

No. XIX.—THE STYLASTERINA OF THE INDIAN OCEAN.

By SYDNEY J. HICKSON, *F.R.S.*, and HELEN M. ENGLAND, *M.Sc.*,
Victoria University of Manchester.

(Communicated by J. STANLEY GARDINER, *M.A.*, *F.R.S.*, *F.L.S.*)

(Plate 44.)

Read 4th June, 1908.

THE small collection of Stylasterina collected by Mr. Stanley Gardiner, *F.R.S.*, presents some features of interest.

A new species of *Distichopora* from deep water helps to bridge over the gap between this genus and *Sporadopora*. A new species of *Sporadopora* is of interest, as it is the first time since the discovery of the type species that the genus has been found. The rediscovery of *Spinipora echinata* is of interest for the same reason.

The following is a list of the species in the collection :—

- Stylaster eximius*, Kent. 100 fms.
- Stylaster minimus*, H. & E. 1–200 fms.
- Stylaster*, sp. 75 fms.
- Allopora* sp.? 6–120 fms.
- Distichopora violacea*, Pall. Shallow water.
- Distichopora profunda*, sp. n. 120–150 fms.
- Sporadopora providentiæ*, sp. n. 125 fms.
- Cryptohelia ramosa*, H. & E. 120–150 fms.
- Conopora tenuis*, Moseley. 75–150 fms.
- Conopora dura*, sp. n. 125 fms.
- Spinipora echinata*, Moseley. 75 fms.

We may take this opportunity of stating that since the account of the genus *Millepora* in the ‘Cambridge Natural History’ was written by one of us (H.) Mr. Gardiner has recorded the occurrence of this coral in depths greater than 15 fathoms. He found it at depths of 25 fathoms off Funafuti and at depths of 40–50 fathoms off the Maldives (1).

Genus *STYLASTER*.1. *Stylaster eximius*, Kent, facies *altus*, H. & E.

Stylaster elegans (?), Duchassaing & Michelotti, Les Coral. des Antilles, Suppl. p. 68, pl. ix. fig. 4.

Stylaster eximius, Kent, Proc. Zool. Soc. 1871.

Stylaster fac. *altus*, Hickson & England, Siboga-Expeditie, Mon. viii. p. 9, pl. i. figs. 1–3.

Several broken specimens, some in spirit and some dried, were obtained in 100 fathoms off the coast of Mauritius. They resemble very closely the specimens of the species obtained by the ‘Siboga’ in the Malay Archipelago at depths of 27–54 metres. The dried specimens are pale cream in colour.

2. *Stylaster minimus*, H. & E.

Stylaster minimus, Hickson & England, Siboga-Expeditie, Mon. viii. p. 15, pl. ii. figs. 13 & 14.

Mauritius, A 1, 1-200 fathoms. One specimen.

This little specimen, 20 mm. in height and 22 mm. in width, resembles the type specimen, except in the position of a few of the calices which are exposed on the posterior surface.

3. *Stylaster* sp.?

A small "dead" fragment of another species was also obtained off Providence I., D 7, 75 fms. It is too imperfect to be identified or described.

Genus *ALLOPORA*.4. *Allopora* sp.?

Off Salomon Atoll, Chagos Archipelago, 60-120 fathoms.

A small white specimen, 24 mm. in height and 7 mm. in diameter at the base, dividing dichotomously at the free extremity into two short branches, was obtained from this locality. It may represent a new species, but it is too imperfect to describe.

The occurrence of the genus in this locality is of some interest, as it has not hitherto been recorded in the Indian Ocean, although *A. nobilis* and *A. oculina* (sp.?) have been described from the neighbourhood of the Cape of Good Hope. It is also noteworthy that the rich collection of Stylasterina made by the 'Siboga' Expedition in the Malay Archipelago contained no specimens of the genus.

Genus *DISTICHOPORA*.5. *Distichopora violacea*, Pallas*.

The earliest description of a coral that can clearly be identified with this species is given by Pallas, under the name *Millepora violacea*. The locality for the species given by him is "Mare Indicum unde cum Iside ocracea et Gorgonia suberosa promiscue allatam habeo." The *Isis ocracea* of Pallas (6) is probably the species now known as *Melitodes ochracea*, and the *Gorgonia suberosa* is now known as *Suberogorgia suberosa*. Both these species have a wide distribution in the Indian Ocean, the waters of the Malay Archipelago and of the Western Pacific islands. It is therefore impossible to determine within the boundaries of this wide area where the type specimens came from. All that does seem certain is that the type specimens were not West Indian and most probably not Hawaiian.

In a previous paper (2) I have fully discussed the synonymy of this species, and I have nothing further to add, except to confirm the view expressed that all the shallow-water specimens of *Distichopora* I have examined from Torres Straits, the Malay Archipelago, the coasts of Fiji, and from other islands of the S. Pacific and of the Indian Ocean belong to the one species, *Distichopora violacea*. I have not yet examined

* The description of this species is by S. J. H. alone.

with sufficient care the beautiful rose-coloured *Distichoporas* from Hawaii nor any specimens from the West Indies, and I am therefore not prepared to say that they also belong to the same widespread species; but I am more firmly convinced, now that I have examined Mr. Gardiner's specimens from the Indian Ocean, that the colour is no guide to specific distinction. In the Torres Straits, specimens of the species vary from bright yellow, orange, and brown to violet and purple; and in the Indian Ocean we also find white, yellow, orange, violet, and purple varieties. In some specimens from the Praslin Reef the white varieties exhibit on the thicker branches a blush of pale violet, and many of the purple specimens have nearly pure white tips to the branches, which fade away into the purple colour of the main stems.

There seem to be no definitely correlated characters to give us any suggestion as to the meaning of the differences in colour. In my former paper (2) on the specimens of *Distichopora violacea* from the Torres Straits I suggested that the orange-coloured colonies are usually juvenile and not sexually mature, that the brown colonies are older and bear ampullæ that are usually male, and that the violet and purple varieties are the oldest and bear either male or female ampullæ.

In these Indian Ocean forms I have found that the largest colonies are nearly all purple or violet in colour, and bear ampullæ some of which are certainly female. The brown and blushed varieties are usually smaller, and bear ampullæ which I believe to be male. The white varieties are frequently the smallest colonies and are sometimes quite immature. On the other hand, some of the white varieties do bear a few ampullæ, some of which I judge to be female, and some of the purple varieties are very small but evidently sexually mature.

If, therefore, the conclusions I have arrived at are true, that the species is protandrous and that the purple colour is the last of a series of colour-changes in growth, it is evident that colour-change and the sexual condition are not closely correlated and that the colour-change is not closely correlated with actual age.

The reason why I have expressed the opinion that some of the ampullæ are male with some doubt is that Miss England has recently made the interesting discovery that a specimen from the Farquhar Atoll that she examined in section was hermaphrodite. Not only are the colonies themselves hermaphrodite, but a single ampulla bears in some instances both male and female sexual cells. This is the first time, I believe, that hermaphroditism has been recorded in the Stylasterina. I have never seen another case in all my preparations of the genera of this order, and I have not discovered yet any method of distinguishing hermaphrodite ampullæ from purely male or female ampullæ without making sections of them. The ampullæ, therefore, that I judge to be males by the rough characters of the external features may prove to be hermaphrodite.

The specimens of *Distichopora violacea* from the Indian Ocean are, speaking generally, rather small and delicate as compared with those from Torres Straits. To give measurements of two examples of the largest colonies, I may record a purple variety from Coetivy which is 40 mm. in width across the flabellum and 18 mm. in height, and a white variety from the same bottle that is 28 mm. in height and 21 mm. in width.

The terminal branches are oval in section, the diameters are about 3 mm. \times 2.75 mm. Specimens were sent to me from Coetivy, Praslin Reef, Egmont, and Farquhar Atoll. In all cases they were obtained in shallow water.

6. *Distichopora profunda*, sp. n. (Plate 44. figs. 4, 5, 6, 7.)

Off Salomon Atoll, Chagos Archipelago, 120–150 fms. Two specimens, one “dead.”

As far as can be ascertained from one of the small colonies obtained, the growth is flabellate, the branches being very stout, obtuse, and flattened in the plane of the flabellum. The thickest branch is 10 mm. \times 4 mm. in diameter, while the base of the main stem is 7 \times 4 mm. The colony is not old enough for it to be ascertained whether the method of growth is dichotomous or anastomosing. The colour is brownish white, the surface is very rugose, recalling the structure of *Sporadopora dichotoma*, but as the pits and furrows of the coenenchym-canals are much deeper and larger they can be easily seen without magnification. The pores are confined chiefly to the lateral sides of the branches, where there is generally a double row of gastropores bordered by a single row of dactylopores on each side (4 \times 2 mm. in diam.). The latter are usually horseshoe-shaped, the outer edge slightly raised above the surface of the coral, the “open” end of the horseshoe being turned towards the row of gastropores (figs. 5 & 6).

The dactylozoid is attached to the outer side of its pore and can be completely retracted within it, the free end pointing inwards—that is to say, towards the gastropores. Sometimes the line of pores is continued on to either of the surfaces of the coral; there may also occasionally be a few isolated pores (fig. 4), a gastropore with one or more dactylopores near it upon the surface. The gastropores vary in size; the larger ones are 0.5 mm. in diameter. In *D. violacea* they are rarely more than 0.3 mm. in diameter. The arrangement of the gastropore-cavities is fan-shaped, as in *D. violacea*. The long gastrostyle is brush-like at the tip. One important feature of this species is that tabulæ are common in the gastropores (fig. 7). The tabulæ do not occur in very young (that is to say, shallow) gastropores, but more than one may be present in the older pores. Moseley only describes tabulæ in *Sporadopora* and *Pliobothrus*. We have found tabulæ also in *Spinipora echinata* (p. 353), another species which has very deep gastropores, and on re-examining *Distichopora violacea* we have found that they do occur in the older gastropores of that species. In many of these there are several incomplete tabulæ—that is to say, excrescences—from the wall of the pore that may or may not reach the gastrostyle. These incipient tabulæ sometimes are seen in *D. profunda* (fig. 4).

In his discussion of the pedigree of the Stylasterina, Moseley (5) expressed the opinion that *Sporadopora* is the most archaic genus, and that *Distichopora* is probably derived from some form allied to *Errina*. One of the results of our investigations derived from the study of the two new species *Sporadopora providentiæ* and *Distichopora profunda* is to show that the two genera are much more closely related than Moseley believed.

It must be observed, however, that there is a striking difference between the male gonangium of *Sporadopora* and that of *Distichopora*. In the former there is a well-marked elongated cylindrical spadix, in the latter there is none (*cf.* Moseley, pl. 3., and Hickson, 3. pl. 30. fig. 15).

The distinctive Characters of Distichopora profunda.

It is probable that there are many intermediate varieties to be found between our new species and *D. violacea*, but, notwithstanding that there is only a small fragment to work upon, the characters it presents are so definite and remarkable that we feel we are justified in giving it a new name.

Distichopora violacea is essentially a shallow-water species, and of the other species of the genus that have been described only *D. foliacea*, Florida, 100–262 fms. (8), *D. sulcata*, off Havana, 270 fms. (8), and *D. contorta*, off Havana, 175 fms. (7)—all three of them described by Pourtalès (7 and 8),—have been found in deep water; but these are quite distinct from *D. profunda*. *D. profunda* is the only species of the genus that has been found in deep water (120–150 fms.) in the Indian and Pacific waters.

The branches are much bigger than in *D. violacea* and the surface of the cœnosteum is much rougher and coarser. The gastropores are decidedly larger. The gastropores are in many places arranged in two alternating rows on the edges of the branches, a condition which is very rare indeed in *D. violacea*. The lips of the dactylopores project in the form of horseshoe-shaped collars from the surface of the cœnosteum, much more definitely than in *D. violacea*. The tabulæ in the gastropores are more frequent and definite than they are in *D. violacea*.

Genus *SPORADOPORA*.7. *Sporadopora providentiæ*, sp. n. (Plate 44. figs. 1, 2, & 3.)

Providence I., D 8, 125 fms. Two colonies.

The habit of growth of this new species is flabelliform and dichotomous; the branches do not coalesce. It is much more delicate in build than *S. dichotoma*; the shape of the branches is, however, similar. The height of the larger of the two colonies is 35 mm., the base of the main stem is 5×4 mm. in diameter; near the apex of a branch the diameter is often as much as 4×13 mm. The colour is yellowish white; the surface is slightly granular in appearance, but smoother than in *S. dichotoma*, in which Moseley likens the texture to that of loaf-sugar. The zooid-pores are very numerous round the edges of the branches, but a few may be scattered on either surface. There is a nearer approach to arrangement in cyclosystems than in Moseley's species (fig. 2). Yet the system of pores recalls still more strongly the condition common in *Distichopora*, most of the gastropores lying in an irregular double or single row at the edge of the branches and the dactylopores arranged either in irregular lateral rows or more irregularly scattered (fig. 1). The lip of the gastropore projects slightly above the surface of the cœnosteum and the aperture is about 2.75 mm. in diameter. The gastropore is deep and curved down the branch; it bears a long gastrostyle, similar to that of *Distichopora* but not quite so slender, tapering to a point near the gastropore. As in *Sporadopora dichotoma*, tabulæ occur in the gastropores, but in the small fragments we have examined they are not nearly so common as they are in *Distichopora profunda* or in *Sporadopora dichotoma*, according to the description originally given of them by Moseley.

The apertures of the dactylopores are either round or top-shaped (figs. 2 & 3) and are usually provided with a horseshoe-shaped lip, very similar to that of *Distichopora profunda*.

The sack in which the gastrozoid lies is remarkably tough in appearance, as described by Moseley in *S. dichotoma*, and sections show that it contracts together near the external aperture of the gastropore, so as to completely close it. There are usually four short tentacles, as in *S. dichotoma*. The dactylozoid also lies in a sack, which, however, is not so tough as that of the gastrozoid. The dactylozoids do not vary so much in size as those Moseley described in his species, where the larger might be twice the size of the smaller. But a much more important difference is that they bear no axial cavity, such as he describes, surrounded by two or three layers of transparent nucleated cells. The axis of the dactylozoid is entirely filled up by a solid scalariform endoderm, such as is common in the tentacles of other Hydrozoa and such as was described by one of us in *Distichopora violacea* (2. p. 505) as a "nucleated syncytium with large vacuoles containing probably water only."

The dactylozoids of all genera of Stylasterina that we have examined (*Pliobothrus* is the only one that we have not seen) have solid endoderm; it is always vacuolated, though not necessarily scalariform in appearance. As in the gastrozoid, there is a well-defined muscular layer between ectoderm and endoderm, such as was carefully described by Moseley in his species. Another difference that we have observed from the condition figured by Moseley is that the zooids, especially the gastrozooids, have living tissue very much deeper down the pores than shown in his plate iii., and this we have also found to be the case with the gastrozooids of *Spinipora*, the only other genus that he figured which has very deep pores.

The female ampullæ are visible from the exterior in *Sporadopora providentiæ* as slight swellings; they occur on both surfaces.

This species may be defined:—

Hydrophytum flabellate, dichotomous; zooid-pores scattered, principally at the edges of the branches; gastrozoid with four short tentacles.

The species differs from *Sporadopora dichotoma*, which was obtained by the 'Challenger' in 600 fms. off Rio de la Plata and which is the only other species of the genus known to science, in being more slender in structure, in having the greater number of the pores on the edges of the branches and arranged there in rows as in *Distichopora*, and in the absence of a cavity in the dactylozoids. In all these characters it shows affinities with the genus *Distichopora* and more particularly with the species *D. profunda*. It is of some interest that in the series beginning with *D. violacea* from shallow water, *D. profunda* from 120–150 fathoms, *S. providentiæ* from the same depth, and *S. dichotoma* from 600 fathoms we have a series connecting the two genera. The conclusion may be either that *Sporadopora* is a genus derived from *Distichopora* and adapted to a deep-sea habit, or the reverse; but, of course, the evidence in favour of either of these conclusions requires considerable strengthening to be placed on a firm footing.

Genus *CRYPTOHELIA*.8. *Cryptohelia ramosa*, H. & E.

Cryptohelia ramosa, Hickson & England, Siboga-Expeditie, Mon. viii. 1905, p. 21, pl. ii. figs. 22, 23.

There is only a small specimen of this genus in the collection, 9 mm. in height and 14 mm. in width. It was obtained off Salomon Atoll, Chagos Archipelago, in 120–150 fms.

It is difficult to identify the species from such a small specimen, but it seems to be undoubtedly most closely related to *Cryptohelia ramosa*, obtained by the 'Siboga' in 1165–1264 metres off N.E. Celebes. The cyclosystems are oval and their diameters about 1.12 mm. \times 0.8 mm., *i.e.* rather smaller than those of the type specimen.

Genus *CONOPORA*.9. *Conopora tenuis*, Moseley.

Conopora tenuis, Moseley, Chall. Zool. vol. ii. pp. 82 & 97, pl. xii. figs. 5 a, b, c (off Kermadec Isls., 520 fms.).

The species was also obtained by the 'Siboga' Expedition in 469 metres off Ceram (*t. c.* p. 25).

(1) Salomon Atoll, Chagos Archipelago, 120–150 fms. Several specimens, the largest 3.2 cms. in height.

(2) Providence I., D 7, 75 fms. One "dead" specimen.

Several of the specimens from the Salomon Islands have female ampullæ, which appear as globular swellings easily seen by the naked eye. Frequently more than one trophodisc occurs in an ampulla, as in *Cryptohelia*. The planula, as it develops, becomes bent within the ampulla. This condition also occurs in *Cryptohelia*.

10. *Conopora dura*, sp. n. (Plate 44. figs. 9, 10, 11.)

Providence I., D 8, 125 fms. Two pieces.

The species is probably flabellate in growth and the branches do not anastomose. The height of the colony was probably about 45 mm. and the width 70 mm. The branches are thick, obtuse, and slightly flattened in the plane of the flabellum. The diameter of the thickest part of the main stem is 8 mm. and of the branches at a distance of 4 mm. from their apices about 4 mm. \times 3.5 mm.

The colour is white and the surface is smooth, except for a number of small nematopores (fig. 10, *nem.*) with slightly raised lips which are distributed between the cyclosystems.

The cyclosystems are irregularly distributed on all sides of the branches and main stem. The shape of the cyclosystems is also irregular but usually oval (1.3 mm. \times 1.1 mm.), the greater diameter being at right angles to the axis of the branch. There are about twelve septa of different sizes, the larger and thicker being usually directed towards the base of the branch (fig. 10).

The gastropore is, as in other species, a large open cup (fig. 11) divided into an upper (larger) (*u.c.*) chamber and a lower chamber (*l.c.*) by a horizontal septum (*h.sept.*) with a

circular aperture. There are no styles either in the gastropores or dactylopores. The dactylozooids are of considerable length and when at rest hang down in the grooves between the septa.

The genus *Conopora* is undoubtedly closely related to *Astylus*, from which it differs in having a circular instead of a horseshoe-shaped perforation of the horizontal septum. In this respect it resembles *Cryptohelia*, from which it differs in the absence of a lid covering the cyclosystem*.

Conopora dura differs from *C. tenuis* in having a solid axis. In *C. tenuis* the axis is usually fistulose, this condition being brought about by its association with a polychæt worm. It also differs from *C. tenuis* in the smaller size of the aperture in the horizontal septum and also apparently in the absence of a definite canal between the dactylopore and gastropore (*cf.* Moseley, *t. c.* pl. ii. fig. 8, *c.c.*, and Hickson and England, pl. iii. fig. 35).

The species may be defined:—

Hydrophytum flabellate (? or subflabellate), axis solid, branches stout, small nematopores on the surface. Cyclosystems irregularly scattered, with only slightly raised edges. Aperture between the upper and lower chamber of the gastropore small; no distinct canal between dactylopore and gastropore. Septa deep, variable in thickness.

Genus *SPINIPORA*.

11. *Spinipora echinata*, Moseley. (Plate 44. fig. 8.)

Spinipora echinata, Moseley, 'Challenger' Zoology, vol. ii. p. 55.

Providence, D 4, 75 fms. Several fragments.

The genus was described by Moseley (5. p. 55) from a small piece of coral obtained off La Plata in 600 fms.

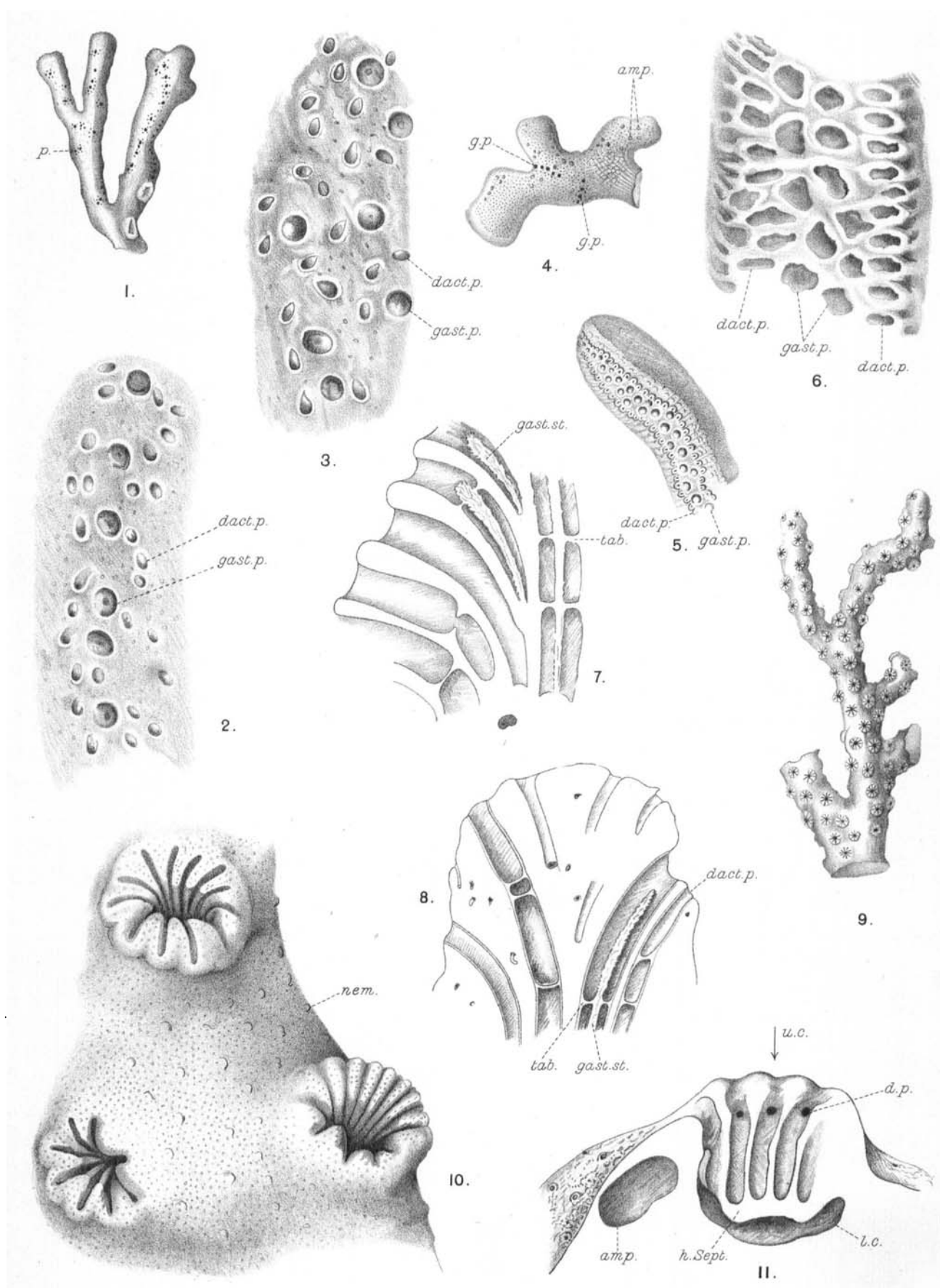
No other species has been described since, and we have not been able to find any reference in literature that enables us to say that any other specimens of the type species have been found. The rediscovery of the species after a lapse of thirty years is in itself a feature of considerable interest.

The material sent to us consists of six fragments, some of which may have belonged to the same colony, of which the largest is 25 mm. in length and the thickest branches not more than 5 mm. in diameter.

The hydrophytum appears from the evidence of these fragments to be irregularly flabellate in growth, the branches attenuating rapidly towards the moderately sharp terminal points.

The larger kind of dactylopores are protected by grooved half-tubes of cœnosteum (Moseley's nariform processes), which are arranged roughly in longitudinal rows near the ends of the branches, but seem to be more irregularly scattered on the thicker parts of the colony. They vary a good deal in length, but the most perfect are about 0.2–0.3 mm. in length. In the dead parts of the cœnosteum these processes are worn down almost to the general surface of the branch.

* In two of the cyclosystems one of the larger septa projects from the surface above the level of the adjacent ones, giving an appearance of an incipient lid such as we find in *Cryptohelia stenopoma*.



The smaller dactylopores are rare and scattered. At the ends of the branches they are very difficult to find and may not occur. They seem to be certainly less abundant in the Providence specimens than in the type.

The gastropores are situated in pits between the nariform processes and each one contains a large, conspicuous, pointed, spinous style which reaches almost to the level of the pit.

In a vertical section through a branch the gastropores and styles can be seen passing towards the centre and then down the axis for some distance. We have seen in such sections several examples of quite distinct but very thin cup-shaped or flattened tabulæ. Such tabulæ occur quite irregularly, and not at definite or constant distances apart (fig. 8). Similar tabulæ also occur in the dactylopores.

The genus *Spinipora* is closely related to the genus *Labiopora*, Moseley, and these two genera are probably also related to the genus *Steganopora* (H. & E.). Some new specimens of *Labiopora* from New Zealand have recently been placed in our hands by Professor W. B. Benham, F.R.S., and we propose to publish shortly a paper in which these relationships will be fully discussed.

LITERATURE.

1. Gardiner, J. S.—The Fauna and Geography of the Maldives and Laccadive Archipelagoes, vol. i. part 3, p. 324.
2. Hickson, S. J.—Notes on a Collection of Hydrocorallinæ. Proc. Roy. Dubl. Soc. vol. vii. part 5 (1892).
3. Hickson, S. J.—The Gonophores of *Allopora* and *Distichopora*. Q. J. Micr. Sci. vol. xxxii. (1891).
4. Hickson, S. J., and England, H. M.—Stylasterina, Siboga-Expeditie, Mon. vol. viii. (1905).
5. Moseley, H. N.—Hydrocorallinæ. 'Challenger' Reports, vol. ii. (1881).
6. Pallas, P. S.—Elenchus Zoophytorum. Ed. by P. van Cleeef, 1766, p. 258.
7. Pourtales, L. F.—Bull. Mus. Harvard, 1879, vol. v. p. 210.
8. Pourtales, L. F.—Deep-sea Corals, 1871, p. 38.

EXPLANATION OF PLATE 44.

- Fig. 1. *Sporadopora providentiæ*, sp. n., nat. size. To show sporadic occurrence of pores (*p.*) on the flat surfaces.
- Fig. 2. *Sporadopora providentiæ*. The edge of a branch enlarged to show the arrangement of the gastropores (*gast.p.*) and dactylopores (*dact.p.*) in regular rows.
- Fig. 3. The same species showing another portion of the edge with a more irregular arrangement of the pores.
- Fig. 4. *Distichopora profunda*, sp. n., nat. size. Showing at *g.p.* the irregular rows of pores on the surfaces, and at *amp.* the ampullæ.
- Fig. 5. The same species. The edge enlarged, to show the arrangement of the gastropores (*gast.p.*) in double rows and the dactylopores (*dact.p.*).
- Fig. 6. The same, further enlarged, to show the horseshoe-shaped lips of the dactylopores (*dact.p.*).

Fig. 7. The same species. Vertical section through a row of gastropores, to show the tabulæ (*tab.*) and gastrostyles (*gast.st.*). $\times 9$ diam.

Fig. 8. Vertical section through the corallum of *Spinipora echinata*, Moseley, to show the tabulæ (*tab.*) and gastrostyle (*gast.st.*) in the gastropore. Tabulæ are also seen in the adjoining dactylopore (*dact.p.*). \times ca. 20 diam.

Fig. 9. *Conopora dura*, sp. n., nat. size.

Fig. 10. *Conopora dura*. Enlarged view of the surface, showing three cyclosystems and the nematopores (*nem.*).

Fig. 11. *Conopora dura*. Vertical section of a cyclosystem enlarged, showing the dactylopores (*d.p.*), the upper (*u.c.*) and lower chamber (*l.c.*) of the gastropore, the horizontal septum (*h.sept.*) separating them, and an ampullar cavity (*amp.*).