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UNITED STATES

EXPLORING EXPEDITION.

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UNDER THE COMMAND OF

CHARLES WILKES, U.S.N.

VOL. VII.

ZOOPHYTES.

BY

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WITH A FOLIO ATLAS OF SIXTY-ONE PLATES.

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CONTENTS.

DESCRIPTION OF SPECIES.

The developement of young from the ovules before their ejection, has been for a long time asserted, and Dalyell and others have shown that it is of common occurrence. The ovules being bathed by the sea-water, which gains access to the visceral cavity, there is little occasion for the doubt with which the statement has been by many received. The ovules have a white, milky appearance, and are of various sizes in the same cluster. They have usually a globular form, but are often a little oblong or of irregular shapes. Wagner has shown that they have the characters of true eggs. On leaving the parent, they are said to move about by means of the vibratile cilia with which they are provided. After a short time the young Actinia appears, and generally fixes itself shortly after to some object at hand. When first produced, the tentacles are scarcely apparent; a single series gradually developes, and afterwards they go on increasing as the animal grows, and do not attain their full number until it is a perfect adult.

29. The Actiniæ have the same power of reproduction from artificial sections as the Hydra. Portions cut or torn off are soon resupplied, and the parts separated develope what is needed to become perfect animals. The process of budding has been observed only in the coral-making species.

The Zoanthidæ.

30. The dissections, by which this division of the Actinoidea is here illustrated, were made on a living specimen of the Palythoa cæsia, at the Feejee Islands, representations of which are given on Plate 30. This species grows in rounded attached masses, of the size of the fist, which consist of a large number of united polyps. When unexpanded, the mass has externally a grayish, leathery appearance, with small

nineteen days eight or nine could be enumerated in another, which now "affixed itself as a young Actinia by the base." (Jameson's Journal, xxi., 1836, p. 89.) "In the course of six years, a specimen preserved by the author produced above two hundred and seventy-six young, some pale, like mere specks, with only eight tentacula, others florid, and with twenty. They are frequently disgorged along with the half-digested food, thirty-eight appearing thus at a single litter. An embryo extracted artificially from the amputated tip of a tentaculum, began to breed in fourteen months, and survived nearly five years. Monstrosities by excess are not uncommon among the young: one produced naturally consisted of two perfect bodies and their parts, sustained by a single base, exhibited embryos in the tentacula at ten months, bred in twelve, and lived above five years. While one body was gorged with food, the other remained ravenous." (Dalyell, in 4th Rep. Brit. Assoc., 1834, p. 599.)

openings scattered over it, each of which is the centre of a slightly-raised prominence. On expanding, these openings enlarge, the margin of each rolls back, and finally the whole mass, before seeming lifeless, is covered with radiated disks, half an inch broad, having a lilac centre, and bordered with a fringe of short tentacles. These are the flower-animals—the polyps—of the Palythoa. They are represented of the natural size in figure 3. Some of the polyps on the right are yet closed, while others are partly, and others wholly, expanded. An enlarged view of the expanded polyp is shown in figure 3 *a*, exhibiting the circular disk—the fringe of short tumid tentacles, in two series, one directed more upward than the other—and, upon the disk, elevated greenish lines, extending, like radii, from each tentacle to the convex centre in which the mouth is situated. The texture of the general mass of the zoophyte is peculiar, in consisting of coral-sand agglutinated by animal matter; particles of various colours are here mingled,—white, red, and black. The sand, as it falls upon the growing zoophyte, is enclosed by the slimy secretions of the surface, and is finally introduced into its texture; and thus firmness is secured by calcareous granules from a foreign source. This is imperfectly represented in the figures 3 *b* and 3 *c*.

31. The *tentacles* are naked—that is, without papillæ—as in the Actiniæ, and each has a minute puncture at apex. These organs are tubular, and they communicate internally with the visceral cavity through a duct concealed under the radiated lines of the disk. The mode of expansion by injection with water is the same as in the animals above described. The *mouth* is without appendages of any kind—a simple opening through the fleshy disk.

32. The *visceral cavity* is cylindrical, and extends down below the disk, into the polyp-mass, to its base. Its form and size, as compared with the expanded animal, is shown in figure 3 *a*. The mouth opens into this cavity, through an oblong *stomach*, which is about one-fifth the length of the cavity, and is connected with its walls by a series of radiating fleshy lamellæ, as in the Actinia. There is also another series of smaller lamellæ intermediate between these. The stomach has a vertically striated or plaited structure within, and closes at bottom at the will of the animal. Figure 3 *b* is a vertical section of the unexpanded polyp, through the mouth (opposite *b'*) and stomach (*b'* to *c'*), and the general visceral cavity; and figure 3 *d* is a transverse section, cutting across the œsophagus a little

obliquely, and showing the radiating visceral lamellæ, which connect it with the sides of the visceral cavity. In figure 3 *b*, only two opposite lamellæ are in view, while in figure 3 *c*, which is an oblique section, crossing the cavity *below* the stomach, the edges of several of the intersected lamellæ are exposed. In the last-mentioned figure, the stomach is seen to terminate in a kind of disk, which is the muscular arrangement for closing its lower extremity. The oblique position of this disk is unnatural, and resulted from the section of part of the lamellæ and their consequent unequal contraction; the animal is drawn just as it was presented in the dissection. In 3 *b*, the upper extremity shows the tentacles as they are concealed in the contracted animal. It thus appears that the visceral cavity is divided by the lamellæ into a series of compartments, as in the Actinia. A second series of narrower lamellæ lies between the larger, as is shown in figure 3 *d*. These narrower lamellæ, however, are prolonged on the under side of the disk to the stomach, so that in making the section here referred to, the upper portion removed, presented below twice as many radiating compartments as were seen in the part figured. There is hence a close analogy with the Actinia, although the animals differ so strikingly in the relative sizes of the stomach and visceral cavity. This resemblance is seen farther in the position of the spermatic cords.

33. *Spermatic* cords border the larger lamellæ, and extend from below the stomach nearly to the bottom of the visceral cavity. They are convoluted throughout their length, as is shown in figures 3 *b*, 3 *c*, and 3 *f*. It is remarkable, that in one of the specimens, the convolutions are very few, and the cord stops far short of the bottom. This fact may be accounted for on the principle that they are periodically developed.*

Spermatozoa were not observed in these cords, yet it is altogether probable that on farther examination they will be detected, as in the Actinia. Vibratile cilia were distinct on the cords, but were not seen on the lamellæ to which they were attached.

The specimens examined contained no ovules. From analogy, we should expect that in the proper season they would be found in clusters, attached to the intermediate series of narrow lamellæ.

34. Besides the spermatic cords, there is attached to the edge of each larger lamella, immediately below the stomach, a pair of flat

* The season when these observations were made was the month of August, 1840.

branchia-like organs. In figure 3 *b*, they are seen in profile in their natural position (*c'* to *d'*), and in the vertical view in 3 *d*, one appears either side of each lamella; this is shown still more distinct in figure 3 *e*. These organs are enlarged in figure 3 *f*. They are transparent, and are transversely divided into narrow compartments, each about $\frac{1}{600}$ of an inch in breadth. The margin is crenated, corresponding with the compartments. Each compartment, as is more distinctly exhibited in figure 3 *g*, is traversed along its middle by a distinct vessel, which terminates in a small process on the margin. Vibratile cilia were apparent on these organs, as is represented in figure 3 *g*, and they were observed to continue in motion for an hour after separation from the animal. These cilia were about $\frac{1}{3000}$ of an inch in length.

The two organs of each pair were united to a common duct, which, in the specimen examined, had a bluish colour, as shown in figure 3 *f;* and by this duct they were attached to the margin of the lamella—one being situated either side—and thus their surfaces were free to be bathed by the water with which the animal distends itself.

35. The structure of these organs is such that we can hardly doubt their branchial nature: yet no circulating fluid was detected within them. Lesueur, who observed them in his excellent dissections of West India species, calls them arcuated organs, and supposes them to "perform the functions of the liver."*

The modes of nutrition in the Zoanthidæ, are the same as in the Actinia.

The Tubipora.

36. The structure of the Tubipora has been illustrated by Quoy and Gaymard, in the Voyages of the Uranie and Astrolabe. The dissections made by the author confirm in general their observations, yet differ in some points of interest.

The Tubipora is a cylindrical animal, expanding above a star of eight tentacles. The animals are often of a lilac or rose tint, and grow in large clusters; and, as they appear beneath the water about the reefs, they are as perfect beds of pinks as those of our gardens. Figure 1, on Plate 59, represents some of these polyps of the natural size; and figures 1 *a* and 2, two individuals of the same genus, enlarged. The eight tentacles are fringed on either side by small papillæ, each of which has a minute puncture at apex. Both the papillæ and the

* Jour. Acad. Nat. Sci., Philad., i. 183, 184, 185, and Plate viii., fig's. 1, 5, 9.

Lamarck states that the cells are deep, with very finely striated sides, which is true of the specimens examined by the author. Blainville's figure well represents it, except that the lamellæ are not sufficiently numerous, the number varying from twenty-four to thirty in the Feejee specimens. The surface is nearly smooth, and the cells are about a line deep.

The masses collected were about five inches in breadth, with a thickness of two to three inches. The polyps had a yellowish colour.

Astrea stellulata, Lamarck, ii. 408, No. 12. *Astreopora stellulata*, Blainv., Man. 383, pl. 60, fig. 4.

FAMILY IV.—ZOANTHIDÆ.

Caryophyllacea simplicissima, aut gemmata; extus subcoriacea; polypis discis latis, convexis, margine radiatè striato et interdum valde reflexo; corallo nullo, sed zoophytis sæpe arenulas corallicas includentibus.

Caryophyllacea either budding or simple; exterior subcoriaceous; polyps with broad convex disks having the margin radiately striate and sometimes much reflexed; no coral secretions, but coral sand often included in their texture by the growing zoophytes.

The coriaceous exterior with no corallum within, and the radiated margin of the disk, are the most striking peculiarities of the Zoanthidæ. The species grow either as simple animals, or by budding form compound zoophytes. The buds pass out from near the base of the polyps, producing either simple lines, incrusting plates, or thick masses (§ 65). The polyps are all large, the diameter of the disk varying from a third of an inch to an inch, and the height from half an inch to an inch and a half. (See farther, pp. 39–42.)

This family includes three genera, distinguished by their mode of budding and growth.

G. 1. Isaura. Simple and not budding.
G. 2. Zoantha. Budding and forming lines of polyps.
G. 3. Palythoa. Budding and forming incrusting plates or convex masses.

The species of Palythoa, in which the surface is very prominently mammillate when unexpanded, have been made into a separate genus; but the transitions from the species in which the union is basal, to those which coalesce by their sides to their very summits, is so gradual, that it is deemed preferable to retain all in a single genus.

Genus ISAURA.—Savigny.

Zoanthidæ non gemmatæ, simplicissimæ.

Non-budding, simple Zoanthidæ.

The genus Isaura, as instituted by Savigny, comprised also, in part, the budding Zoanthidæ. Ehrenberg considers the group identical with the genus Hughea of Lamouroux, and adopts this name; as Savigny's, though of earlier date, had been used for a genus of plants. Ellis's figure (Ellis and Solander, tab. 1, fig. 3), for which Lamouroux's genus was formed, represents a simple polyp, having a small disk and fifteen to twenty rays, without the radiated margin to the disk that characterizes the Zoanthidæ. Its characters are too little known to be received, without farther examination, as the type of the genus.

Arrangement of the Species.

1. I. Hemprichii.
2. I. Savignii.
*3. I. aster.
*4. I. speciosa.

1. Isaura Hemprichii. (*Ehrenberg.*) *Dana.*

I. semipollicaris, nigro-fusca; disci radiis 20–24.

Half an inch high, nearly black; rays of the disk 20 to 24.

Red Sea, near Tor. *Ehrenberg.*

Hughea Hemprichii, Ehrenberg, G. x. sp. 1.

2. Isaura Savignii. (*Audouin.*) *Dana.*

I. quadrilinearis, clavata, gracilior, pallidior.

Four lines high, clavate, more slender than the *Hemprichii*, and paler in colour.

Red Sea. *Ehrenberg.*

Hughea Savignyi, Ehrenberg, G. x. sp. 2.
Palythoa Savignii, Audouin, Explic. des planches de Savigny, l'Egypte, Polypes, tab. 2, fig. 1.

3. Isaura aster. (*Dana.*)

I. pollicaris, 2–3‴ crassa, extus cinerascens disco, semipollicari, brunneo, radiis numerosis, pallidè luteo-virescentibus; tentaculis biseriatis, olivaceis.

An inch high, and 2 to 3 lines thick, with the exterior ash-coloured, disk half an inch in diameter, brown, with numerous pale greenish-yellow rays; tentacles in two series, olive-green.

Plate 30, fig. 2, zoophytes, natural size; 2 *a*, same, enlarged.

Feejee Islands. *Exp. Exp.*

The tentacles which fringe the broad disk are about a sixth of its diameter in length: those of the outer series have a pale greenish-gray colour; immediately around the mouth the disk is green.

4. Isaura speciosa. (*Dana.*)

I. robusta, ¾″ alta et 2–4‴ lata, pallida, disco 8‴ lato, viridi, prope marginem brunnescente; tentaculis brevibus, triseriatis, serie externâ luteâ, intermediâ umbrino-virescente, internâ viridi.

Stout, ¾ of an inch high, and 2 to 4 lines thick, pale; disks 8 lines broad, deep-green, but becoming brown near the margin; tentacles

short, in three series, the outer yellow, the intermediate umber, with a tinge of green, and the inner deep and rich green.

Plate 30, fig. 1, zoophytes, natural size; 1 *a*, same, magnified.

The Balabac Passage, north of Borneo. *Exp. Exp.*

The fringe of tentacles margining the disk is very short. The green colour of the disk belongs to the radiated lines, these being separated by narrower lines of brown. A single one of these rays has a yellowish-white colour, indicating some peculiar function in the tentacle with which it communicates.

Genus ZOANTHA.

Zoanthidæ e stolonibus repentibus gemmatæ.

Zoanthidæ budding from creeping shoots.

The Zoanthæ form long lines of polyps, rising from a creeping, root-like shoot, which is attached to some support.

This genus was instituted by Cuvier, in his Elements of Zoology, but was first restricted to the Zoanthidæ by Lamarck, who included in it all the known species of the family. Lesueur and Lamouroux, by introducing other genera, reduced it to its present limits. The name is derived from ζωον, *animal*, and ανθος, *flower*.

Arrangement of the Species.

1. Z. Ellisii.
2. Z. sociata.
3. Z. Solandri.
4. Z. dubia.
5. Z. Bertholetii.

1. Zoantha Ellisii. (*Bosc.*)

Z. polypis elongatis (*sæpe* 2″) *clavatis, tentaculis filiformibus.*

Polyps often 2 inches long, clavate, tentacles filiform.

West Indies. *Ellis.*

The long filiform tentacles of this species, if correctly given by Ellis, are quite unlike most of the Zoanthidæ. The breadth of the disk is but half the length of a tentacle, and the disk moreover is not radiated; the polyp expanded is nearly three-fourths of an inch broad. (See figure 26, p. 66.)

Actinia sociata, Ellis, Phil. Trans. 57, t. 19, figs. 1, 2.
——, Ellis and Solander, 5, tab. 1, figs. 1, 2.
Hydra sociata, Gmel. Syst. Nat. 3868.
Zoanthus Ellisii, Bosc. ii. 224.
——, Lamouroux, Exp. 89, pl. 1, figs. 1, 2.
Zoantha Ellisii, Lamk. ii. 77, No. 1.
Zoanthus sociatus, Ehrenb., G. xi. sp. 1.

2. Zoantha sociata. (*Lesueur.*)

Z. polypis 2″ altis, subviolaceis disco semipollicari virescente; tentaculis tenuibus, brevibus, luteis.

Polyps 2 inches high, and subviolaceous, disks half an inch in diameter, greenish; tentacles slender and short, yellowish.

Guadaloupe, West Indies. *Lesueur.*

The tentacles in this species, according to Lesueur, are sixty in number, and in two rows.

Zoanthus sociata, Lesueur, Jour. Acad. Nat. Sci. Philad. i. 176.
——, Blainville, Man. 328. Lesueur suggests that this may be the *sociata* of Ellis.

3. Zoantha Solandri. (*Lesueur.*)

Z. polypis crassioribus, 2″ altis, disco fusco-rubescente, tentaculis brevibus.

Polyps stouter than in the *sociata*, 2 inches high, disks reddish-brown, tentacles short.

West Indies, St. Thomas. *Lesueur.*

The exterior colour is reddish-yellow; when the animal is contracted the summit is marked with deep-blue angular spots and white lines. Tentacles about sixty in number.

Zoanthus Solandri, Lesueur, op. cit. 177, pl. 8, fig. 1; well figured, with important dissections.

Zoanthus Solandri, Lamk. 2d ed. ii. 78, No. 2.

——, Blainv. Man. 329, pl. 50, fig. 2.

4. ZOANTHA DUBIA. (*Lesueur.*)

Z. polypis minoribus cylindricis, disco medio viridi; tentaculis oreque luteis; tentaculis biseriatis, numerosis.

Smaller than the *sociata*, cylindrical; disk green at centre, tentacles and mouth yellow; tentacles in two series, very numerous.

Guadaloupe, West Indies. *Lesueur.*

Grows in close clusters or bunches upon marine bodies, as fuci, &c., and is about a third smaller than the *sociata*.

Zoanthus dubia, Lesueur, op. cit. 177.

Zoanthus dubia, Blainville, Man. 329.

5. ZOANTHA BERTHOLETII. (*Audouin.*) *Ehrenberg.*

Z. reticularis, polypis quadrilinearibus et 1½–2‴ latis, subcylindricis; tentaculis clavatis, contractis mammilliformibus.

Reticulate; polyps 4 lines in height, and 1½ to 2 lines broad, subcylindrical, with the tentacles clavate; when contracted mammilliform.

Red Sea. *Savigny.*

Palythoa Bertholetii, Audouin, Explication des Planches de M. Savigny, l'Egypte, Polypes, pl. 2, fig. 3.

Zoanthus Bertholetii, Ehrenb., G. xi. sp. 2.

——, Lamarck, 2d ed. ii. 78, No. 3.

GENUS PALYTHOA.—LAMOUROUX.

Zoanthidæ explanato-gemmatæ; polypis latere coadunatis.

Zoanthidæ with explanate gemmation; polyps united to one another laterally.

The Palythoæ form incrusting plates or convex masses. When the polyps are united by their bases only, the plates are thin, and the polyps when contracted form rounded or cylindrical prominences over the surface; but as the union becomes more general, and they coalesce by their sides above as well as at base, the plates are thicker and the polyps less prominent; and when the coalescence extends quite to their summits, the unexpanded zoophytes are convex, with nearly a flat surface.

The genus Palythoa was separated from Zoantha by Lamouroux. Lesueur subsequently subdividing the Zoanthæ, instituted the two genera *Mammillifera* and *Corticifera*, the first including the Palythoæ, with mammilliform prominences when contracted; and the second, those in which these prominences are obsolete or nearly so. Schweigger's genus Cavolinia, and Oken's Tethya, fall into this group.

Arrangement of the Species.

I. *Polyps united only at base, forming when contracted very prominent mammillæ over the surface.*

1. P. denudata.
2. P. auricula.
3. P. nymphæa.
4. P. fuliginosa.

II. *Polyps united nearly to their summits; surface of the contracted zoophyte mammillate.*

5. P. mammillosa.
6. P. ocellata.

III. *Polyps united quite to their summits; surface of the zoophyte scarcely at all mammillate.*

7. P. glareola.
8. P. flavo-viridis.
9. P. argus.
*10. P. cæsia.

I. *Palythoæ basi tantum coadunatæ.*

1. PALYTHOA DENUDATA. (*Cavolini.*) *Dana.*

P. purpurea, polypis basi tantum coadunatis, valde prominentibus, cylindricis et clavatis; 1–2‴ crassis et 6–9‴ longis; tentaculis triseriatis, serie extimâ minore.

Purple; the polyps united only at base, very prominent, cylindrical, and clavate, 1 to 2 lines thick, and 6 to 9 high; tentacles in three series, the outer smallest.

Near Naples, Mediterranean Sea. *Cavolini.*

Madrepora denudata, Cavolini, Pol. Mar. tab. 3, fig. 6.
Cavolinia rosea, Schweig., Handb. 411.
Mammillifera denudata, Ehrenb., G. xii. sp. 1.

2. Palythoa auricula. (*Lesueur.*) *Dana.*

P. rubescens; polypis basi tantum coadunatis, prominentibus, turbinatis, 3‴ latis, et 3–6‴ altis; discis 4‴ latis, virescentibus; tentaculis 26–30, *rubescentibus.*

Reddish; polyps united only at base, prominent, turbinate, 3 lines broad, and 3 to 6 high; disks 4 lines broad, greenish; tentacles 26–30, reddish.

St. Vincent and Dominica, West Indies, covering the rocks at the entrance of the port. *Lesueur.*

Mammillifera auricula, Lesueur, Jour. Acad. Nat. Sci. Philad. i. 178, tab. 8, fig. 2.
Mammillifera auricula, Blainville, Man. 329, pl. 50, fig. 3.

3. Palythoa nymphæa. (*Lesueur.*) *Dana.*

P. auriculæ *affinis, rubro-lutescens; discis luteis et tentaculorum basi virentibus, tentaculis fere* 50 *biseriatis pallidè brunneis, oribus prominentibus.*

Resembling the *auricula*, yellowish-red; disks yellow, with a green circle at the base of the tentacles; tentacles about 50 in number, in two series, and of a light brown colour; mouth prominent.

St. Christopher, West Indies. *Lesueur.*

Mammillifera nymphæa, Lesueur, Jour. Acad. Nat. Sci. Philad. i. 178. Lesueur states that "the mouth is divided on each side by four or five folds, and rises in the form of a button."
Mammillifera nymphæa, Blainville, Man. 329.
The *Alcyonium mammillosum*, of Esper, Pflanz. iii. tab. 7, is near the *nymphæa.*

4. PALYTHOA FULIGINOSA. (*H. & Ehrenberg.*) *Dana.*

P. flavo-fusca, polypis basi tantum coadunatis; contractis 2½‴ *latis, altioribus; expansis* 1″ *longis, clavatis, discis margine* 32*-dentatis, tentaculis clavatis, obtusis, fusco- et albo-fasciatis, fere* 64 *in serie duplici, internâ validiore.*

Brownish-yellow, polyps united only at base, when contracted 2½ lines broad, and quite prominent; when expanded an inch high, clavate; disks with 32 teeth to the margin; tentacles clavate, obtuse, banded with brown and white, about 64 in 2 series, the inner larger.

The Red Sea. *Ehrenberg.*

Mammillifera fuliginosa, Ehrenberg, G. xii. fig. 3. Ehrenberg suggests that the *Palythoa Perii*, of Audouin, may be the above species.

II. *Palythoæ breviter mammillosæ—polypis latere coadunatis, sed apice liberis.*

5. PALYTHOA MAMMILLOSA. (*Ellis.*) *Lamouroux.*

P. polypis latere coadunatis, contractis apice prominentibus, ½–1″ *altis, fere* 3‴ *latis.*

Polyps laterally united, but with quite prominent summits when contracted, ½ to 1 inch high and nearly 3 lines broad.

Coasts of Jamaica.

Alcyonium mammillosum, Ellis and Solander, 179, No. 5, tab. 1, figs. 4, 5.
——, Linn., Gmelin, 3815, No. 16.
——, Lamk. ii. 601, No. 9.
Sloane's Jamaica, 1, tab. 21, figs. 2, 3.
Palythoa mammillosa, Lamour., Pol. flex. 361.
Palythoa stellata, Lamour., Exp. 70, tab. 1, figs. 4, 5.
Tethya mammillosa, Oken's Zool. i. 82.
Cavolinia mammillosa, Schweig., H. 411.
Mammillifera mammillosa, Blainv., Man. 329.
——, Ehrenb., G. xii. sp. 2.

6. Palythoa ocellata. (*Ellis.*) *Lamouroux.*

P. mammillosæ *affinis, ferruginea ; polypis latere coadunatis, sed apice prominentibus, 3‴ latis, lateribus rugosis.*

Similar to the *mammillosa*, rust-coloured; polyps united by their sides, but prominent above, 3 lines broad, sides wrinkled.

St. Domingo, West Indies. *Ellis.*

Alcyonium ocellatum, Ellis and Sol. 180, tab. 1. fig. 6.
——, Lamarck, ii. 601, No. 8.
Sloane's Jamaica, i. tab. 21, fig. 1.
Mammillifera ocellata, Blainv., Man. 330.
Palythoa ocellata, Lamour., Exp. 70, tab. 1, fig. 6.
——, Ehrenb., G. xiii. sp. 2.

III. *Palythoæ vix minimè mammillosæ, polypis usque ad apicem latere coadunatis.*

7. Palythoa glareola. (*Lesueur.*) *Dana.*

P. polypis brevibus, latere usque ad apicem coadunatis, discis violaceis, centro albidis, tentaculis 20, *quorum quatuor subrubidis.*

Polyps short, and united by their sides quite to the summits, disks deep violet, whitish at centre; tentacles 20, four of which are grayish-red.

Guadaloupe, on the volcanic rocks of Pointe Noire. *Lesueur.*

Corticifera glareola, Lesueur, Jour. Acad. Nat. Sci. Philad. i. 178, pl. 8, figs. 6, 7.
——, Blainv., Man. 331, pl. 50, fig. 1.
The *Corticifera flava*, of Lesueur (ibid. p. 179), is described as closely resembling the preceding, but the animals are much longer, being three times as long as broad; the tentacles and the centre of the disk are yellow; when not expanded, several lines may be observed radiating from the aperture.

8. Palythoa flavo-viridis. (*H. & Ehrenberg.*)

P. polypis usque ad apicem coadunatis, lætè flavo-viridis ; discis margine 16-*crenatis et* 16-*tentaculatis ; tentaculis hyalinis uniseriatis ; lamellis internis* 32.

Polyps united to their summits, bright greenish-yellow; disks margined with 16 crenatures, and as many tentacles; tentacles hyaline, and in a single series; internal lamellæ 32 in number.

Red Sea. *Ehrenberg.*

Palythoa flavo-viridis, Ehrenberg, G. xiii. sp. 1; Ehrenberg suggests that this species may prove identical with the *flava*, which is imperfectly described by Lesueur.

The *Alcyonium tuberculosum*, of Esper (Pflanz. iii. 68, tab. 23), resembles this as well as the following species. It was received by him from the Indian Ocean.

9. PALYTHOA ARGUS. (*H. & Ehrenberg.*)

P. flavo-fusca, sæpe subglobosa; polypis contractis 6–10‴ *latis; discis margine* 20–*crenatis, tentaculis* 40, *pallidè fuscis, in serie duplici, majoribus internis, obtusis, clavatis; lamellis internis* 32.

Brownish-yellow, often subglobose; polyps, when contracted, 6 to 10 lines broad; disks with 20 crenatures to the margin; tentacles 40, pale brown, in two series, the internal larger, obtuse, clavate; visceral lamellæ 32 in number.

Red Sea. *Ehrenberg.*

Palythoa argus, Ehrenberg, G. xiii. sp. 3.

10. PALYTHOA CÆSIA. (*Dana.*)

P. convexa, umbrina; polypis contractis 4–6‴ *latis; discis umbrinis, sed medio cæsiis aut pallidè violaceis, extus margine crenulatis; tentaculis valde numerosis in serie duplici umbrinis.*

Convex; colour umber; polyps, when contracted, 4 to 6 lines broad; disks umber-coloured, except the centre, which is pale grayish-violet; outer margin of the disks crenulate; tentacles very numerous, in two series, umber-coloured.

Plate 30, fig. 3, and 3 *a* to 3 *h*.

Feejee Islands. *Exp. Exp.*

This species has been particularly described on pages 40–42.

Corticifera aggregata (?), Lesson, Coquille, Zooph. pl. 8, fig. 3; island of Bolabola.

Tribe III.—MADREPORACEA.

Actinaria tentaculis duodecim (rarissimè pluribus) uniseriatis, alternis interdum minoribus: gemmipara; gemmatione inferiore: coralligena; corallis calcareis, cellis 6–12 *radiatis aut lamellis obsoletis, superficie interstitiali non lamello-striatâ.*

Actinaria with the tentacles 12 in number (rarely more), in a single series, the alternate sometimes smaller: gemmiparous; gemmation inferior: coralligenous; coralla calcareous, with the rays of the cells 6 to 12 in number or obsolete, interstitial surface not striated with the prolonged lamellæ of the cells.

The polyp of the Madrepore tribe is a simple star-shaped animal of twelve rays, presenting generally bright green, red, or umber tints. The rays or tentacles are at times nearly obsolete, or are reduced to rounded crenations of the circular disk, and in species of this character, lilac, yellow, and green colours of different shades have been observed.

The corallum is at once recognized by the few rays to the cells, the number being twelve or less, and sometimes the whole are obsolete.

Among the forms of these zoophytes there is nearly every variety that occurs in the Actinaria; but the glomerate are never as neatly regular as among the Astræas, while the ramose forms are singularly varied and beautiful. Segregate ramose forms like those of the Caryophylliæ, are never met with; and only among the fossil Favositidæ, do we find coralla consisting of separable columns—a structure arising from the fact that the polyps (as in the Columnariæ) are united laterally only by their outer non-secreting integuments.

This tribe includes three families, as already explained: the Madreporidæ, the Favositidæ, and the Poritidæ.

The following table contains the received genera of this tribe, and exhibits their relations to the corresponding genera adopted by the distinguished authors whose names are placed above the several columns.

UNITED STATES

EXPLORING EXPEDITION.

DURING THE YEARS

1838, 1839, 1840, 1841, 1842.

UNDER THE COMMAND OF

CHARLES WILKES, U. S. N.

ATLAS.

ZOOPHYTES.

BY

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PHILADELPHIA:
LEA AND BLANCHARD.
1849.

ZOOPHYTES.

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PLATE 57.

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PLATE 59.

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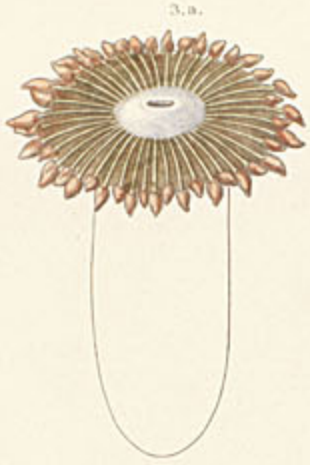
C. SHERMAN, PRINTER.


1.


2.


1.a.


2.a.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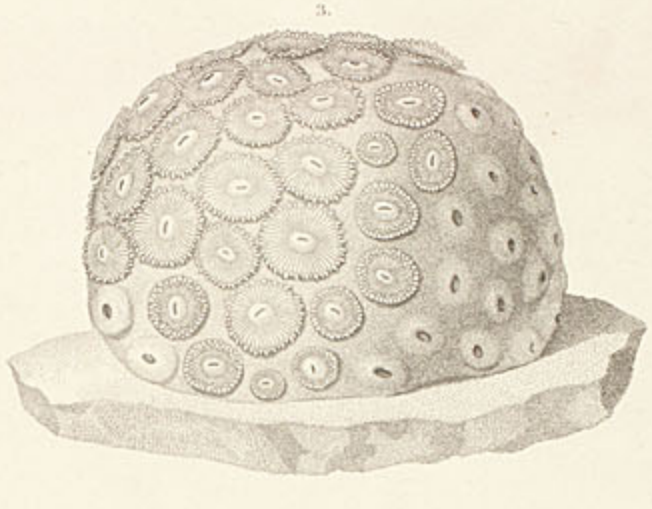
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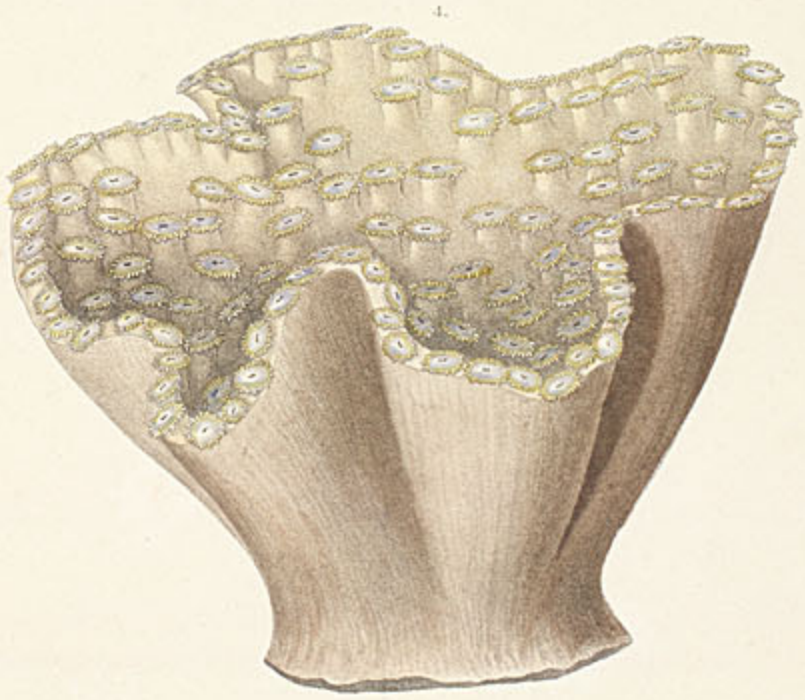
4.


4.a.


4.b.


3.f.


3.g.


3.h.

1. 1. a. Isaura speciosa.
2. 2. a. 1. aster.
3. 3. a. b. c. d. e. f. g. h. Palythoa caesia.
4. 4. a. b. Gemmipora peltata.

Drawn by J. D. Dana.

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