, fig. 42; Taylor 1950: 134 (as *J. antennina* Kützing, prox.)
T. 46–345B. Not collected again.

Jania tenella Kützing; Dawson 1956: 49, fig. 43
P. 2836a, Parry Is. seaward reef edge, 4/4/54; P. 2860, same, 3/10/54.

Grateloupia filicina (Wulfen) C. Agardh; Dawson 1954: 432, fig. 42a
D. 13972. P. 2837, same locality, 5/29/54.

Hypnea esperi Bory; Dawson 1954: 436, fig. 46h–j; Dawson 1956: 51
D. 13617, 13697, 13788, 13852, 13814, 13902, 13939, 14015. Taylor's Eniwetok col-

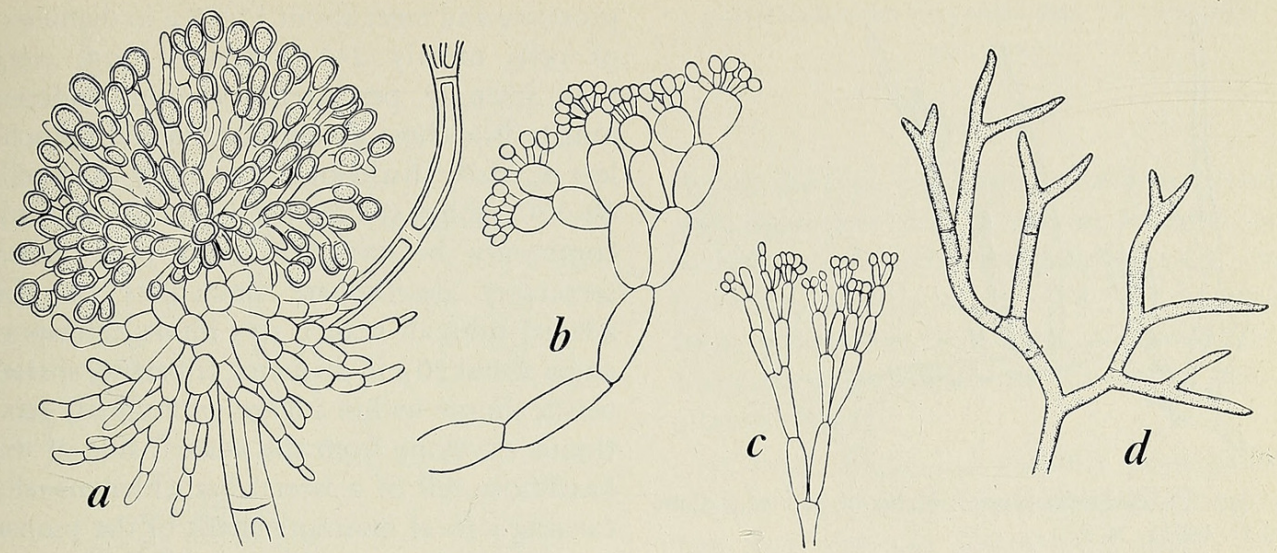


FIG. 19. *a*, *b*, *Liagora orientalis: a*, A young cystocarp, × 300; *b*, an antheridial branch, × 470 (both after Yamada). *c*, *d*, *Liagora robusta: a*, An antheridial branch, × 350 (after Yamada); *b*, part of a plant of Conger 4/27/51 showing the open dichotomous branching and annulations, × 1.5.

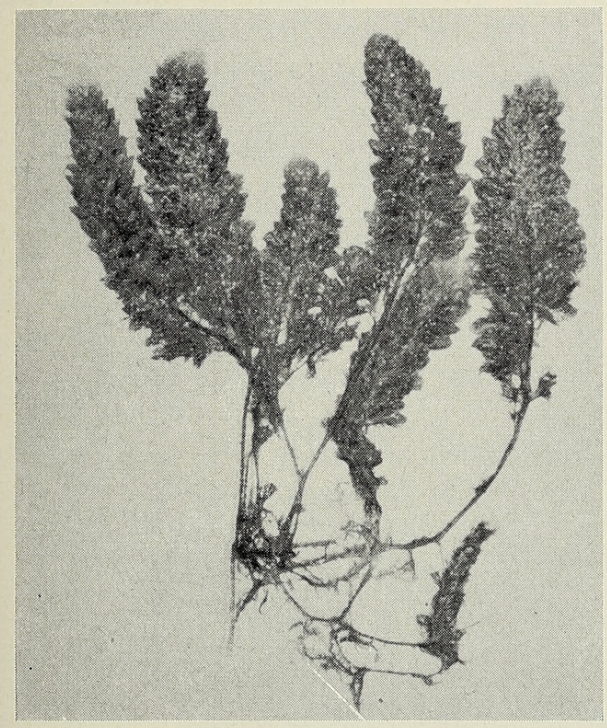


FIG. 20. *Asparagopsis taxiformis*: Habit of dry plants typical of the small reef form, × 1.15.

lection of *Hypnea* under no. 46–378 called *H. spinella* (Ag.) Kütz. is probably the same as these.

Hypnea nidulans Setchell; Dawson 1954: 438, fig. 46e–g
D. 13861.

Hypnea pannosa J. Agardh; Dawson 1956: 51, fig. 46
D. 13912.

Dicranema rosaliae Setchell and Gardner 1924: 745, pl. 22, fig. 6 (Gulf of California, Mexico)
Figs. 22*a*; 23*a*
D. 13980.

Botryocladia skottsbergii (Børgesen) Levring; Dawson 1956: 52, fig. 48; Taylor 1950: 135 (as *Botryocladia kuckuckii* Weber van Bosse) Yamada and Tanaka
D. 13986, 14033.

Coelothrix irregularis (Harvey) Børgesen 1915–20: 389, figs. 373, 374. *Cordylecladia ? irregularis* Harvey 1853: 156 (Key West, Florida)
Fig. 23*b*

D. 13782. The tetrasporic material agrees exactly with Harvey. It is probably identical also with *C. indica* Børgesen from Mauritius which seems doubtfully distinct in view of this Pacific record. The species is probably widespread in tropical waters but of infrequent occurrence in the Pacific and Indian Ocean regions.

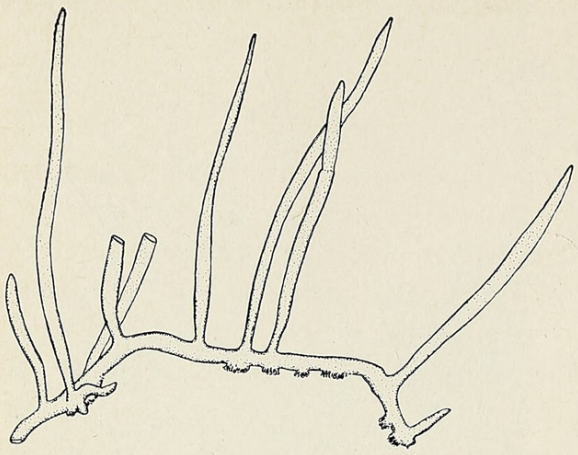


FIG. 21. *Gelidiella bornetii*: Habit of part of a plant of D. 14035, × 9.

Lomentaria hakodatensis Yendo; Dawson 1956: 52, fig. 50
D. 13709, 13853, 13928, 13999i, 14025.

Champia parvula (C. Agardh) Harvey; Dawson 1954: 443, fig. 52c; Dawson 1956: 51
D. 13746, 13849, 14015a.

Champia vieilardii Kützing ?; Dawson 1954: 443, figs. 52e, 53; Dawson 1956: 51
D. 13999f. A small fragment only of uncertain identity.

Rhodymenia anastomosans Weber van Bosse; Dawson 1956: 52, fig. 49
D. 13900.

Antithamnion lherminieri (Crouan and Crouan) Nasr; Dawson 1956: 53, fig. 51
D. 13609a, creeping among other minute algae; 13696b, 13950b, epiphytic on *Halimeda* and *Caulerpa;* 13999b, epiphytic on *Halimeda.*

Antithamnion percurrens sp. nov.

Fig. 24*a*, *b*

Thalli minute, densely tufted, 5–6 mm. high, uniseriate throughout; creeping, prostrate filaments of lower parts fastened to the calcareous substrate by short lateral branchlets modified for attachment; main axes both prostrate and erect about 15–18 μ in diameter, of cells mostly 2–3 diameters long; erect axes strongly percurrent, without indeterminate branches; determinate lateral branchlets regularly distichous from every axial cell, 60–120 μ long, symmetrically curved upward, commonly bearing 1–3 short, 1–2 celled secondary determinate branchlets on the adaxial side; all branch tips blunt; tetrasporangia about 20 μ in diameter, tripartite, sparse, sessile, borne within a large, prominent, gelatinous envelope from the adaxial side of the basalmost cell of a lateral branchlet, usually causing a local disarrangement of the pinnae because of the size of the envelope.

Thallis 5–6 mm. altis in omnis partibus uniseriatis, axilibus principalibus valde percurrentibus 15–18 μ diametro cellulis plerumque 2–3-plo longioribus quam latis,

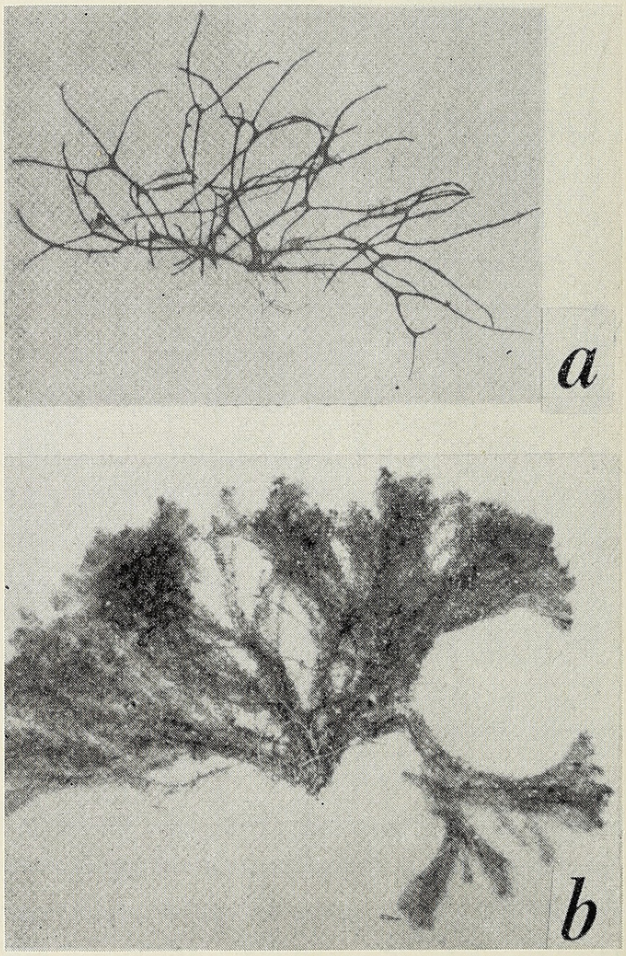


FIG. 22. *a*, *Dicranema rosaliae*: Habit of a dry plant of D. 13980, × 1.7. *b*, *Dasya iyengarii*: Habit of part of a dried tuft of a somewhat robust form, × 2.0.

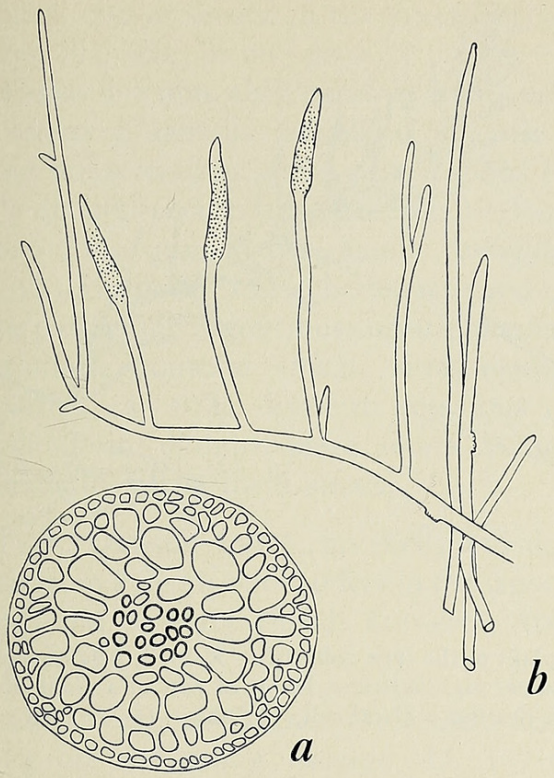


FIG. 23. *a*, *Dicranema rosaliae*: Transection of a branch to show central core of small cells (after Setchell and Gardner). *b*, *Coelothrix irregularis*: Habit of part of a tetrasporic plant of D. 13782 with stichidia, × 10.

ramulis lateralibus determinantibus regulariter distichis ex cellulis axilaribus omnibus salientibus 60–120 μ longis adscendenti-curvatis et in latere adaxilare ramulis determinantibus secundariis productis, apicibus ramorum obtusis, tetrasporangiis ca. 20 μ diametro tripartitis sessilibus sparsis e latere adaxiali cellulae inferioris ramulis lateralibus productis.

TYPE: Dawson 13633, forming tufts on crustose coralline algae near the outer margin of the seaward reef opposite EMBL, Parry Island, August 19, 1955.

This plant is related to *Antithamnion pteroton* Schousb. ex Bornet, but is a markedly distinct species in its percurrent erect axes, its large, sessile sporangia, and the short, symmetrical pinnae lacking any abaxial secondary branchlets.

Antithamnion breviramosus var. ***simplex*** var. nov.

Fig. 24*c*, *d*

Like the type, but more delicate and slender with main axes only 25–30 μ in diameter, and with lateral branchlets simple or only once forked; axial cells longer, 6–8 (10) diameters long; attachment by a short, 1–2 celled rhizoidal outgrowth from the lowermost cell of a lateral branch.

A typo simili sed axilibus principalibus tantum 25–30 μ diametro et cellulis longioribus 6–8 (10)-plo longioribus quam latis, ramulis lateralibus simplicibus vel unifurcatis.

TYPE: Dawson 13704a, creeping on *Griffithsia tenuis* from coral heads at a depth of 10 feet in the lagoon, south end of Parry Island, August 21.

This tiny plant is remarkably similar to that described from Santa Catalina Island, California (Dawson 1949: 14, figs. 28, 57) and seems to be only a more delicate, lax, and less-branched variant of that species.

Callithamnion marshallensis sp. nov.

Fig. 25*a–c*

Thalli attached to other algae or to shells or debris, loosely tufted, 4–5 mm. high, consisting of an irregularly semi-prostrate part attached by modified lateral branchlets with adherent terminal discs, some of the attachment branchlets distinctly catenate in their cell form and unlike vegetative branchlets; main axes 80–90 μ in diameter, noncorticated, of cells 1–1½ diameters long; lateral branchlets 20–30 μ in diameter, lax, long, somewhat attenuate but terminally blunt, mostly simple, curved, alternate, but not always from every cell, mostly spirally arranged, often with approximately ⅕ divergence, but sometimes in part tending to be distichous; tetrasporangia tripartite, subspherical, about 40 μ in diameter, sessile and

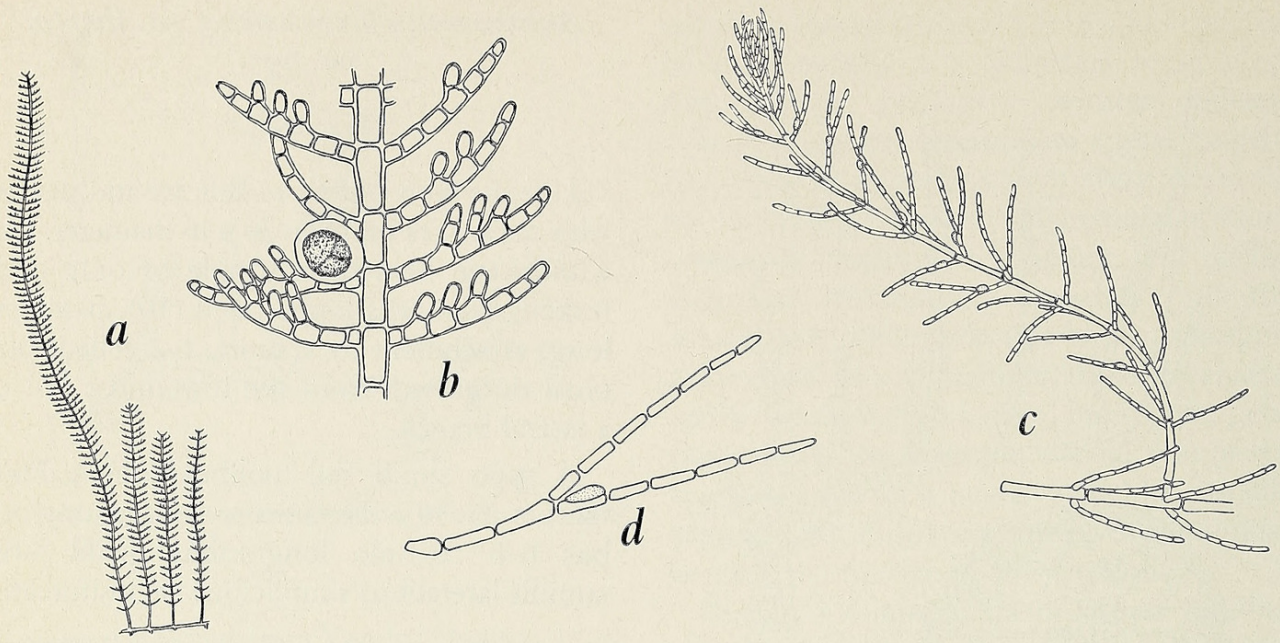


FIG. 24. *a*, *b*, *Antithamnion percurrens: a*, Habit of part of a plant of the type collection, × 13; *b*, part of a plant bearing a tetrasporangium, × 150. *c*, *d*, *Antithamnion breviramosus* var. *simplex: c*, Habit of part of a plant of the type collection, × 68; *d*, detail of an ultimate forked branch bearing a gland cell, × 300.

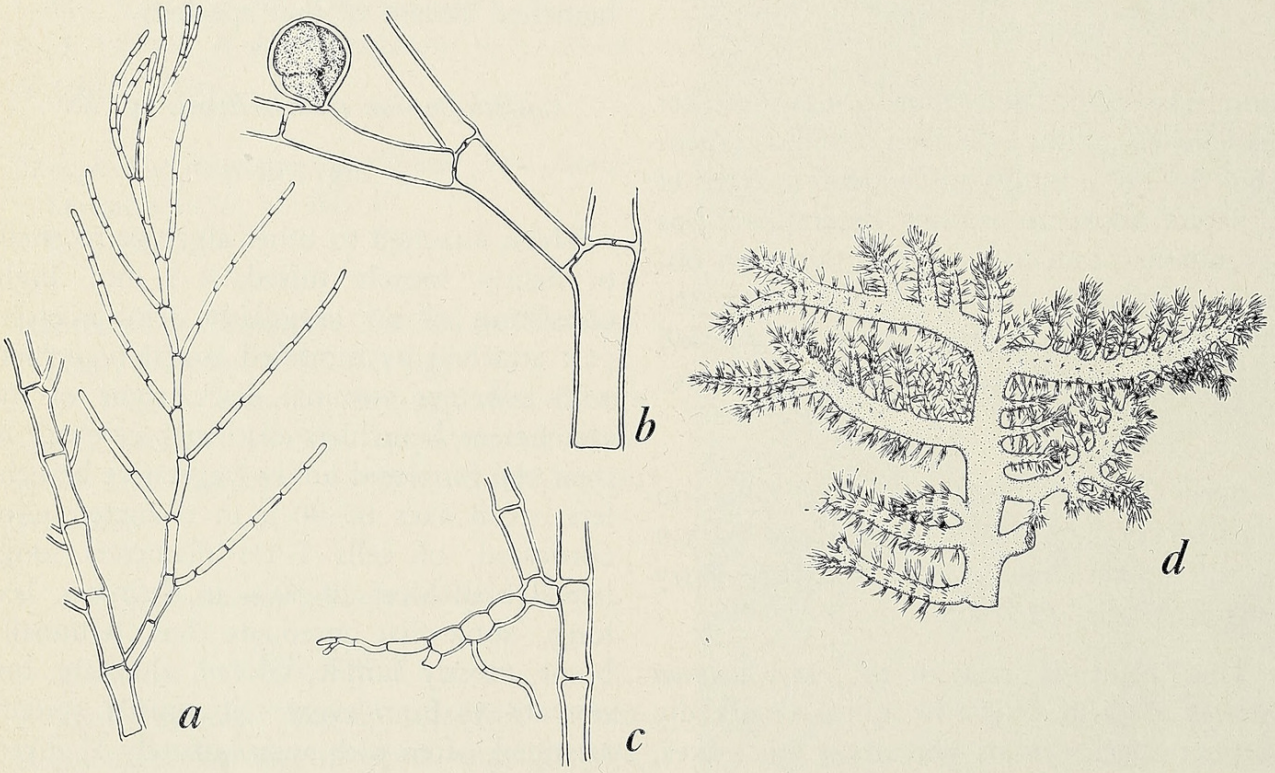


FIG. 25. *a–c*, *Callithamnion marshallensis: a*, Part of a plant of D. 13698a to show branching habit, × 70; *b*, detail of a branch bearing a tetrasporangium, × 162; *c*, detail of a lower part of a plant showing a catenate holdfast branch, × 60. *d*, *Wrangelia anastomosans:* Habit of part of a plant of P. 79a, as seen from the lower side, × 3.

adaxial, one or several in the lower half of a lateral branchlet in mid-parts of thallus.

Thallis 4–5 mm. altis, partibus inferis semiprostratis a ramulis lateralibus mutatis in discis adhaerentibus, axilis principalibus 80–90 μ diametro ecorticatis et cellulis 1–1½-plo longioribus quam latis, ramulis lateralibus 20–30 μ diametro laxis subattenuatis sed obtusis plerumque simplicibus curvatis alternatis plerumque contorte affixis, tetrasporangiis tripartitis ca. 40 μ diametro sessilibus adaxialibus in dimidia parte infera ramulae lateralis in media thalli affixis.

TYPE: Dawson 13695, on shells and dead coral from a depth of 6–10 feet in the lagoon, south end of Parry Island, Eniwetok Atoll, August 21.

ADDITIONAL MATERIAL: D. 13992, under rocks on reef along passage; D. 13950a, epiphytic on *Halimeda* and *Caulerpa*; D. 13997c, epiphytic on *Halimeda*; D. 13698a.

This species is seemingly nearest to *Callithamnion paschalis* Børgesen (1924: 294, fig. 35) from Easter Island, but is neither consistently distichously branched like that species nor with the tetrasporangia borne in the terminal branchlets of the main axes.

Wrangelia anastomosans Yamada 1944: 41, pl. 7, fig. 2 (Ant Atoll, Caroline Islands)

Fig. 25*d*

P. 79a, Igurin Is. tide flats in shallow water, 11/4/54.

Wrangelia argus (Montagne) Montagne; Dawson 1954: 444, fig. 54g; Dawson 1956: 56

D. 13941. This material agrees with the details by which Tseng (1942) differentiates *W. argus* from *W. tayloriana* Tseng, and lacks the more or less complete cortication of *W. penicillata*. The involucral filaments are about 11–13 μ in diameter, of 3 to 5 cells, often dichotomous and strongly curved. The tetrasporangia are 70–80 μ in diameter at maturity.

Wrangelia penicillata C. Agardh 1828: 138 (Adriatic Sea); Taylor 1950: 136

T. 46–336. Not collected again.

Griffithsia ovalis Harvey 1862, vol. 4: pl. 203 (King Georges Sound, West Australia); Abbott 1946: 440, pl. 1, figs. 1–4, pl. 2, figs. 1, 2

Fig. 26*a–d*

D. 14012, fertile. Several other sterile collections were made of a *Griffithsia* which is probably this species.

Griffithsia tenuis C. Agardh; Dawson 1954: 450, fig. 56e; Dawson 1956: 56

D. 13702, 13785, 13950d, 13956, 14029.

Neomonospora pedicellata var. *tenuis* Feldmann-Mazoyer; Dawson 1954: 450, fig. 56a

D. 13610a.

Ceramium clarionense Setchell and Gardner; Dawson 1954: 448, fig. 55k; Dawson 1956: 54

D. 13767. This material, epiphytic on *Turbinaria*, is sterile, but the circinate tips and

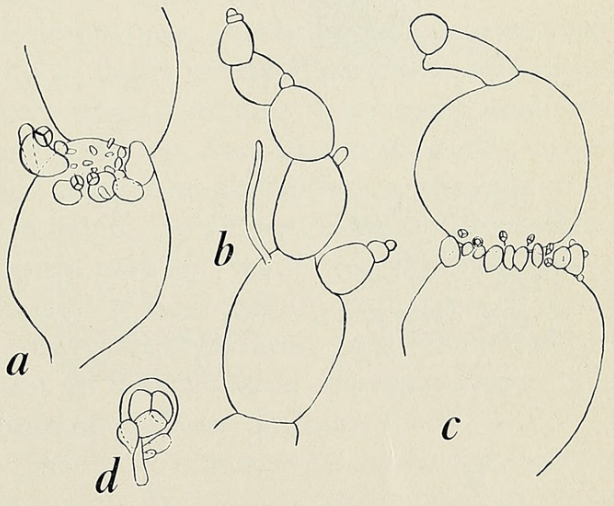


FIG. 26. *a–d*, *Griffithsia ovalis*: *a*, Vegetative cells with involucrate tetrasporangia between articulations, × 30; *b*, habit of part of a specimen with a rhizoid, × 16; *c*, involucrate tetrasporangia near the top of a plant, × 26; *d*, a mature tetrasporangium on a pedicel, × 300 (all after Abbott).

the peculiar exudation droplets from certain cortical cells seem to mark it clearly.

Ceramium marshallense sp. nov.

Fig. 27*a*, *b*

Thalli creeping and entangled among other algae in low turfs, 1 cm. or less in extent, consisting of creeping lower parts fastened to surrounding materials by numerous rhizoids, and free branches 4–5 mm. long; branching primarily dichotomous, with occasional irregular secondary branches; sterile apices strongly forcipate and usually circinately inrolled; main axes to 140–155 μ in diameter; cortication incomplete, consisting of nodal bands about 50–60 μ wide separating uncorticated internodal areas 40–70 μ wide; cortical bands consisting of a central ring of larger, isodiametrical cells about 22–30 μ in diameter and on either side, or somewhat overlapping, an irregular single to double ring of smaller angular cells 10–17 μ in greatest diameter; fertile, outer, erect parts of tetrasporangial plants somewhat catenately swollen, 160–185 μ in diameter; tetrasporangia mostly completely immersed beneath the tumid cortex, 35–40 μ in diameter, whorled after an initial tendency to be abaxial; sexual reproduction unknown.

Thallis repentibus et implicatis ad 1 cm. longis a rhizoideis multis affixis, ramis solutis 4–5 mm. longis, ramulis plerumque dichotomis, apicibus circinatis, axilibus principalibus 140–155 μ diametro, cortice interrupta, vittis corticalibus noduloris ca. 50–60 μ latis

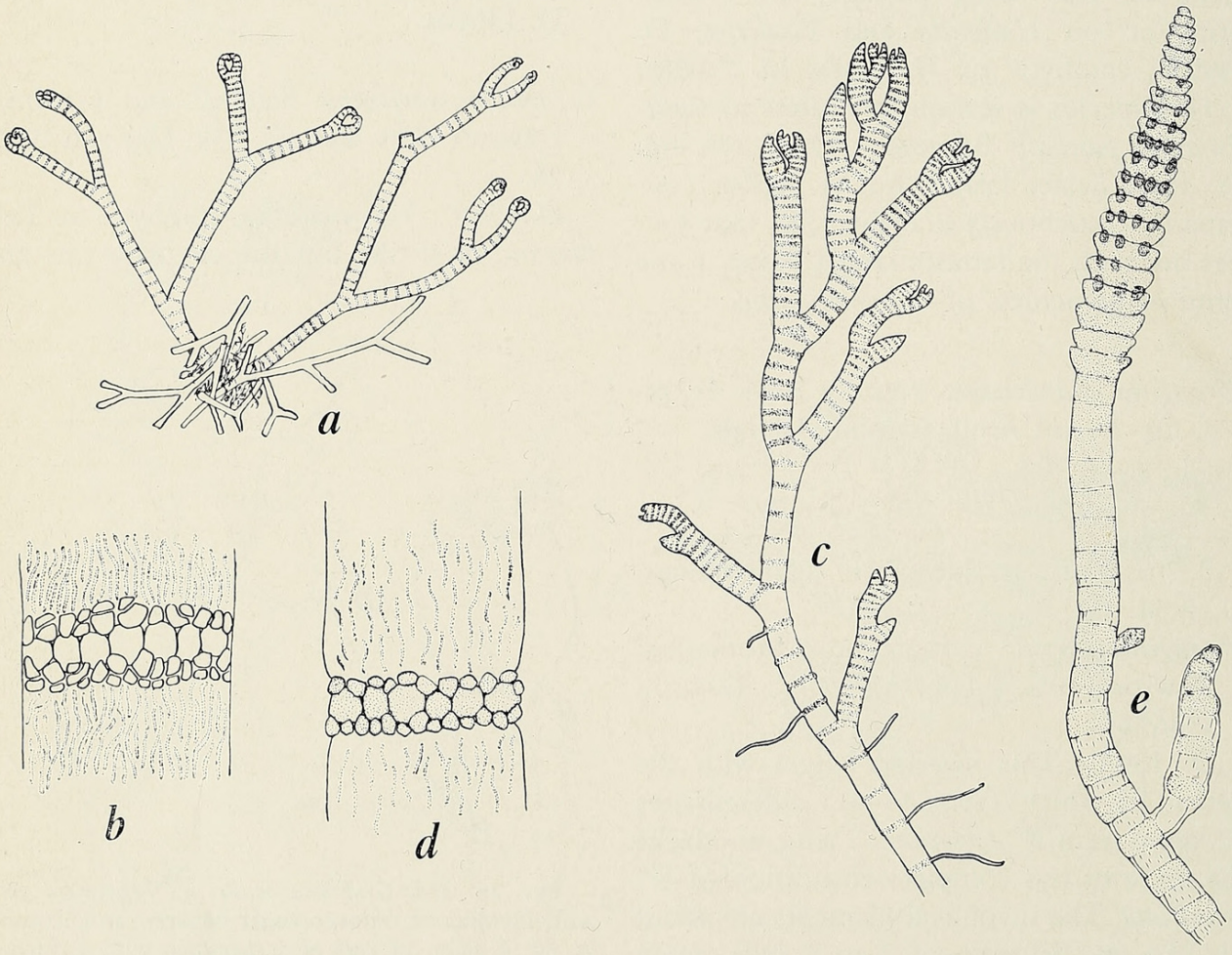


FIG. 27. *a*, *b*, *Ceramium marshallense: a*, Habit of a plant of the type collection, × 12; *b*, detail of a node of the same, × 150. *c*, *d*, *Ceramium sympodiale: c*, Habit of a plant of the type collection, × 26; *d*, detail of a node of the same, × 150. *e*, *Ceramium vagabunde:* Habit of the upper part of a tetrasporangial plant of the type collection, × 34.

a circulo unico cellulis majoribus 22–30 μ diametro et in lateribus ambis circulo irregulari cellulis minoribus angulosis 10–17 μ diametro, internodis 40–70 μ latis, tetrasporangiis 35–40 μ diametro verticillatis plerumque tota immersis sub cortice tumidi.

TYPE: Dawson 14013, growing in a *Jania* turf among rocks near the northern seaward reef edge of Rigili Island, Sept. 2.

This species is distinct in its small size, circinate apices, narrow cortical bands less than one-half as tall as broad, and in its immersed, whorled tetrasporangia. It approaches *C. mazatlanense* Dawson, but differs in the cellular arrangement of the cortical bands and in the whorled, immersed tetrasporangia.

Ceramium sympodiale sp. nov.

Fig. 27*c*, *d*

Thalli 1 cm. or less in height or extent, with main axes 110–130 μ in diameter, consisting of repent or entangled lower parts growing amid other small algae in tufts or turfs, attached at many places by rhizoids from the nodes, giving rise to erect, free parts 3–4 mm. high; branching sympodial and essentially distichous, the branches approximate above and becoming more widely spaced below by elongation of the internodes; branches at extreme apices at first more or less corymbose and the tips slightly forcipate with clearly visible apical cells; cortication incomplete, in narrow bands 35–40 μ wide (⅓ the diameter of the axis or less), consisting of a single ring of larger cells about 30–35 μ in diameter with smaller, angular cells on either side; internodes very narrow in upper parts, about 10 μ wide, expanding below to as much as 170 μ; reproduction not seen.

Thallis ad 1 cm. latis, axilibus principalibus 110–130 μ diametro, partibus inferis repentibus a rhizoideis noduloris affixis, partibus solutis 3–4 mm. altis, ramis sympodialibus et plerumque distichis ad apices corymbosis, apicibus subforcipatis, cortice interrupti vittis corticosis nodi 35–40 μ latis a circulo unico cellulis majoribus 30–35 μ diametro et in lateribus ambis cellulis minoribus anguloris, inter nodis supra angustioribus ca. 10 μ latis infra latioribus ad 170 μ latis.

TYPE: Dawson 14014, in clumps of other small algae under coral rocks near the northern edge of the seaward reef of Rigili Island, September 2.

The sympodial, distichous branching and very narrow cortical bands are distinctive in this small species despite the absence of fertile material.

Ceramium vagabunde sp. nov.

Fig. 27*e*

Plants minute, 4–5 mm. high, growing among other tufted algae, consisting of a creeping, semi-prostrate basal filament provided with numerous ventral rhizoids from the nodes, giving rise to irregularly and sparsely branched erect branches with blunt, non-forcipate tips; erect axes 120–140 μ in diameter, incompletely corticated, the internodes bare for intervals of 30–70 μ in middle and lower parts; cortical bands 1½–2 times as broad as tall, without secondary growth above or below, the margins even, especially the lower ones, consisting of a narrow inner ring of larger cells and on either side of an outer ring of irregularly arranged small angular cells less than 10 μ in maximum diameter; tetrasporangia cruciate, ovate, about 40 μ in length, borne verticillately within prominently swollen involucres which develop acropetally from the closely juxtaposed distal nodal bands of the erect axes; terminal fertile areas to 220–250 μ in diameter, resembling those of *Equisetum* in form.

Thallis 4–5 mm. altis e filamentis basilaribus repentibus a rhizoideis nodularibus affixis et ramis sparsis irregularibus erectis apicibus obtusis eforcipatis, axilaribus erectis 120–140 μ diametro, cortice interrupto, vittis corticosis nodi 1½–2-plo latioribus quam longis a circulo angusto centrali cellulis majoribus et

lateribus ambis corio cellulis minoribus anguloris ad 10 μ diametro, tetrasporangiis cruciatis ovatis ca. 40 μ longis in involucris valde inflatis eis ex vittis nodoris proxime juxtaposis axilarum erectarum acropetaliter productis, loculis fertilibus terminalibus 220–250 μ diametro eis *Equisetum* similantibus.

TYPE: Dawson 13620a, growing within tufts of *Ectocarpus breviarticulatus* near the margin of the seaward reef opposite EMBL, Parry Island, August 19.

This material is nearest to *Ceramium nakamurai* Dawson from Garanbi, Formosa (*C. equisetoides* Nakamura), but is not dichotomously branched. It is identical with tetrasporangial specimens cited and illustrated by the writer as a probable undescribed species from Isla San Benedicto, Mexico (Dawson 1954a: 6, pl. 4, fig. 2).

Ceramium gracillimum var. *byssoideum* (Harvey) G. Mazoyer; Dawson 1954: 448, fig. 55e, f; Dawson 1956: 53; Taylor 1950: 138 (as *Ceramium byssoideum* Harvey)

D. 13616, 13707, 13715, 13790, 13831, 13860, 13891, 13924, 13916, 13951, 14028.

Ceramium mazatlanense Dawson; Dawson 1954: 448, fig. 55g–j; Dawson 1956: 53

D. 13752, epiphytic on *Caulerpa*.

Ceramium serpens Setchell and Gardner ?; Dawson 1956: 54, fig. 53

D. 13610b, 13857. Both are sterile and not positively identified.

Ceramium taylori Dawson; Dawson 1954: 446, fig. 55b, c

D. 13637, epiphytic on *Udotea*, 13817, 13942.

Centroceras apiculatum Yamada; Dawson 1956: 55, fig. 55

D. 13941a, 14016.

Centroceras clavulatum (C. Agardh) Montagne; Dawson 1954: 446, fig. 54b; Dawson 1956: 55; Taylor 1950: 139

D. 13639, 13794, 13808, 13838, 13958 (this latter collection consists largely of f. *inerme* (Kützing) Piccone. P. 52–29, Aomon Is. shore rocks, 10/22/52.

Centroceras minimum Yamada; Dawson 1956: 54, fig. 54

D. 13640a, 14009a.

Spyridia filamentosa (Wulfen) Harvey; Dawson 1954: 444, fig. 54i, j; Dawson 1956: 56; Taylor 1950: 139

D. 13677, 13816, 13884, 13911. P. 1163, Mui Is. lagoon, 4/11/54; P. 1190, Bokanjoio Is. lagoon, 4/14/54.

Hypoglossum minimum Yamada 1936: 138, fig. 2A—D (Naha, Okinawa)

Fig. 30*c*

D. 13704, 13755, 13901, 13999d. These show considerable variation in form and habit. Those under 13999d, epiphytic on *Halimeda* from a depth of 135 feet, are most like Yamada's type.

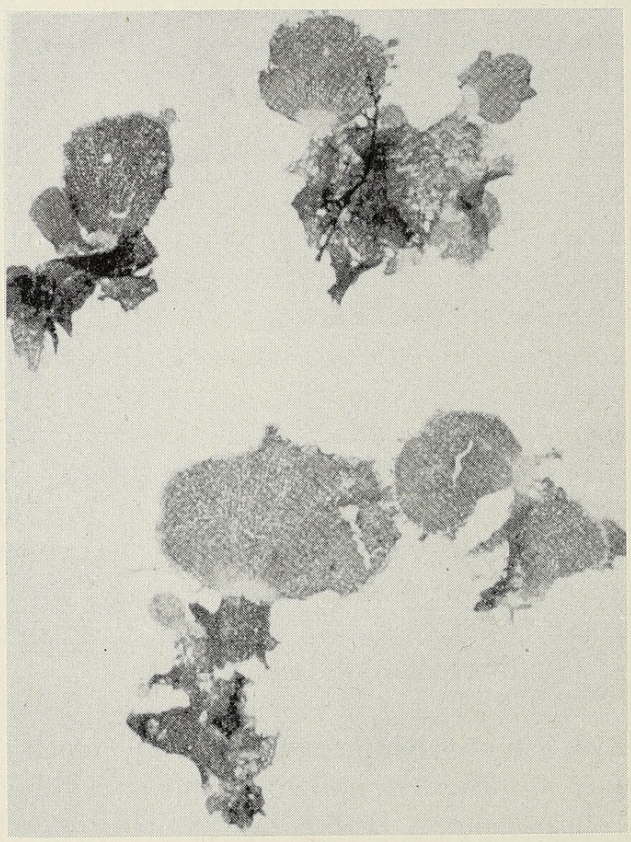


FIG. 28. *Hemitrema fragilis*: Habit of dry plants of D. 13801, × 1.3.

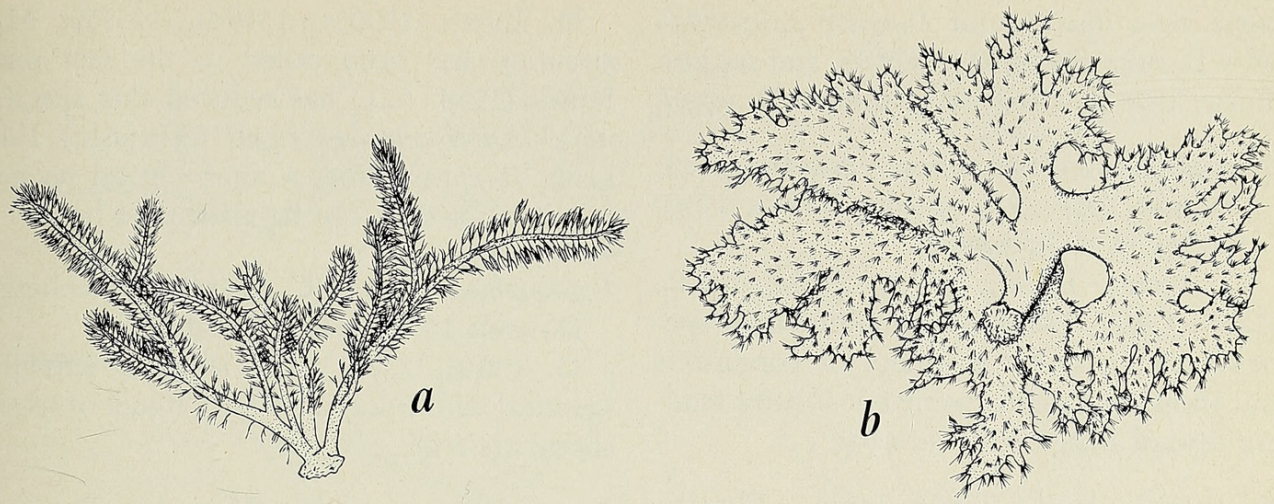


FIG. 29. *a*, *Dasya mollis*, prox.: Habit of a plant of D. 13876, × 4. *b*, *Dasyopsis geppii:* Habit of a young plant of D. 13728 as seen from below, × 3.5.

Taenioma perpusillum (J. Agardh) J. Agardh; Dawson 1954: 451, fig. 58a

D. 14035c. P. 2833a, 1½ mi. off Igurin Is. in the lagoon at 50 ft., 3/16/55.

Hemitrema fragilis (Harvey) comb. nov. *Martensia fragilis* Harvey 1954: 145 (Ceylon); Dawson 1956: 56, fig. 58

Fig. 28

D. 13737, 13801, 14008. Inasmuch as Silva (1952: 291) has pointed out that "*Hemitrema* seems to be the earliest available name for *Martensia*" which is illegitimate, this new combination is called for here.

Dictyurus purpurascens Bory; Dawson 1956: 57; Taylor 1950: 143, pl. 78, fig. 1

D. 13773. P. 2836, Parry Is. seaward reef edge near EMBL, 4/4/54.

Dasya iyengarii Børgesen 1937: 345, figs. 16, 17 (Pam ban Bridge, South India)

Fig. 22*b*

D. 13608, 13624, 13803, 13890, 14051. These specimens are somewhat variable in stature and in detail of branching, but seem to be essentially identical with the south Indian plant. The epiphytic specimens under D. 13608 are especially like the type. Saxicolous specimens under D. 13624 are provided with somewhat more attenuate and less curved and hooked penicilli, but appear otherwise to be like the epiphytic form. The best stands of the plant occur near the margin of the seaward reefs where the species may be dominant in some areas.

Dasya mollis Harvey, prox.; Harvey 1853: 62 (Key West, Florida); Taylor 1928: 173, pl. 26, fig. 13

Fig. 29*a*

D. 13876. This small, completely corticated plant seems best referred here, but the sterile material is insufficient for positive identification. It differs from Atlantic material mainly in the shorter cells of the ramelli.

Dasya adhaerens Yamada 1944: 43, pl. 7, fig. 1 (Ant Atoll, Caroline Islands); Taylor 1950: 141, pl. 79, fig. 1

T. 46–392. Not collected again.

Dasyopsis geppii Weber van Bosse 1913: 130, pl. 13, figs. 18–20, pl. 14, fig. 33 (reefs and to 20–25 fathoms at four Indian Ocean localities indicated)

Fig. 29*b*

D. 13728, 14007. Except for the more pronounced peltate form of some, these agree very well with the account of the "Sealark Expedition" material. Some of them show a

habit more like that of *Dasyopsis palmatifida* W. v B. from the same localities, and suggest further that it is only a variant of *D. geppii*.

Heterosiphonia wurdemannii var. *laxa* Børgesen; Dawson 1956: 57, fig. 60; Taylor 1950: 140 (as *H. wurdemanni*)

D. 13609, 13698, 13739, 13750, 13781, 13760, 13895, 13999. A common small species growing under a variety of conditions and showing variable habit but mostly tending toward Børgesen's var. *laxa*.

Polysiphonia coacta Tseng, prox.; Dawson 1954: 456, fig. 60g, h; Dawson 1956:57

D. 13857d, 13922.

Polysiphonia subtillissima Montagne; Dawson 1954: 454, fig. 60c; Dawson 1956: 58

D. 13904.

Polysiphonia tongatensis Harvey; Dawson 1954: 454, fig. 60d, e; Dawson 1956: 57

D. 13644, 13906, 13933, 13925, 13950c.

Tolypiocladia calodictyon (Harvey) Silva; Dawson 1956: 58, fig. 62; Taylor 1950: 148, pl. 57, fig. 2 (as *Rochera calodictyon*)

D. 13625, 13705, 13881, 13834, 13899, 13957. P. 18129, Runo Is. lagoon at 60 ft., 3/8/55; P. 2500, ¼ mi. off Engebi Is. in lagoon at 15 ft., 3/2/55; P. 2816, s.e. end of Bokanjoio Is. in lagoon at 60 ft., 3/8/55; P. 22x, Runit Is. n.w. tip on channel, 10/22/52; P. 60, off n. tip of Igurin Is. in lagoon at 20 ft., 10/28/52; P. 1153, Engebi Is. lagoon, 4/11/54.

Herposiphonia secunda (C. Agardh) Ambronn; Dawson 1956: 58, fig. 63; Taylor 1950: 148

D. 14002a, growing on the membrane of *Valonia ventricosa*.

Herposiphonia tenella (C. Agardh) Ambronn; Dawson 1954: 452, fig. 59a; Taylor 1950: 147; Dawson 1956: 59

D. 13771a, 13904a, 13914, 14017.

Lophosiphonia bermudensis Collins and Hervey; Dawson 1956: 59, fig. 65

D. 13696, 13903a, 13999a, 14035b. My attention has been called to the fact that Howe (1918: 521) has reduced this species under *Dipterosiphonia rigens* (Schousb.) Falkenb. It appears that a more critical review is called for than can be attempted here.

Lophosiphonia obscura (C. Agardh) Falkenberg; Dawson 1954: 451, fig. 58d, e

D. 13648, 13867. The latter is virtually identical with Børgesen's 1918 figure of tetrasporic material.

Laurencia mariannensis Yamada; Dawson 1956: 60, fig. 66; Taylor 1950: 144, pl. 55, fig. 1

D. 13747. P. 2587a, Aitsu Is., 2/11/55; P. 2832, Igurin Is. lagoon at 50 ft., 3/16/55.

Laurencia nana Howe 1920: 566 (Mariguana, Bahamas)

Fig. 30*a*

D. 13725. These fertile specimens are in excellent agreement with Howe's description, including the palisade cortical cells, the presence of rhizoidal haptera and the lack of lenticular thickenings.

Laurencia parvipapillata Tseng; Dawson 1954: 458, fig. 61g

D. 13754, 13964. P. 2833, Igurin Is. lagoon at 50 ft., 3/16/55.

Chondria minutula Weber van Bosse 1923: 349, pl. 10, figs. 10, 12 (Tanah Djampea Is., Indonesia)

Fig. 30*d*, *e*

D. 13744, 13771, 13932a, 13788a. The tetrasporic and cystocarpic material seems to agree well with Weber van Bosse's account of the type which had a similar creeping habit and the same stature.

Chondria polyrhiza Collins and Hervey 1917: 121, pl. 2, fig. 12 (Bermuda)

Fig. 30*b*

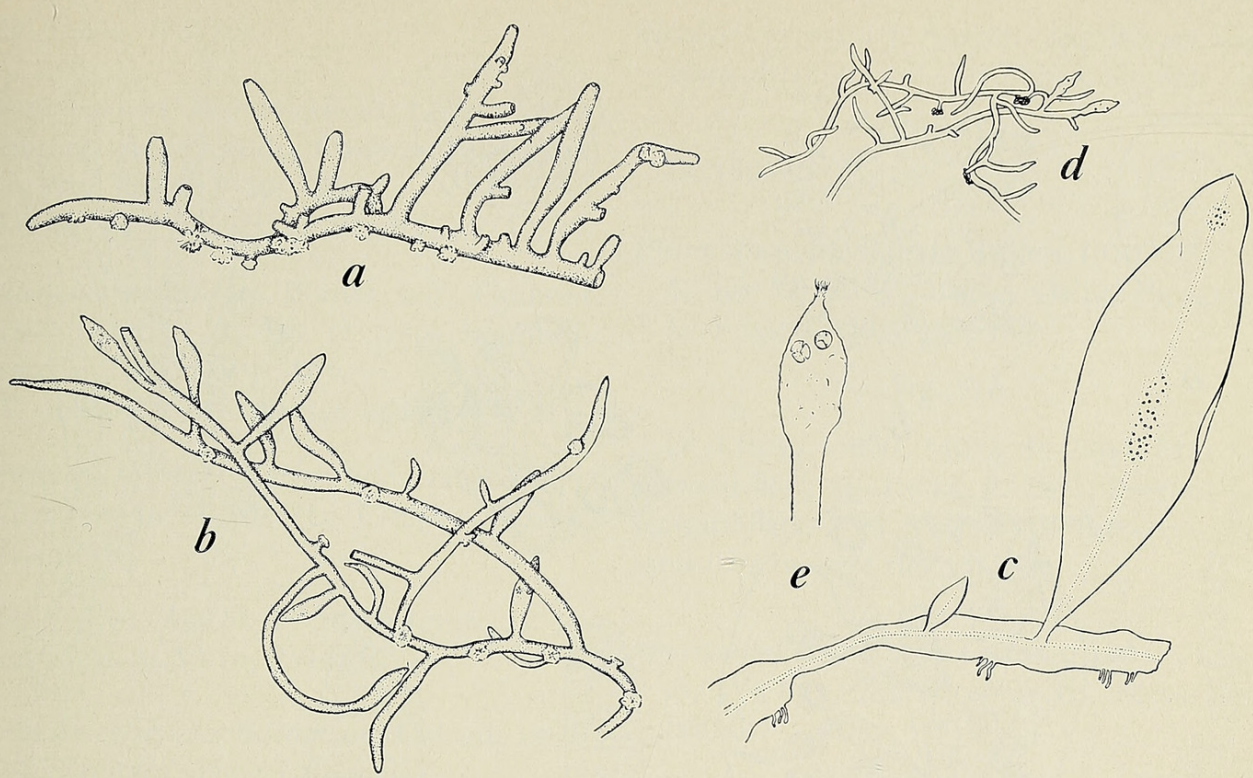


FIG. 30. *a*, *Laurencia nana:* Habit of a plant of D. 13725, × 4. *b*, *Chondria polyrhiza:* Habit of a plant of D. 13795 from the under side, × 10. *c*, *Hypoglossum minimum:* Part of a tetrasporangial plant of D. 13704 showing rhizoids, branching from the midrib, and a sorus, × 6. *d*, *e*, *Chondria minutula: d*, Habit of a plant of D. 13744, × 5; *e*, detail of the apex of a tetrasporic branch of the same showing the emergent tip and trichoblasts, × 35.

D. 13795. This seems to fit the Collins and Hervey description and figures well. Under D. 14027 two forms are present, one with axes to 450 μ in diameter and with rather blunt tips, the other with axes only about 220 μ in diameter and more attenuate tips. They probably represent growth stages.

Chondria repens Børgesen; Dawson 1954: 460, fig. 62d, e; Dawson 1956: 60
D. 13932.

BLUE-GREEN ALGAE

Anacystis dimidiata (Kützing) Drouet and Daily 1952: 221. *Trochiscia dimidiata* Kützing 1833: 593, fig. 75 (Germany). Taylor 1950: 103 (as *Gloeocapsa turgida* (Kütz.) Hollerbach [*Chroococcus turgidus* (Kütz.) Nägeli])

Fig. 31*a*

P. 2830, Igurin Is. scum on rocks in lagoon at 50 ft., 3/16/55.

Coccochloris stagnina Sprengel 1807: 14 (Halle, Germany)

Fig. 31*b*

D. 13893, 14043. P. 1235–6, Bogombogo Is. lagoon, 4/22/54; P. 2801, Bokanjoio Is. seaward flats. 10/25/54.

Gomphosphaeria aponina Kützing 1836: Dec. 16, no. 151 (Abano, Italy); Taylor 1950: 103

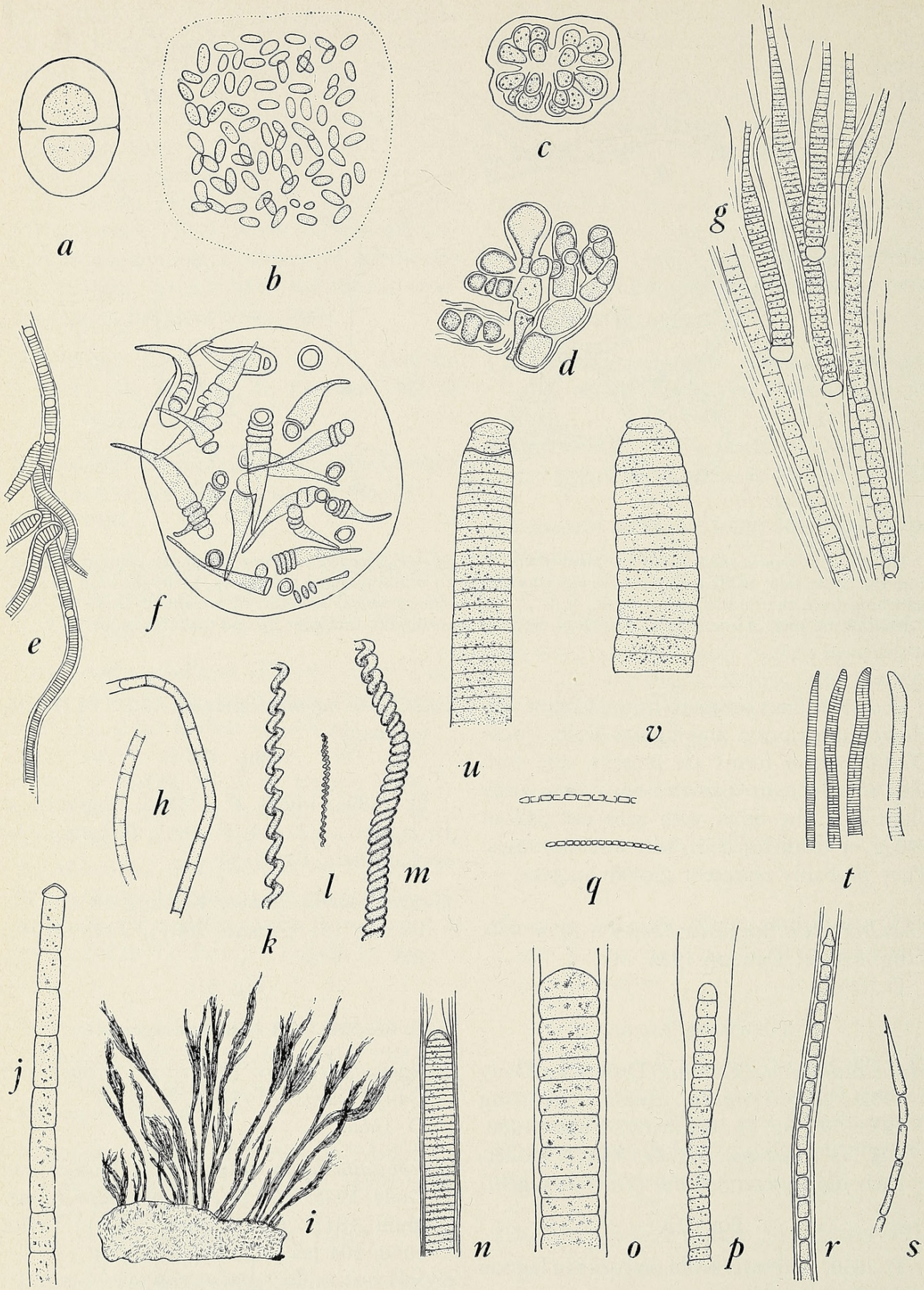
Fig. 31*c*

T. 46–316. Not collected again.

Entophysalis conferta (Kützing) Drouet and Daily; Dawson 1954: 379, fig. 3r
D. 13664.

Entophysalis deusta (Meneghini) Drouet and Daily 1948: 79. *Coccochloris deusta* Meneghini 1841: 173 (Genoa, Italy). Taylor 1950: 104 (as *E. granulosa* Kütz.)

Fig. 31*d*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D. 13673, 13878b.

Hormothamnion enteromorphoides Grunow seq. Bornet and Flahault; Dawson 1954: 379, fig. 3n; Taylor 1950: 105
D. 13680, 13682. P. 22, Rigili Is., 8/10/49.

Plectonema nostocorum Bornet seq. Gomont 1893: 102, pl. 1, fig. 11 (type not indicated); Taylor 1950: 105.
T. 46–304. Not collected again.

Plectonema terebrans Bornet and Flahault seq. Gomont 1893: 103 (Le Croisic, Atlantic France)

D. 13878a, 14020. P. 2830, Igurin Is. lagoon rocks at 50 ft., 3/16/55.

Scytonema polycystum Bornet and Flahault 1887: 90 (Noumea, New Caledonia)
D. 13955.

Scytonema myochrous (Dillwyn) C. Agardh seq. Bornet and Flahault is reported by Palumbo 1950 from Eniwetok without locality, based upon a determination by F. Drouet.

Calothrix crustacea Thuret seq. Bornet and Flahault 1886: 359 (Le Croisic, Atlantic France)

Fig. 31*e*

D. 13621, 13662, 13687, 13868.

Rivularia atra Roth seq. Bornet and Flahault 1886: 353 (Europe)

Fig. 31*f*

D. 13663.

Rivularia polyotis (J. Agardh) seq. Bornet and Flahault 1886: 360 (Mediterranean Sea)

Fig. 31*g*

D. 14034.

Phormidium crosbyanum Tilden 1910: 96, pl. 4, figs. 60, 61 (Waianae, Oahu, Hawaiian Islands); Taylor 1950: 109

Fig. 31*h*

D. 13670, 13880, 14052. P. 2800, Mui Is. seaward flats, 10/21/54; P. 2841, Eneroul Is. seaward flats, 9/23/54; P. 2818, Bokanjoio Is. sand flats on east side, 3/8/55.

Phormidium penicillatum Gomont 1893: CLIX, pl. IV, figs. 5–7 (Borbon Is., Mascarene Islands)

Fig. 31*i*, *j*

D. 13714, 13780, 13963.

Oscillatoria nigro-viridis Harvey seq. Gomont; Dawson 1954: 380, fig. 3g
D. 13686.

Spirulina major Kützing seq. Gomont 1893: 251, pl. 7, fig. 29 (Germany)

Fig. 31*k*

D. 13885.

Spirulina subsalsa Oersted seq. Gomont 1893: 253, pl. 7, fig. 32 (Denmark)

Fig. 31*m*

D. 13662a, 13846.

◂ FIG. 31. *a*, *Anacystis dimidiata:* × 600 approx. (after West). *b*, *Coccochloris stagnina:* × 600 approx. (after Lemmermann). *c*, *Gomphosphaeria aponina:* × 600 approx. (after West). *d*, *Entophysalis deusta:* × 600 approx. (after (Engler and Prantl). *e*, *Calothrix crustacea:* × 500 approx. (after Bornet and Thuret). *f*, *Rivularia atra:* × 600 approx. (after Wille). *g*, *Rivularia polyotis:* × 600 approx. (after Bornet and Thuret). *h*, *Phormidium crosbyanum:* × 600 approx. (after Tilden). *i*, *j*, *Phormidium penicillatum: i*, Habit, × 0.8; *j*, detail of a trichome, × 580 (after Bornet). *k*, *Spirulina major:* × 600 approx. (after Gomont). *l*, *Spirulina tenerrima:* × 600 approx. *m*, *Spirulina subsalsa:* × 600 approx. (after Gomont). *n*, *Lyngbya semiplena:* × 600 approx. (after Gomont). *o*, *Lyngbya sordida:* × 600 approx. (after Gomont). *p*, *Lyngbya gracilis:* × 600 approx. (after Gomont). *q*, *Schizothrix lacustris:* × 600 approx. (after Gomont). *r*, *Symploca laeteviridis:* × 600 approx. (after Gomont). *s*, *Microcoleus tenerrimus:* × 600 approx. (after Gomont). *t*, *Hydrocoleum glutinosum:* × 600 approx. (after Kützing). *u*, *Hydrocoleum comoides:* × 600 approx. (after Gomont). *v*, *Hydrocoleum cantharidosmum:* × 600 approx. (after Gomont).

Spirulina tenerrima Kützing seq. Gomont 1893: 252 (Europe)

Fig. 31*l*

D. 13799, 13970.

Lyngbya aestuari (Mertens) Liebmann seq. Gomont; Dawson 1954: 380, fig. 3a; Taylor 1950: 110
D. 13659, 13684, 13855, 13878, 13984.

Lyngbya confervoides C. Agardh seq. Gomont; Dawson 1954: 380, fig. 3b, c; Taylor 1950: 110
D. 13940, 14038.

Lyngbya majuscula (Dillwyn) Harvey seq. Gomont; Dawson 1954: 380, fig. 3d; Taylor 1950: 111
D. 13646, 13690, 13784, 13844, 13848, 13882, 13960, 13965, 13985. P. 2853, Rigili Is. sea beach, 11/17/54; P. 14, Engebi Is. n.w. end at 6 ft., 8/11/49; P. 2828, Igurin Is. 1½ mi. off at 50 ft., 3/8/55.

Lyngbya meneghiniana (Kützing) seq. Gomont 1893: 125 (Europe); Taylor 1950: 109
D. 13681, 13683, 13885a, 13984a.

Lyngbya semiplena (C. Agardh) J. Agardh seq. Gomont 1893: 138, pl. 3, figs. 7–11 (Adriatic Sea)

Fig. 31*n*

D. 13686a, 14041. P. 57b, Rigili Is. seaward pavement, 10/27/52.

Lyngbya sordida (Zanardini) seq. Gomont 1893: 126, pl. 2, fig. 21 (Venice, Italy); Taylor 1950: 110, pl. 79, fig. 2

Fig. 31*o*

D. 13789, 13931, 13966, 14030. P. 52–18, Runit Is. flats at w. tip, 10/22/52. P. 52–104, Aaraanbiru Is. lagoon s.w. end, 11/7/52.

Lyngbya sordida f. *bostrychicola* Crouan seq. Gomont 1893: 126 (near Brest, France)
D. 13783.

Lyngbya gracilis (Meneghini) Rabenhorst seq. Gomont 1893: 124, pl. 2, fig. 20 (Atlantic France); Taylor 1950: 109

Fig. 31*p*

T. 46–421. Not collected again.

Schizothrix lacustris A. Braun seq. Gomont 1892: 301, pl. 6, figs. 9–12 (Germany); Taylor 1950: 112

Fig. 31*q*

T. 46–333, Runit Is. seaward reef flat, May 1946. Not collected again.

Symploca hydnoides Kützing seq. Gomont; Dawson 1954: 380, fig. 3o, p
D. 13641, 13689, 13839, 13993, 14042. P. 2839, Runit Is. n.w. tip flats in channel, 10/22/52; P. 2809, Bokanjoio Is. lagoon, 3/8/55; P. 2838, Mui Is. lagoon, 4/11/54; P. 1151, Runit Is. n. tip channel, 4/11/54; P. 2843, Bogombogo Is. seaward flats, 10/5/54.

Symploca laete-viridis Gomont 1893: 109, pl. 2, figs. 6–8 (Key West, Florida); Taylor 1950: 113

Fig. 31*r*

D. 13833.

Microcoleus tenerrimus Gomont 1892: 355, pl. 14, figs. 9–11 (France)

Fig. 31*s*

D. 13659a, 13872.

Hydrocoleum coccineum Gomont 1892: 342, pl. 13, figs. 1, 2 (on *Codium* Antibes, Mediterranean Sea); Taylor 1950: 115
D. 13779. This species is similar to *H. lyngbyaceum* but differs in its red to pale blue-green protoplasm (bright blue-green, olive

or yellow green in *H. lyngbyaceum*). In the latter the cross walls are granulated unlike *H. coccineum*.

Hydrocoleum glutinosum (C. Agardh) Gomont 1892: 339 (Sweden)

Fig. 31*t*

D. 13661, 13668, 13756, 13842.

Hydrocoleum comoides (Harvey) seq. Gomont 1892: 335, pl. 12, figs. 3–5 (Australia); Taylor 1950: 115

Fig. 31*u*

D. 13638, 13685, 13688, 13716, 13733.

Hydrocoleum lyngbyaceum Kützing seq. Gomont; Dawson 1954: 380, fig. 3q

D. 13653, 13667, 13671, 13827, 13870. P. 2543, Runo Is. seaward reef, 3/8/55; P. 2802, Bokanjoio Is. seaward flats, 10/25/54; P. 2810, Bokanjoio Is. lagoon, 3/8/55; P. 2823, Bokanjoio Is. seaward reef, 3/8/55; P. 2852, Mui Is. lagoon, 11/17/54; P. 2856, Aitsu Is. lagoon, 11/17/54.

Hydrocoleum cantharidosmum (Montagne) seq. Gomont 1892: 336, pl. 12, figs. 6, 7 (Canary Islands); Taylor 1950: 116

Fig. 31*v*

T. 46–312. Not collected again.

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