NEW AND OLD SCLERACTINIAN CORALS FROM JAMAICA

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ABSTRACT

The underwater studies of Jamaican reefs carried out during the past 17 years by the late T. F. Goreau and his colleagues have turned up a number of new species of scleractinian corals and disclosed the common occurrence at depth of several species previously thought to be rare. The new forms include one species of *Madracis*, one of *Agaricia*, three of *Mycetophyllia*, one of *Gardineria*, and new forms of *Eusmilia fastigiata* and *Agaricia fragilis*. Earlier named but poorly known species discussed and figured are: *Agaricia undata* (Ellis & Solander), *Agaricia lamarcki* Milne Edwards & Haime, *A. tenuifolia* (Dana), *Helioseris cucullata* (Ellis & Solander), *Colpophyllia breviserialis* Milne Edwards & Haime, *Mycetophyllia danaana* Milne Edwards & Haime, and *Dichocoenia stellaris* Milne Edwards & Haime.

INTRODUCTION

During the course of an extended study of the corals and coral reefs of Jamaica by the late T. F. Goreau and his associates at the Discovery Bay Marine Laboratory, the distribution of the hermatypic and ahermatypic scleractinian corals has been a special concern, for while the occurrence and zonation of corals on the shallower parts of West Indian reefs is fairly well known, the situation at depth had been otherwise until the use of SCUBA equipment made possible detailed examination and collection to depths of as much as 100 meters. A preliminary list of the scleractinian corals of the Jamaican reefs was published by Goreau & Wells in 1967, in which the presence of several new species was indicated.

Study of the large collections from Jamaica has revealed the not altogether unsuspected fact that several supposedly very rare forms, such as *Agaricia undata*[1] and *Helioseris cucullata*, heretofore known from one or two specimens obtained a century or two ago more or less by accident, are actually very common even at modest depths and are significant elements in the reef communities. Further, several undescribed species, varieties, and ecovariants have been found. The purpose of the present

[1] "It is doubtful whether many recent writers have seen specimens of the true *A. undata*, though Pourtalès said that he had seen it in Cuba. I am not sure that I have myself seen a specimen that I could refer to that species with confidence. But that does not prove that such a species does not exist. Numerous unknown or rare corals are probably to be found in these waters [West Indies]. The early collections often contained rare or little known species, seldom seen in modern collections. Some of these were doubtless brought up on anchors or on the hooks of fishermen, a prolific source for obtaining rarities in all seas." (Verrill, 1901: 143).

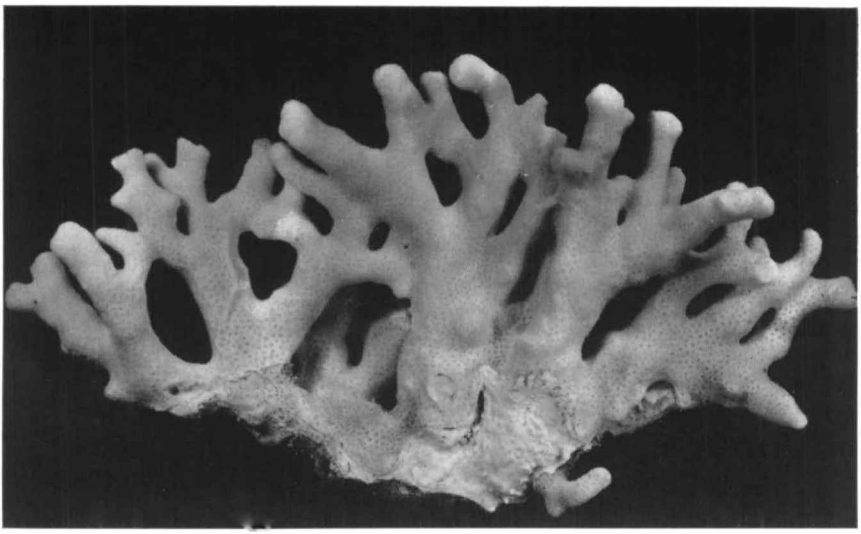

FIGURE 1. *Madracis formosa*, n. sp., holotype, × 0.46, Discovery Bay, 70 m (USNM 53479).

paper is to record and describe some of these new forms. Several others are known which may also be new but as yet are not well-enough studied to be named at this time; for instance, the luciphilous form of *Madracis pharensis* may be a distinct species, but the morphology of the skeletal structures appears to be identical. Attention is focussed on the characters of the corallum, and details of the nature of the polyps and ethology of some of the species are considered elsewhere in this memorial series by Dr. Judith C. Lang.

The iconography of the shallow-water West Indian corals is fairly extensive, but figures of a few species are included here without further description. Localities are cited only for those specimens examined by the writer, but colonies of most species occur at other sites in Jamaica. In addition to collections from Jamaica (DBL) the writer has had the opportunity to examine other collections in the British Museum (Natural History) (BMNH), the National Museum of Natural History (USNM), the Yale Peabody Museum (YPM), and small collections from Barbados, Bermuda, Brazil, Colombia, and Panama.

SYSTEMATIC DESCRIPTIONS

The classification of the higher taxa follows that of Wells in the *Treatise on Invertebrate Paleontology* (1956).

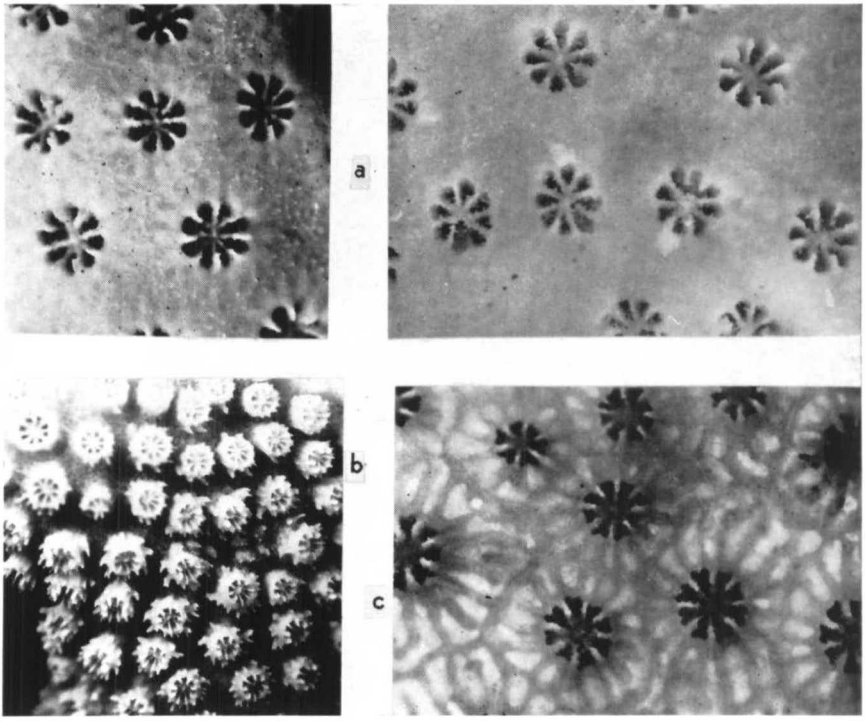

FIGURE 2. *Madracis formosa*, n. sp.: a, calices of holotype, both × 8.6; b, another colony, with area of aberrant, protuberant calices, × 8.6, Discovery Bay, 46 m (paratype, USNM 53480); c, calices on under surface of prostrate corallum, × 8.6, Discovery Bay, 70 m (paratype USNM 53481).

Order SCLERACTINIA
Suborder ASTROCOENIINA
Family Pocilloporidae
Genus *Madracis* Milne Edwards & Haime, 1849

Type-Species.—Madracis asperula Milne Edwards & Haime, Recent, Madeira (unnumbered types in BMNH).

In addition to the common *M. decactis*, three other species of *Madracis* are common on Jamaican reefs: *M. mirabilis* (Duchassaing & Michelotti); *M. pharensis* (Heller) with two forms, one living in dark or shaded places, the other in the open; and the new species described below. An artificial key to the Mediterranean, Atlantic, and West Indian species points up the main differences amongst these.

FIGURE 3. *Madracis formosa*, n. sp., colony *in situ*, Pear Tree Bottom, 49 m (photo by T. F. Goreau).

KEY TO SPECIES OF *Madracis*

I. Septa decamerally arranged:
  A. Ten septa (rarely traces of secondaries):
    1. Intercalicular surface spinose to nearly smooth:
      a. Encrusting, massive, nodular, or clavate .. *M. decactis* (Lyman)
      b. Ramose, branches slender (to 3 mm) and attenuate ..... *M. asperula* M. E. & H.
      c. Ramose, branches thick (6-10 mm), blunt ..... *M. mirabilis* D. & M.
    2. Intercalicular surface striate, corallum ramose ..... *M. myriaster* (M. E. & H.)
  B. Ten septa plus ten weakly developed secondaries; paliform lobes commonly before major septa ..... *M. pharensis* (Heller)
    1. Expanding, laminar, or encrusting sheets, luciphilous ..... *M. pharensis luciphila*
    2. Encrusting stolonlike ribbons, infrequent nodular proliferations, lucifugous ..... *M. pharensis pharensis*

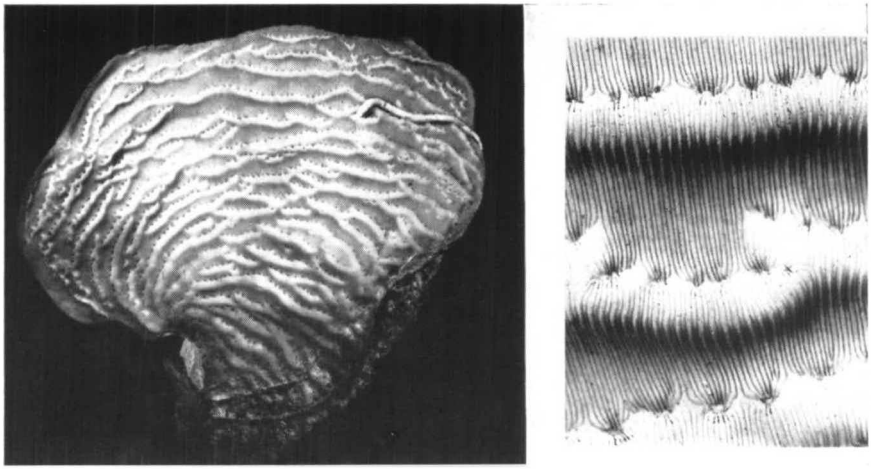

FIGURE 4. *Agaricia undata* (Ellis & Solander), small colony, × 0.33 (left), × 2.7 (right), Duncans, 49 m (USNM 53482).

II. Septa octamerally arranged, corallum ramose:
A. Branches thick (to 15 mm), blunt ..... *M. formosa*, n. sp.
B. Branches slender (to 3 mm), attenuate .. *M. brueggemanni* (Ridley)[2]

Madracis formosa, n. sp.
Figs. 1, 2, 3

Axhelia brueggemanni Ridley, 1881 (*pars*), Proc. zool. Soc. Lond.: 103 (not pl. 6, figs. 7, 7a).

Distinguished by the octameral arrangement of the septa: eight stout, exsert primaries, occasionally with traces of a second set of eight weakly developed secondaries. Branches of corallum bifurcating at a low angle, 8 to 15 mm in diameter, terminally blunt, anastomosing to some extent. Calices flush, 1-1.25 mm in diameter, spaced one to two diameters apart, the intervening coenosteum minutely granulate or spinulose. On the underside of prostrate branches the calices are widely separated by faintly costate coenosteum into which they are gently sunken (Fig. 2,c). On part of a branch of one colony the calices (Fig. 2,b) are strongly protuberant (up to 1.5 mm), their sides with a few coarse spines, and separated by flat and spongy coenosteum. A similar, possibly pathologic condition occurs on a branch of a specimen of *M. decactis* from the Bogue Island reef. Columellar area broad with a small central tubercle. Traces of paliform lobes in some calices.

[2] This "species" may be the same as *M. asperula*, as calices with 9 or 10 septa are not uncommon.

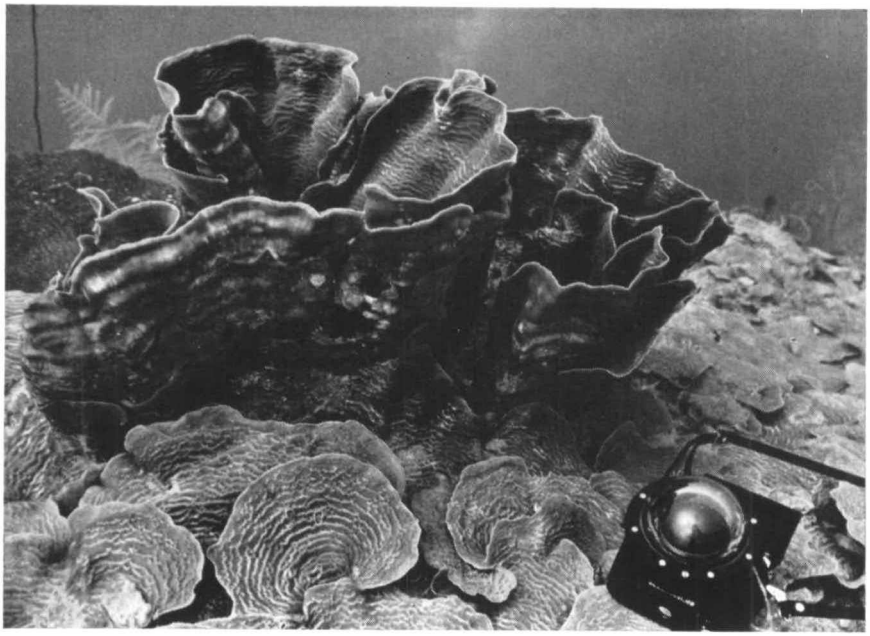

FIGURE 5. *Agaricia undata* (Ellis & Solander) (background), and *A. grahamae*, n. sp. (foreground), *in situ*, Discovery Bay, West Bull, 43 m (photo by T. F. Goreau).

In his description of *Axhelia brueggemanni*, Ridley included two specimens with octameral septa: one from Victoria Bank (20°42′S, 37° 27′ W), 60 m (BMNH 79.12.27.18), the other probably from the West Indies (BMNH unnumbered). The latter had been recognized, but not described, as a distinct species by Brueggemann. The two specimens, however, represent quite distinct species distinguished by the slender, twiglike branches of the former (like *M. asperula*) and the thick, blunt branches of the latter. Ridley figured only the thin branchlet from Victoria Bank; this specimen is here taken as the holotype of *M. brueggemanni*, and the other is included in *M. formosa* (but not as the type, as its source is unknown).

The type of *M. scotiae* Gardiner (1913: 687, 2 figs.) from the Abrolhos Bank (18°24′S, 37°58′W), 65 m, is BMNH 1939.7.20.14, and is a delicately branched form identical with *M. brueggemanni*.[3]

[3] Dr. J. Laborel (*in litt.*) reports both *M. asperula* and *M. brueggemanni* from 130 m off the Abrolhos Bank, Brazil.

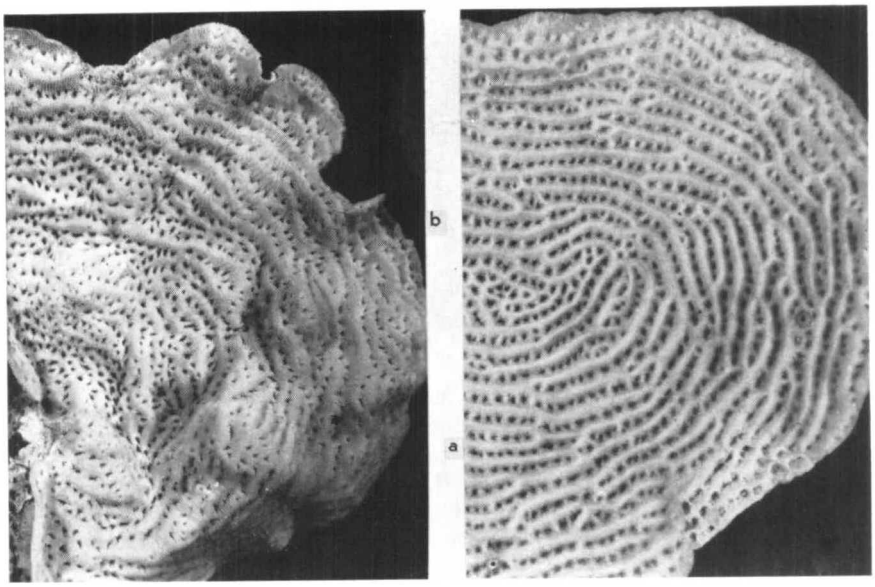

FIGURE 6. a, *Agaricia fragilis fragilis*, × 0.66, Orange Cove, 3 m (USNM 53483); b, *Agaricia fragilis contracta*, n. form, holotype, × 0.66, Maria Buena Bay, 40-43 m (USNM 53484).

The specimen from which Fowler (1888: 416, pl. 32, fig. 1) described the anatomy of the polyps under the name *M. asperula* was an octameral form almost certainly the same as *M. brueggemanni*. Unfortunately, he gave no indication of its origin except that it was a spirit specimen from the CHALLENGER Expedition. In Moseley's account (1881: 187) of the CHALLENGER deep-sea corals, *M.* "*asperula*" was recorded from 55 m off Bermuda, from 13-36 m off Fernando Noronha, and St. Vincent, Cape Verde Islands. The CHALLENGER specimens labelled *M. asperula* from Bermuda (BMNH 1914.5.14.6 and 80.11.25.209) are thick-branched (4-6 mm) decameral forms, not *M. asperula* but *M. mirabilis*, and it is probable that Fowler's material came from Fernando Noronha.

Types.—Holotype, USNM 53479; Paratypes, USNM 53480 and USNM 53481, Discovery Bay, Jamaica, 46 m.

Distribution.—Jamaica: Discovery Bay, 70 m (holotype); other specimens: Discovery Bay, 46, 52, 70, 76, and 79 m; Coconut Walk, 61 m; Maria Buena Bay, 30 and 46 m; Pear Tree Bottom, 43 and 47 m; Runaway Bay, 15 m.

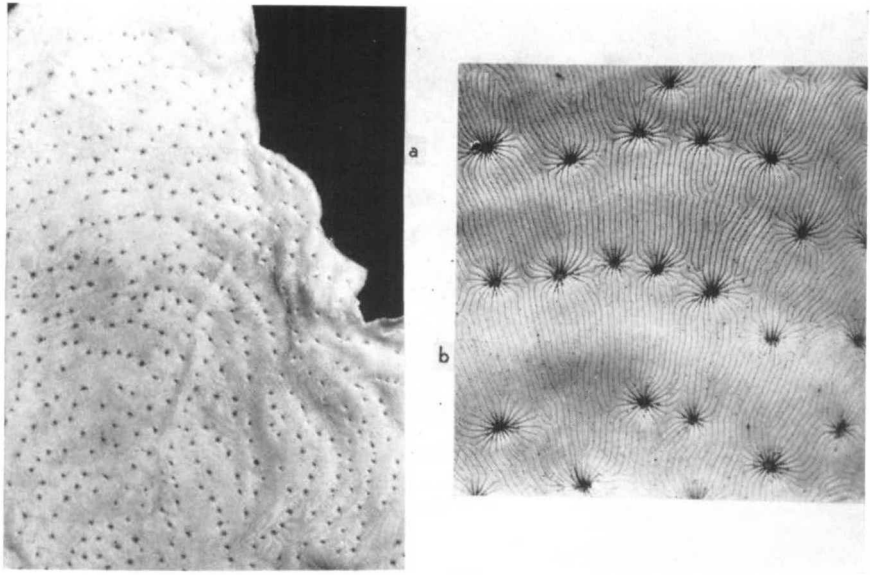

FIGURE 7. *Agaricia fragilis*, deep-water form: a, × 0.66; b, × 2.7. Discovery Bay, 55 m (USNM 53485).

Suborder FUNGIINA
Family Agariciidae
Genus *Agaricia* Lamarck, 1801

Type-Species.—*Madrepora undata* Ellis & Solander, 1786. (Holotype in the Hunterian Museum, Glasgow University.)

Some 21 names have been applied to West Indian species of this genus, some unrecognizable, some to be recognized only as forms of *A. agaricites* and *A. fragilis*, and five—*A. agaricites* (Linnaeus), *A. cailleti* (Duchassaing & Michelotti),[4] *A. fragilis* Dana, *A. tenuifolia* Dana, and *A. undata* (E. & S.)—apparently valid. To these is now added a new species, *A. grahamae*.

Madrepora cucullata Ellis & Solander was made the type of a new genus, *Helioseris*, by Milne Edwards & Haime in 1849, but was later absorbed by them in *Mycedium* as a synonym of *M. elephantotus*. *M. cucullata* is not a synonym of *Mycedium elephantotus*, nor is it a species of *Mycedium*, an Indo-Pacific genus. *Helioseris* is here revived as a genus closely related

[4] The other species named by Duchassaing & Michelotti (*A. danai*, *A. frondosa*, *A. lessoni*, and *A. vesparium*), the types of which appear to have been lost since Vaughan saw them many years ago, were so poorly described and figured that they cannot be recognized with any degree of certainty.

FIGURE 8. *Agaricia lamarcki* Milne Edwards & Haime, neotype, × 0.36, Blue Hole Reef, 12 m (USNM 53486).

to *Agaricia*. Its only known species, *H. cucullata*, is not uncommon throughout the West Indies in depths below about 8 meters.

ARTIFICIAL KEY TO THE WEST INDIAN SPECIES OF *Agaricia* AND *Helioseris*

I. Columella present:
  A. Corallum unifacial; valleys continuous:
    1. Explanate fronds:
      a. 5-8 centers per cm along valleys:
        aa. Collines spaced 6-7 mm apart, columella well developed ..... *A. undata* (E. & S.) (Figs. 4, 5)
        bb. Collines spaced 2-4 mm apart, columella weak:
          aaa. 15-20 septa per center ..... *A. fragilis fragilis* Dana (Figs. 6,a; 7)
          bbb. 20-25 septa per center; calices "pinched" ..... *A. fragilis contracta*, n. form (Fig. 6,b)

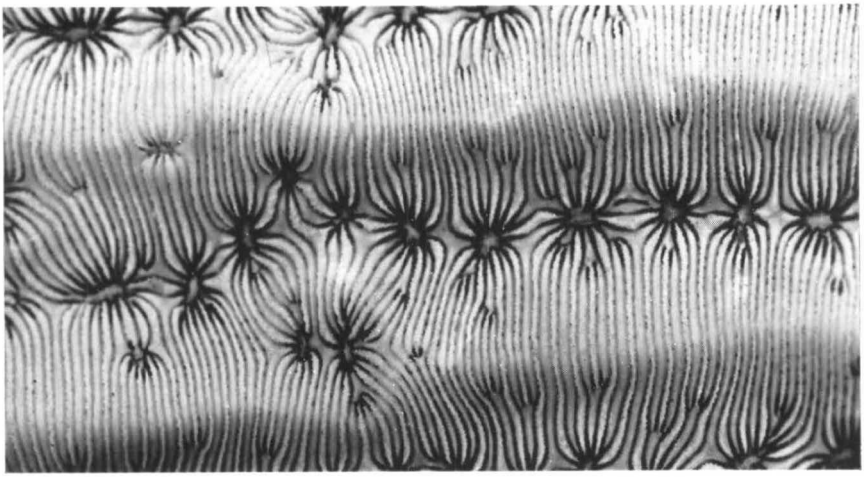

FIGURE 9. *Agaricia lamarcki* Milne Edwards & Haime, neotype, calicular surface, × 3.4, Blue Hole Reef, 12 m (USNM 53486).

b. 3-5 centers per cm along valleys:
aa. Septa alternating .. *A. lamarcki* M. E. & H. (Figs. 8, 9, 10)
bb. Septa subequal to equal ..... *A. grahamae*, n. sp. (Figs. 5, 11, 12)

2. Thin, dissected, crispate fronds ..... *A. cailleti* (D. & M.)

B. Corallum unifacial, or secondarily bifacial; valleys discontinuous or reticulate:

1. Corallum unifacial:
a. 5-7 centers per cm, separated 2 mm radially ..... *A. agaricites humilis* Verrill (+ *A. pusilla* Verrill)
b. 4-5 centers per cm, separated 3.5-4 mm radially:
aa. Flat or slightly concave or convex laminae ..... *A. agaricites purpurea* (Lesueur)
bb. Submassive, convex ..... *A. agaricites agaricites* (Linnaeus) (+ *A. crassa* Verrill, *non* Goldfuss, + *A. gibbosa* [Dana])

2. Corallum unifacial, but developing erect, thick, bifacial lobes:
a. Low, carinate lobes ..... *A. agaricites carinata*
b. Tall, imbricating lobes ..... *A. agaricites danai* M. E. & H. (*cristata* Dana, *non* Lamarck)

C. Corallum bifacial with dissected, thin, vertical fronds; valleys discontinuous or reticulate ..... *A. tenuifolia* Dana (Fig. 13)

II. Columella absent; corallum unifacial, thin, explanate ..... *Helioseris cucullata* (E. & S.) (Figs. 14, 33)

FIGURE 10. *Agaricia lamarcki* Milne Edwards & Haime, colonies *in situ* (E. A. Graham at right), Pear Tree Bottom, 21 m (photo by T. F. Goreau).

Agaricia lamarcki Milne Edwards & Haime, 1851
Figs. 8, 9, 10

Agaricia undata Lamarck, 1816, Hist. Anim. s. Vert., Vol. 2: 212 (*non Madrepora undata* Ellis & Solander, 1786).

Agaricia lamarcki Milne Edwards & Haime, 1851, Ann. Sci. nat. (3), *15:* 128.—Rousseau, 1853, Photographie Zoologique, liv. 3, pl. 18, fig. 3 (figure is about ×0.4).—Milne Edwards & Haime, 1860, Hist. nat. Corall., Vol. 3: 82.

This species is closely related to *A. grahamae*, with which it is associated on Jamaican reefs, and is best characterized by comparison of the two species. Both have the same growth form, attaining considerable proportions—the figured neotype of *A. lamarcki* measuring 40 × 56 cm, 16 cm high—the same mode of increase, the same number of centers per centimeter, the same number of septa per center, and the same prominent columella; both have obsolescent collines in some colonies. The significant differences are in the character of the septa and septocostae and aspect of the calicular centers: in *A. lamarcki* the septa are generally thinner than the interspaces, alternating in height and thickness, with eight or ten of the longer septa prominent and extending nearly to the columella before dropping steeply to below the level of the columella, and with the secondary septa sloping nearly evenly to the same level, giving the centers a more

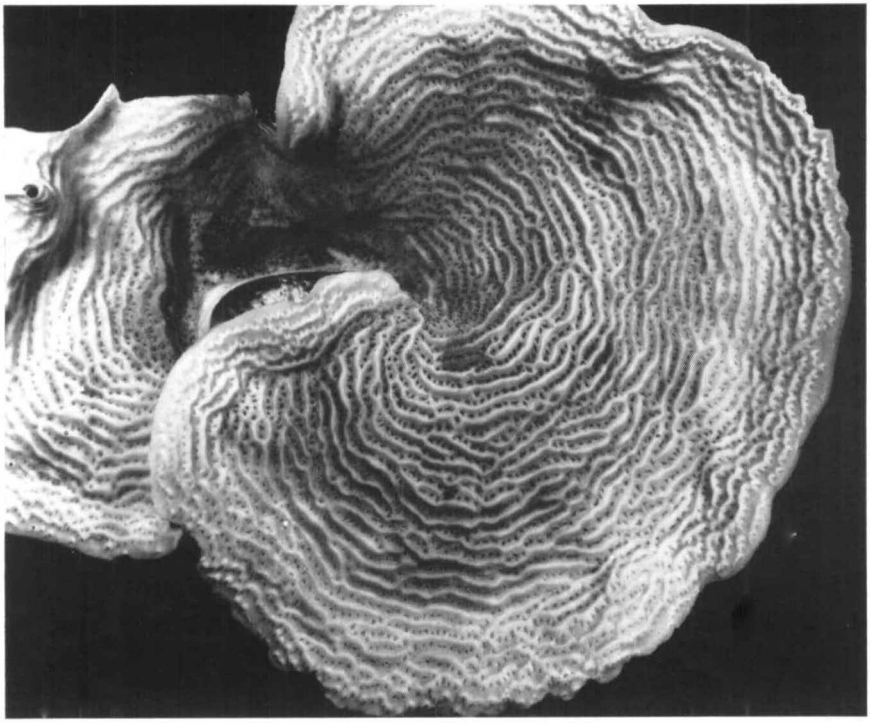

FIGURE 11. *Agaricia grahamae*, n. sp., holotype, × 0.38, Discovery Bay, 46 m (USNM 53487).

open, starlike appearance. The valleys of *A. lamarcki* are commonly wider (4-8 mm, usually between 5 and 6 mm). Older, thicker parts of coralla of *A. lamarcki* have thickened septa like those of *A. grahamae*, but the centers retain the characteristic open aspect.

Lamarck erroneously identified a specimen supposedly from the Indo-Pacific in the Paris Museum with *Madrepora undata* Ellis & Solander. It was made the type of a new species, *A. lamarcki*, by Milne Edwards & Haime in 1851, but was unfigured until 1853, when Louis Rousseau published a photograph (photographed on steel) of the same specimen. The earlier description of the species was repeated in 1857 by Milne Edwards & Haime, without reference to Rousseau's publication.[5] Since then, this form has scarcely been mentioned. Vaughan (1901: 65) placed it in *A. agaricites*, and Verrill (1901: 144) considered that it might be

[5] Milne Edwards & Haime must have been aware of Rousseau's figure, for in the same year (1857) they cited Rousseau's photograph (Phot. Zool.: pl. 12) of a specimen of *Stylaster flabelliformis* in their synonymy of that species.

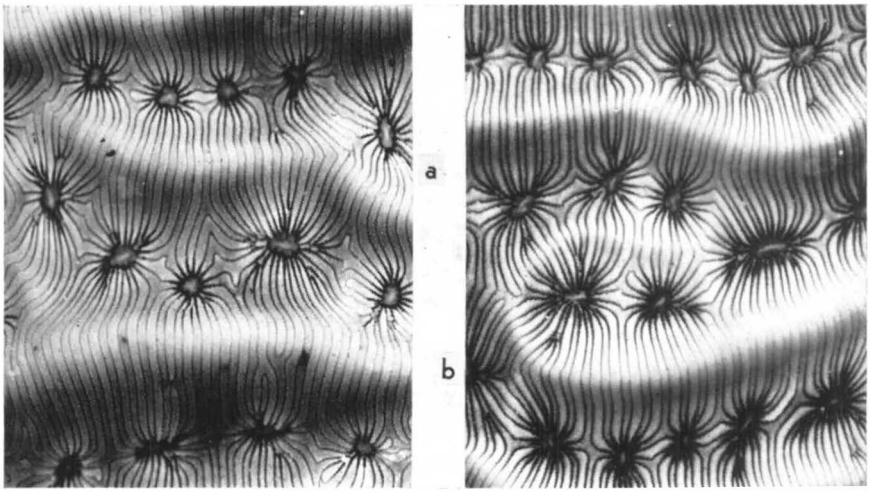

FIGURE 12. *Agaricia grahamae*, n. sp., holotype, calicular surface: a, × 3.4; b, × 3.4. Discovery Bay, 46 m (USNM 53487).

A. fragilis or Lamarck's *A. undata*. Neither seems to have been aware of Rousseau's good photograph, which agrees exactly with Milne Edwards & Haime's description. Lamarck's specimen in the Paris Museum apparently has been lost, and the large colony figured here is taken as the neotype.

Neotype.—USNM 53486.

Distribution.—Jamaica: Blue Hole Reef, 12 m (neotype); north of Southeast Cay, 3-4 m; Port Royal (old seawall), 4 m; Green I., 15 m; Discovery Bay, 21 m; Tower I., 27 m; Mangrove Pt., Duncans, 33 m; Maria Buena Bay, 30 and 46 m. Elsewhere: Dominica (YPM 7662); Prince Rupert Bay, Dominica, 27-40 m (USNM 208263).

Agaricia grahamae, n. sp.
Fig. 5, 11, 12

Corallum a thin, centrally attached, unifacial, shallow bowl, commonly asymmetric and expanding from the founder corallite more in one sector, in unrestricted situations developing into a simple helix of about one and a half volutions. Increase by circumoral intratentacular budding, the successive series of centers arranged in roughly concentric rows radially spaced 3.5-6 mm apart. Valleys long; collines normally prominent with rounded to subangular crests. Centers in the valleys numbering 3.5-4.5 per centimeter. Septa and septocostae equal or slightly subequal, thicker

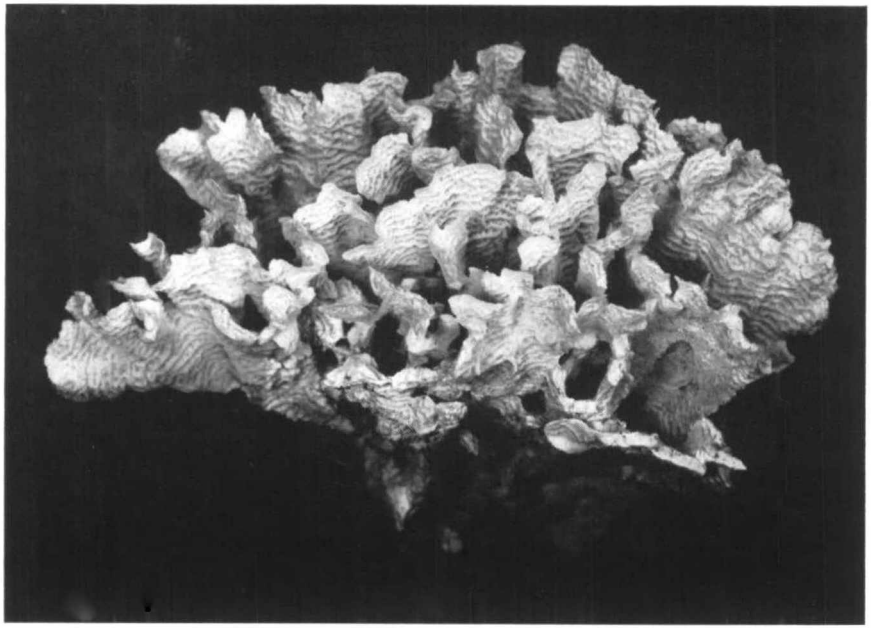

FIGURE 13. *Agaricia tenuifolia* (Dana), part of large colony, × 0.4, Llandovery, 12 m (USNM 53488).

than the interspaces, finely and closely granulated on edges and sides. The number of septa per center variable but rarely less than 22 or more than 26, the normal number, 24, being uncommon, arranged in two groups of 11-13 each, one of which represents the first two cycles and reaches the columella deep in the axial space where the inner septal ends are slightly swollen. The septa of the second group, the third cycle, are thin axially and usually do not meet the columella. Upper margins of all septa the same height or slightly alternating and extending equally almost to the axial space where they drop steeply to below the level of the top of the columella so that their inner edges neatly define the axial space. Septocostae continuous, 35-40 per centimeter over the collines, equal or slightly subequal at the growing margins of the corallum. Columella a large, solid, compressed, ridged process. Synapticulae not visible except in vertical fractures.

The distinctive characters of this species are (1) the thick and usually equal septa and septocostae, and (2) the close approach of all the septa to the axial spaces of the centers. In growth habit it is similar to *A. fragilis* and *A. lamarcki*. In *A. fragilis* the valleys are much narrower, generally between 2.5 and 3 mm, the centers are smaller and closer together (5 or 6

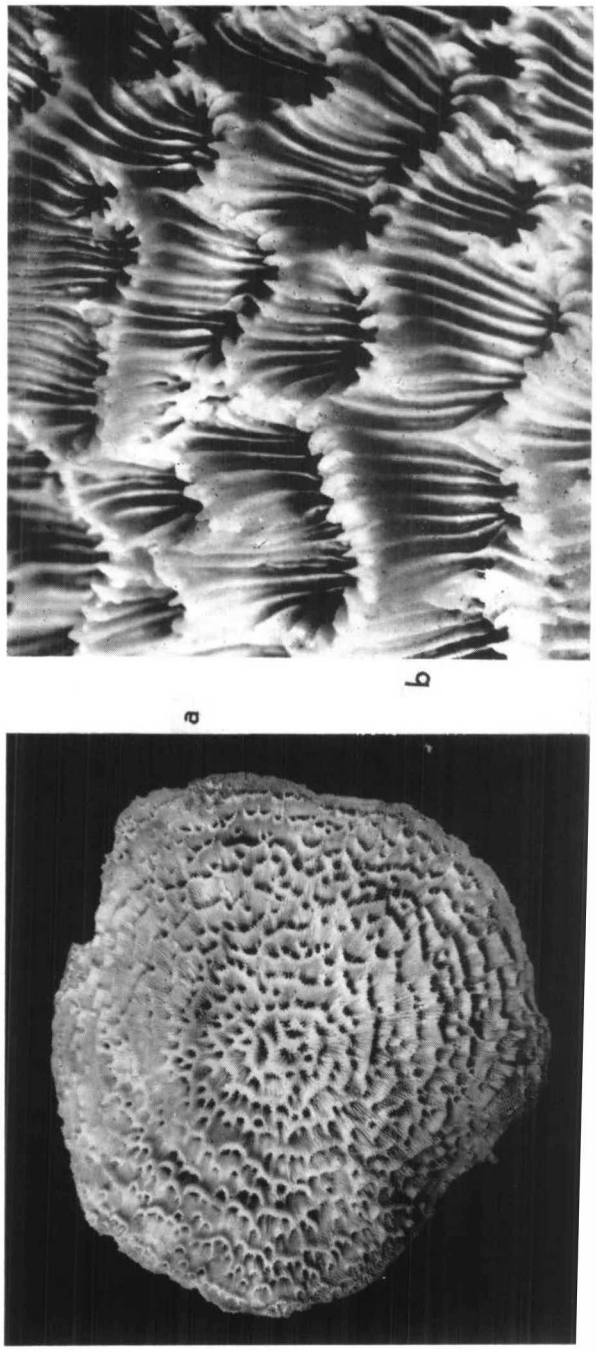

FIGURE 14. *Helioseris cucullata* (Ellis & Solander), small colony: a, × 0.5; b, × 4. Orange Bay, 12 m (USNM 53489).

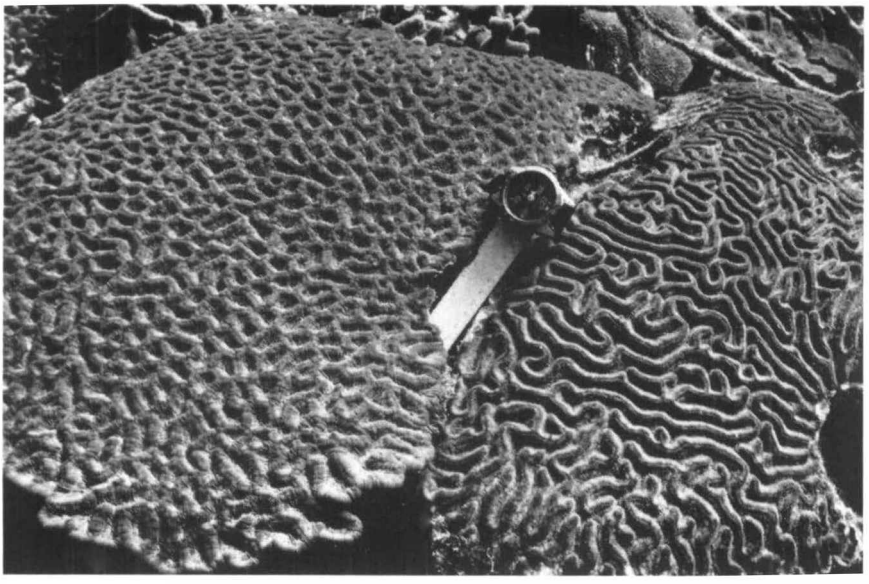

FIGURE 15. *Colpophyllia breviserialis* Milne Edwards & Haime (left), and *C. natans* (Müller) (right), colonies *in situ*, *ca.* × 0.2, Rio Bueno, 15 m (photo by T. F. Goreau).

per cm), and the columella is weakly developed. Comparison with *A. lamarcki* is made in the discussion of that species.

While the valleys of *A. grahamae* are usually defined by well-developed collines, colonies occur in which they are practically obsolete, a condition apparently associated with diminished illumination, and one found in other species of *Agaricia* with expanding growth habit.

Etymology.—Named for Miss Eileen Graham, colleague of T. F. Goreau, who has greatly contributed to the knowledge of the Jamaican reefs.

Holotype.—USNM 53487.

Distribution.—Jamaica: Discovery Bay, 46 m (holotype); Ocho Rios, 9 m; Lime Cay Shoal, 23 m; Little Bay, 27 m; Tower I., fore-reef slope, 29 m; Pear Tree Bottom, 30 m; Mangrove Pt., Duncan, 33 m; Maria Buena Bay, 42 and 46 m; Discovery Bay, 43, 55, 61, 70, and 76 m.

Suborder FAVIINA
Family Faviidae
Genus *Colpophyllia* Milne Edwards & Haime, 1848

Type-species.—*Madrepora natans* Müller, 1775

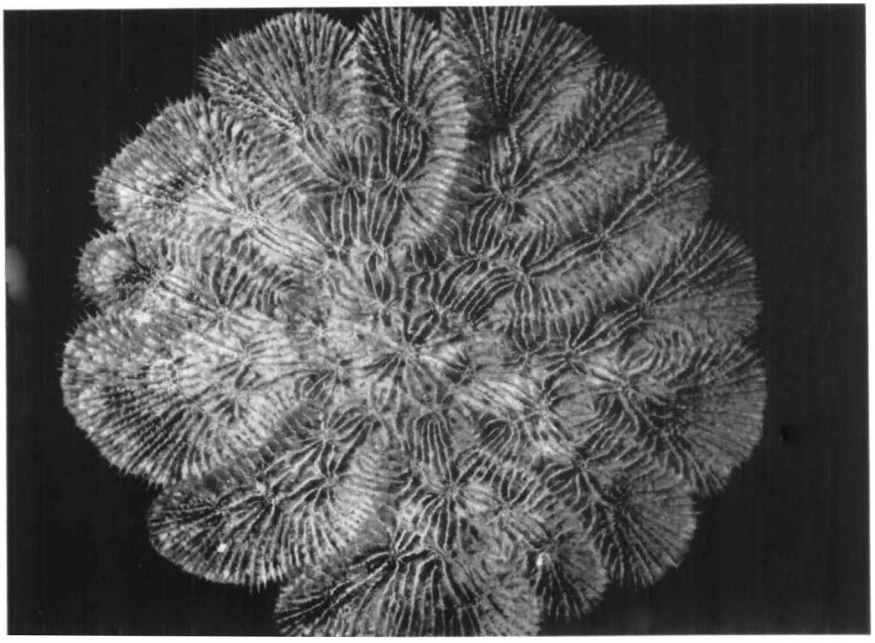

FIGURE 16. *Mycetophyllia lamarckiana* Milne Edwards & Haime, typical form, × 0.74, Southeast Cay, 12-21 m (USNM 53490).

Colpophyllia breviserialis Milne Edwards & Haime, 1849
Fig. 15

Colpophyllia breviserialis Milne Edwards & Haime, 1849, Ann. Sci. nat., (3), *11:* 267; 1857, Hist. nat. Corall., Vol. 2: 385.
Colpophyllia natans Matthai (*pars*), 1928, Cat. Madrep. Brit. Mus. (N. H.), *7:* 106, pl. 71, fig. 9.
Plesiofavites edwardsi Alloiteau, 1957, Contrib. Syst. Madrép. foss.: 146, pl. 2, fig. 2, figs. 110-111
Colpophyllia natans astreaeformis Pfaff, 1969, Mitt. Inst. Colombo-Alemán, Invest. cient., *3:* 23, fig. 1.

Matthai discussed the history of this poorly known species and figured the type-specimen (BMNH 40.5.29.5-6) for the first time, but doubtfully included it as a probable synonym of *C. natans.* On the advice of the present writer, Pfaff (1969) referred a specimen from the Islas del Rosario (Colombia) to Duchassaing & Michelotti's *C. astreaeformis* under the name *C. natans astreaeformis.* Since then it has become evident from large colonies in Jamaica that *C. breviserialis* is a distinct species including the Colombian specimen, and that *C. astreaeformis* D. & M. was based on a fragment of a colony of *C. natans.*

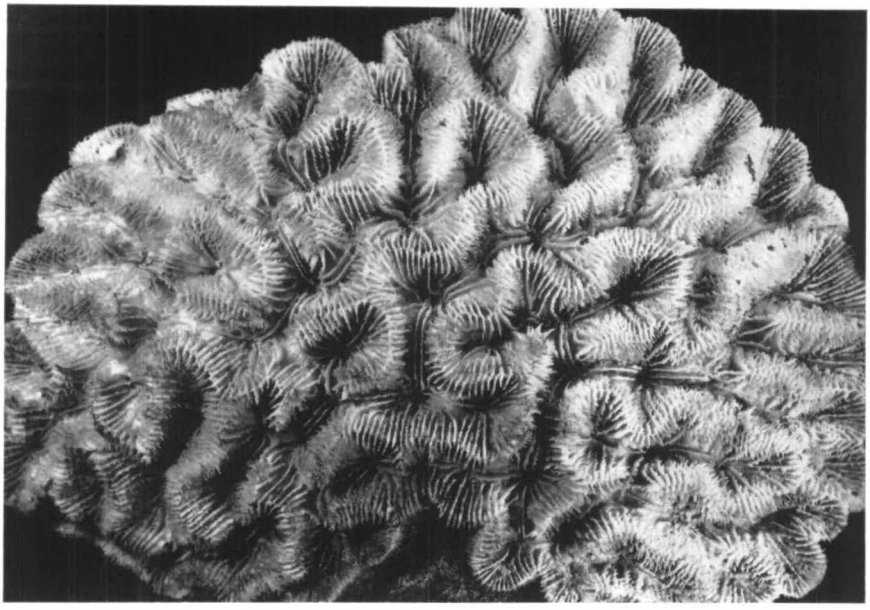

FIGURE 17. *Mycetophyllia danaana* Milne Edwards & Haime, typical form, × 0.71, Green Island Reef (USNM 53491).

A small piece in the Paris Museum of unknown origin (Chevalier [1961: 138] said "Océan Indien") was made the type of a new genus and species, *Plesiofavites edwardsi* by Alloiteau, but, from his photographic figure and description, this appears to be *C. breviserialis*.

C. breviserialis is distinguished by the short calicular series with rarely more than one center, contrasted with the long meandering series of *C. natans* (+ *C. amaranthus*). This is clearly demonstrated by the *in situ* photograph (Fig. 15) of colonies of the two species growing side by side in Jamaica. Details of the septa and dimensions of the two species are the same.

The "hydnophoroid" *Colpophyllia* figured by Pfaff (1969: fig. 2) may prove to represent a new species, or, following the accepted criteria for generic differentiation, it could well be a new genus. A similar "hydnophoroid" condition has been found in a species of *Mycetophyllia* (Fig. 18).

Distribution.—Jamaica: Rio Bueno, 15 m (Fig. 15); Mangrove Pt, 30 m (a colony nearly 150 cm broad); Double Reef, Silver Sands, 5 m. Elsewhere: Colombia: Islas del Rosario; Panama.

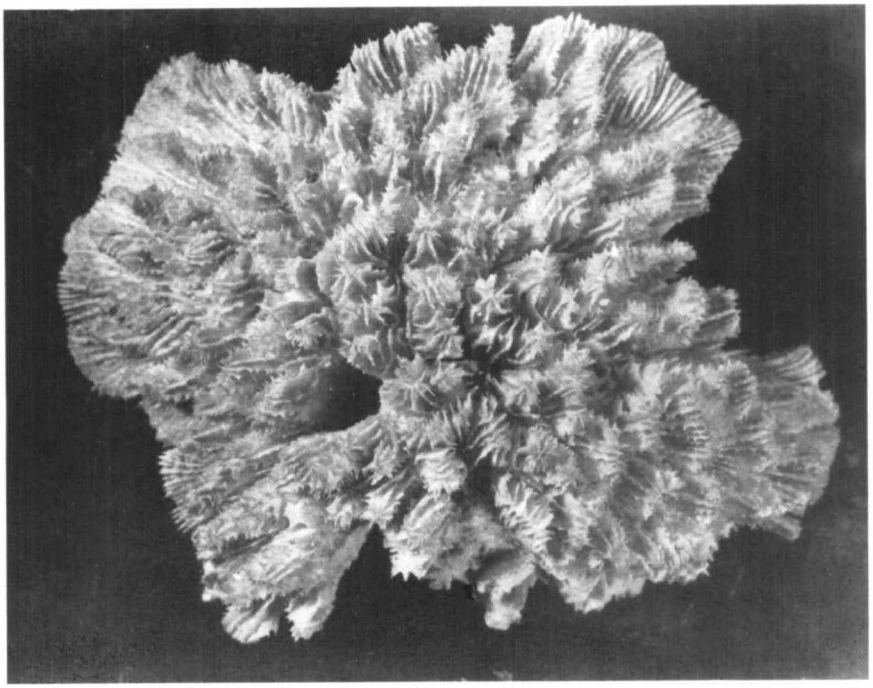

FIGURE 18. *Mycetophyllia danaana* Milne Edwards & Haime, "Hydnophoroid" form, × 0.75, shallow water, Barbados (USNM 53492) (J. B. Lewis, coll.).

Family Mussidae
Genus *Mycetophyllia* Milne Edwards & Haime, 1848

Type-Species.—Mycetophyllia lamarckiana Milne Edwards & Haime, 1848 (type in Paris Museum).

Only one Recent species of this genus has previously been recognized, but the deeper parts of the Jamaican reefs below about 10 meters have revealed a wide range of variation, and the ethological investigations of Dr. Lang have shown that the genus is far from monospecific and that at least four species, three of them new, are common in the deeper zones. These new species are briefly characterized here.

Milne Edwards & Haime recognized two Recent species: *M. lamarckiana* and *M. danaana,* both based on small colonies, only one of which was figured by them. Since then, these have received little attention except by Matthai (1928), who redescribed the types and other specimens and reduced *M. danaana* to a subjective synonym of *M. lamarckiana.* He admitted much variation in *M. lamarckiana,* and the two forms can be

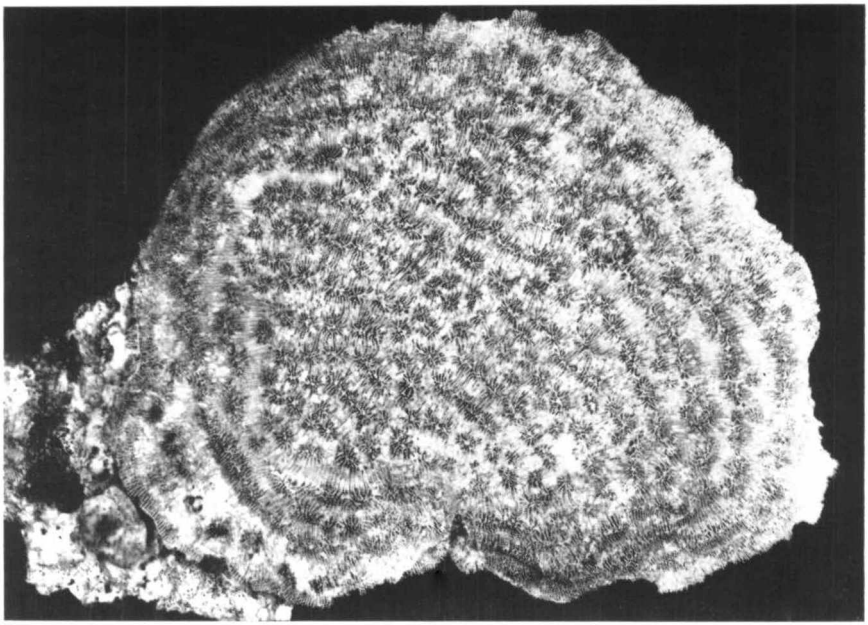

FIGURE 19. *Mycetophyllia reesi*, n. sp., holotype, × 0.38, Discovery Bay, West Bull, 30 m (USNM 53493) (J. C. Lang, coll.).

recognized, but according to Dr. Lang there is no evidence of ethological aggressiveness between them, in contrast with the behavior of other species of *Mycetophyllia*. Extremes of the *M. lamarckiana* form and the *M. danaana* are quite different (Figs. 16, 17), but there are intergrades. They are separated here with misgivings.

A curious variant of *M. danaana* is found in a few coralla in which the collines, continuous marginally, are centrally very short and isolated as hydnophoroid pillars, similar to a condition found in some specimens of *Colpophyllia natans*. Figure 18 shows a specimen from Barbados collected by Dr. J. B. Lewis, who notes that it occurs there in shallow water. Similar variants occur in Jamaica and Panama, although the hydnophoroid condition is less pronounced. The hydnophoroid aspect, however, is superficial, as there is no indication of the true hydnophoroid mode of increase.

ARTIFICIAL KEY TO THE RECENT SPECIES OF MYCETOPHYLLIA

I. Increase by circumoral budding; collines and valleys absent ..... *M. reesi*, n. sp.

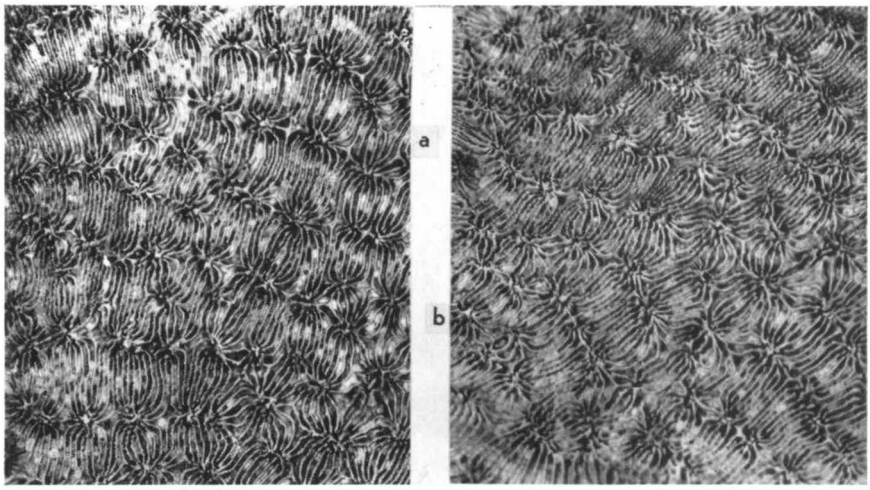

FIGURE 20. *Mycetophyllia reesi*, n. sp., holotype: a, calicular surface, × 0.75; b, oblique aspect of calicular surface, to show elevated calicular centers, × 0.75. Discovery Bay, West Bull, 30 m (USNM 53493).

II. Increase initially by circumoral followed by intramural budding with terminal forking:

A. Septa and septocostae thinner than interspaces:

1. Collines continuous:

a. Valleys discontinuous, narrow, shallow ..... *M. ferox*, n. sp.

b. Valleys continuous, deep ..... *M. danaana* M. E. & H.

2. Collines radiating, absent centrally, valleys broad and shallow ..... *M. lamarckiana* M. E. & H.

B. Septa equal to or thicker than interspaces; collines radiating, absent centrally, or obsolete; valleys wide and shallow ..... *M. aliciae*, n. sp.

Mycetophyllia reesi, n. sp.
Figs. 19, 20, 21

Corallum a light, thin, expanding lamina, centrally or marginally attached to substrate. Calicular surface relatively even, or in places conforming to substrate. Noncalicinal surface more or less even with concentric shreds of epitheca overlying thin, equal, toothed costae radiating from the point of attachment. The holotype colony measures 19 × 24 cm; marginally it is very thin and not more than a centimeter thick centrally. Increase is by circumoral polystomodaeal budding, with calicular

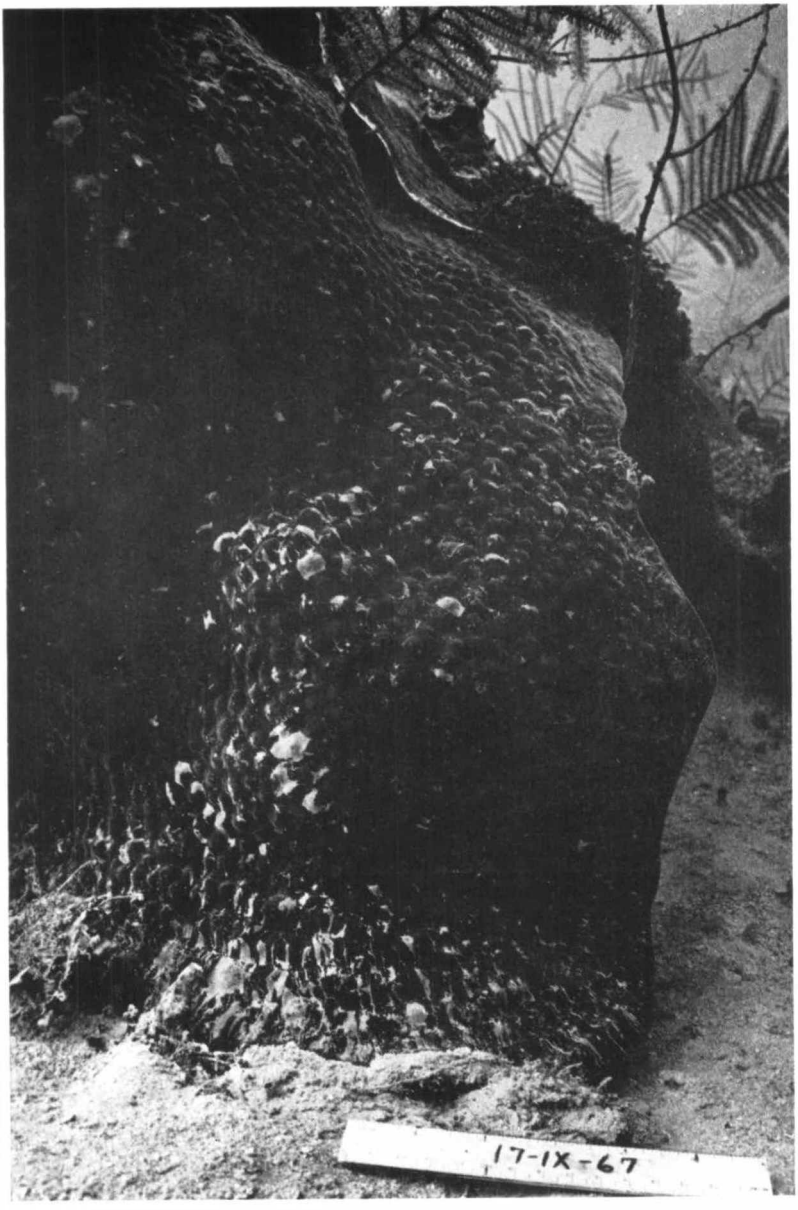

FIGURE 21. *Mycetophyllia reesi*, n. sp., colony *in situ*, *ca.* × 0.28. Note elevated peristomes of polyp centers. Discovery Bay, Buoy W in channel, *ca.* 40 m (photo by J. C. Lang).

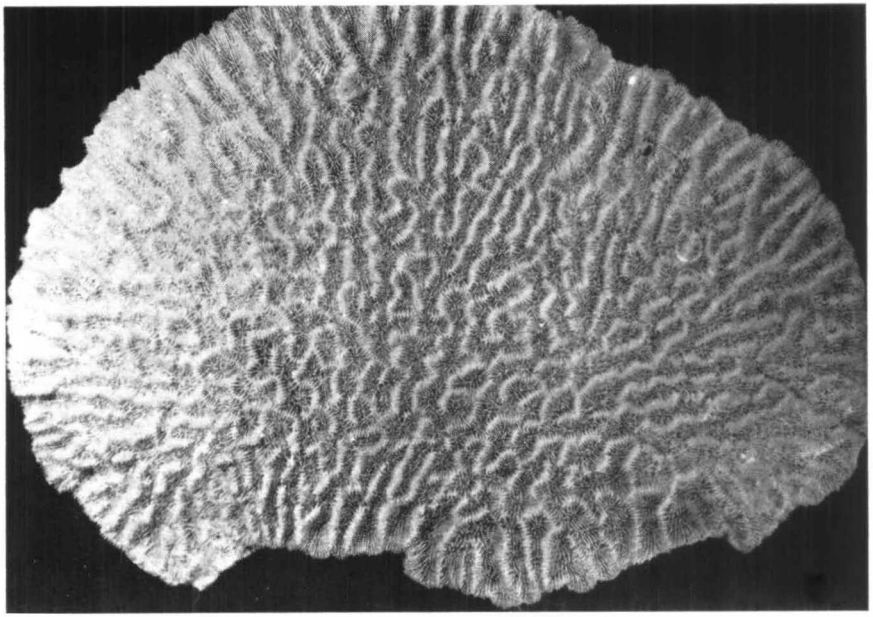

FIGURE 22. *Mycetophyllia ferox*, n. sp., holotype, × 0.36, Eaton Hall, scarp face, 20 m (USNM 53494).

TABLE 1
COMPARISON OF SOME CHARACTERS OF SPECIES OF *Mycetophyllia*

	M. reesi	*M. aliciae*	*M. ferox*	*M. danaana*	*M. lamarckiana*
Increase	circumoral	circumoral-intramural	intramural	circumoral-intramural	circumoral-intramural
Centers	—	di-triserial	uniserial	uniserial	uni-diserial
Valley length	—	continuous	discontinuous	continuous	continuous
Valley width (mm)	—	30–80	*ca.* 10	10–20	10–20
Valley depth (mm)	—	3–7	3–5	10–12	5–12
Spacing of centers (mm)	7–15	10–15	5–10	10–15	8–11
Septa per cm	9–11	6–7	9–11	10–12	6–7
Septal thickness	thin	thick	thin	thin	thin
Septa per center	10–15	10–12	18–20	12–16	10–15

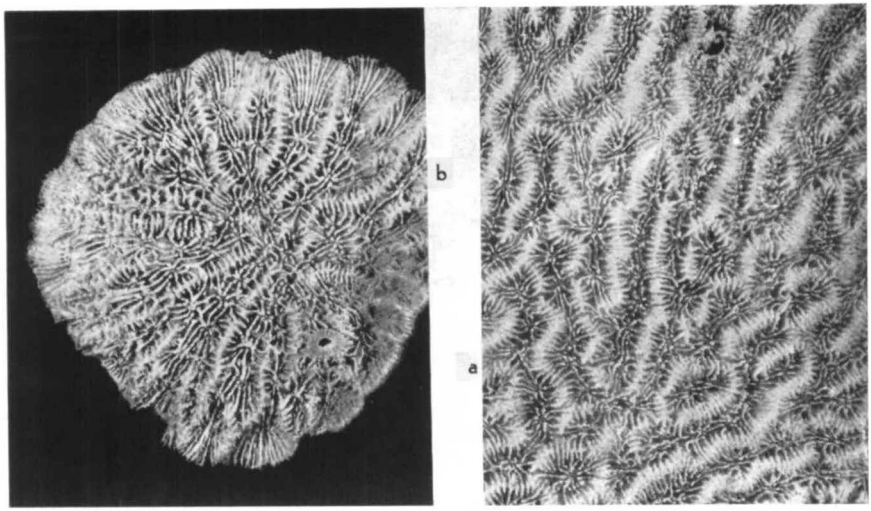

FIGURE 23. *Mycetophyllia ferox*, n. sp.: a, calicular surface of holotype, × 0.66, Eaton Hall, scarp face, 20 m (USNM 53494); b, young colony, without trace of circumoral budding, × 0.66, Southeast Cay, 9-21 m (at drop off) (paratype, USNM 53495).

centers in concentric rows. Collines absent. Centers 7-12 mm apart along rows; rows of centers 10-15 mm apart. Margins of septa elevated above the general surface at the centers, giving a marked protuberant aspect. Septa 9-11 per centimeter; 10-15 septa per center, meeting in a weak columellar tangle. Septa and septocostae equal, thin, with 10-12 weak dentations per centimeter.

Most of the details of the structure of this species are like those of the other species of *Mycetophyllia*, the significant differences being (1) the mode of increase, which is wholly circumoral, (2) the absence of collines, and (3) the elevation of the calicular centers above the otherwise even calicular surface.

According to Dr. Lang, this is the only known West Indian species in which the polyps lack tentacles.

Etymology.—Commemorative of the late W. J. Rees of the British Museum (N. H.).

Holotype.—USNM 53493.

Distribution.—Jamaica: West Bull, 30 m (holotype); Discovery Bay, 30-76 m; Mangrove Pt., 33 m; Cardiff Hall, 27 m.

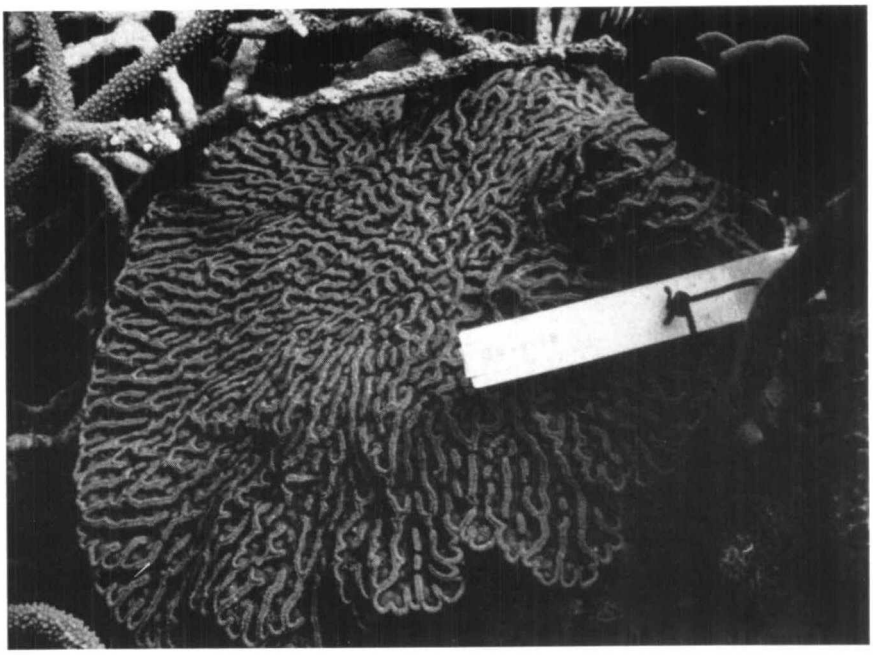

FIGURE 24. *Mycetophyllia ferox*, n. sp., colony *in situ*, among *Acropora cervicornis*, Discovery Bay, *ca.* 15 m (photo by J. C. Lang).

Mycetophyllia ferox, n. sp.
Figs. 22, 23, 24

Corallum an expanding lamina, weakly attached (subpedunculate), irregularly circular in outline in large colonies. Calicular surface even, undulant. Dimensions of holotype: 22 × 32 cm; of another corallum: 26 × 35 cm. Marginally the corallum is thin, thickening toward the area of fixation to 4-5 cm. Under surface with only faint traces of epitheca, costate as in other species. Increase apparently by intramural budding with terminal forking, with narrow uniserial rows of centers separated by low, narrow collines over entire upper surface. Valleys shallow, scarcely more than 10 mm wide except at forkings. Collines continuous, interconnecting, enclosing series with up to 12 centers spaced 5-10 mm apart. Centers with 16-20 septa, of which about 10 extend nearly to the axis where there are a few weak columellar strands. Septa equal in thickness, much thinner than interspaces. Septa and septocostae 9-11 per cm. Septal and septocostal marginal dentations tall, acute, and minutely spinulose, about 1 mm apart, four or five per septum, the innermost one taller than the rest.

As in other species of *Mycetophyllia*, it would seem probable that in-

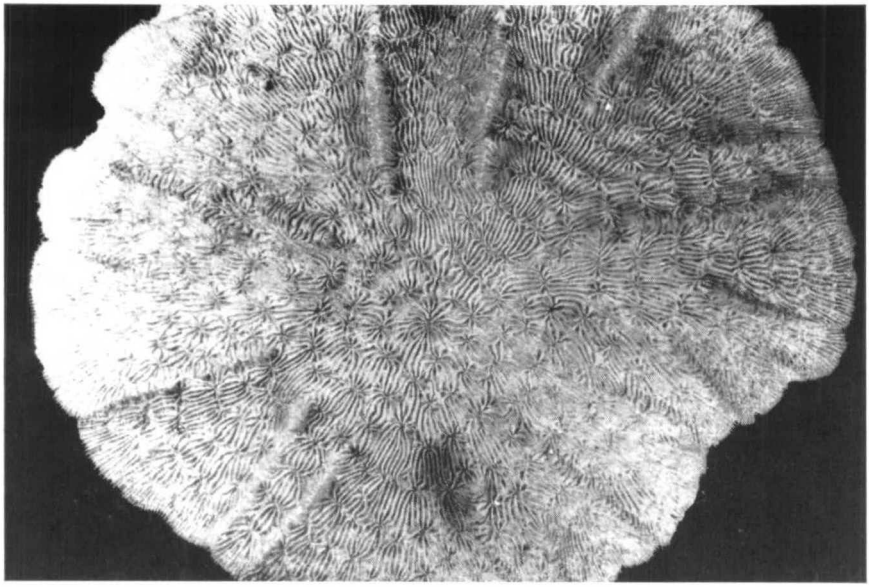

FIGURE 25. *Mycetophyllia aliciae*, n. sp., holotype, × 0.35, Discovery Bay, Bull, 55 m (USNM 53496).

crease would be initially circumoral, but in young coralla 8 cm in diameter (Fig. 23,b), with radiating collines, no trace of the circumoral condition can be seen.

The distinctive characters of this comparatively shallow-water species are the continuous, low, interconnecting submeandroid collines enclosing short series and the narrow valleys with single rows of centers. In other species the collines are discontinuous or absent, and valleys continuous or absent.

Types.—Holotype, USNM 53494; paratype, USNM 53495, Southeast Cay, Jamaica, 12-21 m.

Distribution.—Jamaica: Eaton Hall, 20 m, scarp face (holotype); Discovery Bay, 13 m; Green Island reef; Southeast Cay, 18 m; Maria Buena Bay, 10 m.

Mycetophyllia aliciae, n. sp.
Figs. 25, 26, 27, 28

Corallum an expanding, commonly circular, lamina, weakly attached centrally to substrate. Calicular surface even, slightly undulating, or slightly convex. Diameter of holotype 31 cm. Marginally it is thin, thickening

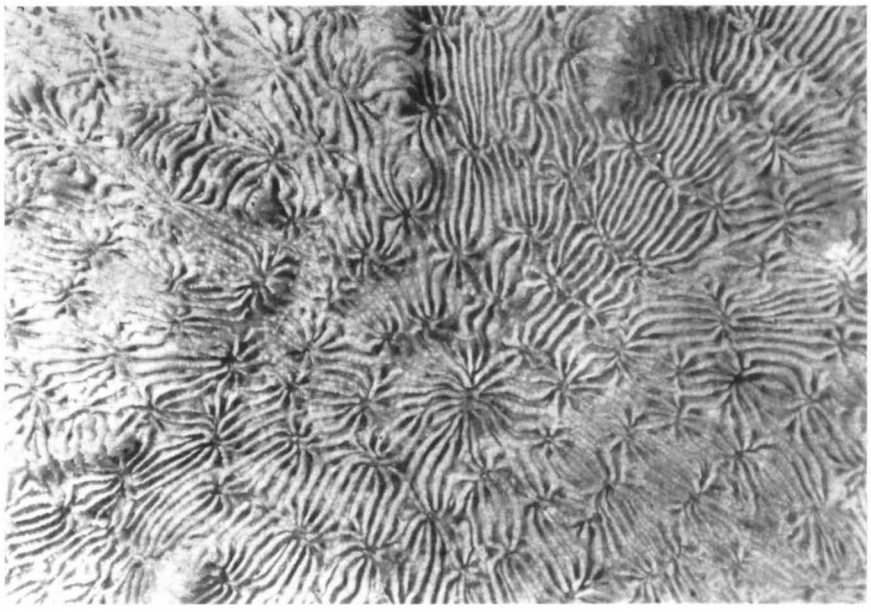

FIGURE 26. *Mycetophyllia aliciae*, n. sp., calicular surface of holotype, × 0.7, Discovery Bay, Bull, 55 m (USNM 53496).

centrally to 1-1.5 cm. Under surface with thin shreds of epitheca overlying radiating, thin, equal, toothed costae. Increase is initially by circumoral budding to a diameter of 8-12 cm followed by intramural budding with di- or triserial series of centers separated by low, narrow, straight, radiating collines. Collines at origins about 3 cm apart, spreading to 6 or 8 cm before terminal forking introduces intervening short collines. Centers 10-15 mm apart radially and about the same concentrically. Inner ends of septa commonly slightly elevated at centers. Septa 10-12 per center, but not quite extending to the axis, which is free of columellar structure. Septa equal in thickness, and equal to, as thick as, or thicker than, the interspaces. Septa and septocostae six or seven per cm. Septal and septocostal marginal dentations short and conical, 10 or 11 per cm.

In deeper-water (40-70 m) colonies the collines are weakly developed or even absent, the calicular surface becoming evenly and gently convex, and the septa and septocostae much thickened, numbering only five per cm.

This handsome coral has the same mode of increase as *M. lamarckiana*, circumoral followed by intramural budding, but in *M. aliciae* growth is almost wholly horizontal, rather than lateral and upward as in *M. lamarkiana*. The septa at the calicular centers are slightly elevated rather

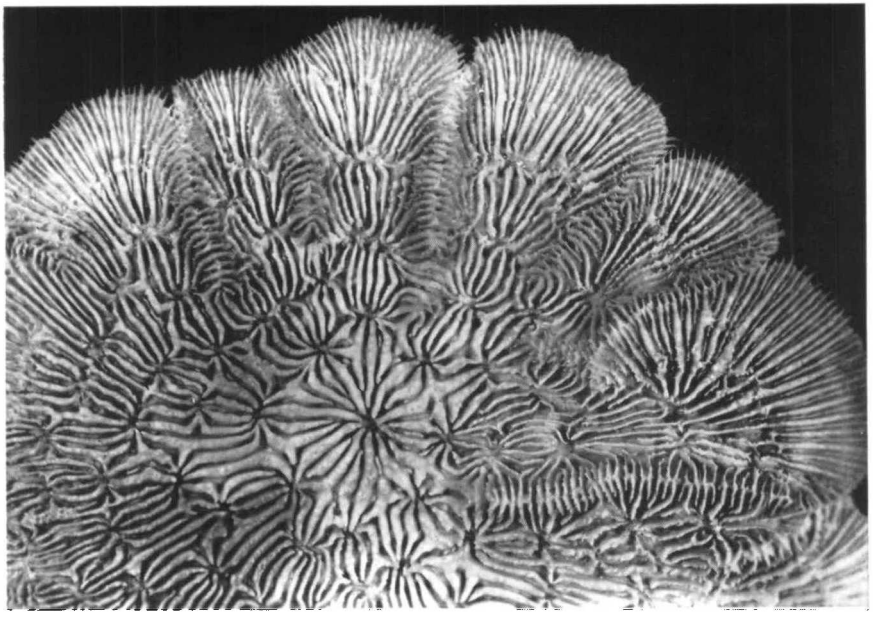

FIGURE 27. *Mycetophyllia aliciae*, n. sp., calicular surface of paratype colony with thickened septa, × 0.7, Discovery Bay, West Bull, 38 m (USNM 53497) (J. C. Lang, coll.).

than depressed and are much thicker. Both are much alike in early stages of development. In *M. lamarckiana*, initial circumoral budding ceases with the development of one, or at most two, circles of centers and the central circumoral region is commonly subsequently masked by intramural budding with higher, more closely spaced, radiating or meandering collines. *M. reesi* increases only circumorally and lacks collines. *M. ferox* develops meandering, interconnecting collines enclosing narrower valleys.

Etymology.—In honor of H. R. H. Princess Alice, Countess of Athlone, former Chancellor of the University of the West Indies, and friend of the Discovery Bay Marine Laboratory.

Types.—Holotype, USNM 53496; paratype, USNM 53497, Discovery Bay, Jamaica, 38 m.

Distribution.—Jamaica: The Bull, Discovery Bay, 55 m, at bottom of fore-reef slope (holotype); Discovery Bay, 29, 33, 35, and 64 m; West Rio Bueno, 40 m, scarp face; Runaway Bay, 18 m; West Bull, Discovery Bay, 38 m.

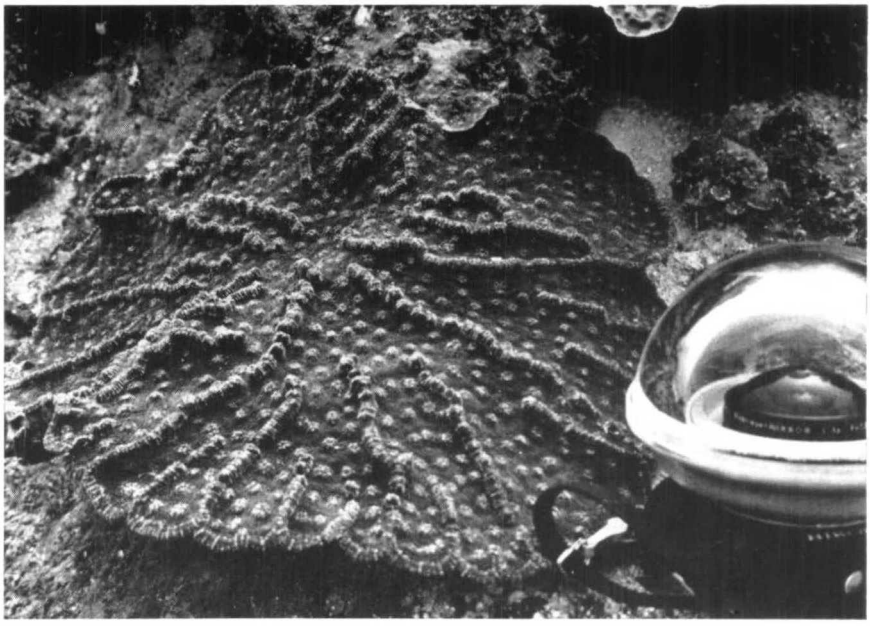

FIGURE 28. *Mycetophyllia aliciae*, n. sp., colony *in situ*, *ca.* × 0.36, Discovery Bay, Pinnacle II, 43 m (photo by J. C. Lang).

Family Meandrinidae
Genus *Dichocoenia* Milne Edwards & Haime, 1848

Type-Species.—*D. stokesi* M. E. & H., 1848, Recent, Cuba (type in Mus. Nat. Hist. nat., Paris).

Dichocoenia stokesi Milne Edwards & Haime, 1848
Figs. 29, 30

Dichocoenia stokesi Matthai, 1928, Cat. Madrep. Brit. Mus. (N. H.), *7:* 198, pl. 44, fig. 1; pl. 45, figs. 2, 5; pl. 72, fig. 8a (synonymy).—Smith, 1948, Atlantic Reef Corals: 93, pl. 31.—Squires, 1958, Bull. Am. Mus. nat. Hist., *115:* 257, pl. 34, fig. 4.—Duarte Bello, 1961, Acuario Nacional (Cuba), Ser. Educacional, No. 2: 50.—Almy & Torreón, 1963, Caribb. J. Sci., *3:* 157, pl. 17, fig. a.

Dichocaenia porcata Alloiteau, 1957, Contrib. Syst. Madrép. foss.: 276, pl. 13, fig. 1

Paradichocaenia stokesi Alloiteau, 1957, *Op. cit.*: 276, pl. 13, figs. 5, 8.

Alloiteau considered that the two specimens that he supposed to be (1) Milne Edwards & Haime's type of *D. stokesi* and (2) a specimen labeled *D. porcata* by Milne Edwards, represented two different genera:

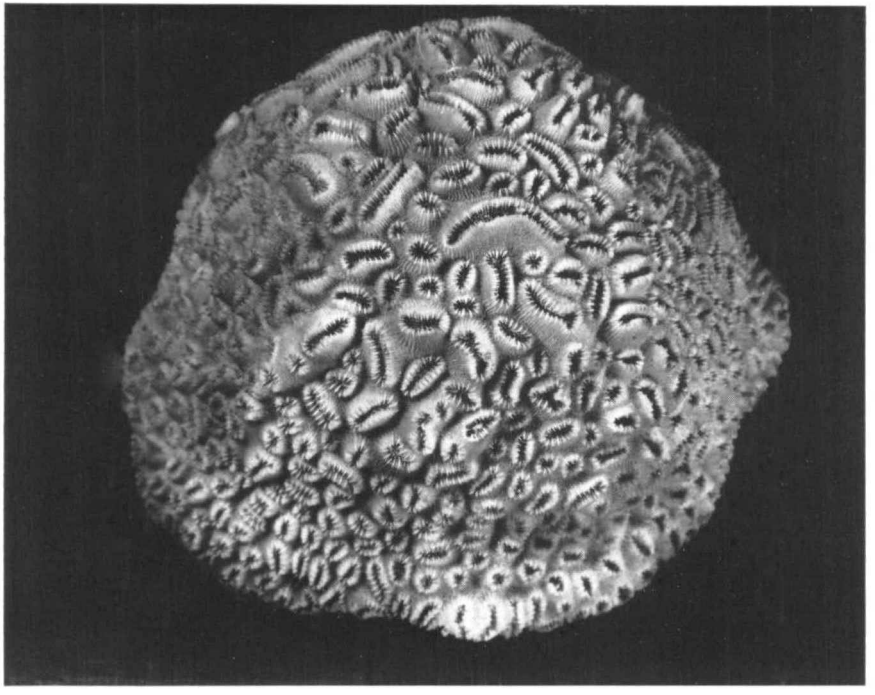

FIGURE 29. *Dichocoenia stokesi* Milne Edwards & Haime, typical small colony, × 0.61, East Palisadoes, 27 m (USNM 53498).

Dichocoenia M. E. & H. and a new genus *Paradichocaenia* (*sic*), distinguished from each other by trifling differences in granulation of the septa and a lamellar columella in *Dichocoenia* and a fascicular one in *Paradichocaenia*. Septal granulation is scarcely even a specific character, and in virtually every specimen of *D.* "*porcata*" (Lamarck, *non* Esper) (= *D. stokesi*) and *D. stokesi* the columella varies in development from wholly fascicular to a thin, continuous or discontinuous lamella. As pointed out by Matthai (1928), who figured the types of both forms, Lamarck's *Astrea porcata* (*non* Esper) is the same as *D. stokesi* M. E. & H., and the latter is the correct name for this common West Indian coral.

Distribution.—Throughout the West Indian–Caribbean area; sparingly in Bermuda.

Dichocoenia stellaris Milne Edwards & Haime, 1849
Figs. 31, 32, 33

Dichocoenia stellaris Milne Edwards & Haime 1849, Ann. Sci. nat., (3), *10:* 307; 1857, Hist. nat. Corall., *2:* 201.—Matthai 1928, Cat. Madrep. Brit. Mus. (N. H.), *7:* 201, pl. 63, fig. 2 (holotype).

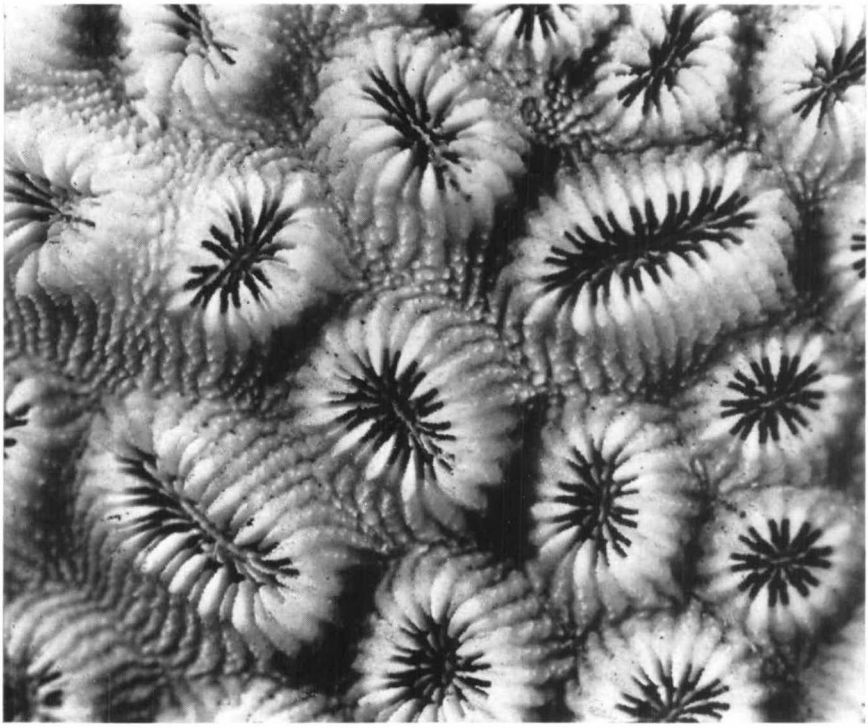

FIGURE 30. *Dichocoenia stokesi* Milne Edwards & Haime, calices, × 4, East Palisadoes, 27 m (USNM 53498).

Corallum expanding, gently convex. Increase by extratentacular budding from intercorallite surface; intratentacular increase uncommon. Calices protuberant, circular in early stages, commonly becoming elliptical with longer diameter up to 12 mm. Septa as in *D. stokesi*; costae equal, short. Intercalicular surface spinulose. Columella fascicular to lamellar. Distinguished from *D. stokesi* by the pancake-like growth habit and dominance of extratentacular budding, with smaller, nonmeandrine calices.

This species is common on Jamaican reefs, and has probably not been recorded from other West Indian reefs due to its relative scarcity on surface reefs. Colonies occur in Jamaica from surface reefs (2 m), but it is more abundant in deeper zones. Individual variation is to some extent correlated with depth: calices are spaced 1 to 3 mm apart in shallow water, from 3 to 6 mm in deeper water; they are protuberant from 1 to 3 mm in shallow water, from 1 to 6 mm in deeper water; the peritheca is generally coarsely granular in shallow water, becoming spinulose in deeper water.

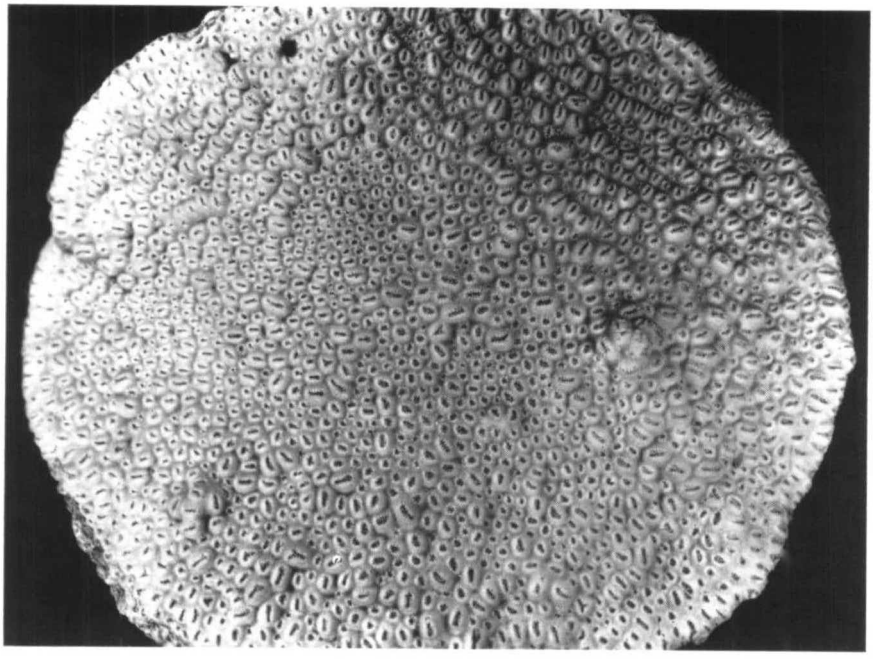

FIGURE 31. *Dichocoenia stellaris* Milne Edwards & Haime, typical form, × 0.38, Boscobel, 7.5 m (USNM 53499).

Distribution.—Jamaica: Boscobel, 8 m (Figs. 31, 32); Bank House Channel, Llandovery, 12 m; East Palisadoes, 28 m; Discovery Bay, 37 and 47 m.; Bull, 24 m (Fig. 33).

Suborder CARYOPHYLLIINA

Family Caryophylliidae

Subfamily Eusmiliinae

Genus *Eusmilia* Milne Edwards & Haime, 1848

Type-Species.—*Madrepora fastigiata* Pallas, 1766. West Indies.

Eusmilia fastigiata (Pallas) forma **flabellata**, n. form
Figs. 34,b; 35,b

This striking variant of the common West Indian *E. fastigiata* (Figs. 34, a; 35,a) is distinguished only by its mode of increase, which is mainly by intramural linear polystomodaeal budding resulting in flabellate series up to 15 cm long and about 1 cm broad, rather than the wholly di- or

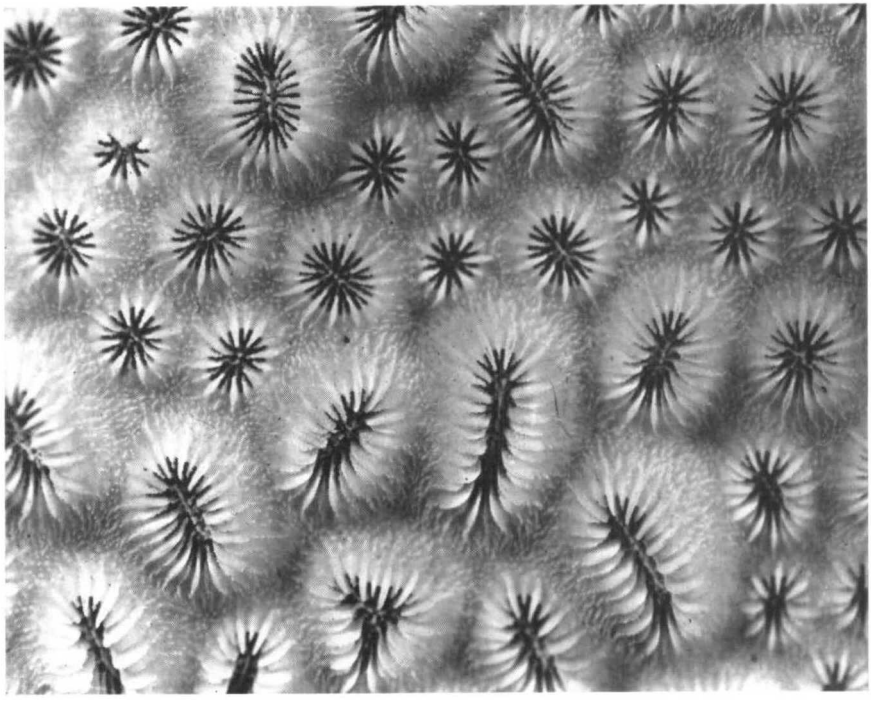

FIGURE 32. *Dichocoenia stellaris* Milne Edwards & Haime, calices, × 4, Boscobel, 7.5 m (USNM 53499).

tristomodaeal budding of *E. fastigiata fastigiata*, which leads to monocentric corallites.

Forma *flabellata* bears the same relation to *E. fastigiata* as *Euphyllia fimbriata* (Spengler) does to *E. glabrescens* (Chamisso & Eysenhardt) of the Indo-Pacific fauna (two forms considered to be distinct species), but the few known colonies of forma *flabellata* have several mono- or dicentric corallites in addition to the polycentric series. A trend from mono- or dicentric corallites to flabellate series is a common one in several scleractinian groups, and the present case may signal the recent initiation of this condition in *Eusmilia.*

Types.—Holotype, USNM 53501; paratype, USNM 53502, Discovery Bay, Jamaica, 23 m.

Distribution.—Jamaica: Pear Tree Bottom, 21 m (figured); other specimens from Pear Tree Bottom, 14 m, and Discovery Bay, 12 m.

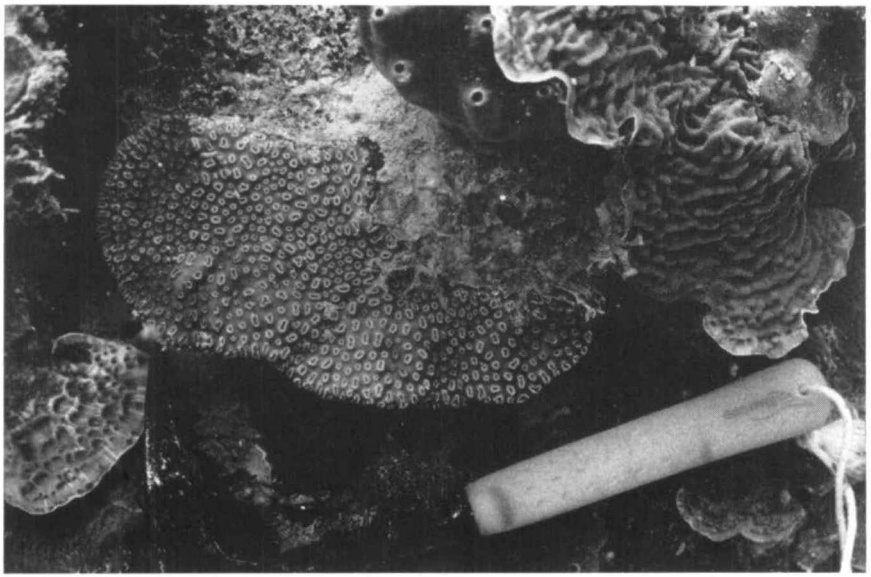

FIGURE 33. *Dichocoenia stellaris* Milne Edwards & Haime, colony *in situ*, × 0.30, with colonies of *Helioseris cucullata* (Ellis & Solander) in upper right and lower left corners, Discovery Bay, Bull, *ca.* 24 m (photo by E. A. Graham).

Family Flabellidae

Genus *Gardineria* Vaughan, 1907

Type-Species: *G. hawaiiensis* Vaughan, 1907. Hawaii, 83-90 m (type: USNM 20731).

Gardineria minor, n. sp.

Fig. 36

A small, solitary ahermatypic photophobe with pale pink polyps, having the characters of the genus. Corallum tympanoid in early stages, expanding slightly and becoming cylindrical, with epithecal wall. Calice circular, slightly excavated. Height of corallum: 0.4-4 mm; calicular diameter: 0.5-5.5 mm. Septa hexamerally arranged in two complete cycles (6/6), a third cycle of 12 more-or-less complete, and in the largest specimen (holotype) with a diameter of 5.5 mm, the fourth cycle of 24 is complete. Septa appearing initially as inwardly projecting, lightly granulated spines, becoming solid with entire margins and coarsely spinulose sides, the primaries and secondaries developing exsert upper margins that descend peripherally to meet the wall below its upper edge. Where three cycles are present, the first two extend to the columella. Paliform lobes

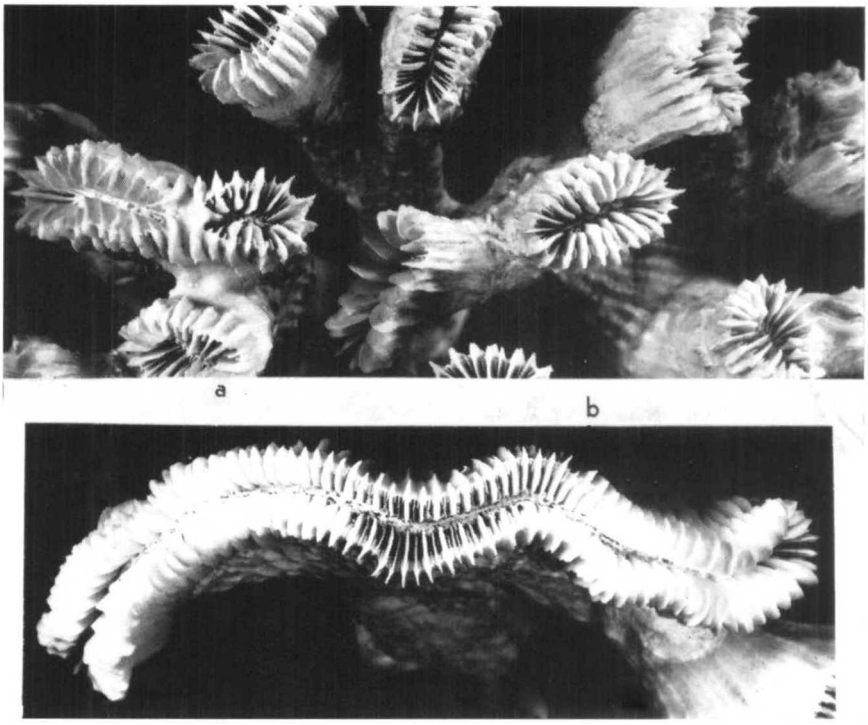

FIGURE 34. *Eusmilia*: a, *E. fastigiata* (Pallas), typical form, × 0.84, Tower Island, shallow water (USNM 53500); b, *E. fastigiata flabellata*, n. form, meandroid flabellate series, × 0.84, Pear Tree Bottom, 21 m (holotype, USNM 53501).

variable, being absent in many specimens, and, when present, never more than six, commonly only one or two, before the second cycle septa. The columella is a single rod in the smallest septate corallites and a cluster of seven or more spinose rods in the largest, but the number of such columellar pillars is very variable: in some corallites with three complete cycles of septa there are two, in others five, and in one with six prominent paliform lobes there are ten. In the largest specimen (fig. 36,a,b), with 48 septa and no apparent paliform lobes, the columella consists of more than 20 rods, some of which may be paliform lobes. The inner surface of the epithecal wall is slightly secondarily thickened below, but there are no heavy mural deposits or dissepiments.

Two other species of *Gardineria* are known from the West Indies: *G. barbadensis* (Pourtalès), 1874 (p. 45, pl. 9, figs. 5, 6, 7; Barbados, Martinique, St. Martin, Virgin Is., Anguilla, 73-365 m), and *G. paradoxa*

TABLE 2
MEASUREMENTS OF SPECIMENS OF *Gardineria*

Locality	Height (mm)	Calice (mm)	Septa	Paliform lobes	Columellar rods	
G. minor						
Maria Buena Bay, 46 m	0.4	0.4	0	0	0	(Fig. 36, c, d)
Discovery Bay, 55 m	0.4	0.5	6	0	1	
Discovery Bay, 70 m	0.4	0.7	6	0	0	
Discovery Bay, 70 m	0.6	0.75	6	0	1	
Runaway Bay, 61 m	1.0	1.2	12	0	1	
Runaway Bay, 61 m	1.0	1.5	12	1	2	
Discovery Bay, 70 m	2.5	2.0	12	0	3	
Discovery Bay, 61 m	2.0	2.6	23	2	2	
Discovery Bay, 61 m	2.0	3.0	21	2	2	
Eaton Hall, 30 m	2.0	3.0	18	0	7	
Discovery Bay, 55 m	2.0	3.5	24	6	5	
Cardiff Hall, 30 m	3.5	3.8	23	0	6	(Fig. 36, f)
Llandovery, 2–5 m	2.0	4.0	18	0	9	
Maria Buena Bay, 46 m	2.0	4.5	19	0	6	
Blue Hole Reef, 12 m	3.5	4.5	24	6	10	(Fig. 36, e, g)
Yallahs, 15 m (Holotype)	3.5	5.5	48	?	20+	(Fig. 36, a, b)
G. paradoxa (Holotype)	15.0	12.0	16+	0	2	(*f.* Pourtalès)
G. barbadensis (= *paradoxa*)	20–25	10–11	20+	10+	10–20	(types)
Barbados (Lewis)	15.0	10	40	20	28	
Discovery Bay, 100 m	14.0	8.5×9.0	24+	6	10+	
Jamaica (Gosnold)	32	10.5	20	0	1	
Jamaica (Gosnold)	15	15	20	0	3	
Jamaica, SE Coast, 450–525 m (EASTWARD)	15	11	19+	0	3±	

(Pourtalès), 1868 (p. 140; off Bahia Honda, Florida, 730 m). The latter is known from a single corallum that is probably an aberrant individual of the better-known *G. barbadensis*.

The Jamaican specimens here named *G. minor* are all much smaller, even at maturity, than mature corallites of *G. paradoxa* (*barbadensis*). Of the 30 or more specimens of *G. minor*, the largest is only 5.5 mm in diameter but has 48 septa, whereas no specimen of *G. paradoxa* is known with calice less than 10 mm and these have fewer septa. A specimen of *G. paradoxa* from Barbados collected by J. B. Lewis has a calice 15 mm

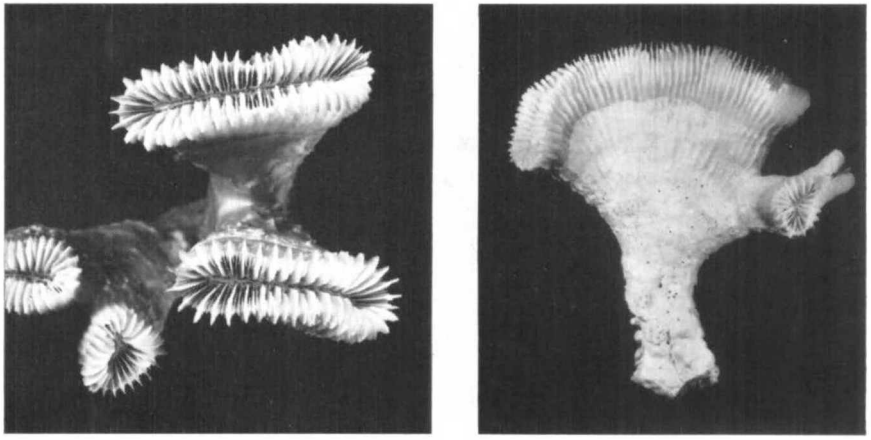

FIGURE 35. *Eusmilia*: left, *E. fastigiata* (Pallas), part of colony with short series, intermediate between the typical and flabellate forms, × 0.66, Discovery Bay, 23 m (USNM 53502); right, *E. fastigiata flabellata*, n. form, lateral aspect of specimen shown in Figure 34,b, × 0.33, Pear Tree Bottom, 21 m (USNM 53501).

in diameter with 40 septa, 20 paliform lobes, and 28 columellar rods. All the specimens of *G. paradoxa* have been obtained by dredging in non-reef environments, whereas *G. minor* occurs abundantly, and only, in caves or very shaded sites on the under surfaces of laminar reef corals, commonly along with *Desmophyllum riisei* and the lucifugous form of *Madracis pharensis*.

Many extremely young postlarval "spat" of this species were found on the under surface of a dead frond of *Agaricia* from Maria Buena Bay (46 m) (Fig. 36,c,d). They are about 0.4 mm high and 0.4 mm in diameter with broad attached bases. In most of them there are no septa, a few have from two to six septa represented by one or two inwardly projecting spines, and an occasional small columellar rod. Disconcerting, however, is that in the aseptate corallites there is no trace of the initially deposited basal plate, from the periphery of which the epitheca is supposed to arise in normal development. The lower edge of the slightly tapered epithecal wall is cemented directly to the unobscured substrate. By the time six septa, which do not extend to the base, have developed, an exceedingly thin calcareous film has sealed off the base of the polyp from the substrate.

Types.—Holotype, USNM 53503; paratypes, USNM 53504 (Maria Buena Bay, Jamaica, 46 m), USNM 53505 (Blue Hole Reef, Jamaica, 12 m), and USNM 53506 (Cardiff Hall, Jamaica, 30 m).

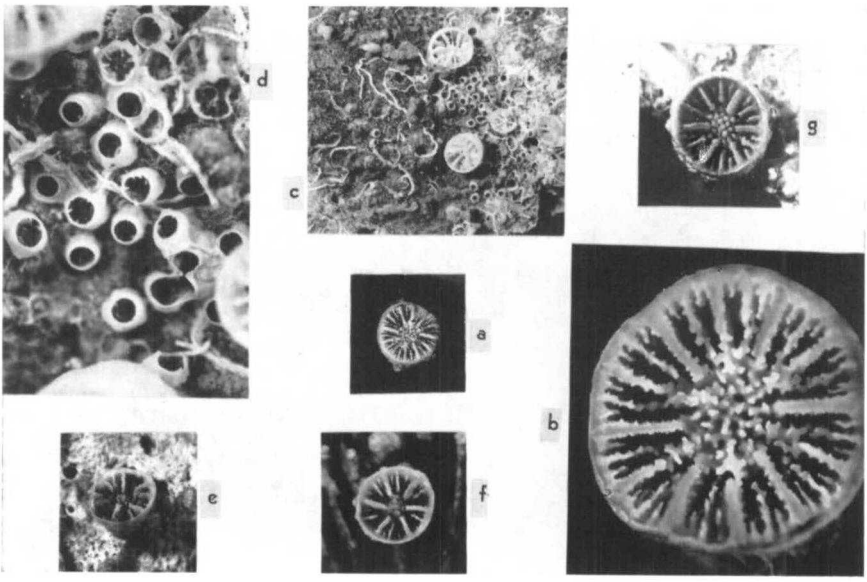

FIGURE 36. *Gardineria minor*, n. sp.: a, b, holotype, calicular aspects, × 1.35 and × 6.7 respectively, Yallahs, 15 m (USNM 53503); c,d, early postlarval stages ("spat"), × 1.35 and × 6.7, respectively (three larger coralla are average in size), Maria Buena Bay, 46 m (paratype, USNM 53504); e, slightly oblique aspect of average corallum on under surface of *Agaricia lamarcki*, × 2.7, Blue Hole Reef, 12 m (paratype, USNM 53505); f, calicular aspect of an average corallum, × 2.7, Cardiff Hall, 30 m (paratype, USNM 53506); g, calicular aspect of an average corallum on under surface of same specimen of *A. lamarcki* as e, × 2.7, Blue Hole Reef, 12 m (paratype, USNM 53505).

Distribution.—Jamaica: Yallahs, 15 m (holotype); Runaway Bay, 61 m; Blue Hole Reef, 12 m; Eaton Hall, 30 m; Cardiff Hall, 30 m; Maria Buena Bay, 46 m; Discovery Bay, 55, 61, 70, and 100 m; Llandovery, 2-5 m.

SUMARIO

CORALES ESCLERACTÍNIOS NUEVOS Y VIEJOS DE JAMAICA

Los estudios submarinos de arrecifes de Jamaica llevados a cabo durante los últimos 17 años por el desaparecido T. F. Goreau y sus colegas han mostrado un número de nuevas especies de corales escleractínios y han revelado la presencia común, a profundidad, de varias especies previamente consideradas raras. Las nuevas formas incluyen una especie de *Madracis*, una de *Agaricia*, tres de *Mycetophyllia*, una de *Gardineria* y nuevas formas de *Eusmilia fastigiata* y *Agaricia fragilis*. Las especies antes nombradas

pero poco conocidas que se discuten e ilustran son: *Agaricia undata* (Ellis & Solander), *Agaricia lamarcki* Milne Edwards & Haime, *A. tenuifolia* (Dana), *Helioseris cucullata* (Ellis & Solander), *Colpophyllia breviserialis* Milne Edwards & Haime, *Mycetophyllia danaana* Milne Edwards & Haime y *Dichocoenia stellaris* Milne Edwards & Haime.

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APPENDIX

SYSTEMATIC LIST OF JAMAICAN SHALLOW-WATER SCLERACTINIA
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This is a revision of the list published in 1967 by T. F. Goreau and J. W. Wells (Bull. Mar. Sci., *17*[2]: Table 1, pp. 446-449). It includes the hermatypic and ahermatypic (*) species and genera now known from Jamaica to a depth of about 100 m. Many of the ahermatypic forms extend into deeper zones

where additional genera (*Anomocora, Conotrochus, Cyathoceras, Deltocyathus, Dendrophyllia, Enallopsammia, Flabellum, Fungiacyathus, Madrepora, Oxysmilia, Stephanocyathus, Stenocyathus,* and *Trochocyathus*) appear.

Class ANTHOZOA Ehrenberg, 1834

Subclass *HEXACORALLIA* Haeckel, 1896

Order SCLERACTINIA Bourne, 1900

Suborder ASTROCOENIINA Vaughan & Wells, 1943

Family Astrocoeniidae Koby, 1890

1. *Stephanocoenia michelinii* Milne Edwards & Haime

Family Pocilloporidae Gray, 1842

2. *Madracis decactis* (Lyman)
3. *M. formosa* Wells*
4. *M. mirabilis* (Duchassaing & Michelotti)
5. *M. pharensis* (Heller)
   forma *pharensis**
   forma *luciphila*

Family Acroporidae Verrill, 1902

6. *Acropora palmata* (Lamarck)
7. *A. cervicornis* (Lamarck)
8. *A. prolifera* (Lamarck)

Suborder FUNGIINA Verrill, 1865

Superfamily Agariciicae Gray, 1847

Family Agariciidae Gray, 1847

9. *Agaricia agaricites* (Linnaeus)
   forma *agaricites*
   forma *danai*
   forma *carinata*
   forma *purpurea*
   forma *humilis*
10. *A. tenuifolia* Dana
11. *A. undata* (Ellis & Solander)
12. *A. lamarcki* Milne Edwards & Haime
13. *A. grahamae* Wells
14. *A. fragilis* Dana
    forma *fragilis*
    forma *contracta*
15. *Helioseris cucullata* (Ellis & Solander)

Family Siderastreidae Vaughan & Wells, 1943

16. *Siderastrea siderea* (Ellis & Solander)
17. *S. radians* (Pallas)
    forma *radians*
    forma *stellata*

Superfamily Poriticae Gray, 1842

Family Poritidae Gray, 1842
18. *Porites astreoides* Lesueur
19. *P. branneri* Rathbun
20. *P. porites* (Pallas)
21. *P. divaricata* Lesueur
22. *P. furcata* Lamarck

Suborder FAVIINA Vaughan & Wells, 1943

Superfamily Faviicae Gregory, 1900

Family Faviidae Gregory, 1900
23. *Favia fragum* (Esper)
24. *Diploria clivosa* (Ellis & Solander)
25. *D. labyrinthiformis* (Linnaeus)
26. *D. strigosa* (Dana)
27. *Manicina areolata* (Linnaeus)
    forma *areolata*
    forma *mayori*
28. *Colpophyllia natans* (Müller)
29. *C. breviserialis* Milne Edwards & Haime
30. *Cladocora arbuscula* (Lesueur)
31. *Montastraea annularis* (Ellis & Solander)
32. *M. cavernosa* (Linnaeus)
33. *Solenastrea hyades* (Dana)
34. *S. bournoni* Milne Edwards & Haime

Family Rhizangiidae D'Orbigny, 1851
35. *Astrangia solitaria* (Lesueur)*
36. *Phyllangia americana* Milne Edwards & Haime*
37. *Colangia simplex* Pourtalès*
38. *C. immersa* Pourtalès*

Family Oculinidae Gray, 1847
39. *Oculina diffusa* Lamarck
40. *O. valenciennesi* Milne Edwards & Haime*

Family Meandrinidae Gray, 1847
41. *Meandrina meandrites* (Linnaeus)
    forma *meandrites*
    forma *danai*
42. *Dichocoenia stokesi* Milne Edwards & Haime
43. *D. stellaris* Milne Edwards & Haime
44. *Dendrogyra cylindrus* Ehrenberg

Family Mussidae Ortmann, 1890
45. *Mussa angulosa* (Pallas)
46. *Scolymia lacera* (Pallas)
47. *S. cubensis* (Milne Edwards & Haime)
48. *Isophyllia sinuosa* (Ellis & Solander)
49. *Isophyllastrea rigida* (Dana)
50. *Mycetophyllia lamarckiana* Milne Edwards & Haime

51. *M. danaana* Milne Edwards & Haime
52. *M. ferox* Wells
53. *M. aliciae* Wells
54. *M. reesi* Wells

Suborder CARYOPHYLLIINA Vaughan & Wells, 1943

Superfamily Caryophylliicae Gray, 1847

Family Caryophylliidae Gray, 1847
55. *Caryophyllia flos* (Pourtalès)*
56. *C. maculata* (Pourtalès)*
57. *Caryophyllia* sp. cf. *C. antillarum* (Pourtalès)*
58. *Paracyathus defilippi* Duchassaing & Michelotti*
59. *Desmophyllum riisei* Duchassaing & Michelotti*
60. *Eusmilia fastigiata* (Pallas)
    forma *fastigiata*
    forma *flabellata*

Superfamily Flabellicae Bourne, 1905

Family Flabellidae Bourne, 1905
61. *Gardineria minor* Wells*

Family Guyniidae
62. *Guynia annulata* Duncan*

Suborder DENDROPHYLLIINA Vaughan & Wells, 1943

Family Dendrophylliidae Gray, 1847
63. *Balanophyllia floridana* Pourtalès*
64. *Tubastraea aurea* (Quoy & Gaimard)*