dry specimen the adjoining calices, or rather troughs, are closely adherent; the exact septa almost overlap in the larger spirit-specimen (6 cm. long), in which the skeleton is obscured by the soft parts; the ridge between the calices appears to widen here and there into an ambulacrum 1–2 mm. wide. The calicular trough must have been 3 cm. deep and as much across, while the primary septa are very stout and exerted, and with their inner edges rather more vertical than in Musca regalis, at least near the top of the ridge. The soft parts are bright green. Small cup-shaped galls are found on the septa here and there, somewhat like those occurring on the specimen of Colonia (see below).

Occurs on the sides of the deep channels at the rim of the reef.

**Genus Leptoria M.-E. & H.**

*Leptoria phragis* Ellis.
*Leptoria phragis* Ellis, Zooph. p. 162, 1786, pl. 48.

One fragment from a massive growth. It shows both straight and curving calicular troughs. A good section shows the thick plate-like columnella with its lobed and also finely serrated edge.

The species is said to extend over the Indo-Pacific area. Dana records it from Ceylon.

Pools on reef-flat, Flying Fish Cove.

**Genus Colonia M.-E. & H.**

*Colonia sinensis* M.-E. & H.

One large specimen which agrees in all important points with this species. The Chinese type had calicular troughs not exceeding 2 cm. The specimen from Christmas Island has the same tendency to short troughs, some being round and only a few mm. in diameter, but a few reach to 3 and 4 cm. in length. What appear to be galls occur on the septa here and there.

Pools on reef-flat, Flying Fish Cove.

**Genus Prionastera M.-E. & H.**

*Prionastera auriculata* M.-E. & H.
*Prionastera auriculata* M.-E. & H. Les Cor. ii. 1857, p. 520.

There is a narrow convex strip with the angular surface characteristic of this genus. It may provisionally be placed near *P. australasia*, with which it agrees in size of calice, thin walls, and rudimentary columnella; while round the columnella a ring, often incomplete, of larger septal teeth rises up, either 2–3 on each septum, or else one large paliform tooth.

There is further a very similar specimen in spirit of the same bright green which seems common to these Christmas Island Madreporaria. It appears to have much thicker walls than the dried specimen, but the presence of the soft parts would at least partly account for this. Slightly thicker skeletal walls it may easily have, as some variation in their thickness is observable in the dried specimens.

Pools on reef-flat, Flying Fish Cove.

**Genus Agaricia Lamarck.**

There is a fragment of what appears to be a flat encrusting disc with sharp free edges, the epitheca following about 1 cm. behind. The very young calices are confluent in concentric rows but soon separate off, the smooth low rounded walls, finely striated by the septa, rapidly forming an irregular network over the surface; the calices all look upwards, and are not tilted to look towards the growing edge. There are 4 cycles of septa—and if any columnella, only in the deep calices in the thicker parts of the stock. The section is very dense, the septa being thick and closely packed with traces of synapical junctions.

Rock-pools under cliffs S. of Flying Fish Cove.


The Sponges collected by Mr. Andrews were obtained from an area limited to the reefs of Flying Fish Cove. The majority of the specimens were found growing on the under surface of large coral blocks lying in pools left by the tide. The use of the dredge was impossible owing to the irregular rocky nature of the bottom.

Hitherto only one species (*Paxiolarca paxiolarca* Dundy, P. Z. S. 1887, p. 524) has been obtained from this locality. The present collection of 53 specimens, referable to 24 genera and 52 species, contains examples of 7 new species and 2 new varieties.

The Calcarea and Monocorallia are each only represented by two small specimens.

The Carnosa are represented by three species, the occurrence of *Chondrosis plesioja* Schmidt, recorded for the first time from the Indo-Pacific, being specially interesting.

The sponge-farms of Christmas Island, so far as known at present, is very similar to that of Java.

A list of species, arranged according to the classification of Topsent, is given below.

**Sub-Class CALOAREA.**

1. *Clathrina primordialis* (Haeckel).
2. *Loucandra sp.*

**Sub-Class DESMOSPONGIDA.**

**Order CARNOSA.**

Order Tetractinellida.
7. Ecionema basiliforme (Carter).
8. Stelletta sinapisfera (Sollas).
9. Tetilla baco (Selekia).
10. Tetilla ternatensis Kiesmich.

Order Monaxonida.

Suborder Hadromerina.
Section Clavulida.
11. Spirastrella carnosa Topsent.
12. Spirastrella decurvata Ridley, var. robusta, var. nov.
13. Pseudomobius sterneri, sp. n.

Section Aciculida.
14. Tetlya ingalli Bowerbank.
15. Tetlya seychellensis (E. P. Wright).
16. Tetlya affinis, sp. n.

Suborder Halichondridae.
Family Axinellidae.
17. Hymeniacidon conulosum (Topsent).

Family Pocillocleridae.
18. Microciona dubia, sp. n.
19. Isotrechus bennetfii Ridley, var. immensus, var. nov.
20. Eoletta pallida Ridley.
21. Dermacella sp.
22. Styloclathra irregularis, sp. n.
23. Styliola sp.

Family Haploscleridae.
24. Elizochalina pellucida Ridley.
25. Rhabdodiscus secalis, sp. n.
26. Geikiea varius (Bowerbank).
27. Rivierra inominata, sp. n.
28. Petrosea eximia, sp. n.
29. Halichondria solida Ridley & Dendy.
30. Halichondria solida, var. rupestris Ridley & Dendy.

Order Monoceratina.
31. Spongia (Eupongia auct.) sp.
32. Spongilla sp.
their shape is subspherical, elongated or pyriform, and they vary in size from 1 to 5 c.c. in length or diameter, and in colour from yellow to dark brown. The alcohol specimens are much shrunk from yellow to dark brown. The surface being marked with polygonal or elongated depressions (“wabige vertiefungen,” O. Schmidt) with pigmented stellate markings. The specimen in formal, which was unfortunately transferred to alcohol, was bluish-black and quite smooth.

On drying, the surface has a distinctly gritty appearance, caused by the shrinking of the dermal membrane on the foreign particles beneath.

The foreign bodies (fine sand-grains, sponge-spicules) form a fairly-well defined layer in the cortex and just beneath the dermal membrane; in some specimens spicules projected beyond the surface at right angles. There are no foreign bodies scattered in the interior of the body, differing in this respect from the specimens from Algiers described by O. Schmidt.

Distribution. Mediterranean; Atlantic; Christmas Island.


canthibina nuda Lendenfeld.

1887. Chondrella nuda Lendenfeld (9 p. 105, pl. x, figs. 69-71).

One small specimen of this species occurs in the form of a rounded bilobed mass 8 x 8 x 4 mm. in size, growing on Chondrella pectina.

The surface is bluish-black and smooth, and shows under a lens a faint whitish reticulate pattern. The larger lobe has two minute raised oscules <3 mm. in diameter. The cortical layer includes columns of large granular pigmented cells, as in the specimen from Zanzibar.

The spicules are slightly larger than in Lendenfeld’s specimens. The oxeysters, 30 μ in diameter, possess 8 sharp spines usually slightly curved. The spherasters, 25 μ in diameter, possess 25-30 sharp-pointed pyramidal prickles. In the Zanzibar specimens the oxeysters are 25-30 μ and the spherasters only 10-15 μ in diameter.

Distribution. Zanzibar; Christmas Island.

Sidonopsis pectinata Topsent.

1887. Sidonopsis pectinata Topsent (18. p. 431, pl. xviii. fig. 2).

1898. Sidonopsis pectinata Lindgren (10. p. 349, pl. xviii. fig. 17, pl. xx. fig. 6).

There are four small specimens, the largest of which is 5 c.c. by 2 c.c. in area and 15 c.c. in thickness. So-called small spherical buds about 2 mm. in diameter are lightly but closely attached by bundles of oxooste spicules. When a bud is detached, a shallow circular depression remains, the stellastil crust being thin and biocollate in section.

The slender cortical oxas and the oscular palisade of spicules described by Lindgren are present.

Distribution. Ambon; Java; Christmas Island.

1900.] MARINE FAUNA OF CHRISTMAS ISLAND. 131

Ectonema bacilliformum (Cartier).

1887. Stellleta bacillifera Carter (4. p. 76, pl. vi. figs. 9-14).


1898. Ectonema bacilliformum Lindgren (10. p. 335, pl. xvii. fig. 17; pl. xix. fig. 27).


The largest of the four specimens in this collection is 4 x 5 c.c. in area and 1 c.c. in thickness, and forms a thick crust; in colour pale brown mottled with dark brown.

The type specimen from Mergui, being in the Calcutta Museum, is not available for comparison. Protostrema are very rare in the Christmas Island specimens. The microstrangles, which are 18 x 3 μ in size, are occasionally centrotyle. The fine cortical oxas measure 180 x 4 μ.

The asters are tylose, and with roughened actines, the same characteristics being found in the asters of Ancorina simplex, of which species the Museum possesses a few slides prepared from the type specimens from Zanzibar.

Distribution. Mergui, Java, Christmas Island, Zanzibar; var. robustum: Port Phillip, Ports Elliot and Adelaide.

Stellleta simplicifurca (Sollas).


1888. Myriaster simplicifurca Sollas (17. p. 114, pl. xii. figs. 29-33).

1898. Stellleta simplicifurca Lindgren (10. p. 332, pl. xviii. fig. 8).

Of the three specimens of this species, one is small (8 x 8 x 6 mm.) and oval; the other two are in the form of thick nodular lamellae, the larger being 5 x 3 c.c. in area and from 1 to 2 c.c. in thickness.

<table>
<thead>
<tr>
<th>Small spec.</th>
<th>Largest spec.</th>
<th>Towers Strata</th>
<th>Cochim Chalin. Ligngren</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christin I.</td>
<td>Christin L.</td>
<td>Challenger</td>
<td></td>
</tr>
<tr>
<td>Orthotriana. Rhëbus 1257 x 50</td>
<td>1832 x 32</td>
<td>2256 x 55</td>
<td>2700 x 84</td>
</tr>
<tr>
<td>Orthotriana. Cladi 25</td>
<td>225 x 54</td>
<td>265</td>
<td>2450 x 30</td>
</tr>
<tr>
<td>Ancotriana. Rhëbus 1830 x 22</td>
<td>1830 x 15</td>
<td>1980 x 29</td>
<td>2690 x 30</td>
</tr>
<tr>
<td>Ancotriana. Cladi 105</td>
<td>74</td>
<td>120</td>
<td>105</td>
</tr>
<tr>
<td>Ancotriana. Chordi 122</td>
<td>72</td>
<td>127</td>
<td>168</td>
</tr>
<tr>
<td>Ancotriana. Sagitta 86</td>
<td>48</td>
<td>50</td>
<td>84</td>
</tr>
<tr>
<td>Large oxas</td>
<td>1255 x 49</td>
<td>1239 x 24</td>
<td>2000 x 31</td>
</tr>
<tr>
<td>Small oxas</td>
<td>129 x 6</td>
<td>210 x 3</td>
<td>225 x 3</td>
</tr>
</tbody>
</table>

The surface of the lamellae presents a tessellated pattern, the
pores being in the grooves between the lamellae; the pattern is not present on the thick rounded edges or on the nodular excrescences. Several small oscules 1 x 5 mm. are present.

The specimens described by Sollas and Lindgren are probably in an early stage of growth.

There are considerable variations in the dimensions of the spicules, as will be seen from the table (p. 131) giving the sizes in microns.

**Distribution.** China Sea; Torres Straits; Christmas Island.

**Tetilla bacca** (Selenka).

1883. *Tetilla mrgulensis* Carter (2. p. 386, pl. xxv. figs. 6-8).

There are two specimens, the larger being 2.5 cm. x 3.5 cm. They are subspherical, but with a concave area below apparently resulting from radial fission. The larger specimen has 20 oval depressions pore-areas and 2 oscules, all being about 4 x 5 mm. in area and 2-5 mm. in depth. The oscules are clausoca, in the floor of which several openings of excurrent canals are seen; the floor of the pore-areas is covered with membrane perforated by groups of pores. A section of the sponge, which is soft and cuts easily, shows bundles of spicules radiating from a central nodule.

The speculations are almost identical with that of a specimen from Java described by Lindgren. The length of the oxea is 3-6 mm., of the anatremes 5-7 mm. and of the proctines 6-8 mm.

**Distribution.** Samoa; Torres Straits; Ambon; Java; Mergui; Christmas Island.

**Tetilla ternatensis** Kieschuck.


The one specimen is subspherical, 2 x 2 x 3 cm. in size; the sponge is deeply fissured in several places. There are several oscules, the largest being 3 mm. in diameter and possessing a raised rim. As in Lindgren's specimen, the surface of the sponge is crowded with Diatoms.

The very rare proctines are irregular, one of the arms being much longer than the other two, which may be reduced to mere knobs.

This species resembles *T. daezioides* Carter in certain respects, the radiating bundles of the latter being formed of oxea (1360 x 64) midway in size between the large oxea and microaxes of *T. ternatensis*.

**Tetilla ingalli** Bowerbank.

1879. *Tetilla ingalli* Bowerbank (1. p. 119, pl. v. figs. 11-17).

The single specimen is free, oval, 22 mm. in length, and 16 mm in breadth and height. The surface is level, but shows a faintly marked tessellated pattern. The cortex is 2 mm. thick, and is uniformly and densely crowded with spherasters.

The spicule-measurements are given along with those of the type specimen from Fremanet for comparison.

**Chocoanosal**

<table>
<thead>
<tr>
<th>Strongylozoa</th>
<th>Sparasters</th>
<th>Oxyasters</th>
<th>Chiastera</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christmas Island</td>
<td>1850 x 24μ</td>
<td>70μ</td>
<td>18-24μ</td>
</tr>
<tr>
<td>Fremanet</td>
<td>1450 x 35μ</td>
<td>70μ</td>
<td>36μ</td>
</tr>
</tbody>
</table>

**Tetilla ingalli** shows a considerable range of variation, but, I think, would include the Christmas Island specimen in spite of its oval form and the smaller size of its spicules.

**Distribution.** Seychelles; Australia; Christmas Island; Java; Ambon.

**Tetilla eychellenis** (E. P. Wright).


There are five small, free, nearly spherical specimens, all of which are gemmiferous. The outer two-thirds of the cortex is occupied by a zone of subcortical cavities.

**Spiculae.** Megascleres—strongylozoa, 1200 x 18 μ.
Microscleres—spherasters, 45 μ. Somal chaasters, 12 μ. Chocoanosal asteres, 30 μ, with well-defined centrum; actines roughened, bifurcate.

The “regular hexaster” type of the oxyasters is a characteristic of this species, distinguishing it from *T. ingalli* Bowerbank.

A comparative table of spicule-measurements (in microns) of specimens from various localities is given below.

<table>
<thead>
<tr>
<th>Type from</th>
<th>'Challenger'</th>
<th>'Challenger'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christmas Island</td>
<td>1730 x 30</td>
<td>1510 x 23</td>
</tr>
<tr>
<td>Spongylozoa</td>
<td>70</td>
<td>64</td>
</tr>
<tr>
<td>Sparasters</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>Somal chaasteres</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Chocoanosal asteres</td>
<td>54</td>
<td>50</td>
</tr>
</tbody>
</table>

**Distribution.** Seychelles; Philippines Island; Torres Straits; Christmas Island.

**Tetilla affinis**, sp. n. (Plate XII. fig. 1; Plate XIII. figs. 3a-d.)

Sponge incrusting, and of irregularly conical shape; upper surface rough but level, with an obscure polygonal pattern formed by depressed conules with fringulated edges, and with two small membranous oscular cones, the apertures being 1 x 5 mm. in area.

Cortex 1-2 mm. in thickness, with a few narrow intercostal cavities arranged vertically in the outer two-thirds, the cortical spherasters occasionally occupying the whole thickness but usually
only the inner third, where they are divided into two zones by a shallow space.

Spirastrella. Megascleres—strongly vexen, 1380 x 38 μ. Microscleres—spinerasts, 80 μ. Somal chiasters, 15–15 μ. Dermal chiasters, 12 μ. The unique specimen measures 2.5 x 2 c.c. in horizontal and 2.5 c.c. in vertical plane. The rough convex under surface appears to have been torn off from a rock.

The name given to the species denotes its close affinity to *S. javanica* Sollas; it differs from the latter (1) in its mode of growth, *S. javanica* being spherical and free, (2) in having the membranous ocular cones, and (3) in the slight difference in size between the dermal and somal chiasters.

**Spirastrella carnosia** Topsent.

1897. *Spirastrella carnosia* Topsent (18, p. 441).

The specimen is cauliflower-shaped, expanding upwards from a narrow base to a height of 2 c.c., the area of the upper surface being 2.5 x 1.5 c.c. The upper surface is covered with low rounded papillae.

The tylosomes, 550 x 18 μ, usually have a tribulate head. The spirasters are extremely rare and very fine, being 18 x 1 μ, with minute spines, and usually with four curves.

The specimen differs from the type from Ambon in having larger megascleres, these being only 330 x 8 to 6 μ in the latter.

In Topsent’s specimens, too, the surface is ridged (‘froncé’).

**Distribution.** Ambon; Christmas Island.

**Spirastrella decumbens** Ridley, var. robusta, var. roy.

1887. *Spirastrella decumbens* var. Ridley and Denny (13, p. 229, pl. xiv, fig. 12).

1898. *Spirastrella semilunaris* Lindgren (10, p. 323, pl. xix, fig. 23).

There are two specimens of this variety—one (1) forming a thin yellow crust on a shell, the other (2) in the form of small fleshy lobes growing on *Solenopora picta*. Specimen (1) has a shallow patent oscule 1.5 mm. in diameter; the surface shows a delicate reticulate pattern formed by the pore-areas, the pores being circular and 40 μ in diameter; sieve-like groups of 5 to 10 pores lead into subdermal spaces.

A cavernous cortex from 5 to 1 mm. in thickness occurs in the type specimens of the species from Torres Straits, described by Ridley (11, p. 470, pl. xliii, fig. 1). The same structure is also present in the specimens from Ambon and Christmas Island. In all these specimens the minute semilunaris spirasters (25 μ in length) form the outermost dermal layer. Hence I have no doubt that Lindgren’s species is a synonym; at the same time it is right to add that this author is in no way to blame, owing to the incomplete description of the type specimens, which are badly preserved.

The differences between the type specimen from Torres Straits on the one hand, and the specimens from Ambon, Java, and Christmas Island on the other, are constant, and render it necessary to regard the latter specimens as belonging to a well marked variety. In the type the tylosomes are longer and narrower, and the largest spirasters are smaller than in the new variety which I have named "robusta."

**Tylosomes**

<table>
<thead>
<tr>
<th>Type</th>
<th>507 x 3 μ</th>
<th>432 x 12 μ</th>
</tr>
</thead>
<tbody>
<tr>
<td>head</td>
<td>12 μ</td>
<td>10 μ</td>
</tr>
<tr>
<td>neck</td>
<td>6 μ</td>
<td>8–12 μ</td>
</tr>
<tr>
<td>largest</td>
<td>36 μ</td>
<td>45 μ</td>
</tr>
</tbody>
</table>

**Distribution of S. decumbens**: Torres Straits; of *S. decumbens var. robusta*: Philippines, Java, Christmas Island, Red Sea.

**Pseudodiscaster andrewsi**, sp. n. (Plate XII, figs. 2 a–b; Plate XIII, fig. 7.)

Sponge loosely encrusting or forming free thick lamellae. Pale yellow in colour; surface smooth, and with canaliculate markings beneath the dermis; soft in consistence and easily torn. Oscules, when present, small, circular (0.75 mm. in diameter), guarded by a silvery fringe or corall of tylospicules with points centripetal. Skeleton composed of primary lines of multispheric, and sometimes radiating to the surface and giving off at various angles a few scattered single spicules.

Dermal skeleton very distinct and formed of tangentially arranged bundles of spicules joining in the cortex with tri- or quadrangular meshes.

*Spicules*. Tylosomes 350 x 6 μ, slightly curved in the basal third; head rounded, 75 μ in diameter, slightly knobbed at the summit or swollen laterally.

Of the three specimens, one is encrusting and with oscules, the others are free and without oscules; the former is 5 x 3 x 2 c.c. in area, and 5 c.c. in thickness; the latter are considerably thicker.

The genus at present includes, as stated by Topsent, two other species, *P. hyalina* (Ridley & Denny) and *P. sulphurea* (Bowerbank). One of the small fragments of the type specimen of *P. hyalina* has an oscule with the pallisade of spicules arranged in the new species, but the tylospicules are much larger in the former, measuring 1100 x 25 μ.

**Hymeniacidon conulorum** (Topsent).

1897. *Systella conulosa* Topsent (18, p. 466).

1888. *Hymeniacidon conulorum* Lindgren (10, p. 313, pl. xvii, fig. 13; pl. xix, fig. 19).

The single specimen is pyramidal, 3 c.c. in height, and with an incrusting base 3 x 1.5 c.c.

The surface is partly even, and partly provided with small hispid tufts.
The skeleton is composed of main lines of multispecies fibre radiating from base to surface, with an irregular reticulum between formed by bundles of one or a few spicules given off from the main lines; the axial columns alone are present in the tufts.

The styles, which measure \(525 \times 12 \mu\) are curved near the basal end.

The nearly related species *Stylotella polymastia* Lendenfeld, referred to by Topsent l. c. p. 466, is synonymous with *Hymeniacidon fenestratum* (Ridley).

The proper position for the above species appears to be in the Axinellidae. The skeleton is composed of axial lines of monaxonal spicules, the reticulation being of secondary importance and absent from the tufts; some of the spicules show a double curve, characteristic of certain typical Axinellid sponges.

**Distribution.** Ambon; Java; Christmas Island.

**Microciona dema**, sp. n. (Plate XII. figs. 3, 3a; Plate XIII. figs. 2 a-f.)

Sponge forming an almost free or loosely incrusting lamina with margins curvied up, with foreign particles adherent to the undersurface where the latter is free.

Colour yellow: upper surface smooth. Skeleton formed partly of columns, each composed of one stout subtylate spicules, and partly of columnar columns of more slender tylole opening out from base to surface, where they almost form a distinct dermal layer; numerous short spined styls arranged vertically with bases on the basal layer of the sponge. Sponge absent.

**Spicules.** Megascleres—stout, slightly curved subtylotyes 324 x 7-5 \(\mu\), head 7-7 \(\mu\), slightly spinous, occasionally facetted.

Slender straight tylotyes 318-328 x 5-5 \(\mu\), head 7 \(\mu\) with basal end spinous.

Short spined styls 48 x 7-5 \(\mu\), with sharp, often curved, spines on the basal three-fourths of the length of the spicule.

**Microscleres**—palmate isochile from 3 to 12 \(\mu\). Toxa large, slender, 36 x 1-1 \(\mu\); a shorter but thicker form (numerous), 6 x 1-1 \(\mu\).

The size of the specimen is 2-5 c.c. x 5 c.c. in area, and 1 mm. in thickness. The unispeculate columns, which occur in parts of the sponge, recall the chief character of *Hymeniacidon*. Again, the spiculation closely resembles that of certain species of *Rhaphiodophasis* (R. flifer Ridley & Dendy and *R. spinulosus* Dendy), but the absence of spongins excludes the new species from this genus. The specimen is probably mature, since there are several embryos near the base of the sponge.

**Iotrochota raciculata** Ridley, var. Tuxerensis, var. nov. (Plate XIII. fig. 1.)

Specimen forming an irregular stellate and branching growth, 6 c.c. x 1 c.c. in area and 3 c.c. in thickness.

**Spicules.** Styles averaging 210 x 10 \(\mu\).

Strongyles 220-250 x 1 \(\mu\), with from one to three fusiform swellings along the body, one of the ends attenuated sometimes to a blunt point. Amphidiscs 18 \(\mu\).

The characteristic feature of the new variety lies in the strongyles with their peculiar swellings; these may, however, be dependent on some pathological cause such as the presence of a parasite, but I was unable to find any such organism. (In several descriptions of this species the dermal dinoxides are described as tylole. In the type specimen from Port Darwin the ends of the strongyle are very slightly enlarged, a feature slightly exaggerated by the artist in the figures (11. p. 435, pl. xiii. fig. f); but there is no trace of terminal enlargement in the spicules of specimens from the Mascarenes, Madras, and Christmas Island.)

**Dismaccella** sp.

A few small broken-up pieces of a very soft dark reddish-brown incrusting sponge, with a few ocellar-like oscules. The skeleton forms a unispeculate network, the meshes of which are triangular and quadrangular and made up of styles, oxeas, and strongyles. A few long slender toxa and one or two sigmata, together with some slender raphides, are present. The skeleton is reniform, and spongins entirely absent. The dimensions of the spicules are:

**Styles** (not rare) slightly curved, 150 x 8 \(\mu\); strongyle (rare) straight, 120 x 8 \(\mu\).

**Oxeas** (very abundant), curved, 130 x 7 \(\mu\).

**Microscleres**—toxa 48 x 6 \(\mu\), sigmata 24 \(\mu\), (very rare); raphides (rare), 105 x 1-5 \(\mu\).

This species, which appears to be new, has not been named owing to the uncertainty as to whether all the above-mentioned microscleres seen in the preparations really belong to the sponge; several kinds of obviously foreign spicules were included.

**Stylotella irregularis**, sp. n. (Plate XII. fig. 4; Plate XIII. figs. 6 a-d.)

Sponge incrusting or forming free irregular lamellae; colour pale brown; with several small circular oscules 2 to 3 mm. in diameter on the upper surface.

Skeleton forming a rectangular network, the meshes being for the most part unispeculate, but with a few slender primary lines of spiculo-fibre 2-4 spicules thick.

**Spicules.** Styles 186 x 9 \(\mu\), smooth, straight or slightly curved.

Oxeas 205 x 8 \(\mu\), curved.

Strongyle 150 x 10 \(\mu\), straight or slightly curved.

Slender oxeas 150 x 4 \(\mu\), occasionally with a central fusiform enlargement, rare and scattered in the tissues.

This species is very near *Petrolia constricta* Thiele, from ebos (Zooloogica, Stuttgart, 1898, Hert 24, ii. p. 20), but differs mainly in possessing slender fusiform oxeas; unfortunately the central swelling is not shown in Pl. XIII, fig. 6 a.

**Stylotella** sp.

Specimen incrusting, 2 x 1 c.c. in area, and 25 x 5 c.c. in thickness; pale brown, very soft, with several oscules 1 mm. in diameter.
Skeleton consisting of slender vertical main lines, loosely joined by single spicules in horizontal plane excepting near the surface, where the main fibres are isolated.

Spiroidea. Styles 132 x 4 μ, with a sharp bend at the centre. Oxea 144 x 4 μ, sharply curved at the centre, and gradually diminishing to sharp points. The skeleton is like that of a Petrosoia, but very loosely arranged. The specimen is too fragmentary to serve as the type of a new species.

Petrosoia pellucida Ridley. 1884. Petrosoia pellucida Ridley (11. p. 606, pl. iv, fig. 7). There are only three small fragments of this tube, the longest being 4 mm. in length and 1.5 mm. in diameter. The spicules are slightly smaller than in the type specimen, being 240 x 9 μ in the former, and 360 x 10 μ in the latter, but the shape is the same.

Distribution. Providence Island, Mascarene Group; Christmas Island.

Petrosoia sessile, sp. n. (Plate XII, fig. 5; Plate XIII, fig. 8.)

Sponge pyramidal or digitate, sessile, arising from an incrusting base; surface smooth; consistence firm but rather brittle; colour (in formal) white-crystalline; translucent. Skeleton consisting of an axial or central open spiculo-fibrous network formed of broad loose strands about 10 spicules thick, surrounded by a cortical network of more slender strands at right angles to the central network, and of a dermal isodetic network with strands 2-3 spicules thick, with unispeciculate strands in the interdices.

Spiroidea. Oxea 372 x 14 μ, curving at the centre and diminishing suddenly near the ends to sharp points. Microscleres 0.

There are several specimens and fragments, most of them being of flattened digitate form, the largest being 30 mm. in height, 8 mm. in breadth, and 3 mm. in thickness. The specimens preserved in alcohol are dark yellow at the surface, and bright yellow in the interior, the formal specimens being white.

The new species is very near Polysiphonopsis Ridley (11. p. 114, pl. xlii, fig. 2), from Port Darwin, but differs in the shape of the sponge and in size of the spicules. These two species come within the subfamily Phaeodactylineae rather than within the Renierinae.

Reniera ennomata, sp. n. (Plate XII, figs. 6, 6a; Plate XIII, figs. 5 a-b.)

Sponge incrusting; colour pale brown with a faint reddish tinge; texture soft and elastic. Skeleton forming a rather regular reticulum of unispeciculate fibres with triangular (mostly) and quadrangular meshes with nodes cemented with spicula.

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Spiroidea. Strongly 125 x 8 μ, slightly curved in the middle. Oxea 108 x 5 μ, curved at the centre; also very slender oxea of the same length and shape, probably young forms of the thicker kind.

The specimen encrusts a Melanella shell, and is produced at one point into a short, stout, digitate process.

There is in the British Museum Collection an unnamed specimen (registered 82.10.17.246) of this species from Marie Louise Island, Amiranse Group.

The species from Providence Island described by Ridley (11. p. 607, pl. liii, fig. 1) as "Reniera sp. allied to euteriformis" has spicules of the same shape, but much larger (193 x 35 μ), and the meshes of the reticulum are multispeciculate.

Distribution. Amiranse Island; Christmas Island.

Petrosoia exigua, sp. n. (Plate XII, fig. 7; Plate XIII, fig. 4.)

Sponge forming a hard, thick, nodulated crust. Colour pale grey; surface smooth, and in parts showing an irregular reticulate pattern formed by poro-areas. Oseules 1 to 1.5 mm. in diameter, numerous, some level with surface, others with slightly raised margin.

Skeleton formed of slender main lines of fibres passing vertically to the surface and connected at right angles to this plane by closely packed single spicules, so as to form circular or oblong polygonal tubes about 70 mm. in diameter, the skeletal tubes being much more apparent near the surface and very ill-defined deeper, where the skeleton becomes a dense, confused network. Special dermal skeletal absent.

Spiroidea. Oxea 114 x 5 μ, curved at the centre, and diminishing to very sharp points.

The single specimen is 4 x 4 μ. in area, and 1-5 μ. in thickness. The salient character of this species lies in the very small size of the spicules, which are less than half the size of those of Petrosoia similis Ridley & Dendy (12. p. 9, pl. i, fig. 10, pl. iii, figs. 5 & 4), a species closely allied to it in other respects; the spicules are considerably smaller than those of any species with oxoeate spicules from this region of the Indo-Pacific.


The specimen, which is white and with an even surface, differs slightly from the type in having the ends of the oxea sharp-pointed; the spicules (770 x 22 μ) are curved at the centre.

Distribution. Ambon; Tahiti; Christmas Island.

Haliconcysta solida var. rugosa Ridley & Dendy.

The specimen is dark brown and wrinkled in places, as in the type of the variety from Api. There are several oseules, from 1 to 2 mm. across, with conspicuous membranous spiculums.
spicules are curved at the junction of the middle and outer third, the size being 770 x 18 µ.

Distribution. Apl. New Hebrides; Christmas Island.

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V. List of the Foraminifera from the Boot-channel, Flying Fish Cove, Christmas Island, 11 fathoms. By F. C. CHAPMAN, A.L.S., F.R.M.S.

4. seminulum (L.) Frequent; small.
5. aubertii (d’Orb.) Rare; rather small.
6. parkeri Brady. Very rare.
7. bicorns (Walker & Jacob). Very rare.
8. repartiment Brady. Frequent; very fine.
10. Heriocrinus ornatus (Karrer). Rare.
12. marginalis (Lam.). Very rare.
13. duplicipes Carpenter. Rare.
14. Textularia rogoa (Reuss). Rare.
16. Spirella limba Brady. Rare.
18. uveryiana (d’Orb.). Very rare; small.
21. Euprymna sessilis (Parker & Jones). Rare.
23. Polyplax aswata (Fichtel & Moll). Rare.

VI. EXPLANATION OF THE PLATES.

PLATE XII.—Sponges from Christmas Island.

Fig. 1. Tethya affinis (p. 133), nat. size.
2. Pseudospongiae andrewsi (p. 135), nat. size. 2a. oscule, x 30; 2b. section, x 30.
3. Microseta dubia (p. 136), nat. size. 3a. section, x 40.
4. Stylophora irregularis (p. 137), nat. size.
5. Rhizocodium aestivat (p. 138), nat. size.
6. Reserva flammea (p. 139), nat. size. 6a. section, x 30.
7. Petrosia exigua (p. 139), nat. size.

PLATE XIII.—Sponges from Christmas Island.

Fig. 1. Liochera bouilloni nesovis (p. 130), strongylus, x 300.
2. Sertiospongia dubia (p. 136), a = 2 x 280; c / = 160. a = slender tube; b = spinous style; d = large tube; e = spinous isochelis; side view; f = ditto, front view; j = short tube.
3. Tethya affinis (p. 133). a, strongylosomum, x 20; b, sphenrisum, x 400; c, somal chiasum, x 400; d, dermal chiasum, x 400.
4. Petrosia exigua (p. 139), osculum, x 300.
5. Reserva flammea (p. 138), strongylus, x200; 6, osculum, x 300.
6. Stylophora irregularis (p. 137); a = x 350; b, osculum, x 400; 6, style; c, strongylosomum, x 400; d, slender osculum.
7. Pseudodendrites andrewsi (p. 136), oscule, x 200.
8. Rhizocodium aestivat (p. 138), osculum, x 300.
SPONGES FROM CHRISTMAS ISLAND.