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THE MARINE ALGAE OF KANGAROO ISLAND
III. LIST OF SPECIES, 1

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SUMMARY

Four hundred and one species of marine algae are recorded from Kangaroo Island, South Australia, together with comprehensive references, and notes on many species.

INTRODUCTION

This paper records 401 species of marine algae (Cyanophyta 26, Chlorophyta 46, Phaeophyta 96, Rhodophyta 233) from Kangaroo Island. Records derived from a small collection from the "south coast," made by J. Cork in the winter of 1939, and also records given by Cleland and Black from Sou' West River mouth, December 1934 (determined by A. H. S. Lucas) have been incorporated.

Further species will be recorded in a second list, as over 100 remain undetermined, some of which are as yet undescribed. Kangaroo Island is a very rich region for marine algae, and although extensive collections have been made during the last five years, doubtless more species remain to be discovered in localities which have not been thoroughly investigated.

Over 100 species comprise new records for the State of South Australia, but as Southern Australia forms a distinct geographic region (with probably 35-40% of species occurring from Tasmania to Western Australia), and so few localities have been thoroughly examined, such new records have little significance for the present and have not been indicated.

The specimens on which this list is based are deposited in the Algal Herbarium of the Botany Department, University of Adelaide.

Visits were made to Kangaroo Island at the following times: 1944, January; 1945, January, May; 1946, January, August; 1947, January, April, May, June, July, October, November; 1948, January, September, December; 1949, January.

In determining the species in this list recourse has been made wherever possible to original literature, and to authentic specimens in Australian Herbaria, especially the Melbourne National Herbarium. Unfortunately, few type specimens of Australian algae exist in Australia, making sure determinations very difficult in many cases; and many other specimens in herbaria are incorrectly named, so that comparisons with specimens other than the type have to be done with caution. Melbourne National Herbarium fortunately possesses O. W. Sonder's Australian collection, including his type specimens, and also a set of W. H. Harvey's Australian algae, J. G. Agardh's "Algae Muellerianae" and duplicates of J. B. Wilson's collections. The Adelaide University Herbarium possesses a few of T. Reinbold's cotypes from Investigator Strait. It is evident, however, that extensive series of nearly all Australian species should be checked with the type specimens, and also with related species to define limits of variability. Many other species, such as those of Zanardini, are very poorly known, and require re-examination of the original specimens. Until this can be done some determinations must necessarily be provisional, and description of new species must await comparison with authentic material of closely related species.

In this list notes on the habitat of each species are given where possible. The ecological terms used have been defined in Pt. I of this series (Womersley 1947), and references to Pt. I and Pt. II apply to this and the second paper (Womersley 1948). Where a species is listed as from the drift (*i.e.*, found cast up or floating), it almost certainly grows in the sublittoral, as the littoral and

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upper sublittoral have been extensively collected in most localities and are listed as such. The month (abbreviated) and year of most collections are given, as this gives positive evidence of the seasonal occurrence of many species (and also facilitates future reference to the specimens in the herbarium). In many cases, especially at Pennington Bay and American River inlet where the seasonal occurrence of many species is comparatively well known it has been possible to generalise and give the period of their occurrence. However, probably the majority of species known from a few records are present during all seasons.

Although positive records only are given, generalisations about the distributions of many species around the island can be made. Thus species found at Pennington Bay or Vivonne Bay probably occur in similar habitats anywhere along the south and west coasts. In fact, the formations and subformations described in Pt. I are usually broad habitat regions.

No attempt has been made to give a complete list of references to the species, nor in some cases is the reference to the original description given. A selection has been made of the more important and useful references, especially those available to the author, and De Toni in most cases gives fairly complete lists.

Throughout this series of papers Recommendation XLIII of the 1935 Botanical Rules referring to the use of capital letters for patronymic and certain other specific names has not been followed. I am in full agreement with the reasons expressed for this in the Journal of Ecology, 31, (1943), p. 93.

The following authors have been followed in the classification adopted: Cyanophyta (Fritsch 1942), Chlorophyta and Phaeophyta (Smith 1938, Papenfuss 1947 a), Rhodophyta (Kylin 1924, 1931, 1932, Falkenberg 1901, and Fritsch 1945).

The localities have been abbreviated to the first letters of the names, as in the list below. The order of localities is from American River inlet along the north, west, south and east coasts and back to American River inlet (see fig. 1, Pt. I). Brief notes on the areas examined are also given below, and reference should be made to Pt. I and II for further details.

North Coast—

AR. American River inlet: an extensive tidal inlet (not a river) with small islands (Shag Rock, Pig, Wallaby Islands) in Pelican Lagoon. *BH*. Ballast Head: a rocky headland immediately north of American River inlet. The east side only has been examined. *K*. Kingscote. *BS*. Bay of Shoals: a shallow sandy bay with calm conditions. *EB*. Emu Bay: the rocky coast near the old jetty was examined. *SB*. Stokes Bay. *MR*. Middle River: the mouth is normally closed by a sand bar and rocky coast occurs at both ends of a sandy beach. *WR*. Western River: the river mouth is also usually closed by a sandy bar. *HR*. Harvey's Return: about four miles east of Cape Borda.

West Coast—

WB. West Bay.

South Coast—

CC. Cape Coudie. *VB*. Vivonne Bay: rock platforms occur within the bay while the western extremity—Ellen Point—is of steeply sloping rock. Pools 1 and 2 are referred to in Pt. I, p. 245. *DB*. D'Estrees Bay: reefs briefly examined are at the eastern end of the bay. *PB*. Pennington Bay: see Pt. II *CW*. Cape Willoughby.

East Coast—

AB, Antechamber Bay: The rocky area at the north end of the bay was examined. *HB*. Hog Bay.

NORTH COAST—

RP. Rocky Point: "drift" specimens from here were mostly collected between Rocky Point and American River inlet.

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In addition to the acknowledgments made in Pt. I, I would like to thank further Mr. A. W. Jessup, of the Melbourne National Herbarium, for the loan of specimens and literature. Dr. G. F. Papenfuss, of the Department of Botany, University of California, has also kindly made information available and given opinions on certain species. Both Dr. C. Bliding, of Sweden, and Dr. V. J. Chapman have given opinions on the species of *Enteromorpha*.

CYANOPHYTA

CHROOCOCCALES — CHROOCOCCACEAE

COCCOCHLORIS Sprengel

COCCOCHLORIS CASTAGNEI (Kützing) Drouet and Daily 1948, 77. *Palmella castagnei* Kützing 1846, t. 9. *Aphanothece castagnei*, Rabenhorst 1932, 171. Tilden 1910, 31, pl. 2, f. 13. — *AR*. Sublittoral, near Muston, Jan. 1948.

ENTOPHYSALIS Kützing

ENTOPHYSALIS DEUSTA (Meneghini) Drouet and Daily 1948, 79. *Glococapsa deusta*, Kützing 1949, 224. Rabenhorst 1932, 190. — *AR*. Amongst other algae in a mat on buoys near American River jetty, Jan. 1946.

PLEUROCAPSALES — PLEUROCAPSACEAE

DERMOCARPA Crouan

DERMOCARPA SCHOUSBOEI (Thuret) Bornet. *Xenococcus schousboei* Thuret in Bornet and Thuret 1880, 74, pl. 26, f. 1, 2. Tilden 1910, 50, pl. 3, f. 7. Rabenhorst 1932, 335, f. 170 — *EB*. In littoral rock scrapings, Jan. 1946.

NOSTOCALES — OSCILLATORIACEAE

HYDROCOLEUM Kützing

HYDROCOLEUM CANTHARIDOSMUM (Montagne) Gomont 1892, (Pt. I), 336, pl. 12, f. 647. Tilden 1910, 135, pl. 5, f. 57. Rabenhorst 1932, 1,148, f. 755. *Calothrix limbata* Harvey 1863, syn. n. 792, Alg. Aus. exs. n. 596. — *PB*. Lower littoral, on well washed rock, Dec. 1948.

HYDROCOLEUM COMOIDES (Harvey) Gomont 1892, (Pt. I), 335, pl. 12, f. 3-5. Tilden 1910, 134, pl. 5, f. 56. Rabenhorst 1932, 1,148, f. 756. *Calothrix comoides* Harvey 1863, syn. n. 793. Alg. Aus. exs. n. 597, 598. — *VB*, Edge of rock pool, south side of Ellen Pt., May 1945.

HYDROCOLEUM GLUTINOSUM (Agardh) Gomont 1892 (Pt. 1), 330. Tilden 1910, 136, pl. 5, f. 59. Newton 1931, 29. Rabenhorst 1932, 1,149. — *AR*. As irregular masses on *Hormosira* (Aug. 1948) and *Zostera* (Sept. 1946) on the tidal flats. *MR*. On *Cystophyllum muricatum* and *Cladostephus verticillatus*, upper sublittoral, Jan. 1947. *VB*. On rocks near jetty, mid littoral, and on reef in bay, Jan. 1947. *PB*. On ledge, main reef, all seasons, and on *Corallina cuvieri* in sublittoral fringe, Jan. 1946. CW. On rocks and on *Hormosira*, lower littoral, Jan., Aug. 1948.

HYDROCOLEUM LYNGBYACEUM Kützing 1849, 259. Gomont 1892 (Pt. I), 337, pl. 12, f. 8-10. Tilden 1910, 135, pl. 5, f. 58. Setchell and Gardner 1919, 85, pl. 1, f. 10. Newton 1931, 29, f. 20. Rabenhorst 1932, 1,150, f. 757. — *PB*. Forming tufts at the constrictions of *Hormosira*, lower littoral, Jan. 1946. *AB*. On *Cystophora subfarcinata*, lower littoral, Jan. 1947.

LYNGBYA Agardh

LYNGBYA CONFERVOIDES Agardh. Gomont 1892 (Pt. II), 136, pl. 3, f. 5, 6. Tilden 1910, 119, pl. 5, f. 39. Setchell and Gardner 1919, 77. Rabenhorst 1932, 1,061, f. 672 b. — *AR.* In a mat on buoys near American River jetty, Jan. 1946. *EB.* Littoral rock scrapings, Jan. 1946.

LYNGBYA LUTEA (Agardh) Gomont 1892 (Pt. II), 141, pl. 3, f. 12, 13. Tilden 1910, 114, pl. 5, f. 30, 31. Rabenhorst 1932, 1,057, f. 670 a. b. — *MR.* Littoral rock scrapings, Jan. 1946.

LYNGBYA MAJUSCULA (Dillwyn) Harvey. Gomont 1892 (Pt. II), 131, pl. 3, f. 3, 4. Tilden 1910, 123, pl. 5, f. 42. Rabenhorst 1932, 1,060, f, 672 c, d. — *VB.* In shaded part of pool 1, south side of Ellen Pt., Dec. 1945.

LYNGBYA SEMIPLENA (Agardh) J. Agardh. Gomont 1892, (Pt. II), 138, pl. 3, f. 7-11. Tilden 1910, 118, pl. 5, f. 38. Setchell and Gardner 1919, 78. Rabenhorst 1932, 1,061, f. 672 a. — *MR.* In scrapings from a shallow pool, Jan. 1946.

LYNGBYA SORDIDA (Zanardini) Gomont 1892, (Pt. II), 126, pl. 2, f. 21. Tilden 1910, 118, pl. 5, f. 37. Rabenhorst 1932, 1,039, f. 657 b. — *PB.* In a shaded pool, rear littoral of main reef, Jan. 1948.

PLECTONEMA Thuret

PLECTONEMA BATTERSII Gomont 1899, 36. Tilden 1910, 211. Setchell and Gardner 1919, 79, pl. 1, f. 1. Newton 1931, 25, f. 18. Rabenhorst 1932, 684. — *AR.* Amongst other algae in a mat on buoys near American River jetty, Jan. 1946.

PLECTONEMA NORVEGICUM Gomont 1899, 34. Newton 1931, 26. Rabenhorst 1932, 684. — *AR.* Amongst other algae in a mat on buoys near American River jetty, Jan. 1946.

SYMPLOCA Kützing

SYMPLOCA HYDNOIDES Kützing 1849, 272. Setchell and Gardner 1919, 81, pl. 1, f. 12, 13. Newton 1931, 21, f. 16. Rabenhorst 1932, 1, 1,119, f. 724. — *AR.* On tidal flats, May 1945. *WR.* In littoral rock scrapings, Jan. 1946. *VB.* In pool 1, south side of Ellen Point, Jan. 1949. *PB.* On sloping and vertical rock in the rear littoral, all seasons. *CW.* Littoral, Jan. 1946.

RIVULARIACEAE

CALOTHRIX Agardh

CALOTHRIX AERUGINEA (Kützing) Thuret 1875, 10. Tilden 1910, 261, pl. 17, f. 1. Rabenhorst 1932, 599, f. 375 a. — *MR.* On *Enteromorpha* and *Cladophora* in littoral pools, Jan. 1948. *PB.* On *Polysiphonia* on littoral sloping rock, Dec. 1948. *CW.* On *Chaetomorpha aerea* in littoral pools, south side Jan. 1948.

CALOTHRIX CONFERVICOLA (Roth) Agardh. Tilden 1910, 256, pl. 16, f. 6-8. Rabenhorst 1932, 601, f. 376. Epiphytic on other algae in the littoral zone in most localities, all seasons. Often dense on *Jania fastigiata* (*VB, PB, AB*), *Centroceras clavulatum* (*VB,* Jan. 1946), *Hymenocladia polymorpha* (*DB,* sublittoral fringe, Jan. 1947) and *Chaetomorpha aerea* (*CW,* littoral pool, Aug. 1948).

CALOTHRIX CRUSTACEA Thuret. Tilden 1910, 264, pl. 17, f. 2-6. Rabenhorst 1932, 601. — *EB, MR, WR, WB.* On littoral rock, sometimes forming extensive slippery patches, all Jan. 1946. *HB.* Upper littoral, Jan. 1945.

CALOTHRIX SCOPULORUM (Weber and Mohr) Agardh. Bornet and Thuret 1880, 159, t. 38. Tilden 1910, 258, pl. 16, f. 11, 12. Setchell and Gardner 1919, 96. Rabenhorst 1932, 600, f. 374, f, g. — *AR.* Amongst other algae in a mat on buoys near American River jetty, Jan. 1946.

ISACTIS Thuret

ISACTIS PLANA (Harvey) Thuret. Bornet and Flahault 1886, (Pt. II), 343. Setchell and Gardner 1919, 104, pl. 1, f. 8, 9. Womersley 1946a, 128, f. 1A. — *VB.* Edge of rock pools and on the mollusc *Cellana tramoserica,* south side of Ellen Pt., Jan. 1946. *PB.* Littoral, main reef, all seasons. *HB.* Lower littoral, Jan. 1944.

RIVULARIA Agardh

RIVULARIA ATRA Roth. Bornet and Flahault 1886, (Pt. II), 353. Setchell and Gardner 1919, 107, pl. 8, f. 1, 2. Womersley 1946a, 132, f. 1B. — *AR.* On dead *Posidonia* and shells, Jan. 1946. *SB.* Upper littoral, Jan. 1946. *VB.* Edges of rock pools and on molluscs, south side of Ellen Point, May 1945. *PB.* Littoral, main reef, Jan. 1948.

RIVULARIA AUSTRALIS Harvey 1854, 566. Bornet and Flahault, 1886, (Pt. II), 362. Womersley 1946a, 133. — *MR.* Upper littoral, west side, Jan. 1948.

RIVULARIA FIRMA Womersley 1946a, 130, f. 2A, B. — East, south west and rougher parts of the north coast, in middle and upper littoral, all seasons, but variable in occurrence and amount.

RIVULARIA NITIDA Agardh. Bornet and Flahault 1886, (Pt. II), 357. Womersley 1946a, 133, f. 1C. — *AR.* On rock in mid littoral, Pelican Lagoon, Jan. 1946.

RIVULARIA POLYOTIS (Agardh) Bornet and Flahault 1886, (Pt. II), 360. Womersley 1946a, 134, f. 2C. — *AR.* On *Posidonia, Zostera* and larger algae on the tidal flats and floating, mainly summer. *BS.* Upper sublittoral, Jan. 1947.

STIGONEMATACEAE

BRACHYTRICHIA Zanardini

BRACHYTRICHIA QUOYI (Agardh) Bornet and Flahault 1886, (Pt. II), 373. De Toni 1907, 680. Tilden 1910, 294, pl. 20, f. 18. — *SB* and *MR.* Upper and mid littoral, Jan. 1947 and 1948. *VB.* Edge of pool, south side of Ellen Point, May 1945.

CHLOROPHYTA

ULOTRICHALES — ULOTRICHACEAE

ULOTHRIX Kützing

ULOTHRIX IMPLEXA Kützing 1849, 349. Setchell and Gardner 1920, 283. Smith 1944, 34. — *AR.* As a green band along the waterline on boats anchored near American River jetty, Aug. 1948. Seasonal occurrence (from local information), March to Nov. These specimens agree well with the above descriptions, but I have not seen authentic material. There seems to be some difference of opinion as to whether the marine species should be known as *U. implexa* or *U. subflaccida* Wille. Setchell and Gardner are followed in referring it to *U. implexa.*

ULVALES — ULVACEAE

ULVA Linnaeus

ULVA LACTUCA Linnaeus. Setchell and Gardner 1920, 265. Smith 1944, 45. Taylor 1937, 75 — *AR.* On tidal flats (low littoral and upper sublittoral),

common, all seasons. Sou'-West River mouth, Dec. 1934 (Cleland and Black). *PB*. Less rough parts of the reefs and rear littoral, all seasons. Also found in almost any suitable habitat elsewhere around the island. In *AR* specimens the thallus is 55-70μ thick, with the cells in transverse section 1-1½ times as high as broad. In *PB* specimens the thallus is 40-60μ (–70μ) thick, cells as high (–1½ times) as broad. In size and form the *AR* specimens often approach var. *latissima* De Candolle, while the *PB* specimens are similar to var. *rigida* (C.Ag.) Le Jol. However, the great variation in size and form between specimens in the same and different localities (from expanded plates to elongate undulate ribbons), prevents any valid separation of varieties.

ENTEROMORPHA Link

This genus is notoriously difficult, and only some of the more distinct forms from Kangaroo Island are listed here. I have received opinions on the species from Dr. V. J. Chapman and also from Dr. C. Bliding whose culture experiments in Sweden have shown that some species include a number of forms. Until it is possible to carry out similar culture and copulation experiments with Kangaroo Island *Enteromorpha's,* the limits of some species must remain uncertain.

ENTEROMORPHA ACANTHOPHORA Kützing 1856, t. 34, f. 1. J. Agardh 1883, 158. De Toni 1889, 135. — *PB*. Rear littoral on reefs, all seasons but best developed in winter. These forms are only 1-4 cm. high, but resemble Kützing's figure and New Zealand specimens in form and structure.

ENTEROMORPHA CLATHRATA (Roth) J. Agardh. Bliding 1944, 331. Doty 1947, 16. Kylin 1949, 28. — *AR*. Lower littoral and upper sublittoral throughout the inlet, all seasons. *MR*. Lower littoral pools, Jan. 1946, 1948. *CC*. Rock pools, Jan. 1948. *VB*. On a punt in mouth of Harriet River, Jan. 1946. *AB*. Rock pool, Jan. 1947. *RP*. Mid littoral, Jan. 1945.

The material from American River inlet is very variable and is referred by Dr. Chapman to a number of forms. The variations seem, however, to be ecological in nature, depending on degree of exposure and water movements, and probably nearly all the American River forms are best placed under one species, as Dr. Bliding would do. Culture experiments with these forms are necessary for a full understanding of the problem. The form of Bliding's Types I, II, and III are represented at American River inlet.

ENTEROMORPHA COMPRESSA (L.) Greville. De Toni 1889, 126. Doty 1947, 14. Bliding 1948, 128. Kylin 1949, 22, f. 14, 15. — *AR*. On buoys near American River jetty, Jan. 1946. *BH*. Lower littoral, Oct. 1947.

ENTEROMORPHA INTESTINALIS (L.) Link. Doty 1947, 14. Bliding 1948, 123. Kylin 1949, 22. — *MR*. In lower littoral pools, Jan. 1946.

BLIDINGIA Kylin

BLIDINGIA MINIMA (Kützing) Kylin 1949, 30. *Enteromorpha minima* Kützing 1856, t. 43, III. Bliding 1938, 84. — *AR*. On jetty steps, mid littoral, Sept. 1946, Aug. 1948. *RP*. Mid littoral, amongst *Enteromorpha clathrata,* Jan. 1945. Original det., C. Bliding.

CLADOPHORALES — CLADOPHORACEAE

CLADOPHORA Kützing

CLADOPHORA CERATINA Kützing 1849, 401; 1854, 5, t. 21, f. 1. — *AR*. Epiphytic on *Zostera muelleri* and in tangled masses on the tidal flats near the mouth of the inlet, Feb. 1946, Jan. 1948. *VB*. On punt and stakes at mouth of Harriet River (brackish), Jan. 1946.

CLADOPHORA DELICATULA Montagne. Setchell and Gardner 1920, 220. Smith 1944, 61. De Toni 1889, 326. — *CC.* Drift, Jan. 1947.

CLADOPHORA FASCICULARIS (Mertens) Kützing 1843, 268, 1849, 393. De Toni 1889, 316. Borgesen 1946, 21. — *AR.* Widely, but often sparsely, distributed in the upper sublittoral throughout the inlet, and on the buoys near American River jetty, all seasons. *BH.* Upper sublittoral, Oct. 1947. *PB.* In mid littoral rock pool on western terraced reef, Jan. 1946. The branching of AR specimens is very much looser, and they appear more slender than those from BH and PB. Filament widths, however, are similar in all specimens, and the fasciculate branching is well developed in all.

CLADOPHORA FEREDAYAE Harvey 1858, pl. 47; 1860b, 339. De Toni 1889, 323. — *CW,* Rock pool, south side, Aug. 1948.

CLADOPHORA REPENS (J. Agardh) Harvey 1871, pl. 236. Kützing 1854, t. 70, f. 2. De Toni 1889, 345. — *VB.* Edge of reef (sublittoral fringe), north side of Ellen Point, Jan. 1948. *PB.* Drift, April 1947.

CLADOPHORA VALONIOIDES Sonder 1846, 149. Harvey 1859, pl. 78. De Toni 1889, 308. — *WB.* Drift, Jan. 1946. *CC.* Rock pool, Jan. 1944, drift, Jan. 1947. *VB.* Drift, and on reefs in bay, Jan. 1949. *PB.* On reefs, littoral, all seasons. Specimens cast up from the sublittoral are much looser and larger than those growing in rough conditions on the reefs.

CHAETOMORPHA Kützing

CHAETOMORPHA AEREA (Dillwyn) Kützing 1849, 379; 1853, t. 59. De Toni 1889, 272. Smith 1944, 56. Taylor 1937, 80. — *SB.* Lower littoral, as a mat on boulders, Jan. 1948. *HR.* In rock pools, Jan. 1949. *WB.* Lower littoral on rocks, Jan. 1946. *PB.* In rock pools, Jan. 1944. *CW.* In rock pools, Jan. 1948.

CHAETOMORPHA DARWINI (Hooker) Kützing 1849, 380. De Toni 1889, 271. *Conferva clavata* var. *darwinii* Hooker 1847, 187, pl. 192, f. 1. — *VB.* Sublittoral fringe on reefs in bay. *PB.* Sublittoral fringe on reefs. *CW.* Lower littoral, south side. All seasons. At *PB,* commonly epiphytic on *Zonaria spiralis, Halopteris pseudospicata, Cystophora paniculata* and *Ballia scoparia.*

CHAETOMORPHA LINUM (Mueller) Kützing. De Toni 1889, 269. Taylor 1937, 80. — *BS.* Upper sublittoral, June 1947.

CHAETOMORPHA VALIDA (Hooker and Harvey) Kützing 1849, 379. De Toni 1889, 274. *Conferva valida* Hooker and Harvey 1847, 416 — *AR.* Upper sublittoral on Rabbit Island and elsewhere in Pelican Lagoon and near Muston, not common, May 1947, Aug. 1948.

This agrees well with a specimen from Tasmania of *Conferva valida* H. & H. in Melbourne National Herbarium. The plant is dark green, forming rather coarse tangled masses, not readily collapsing out of water; filaments 350-450μ thick, cells mostly 1½-2½ times as long as wide, slightly inflated. It is a distinctly more robust plant than *C. linum,* readily distinguished in the field.

SIPHONOCLADALES — VALONIACEAE

DICTYOSPHAERIA Decaisne

DICTYOSPHAERIA SERICEA Harvey 1860 b, 339, pl. 196 A. J. Agardh 1887, 118; 1896, 61. De Toni 1889, 371. — *MR.* Upper sublittoral, Jan. 1948. *WR.* Drift, Jan. 1946. *VB.* Pools of sublittoral fringe on reefs in bay, Jan. 1947, *PB.* Pools in sublittoral fringe on reefs, all seasons.

SIPHONOCLADIACEAE

APJOHNIA Harvey

APJOHNIA LAETEVIRENS Harvey 1858, pl. 5. J. Agardh 1887, 108. De Toni 1889, 382. — *MR*. Drift, Jan. 1946. *CC*. Drift, Jan. 1948. *VB*. Drift, Jan. 1948, 1949 and in pools of sublittoral fringe on reefs in bay, Jan. 1948. *PB*. Drift, and in pools of sublittoral fringe, Jan. 1944, 1947, 1948. Specimens growing in pools in the sublittoral fringe are usually stunted, often with only the basal part developed.

STRUVEA Sonder

STRUVEA PLUMOSA Sonder 1846, 151. Harvey 1858, pl. 32. De Toni 1889, 364. A single specimen from "North of Kangaroo Island, 1893." Collector and further details are unknown.

BOODLEACEAE

MICRODICTYON Decaisne

MICRODICTYON UMBILICATUM (Velley) Zanardini. Setchell 1929, 503. Micro-*dictyon agardhianum*, Harvey 1858, pl. 50. — *AR*. In *Posidonia* beds near Strawbridge Point, May 1945; drift, Dec. 1948. Apparently rare.

DASYCLADACEAE

ACETABULARIA Lamouroux

ACETABULARIA PENICULUS (R. Brown) Solms-Laubach 1895, 27. *Polyphysa peniculus* (R. Br.) Agardh. Harvey 1858, pl. 11. De Toni 1889, 421. — *AR*. Low littoral and upper sublittoral at head of the lagoons (dense in patches) and in Pelican Lagoon, all seasons. *BS*. Lower littoral, June 1947.

SIPHONALES — BRYOPSIDACEAE

BRYOPSIS Lamouroux

BRYOPSIS BACULIFERA J. Agardh 1887, 21. De Toni 1889, 428. — *VB*. Shaded end of pool 1, south side of Ellen Point, May 1945, Jan. 1949. *PB*. Shaded pool, rear littoral, main reef, Jan. 1948. Rare.

The few specimens collected have been sterile. They agree well in form and structure with cotype specimens of J. B. Wilson's in Melbourne National Herbarium except that the thallus of Wilson's specimens are nearly twice as wide (340-510μ against 120-350μ).

BRYOPSIS CUPRESSOIDES Lamouroux. Kützing 1856, t. 79, f. 1. J. Agardh 1887, 29. De Toni 1889, 435 — *AR*. On buoys, Jan., Sept., 1946; upper sublittoral near American River jetty, July 1946. Best developed in winter. Dr. V. J. Chapman considers these plants are referable to *B. cupressoides*, though they seem to be softer plants with longer pinnules than those figured by Kützing.

BRYOPSIS PLUMOSA (Hudsworth) Agardh. J. Agardh 1887, 24. De Toni 1889, 431. Setchell and Gardner 1920, 161, pl. 14, f. 1, 2. — *VB*. In rock pools, south side of Ellen Point, May 1945, Jan. 1947, 1948.

DERBESIACEAE

DERBESIA Solier

DERBESIA CLAVAEFORMIS (J. Agardh) De Toni 1889, 425. *Bryopsis clavaeformis* J. Agardh 1887, 20. — *WB*. Drift, Jan. 1946. *PB*. Shaded pool, rear littoral, main reef, Jan. 1948. Rare. These specimens agree well with those of J. B. Wilson's in Melbourne National Herbarium. The WB specimen is rather thicker, but identical in form and position and size of zoosporangia.

CODIACEAE

CODIUM Stackhouse

CODIUM GALEATUM J. Agardh 1887, 42, t. 1, f. 1. De Toni 1889, 494. Lucas 1936, 54. — *AR.* Upper sublittoral throughout the inlet, occasional, all seasons. *WB.* Drift, Jan. 1946. *VB.* Drift, Jan. 1946, 1948, 1949. *DB.* Sublittoral fringe on reef, Jan. 1947. *PB.* Drift, and in sublittoral fringe, all seasons. *RP.* Drift, and pools of lower littoral, all seasons. Most of the specimens placed under *C. galeatum* show a distiuctly but moderately thickened top to the utricles. Some, such as those from American River, are very slightly thickened. Some specimens from Victor Harbour and other parts of the South Australian coast have extremely heavily thickened tops to the utricles, which tend to be narrower and contracted a short distance below the apex. All these specimens are identical in external form (stout plants, thallus 4-6 mm. wide), and the variation in utricle thickness between young and old parts of one specimen, and between different specimens, is very considerable. Even when most utricles are scarcely thickened at all, an occasional narrower one occurs with heavy apical thickening.

Although the extremes in utricle thickness are very distinct, and such characters have been largely used in segregation of species within the genus, it seems impossible to delimit the extremes as species or even varieties. On the other hand this may be an ecological variation, as plants with heavily thickened utricles seem to occur mainly in deep water on exposed coasts.

A slender dichotomous *Codium,* 2-3 mm. in thickness, and with very slight utricle thickening has been found in the drift at Pennington and Vivonne Bays. This may be another form of *C. galeatum,* or may prove to be a distinct species.

CODIUM LUCASII Setchell in Lucas 1935, 200. Lucas 1936, 50. — *PB.* Rear littoral on an eastern reef, 1944. Rare.

CODIUM MAMILLOSUM Harvey 1854, 505; 1858, pl. 41. J. Agardh 1887, 39. De Toni 1889, 491. Lucas 1936, 52. — *RP.* Drift, June 1947, Aug. 1948. *EB, MR,* and *PB,* all drift, Jan. 1946. Apparently this species occurs only in the deeper sublittoral, sometimes very commonly in sheltered bays. Near Rocky Point enormous numbers of this species, *C. pomoides* and *C. spongiosum,* were cast up after a storm in June 1947.

CODIUM MUELLERI Kützing 1856, 34, t. 95, f. 2. J. Agardh 1887, 42. De Toni 1889, 493. *Codium schmidtii* Vouk 1935, 9, pl. 1. — *RP.* Drift, June 1947, Aug. 1948. *K.* Drift, Jan. 1948. This species is distinguished by the presence of hemispherical thickenings on the internal side of the apical membrane of the utricles. This was first recorded in Vouk's *Codium schmidtii* (from Bussleton, Western Australia, and Lefevre Peninsula near Adelaide, South Australia, not New Caledonia as given by Vouk), but Setchell (1940, 444) pointed out the type specimen of *C. muelleri* Kützing shows the same feature although Kützing does not figure it. Cotype specimens of *C. muelleri* in Melbourne National Herbarium show the thickenings distinctly. The plants are slender (2-3 mm. wide) and soft, becoming flat and membranous on drying out.

Most specimens in Australian Herbaria named as *C. muelleri* do not show the internal thickening, and are not this species; some are probably forms of *C. galeatum.*

CODIUM PERRINAE Lucas 1935, 203, f. 4. — *DB.* Outer reef pools, Jan. 1950.

CODIUM POMOIDES J. Agardh 1894a, 100. Lucas 1936, 53. — *RP*. Drift, Jan. 1944, June 1947. *EB*. Drift, Jan. 1946. *VB*. Upper sublittoral at end of Ellen Point, Jan. 1946. *PB*. In rock crevices of sublittoral fringe on reefs, occasional, all seasons.

CODIUM SPONGIOSUM Harvey 1854, 565; 1858, pl. 55. J. Agardh 1887, 38; 1894a, 99. De Toni 1889, 489. Lucas 1936, 51. — *RP*. Drift, June 1947, Aug. 1948. *AR*. Upper sublittoral in Pelican Lagoon, all seasons, rare. *PB*. Drift, Jan. 1946. *AB*. Drift, Aug. 1948. Common in drift, near *RP* after storms.

RHIPILIOPSIS A. and E. S. Gepp

RHIPILIOPSIS PELTATA (J. Agardh) A. and E. S. Gepp 1911, 45, f. 118-122. *Udotea peltata* J. Agardh 1882, 74. De Toni 1889, 509. — *PB*. In shaded pools, rear littoral, Jan. 1947, 1948, 1949, also in deeper pools of sublittoral fringe, Jan. 1948, 1949. Not common.

CAULERPACEAE

CAULERPA Lamouroux

CAULERPA BROWNII Endlicher. J. Agardh 1872, 28. De Toni 1889, 468. W. v. Bosse 1898, 306. Lucas 1936, 42. — General in the lower littoral and sublittoral fringe within the exposed rocky coast formation (*MR*, west and south coasts to *AB*). Also drift from deeper water. All seasons, but often not common.

CAULERPA CACTOIDES (Turner) Agardh. Harvey 1858, pl. 26. De Toni 1889, 485. W. v. Bosse 1898, 390. Lucas 1936, 48. — *RP*. Drift, June 1947. *VB*. Drift, Jan. 1948. *PB*. Drift, Jan. 1944. Rare.

CAULERPA ETHELAE W. v. Bosse 1898, 384. *Caulerpa simpliciuscula* var. *vesiculifera* Harvey 1859, pl. 65, f. 3, 4. *Caulerpa vesiculifera* Harvey, Lucas 1936, 47. — *MR*. Upper sublittoral, Jan. 1948; drift, Jan. 1946. *WB*. Drift, Jan. 1945, 1946. *PB*. Drift, Jan. 1944, May 1945

This species has been commonly known as *C. vesiculifera*. W. v. Boose showed that Harvey included two algae in his var. *vesiculifera* of *C. simpliciuscula*, one of which is a loose form of that species, while the other has very much larger vesicles; this she renamed *C. ethelae*.

CAULERPA HEDLEYI W. v. Bosse 1910, 1-2. Lucas 1927b, 559; 1936, 43. — This species was "dredged in 8 fathoms off Kangaroo Island by the fisheries' trawler *Endeavour* in 1909." I have not collected it. The pinnate fronds are densely covered with minute, several times dichotomous, ramenta which are similar but slenderer on the surculus.

CAULERPA HYPNOIDES (R. Br.) Agardh. Harvey 1859, pl. 84. De Toni 1889, 470. W. v. Bosse 1898, 342. Lucas 1936, 44. — *AR*. Sublittoral near Muston, July 1947. *WB*. Drift, Jan. 1946. *CC*. Drift, Jan. 1948. Sou'-West River mouth. Dec. 1934 (Cleland and Black). *VB*. Drift, Jan. 1949. *PB*. Pools on reefs, all seasons. *AB*. Drift, Aug. 1948. *RP*. Drift, June 1947, Aug. 1948.

var. MUELLERI (Sonder) W. v. Bosse 1898, 342. *Caulerpa muelleri* Sonder. Harvey 1858, pl. 2. — *MR*. Drift, Jan. 1946. *WB*. Drift, Jan. 1946. *VB*. Drift, Jan. 1948, 1949. *PB*. Pools of sublittoral fringe, all seasons, but not common. *AB*. Drift, Jan. 1948.

CAULERPA LONGIFOLIA Agardh. J. Agardh 1872, 16. De Toni 1889, 455. *C. harveyi* F. v. Mueller in Harvey 1859, pl. 95. De Toni 1889, 455. Lucas

1936, 41. W. v. Bosse 1898, 299. — *WB*. Drift, Jan. 1946. *CC*. Drift, Jan. 1948. *VB*. Drift, Jan. 1948. *PB*. Drift, Jan. 1944, 1946. Only found in the sublittoral.

var. CRISPATA (Harvey) comb. nov.

C. harveyi var. *crispata* Harvey 1859, pl. 95. W. v. Bosse 1898, 300. *C. longifolia* Agardh in Lucas 1936, 38. *C. curvifolia* J. Agardh in Wilson 1892, 188 (nomen nudum). — *VB*. Under ledge in sublittoral fringe of reef in bay, Jan. 1947; drift, Jan. 1948. *PB*. In pools of sublittoral fringe on reefs, probably all seasons. Usually found in lower littoral or sublittoral fringe rock pools.

Considerable confusion has existed in the position of *C. longifolia* and *C. harveyi*. In Australian herbaria they have usually been regarded as distinct species, as did Lucas (1936). W. v. Bosse (1898, 299) examined the authentic (probably type) specimens of *C. longifolia* of C. Agardh, in the Paris Museum, and found it to be identical with *C. harveyi* F. v. M. W. v. Bosse conserved the name *C. harveyi* as Agardh's original diagnosis was slightly erroneous. There is, however, no provision for this in the Botanical Rules (1935), and the name must therefore revert to the earlier *C. longifolia* C. Agardh.

The var. *crispata* Harvey of *C. harveyi* F. v. M. has been commonly known in Australia as *C. longifolia* Ag. Most specimens are very distinct from typical *C. harveyi;* they are smaller, much less robust, and have the ramenta recurved inwards above and irregularly placed on the stem. Var. *crispata* is an inhabitant of rock pools, while *C. harveyi* (now *C. longifolia*) inhabits deeper water. From W. v. Bosse's description it appears that specimens of both *C. longifolia* and var. *crispata* are present on the type sheet.

Most specimens of var. *crispata* are very distinct from the species, but intermediate forms do occur, and Harvey claimed to have seen connecting stages between the deep water and rock pool forms. Several intermediate specimens occur in the algal collection of the Melbourne National Harbarium.

C. curvifolia J. Agardh from Port Philip (Wilson 1892, 188) is identical with var *crispata,* but is a nomen nudum as no description has ever been published. Several specimens of Wilson's are in the Melbourne National Herbarium.

CAULERPA OBSCURA Sonder 1846, 550. Harvey 1860b, 337. Kützing 1857, t. 17. W. v. Bosse 1898, 301. *C. sonderi* F. v. M. in Sonder 1852, 661. Harvey 1860a, pl. 167. De Toni 1889, 456. — AR. Sublittoral, near Muston, Jan. 1948. *RP*. Drift, June 1947. *WB*, Drift, Jan. 1946. *CC*, Drift, Jan. 1947, 1948. *VB*, Drift, Jan. 1948, 1949. *PB*, Drift, Jan. 1946. Only found in the sublittoral.

CAULERPA REMOTIFOLIA Sonder 1852, 660. Harvey 1859, pl. 107. W. v. Bosse 1898, 286. De Toni 1889, 448. — *AR*. Upper sublittoral throughout lagoons, especially at edge of channel and in deeper holes, all seasons. *K*. Drift, Jan. 1945. *CC*. Drift, Jan. 1948. This species shows great seasonal variation in density of the lateral pinnae along the branches. In summer (Dec.-April) the pinnae are few, sometimes completely absent. In winter more pinnae develop, until in late winter (Aug.-Oct.) they are sufficiently close to just overlap. Harvey's figure shows an intermediate stage. The alga occurs as dense intertwined masses, often 1-2 ft. across.

CAULERPA SCALPELLIFORMIS (R. Brown) C. Agardh. Harvey 1858, pl. 17. De Toni 1889, 449. W. v. Bosse 1898, 286. Lucas 1936, 34. — *CC*. Drift, Jan. 1948. *VB*. Sublittoral fringe of reef in bay, Jan. 1948, 1949. *PB*. Pools of sublittoral fringe, Jan. 1944, 1948.

CAULERPA SEDOIDES (R. Brown) C. Agardh. Harvey 1859, pl. 72. De Toni 1889, 480. W. v. Bosse 1898, 387. Lucas 1936, 47. — *AR.* In Posidonia beds near Strawbridge Point, May 1945. *MR.* and *WR.* Drift, Jan. 1946. *VB.* Sublittoral fringe of reef in bay, Jan. 1947. *PB.* Pools of sublittoral fringe on reefs, Jan. 1944, 1947, 1948.

CAULERPA SIMPLICIUSCULA (Turner) C. Agardh. Harvey 1859, pl. 65, f. 1, 2. De Toni 1889, 482. W. v. Bosse 1898, 377. Lucas 1936, 47. *BS.* (no data). PB. In pools of sublittoral fringe on reefs, all seasons.

var. VESICULIFERA Harvey 1859, descr. of pl. 65. W. v. Bosse 1898, 377. — *AR.* Upper sublittoral in lagoons, especially on edge of channel, all seasons.

Under *C. ethelae* I have commented that Harvey confused two plants under his var. *vesiculifera.* W. v. Bosse renamed one *C. ethelae* and kept a form with more loosely placed vesicles (but of similar size to those of the species) as var. *vesiculifera.*

CAULERPA TRIFARIA Harvey 1863, pl. 261. J. Agardh 1872, 16. De Toni 1889, 454. W. v. Bosse 1898, 299. Lucas 1936, 39. — South coast, collected by J. Cork, winter 1939 (probably drift). *VB.* Shaded end of pool 1, south side of Ellen Point, Jan. 1948 (No. A9469). *PB.* Shaded pools, rear littoral, main reef, Jan. 1948 (No. A7019). The specimens under A9469 and A7019 are 1"-2" high and show two regular rows of ramenta, never three. They are morphologically identical with *C. sertularioides* (Gm.) Howe. (*C. plumaris* Forsk). However, specimens of *C. trifaria* sometimes have only two rows of ramenta in parts, and this may be a feature of juvenile plants (as the VB and PB specimens probably are). *C. trifaria* also differs from *C. sertularioides* in having spines on the surculus. These are absent in these specimens, but this again may be a feature of young *C. trifaria.* For the present I prefer to leave these specimens under *C. trifaria,* though the possibility of their being *C. sertularioides* cannot be excluded.

In the Herbarium of the University of Adelaide is a specimen (A96) collected by Dr. Englehart at Lacepede Bay in 1897, identified as *Caulerpa plumaris* var. *elegans* (see Reinbold 1897, 44). This is also recorded by Lucas 1936, 35. Underneath the specimen is written: "Examined and identified by Madame Weber van Bosse," probably in Reinbold's writing, as he dealt with Engelhart's collection generally. W. v. Bosse (294) states in a footnote that she made the determination and adds: "Ceci repose sur une erreur, car l'algue de M. Reinbold est le *C. plumaris,* mais un échantillon tres ramifie." The specimen, however, is a typical *C. trifaria,* with three rows of ramenta in most parts.

C. sertularioides is characteristic of tropical waters, and on geographical grounds it would be unlikely to occur along Southern Australia.

PHAEOPHYTA

ISOGENERATAE — ECTOCARPALES — ECTOCARPACEAE

ECTOCARPUS Lyngbye

ECTOCARPUS CONFERVOIDES (Roth) Le Jolis. Setchell and Gardner 1925, 412. Taylor 1937, 109. May 1939, 537-554. — *AR.* Common throughout the inlet, growing epiphytically on other algae (especially *Hormosira*) in winter (June-October). *CC.* In a rock pool, Jan. 1944. *PB.* Common in the rear littoral, winter (May-Nov.).

PYLAIELLA Bory

PYLAIELLA FULVESCENS (Schousboe) Bornet 1889, 8, pl. 1, f. 1. De Toni 1895, 536. Borgesen 1920, 431, f. 408, 409. — *BH.* Mid littoral, east side, Jan.

1948. *PB*. Rear littoral, summer (Nov.-April). *CW*. In a rock pool, south side, August 1948. *HB*. In rock pools, Jan. 1944. *RP*. Low littoral, Jan. 1948.

SPHACELARIALES — SPHACELARIACEAE

SPHACELARIA Reinke

SPHACELARIA BIRADIATA Askenasy 1894, 15, pl. 2, f. 12. De Toni 1895, 507. Sauvageau 1914, 163-166. — *SB*. Drift, Jan. 1946. *MR*. Epiphytic on *Sargassum*, drift, Jan. 1946. *VB*. On *Cystophora subfarcinata* and *Cystophyllum muricatum* in littoral pools, south side of Ellen Point, Dec. 1945, Jan. 1946. *PB*. On stems of *Cystophora uvifera* and *Cystophyllum muricatum*, littoral on reefs, Nov. to Feb. (? all seasons).

SPHACELARIA FURCIGERA Kützing 1855, 27, t. 90. De Toni 1895, 506. Sauvageau 1914, 145-156. Taylor 1937, 129. — *PB*. On *Cystophora uvifera* and *Cystophyllum muricatum*, littoral, on reefs, all seasons.

SPHACELARIA PYGMAEA Lenormand in Sauvageau 1914, 29-31. — *CC*. On *Carpoglossum confluens*, drift, Jan. 1948.

SPHACELARIA TRIBULOIDES Meneghini. Kützing 1855, t. 89, f. 2. De Toni 1895, 502. Sauvageau 1914, 123-130. — *VB*. On *Myriodesma latifolia* var. *duriuscula* in littoral pools, south side of Ellen Point, Dec. 1945, Jan. 1946, 1947, 1948. Also in shaded part of pool 1, May 1945, Jan. 1946, 1948. *PB*. In mid littoral pools of western terraced reef, Jan. 1946.

STYPOCAULACEAE

HALOPTERIS Kützing

HALOPTERIS FUNICULARIS Sauvageau 1914, 402-403. Dickinson 1933, 255, f. 2 (for ball forms). *Sphacelaria muelleri* Sonder 1853, 507. — *WB*. Drift, Jan. 1946. *VB*. Drift, Jan. 1949.

HALOPTERIS PSEUDOSPICATA Sauvageau 1914, 411. — *BH*. Upper sublittoral, east side, Oct. 1947, Dec. 1948. *SB*. Drift, Jan. 1948. *MR*. Drift, Jan. 1946. *WB*. Drift, Jan. 1946. *CC*. Drift, Jan. 1947. *VB*. Drift, Jan. 1948, 1949. *PB*. In pools on reefs, upper sublittoral, all seasons. *CW*. Drift, Jan. 1946. *AB*. Upper sublittoral, Jan. 1947.

HALOPTERIS HORDACEA (Harvey) Sauvageau 1914, 416-433. — *CW*. Drift, Jan. 1946. A single sexual plant.

HALOPTERIS SPICIGERA (Areschoug) Moore in Reports of the 7th Pacific Science Congress, 1950. *Sphacelaria spicigera* Areschoug 1854, 365. Sauvageau 1914, 418-420. — *BH*. Upper sublittoral, east side, Oct. 1947. *PB*. In a low littoral pool, just west of main reef, Dec. 1948, Jan. 1949 (fertile). *CW*. Drift, Jan. 1946.

PHLOEOCAULON Geyler

PHLOECAULON SPECTABILE Reinke 1890, 213. De Toni 1895, 520. Sauvageau 1914, 457-463. — *MR*. Drift, Jan. 1946, 1947. *WR*. Drift, Jan. 1946. *WB*. Drift, Jan. 1946. *PB*. Drift, Jan. 1944, May 1945, Jan. 1947, 1948. Also in pools of sublittoral fringe, main reef, Nov. 1947, Jan. 1948.

CLADOSTEPHACEAE

CLADOSTEPHUS Agardh

CLADOSTEPHUS VERTICILLATUS (Lightfoot) Agardh. De Toni 1895, 513. Lucas

1936, 105. Taylor 1937, 135, pl. 17, f. 9-11. — In the upper sublittoral zone within the Rocky Coast Formation, in well washed but not extremely rough places (often sandy), all seasons. Common at *RP, K, EB, MR, PB, CW, HB.*

CUTLERIALES — CUTLERIACEAE

CUTLERIA Greville

CUTLERIA MULTIFIDA Greville. Kützing 1859, t. 45, f. 1. De Toni 1895, 302. Newton 1931, 197, f. 125. — *AR.* Sublittoral, on edge of channel, especially near Muston, Nov. 1947, Aug. 1948. On cockle bank near Strawbridge Point, Jan. 1949. *RP.* Drift on beach, Aug. 1948. This is mainly a late winter form, rarely seen in January. The thallus is mostly 2-3 mm. wide.

DICTYOTALES — DICTYOTACEAE

DICTYOTEAE

DICTYOTA Lamouroux

DICTYOTA APICULATA J. Agardh 1894a, 67. De Toni 1895, 262. *D. dichotoma* Harvey, Alg. Aus. exs., n. 70 in part. — *BH.* Very low littoral, Dec. 1948. *VB.* Shaded part of the large littoral pool, south side of Ellen Point, Jan. 1949.

The terminal segments of *D. apiculata* are acute, not obtuse as in *D. dichotoma.* The VB specimens agree well with specimens of *D. apiculata* in Melbourne National Herbarium; the BH specimens are very similar but show a slight tendency for the tetrasporangia to become aggregated into sori.

DICTYOTA BIFURCA J. Agardh 1894a, 79. De Toni 1895, 279. — *RP.* Upper sublittoral, Jan. 1947, 1948. *BH.* Upper sublittoral, east side, Jan. 1947. These specimens agree well with Wilson's (cotypes?) in Melbourne National Herbarium.

DICTYOTA DICHOTOMA (Huds.) Lamouroux. Harvey 1871, pl. 103, f. 1. J. Agardh 1882, 92; 1894a, 67. Newton 1931, 212, f. 134. Lucas 1936, 91, f. 51 — *BH.* Upper sublittoral, Oct. 1947. *CC.* Sublittoral fringe and lower littoral in the sheltered inlet, Jan. 1948. *CW.* Lower littoral, south side, Jan. 1946.

var. INTRICATA (Agardh) Greville. Harvey 1871, pl. 103, f. 2. Papenfuss 1944, 338. — *AR.* Widely distributed in the upper sublittoral throughout the inlet, all seasons. *PB.* In sandy pool, main reef, Jan. 1945. Although this is a common alga in American River inlet, no fertile plants have yet been collected. It agrees very well, however, with Harvey's figure and specimens from Europe.

DICTYOTA DIEMENSIS Sonder in Kützing 1859, 14, t. 34. De Toni 1895, 266. J. Agardh 1882, 97; 1894a, 69. *D. naevosa,* Harvey 1862, pl. 186. — *BH.* Drift, Dec. 1948. *WR.* Drift, Jan. 1946. *VB.* In shaded part of the large littoral pool, south side of Ellen Point, and drift, Jan. 1949. *PB.* Drift, Jan. 1948.

These specimens agree well with the figures of Kützing and Harvey, although the fronds are narrower. A few specimens have ill-defined sori.

DICTYOTA FURCELLATA Agardh. J. Agardh 1848, 90; 1894a, 80. De Toni 1895, 280. Not *D. furcellata* Harvey. — *RP.* Upper sublittoral, Jan. 1948. *BH.* Upper sublittoral, Jan. 1948. This species is regularly dichotomous, in contrast to the more lateral branching of *Pachydictyon furcellatum*

(*D. furcellata* of Harvey). Older parts of the thallus are typically *Dictyota* in section. Our specimens agree well with some in Melbourne National Herbarium.

DICTYOTA LATIFOLIA J. Agardh 1894a, 65. De Toni 1895, 261. Lucas 1936, 90. — *WB*. Drift, Jan. 1946. *CC*. Drift, Jan. 1948. *VB*. Drift, Jan. 1946, 1948, 1949. *PB*. Drift, Jan. 1944, May 1945, Jan. 1946, 1947, 1948.

An extensive range of specimens, undoubtedly belonging to the one species, has been examined, and they show considerable variation in characters which are accepted as being of generic significance in the Dictyotaceae.

The thallus width ranges from 1 to 5 cm., the number of dichotomies from 1 to 4 or 5. The small surface proliferations densely cover well developed fronds, but the upper parts and older fronds are often largely or almost completely denuded. The transverse section of the thallus in most specimens is that of *Dictyota*. Old parts of A3299f, however, show two rows of internal cells, though only one in younger parts (c.f., *Dilophus*). The tetrasporangia and sexual sori in most specimens are scattered over the thallus but not on the proliferations. Some specimens (*e.g.*, A3299d) show sporangia on both thallus and proliferations, while in others (A3299a and f) they are only on the proliferations (c.f. *Glossophora*). Similar variations have been observed in specimens of this species in Melbourne National Herbarium. Kützing (1859, 6, t. 12, f. 1) described a *Dictyota latifolia* from the Atlantic which has been relegated to a synonym of *D. dichotoma* (see De Toni). As J. Agardh's *D. latifolia* was described in 1894, his name is invalid, and if the species is to be maintained it must be renamed.

J. Agardh 1882, 94, described *D. nigricans*, which differs from *D. latifolia* J. Ag. mainly in degree of branching. Specimens of these two species in Melbourne National Herbarium (some were probably named by J. Agardh) are very doubtfully distinct. The degree of branching is variable, and specimens under both names show the variation in cellular structure described above. If the two species are to be combined, *D. nigricans* has priority and appears to be a valid name. In showing very few dichotomies, the Kangaroo Island specimens are of the *D. latifolia* form.

Until the type specimens of *D. latifolia* J. Ag. and *D. nigricans* J. Ag. can be re-examined, in light of the above remarks, it seems best to leave the position as it is, rather than renaming *D. latifolia* J. Ag. and adding a name to the literature which may have to be relegated to the synonym of *D. nigricans* later.

DICTYOTA RADICANS Harvey 1854, 536; 1859, pl. 110. Kützing 1859, t. 36, f. 2. J. Agardh 1882, 92; 1894a, 74. De Toni 1895, 273. Lucas 1936, 91. — *WB*. Drift, Jan. 1946. *VB*. Drift, Jan. 1949. *PB*. Drift, Jan. 1944, 1948.

PACHYDICTYON J. Agardh

PACHYDICTYON FURCELLATUM (Harvey) J. Agardh 1894a, 83. De Toni 1895, 282. *Dictyota furcellata*, Harvey 1858, pl. 38 (not *D. furcellata* Ag.). — *EB*. Upper sublittoral, on *Posidonia*, Jan. 1945, 1946. *AB*. Drift, Jan. 1945. Harvey, in describing *D. furcellata*, recognised that some specimens show characters intermediate between this species and *P. paniculatum*. The main distinction lies in the wider and more robust frond of *P. paniculatum*. Most specimens are quite distinct, but some intermediate forms are very difficult to place. Harvey doubted whether his plant was distinct from *Dictyota minus* Sonder, but from specimens of Sonder's in Melbourne National Herbarium *D. minus* is probably identical with *P. paniculatum*.

In his description Harvey referred to, and figured, "spores" which he thought might be antheridia. A specimen of Harvey's No. 67B in Melbourne National Herbarium shows the structures figured by Harvey. They are not reproductive organs but intracellular thickenings. Fig. 1 shows their characteristic form. I have observed similar thickenings in occasional specimens of *Dictyota dichotoma* and *Dilophus fastigiatus* also.

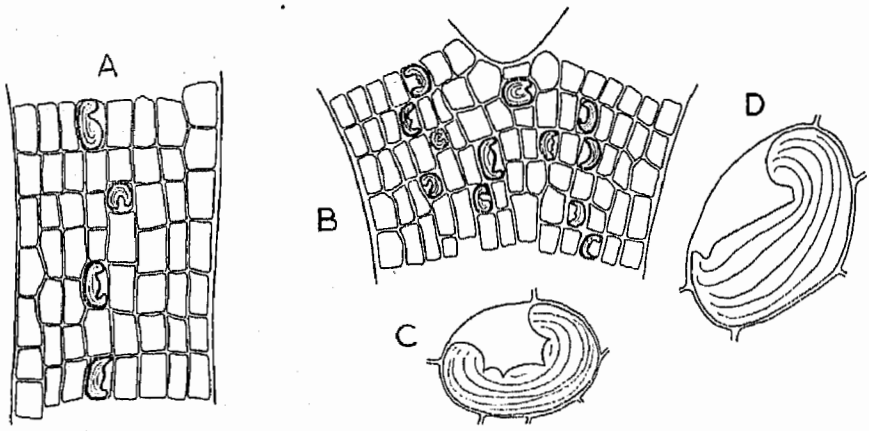

Fig. 1

Intracellular inclusions in some Dictyotaceae, as seen lying in the medullary cells (cortical cells not shown). A. In Harvey's specimen of *Pachydictyon furcellatum*. B. In a specimen of *Dictyota dichotoma*. C and D. Two typical inclusions.

PACHYDICTON PANICULATUM J. Agardh 1894a, 84. De Toni 1895, 283. De Toni and Forti, 1923, 73, pl. 8, f. 8. Levring 1946, 218, f. 3. — *BH*. Upper sublittoral, Jan. 1948, 1949. *EB*. Upper sublittoral, Jan. 1945. *WR*. Drift, Jan. 1946. *WB*. Drift, Jan. 1945, 1946. *CC*. Drift, Jan. 1944, 1947, 1948. *VB*. In the large littoral pool, south side of Ellen Point, and drift, probably all year. *PB*. Pools of sublittoral fringe, all seasons. *CW*. In rock pools, Aug. 1948, and drift, Jan. 1946, 1947. *AB*. Upper sublittoral, Jan. 1947. *RP*. Upper sublittoral, Jan. 1948. Probably present in all seasons in the upper sublittoral and low rock pools within the Rocky Shore Formation.

DILOPHUS J. Agardh

DILOPHUS FASTIGIATUS (Sonder) J. Agardh 1882, 107; 1894a, 92. De Toni 1895, 288. *Dictyota fastigiata* Sonder 1846, 155. Harvey 1859, pl. 82. — *MR, WR*, and *WB*, all drift, Jan. 1946. *CW*. In a rock pool, south side, Jan. 1948.

DILOPHUS FOLIOSUS J. Agardh 1894a, 94. De Toni 1895, 290. — *BH*. Drift, Dec. 1948. *MR*. Drift, Jan. 1946. — J. Agardh placed *D. foliosus* in the section Marginatae, with two rows of internal cells in the median part and four at the edges. The BH specimens show one row of internal cells and two at the edges in the youngest parts, with the number of rows increasing in older parts to four rows all through, the margin being very slightly if at all thicker. In the presence of small proliferations, general form and position of sori they closely resemble some of Wilson's specimens of *D. foliosus* in Melbourne National Herbarium. Wilson's specimens also vary in number of rows of internal cells.

DICTYOPTERIS Lamouroux

DICTYOPTERIS NIGRICANS Womersley 1949, 115, f. 1, pl. 22, f. 2. — *WB*. Drift, Jan 1946. *VB*. In pools on reefs in the bay, Jan. 1948, drift, Jan. 1948, 1949. *PB*. In pools of the sublittoral fringe and calmer parts of the reefs, all seasons. (Previously reported in Pt. II as *D. acrostichoides*?)

DICTYOPTERIS MUELLERI (Sonder) Schmidt 1938, 218. *Haliseris muelleri* Sonder 1852, 665. Harvey 1860a, pl. 180. De Toni 1895, 255. Lucas 1936, 89, f. 49a. — *MR*. Drift, Jan. 1946. *VB*. In shaded parts of large littoral pool south side of Ellen Point, Jan. 1949. *PB*. Drift, Jan. 1944, 1946, 1948. *AB*. Drift, Aug. 1948.

LOBOSPIRA Areschoug

LOBOSPIRA BICUSPIDATA Areschoug 1854, 364. Harvey 1858, pl. 34. De Toni 1895, 292. J. Agardh 1894a, 98. Lucas 1936, 93. — *BH*. Upper sublittoral, Dec. 1948. *MR*. Drift, Jan. 1946. *WR*. Drift, Jan. 1946. *HR*. In a low rock pool, Jan. 1949. *WB*. Drift, Jan. 1945, 1946. *VB*. In large littoral pool, south side of Ellen Point, Jan. 1947, 1949; drift, Jan. 1949. *PB*. Pools of sublittoral fringe and drift, all seasons. *CW*. Drift, Jan. 1946.

ZONARIEAE

CHLANIDOPHORA J. Agardh

CHLANIDOPHORA MICROPHYLLA (Harvey) J. Agardh 1894a, 18, t. 1, f. 3-5. De Toni 1895, 238. Lucas 1936, 87. Levring 1940, 2. *Zonaria microphylla* Harvey 1862, pl. 195. — *WB*. Drift, Jan. 1946. *VB*. Drift, Jan. 1949. *PB*. Drift, Jan. 1949.

POCOCKIELLA Papenfuss

POCOCKIELLA VARIEGATA (Lamouroux) Papenfuss 1943, 467, f. 1-14. *Gymnosorus variegatus* (Lamour). J. Agardh 1894a, 11, pl. 1, f. 1-2. De Toni 1895, 227. — *MR*. Drift, Jan. 1946. *VB*. Shaded end of pool 1, south side of Ellen Point, Jan. 1947. *PB*. In pools of sublittoral fringe on reefs, Jan. 1947, 1948 (as *Gymnosorus* in Pt. II). *RP*. Drift, Jan. 1944, June 1947.

TAONIA J. Agardh

TAONIA AUSTRALASICA J. Agardh 1894a, 30. De Toni 1895, 242. Lucas 1936, 87. — *BH*. Upper sublittoral, Oct. 1947, and drift, Dec. 1948. *CC*. Drift, Jan. 1948. These specimens agree very well with Agardh's description, and certainly belong to *Taonia*. In Melbourne National Herbarium there are no specimens of Wilson's under this name, but some labelled *Taonia atomaria* which are identical with the Kangaroo Island specimens. These are probably authentic specimens of *T. australasica*, and had been originally referred to by Agardh to *T. atomaria*. *T. australasica* resembles *T. atomaria* in form, but is a much smaller plant (4-8 cm. high).

Spatoglossum australasicum Kützing 1859, t. 48, which J. Agardh doubtfully refers to his *T. australasica*, is a quite distinct plant. Cotype (and probably type) specimens are in the Melbourne National Herbarium.

ZONARIA Agardh

ZONARIA CRENATA J. Agardh 1872, 48; 1894a, 13. De Toni 1895, 230. Lucas 1936, 86. — *MR*. Drift, Jan. 1948. *VB*. Drift, Jan. 1946. *PB*. Drift, May 1945, Jan. 1947, 1948. *CW*. Drift, Jan. 1947. *AB*. Drift, Aug. 1948.

ZONARIA DIESINGIANA J. Agardh 1848, 109; 1872, 46; 1894a, 13. De Toni 1895, 229. Lucas 1936, 86. Levring 1946, 216, f. 1. — *SB*. In littoral pools, Jan. 1948. *PB*. In pools of sublittoral fringe, main reef, Dec. 1948. The SB specimens show concentric zones of long hairs on one surface. Germinating spores had apparently become entangled in the hairs, forming numerous young plants which appeared like proliferations.

ZONARIA SPIRALIS (J. Agardh) Papenfuss 1944, 341. *Homoeostrichus spiralis* J. Agardh 1894b, 89. De Toni 1895, 237. Lucas 1936, 86. — *MR*. Drift, Jan. 1948. Rock pools, Jan. 1946. *HR*. In rock pools, Jan. 1949. *VB*. Drift, Jan. 1948, 1949; sublittoral fringe in bay, Jan. 1947. *PB*. In pools of sublittoral fringe on reefs, and drift, all seasons. *CW*. Lower littoral, east side, Jan. 1946.

I am in full agreement with Papenfuss in not recognising *Homoeostrichus* as distinct from *Zonaria*. The "twinning" of cortical cells in both *Z spiralis* and *Z. stuposa* is very variable. Most specimens of *Z. spiralis* are readily distinguished from *Z. subarticulata*, but intermediate specimens with only slight spirality of the upper parts of the thallus occur, and are difficult to place.

ZONARIA STUPOSA R. Brown in Kützing 1849, 564. J. Agardh 1872, 50. *Homoeostrichus stuposus* (R. Br.) J. Agardh 1894a, 15. De Toni 1895, 236. Lucas 1936, 86. — *WB*. Drift, Jan. 1946. *VB*. Drift, Jan. 1948, 1949. *PB*. Drift, Jan. 1944, 1946, 1947, 1948 (as *Homoeostrichus* in Pt. II, 161).

ZONARIA SUBARTICULATA (Lamouroux) Papenfuss 1944, 339. *Z. turneriana* J. Agardh 1872, 48; 1894a, 14. De Toni 1895, 232. Lucas 1936, 86. *Z. interrupta*, Harvey 1862, pl. 190. — *MR*. Drift, Jan. 1946, 1948; lower rock pools, Jan. 1946. *VB*. Drift, Jan. 1948, 1949; sublittoral fringe on reefs in bay, Jan. 1947. *PB*. Drift, May 1945, and sublittoral fringe on reefs, all seasons. *AB*. Drift, Jan. 1948, Aug. 1948; low littoral, Jan. 1945, 1947, 1948. Very variable in size, and usually stunted when in the sublittoral fringe. This was reported in Pt. I. as *Z. turneriana*.

HETEROGENERATE — CHORDARIALES — MYRIONEMATACEAE

MYRIONEMA Greville

MYRIONEMA STRANGULANS Greville. Kützing 1857, t. 93, f. 1. De Toni 1895, 399. De Toni and Forti 1923, 78. Setchell and Gardner 1925, 471, pl. 40, f. 51. Smith 1944, 106, pl. 15, f. 5. *M. leclancheri*, Harvey 1863, Syn. No. 134. — *AR*. Epiphytic on *Ulva lactuca*, upper sublittoral on Shag Rock in Pelican Lagoon, July 1947. Harvey recorded this species as *M. leclancheri* from Georgetown, Tasmania. De Toni and Forti also refer Harvey's specimens to *M. strangulans*.

CORYNOPHLAEACEAE

CORYNOPHLAEA Kützing

CORYNOPHLAEA CYSTOPHORAE J. Agardh 1882, 22, t. 1, f. 1. De Toni 1895, 421. Lucas 1936, 102. — *WR*. On *Cystophora spartioides* in the upper sublittoral, Jan. 1946. *CC*. On *Cystophora intermedia* in sublittoral fringe, Jan. 1945. *PB*. On *Cystophora intermedia* Jan. 1945, 1947, 1948 and *Cyst. siliquosa*, Nov. 1947, in sublittoral fringe. Often very dense on these species of *Cystophora* where aeration is high. Kuckuck (1929, 40) refers this species to *Myriactis* as *M. cystophorae* (J. Ag.) Kuckuck.

CHORDARIACEAE

CLADOSIPHON Kützing

CLADOSIPHON FILUM (Harvey) Kylin 1940, 29. *Mesogloia filum* Harvey 1854, 536. *Bactrophora filum* (Harv.) J. Agardh 1882, 24, t. 1, f. 4. De Toni 1895, 409. — *MR*. Low littoral, west side, Jan. 1947. *VB*. Littoral on reefs in bay, Jan. 1947. *PB*. Littoral on reefs, Jan. 1944, 1946, 1948, Nov. 1947. *AB*. Littoral pools, Jan. 1945.

The thallus is usually simple or sub-simple, with a few branches from a common base. Some MR specimens show numerous lateral "proliferations", but all grades to the simple forms occur in the same area.

CLADOSIPHON VERMICULARIS (J. Agardh) Kylin 1940, 30, t. 5, f. 12. *Bactrophora vermicularis* J. Agardh 1882, 25. De Toni 1895, 409. — *MR*. Drift, Jan. 1946. *CC*. Mid littoral, Jan. 1948. *PB*. Pools on main reef, Jan., Dec. 1947.

MYRIOGLOIA Kuckuck

MYRIOGLOIA SCIURUS (Harvey) Kuckuck 1929, 63, f. 81. Kylin 1940, 12, f. 8A. *Myriocladia sciurus* Harvey 1858, pl. 58. J. Agardh 1882, 19. — *WB*. Littoral on a small reef near beach, Jan. 1946.

POLYCEREA J. Agardh

POLYCEREA NIGRESCENS (Harvey) Kylin 1940, 36, f. 20 A-B, t. 7, f. 16. *Cladosiphon nigrescens* Harvey, Alg. Aus. exs. n. 94. Kützing 1859, t. 1. Kuckuck 1929, 58, f. 73, 74. *Cladosiphon nigricans* Harvey 1860b, 292. *Polycerea ramulosa* J. Agardh 1882, 48, t. 3, f. 3. — *AR*. Upper sublittoral on cockle bank, Jan. 1946. *BH*. Drift, Jan. 1948. *EB*. Drift, Jan. 1946. *WR*. Drift, Jan. 1946. *VB*. Drift, Jan. 1948, 1949, and upper sublittoral in the bay, Jan. 1946. *PB*. Drift, Jan. 1947, 1948.

POLYCEREA ZOSTERICOLA (Harvey) Kylin 1940, 37, t. 7, f. 17. *Cladosiphon zostericola* Harvey 1863, Syn No. 130. Kützing 1859, t. 1. J. Agardh 1882, 43. Kuckuck 1929, 58, f. 75. — *MR*. Drift, Jan. 1946. *VB*. Drift, Jan. 1949. *AB*. Drift, Jan. 1948.

These two species of *Polycerea* are very similar in habit, and both grow on *Posidonia* in similar localities. The figures of Kuckuck illustrate well the differences between them, *P. nigrescens* having large inflated terminal cells on the assimilatory filaments, while *P. zostericola* has not. J. Agardh's figure (1882, t. II, f. 3a) of *P. zostericola* is incorrect in this respect.

TINOCLADIA Kylin

TINOCLADIA AUSTRALIS (Harvey) Kylin 1940, 34, t. 6, f. 14. *Liebmannia australis* Harvey 1860b, 291. Alg. Aus. exs., Nr. 88. *Eudesme australis* J. Agardh 1882, 32. — *VB*, Drift, Jan. 1948.

SPERMATOCHNACEAE

STILOPSIS Kuckuck

STILOPSIS HARVEYANA Kylin 1940, 50, t. 8, f. 22. *Stilophora lyngbyei* Harvey Alg. Aus. exs. Nr. 65; 1863, Syn n. 118 — *AR*. Upper sublittoral in Pelican Lagoon, May 1945, Nov. 1947.

SPLACHNIDIACEAE

SPLACHNIDIUM Greville

SPLACHNIDIUM RUGOSUM (Linn.) Greville. Harvey 1858, pl. 14. Kützing 1860, t. 8. Lucas 1936, 83. Kylin 1940, 55. — *CC* Mid littoral, Jan. 1945.

VB. Upper littoral, south side of Ellen Point, Jan. 1946. *PB*. Upper littoral, Jan. 1944 (very rare). *CW*. Upper littoral, Jan. 1946, 1947, 1948 (common, on granite rock).

SPOROCHNALES — SPOROCHNACEAE

SPOROCHNUS Agardh

SPOROCHNUS HARVEYANUS J. Agardh 1896, 32. *Sporochnus comosus*, Harvey 1859, pl. 104 (not C. Agardh). — *MR*. Drift. Jan. 1946. *WB*. Drift, Jan. 1946. *PB*. Drift, Jan. 1947, Aug. 1948 (as *Sp. comosus* in Pt. II, 161). Examination of a range of specimens may show *Sp. harveyanus* is not distinct from *Sp. comosus* C. Agardh.

SPOROCHNUS RADICIFORMIS (R. Brown) Agardh. Harvey 1862, pl. 225. De Toni 1895, 382. Lucas 1936, 100. — *CC*. Drift, Jan. 1948. *VB*. Shaded part of large littoral pool, south side of Ellen Point, Jan. 1949.

SPOROCHNUS SCOPARIUS Harvey 1854, 535; 1862, pl. 226. De Toni 1895, 383. Lucas 1936, 100. — *WB*. Drift, Jan. 1946. *VB*. Drift, Jan. 1948, 1949. *PB*. Drift, Jan. 1946, 1947. *CW*. Drift, Jan. 1946.

Sporochnus radiciformis and *Sp. scoparius* may well be forms of one species. *Sp. scoparius* is a more robust plant, usually with a prominent main stem; *Sp. radiciformis* is less robust, usually with several slender stems from near the base. Harvey separated them on robustness, angle of branching (wider in *Sp. radiciformis*) and form of receptacles. The slight differences in these features are of doubtful specific distinction, depending on the age of the plant, state of development of receptacles, and habitat.

Kützing's species *Sp. sphaerocephalus*, *Sp. obovatus* and *Sp. cryptocephalus* belong to the *radiciformis-scoparius* complex, and are doubtfully distinct species.

ENCYOTHALIA Harvey

ENCYOTHALIA CLIFTONI Harvey 1859, pl. 62. De Toni 1895, 379. Lucas 1936, 99, f. 55. — *PB*. Drift, Jan. 1944, May 1945, Jan. 1946, 1947.

BELLOTIA Harvey

BELLOTIA ERIOPHORUM Harvey 1859, pl. 69; 1860b, 288, t. 187, f. 1-3. De Toni 1895, 377. Lucas 1936, 97, f. 54. — *MR*. Drift, Jan. 1946. *WR*. Drift, Jan. 1946. *WB*. Drift, Jan. 1946. *VB*. Drift, Jan. 1947, 1948, 1949. *PB*. Drift, Jan. 1946, 1948, 1949.

PERITHALIA J. Agardh

PERITHALIA INERMIS (R. Brown) J. Agardh 1890, 4. De Toni 1895, 378. Lucas 1936, 100. *Carpomitra inermis*, Harvey 1862, pl. 238. — *MR*. Drift, Jan. 1946. *WB*. Drift, Jan. 1946. *CC*. Drift, Jan. 1947. *VB*. Drift, May 1945, Jan. 1946, 1949. *PB*. Two to three feet over edge of main reef (and probably deeper), all seasons.

NEREIA Zanardini

NEREIA AUSTRALIS Harvey 1860b, 289, pl. 187. *Stilophora ? australis* Harvey 1844, 453; Alg. Aus. exs., n. 66. J. Agardh 1848, 86. — *VB*. Drift, Jan. 1948. *PB*. Drift, Jan. 1948.

CARPOMITRA Kützing

CARPOMITRA COSTATA Batters. Newton 1931, 137, f. 84. *C. cabrerae* Kützing 1849, 569; 1859, t. 89, f. 1. Harvey 1871, pl. 14. — *CW*. Drift, Jan. 1946.

DICTYOSIPHONALES — PUNCTARIACEAE

ASPEROCOCCUS Lamouroux

ASPEROCOCCUS BULLOSUS Lamouroux. De Toni 1895, 493. Newton 1931, 172, f. 107. Lucas 1936, 104. Kylin 1947, 75, t. 11, f. 38. *A. turneri,* Harvey 1871, pl. 11; 1863, Syn. n. 119. — *AR.* In the upper sublittoral throughout the inlet, usually epiphytic on *Posidonia,* all seasons. In summer the plants are 2-5 cm. high, increasing in size in late winter (Aug.-Nov.) to up to 60 cm. high and 10 cm. wide, and then becoming very common in the *Posidonia* beds. *MR.* Drift, Jan. 1946. *AB.* Drift, Jan. 1948.

COLPOMENIA Derbes and Solier

COLPOMENIA SINUOSA (Roth) Derbes and Solier. De Toni 1895, 489. Setchell and Gardner 1925, 539, pl. 45, f. 82-86. Lucas 1936, 103. Smith 1944, 128, pl. 20, f. 1. *A. sinuosus,* Harvey 1863, Syn. N. 120. — *AR.* Upper sublittoral in the lagoons, mainly winter (Aug.-Nov.), with small plants on the buoys most of the year. *EB.* Lower littoral on rocks, Jan. 1945. *MR.* Lower littoral, Jan. 1947. *WR.* Drift, Jan. 1946. *PB.* In the sublittoral fringe and littoral on reefs, Jan., Aug. 1948.

HYDROCLATHRUS Bory

HYDROCLATHRUS CLATHRATUS Bory. Setchell and Gardner 1925, 543. *H. cancellatus,* Harvey 1859, pl. 98. De Toni 1895, 490. Lucas 1936, 103. — *AR.* On red buoy, Dec. 1948. *EB.* Drift, Jan. 1946. *MR.* Drift, Jan. 1946. *AB.* Drift, Jan. 1948.

SCYTOSIPHON Agardh

SCYTOSIPHON LOMENTARIA (Lyngbye) J. Agardh. De Toni 1895, 485. Setchell and Gardner 1925, 531, pl. 44, f. 72, 74. Newton 1931, 178, f. 111. Lucas 1936, 103. Smith 1944, 129, pl. 19, f. 1. — *AR.* On *Posidonia,* upper sublittoral, and on the buoys, winter (July-Nov.). *MR.* In rock pools, Jan. 1946. *PB.* In pools and on rock in rear littoral, Jan. 1944, May 1945, Sept. 1946, Nov. 1947.

LAMINARIALES — LESSONIACEAE

MACROCYSTIS Agardh

MACROCYSTIS PYRIFERA (Linn.) Agardh. De Toni 1895, 372. Setchell and Gardner 1925, 627, pl. 64, 65. Lucas 1936, 95, f. 53. Smith 1944, 144, pl. 31, f. 3-4. — *PB.* Drift, Jan. 1944. Several fragments which may have drifted from some distance away. No beds exist along the coast as far as is known.

ALARIACEAE

ECKLONIA Horneman

ECKLONIA RADIATA (Agardh) J. Agardh. De Toni 1895, 354. Lucas 1936, 95, f. 52. Papenfuss 1944, 341. — *MR.* Upper sublittoral. *CC.* Sublittoral fringe in sheltered inlet and more exposed parts. Sou'-West River mouth. Dec. 1934 (Cleland and Black). *VB.* Drift. *PB.* In the sublittoral fringe on reefs, occasional. *CW.* Upper sublittoral, east side, occasional. *RP.* Upper sublittoral, common. Present in all seasons in all localities.

Papenfuss (1940, 210) considers that *E. biruncinata* (Bory) Pap., (*E. exasperata* (Turner) J. Agardh) and *E. richardiana* J. Ag. are specifically distinct from *E. radiata,* being separated on form and presence of marginal and surface spines. Degree of spininess and form are, however, both very variable features, depending on habitat, and in South Australia all the above species must be combined. At Cape Coudie, in a small inlet (50 metres long

by 5-10 metres wide), relatively sheltered at the inner end and exposed at the outside, gradations in spininess and form are found. Sheltered plants are simple, consisting of a main elongate lamina with small marginal outgrowths, but no spines. In rougher parts a few marginal spines appear, and in the rough condtiions at the end of the channel spines densely cover the surface and edges, the plants being dense and stout.

These variations can only be regarded as ecological forms of the one species, and in view of the gradations between them it seems useless to give them even varietal names. Stephenson (1948, 284) has come to a similar belief concerning the South African forms of this species. I suspect that *E. lanciloba* Sonder is only another form of *E. radiata.*

CYCLOSPORAE — FUCALES — NOTHEIACEAE

HORMOSIRA Endlicher

HORMOSIRA BANKSII (Turner) Decaisne. Harvey 1860a, pl. 135. De Toni 1895, 187. Lucas 1936, 80. Osborn 1948, 47-71. — *AR.* Lower littoral throughout the inlet. *BH.* Lower littoral. *MR* and *WR.* Low rock pools. *VB.* Lower littoral on reefs in bay. *PB.* Lower littoral on reefs. *RP.* Lower littoral. Present in all seasons and likely to be found anywhere around the island except in very rough places on steep rock. *H. banksii* shows a variety of ecological forms. On the whole each form is characteristic of a particular habitat, but gradations between them occur in intermediate habitats. The following forms occur around Kangaroo Island.

f. *labillardieri* (Bory) Harvey. American River Inlet.
f. *sieberi* (Bory) Harvey. Pools and reefs on north-west and south coasts.
f. *pumila* Sonder (in Kützing 1860, t. 4, f. 2). Rocky Point and Ballast Head.

NOTHEIA Bailey and Harvey

NOTHEIA ANOMALA Bailey and Harvey. Harvey 1862, pl. 213. De Toni 1895, 224. Lucas 1936, 82, f. 48. — *VB.* On *Hormosira banksii* on reefs in bay. *PB.* On *H. banksii* on reefs. All seasons. *Notheia* is usually parasitic on *Hormosira banksii,* but has only been found on f. *sieberi* on reefs on the south coast, where wave action is strong.

FUCACEAE

MYRIODESMA Decaisne

MYRIODESMA INTEGRIFOLIA Harvey 1860b, 286, pl. 186. J. Agardh 1890, 6; 1894b, 92. De Toni 1895, 191. Lucas 1936, 79, f. 47. — *VB.* Drift, Jan 1948, 1949. *PB.* Drift, Jan. 1948.

MYRIODESMA LATIFOLIA Harvey var. DURIUSCULA J. Agardh. Harvey 1858, pl. 24 (for species). J. Agardh 1894b, 92. De Toni 1895, 192. — *CC.* Drift, Jan. 1948. *VB.* In shaded parts of large rock pools, south side of Ellen Point, Jan. 1945, 1949.

MYRIODESMA QUERCIFOLIUM (Bory) J. Agardh 1848, 192; 1890, 7; 1894b, 93. De Toni 1895, 193. — South'-West River mouth. Drift, Jan. 1945. *VB.* Drift, Jan. 1948, 1949. *PB.* Drift, 1944, 1946, 1947, Dec. 1948 (as *M. calophyllum* in Pt. II, 161). J. Agardh (1894b, 94) described *M. calophyllum* from Port Phillip (J. B. Wilson), differing from *quercifolium* in

having an entire (not spinous) margin. The Kangaroo Island specimens are mostly entire, sometimes with one or two small marginal spines. Most of the specimens in Melbourne National Herbarium under *M. quercifolium* and *M. calophyllum* are entire, some with a few marginal spines. Without examining the type material, together with a range of specimens, it is difficult to judge whether these two species are distinct or not, but I suspect they are not. *M. quercifolium* has been recorded generally in the Southern Australian region, and the type locality is somewhere in this region. Should *M. calophyllum* prove to be distinct from *M. quercifolium*, the Kangaroo Island specimens will probably belong to the former.

SCYTOTHALIA Greville

SCYTOTHALIA DORYCARPA (Turner) Greville. Harvey 1858, pl. 9. De Toni 1895, 132. Lucas 1936, 69, f. 42. — *WR*. Drift, Jan. 1946. Sou'-West River mouth. Drift, Jan. 1945. *VB*. In shaded part of the large littoral pool, south side of Ellen Point, Dec. 1945, Jan. 1948, and drift, May 1945, Jan. 1949. *PB*. Sublittoral fringe on reefs, all seasons.

SEIROCOCCUS Greville

SEIROCOCCUS AXILLARIS (Turner) Greville. Harvey 1858, pl. 4. De Toni 1895, 131. Lucas 1936, 68, f. 41. — *MR*. Drift, Jan. 1946. *PB*. Drift, Jan. 1946, 1948, June 1947. *CW*. Drift, Jan. 1946.

XIPHOPHORA Montagne

XIPHOPHORA CHONDROPHYLLA (R. Brown) Montagne var. MINUS J. Agardh. De Toni 1895, 213. Heine 1932, 558, pl. 17, f. 2, 3. Lucas 1936, 81. — *MR, WR, CW* and *AB*. Growing in patches in the upper sublittoral, probably all seasons. *PB*. Small patches in the *Cystophora*-coralline association on the main reef, all seasons.

This species was at first confused with *Acrotylus australis* (see correction in Pt. II). It grows to 8 or 12 cm. high, and has rarely been found fertile. Kangaroo Island is probably the extreme west of the geographic range of var. *minus*.

CYSTOSEIRACEAE

CARPOGLOSSUM Kützing

CARPOGLOSSUM CONFLUENS (R. Brown) Kützing. Harvey 1860a, pl. 159. De Toni 1895, 182. Lucas 1936, 78, f. 46. — *MR*. Drift, Jan. 1946. *WB*. Drift, Jan. 1946. *VB*. Drift, May 1945, Jan. 1948, 1949. *PB*. Drift, Jan. 1944, May 1945, Jan. 1948. Only found in the sublittoral.

CYSTOPHORA J. Agardh

Some authors have used the generic name *Blossevillea* Decaisne. *Cystophora* J. Agardh appears in the "Nomina Generica conservanda proposita" of the 1935 edition of the International Rules, and it is to be hoped this well-known name will be adopted at the next Botanical Congress.

CYSTOPHORA BOTRYOCYSTIS Sonder 1852, 670. Harvey 1858, pl. 56. De Toni 1895, 144. Lucas 1936, 72. — *RP*. Drift on beach near AR inlet, Jan. 1944, May 1945, June 1947, Aug. 1948 (probably growing in several meters in Eastern Cove). *EB*. Drift, Jan. 1946.

CYSTOPHORA BROWNII (Turner) J. Agardh. Harvey 1860a, pl. 169. De Toni 1895, 146. Lucas 1936, 73. — *MR*. In littoral pools and upper sublittoral, Jan. 1946, 1948. *VB*. In large littoral pool, south side of Ellen

Point, all seasons. *PB*. In littoral pools on a reef, Jan. 1947, and drift, June 1947

CYSTOPHORA CEPHALORNITHOS (Labilladiere) J. Agardh. Harvey 1859, pl. 116. De Toni 1895, 138. Lucas 1936, 70. — *AR*. Upper sublittoral at head of lagoons, Jan. 1948 (probably all seasons), and drift near American River jetty, June 1947. Not common. *K*. Drift, Jan. 1944, 1945.

CYSTOPHORA DUMOSA (Greville) J. Agardh 1870, 444. De Toni 1895, 142. *Blossevillea dumosa*, Kützing 1860, t. 73, f. 1. — *VB*. Drift, May 1945, Jan. 1946. *PB*. Drift, all seasons.

CYSTOPHORA GREVILLEI (Agardh) J. Agardh. Harvey 1862, pl. 183. De Toni 1895, 144. Lucas 1936, 73. — *MR*. Drift, Jan. 1946. *VB*. Drift, May 1945, Jan. 1946. *PB*. Drift, Jan. 1944, April 1947, Dec. 1948. *RP*. Drift, June 1947.

CYSTOPHORA INTERMEDIA J. Agardh 1897, 102. — In the sublittoral fringe throughout the Exposed Rocky Coast Formation, all seasons (see Pt. I).

CYSTOPHORA MONILIFERA J. Agardh 1848, 241. Harvey 1863, pl. 245. De Toni 1895, 146. Lucas 1936, 73. — *EB, MR, WR, WB, CC, VB, PB, CW, AB*, all drift from sublittoral, all seasons. Widely distributed in the sublittoral around the island. Rarely on rock in the channel at *AR* inlet.

CYSTOPHORA PANICULATA (Turner) J. Agardh. Harvey 1863, pl. 247. De Toni 1895, 149. Lucas 1936, 74. — *WR, MR*, and *CC*. Drift. *VB*. Drift and in the large littoral pool, south side of Ellen Point. *PB*. In the *Cystophora*-coralline and sublittoral fringe associations on reefs, and sublittoral. *CW*. Drift. All seasons in all localities.

CYSTOPHORA PECTINATA (Greville and Agardh) J. Agardh. De Toni 1895, 139. Lucas 1936, 71. *Blossevillea pectinata*, Kützing 1860, t. 74, f. 2. — *WR*. Drift, Jan. 1946. *CC*. Drift, Jan. 1948. *PB*. Drift, May 1945, Jan. 1946, 1948. Restricted to the sublittoral.

CYSTOPHORA PLATYLOBIUM (Mertens) J. Agardh. De Toni 1895, 138. Lucas 1936, 71. *Cystophora lyallii* Harvey 1855, 214, pl. 108. — *MR*. Drift, Jan. 1946, 1948. *CC*. Drift, Jan. 1948. Sou'-West River mouth, Dec. 1934 (Cleland and Black). *VB*. Drift, May 1945, Jan. 1946, 1948, 1949. *PB*. Drift, Jan. 1944, May 1945, April 1947, Jan. 1948. *CW*. Drift, Jan. 1946, 1948. Restricted to sublittoral.

CYSTOPHORA POLYCYSTIDEA Areschoug in J. Agardh 1848, 240. De Toni 1895, 148. Lucas 1936, 74. Widely distributed in the upper sublittoral within the Sheltered Rocky Coast Subformation, all seasons. Also in very sheltered pools at *PB* and *CW*, all seasons.

CYSTOPHORA RACEMOSA Harvey. Alg. Aus. Exs. n. 5. J. Agardh 1870, 441. De Toni 1895, 140. Lucas 1936, 71. *Blossevillea racemosa*, Kützing 1860, t. 85, f. 1. — *PB*. Drift, Sept. 1946, June 1947.

CYSTOPHORA RETORTA (Mertens) J. Agardh 1848, 243; 1870, 443. De Toni 1895, 141. Lucas 1936, 72. — *VB*. Drift, Jan. 1948. *PB*. Drift, May 1945, July 1947, Jan. 1948.

CYSTOPHORA SILIQUOSA J. Agardh 1870, 445. De Toni 1895, 143. Lucas 1936, 72 — In the upper sublittoral and in low, large littoral pools throughout the Rocky Shore Formation. Common on reefs on the south coast. All seasons.

CYSTOPHORA SPARTIOIDES (Turner) J. Agardh. Harvey 1859, pl. 76. De Toni 1895, 145. Lucas 1936, 73. — *EB* and *MR*. Upper sublittoral, Jan. 1946. *VB*. In the large littoral pool, south side of Ellen Point, and sublittoral in bay, Jan. 1946, 1947. *PB*. In pools on the sublittoral fringe, all seasons. *CW*. Upper sublittoral, east side, Jan. 1946, 1947. *AB*. Upper sublittoral, Jan. 1947.

CYSTOPHORA SUBFARCINATA (Mertens) J. Agardh 1848, 240. De Toni 1895, 147. Lucas 1936, 74. — Widely distributed in the upper sublittoral and low littoral pools within the Rocky Coast Formation. Very common on south coast reefs. All seasons. The north coast form (MR to AB) bears vesicles.

CYSTOPHORA UVIFERA (Agardh) J. Agardh. Harvey 1860a, pl. 175. De Toni 1895, 137. Lucas 1936, 70. — South'-West River mouth, Dec. 1934 (Cleland and Black). *VB*. Littoral on reefs in bay, all seasons. *PB*. Littoral on reefs and occasionally drift from deeper water, all seasons. The seasonal variation in vesicle formation at PB has been described previously (Pt. II, 154). *AB*. Drift, Aug. 1948. This species probably occurs on all the reefs along the south coast.

CYSTOPHYLLUM J. Agardh

CYSTOPHYLLUM MURICATUM (Turner) J. Agardh 1848, 231. De Toni 1895, 154. Lucas 1936, 74. — *AR*. Occasional in the upper sublittoral, mainly near the channel edge. *K*. Drift. *EB*, *WR* and *MR*. Upper sublittoral. *PB*. Littoral pool association on reefs. *RP*. Low littoral. All seasons in all localities. Widely distributed in the Sheltered Rocky Coast Formation.

SARGASSUM

SARGASSUM BIFORME Sonder. J. Agardh 1889, 75, pl. 23, f. 3. De Toni 1895, 34. Lucas, 1936, 67. — *AR*. Sublittoral and upper sublittoral on rock along channel, occasional, all seasons. Also cast up (from Eastern Cove), May 1945, Sept 1946.

SARGASSUM BRACTEOLOSUM J. Agardh 1889, 67, pl. 4, pl. 19, f. 2. De Toni 1895, 28. Lucas 1936, 66. — *WR*. Upper sublittoral, Jan. 1946. Sou'-West River mouth, Dec. 1934 (Cleland and Black) and drift, Jan. 1945. *VB*. Upper sublittoral at the end of Ellen Point and in the large littoral pool, south side of Ellen Point, Jan. 1946. *DB*. Sublittoral fringe on reefs, Jan. 1947. *PB*. Sublittoral fringe on reefs and sublittoral, all seasons.

SARGASSUM CRISTATUM J. Agardh 1889, 84, t. 25, f. 5. De Toni 1895, 44. Lucas 1936, 67. — *EB*. Drift, Jan. 1946. *PB*. Drift, Jan. 1944, 1945, April 1947, Dec. 1948.

SARGASSUM LACERIFOLIUM (Turner) Agardh. Harvey 1862, pl. 208. J. Agardh 1889, 74, t. 23, f. 2. De Toni 1895, 34. Lucas 1936, 66. — *PB*. Drift, April 1947, July 1947, Dec. 1948.

SARGASSUM MERRIFIELDII J. Agardh 1889, 115, pl. 30, f. 4. De Toni 1895, 96. Lucas 1936, 68. — *BH*. Upper sublittoral, Oct. 1947, Dec. 1948. The species is somewhat variable in form but agrees well with J. Agardh's description and figures.

SARGASSUM MURICULATUM J. Agardh 1872, 58; 1889, 44, pl. 14, f. 2. De Toni 1895, 10. Lucas 1936, 63. — *MR*. Drift, Jan. 1946. *VB*. In the large littoral pool, south side of Ellen Point, Dec. 1945, Jan. 1949. *PB*. Littoral on reefs,

all seasons. (Seasonal variation described in Pt. II, 155.) *CW*. In rock pools, south side, Aug. 1948. *RP*. Drift, June 1947, Aug. 1948.

SARGASSUM SONDERI J. Agardh 1889, 44, pl. 14, f. 1-2. De Toni 1895, 10. Lucas 1936, 63. *Cystophora sonderi*, Harvey 1863, pl. 243. — *PB*. Drift, May 1945.

SARGASSUM TRICHOPHYLLUM J. Agardh 1889, 52, pl. 17. De Toni 1895, 16. Lucas 1936, 64. — *AR*. Drift (probably from Eastern Cove), June 1947. *PB*. Drift, all seasons.

SARGASSUM VARIANS Sonder. J. Agardh 1889, 49, pl. 16, f. 1-8. De Toni 1895, 14. Lucas 1936, 64. — *MR*. Upper sublittoral, Jan. 1946. *PB*. Drift May 1945, Sept. 1946, April, July 1947.

SCABERIA Greville

SCABERIA AGARDHII Greville. Harvey 1860a, pl. 164. De Toni 1895, pl. 179. Lucas 1936, 76. — *EB*. Upper sublittoral. *VB* and *PB*. Drift. *RP*. Upper sublittoral. Common, all seasons. *Scaberia rugulosa* J. Agardh is only a slenderer form of this species.

RHODOPHYTA

BANGIOIDEAE — BANGIALES — BANGIACEAE

BANGIA Lyngbye

BANGIA FUSCOPURPUREA (Dillwyn) Lyngbye. De Toni 1897, 11. Newton 1931, 238, f. 145. Taylor 1937, 218, pl. 28, f. 10-12. Lucas and Perrin 1947, 125. f. 4. — *AR*. On black buoy, Sept. 1946, Jan. 1947. *CW*. At the edge of exposed rock pools, south side, Aug. 1948. This seems to be mainly a winter form, and has usually disappeared at American River by January.

PORPHYRA C. Agardh

PORPHYRA UMBILICALIS (Linnaeus) J. Agardh. Newton 1931, 240, f. 146. Taylor 1937, 221, pl. 30, f. 1-3. Lucas and Perrin 1947, 125, f. 5, 6. *Wildemania umbilicalis* (L.) De Toni 1897, 20. — *AR*. Upper littoral on Shag Rock and Pig Island (probably elsewhere in the lagoons), Sept. 1946, July and Nov. 1947. — *CW*. Upper littoral, south side, Aug 1948. This is a winter form, occurring in American River inlet from June to early November.

FLORIDEAE — NEMALIONALES — ACROCHAETIACEAE

ACROCHAETIUM Naegeli

ACROCHAETIUM BOTRYOCARPUM (Harvey) J. Agardh 1876, 10. Papenfuss 1945, 313. *Callithamnion botryocarpum* Harvey 1854, 563. — *PB*. Drift, on *Polyceria nigrescens*, Jan. 1948.

BONNEMAISONIACEAE

ASPARAGOPSIS Montagne

ASPARAGOPSIS ARMATA Harvey 1854, 544; 1862, pl. 192. De Toni 1900, 772. Feldmann 1942, 82, 102, 109. Lucas and Perrin 1947, 244. — *BH*. Upper sublittoral, Oct. 1947. *WB*. Drift, Jan. 1946. *PB*. Drift, Jan. 1944, May 1945, Jan. 1948.

Feldmann has presented evidence, based on culture experiments and morphology, that *Falkenbergia* (Rhodomelaceae) is the terasporic phase of *Asparagopsis armata*. *Falkenbergia* has not yet been found around Kangaroo Island.

ASPARAGOPSIS TAXIFORMIS (Delile) Collins and Hervey. Feldmann 1942, 81. *Asparagopsis sanfordiana* Harvey 1858, pl. 6. De Toni 1900, 771. — North coast (no details). This single specimen in the Adelaide University Herbarium agrees with others from Port Willunga, in Gulf St. Vincent, which are referable to *A. sanfordiana* Harvey. Feldman and others consider this species identical with *A. taxiformis,* any differences being due to the habitat.

BONNEMAISONIA C. Agardh

BONNEMAISONIA ASPARAGOIDES (Woodward) Agardh var. HYPNOIDES Reinbold. De Toni 1900, 768. Newton 1931, 269, fig. 164. Reinbold 1899, 47 (for variety). Lucas and Perrin 1947, 243. — *PB.* Drift, Aug. 1948. A single specimen, identical with a cotype of Reinbold's var. *hypnoides* in Adelaide University Herbarium, and which seems to agree closely with figures of *B. asparagoides.*

DELISEA Lamouroux

DELISEA HYPNEOIDES Harvey 1860a, pl. 134. De Toni 1900, 761. Lucas and Perrin 1947, 241. — *SB.* Drift, Jan. 1948. *WR, MR* and *WB,* all drift, Jan. 1946. *CC.* Drift, Jan. 1947, 1948. *VB.* Drift, Jan. 1944, 1946, 1948, 1949. *PB.* Drift, Jan. 1944, 1946, 1947. These specimens are rather denser than Harvey's figure, and were reported as *D. elegans* in Pt. I, 244.

DELISEA PULCHRA (Greville) Montagne. Harvey 1858, pl. 16. De Toni 1900, 763. Lucas and Perrin 1947, 241. — *WR.* Drift, Jan. 1946. *WB.* Drift Jan. 1945, 1946. *PB.* Drift, Jan. 1947.

HELMINTHOCLADIACEAE

LIAGORA Lamouroux

LIAGORA HARVEYANA Zeh 1913, 270. De Toni 1924, 92. Lucas and Perrin 1947, 134. *Liagora viscida,* Harvey Alg. Aus. exs. n. 348B; 1863, Syn n., 477. — *PB.* Littoral and sublittoral fringe on reefs, all seasons but variable in occurrence. *CW.* In a rock pool, south side, Jan. 1948.

LIAGORA WILSONIANA Zeh 1913, 269. De Toni 1924, 94. Lucas and Perrin 1947, 134. — *PB.* Littoral, on sloping rock, Jan. 1948. No authentic specimens are available for comparison, but the specimens agree very well with Zeh's description.

NEMALION Targioni-Tozzetti

NEMALION HELMINTHOIDES (Velley) Batters. Cotton 1912, 133. Newton 1931, 256. Lucas and Perrin 1947, 131, f. 7. *N. lubricum* Duby. Smith 1944, 186, pl. 41, f. 5. — *AR.* Mid littoral on a post on Strawbridge Point, Jan. 1949. *BH.* Mid and lower littoral, Jan., Dec. 1948. *MR.* Mid littoral, Jan. 1946, 1947, 1948. *PB.* Sublittoral fringe, main reef, rare, Jan. 1947. In form this species ranges from plants with a few simple branches from a common base to ones dichotomously or even proliferously branched many times. (see fig. 2). These latter dichotomous forms are included by most authors under *N. multifidum* (Weber and Mohr) J. Agardh, but such a great variation in degree of branching is found, even in the same situation, that only one species can be maintained around Kangaroo Island. Some of the forms found in one colony at Ballast Head are shown in fig. 2. The Middle River specimens are usually rather simple, those at Pennington Bay with numerous branches. Cotton also found difficulty in separating *N. helminthoides* and *N. multi-*

fidium at Clare Island, Ireland, and suggested they may be forms of the one species. *N. helminthoides* has priority as a specific name over *N. multifidum* if they are to be united.

May 1945, 122, recorded *N. multifidum* from New South Wales, noting that there were few branches in her specimens. I have seen plants of *Nemalion* at Harbord, N.S.W., which show very simple thalli, which are best referred to *N. helminthoides*.

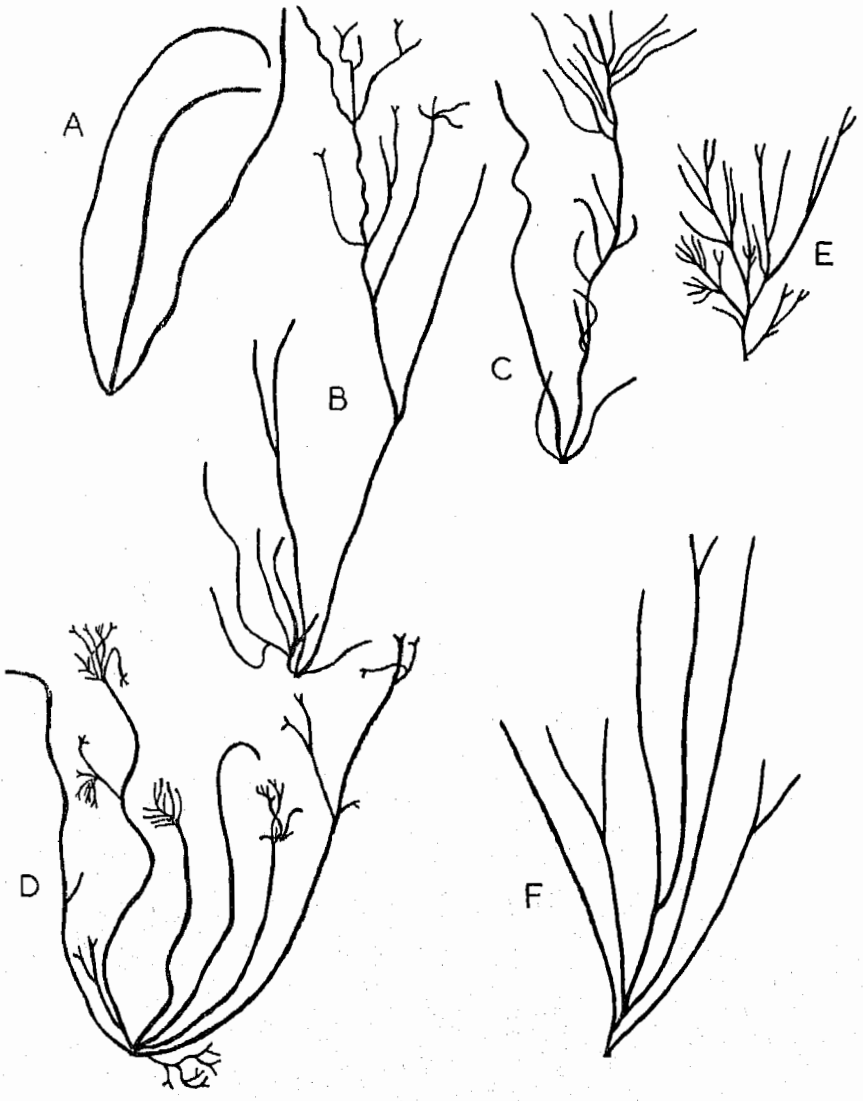

Fig 2

The range of form in *Nemalion helminthoides* on Kangaroo Island. A. A typical specimen from the coast at Middle River. B, C, D, F. Specimens from Ballast Head. The form shown in A also occurs here. E. A specimen from Pennington Bay. Approx. ½ natural size.