

MARINE ALGAE
FROM THE TROPICAL ATLANTIC OCEAN:
V. ALGAE FROM THE LESSER ANTILLES

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Introduction

In preparing a general account of the marine algae of the West Indies and neighboring coasts the writer has had many occasions to note apparent discontinuities of range, or ranges of conspicuous algae much less extensive than it seems reasonable to expect. One who knows the West Indian algal flora well discounts these deceptive ranges, but is nevertheless restricted in the range he can cite for species. The algae of very few places in the West Indies or nearby have been thoroughly studied; even those places that have been visited and the algae superficially studied are widely scattered.

The marine algae of the Virgin Islands (while still the Danish West Indies) were thoroughly studied and described by Børgesen (1913-20), and his papers are the most informative of any dealing with West Indian algae. Famous among the algal works on the Lesser Antilles are the books based on the collections of A. Schramm and H. Mazé in Guadeloupe (Schramm and Mazé 1865, 1866; Mazé and Schramm 1870-77), the identifications having been made by the brothers Crouan, well-known phycologists of Brest. These are rare books in the original issues. The collections were made with great discernment, but the identifications took little account of the great variability of many of these plants, and the publications while proposing scores of new species seldom provided descriptions of the plants. It appears that no definitive set of specimens was set aside; several institutions possess considerable series of them but the specimens under a given collection number are not always identical as to species. Hamel and Hamel-Joukov supplemented these works later (1929, 1931), as did Questel (1951).

Grieve gave a brief list of Dominican algae (1909). The algae of Martinique have often been collected but reported only in scattered notes. A study of the algae of Barbados (Vickers 1905, 1908) yielded a rather limited list and a handsome atlas of selected Chlorophyceae and Phaeophyceae. The writer has reported on small collections from the Lesser Antilles in a few papers (1929, 1940, 1942). Lists

from several sources appear in the reports of the famous H.M.S. "Challenger" expedition, but they are in part simply recapitulations of earlier-published accounts.

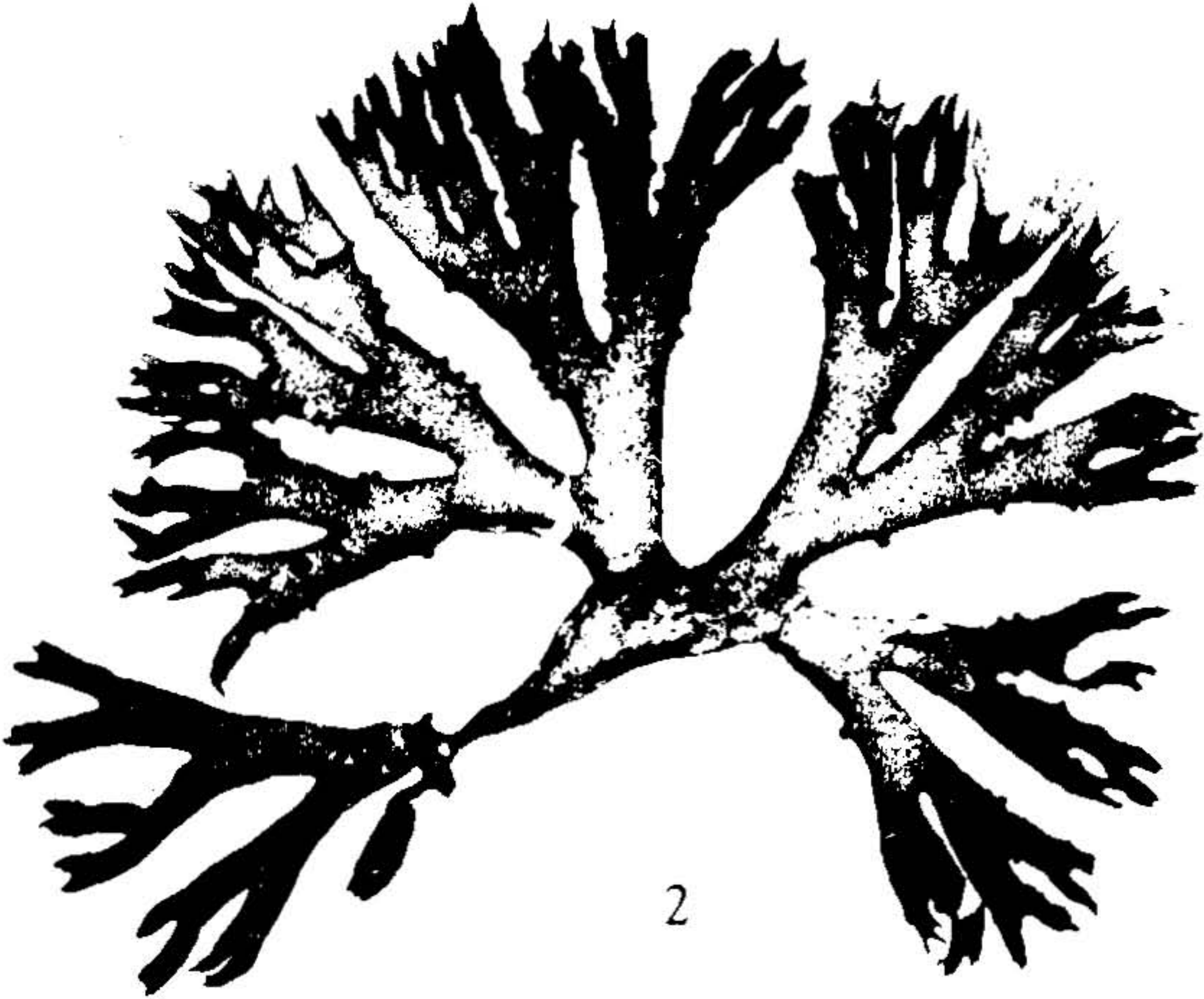
The only comprehensive catalog of West Indian (including Lesser Antilles) algae is that of Murray (1888, 1889) which brings together all reports up to that date in one list, but unfortunately it is quite uncritical, including records almost without question or verification, in particular those of Schramm and Mazé without remark, even when their names are *nomina nuda*. The writer in his recent (1960) general work has attempted to select the most reliable reports from the Lesser Antilles as well as other West Indian and mainland countries and to segregate those which are doubtful.

It is very satisfying to be able to report now on useful collections from the British Virgin Islands, Barbuda, Nevis, and Antigua, and even more substantial ones from St. Kitts, St. Lucia, and Grenada, which in the very great majority of cases provide the first records of these plants from those islands, and in several cases extend the known ranges of the plants along the chain. These collections did not come to hand in time to be studied and the records entirely incorporated in the general account mentioned above (Taylor 1960), though it was possible to introduce a very considerable number of the Grenada records and a few others of special interest. No general conclusions can be derived from these collections—they fill in gaps in our knowledge but do not change our general picture of the West Indian algal flora.

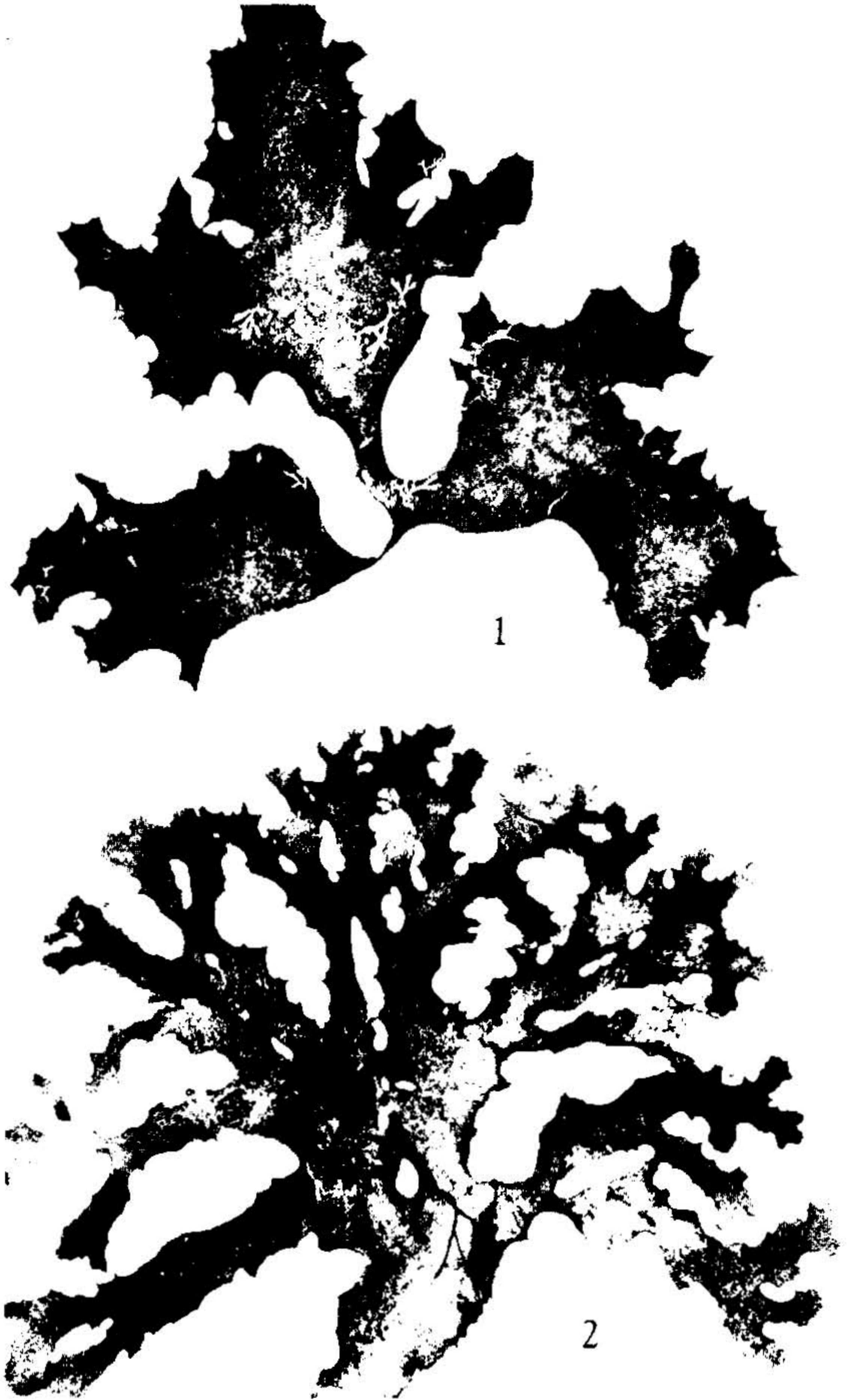
The material from the Smithsonian-Bredin Caribbean Expeditions of 1958 and 1959 was submitted through the kindness of Dr. Fenner A. Chace, Jr., Curator of Marine Invertebrates, U.S. National Museum, and Dr. Waldo L. Schmitt, Emeritus Head-Curator of Zoology and one of the collectors on the expeditions. That from the Institute of Jamaica-Arnold Arboretum (Harvard University) Expedition was submitted by C. Bernard Lewis, Director of the Institute, on behalf of the collector, Mr. George R. Proctor and of Mrs. Lena Green, the curatorial assistant who prepared the material for study. To all of these the writer is exceedingly grateful for the opportunity of studying the specimens. The first set of the Smithsonian-Bredin collection is in the U.S. National Museum, and that of the plants collected by Mr. Proctor in the Science Museum of the Institute of Jamaica.

Localities

As a large number of species are involved and as it is impossible in any case to designate the precise environment of individual specimens, since they were grouped together in large jars, a general characterization of each major station will be given below. The individual



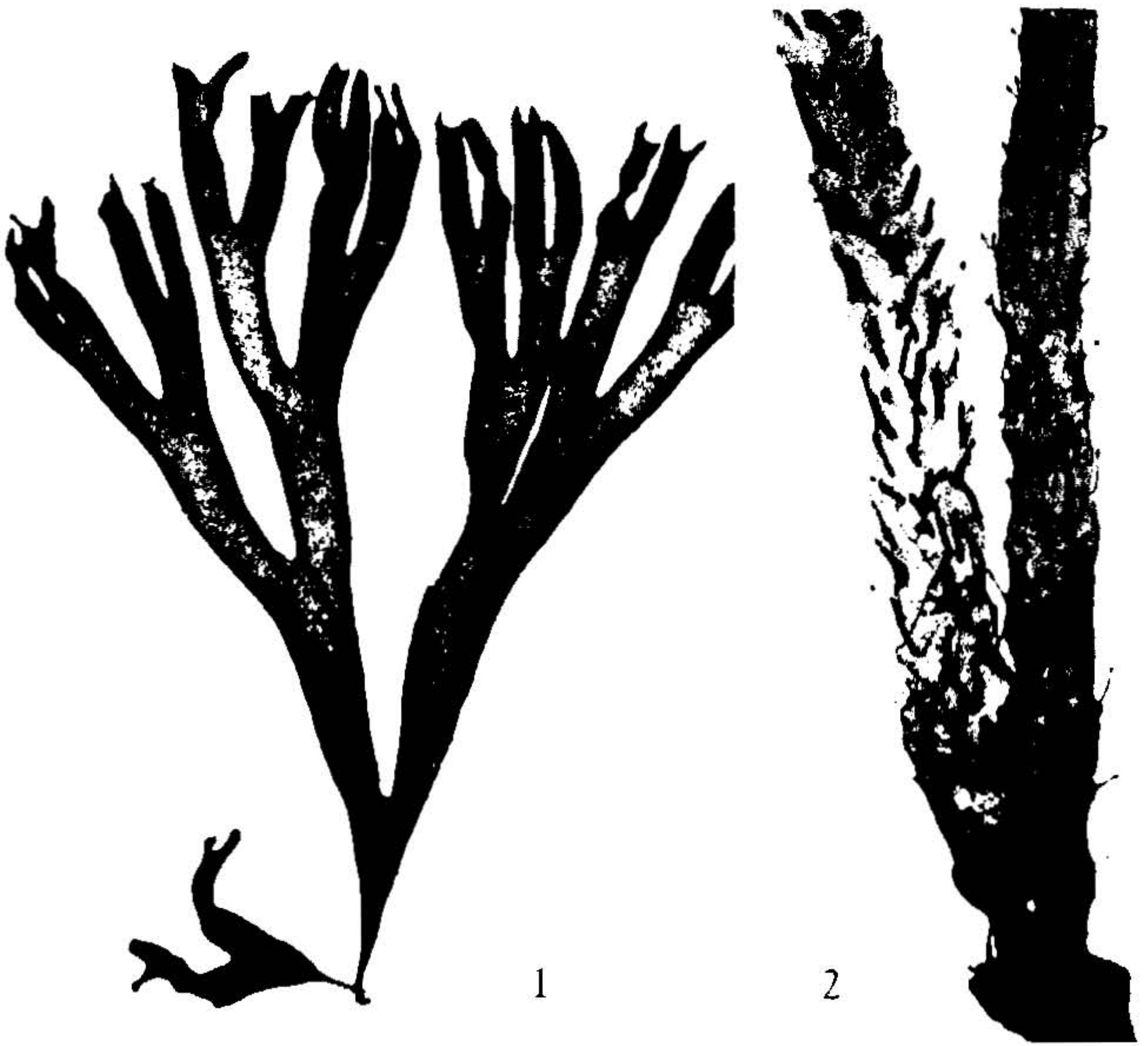
FIGURES 1-2. *Sarcodiotheca caribaea*: 1, spermatangial plant, $\times 1.35$; 2, type, cystocarpic plant, $\times 1.35$.



FIGURES 1-2. *Meristotheca tobagensis*: 1, cystocarpic plant, $\times 1.7$; 2, type, spermatangial plant, $\times 1.9$.



FIGURES 1-2. *Waldia antillana*: 1, cystocarpic plant, $\times 1.1$; 2, type, tetrasporic plant, $\times 1.1$



FIGURES 1-2 - -1, *Sarcodiotheca caribaea*, tetrasporic plant, $\times 1.3$. 2, *Halidoria antillana*, detail of part of a tetrasporic plant showing stichidia, $\times 2.3$.

numbers for the Smithsonian specimens were supplied by the writer when mounting the plants for study; those with the Proctor specimens were assigned by the Science Museum.

SMITHSONIAN-BREDIN CARIBBEAN EXPEDITION OF 1958

The algae of the Smithsonian-Bredin Expeditions were collected incidental to other tasks by various persons, particularly by Dr. Waldo L. Schmitt, to whose continuing interest in all living things of the shore, and generosity in contributing the plants for study, the writer has been deeply indebted for many years. Dr. Schmitt collected at most of the localities; Dr. Richard S. Cowan collected at Pigeon Island, St. Lucia, at some of the Barbuda localities, and Man-of-War Bay, Tobago, and Dr. Paul Denckla collected the algae at Antigua.

Station 9-58. British Virgin Islands, B.W.I., Guano Island, White Bay. Reefs in a cove, from honeycombed rocks and Porites clumps, just off shore and at a depth of about 2 meters, Mar. 28, 1958. Collector: W. L. Schmitt.

Stations 18 & 21-58. British Virgin Islands, B.W.I., Peter Island, Little Bay. Dredged from 4.5-15.0 meters, Mar. 29, 30, 1958. Collector: W. L. Schmitt.

Station 42-58. British Virgin Islands, B.W.I., Anegada Island, Pomato Point. Collected over the edge of a reef and on eel-grass flats at depths to one meter, Apr. 8, 1958. Collector: W. L. Schmitt.

Station 67-58. Nevis, B.W.I., Charlestown. Dredged about the anchorage over a weedy bottom at 3.6-5.5 meters, Apr. 16, 1958. Collector: W. L. Schmitt.

Station 113a-58. Barbuda, B.W.I., Gravenor Landing. Collected along shore in honeycombed coral rock and limestone, and in turtle grass beds, Apr. 28, 1958. Collector: W. L. Schmitt.

SMITHSONIAN-BREDIN CARIBBEAN EXPEDITION OF 1959

Tobago, B.W.I., Man-of-War Bay, Apr. 7, 1959. Collector: R. S. Cowan.

St. Lucia, B.W.I., Marigot Bay, Apr. 14, 1959. Collectors: W. L. Schmitt et al.

St. Lucia, B.W.I., Pigeon Island, Apr. 16, 1959. Collector: R. S. Cowan.

Barbuda, B.W.I., Barbuda lagoon, Apr. 25, 1959. Collector: R. S. Cowan.

Barbuda, B.W.I., Cocoa Point, Apr. 26, 1959. Collector: R. S. Cowan.

Station 119-59. Antigua, B.W.I., Reeds Beach, a private beach in the Mill Reef Club area north of English Harbor, May 4, 1959. Collector: Paul Denckla.

INSTITUTE OF JAMAICA-ARNOLD ARBORETUM EXPEDITIONS OF 1958, 1959

Collector for all stations, George L. Proctor. No station numbers were supplied.

St. Kitts, B.W.I., Black Rocks. Tidepools in rough lava rock, subject to violent wave action, Mar. 14, 1959.

St. Kitts, B.W.I., Conaree Beach. Attached to rocks lightly covered by shifting sand at depths of 1.5–3.0 dm., Mar. 28, 1959.

St. Kitts, B.W.I., Frigate Bay. Attached to boulders at depths of 1.5–3.0 dm., Mar. 29, 1959.

St. Kitts, B.W.I., North Friars Bay. On ledges and in tidepools washed by violent surf, Mar. 29, 1959.

St. Kitts, B.W.I., South Friars Bay. On partly submerged rocks accompanied by some sand, Mar. 29, 1959.

Nevis, B.W.I., near Red Cliff. Collected along a rocky shore at depths of 1.5–3.0 dm., Mar. 20, 1959.

St. Lucia, B.W.I., Marquis Bay. Collected along rocky shores, May 16, 1958.

St. Lucia, B.W.I., Vigie Point. From rocky ledges in heavy surf, June 1, 1958.

LIST OF SPECIES

Myxophyceae

Oscillatoriaceae

Lyngbya majuscula Harv. ex Gom. Ann. Sci. Nat., Bot. VII, 16: 131. 1892.

ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-59a. A very widely distributed species.¹

Chlorophyceae

Ulvaceae

Enteromorpha flexuosa (Wulf.) J. Ag. Lunds Univ. Årsskr., Afd. Math. Naturvetensk. 19(2): 126. 1883.

GRENADE: True Blue, coll. Proctor no. A-2699. Range from Bermuda and North Carolina to Uruguay.

Ulva fasciata Delile. Flore d'Égypte 153. 1813.

NEVIS: Charlestown, coll. Schmitt, Smiths.-Bredin no. 67-58a. Range from Bermuda and North Carolina to Uruguay.

Cladophoraceae

Chaetomorpha brachygona Harv. Smiths. Contr. Knowl. 10: 87. 1858.

NEVIS: Charlestown, coll. Schmitt, Smiths.-Bredin no. 67-58e. Range from Bermuda and North Carolina to Brazil.

Chaetomorpha crassa (C. Ag.) Kütz. Phycol. Germ. 204. 1845.

ST. KITTS: Frigate Bay, coll. Proctor no. A-3166. The easternmost record to date. Range hitherto Bermuda, Virgin Islands, and St. Barthélemy.

¹ The range as given applies only to the distribution of these plants in the warmer latitudes of the western Atlantic Ocean. Some of them occur in other seas as well.

Chaetomorpha media (C. Ag.) Kütz. Spec. Alg. 380. 1849.

BRITISH VIRGIN ISLANDS: Guano Island, coll. Schmitt, Smiths.-Bredin no. 2. ST. KITTS: Black Rocks, coll. Proctor no. A-3206; Conaree Beach, coll. Proctor no. A-3136. ST. LUCIA: Marquis Bay, coll. Proctor no. A-2782; Vigie Point, Proctor no. A-2790. Range from Bermuda to Brazil.

Cladophora fascicularis (Mert.) Kütz. Linnaea 17: 91. 1843.

BARBUDA: Cocoa Point, coll. Smiths.-Bredin no. 84. ST. KITTS: Black Rocks, coll. Proctor no. A-3198; S. Friars Bay, coll. Proctor no. A-3173. ST. LUCIA: Marquis Bay, Proctor no. A-2775. Range from Bermuda and North Carolina to Uruguay.

Cladophora fuliginosa Kütz. Spec. Alg. 415. 1849.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3121. The easternmost record to date. Range hitherto from Bermuda to the southern Netherlands Antilles.

Dasycladaceae

Batophora oerstedii J. Agardh, Öfvers. K. Vetensk.-Akad. Förhandl., 11: 108. 1854.

BARBUDA: Barbuda Lagoon, coll. Cowan, Smiths.-Bredin no. 75. Range from Bermuda to British Honduras.

Acetabularia crenulata Lamour. Hist. Polyp. Corall. Flex. 249. 1816.

BARBUDA: Barbuda Lagoon, coll. Cowan, Smiths.-Bredin no. 70. Range from Bermuda to Venezuela.

Valoniaceae

Hali cystis osterhoutii L. R. & A. H. Blinks, Bull. Torrey Bot. Club, 57: 389. 1930.

ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-59m. Range from Bermuda to the Grenadines, but at few stations.

Valonia macrophysa Kütz. Phycol. Gen. 307. 1863.

BRITISH VIRGIN ISLANDS: Anegada Island, Pomato Point, coll. Schmitt, Smiths.-Bredin no. 42-58b. A slight northeastward range extension. Range hitherto from Bermuda to the American Virgin Islands.

Valonia ventricosa J. Ag. Lunds Univ. Årsskr., Afd. Math. Naturvetensk., 23(2). 96. 1887.

BRITISH VIRGIN ISLANDS: Anegada Island, Pomato Point, coll. Schmitt, Smiths.-Bredin no. 42-58a. Range from Bermuda to Brazil.

Dictyosphaeria cavernosa (Forssk.) Børg. Dansk Bot. Ark. 8(2): 2. 1932.

BRITISH VIRGIN ISLANDS: Anegada Island, Pomato Point, coll. Schmitt, Smiths.-Bredin no. 42-58c. ST. KITTS: Black Rocks, coll. Proctor no. A-3190; Conaree Beach, coll. Proctor no. A-3137. ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-59g. Range from Bermuda to Brazil.

Cladophoropsis membranacea (C. Ag.) Børg. Overs. K. Danske Vidensk. Selsk: Forhandl. 1905(3): 288. 1905.

ST. KITTS: Black Rocks, coll. Proctor no. A-3199. ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-59f. ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 48. GRENADA: Grenada Bay, coll. Proctor no. A-2741. Range from Bermuda to Brazil.

Anadyomene stellata (Wulf.) C. Ag. Spec. Alg. Rite Cogn. 1: 400. 1822.

BARBUDA: Barbuda Lagoon, coll. Cowan, Smiths.-Bredin no. 74. Range from Bermuda to Brazil.

Bryopsidaceae

Bryopsis pennata Lamour. Nouv. Bull. Sci. Soc. Philom. 1: 333. 1809.

ST. KITTS: Black Rocks, coll. Proctor no. A-3191. Range from Bermuda to Brazil.

Caulerpaceae

Caulerpa cupressoides (West) C. Ag. Spec. Alg. Rite Cogn. 1: 441. 1822.

NEVIS: Red Cliff (v. *lycopodium* (J. Ag.) Weber-van Bosse f. *alternifolia* Weber-van Bosse), coll. Proctor no. A-3209; (v. *lycopodium* f. *disticha* (Weber-van Bosse) Collins), coll. Proctor no. A-3220; (v. *lycopodium* toward f. *elegans* (Crouan) Weber-van Bosse), coll. Proctor no. A-3223. ST. LUCIA: Marigot Bay (v. *cupressoides*), coll. Schmitt, Smiths.-Bredin no. 42; Pigeon Island (v. *lycopodium*), coll. Cowan, Smiths.-Bredin no. 51. Range from Bermuda to Brazil.

Caulerpa microphysa (Weber-van Bosse) J. Feldm. Rev. Gen. Bot. 62: 424. 1955.

ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 46. Range from Bermuda to Venezuela.

Caulerpa prolifera (Forssk.) Lamour. Nouv. Bull. Sci. Soc. Philom. 1: 332. 1809.

GRENADA: Grenada Bay, Proctor A-2718. Range from Bermuda and Florida to Brazil.

Caulerpa racemosa (Forssk.) J. Ag. Lunds Univ. Årsskr., Afd. Math. Naturvetensk. 9(8): 35. 1873.

BRITISH VIRGIN ISLANDS: Guano Island, coll. Schmitt, Smiths.-Bredin no. 1. BARBUDA: Cocoa Point, coll. Cowan, Smiths.-Bredin no. 85. ST. LUCIA: Marquis Bay, coll. Proctor no. A-2778; Pigeon Island, coll. Cowan, Smiths.-Bredin no. 52; Vigie Point, coll. Proctor no. A-2796. Range from Bermuda and Florida to Brazil.

Caulerpa sertularioides (Gmel.) Howe, Bull. Torrey Bot. Club 32: 576. 1905.

BARBUDA: Cocoa Point, partly approaching v. *farlowii* (Weber-van Bosse) Børg., coll. Cowan, Smiths.-Bredin no. 86. ST. KITTS: Conaree Beach (partly f. *brevipes* (J. Ag.) Sved.), coll. Proctor no. A-3140; South Friars Bay, coll. Proctor no. A-3176. NEVIS: Charlestown, coll. Schmitt, Smiths.-Bredin no. 67-58d. ST. LUCIA: Pigeon Island (f. *brevipes* (J. Ag.) Sved.), coll. Cowan, Smiths.-Bredin no. 47; Vigie Point, coll. Proctor A-2792. Range from Bermuda and Florida to Brazil.

Caulerpa verticillata J. Ag. Öfvers. K. Vetensk.-Akad. Förhandl. 4: 6. 1847.

GRENADA: True Blue, coll. Proctor A-2701. Range from Bermuda and Florida to Brazil.

Codiaceae

Avrainvillea nigricans Dec. Ann. Sci. Nat., Bot., II, 18: 108. 1842.

ST. LUCIA: Vigie Point, coll. Proctor no. A-2813 (in part). Range from Bermuda and Florida to Brazil.

Avrainvillea rawsonii (Dickie) Howe, Bull. Torrey Bot. Club 34: 510. 1907.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3115. ST. LUCIA: Vigie Point, coll. Proctor no. A-2806. Range from Bermuda to Barbados.

Udotea flabellum (Ell. & Sol.) Lamour. Nouv. Bull. Sci. Soc. Philom. 3: 180. 1812.

BARBUDA: Cocoa Point, coll. Cowan, Smiths.-Bredin no. 83; Barbuda Lagoon coll. Cowan, Smiths.-Bredin no. 72. ANTIGUA: Reeds Beach, coll. Denckla,

Smiths.-Bredin no. 119-59e. ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 49. Range from Bermuda and Florida to Brazil.

Penicillus capitatus Lamarck, Ann. Mus. Hist. Nat. 20: 299. 1813.

BARBUDA: Barbuda Lagoon, coll. Cowan, Smiths.-Bredin no. 73. NEVIS: Charlestown, coll. Schmitt, Smiths.-Bredin no. 67-58c. ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-59i. ST. LUCIA: Vigie Point, coll. Proctor no. A-2809; Pigeon Island, coll. Cowan, Smiths.-Bredin no. 50. Range from Bermuda and Florida to Las Aves Island, and at Trinidad Island, off Brazil.

Penicillus dumetosus (Lamour.) Blainv. Man. Actin. Zoophyt. 553. 1834.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3124. ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 45. GRENADA: Grenada Bay, coll. Proctor no. A-2714. Range from Bermuda and Florida to Colombia.

Halimeda discoidea Dec. Ann. Sci. Nat., Bot. 18: 102. 1842.

ST. LUCIA: Vigie Point, coll. Proctor A-2805; Pigeon Island, coll. Cowan, Smiths.-Bredin no. 44. A slight eastward extension of range in the West Indies. Range from Florida to Brazil.

Halimeda incrassata (Ellis) Lamour. Hist. Polyp. Corall. Flex. 307. 1816.

BARBUDA: Cocoa Point, coll. Cowan, Smiths.-Bredin no. 87; Barbuda Lagoon coll. Cowan, Smiths.-Bredin no. 71. NEVIS: Charlestown, coll. Schmitt, Smiths.-Bredin no. 67-58b. ST. LUCIA: Marigot Bay, coll. Schmitt, Smiths.-Bredin no. 43. Range from Bermuda and Florida to Grenada and the Netherlands Antilles.

Halimeda opuntia (L.) Lamour. Hist. Polyp. Corall. Flex. 308. 1816.

BARBUDA: Cocoa Point, coll. Cowan, Smiths.-Bredin no. 82. ST. KITTS: Conaree Beach, coll. Proctor no. A-3144. NEVIS: Red Cliff, coll. Proctor no. A-3221. GRENADA: True Blue, coll. Proctor no. A-2703. Range from Florida to Brazil.

Codium intertextum Coll. & Herv. Proc. Amer. Acad. Arts Sci. 53: 54. 1917.

ST. BARTHÉLEMY: Anse de Cul-de-Sac, coll. Le Gallo no. 62, Sept. 15, 1955. ST. KITTS: Conaree Beach, coll. Proctor no. A-3141. ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 66. Range from Bermuda and Florida to Brazil.

Codium isthmocladum Vickers, Ann. Sci. Nat., Bot., IX, 1: 57. 1905.

ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 65. Range from Bermuda and North Carolina to Brazil.

Xanthophyceae

Vaucheriaceae

Vaucheria dichotoma (L.) C. Ag. Synop. Alg. Scand. 47. 1817.

GRENADA: True Blue, coll. Proctor no. A-2090. Range from Bermuda to Grenada, but reported from only a few stations.

Phaeophyceae

Ectocarpaceae

Ectocarpus breviarticulatus J. Ag. Öfvers. K. Vetensk.-Akad. Förhandl. 4(1): 7. 1847.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3131. ST. LUCIA: Marquis Bay, coll. Proctor no. A-2785; Vigie Point, coll. Proctor no. A-2822. GRENADA: Grenada Bay, coll. Proctor no. A-2729. Range from Jamaica to Brazil.

Giffordia mitchellae (Harv.) Hamel, Bot. Notiser, 1939: 66. 1939.

ST. LUCIA: Vigie Point, coll. Proctor no. A-2820. The easternmost record of this species in the West Indies to date. Ranging from Bermuda and North Carolina to Guadeloupe, and reported from Brazil.

Dictyotaceae

Dilophus guineensis (Kütz.) J. Ag. Lunds Univ. Årsskr., Afd. Math. Naturvetensk. 17(4): 106. 1882.

ST. KITTS: Conaree Beach, coll. Proctor nos. A-3127, A-3129; North Friars Bay, coll. Proctor no. A-3186. NEVIS: Near Red Cliff, coll. Proctor nos. A-3212, A-3214. ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 54; Vigie Point, coll. Proctor no. A-2816. Range from Bermuda and Florida to Venezuela.

Dictyota bartayresii Lamour. Nouv. Bull. Sci. Soc. Philom. 1: 331. 1809.

ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-59c. Range from Bermuda and Florida to Brazil.

Dictyota cervicornis Kütz. Tab. Phycol. 9: 11. 1859.

ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-59d. Range from Bermuda and North Carolina to Brazil.

Dictyota ciliolata Kütz. Tab. Phycol. 9: 12. 1859.

ST. KITTS: Conaree Beach, coll. Proctor nos. A-3122, A-3123, A-3125. Range from Bermuda and Florida to Brazil.

Dictyota dentata Lamour. Nouv. Bull. Sci. Soc. Philom. 1: 331. 1809.

ST. KITTS: Conaree Beach, coll. Proctor A-3133. ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 57. GRENADA: Grenada Bay, coll. Proctor no. A-2716. Range from Bermuda and Florida to Brazil.

Dictyota dichotoma (Huds.) Lamour. Nouv. Bull. Sci. Soc. Philom. 1: 331. 1809.

NEVIS: Charlestown, coll. Schmitt, Smiths.-Bredin no. 67-58h. Range from Bermuda and North Carolina to Brazil.

Dictyota jamaicensis Taylor, Mar. Alg. East. Trop. Subtrop. Coasts Amer. 630. 1960.

ST. KITTS: Frigate Bay, coll. Proctor no. A-3164. ST. LUCIA: Vigie Point, coll. Proctor no. A-2798. Hitherto known from Jamaica, Grenada, and Venezuela.

Dictyopteris delicatula Lamour. Nouv. Bull. Sci. Soc. Philom. 1: 332. 1809.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3130 (in part). ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin nos. 44 (mixed with *Halimeda discoidea*), 55 (in part). Range from Bermuda and Florida to Brazil.

Dictyopteris jamaicensis Taylor, Mar. Alg. East. Trop. Subtrop. Coasts Amer. 631. 1960.

GRENADA: Grenada Bay, coll. Proctor no. A-2739. Previously only known from Jamaica.

Dictyopteris justii Lamour. Nouv. Bull. Sci. Soc. Philom. 1: 332. 1809.

ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 56. Range from Bermuda and Florida to Brazil.

Pocockiella variegata (Lamour.) Papenf. Amer. Journ. Bot. 30: 467. 1943.

NEVIS: Charlestown, coll. Schmitt, Smiths.-Bredin no. 67-58g. ST. LUCIA, Pigeon Island, coll. Cowan. Smiths.-Bredin no. 53. Range from Bermuda and North Carolina to Brazil.

Styopodium zonale (Lamour.) Papenf. Bot. Notiser, 1940: 205. 1940.

ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 64. Range from Bermuda and Florida to Brazil.

Padina gymnospora (Kütz.) Vickers, Ann. Sci. Nat., Bot., IX, 1: 58. 1905.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3147. NEVIS: Near Red Cliff, coll. Proctor no. A-3216. ST. LUCIA: Vigie Point, coll. Proctor no. A-2812. GRENADA: Grenada Bay, coll. Proctor no. A-2711. Range from Bermuda and Florida to Brazil.

Padina sanctae-crucis Børg. Dansk Bot. Ark. 2(2): 45. 1914.

GRENADA: Grenada Bay, coll. Proctor no. A-2712. Range from Bermuda and Florida to Brazil.

Padina vickersiae Hoyt in Britt. & Millsp. Bahama Flora 595. 1920.

ST. KITTS: Frigate Bay, coll. Proctor no. A-3156. GRENADA: True Blue, coll. Proctor no. A-2696. Range from Bermuda and North Carolina to Brazil.

Punctariaceae

Colpomenia sinuosa (Roth) Derb. & Sol. Comptes Rend. Séanc. Acad. Sci. Suppl. 1: 11. 1856.

NEVIS: Red Cliff, coll. Proctor no. A-3225. Range from Bermuda and North Carolina to Brazil.

Chnoospora minima (Hering) Papenf. Journ. So. Afr. Bot. 22(2): 69. 1956.

ST. LUCIA: Vigie Point, coll. Proctor no. A-2781. TOBAGO: Man-of-War Bay, coll. Cowan, Smiths.-Bredin no. 27. Range from Redonda Island to Brazil.

Sargassaceae

Sargassum fluitans Børg. Dansk Bot. Ark. 2(2): 66. 1914.

NEVIS: Red Cliff, coll. Proctor no. A-3126. ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-59j. Range from Bermuda and Florida to Panama.

Sargassum natans (L.) J. Meyen, Arch. für Naturgesch. [Wiegmann], 4(2): 185. 1838.

BARBUDA: Cocoa Point, coll. Cowan, Smiths.-Bredin nos. 88, 93. NEVIS: Red Cliff, coll. Proctor no. A-3125. ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-59k. Range from Bermuda and North Carolina to British Honduras.

Sargassum platycarpum Mont. Ann. Sci. Nat., Bot. II, 18: 248. 1842.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3151. Range from Bermuda to Brazil.

Sargassum polyceratium Mont. Ann. Sci. Nat., Bot., II, 8: 356. 1837.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3149. Range from Bermuda and Florida to Brazil.

Sargassum rigidulum Kütz. Spec. Alg. 615. 1849.

ST. KITTS: Black Rocks, coll. Proctor no. A-3200. Range from Bermuda to Brazil.

Sargassum vulgare C. Ag. Spec. Alg. Rite Cogn. 1: 3. 1820.

ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 59; Vigie Point, coll. Proctor no. A-2797. GRENADA: Grenada Bay, coll. Proctor no. A-2735. Var. *foliosissimum* (Lamour.) J. Ag.: BRITISH VIRGIN ISLANDS: Guano Island, coll. Schmitt, Smiths.-Bredin no. 3. Range from Bermuda and Florida to Brazil.

Turbinaria tricostata Barton, Trans. Linn. Soc., Bot. II, 3: 218. 1891.

BARBUDA: Cocoa Point, coll. Cowan, Smiths.-Bredin no. 94. Range from Bermuda to the Netherlands Antilles.

Turbinaria turbinata (L.) Kuntze, Rev. Gen. Plant. 3: 434. 1898.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3142. Range from Florida to Brazil.

Rhodophyceae

Helminthocladiaceae

Liagora ceranoides Lamour. Hist. Polyp. Corall. Flex. 239. 1816.

ST. KITTS: North Friars Bay, coll. Proctor no. A-3185. Range from Bermuda and Florida to Brazil.

Liagora farinosa Lamour. Hist. Polyp. Corall. Flex. 240. 1816.

ST. KITTS: Frigate Bay, coll. Proctor no. A-3159. Range from Bermuda and Florida to Brazil.

Liagora valida Harv. Smithson. Contr. Knowl. 5(5): 138. 1853.

ST. KITTS: South Friars Bay, coll. Proctor no. A-3195 (young and soft). Range from Bermuda and Florida to Panama.

Chaetangiaceae

Galaxaura cylindrica (Ell. & Sol.) Lamour. Expos. Méthod. Genres Ordre Polypiers 22. 1821.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3139. Range from Bermuda and Florida to Brazil.

Galaxaura oblongata (Ell. & Sol.) Lamour. Hist. Polyp. Corall. Flex. 262. 1816.

ST. LUCIA: Vigie Point, coll. Proctor no. A-2799. Range from Bermuda and Florida to Brazil.

Galaxaura obtusata (Ell. & Sol.) Lamour. Hist. Polyp. Corall. Flex. 262. 1816.

NEVIS: Near Red Cliff, coll. Proctor no. A-3224. Range from Bermuda and Florida to Brazil.

Galaxaura rugosa (Ell. & Sol.) Lamour. Hist. Polyp. Corall. Flex. 263. 1816.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3138; Frigate Bay, coll. Proctor no. A-3161. ST. LUCIA: Vigie Point, coll. Proctor no. A-2795. Range from Bermuda and Florida to Brazil.

Galaxaura squalida Kjellm. K. Svenska Vetensk.-Akad. Handl. 33(1): 55. 1900.

ST. KITTS: Frigate Bay, coll. Proctor no. A-3170. ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 61. Range from Bermuda and Florida to Venezuela.

Galaxaura subverticillata Kjellm. K. Svenska Vetensk.-Akad. Handl. 33(1): 48. 1900.

ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 62. Range from Bermuda and Florida to British Honduras.

Gelidiaceae

Gelidiella acerosa (Forssk.) Feldm. & Hamel, Rev. Gén. Bot. 46: 533. 1934.

ST. LUCIA, Pigeon Island, coll. Cowan, Smiths.-Bredin no. 69. ST. LUCIA: Marquis Bay: coll. Proctor no. A-2774; Vigie Point, coll. Proctor no. A-2793. GRENADA: Westerhall Point, coll. Proctor no. A-2683. Range from Bermuda and Florida to Brazil.

Rhizophyllidaceae

Ochtodes secundiramea (Mont.) Howe in Britt. & Millsp. Bahama Fl. 583. 1920.

ST. KITTS: Black Rocks, coll. Proctor no. A-3189. ST. LUCIA: Vigie Point, coll. Proctor no. A-2825. Range from the Bahamas to Trinidad.

Corallinaceae

Fosliella farinosa (Lamour.) Howe in Britt. & Millsp. Bahama Fl. 587. 1920.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3127. ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-59p. Range from Bermuda and North Carolina to Brazil.

Fosliella lejolisii (Rosan.) Howe in Britt. & Millsp. Bahama Fl. 588. 1920.

NEVIS: Charlestown, coll. Schmitt, Smiths.-Bredin no. 67-58i. Range from Prince Edward Island to Brazil.

Amphiroa fragilissima (L.) Lamour. Hist. Polyp. Corall. Flex. 298. 1816.

ANEGADA ISLAND: Pomato Point, coll. Schmitt, Smiths.-Bredin no. 42-58d (lesser part). ST. LUCIA: Pigeon Island, coll. Smiths.-Bredin no. 68 (lesser part). ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-59l. Range from Bermuda and North Carolina to Brazil.

Amphiroa hancockii Taylor, Allan Hancock Atlantic Exped. 2: 95. 1942.

ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 63. Hitherto only known from Hispaniola and Panama.

Amphiroa rigida Lamour. var. *antillana* Børg. Dansk Bot. Ark. 3(1c): 183. 1917.

ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin nos. 67, 68. Range from Florida to Panama.

Corallina officinalis Linn., Fauna Suecica, edit. alt. 539. 1761.

ST. LUCIA: Marquis Bay, coll. Proctor A-2770. A very interesting find, because, although this plant occurs further south as well as north, reports of it from the West Indies are extremely untrustworthy. The material is quite typical. Range south to North Carolina, and again from Brazil and Uruguay southward, with this as a new intermediate station.

Jania adhaerens Lamour. Hist. Polyp. Corall. Flex. 270. 1816.

ANEGADA ISLAND: Pomato Point, coll. Schmitt, Smiths.-Bredin no. 42-58d (lesser part). BARBUDA: Barbuda Lagoon, coll. Cowan, Smiths.-Bredin no. 81 (lesser part). ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 68. The last is probably a new eastern record for the West Indies.

Jania capillacea Harv. Smithson. Contr. Knowl. 5(5): 84. 1853.

ST. KITTS: Black Rocks, coll. Proctor no. A-3203. ST. LUCIA: Vigie Point, coll. Proctor nos. A-2804, A-2810 (in small part). Range from Florida to Brazil.

Jania rubens (L.) Lamour. Nouv. Bull. Sci. Soc. Philom. 3: 186. 1812.

ANEGADA ISLAND Pomato Point, coll. Schmitt, Smiths.-Bredin no. 42-58e (in part). BARBUDA: Barbuda Lagoon, coll. Cowan, Smiths.-Bredin no. 79. GRENADA: Grenada Bay, coll. Proctor no. A-2730. Range from Bermuda and North Carolina to Uruguay.

Grateloupiaceae

Halymenia floresia (Clem.) C. Ag. Spec. Alg. Rite Cogn. 1: 209. 1822.

ST. LUCIA: Vigie Point, coll. Proctor no. A-2801. Range from Bermuda and North Carolina to Brazil.

Grateloupia cuneifolia J. Ag. Öfvers. K. Vetensk.-Akad. Förhandl. 6: 85. 1849.

ST. KITTS: Black Rocks, coll. Proctor nos. A-3145, A-3208. ST. LUCIA: Marquis Bay, coll. Proctor no. A-2771. A slight eastward extension of range in the West Indies. Range from Jamaica to Uruguay.

Grateloupia dichotoma J. Ag. Algae Maris Medit. Adriat. 103. 1842.

ST. KITTS: Black Rocks, coll. Proctor no. A-3192. Range from Jamaica to Trinidad.

Grateloupia filicina (Wulf.) C. Ag. Spec. Alg. Rite Cogn. 1: 223. 1822.

BARBUDA: Barbuda Lagoon, coll. Cowan, Smiths.-Bredin no. 92. ST. KITTS: South Friars Bay, coll. Proctor no. A-3172; Frigate Bay, coll. Proctor no. A-3155, A-3157. Range from North Carolina to Brazil.

Cryptonemia luxurians (Mert.) J. Ag. Spec. Gen. Ord. Alg. 2: 228. 1851.

GRENADA: Grenada Bay, coll. Proctor no. A-2721. Range from Bermuda and Florida to Brazil.

Gracilariaceae

Gracilaria curtissiae J. Ag. Lunds Univ. Årsskr. Afd. Math. Naturvetensk. 21(8): 61. 1886.

GRENADA: Grenada Bay, coll. Proctor no. A-2722.

Gracilaria debilis (Forssk.) Børg. Dansk Bot. Ark. 8(2): 7. 1932.

ST. KITTS: Conaree Beach, coll. Proctor nos. A-3116, A-3118a, b, A-3143; North Friars Bay, coll. Proctor no. A-3181. NEVIS: Red Cliff, coll. Proctor no. A-3222. GRENADA: Grenada Bay, coll. Proctor no. A-2237. Range from Bermuda and Florida to Brazil.

Gracilaria domingensis Sonder, herb., *Sphaerococcus domingensis* Kütz. Tab. Phycol. 19: 8. 1869; *G. domingensis* Sonder ex Collins, Proc. Amer. Acad. Arts Sci. 37: 254. 1901.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3132. GRENADA: Grenada Bay, coll. Proctor no. A-2723. Range from Jamaica to Brazil.

Gracilaria ferox J. Ag. Spec. Gen. Ord. Alg. 2(2): 592. 1852.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3150; North Friars Bay, coll. Proctor no. A-3179; Frigate Bay, coll. Proctor no. A-3171. ST. LUCIA: Marquis Bay, coll. Proctor no. A-2786. Range from Bermuda and Florida to Brazil.

Gracilaria foliifera (Forssk.) Børg. Dansk Bot. Ark. 8(2): 7. 1932.

GRENADA: True Blue, coll. Proctor nos. A-2698, A-2707. TOBAGO: Man-of-War Bay, coll. Cowan, Smiths.-Bredin no. 31. Range from Bermuda and North Carolina to Uruguay.

Gracilaria verrucosa (Huds.) Papenf. Hydrobiol. 2: 195. 1950.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3117. NEVIS: Charlestown, coll. Schmitt, Smiths.-Bredin no. 67-58k. TOBAGO: Man-of-War Bay, coll. Cowan, Smiths.-Bredin no. 28. Range from Bermuda and North Carolina to Brazil.

Solieriaceae

Sarcodiotheca caribaea nov. sp. PLATE 1, FIGURES 1, 2; PLATE 4, FIGURE 1

Plantae omnes infra breviter teretes supra ad laminam 4-8 irregulariter dichotome furcatam, ramis ligulatis 4-10 mm. lat. super furcationes inferiores, 1-2 mm. in divisionibus supremis, marginibus integris, expansae; tetrasporangia super thallam dispersa, 30-38 μ

diam., 45–55 μ longa; cystocarpi prominentes, marginales, intus parenchymatici; pericarpi ostiolati, intus filamentosi, nonnullis filis inter gonimoblastos ad centrum sterile extensis.

Plants arising from very small, lobed, cushion-shaped holdfasts, briefly terete below and often with 1–3 proliferations from the holdfast or the stalk, each expanding above to a 4–8 times irregularly dichotomous blade with a tapering base, the strap-shaped branches 4–10 mm. broad above the lower forkings, 1–2 mm. in the uppermost divisions, the tips rather acute, the margins entire. Blade thickness to 400–500 μ , the cortex of one layer of small cells and the outer medulla of two layers, the inner ones rather large; medullary cavity small, loosely crossed by oblique thicker-walled filaments about 18–25 μ in diameter, and thinner-walled ones about 4.5–14 μ . Tetrasporangia scattered over the thallus, extending inward from the cortex, zonate, 30–38 μ in diameter, 45–55 μ long. Spermatangia widely distributed in patches over the surface. Cystocarps prominent, marginal, with a parenchymatous core, the pericarps ostiolate, filamentous within, with some strands extending between the gonimoblasts to the sterile center; carposporangia produced in short centripetal series.

Type in the U.S. National Herbarium, collected in Man-of-War Bay, Tobago, British West Indies, April 7, 1959, by Richard S. Cowan (No. 41).

These plants agree in most respects with the description of *Sarcodiotheca*, the only particular discrepancy lying in the restriction of the cystocarps to the margin, where they are strongly elevated. Individuals of west-coast species of the genus may, on occasion, have some of them along the margin. Since this is the first record of the genus in the western Atlantic in a family not represented there by many species, it is of particular interest.

Agardhiella tenera (J. Ag.) Schmitz, Flora 72: 441. 1889.

TOBAGO: Man-of-War Bay, coll. Cowan, Smiths.-Bredin no. 38. Range from North Carolina to Brazil.

Eucheuma isiforme (C. Ag.) J. Ag. Öfvers. K. Vetensk.-Akad. Förhandl. 4: 16. 1847.

BARBUDA: Cocoa Point, coll. Cowan, Smiths.-Bredin no. 95; Gravenor Landing, coll. Cowan, Smiths.-Bredin no. 26. This records a slight eastward extension of range. Range hitherto Bermuda and Florida to St. Barthélemy.

Meristotheca tobagensis nov. sp.

PLATE 2, FIGURES 1, 2

Plantae foliosae, in margine irregulariter furcatae; plantae spermatangiales identidem irregulariter ad subdichotome furcatae, in partibus inferioribus ad 1.0 cm. lat., modice ad valde eroso-dentatae; plantae cystocarpicae lobos relative latiores, simpliciores magis irregulares, sursum valde aculeato-dentatae; cystocarpi 0.5–2.5 mm. diam., superficiales aut elevati super superficiem dispersi.

Plants foliose, to at least 6 cm. in height, the fleshy blades reaching a thickness of 530 μ , marginally irregularly forked, but probably sexually dimorphic. Structurally showing an outer cortex of one layer of oval cells about 5 μ in diameter, 15 μ tall, below a firm gelatinous cuticle, and resting on a layer of small rounded ones. Outer medulla of about 3 layers of thick-walled cells, the inner ones being very large, enclosing a filamentous central medulla, this being rather loose in the younger parts, dense near the base. Spermatangial plants several times irregularly to subdichotomously forked, to 1.0 cm. broad in the lower parts, or 1.5 cm. where subcuneate below a fork, the ultimate divisions more band-shaped and tapering, moderately to strongly erose-dentate. Cystocarpic plants with relatively broader, simpler and more irregular lobes rather than forking blades, these very strongly aculeate-dentate above and, scattered over the surface, bearing conspicuous superficial or elevated cystocarps 0.5–2.5 mm. in diameter, each with a thick ostiolate pericarp, this parenchymatous without but with a filamentous lining. Gonimoblasts surrounding a parenchymatous core, this externally interrupted by groups of filaments spreading over the surface and bearing the small carposporangia. Tetrasporangial plants not seen.

Type in the U.S. National Herbarium, collected in Man-of-War Bay, Tobago, British West Indies, April 7, 1959, by Richard S. Cowan (no. 40, spermatangial and cystocarpic plants).

In the absence of tetrasporangial material and with too little cystocarpic material to permit a developmental study, the generic assignment of these plants must be considered tentative. They are far smaller and less broadly foliar than *M. florida* Kylin, an ill-known plant although reported from Florida to Panama, and more regularly branched than the type species, *M. papulosa* (Mont.) J. Ag., which is not known to occur in the West Indies.

Hypneaceae

Hypnea musciformis (Wulf.) Lamour. Mém. Muséum [Paris], 20: 43. 1813.

ST. KITTS: Black Rocks, coll. Proctor no. A-3194; Conaree Beach, coll. Proctor no. A-3120; South Friars Bay, coll. Proctor no. A-3174; Frigate Bay, coll. Proctor nos. A-3158, A-3162. ST. LUCIA: Vigie Point, coll. Proctor no. A-2807. Range from Bermuda and North Carolina to Brazil.

Hypnea spinella (C. Ag.) Kütz. Tab. Phycol. 18: 9. 1868.

ST. KITTS: Frigate Bay, coll. Proctor no. A-3168. ST. LUCIA: Vigie Point, coll. Proctor no. A-2821. Range from Bermuda to Brazil.

Phylloporaceae

Gymnogongrus tenuis (J. Ag.) J. Ag. Öfvers. K. Vetensk.-Akad. Förhandl. 6: 88. 1849.

ST. KITTS: Frigate Bay, coll. Proctor no. A-3160. Reported from North Carolina, Guadeloupe, Tobago, Brazil, and Uruguay.

Champiaceae

Coelothrix irregularis (Harv.) Børg. Dansk Bot. Ark. 3: 389. 1920.

ST. LUCIA: Vigie Point, coll. Proctor no. A-2824. Range from Bermuda and Florida to British Honduras.

Ceramiaceae

Ceramium nitens (C. Ag.) J. Ag. Spec. Gen. Ord. Alg. 2: 130. 1851.

ST. LUCIA: Vigie Point, coll. Proctor no. A-2823. Within the West Indies this is a slight eastward extension of range. Hitherto known from Bermuda and Florida to Martinique and along the mainland to Colombia.

Ceramium subtile J. Ag. Spec. Gen. Ord. Alg. 2: 120. 1851.

GRENADA: True Blue, coll. Proctor no. A-2695. Range from Bermuda and Florida to Barbados and the Netherlands Antilles.

Centroceras clavulatum (C. Ag.) Mont. in Durieu, Flore Algérie 1: 140. 1846.

ST. KITTS: Black Rocks, coll. Proctor no. A-3207. ST. LUCIA: Marquis Bay, coll. Proctor no. A-2787. GRENADA: True Blue, coll. Proctor no. A-2693. Range from Bermuda and Florida to Brazil.

Spyridia aculeata (Schimp.) Kütz. Phyc. Gen. 377. 1843.

GRENADA: Grenada Bay, coll. Proctor no. A-2733. TOBAGO: Man-of-War Bay, coll. Cowan, Smiths.-Bredin no. 33. Range from Bermuda and North Carolina to Brazil.

Spyridia filamentosa (Wulf.) Harv. in Smith, English Fl. 5(1): 337. 1833.

ST. LUCIA: Marquis Bay, coll. Proctor A-2767. GRENADA: Westerhall Point, coll. Proctor nos. A-2686, A-2688. Range from Bermuda and North Carolina to Brazil.

Delesseriaceae

Grinnellia americana (C. Ag.) Harvey var. *caribaea* Taylor, Hancock Atlantic Exped. 2: 127. 1942.

TOBAGO: Man-of-War Bay, coll. Cowan, Smiths.-Bredin no. 30. The species itself chiefly northern in range, but with the variety known from North and South Carolina, the Netherlands Antilles and Venezuela as well.

Nitophyllum punctatum (Stack.) Grev. Alg. Britt. 79. 1830.

TOBAGO: Man-of-War Bay, coll. Cowan, Smiths.-Bredin no. 29. Conspicuously large and handsome cystocarpic plants. This is the first well-substantiated record for the West Indies.

Dasyaceae

Heterosiphonia gibbesii (Harv.) Falk. Fauna et Flora Golf. Neapel 26: 653. 1901.

ST. KITTS: North Friars Bay, coll. Proctor no. A-3183. GRENADA: Grenada Bay, coll. Proctor no. A-2725. Range from Bermuda and Florida to Venezuela.

Rhodomelaceae

Falkenbergia hillebrandii (Bornet) Falk. Fauna et Flora Golf. Neapel 26: 689. 1901.

ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-590. Range from Bermuda and Florida to Brazil.

Polysiphonia ferulacea Suhr in J. Ag. Spec. Gen. Ord. Alg. 2: 980. 1863.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3119; South Friars Bay, coll. Proctor no. A-3177. GRENADA: Grenada Bay, coll. Proctor no. A-2719. Range from Bermuda and Florida to Venezuela.

Polysiphonia subtilissima Mont. Ann. Sci. Nat. Bot. II, 13: 199. 1840.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3152. TOBAGO: Man-of-War Bay, coll. Cowan, Smiths.-Bredin no. 37. Range from Bermuda and North Carolina to Brazil.

Bryothamnion triquetrum (Gmel.) Howe, Journ. N.Y. Bot. Gard. 16: 222. 1915.

ANEGADA ISLAND: Pomato Point, coll. Schmitt, Smiths.-Bredin no. 42-58f. ST. KITTS: Conaree Beach, coll. Proctor no. A-3130. NEVIS: Red Cliff, coll. Proctor no. A-3211. GRENADA: Grenada Bay, coll. Proctor no. A-2727. Range from Florida to Brazil.

Digenia simplex (Wulf.) C. Ag. Spec. Alg. Rite Cogn. 1: 388. 1822.

BARBUDA: Barbuda Lagoon, coll. Cowan, Smiths.-Bredin no. 81. ST. KITTS: Black Rocks, coll. Proctor no. A-3202. ANTIGUA: Reeds Beach, coll. Denckla, Smiths.-Bredin no. 119-59h. ST. LUCIA: Vigie Point, coll. Proctor no. A-2810. GRENADA: Grenada Bay, coll. Proctor no. A-2726. Range from Bermuda and Florida to Brazil.

Murrayella periclados (C. Ag.) Schmitz, Ber. Deutsche Bot. Ges. 11: 227. 1893.

GRENADA: True Blue, coll. Proctor no. A-2692; Westerhall Point, coll. Proctor no. A-2687. Range from Bermuda and Florida to French Guiana.

Bostrychia tenella (Vahl) J. Ag. Spec. Gen. Ord. Alg. 2: 869. 1863.

GRENADA: Westerhall Point, coll. Proctor no. A-2684. Range from Bermuda and Florida to Brazil.

Dipterosiphonia dendritica (C. Ag.) Schmitz in Engler & Prantl, Nat. Pflanzenf. 1(2): 463. 1897.

ST. LUCIA: Marquis Bay, coll. Proctor no. A-2769. On *Corallina officinalis*, so crowded and mosslike that the typical branch arrangement was seldom seen. This is the easternmost and only the second record in the West Indies, it having been reported from Beata Island by Børgesen.

Amansia multifida Lamour. Nouv. Bull. Sci. Soc. Philom. 1: 332. 1809.

NEVIS: Near Red Cliff, coll. Proctor no. A-3218. Range from Florida to Brazil.

Vidalia obtusiloba (Mert.) J. Ag. Spec. Gen. Ord. Alg., 2(3): 1123. 1863.

GRENADA: Grenada Bay, coll. Proctor no. A-2724. Range from Florida to Brazil.

Chondria atropurpurea Harv. Smiths. Contr. Knowl. 5(5): 22. 1853.

GRENADA: Grenada Bay, coll. Proctor no. A-2732. The easternmost record within the West Indies. Range from Bermuda and North Carolina to Brazil.

Chondria littoralis Harv. Smiths. Contr. Knowl. 5(5): 23. 1853.

ST. KITTS: Conaree Beach, coll. Proctor no. A-3154, an exceptionally attenuate form. Range from Bermuda and North Carolina to Colombia.

Chondria tenuissima (G. & W.) C. Ag. Synop. Alg. Scand. xviii. 1817.

TOBAGO: Man-of-War Bay, coll. Cowan, Smiths.-Bredin no. 32. The easternmost record within the West Indies. Range hitherto from North Carolina to Guadeloupe and Venezuela.

Waldoia nov. gen.

Laminae planae alterne marginaliter conformiter ramosae, ecostatae, cellulis axialibus non perspicuis per nonnulla fila rhizoidea circumdatis,

cellulis pericentralibus non perspicuis; tetrasporangia in stichidiis simplicibus cylindricis super superficiem axium ramorumque ordinariorum dispositis; pericarpi sessiles aut breviter stipitati, in superficie axium ramorumque ordinarium dispositi. Species typicum: *Waldoia antillana*.

Plants with flat blades, alternately marginally conformably branched, ecostate, the axial cells obscure. Tetrasporangia in simple cylindrical stichidia borne over the surfaces of ordinary axes and branches. Pericarps sessile or briefly stalked, borne on the surfaces of ordinary axes and branches.

Waldoia antillana nov. sp.

PLATE 3, FIGURES 1, 2; PLATE 4, FIGURE 2

Plantae ex haptero crasse fibroso parce ramoso, in laminis primariis lineari-lanceolatis ecostatis gradatim expansae, laminis per altitudinem plantae totam plerumque extensis, usque ad 4–7 mm. lat.; plantae bis vel ter abunde ramosae; tetrasporangia in stichidiis ad 4–5 mm. longis, 250–400 μ diam., subcylindrica; pericarpi super ramos laterales atque versus extremitates axis primarii dispersi, rotundati, ca. 0.5 mm. diam., ostiolo paululum producto.

Plants to 13 cm. high (perhaps more), rose-red to dull purplish, soft, closely adherent to paper except at the base, arising from a sparingly branched coarsely fibrous holdfast, this giving rise to a few erect, foliar axes; axes very briefly terete below, the stalklike portion 2–15 mm. long, sometimes with a few terete or flattened proliferations, gradually expanded to the primary linear-lanceolate ecostate blades, these generally extending the full height of the plant and becoming 4–7 mm. broad, the margins slightly undulate-crenate, the apex somewhat narrowed but the tip obtuse to retuse; growth from an evident apical cell somewhat projecting or sunken in the apical notch (if present), and surrounded by a few obsolescent trichoblasts. Fronds abundantly 2- or 3-times branched, the branches, marginal, alternate, the branch attachments subterete to flat but contracted, the bases obtusely tapered, the branches otherwise like the primary axis. Tetrasporangia in notable stichidial branchlets scattered over the faces of the blades, often in abundance, to 4–5 mm. long, 250–400 μ diam., at first subconical, becoming subcylindrical with a slightly contracted base and briefly tapered tip, the sporangia formed progressively near the growing point and soon discharged. Pericarps scattered over the lateral branches and toward the ends of the primary axes, superficial, sessile, or contracted below and briefly stalked, rounded, about 0.5 mm. in diameter, the ostiole slightly produced. Spermatangial plants not seen.

Type in the U.S. National Herbarium, collected in Man-of-War Bay, Tobago, British West Indies, April 7, 1959, by Richard S. Cowan (no. 39, tetrasporangial plants).

These plants represent a particularly strange and unexpected addition to the Caribbean flora, for the small and specialized genus *Cladhymenia* to which they at first seemed to belong is primarily a Pacific one. Once before the writer hesitantly assigned some sterile Colombian material to *Cladhymenia*, and naturally one must consider the possibility that the same species is represented in both collections. There is little about the histological characters to distinguish these plants: The cortex cells in surface view seem about one-third broader in the older parts of these Tobagan specimens. It is even more difficult to recognize the primary axial cell and pericentral cells than in *C. lanceifolia*. What probably is the primary axis seems to be surrounded by a few irregular small elements rhizoidal in nature, and the large cells immediately outside these are not regular in number or position. The Tobagan plants are also far more elegantly branched, with longer and more symmetrical axes than the plants from Colombia, which do not adhere to paper except in the youngest proliferations. The possibility remains that the Colombian specimens are fragmentary and proliferous basal portions of old plants. However, the aspects of the two are so very different, as may be seen by comparing the figures of *C. lanceifolia* (Taylor 1942, pl. 19) with those given here of *Waldoia antillana*, that it seems safer to describe the new material as a new species rather than to risk confusing the two.

The generic assignment becomes critical now that fertile material is at hand. Until fertile material directly connected with the Colombian plants comes to hand nothing can be done about the status of *C. lanceifolia*, which, on the basis of sterile material, cannot be separated from *Cladhymenia*. Contrariwise, the Tobagan material with the tetrasporangia in simple stichidia all over the surfaces of the blades and not as marginal structures, and with the pericarps sessile or briefly stalked and similarly scattered over the surfaces rather than in marginal projections, is in its reproductive organs very different indeed, although belonging to the same section of the family. It seems appropriate, therefore, to make Tobagan material the type of a new genus *Waldoia*, named in appreciation of the help given by Dr. Waldo Schmitt, and to leave the transfer of the Colombian species name until evidence to justify it appears.²

Acanthophora muscoides (L.) Bory, Voy. de la Coquille, Bot. Crypt. 156. 1828.

ST. KITTS: Frigate Bay, coll. Proctor no. A-3163. Range from Florida to Brazil, a less common species than the next.

² The writer wishes to express appreciation of the kindness of Professor G. F. Papenfuss in examining representative Tobagan specimens and offering valuable suggestions which in general confirmed the writer's own observations.

Acanthophora spicifera (Vahl) Børg. Bot. Tidsskr. 30: 201. 1910.

BARBUDA: Cocoa Point, coll. Cowan, Smiths.-Bredin, no. 89. ST. KITTS: Black Rocks, coll. Proctor no. A-3197. ST. LUCIA: Pigeon Island, coll. Cowan, Smiths.-Bredin no. 60; Vigie Point, coll. Proctor no. A-2811. GRENADA: Westerhall Point, coll. Proctor no. A-2685. Range from Bermuda and Florida to Brazil.

Laurencia gemmifera Harv. Smiths. Contr. Knowl. 5(5): 73. 1853.

BARBUDA: Barbuda Lagoon, coll. Cowan, Smiths.-Bredin no. 77. NEVIS: Charlestown, coll. Schmitt, Smiths.-Bredin no. 67-58j. Range from Bermuda and North Carolina to Brazil.

Laurencia obtusa (Huds.) Lamour. Mém. du Museum [Paris] 20: 42. 1813.

VIRGIN ISLANDS: Guano Island, coll. Schmitt, Smiths.-Bredin no. 4. BARBUDA: Barbuda Lagoon, coll. Cowan, Smiths.-Bredin no. 91. Range from Bermuda and Florida to Brazil.

Laurencia papillosa (Forssk.) Grev. Alg. Britt. lii. 1830.

ANEGADA ISLAND: Pomato Point, coll. Schmitt, Smiths.-Bredin no. 42-58d (major part). ST. KITTS: Black Rocks, coll. Proctor no. A-3196; Conaree Beach, coll. Proctor no. A-3128; South Friars Bay, coll. Proctor no. A-3178; Frigate Bay, coll. Proctor no. A-3167. ST. LUCIA: Marquis Bay, coll. Proctor no. A-2773. Range from Bermuda and Florida to Brazil.

Laurencia scoparia J. Ag. Spec. Gen. Ord. Alg. 2: 746. 1863.

ST. KITTS: Black Rocks, coll. Proctor no. A-3187; Conaree Beach, coll. Proctor no. A-3128; North Friars Bay, coll. Proctor no. A-3182. ST. LUCIA: Marquis Bay, coll. Proctor no. A-2772; Vigie Point, coll. Proctor no. A-2803. Range from Jamaica to Brazil.

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