

THE  
JOURNAL  
OF  
THE LINNEAN SOCIETY.

---

ZOOLOGY.

---

VOL. XXI.

LONDON:  
SOLD AT THE SOCIETY'S APARTMENTS, BURLINGTON HOUSE,  
AND BY  
LONGMANS, GREEN, AND CO.,  
AND  
WILLIAMS AND NORGATE.  
1889.

Report on the Marine Sponges, chiefly from King Island in the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. John Anderson, F.R.S., Superintendent of the Museum. By HENRY J. CARTER, F.R.S. (Communicated by Dr. JOHN ANDERSON, F.R.S., F.L.S.)

[Read 3rd June, 1886.]

(PLATES V.-VII.)

BEFORE stating the result of my examination of these Sponges, I introduce this communication by a list of the species, arranged according to my classification\*, and indicating the new species and the varieties yielded by the collection, also the number of specimens contained in it &c.

Order I. CARNOSA.

None.

Order II. CERATINA.

None.

Order III. PSAMMONEMATA.

Name.	Author.	New species.	New variety.	How many specimens.	Number on label.
<i>Spongia officinalis</i> .....	auct.	.....	.....	1	9.
<i>Polytherses, Duch. &amp; Mich.</i> ( <i>Hircinia</i> transformed), coarse structure.	Duch. & Mich.	.....	.....	3	61, 62, 64.
Ditto, fine structure.....	.....	.....	.....	1	2.
Ditto, incrusting bivalve.....	.....	.....	.....	1	76.
<i>Cacospongia</i> , sp. ....	Schmidt.	.....	.....	3	31, 39, 70.
<i>Dysidea ramoglomerata</i> .....	Carter.	n. sp.	.....	7	29, 26, 51, 34, 48, 56, & 65.
———, var. <i>ramotubulata</i> .	Carter.	.....	n. v.	1	5.
———, var. <i>granulata</i> ...	Carter.	.....	.....	1	49.
Order IV. RHAPHIDONEMATA.					
<i>Chalina oculata</i> , var. <i>fibrosa</i> ..	Carter.	.....	n. v.	1	53.
——— <i>spinifera</i> .....	Carter.	n. sp.?	.....	1	67.

\* Ann. & Mag. Nat. Hist. 1875, vol. xvi. p. 126 &c.

## Order V. ECHINONEMATA.

Name.	Author.	New species.	New variety.	How many specimens.	Number on label.
Dictyocylindrus hispidus.....	Bowerb.	.....	.....	1	75.
— aceratus.....	Carter.	n. sp.	.....	1	6.
Microciona acerato-obtusata .....	Carter.	n. sp.	.....	11	17, 20.
Axinella virgulosa .....	Carter.	n. sp.	.....	1	7.
— virgulosa, var. massa .....	Carter.	.....	n. v.	3	4, 13, 33.

## Order VI. HOLORHAPHIDOTA.

Halichondria panicea .....	Johnst.	.....	.....	4	16, 19, 21, 22, & on 62.
Phlecodietyon isodietiyforme	Carter.	.....	.....	1	11.
Isodietya simulans, var. cancellata (fusca).	Carter.	.....	n. v.	3	1, 43, 74, also two numbered 55.
— —, var. (albida) .....	Carter.	.....	n. v.	1	8.
— densa.....	Bowerb.	.....	.....	1	71.
— —, var. incrustans .....	Carter.	.....	n. v.	2	55, and on 54, both labelled <i>I. simulans</i> .
— —, var. tubuloramosa	Carter.	.....	n. v.	2	59 (labelled <i>I. simulans</i> , var.), 15.
Thalysias tener .....	Carter.	.....	.....	3	14 (labelled <i>Reniera fibrosa</i> ), 30, 25, 24.
Reniera crateriformis .....	Carter.	.....	.....	1	79.
Fibularia ramosa .....	Carter.	.....	.....	8	32, 33, 46, 50, 57, 58, 63, 74.
Halichondria birotulata .....	Higgia.	.....	.....	1	69.
Esperia plumosa .....	Carter.	.....	.....	6	37, 44, 45, 47, 52, 68.
— indica .....	.....	n. sp.	.....	2	28, 54.
Suberites carnosa .....	Johnst.	.....	.....	2	3, 9.
— coronarius .....	Carter.	.....	.....	1	73.
— trincomaliensis.....	Carter.	n. sp.	.....	1	40.
Spirastrella cunctatrix .....	Schmidt.	.....	.....	1	72.
Cliona ensifera .....	Sollas.	.....	.....	.....	} 12 (altogether in the cancellated excavations of an old piece of coral).
Samus anonyma.....	Gray.	.....	.....	.....	
— simplex .....	Carter.	.....	.....	.....	
Cliona stellifera? .....	Carter.	n. sp.	.....	.....	
— sceptrifera? .....	Carter.	n. sp.	.....	.....	
Reniera digitata .....	Schmidt.	.....	.....	.....	.....
Halichondria incrustans, var.	.....	.....	n. v.	.....	.....
Cliona bacillifera .....	Carter.	n. sp.	.....	1	78.
Amorphinopsis excavans .....	Carter.	n. g. et sp.	.....	1	74.
Donatia lyncurium .....	auct.	.....	.....	2	18, 18.
Stelletta bacillifera .....	Carter.	n. sp.	.....	3	18.
Tethya cranium, var. robusta.	Carter.	.....	n. v.	1	41, 42.
— dactyloidea .....	Carter.	.....	.....	1	23.
Tethya merguensis .....	Carter.	n. sp.	.....	2	27.

## Order VII. HEXACTINELLIDA.

None.

## Order VIII. CALCAREA.

None.

## Order I. CARNOSA.

None.

## Order II. CERATINA.

None.

## Order III. PSAMMONEMATA.

Among the Psammonemata there is a small specimen of *Spongia officinalis*; three specimens of *Polytherses* with coarse, one with fine or compact structure, and one incrusting a mass of bivalves; three specimens of *Cacospongia*, and nine of *Dysidea*.

## SPONGIA OFFICINALIS.

Of the single specimen of *Spongia officinalis* there is nothing to say beyond that it is genuine although small, not being more than an inch in its longest diameter.

## HIRCINIA, sp.

The three large specimens of *Polytherses* with "coarse" structure are massive and sessile, with broad bases respectively, ending superficially in short pyramidal processes. The latter present the usual white lace-like reticulation over the polygonal interstices which is common (although not always produced) in these sponges, and arises from an accumulation of foreign bodies (fragments of the spicules of other sponges, sand-grains, and the hard parts of many other microscopic organisms) over the soft reticulated fibre which pervades the dermal sarcode and gives support to the pores or inhalant orifices which are situated in its interstices. This is the structure of a true *Hircinia* before it has been transformed by the invasion of the terminally swollen parasitic filament which I have described and illustrated under the name of *Spongiophaga communis* (Ann. & Mag. Nat. Hist. 1878, vol. ii. p. 168). It is to this transformation, which is so much more frequently seen in almost all the *Hircinia* than the original sponge itself, that has led many to consider it a distinct genus, and among them Duchassaing and Michelotti, who, in their account of the West-Indian Sponges ('Spongiaires de la Mer Caraïbe,' Haarlem, 1864), first called it "*Polytherses*." Many have endeavoured to unravel the nature of this filament, but it still remains as enigmatical as ever. Still there can be no doubt that specimens occasionally occur without the parasite. In any case the external form of the sponge is generally sufficient for

its specific identification. When, therefore, the name of "*Polythorses*" is used, it must be understood as applied to the combination of *Hircinia* and the parasite. In like manner a fourth specimen is equally transformed; but being delicate in structure, although otherwise identical with the rest, presents a much more compact appearance; it is lobate, about  $2\frac{1}{2}$  inches in its longest diameter horizontally, and has grown over a crab's back of about half its size.

*CACOSPONGIA*, sp.

The specimens of *Cacospongia*, on the other hand, which are of a light yellowish fawn-colour and loose straggling structure, are insignificant in size and devoid of satisfactorily distinctive specific characters to determine whether they belong to a distinct species or some aberrant growth of a *Hircinia* which has not attained its ultimate form. They occur growing over hard objects (*e. g.* the stems of *Gorgonia*, bivalve shells, &c.) in a parasitic incrusting manner without any distinguishing points, like this ill-defined genus generally.

DYSIDEA.

The specimens of *Dysidea*, in comparison with the preceding forms, are well marked, and the etymological meaning of the term, viz. "*ugliness*," was never more misapplied; for they form the most beautiful part of the collection. Of these there are nine specimens: seven constitute a new species, which I propose to designate *ramoglomerata*; whilst the other two are varieties, which I distinguish respectively as *ramotubulata* and *granulata*.

DYSIDEA RAMOGLOMERATA, n. sp.

Massive, sessile, convex; composed of erect columns in juxtaposition, more or less branched and terminating in obtuse ends which project unequally above the common level of the surface. Consistence fragile. Colour light or dark brown. Surface irregular. Pores and vents not seen in the dry state of the specimens, as the sarcode, always very delicate in this genus, has contracted considerably, so as to leave the skeleton almost bare. Structure exquisitely reticular; fibre of the reticulation filled throughout with foreign bodies of microscopic dimensions, as usual. Size of specimens variable; the largest, which is hemispherical (from having grown over a pebble or some globular body, probably), measures about 9 inches in diameter and 3 in thickness.

*Hab.* Growing over hard objects, *e. g.* the slender stems of *Gorgonia*, or convex bodies, or over the shell-detritus of the sea-bottom.

*Loc.* Muddy flats, King Island.

*Obs.* The fragility of this genus is due to the delicacy and scantiness of the sarcode, rendering it peculiarly brittle, and there is a want of toughness consequent on the preponderance of the "foreign objects" over the keratode throughout the fibre. At the same time, this fragility becomes considerably increased when the specimen has been torn from its place of growth by the waves, and finally thrown up "high and dry" upon the beach; under this condition it received the name "*Dysidea*" from Dr. Johnston, who, had he seen it growing in its natural habitat, would have proposed for it a very different appellation. While the British species is massive and lobate, this presents, as above stated, a columnar structure, in which the columns are more or less subdivided or branched, and the reticulate fibre of which they are composed terminated by short spines, which gives the whole mass an appearance like that of a prickly plant or shrub—*e. g.* *Ulex*. This species is also found at Mauritius.

DYSIDEA RAMOGLOMERATA, var. RAMOTUBULATA, nov.

The same as the foregoing, but with the branches tubular. Size of specimen about 3 inches in its longest diameter and 1 inch thick, mixed with shell-detritus at the base.

DYSIDEA RAMOGLOMERATA, var. GRANULATA, *Carter*.

Massive, sessile, spreading, composed of erect columns in juxtaposition, branched and uniting with each other; intermingled with shell-detritus at the base. Consistence fragile. Colour dark brown. Surface of sponge as a whole even, horizontal, and uninterruptedly roughened, with the exception of certain round holes and of the depressions between the heads of the segments. Vents represented by the "round holes" just mentioned, which occur on the more prominent ends of the branches and in the midst of the roughnesses of the surface. Granulations consisting of little, subspherical masses of foreign bodies, which usually replace the spinous terminations (*conuli*) on the surface of these sponges. Size of specimen about 7 inches in its longest diameter and  $1\frac{1}{2}$  inch thick.

*Hab.* Growing on shell-detritus, which becomes incorporated with the base of the sponge.

*Loc.* King Island.

*Obs.* The generally horizontal and granulated surface, together with the presence of the "round holes" or vents, distinguishes this variety from *D. ramoglomerata*. It occurs in England, as I learnt from a specimen in the Bowerbank Collection at the British Museum, obtained from the coast of Suffolk, and presented by Dr. W. B. Clarke to Dr. Bowerbank; for which I have already suggested the varietal term above mentioned (*Ann. & Mag. Nat. Hist.* 5th ser. vol. vii. p. 376, 1881).

#### Order IV. RHAPHIDONEMATA.

##### CHALINA OCULATA, var. FIBROSA, nov.

This consists of a large mass of branches uniting during their growth upwards, and becoming more or less expanded at the dichotomous extremities. The branches are solid and osculiferous on the surface; in short, the whole mass, with the exception of the fibrous structure terminating superficially in minute aculeations, which replaces the fine dermal reticulation in the typical form of *Chalina oculata*, is the same as in that species. Consistence firm. Colour brown. Size of specimen, which is rather compressed, about 1 foot long, 8 inches high, and 5 inches thick.

*Loc.* King Island.

##### CHALINA SPINIFERA, n. sp.? (Plate V. figs. 1 & 2.)

This is a small specimen, being not more than 2 inches high, indeed a mere fragment, but, from its solid branches, prickly aculeations, and the remains of the purple colour common to these *Chalinæ*, it evidently belongs to the *Spinifera*, the fourth group of my *Rhaphidonemata*, *Ann. & Mag. Nat. Hist.* 4th ser. vol. xvi. p. 194 (1875).

#### Order V. ECHINONEMATA.

##### DICTYOCYLINDRUS HISPIDUS, *Bowerb.*

This is a well-preserved specimen, showing the dichotomous and setiferous branches rising from a single hard stem, together with the usual spicular and microscopic structure which charac-

terize the species. Size of specimen about 4 inches high and 5 inches broad.

##### DICTYOCYLINDRUS ACERATUS, n. sp. (Plate V. figs. 3-6.)

A small, ragged, branched specimen, of globular form and grey colour, about 2 inches high and 2½ inches in horizontal diameter. In its rough aculeated appearance it strongly resembles *D. rugosus*, *Bowerb.*, but is widely different in spiculation from it and the British species generally, inasmuch as the fibre is chiefly composed of *acerate* spicules, from which the acuates spring in long setaceous tufts on the surface, accompanied at the base by short, clavate, sharp-pointed, capitate, and spined echinating spicules. The *acerate* spicules are smooth, cylindrical in the middle, and pointed at each end, rather bent than arched in the centre, varying in size from less than 50-1800ths by 1-1800th inch downwards; while the acuates, as usual, consist of stout and comparatively short spicules, mixed with thin and long setaceous ones.

*Loc.* King Island.

*Obs.* The most characteristic point in this species is the presence of the *acerate* spicule; hence it has been designated "*aceratus*" after this peculiarity.

##### MICROCIONA ACERATO-OBTUSA, n. sp. (Plate V. figs. 7-10.)

Adnate, spreading, almost immeasurably thin. Colour brown. Spicules consisting of long, setaceous, thin, mixed with shorter, stout acuates, for the most part obtusely pointed and microspined over the large end, but not inflated there; and of tricurvate flesh-spicules and minute, navicular equianchorates lying at the base of the acuates. Size variable.

*Loc.* King Island.

*Obs.* The obtuse ends of the acuates of this species led to the specific name; this point, together with the absence of a spinous echinating spicule, causes it to differ from the species hitherto described. In one specimen, viz. No. 20, the sponge presents itself under the form of short, obtuse, mammillary processes about ¼ inch long and 1/12 inch in thickness; but as it here covers the tubes of *Serpulæ*, I am not certain that these prolongations are not the oral ends of the latter, over which the *Microciona* had grown, and which it had subsequently replaced by its own tissue, as I have never before seen prolongations from the surface of any species of *Microciona* that has come under my observation.

*AXINELLA VIRGULTOSA*, n. sp. (Plate V. fig. 11.)

This specimen, which is well represented by the figure of *Dictyocylindrus virgulosus*, Bowerb. (Mon. Brit. Spongiadae, vol. iii. pl. 19. fig. 14), consists of a number of filaments or fringe-like shreds about  $\frac{3}{4}$  inch long and  $\frac{1}{2}$  inch in diameter at their base, where they rise from a continuous layer, about  $2\frac{1}{2}$  inches square; they taper upwards and become bifurcated towards the extremities. Their spiculation consists only of smooth acuates bent towards the large end, many of which are subterminally inflated, and by their projection on the surface give the whole filament a hispid character. Superficial area of specimen coextensive with that of the basal layer above mentioned.

*Hab.* Growing on hard objects.

*Loc.* King Island.

*Obs.* The general character of this species has led to the above specific designation, and the absence of any echinating spicule to its being placed in the second family of my ECIINONEMATA, viz. the "Axinellida" (*l. c.* p. 145). If one may be permitted to conjecture, it would appear that the filaments, which in the following species are united together into one mass, remain separate in this form.

*AXINELLA VIRGULTOSA*, var. *MASSA*, nov.. (Plate VII. figs. 6 & 7.)

Massive, lobate, rather compressed and crested, somewhat plumose in external appearance. Consistence firm. Colour grey or brown. Surface irregular, more or less hispid. Vents on the crests of the lobes. Internal structure fibro-plumose, traversed by the branches of the excretory canal-system. Spicules of one form only, viz. acute, either stout or thin, frequently subterminally inflated, indeed precisely like those of the foregoing species, arranged in tufts which, projecting beyond the surface, here also produce the hispid character. Largest specimen about 6 inches long,  $3\frac{1}{2}$  inches high, and 2 inches thick, thus being somewhat compressed.

*Hab.* Growing on hard objects.

*Loc.* King Island.

*Obs.* This appears to me, by the spiculation and structure, to be nothing more than a condensed and massive variety of *A. virgultosa*.

Order VI. HOLORHAPHIDOTA.

*HALICHONDRIA PANICEA*, Johnston.

Growing by itself and over other sponges. This world-wide species (Schmidt's "*Amorphina*"), by possessing one form of spicule only, viz. acerate, curved, fusiform, smooth, gradually attenuated to sharpness at both ends, and very variable in size, and by its white colour, is easily recognized as being present in several instances at King Island.

*PHLEODICTYON ISODICTYIFORME*, Carter, *Ann. & Mag. Nat. Hist.* 1882, vol. x. p. 122.

In this specimen the tubulate prolongations which grow from a common base, spreading over shell-detritus, are about  $2\frac{1}{2}$  inches long and  $\frac{1}{2}$  of an inch in transverse diameter. They are sometimes bifurcated or polychotomously divided, but they are unfortunately all frayed out and rendered thus imperfect at their free ends. The consistence is fragile and delicate. Colour white. Structure isodictyal externally, supported internally by reticulate fibre with meshes vertical to the surface, which seems to me to be the same structure as that described and illustrated by Johnston and Bowerbank in the species "*Halichondria albescens*" and "*Hymeniacidon albescens*" respectively.

*ISODICTYA SIMULANS*, Bowerb. (Plate VI. figs. 1 & 2.)

There are eight specimens of *Isodictya*, all characterized by the symmetrical arrangement of their spicules, which are small acerates, and by the absence of skeletal fibre, as laid down by Dr. Bowerbank for the diagnosis of this genus. Moreover, although of different forms they all appear, like the British varieties of this sponge, as stated by Dr. Johnston, to belong to one species only, viz. his *Halichondria simulans* (*Hist. Brit. Sponges*, p. 109), = *Isodictya*, Bowerb. Four, which are small specimens that have grown on oyster-shells, are massive and cancellated; three of them are of a dark brown colour, and the other, viz. No. 8, much lighter. From its appearance this variety might be termed "*cancellata*," whence the subvarieties, after their colour, might be called "*fusca*" and "*albida*" respectively. No. 71 grows over a rock to the extent of several square inches, and, consisting of a thin stratum of a light brown colour with single, well-marked vents, some way

apart, but nearly equidistant from each other, resembles *Isodictya densa*, Bowerb. (Mon. Brit. Spong. vol. iii. pl. 50. fig. 5). No. 55 (Pl. VI. fig. 2) and that on the base of *Esperia indica* (No. 54) are much the same but without the vents on the surface, and this variety might be termed "*incrustans*." Lastly, Nos. 59 (Pl. VI. fig. 1) and 15 are branched fragments (some of which measure 3 inches in their longest diameter) of a large specimen which, from its fragility, has become broken into pieces. In its original state, the sponge consisted of a mass of short branches united with each other and tubulated, so that a large terminal vent is present in the free end of each branch. For this variety, which is the most characteristic of all, I would suggest the name of "*tubuloramosa*." It comes nearest in character to the British form of the species, and the specimen which represents it must when perfect have been of considerable size.

THALYSIAS TENER, n. sp.

Densely ramose; sessile or stipitate; branches tubular, short, thick, crooked and anastomosing, ending on a horizontal surface. Consistence light, fragile. Colour light brown. Surface uniformly but irregularly pitted, covered with a delicately reticulate dermal structure. Vents large, numerous, and circular; placed on the sides or at the ends of the branches. Internal structure consisting of fibres intermixed with isodictyal tissue. Spicules of one form only, viz. acerate, smooth, fusiform, curved, sharp-pointed, about 40 by 2-6000ths inch in its greatest dimensions. Size of largest specimen, which is stipitate, about 4 inches in horizontal diameter and 3 inches high.

Loc. King Island.

Obs. The chief difference between this and the last species is caused by the presence of fibres among the isodictyal tissue, which show themselves in a beautiful manner through the delicate dermal network that veils the surface. It chiefly differs from the West-Indian species, viz. *T. subtriangularis*, Duch. & Mich., and its varieties in being less compact and much more tender in structure; otherwise it seems to be the representative of the latter in these parts. The aduate fragments, growing on rock, viz. Nos. 14 and 24, must be viewed as young individuals. It belongs to that division of the Renierid family in my classification which has been termed ("*Thalysiosa*") *Thalyosa*.

RENIERA CRATERIFORMIS, Carter, *Ann. & Mag. Nat. Hist.* 5th ser. vol. x. p. 115 (1882), where for "CARNOSA" read "CRASSA."

This species comes under the division "Crassa," chiefly so called from the greater size of the spicules, which in this instance are 85 by 6-6000ths inch in their greatest dimensions. Like all the other species, it is deeply excavated, and measures outside 14½ inches high by 10 and 7 horizontally, so that it is somewhat compressed, and is also bent upon itself in the direction of the longest diameter; while the excavation, the mouth of which is an elongated oval, measuring in its long and short diameters 9 and 2 inches respectively, is 9 inches deep. Like the large specimen in the British Museum, which exceeds the present in size, it is covered outside by a proliferous growth of ragged ridges and pyramidal processes, which are largest at the base and gradually diminish in size upwards until they approach the margin of the mouth, where they disappear altogether, leaving the latter with a plain, irregularly undulating, thin edge. In the large specimen in the British Museum most of these processes are themselves centrally excavated, forming "little craters." The specimen from Elphinstone Island, which was sessile, is very remarkable from its great size, good state of preservation, and great cleanness, which renders it as beautiful as it is valuable in an instructive point of view.

FIBULARIA RAMOSA, Carter, *Ann. & Mag. Nat. Hist.* 5th ser. vol. ix. p. 283 (1882). (Plate VII. figs. 1-3.)

If the abundance of this species in the Collection is any indication of its prevalence in the locality whence it came, it must be very plentiful. There are eight specimens of it, all of which are characterized by coarse, white, fibro-reticulate structure covered with an extremely delicate, gauze-like, reticulate dermal layer, and by the presence of the bihamate flesh-spicule which, in addition to the skeletal acerate, gives the diagnostic spiculation. One specimen, viz. No. 38, which appears to have grown upon a layer of barnacles, and is about 4 inches in horizontal diameter with a uniform height of 1½ inch, is composed of a reticulate mass of hollow branches whose cavities open by large round vents on the surface. These characters are better developed in Nos. 50 and 57, where the form is preserved by the intermixture of a tough, filiform, branched *Fucus* that pervades the whole structure and

projects from the surface here and there in pointed terminations like small spines. No. 57 (Pl. VII. figs. 1-3), which is the largest of these specimens, is about 9 by 5 inches in horizontal diameter and 3 inches high, composed of hollow branches subdividing and anastomosing so as to form a continuous structure, in which the free ends of the branches on the surface are inflated, and each presents a circular hole in the centre, which is the oscular termination of the tubular interior. The rest all grow over the surface of the stems of thread-like *Gorgonia*, with the exception of No. 74, which is a small specimen on a piece of rock.

*HALICHOONDRIA BIROTULATA*, Higgin, *Ann. & Mag. Nat. Hist.* 4th ser. vol. xix. p. 296 (1877).

This reddish-purple or claret-coloured sponge, originally described from a West-Indian specimen by Mr. Thos. H. Higgin, F.L.S., is represented by a small portion (No. 69) growing over a piece of old branched coral. It is also abundant on the S.W. coast of Australia, and probably occurs in other parts of the world.

*ESPERIA PLUMOSA*, Carter, *Ann. & Mag. Nat. Hist.* 5th ser. vol. ix. pp. 298, 299 (1882).

Is plentifully represented, and appears to be identical with the form from Mauritius to which I have given the above name. Most of the specimens have grown over the stems of thread-like *Gorgonia*, where they present a spinous appearance as if they had grown over a layer of *Dysidea ramoglomerata*; while the anfractuous, irregular growth of the two separate ones, viz. Nos. 37 and 68, although more massive, present no specific character whatever in this respect. The fragility of the species has caused No. 37 during transit to become broken, so that, although apparently of great dimensions when entire, it now only presents fragments, of which the largest is only 3 inches in its longest diameter. In some parts of these specimens the tricurvate is replaced by the sheaf-shaped spicules ("trichites," Sollas), which, as I have before stated, appear to me to be only a straighter form of the tricurvate flesh-spicule; while the minute equianchorate of *E. plumosa* (*l.c.* pl. xi. fig. 19, *a, b*) is very abundant.

*ESPERIA INDICA*, n. sp. (Plate VI. figs. 3-6.)

Massive, sessile, lobate, taking the form of the bottom-detritus (shells and stones) over and among which it has grown, or rising

into short tubular processes. Consistence fragile. Colour yellowish white. Surface even, presenting the usual characteristic, viz. a beautiful, lace-like, stellar dermal reticulation covering an apparently confused broken-up fibrous interior. Vents scattered over the surface and at the ends of the tubular processes respectively. Internal structure fibrous, traversed by the branches of the excretory canal-system, which open at the vents mentioned. Spicules of four forms, viz. :—1, skeletal, acute, smooth, slightly curved, sharp-pointed; head obtuse and smaller in diameter than the shaft and not inflated, 290 by 9-6000ths inch in its greatest dimensions, obtuse end 4-6000ths inch in diameter; 2, flesh-spicule, inequianchorate, shaft straight except towards the ends, where it is bent forwards to meet the arms, which at the large end are each prolonged into an angular sharp point towards the centre, where they are slightly everted; while at the small end, which is round, the lateral ones are short and the central one only pointed; shaft of the larger forms about 3-6000ths inch in transverse diameter, total length 31-6000ths, large head 14-6000ths and small one 7-6000ths inch in length; 3, flesh-spicule, simple, elongated C- and S-shaped (bihamates), more or less contort, about 22 by 1 $\frac{3}{4}$ -6000th inch in its greatest dimensions; 4, flesh-spicule, minute acerates in sheaves (fig. 6), or isolated after disintegration of the sheaves, of various lengths, less than 35-6000ths inch. No tricurvates and no minute equianchorates seen. Size of largest specimen about 9 by 4 inches horizontally, and 3 inches high. No. 28, although not nearly so long, is somewhat higher, and is prolonged upwards into short tubular processes.

*Hab.* Incrusting and enveloping hard objects.

*Loc.* King Island.

*Obs.* The larger spicules of this species, together with the peculiar form of the arms of the inequianchorate and the absence of the tricurvate form and minute equianchorate, distinguish it from the last mentioned. I have designated it "*indica*" on account of the inequianchorate being almost identical in form with that represented by Schmidt from an Indian species (Spong. Adriat. Meeres, Supp. 1, tab. iii. fig. 11); but still more satisfactorily by Schmidt's slide of the actual specimen in the British Museum. The spicule is also like that of his *E. diaphana* from the coast of Florida.



SUBERITES CARNOSA, *Johnst.*

If a massive form, compact structure, whitish-grey colour, and pin-like spicule *only*, with terminal, globular, pointed head, and without the centrally inflated flesh-spicule of *Suberites domuncula*, Nardo, be allowed to characterize this species, then the two specimens in this collection, one of which, viz. the largest (No. 3), has grown over a crab's back, and is about  $2\frac{3}{4}$  inches in horizontal and  $1\frac{1}{2}$  inch in vertical diameter, represent this sponge.

SUBERITES CORONARIUS, *Carter, Ann. & Mag. Nat. Hist.* 5th ser. vol. ix. p. 352 (1882). (Plate VII. figs. 4 & 5.)

The soft consistence, verrucose surface, buff-yellow colour, and spiculation of this specimen, together with the peculiar form of its flesh-spicule (*l. c.* pl. xiii. fig. 27*c*), correspond with the characters of the Honduras species to which this sponge is referred. Its growth is more remarkable than in that example, for it is laminar, and extends in a horizontal direction for several square inches; the superficial stratum, which is comparatively thin and buff-yellow in colour, changes to black or dark brown in the cancellated cavities to be presently mentioned for half an inch downwards, where it rests on granite. The explanation of this abrupt termination is that the lower portion is mingled with a layer of coral which has been cancellated by the excavating habit of these sponges, which exhibit an apparent fondness for calcareous material, whether in a mineral or organic form.

SUBERITES TRINCOMALIENSIS, n. sp. (Plate VI. figs. 7 & 8.)

"Suberites? sp. undescribed, Trincomalee," *Carter, Ann. & Mag. Nat. Hist.* 5th ser. vol. ix. p. 352 (1882).

*Suberites vagabunda*, var. *trincomaliensis*, *Ridley, Report Zool. Coll. 'Alert,'* p. 468, note.

Massive, sessile, rising into short, mammillary processes which are more or less proliferous. Consistence soft. Colour brownish or yellowish white. Surface even, soft, villous. Vents on the side or about the base of the mammillary processes, which are otherwise *solid*, not tubular, and have not a terminal aperture. Internal structure compact, traversed by the branches of the excretory canal-system, which open at the vents. Spicules of two forms, viz.:—1, skeletal, pin-like, smooth, slightly curved, fusiform, slightly pointed at one end, slightly constricted at the other,

where the subglobular or slightly elliptical head is placed, about 153 by 5-6000ths inch in its greatest diameters; shaft a little thicker than the head; 2, flesh-spicule a spinispirula varying greatly in length and thickness, the largest about 6-6000ths inch long with 6 bends, the rest so short as to appear like the longer ones broken up. Both forms are equally abundant, the latter scattered among the former, but chiefly found congregated near the surface. Size of entire specimen  $4\frac{1}{2}$  inches long, by  $2\frac{1}{2}$  broad in its horizontal diameter, with a height of about  $2\frac{1}{2}$  inches.

*Hab.* Growing upon shell-detritus which has become incorporated with its base.

*Loc.* King Island.

*Obs.* I first observed this sponge (to which I have already alluded, *l. c.*) in the Bowerbank Collection, where its label bore the words "Trincomalee, Johnston;" the Bowerbankian specimen only differs in the mammillary processes being larger and more agglomerated or proliferous. Having thus met with a second specimen, viz. on the coast of Burmah, I now for the first time name and describe it.

SPIRASTRELLA CUNCTATRIX, *Schmidt, Spong. Küste Alger*, 1868, p. 17, Taf. 3. fig. 8.

This specimen grows over the surface of a piece of rock to the extent of several square inches in the form of a thin, incrusting layer about 1-48th inch thick with well-defined round margin. Consistence soft. Colour pinkish or lilac. Surface even. Structure throughout compact, but by no means corticate as Schmidt's specimen would appear to have been, although the flesh-spicules (spinispirulæ) are chiefly congregated on the surface, as in most sponges where they exist.

ECCÆLONIDA, *Carter, 1879.*

"Excavating Sponges," *Journ. Roy. Microscopic. Society*, vol. xi. p. 496.

No. 12 specimen is a portion of old coral riddled throughout with cancellous excavations, inhabited as usual by several kinds of sponges, as testified by a fragment when boiled in nitric acid, whose residue when mounted presents the spiculations of:—*Cliona ensifera*, Sollas; *Samus anonyma*, Gray; *S. simplex*, Carter; *Cliona* sp.?, pin-like spicules and little globular stellates; *Cliona*

sp.?, spinous acerates and little sceptrellæ like those of *Alectona Wallichii* (olim *Gummina mendose Corticum*, Ann. & Mag. Nat. Hist. 1879, vol. iii. pp. 353-354, pl. xxix. figs. 5-9), but with both ends of the shaft shortened and inflated instead of extended and pointed, and all the inflations microspined; *Reniera digitata*; and a variety of *Halichondria incrustans*. All these species have become so mixed up together by the invasion of a small Annelid whose tubes, about  $\frac{1}{4}$  inch thick, are chiefly composed of them, that it is impossible, where the species are not previously known, to distinguish their spiculations with certainty in this mounted "residue," where they are of course all mixed together; hence the notes of interrogation after *Cliona stellifera* and *C. sceptrellifera*, the characters of whose spiculations, although regarded as those of new species, are also conjectural.

*CLIONA BACILLIFERA*, n. sp.

This is another form, which has riddled an old oyster-shell that was incorporated with other shell-detritus at the base of *Eesperia indica* (no. 54), making its appearance on the surface as usual in little circular heads (white when dry), in which are found three spicular forms, viz.:—1, skeletal, pin-like, with straight, smooth, conical shaft, pointed at one end and terminated at the other by a subglobular head, which is wider than the shaft, about 52 by  $1\frac{1}{2}$ -6000th inch in its greatest dimensions; 2, acerate, fusiform, sharp-pointed, bent or curved in the centre and finely microspined, about 23 by  $1\frac{1}{2}$ -6000th inch in its greatest diameters; 3, flesh-spicule, bacilliform, like a minute caraway seed in form, slightly curved, fusiform, and also finely microspined, about 2-6000ths inch long. No. 1, as usual, generally forms the external portion of the head with the points *outwards*, and nos. 2 and 3 are plentifully mixed together at the base.

*Loc.* King Island.

*Obs.* Of course the spiculation is the chief distinctive character in these excavating sponges, whose burrowing forms are so much alike in most instances that there is hardly any other difference between them. Where alone, as in this case, the species, although new, is easily recognized. *Cliona bacillifera* is closely allied to, if not the same as, *Cliona Carpenteri*, Hancock (Ann. & Mag. Nat. Hist. 1867, vol. xix. p. 241, pl. viii. fig. 4).

I would here observe that the number of "Eccelonida" is

becoming so large and the species so different, that it will soon be questionable whether they should all be included in a separate family, or relegated respectively to the groups to which they may belong. *Suberites coronarius* as well as the following species, viz. *Amorphinopsis excavans*, are instances of the great differences between some species included in this group.

*AMORPHINOPSIS EXCAVANS*, n. gen. et sp. (Plate V. figs. 12-15.)

Laminar, continuous, very thin, spreading horizontally over a piece of old coral, which it has excavated vertically. Consistence soft. Colour pinkish, almost white. Surface even, following that of the object on which it may be growing, presenting a beautiful arrangement of the spiculation on the surface, which gives it the appearance of a fabric formed of little stars. Pores and vents not seen. Spicules of two forms, viz.:—1, skeletal, acerate, fusiform, slightly curved, smooth, and very gradually sharp-pointed, varying much in size, 50 by  $2\frac{1}{4}$ -1800ths inch in its greatest dimensions; 2, acute, slightly curved, slightly fusiform, smooth and sharp-pointed, head obtuse, not inflated, less in diameter than the shaft, varying in size under 10 by  $\frac{1}{2}$ -1800th inch in its greatest dimensions. Horizontal diameter of specimen about 3 inches; the portion which lies in the excavations about  $\frac{1}{2}$  an inch in vertical diameter.

*Hab.* Growing over and incrusting and penetrating old coral.

*Loc.* King Island.

*Obs.* At first this sponge, from its structure and white colour, looks very much like *Halichondria panicea*, Johnst., = *Amorphina*, Schmidt; but it differs from it in its *horizontal laminar* growth and the presence of an *acute* flesh-spicule in addition to the large *acerate*, together with the *excavating habit*, in which it approaches the *Suberites*; so that having regard to these resemblances to such totally different sponges, I have considered it desirable to call it after neither, and so have given it the generic name *Amorphinopsis*. No laminar sponge with this spiculation and excavating habit has, I think, hitherto been described.

*DONATIA LYNCURIUM*, *auct.*

But for the colour being whitish, grey, or leaden white, instead of orange, this sponge, of which there are two specimens, would

be almost identical with the British species. Like that species of *Donatia* from Acapulco which I have designated "*multifida*," and its southern varieties especially (*e. g.* those from the Cape and Australia), a stellate spicule of intermediate size between the large globate and small one, with no body and with long, pointed and spined rays (Ann. & Mag. Nat. Hist. 1882, vol. ix. p. 361, pl. 12. figs. 22 *d* and 23), is also present, and seems to be chiefly confined to the *interior* structure of the sponge in all, where it is thus analogous to the larger stellate of the interior of *Geodia*.

STELLETTA BACILLIFERA, n. sp. (Plate VI. figs. 9-14.)

Compact, globular, sessile. Consistence hard, crisp. Colour light grey. Surface even, composed of the trifid heads of the "zone-spicule" in bundles supporting a crust of minute flesh-spicules, and forming a cribriform dermal structure between the "groups" into which the pores are arranged; vents not seen. Internal structure confused in the centre, radiating towards the circumference. Spiculation (as is usual in these sponges) consisting of six forms, viz.:—1, "body-spicule," large, acerate, fusiform, sharply curved and sharp-pointed; 2, "zone-spicule," also large, trifid, smooth, sharp-pointed, arms spread out laterally and slightly directed outwards; 3 and 4, the usual "anchors and forks" (anchoring-spicules), with much longer shafts, but much more delicate in every way; 5, minute flesh-spicule of the surface, bacilliform, more or less fusiform, microspined; 6, minute flesh-spicule of the interior, a delicate stellate, as usual. No. 1, in some numbers, forms the body or centre, becoming mixed with no. 2, the zone-spicule, towards the circumference, where the latter in bundles, arranged vertically to the surface, supports by its outstretched arms the crust, which is formed of no. 5, while the delicate no. 6 is confined to the sarcode of the interior. Size of specimen which, although small, is very perfect,  $\frac{1}{4}$  inch in horizontal and  $\frac{3}{8}$  inch in vertical diameter.

*Hab.* Growing on hard objects.

*Loc.* King Island.

*Obs.* The bacilliform flesh-spicule of the surface is the chief distinguishing character of this species; but that is a common feature of certain specimens in the Bowerbank Collection which come from the S. coast of Australia, where it is often very large comparatively, being in some specimens 13 by  $1\frac{1}{2}$ -6000th inch in

its greatest dimensions, while that of *Stelletta bacillifera* is not more than 4-6000ths inch long with proportionate thickness.

TETHYA CRANIUM, *Johnst.*, var. ROBUSTA, nov.

This appears to be nothing more than a coarse form of *T. cranium*, wherein the radiating spicular mass, separating into bundles as it advances from the centre to the circumference, leaves large interspaces (excretory interspaces). These spaces open by equally large vents all over the surface, but more especially towards the lower part of this sponge, which is globular with the exception that it is more or less tangentially cut by its sessile attachment to the rock or object on which it may be growing. Typical specimens of *T. cranium* are more compact and the vents are at the summit (Ann. & Mag. Nat. Hist. 1872, vol. ix. p. 419, pl. xxii. fig. 9 *a*). The specimens, of which there are two of about the same size, are  $2\frac{1}{2}$  inches high and  $2\frac{1}{4}$  inches in their greatest horizontal diameter, which is midway between the summit and the base, that is somewhat contracted on account of the natural tendency to a globular form; while the centre of the sponge, from which the large spicules radiate, is midway between the summit and the base. The spicules of the interior, which project so abundantly as to produce a hispid condition of the surface, are so matted together by the mud in which the sponge has grown on the subjacent rock that, in taking off this crust, the "forks" and "anchors," together with the projecting ends of the "body-spicules," all come away with it. As the sponge generally is very robust in habit, the spicules are correspondingly large; in fact the body-spicules are  $\frac{1}{4}$  inch long by 1-450th inch in thickness, and the bihamate flesh-spicules, which, as usual, are C- and S-shaped and contort, are 5-6000ths inch long.

TETHYA DACTYLOIDEA, *Carter*.

With the exception of the colour being lightish grey or leaden white, the present specimen agrees with those of the S.E. coast of Arabia, where its colour is purple-red; while at Bombay, where it grows in the sands of the Mahim Estuary, the species is strikingly yellow. Indeed the specimen from King Island, which I have divided vertically in order to study its structure, still presents a reddish tint in the centre, so that the grey colour, like that of many of the other sponges of this collection, seems

to have been produced by the bleaching action of the strong alcohol in which the specimens were preserved.

*TETHYA MERGUIENSIS*, n. sp. (Ann. & Mag. Nat. Hist. 1883, xi. p. 366, pl. xv. figs. 6 *a-f*, 7 *a-k*, 8 *a-h*.)

Circular, convex, sessile, depressed, rather constricted at the base (*l. c.* fig. 6, *a-f*). Consistence loose, soft. Colour black-brown. Surface hispid, interrupted by several large vents of different sizes, chiefly situated towards the circumference (*l. c.* fig. 6, *b*). Pores in the interstices of a dermal spicular reticulation whose sarcode, charged with dark-brown pigment-cells, is thus rendered cribriform (*l. c.* fig. 8, *a-h*). Internal structure as in *T. robusta*, viz. the spicules radiating in bundles from the centre, which lies, as in that species, midway between the base and the summit (*l. c.* fig. 6, *d*). The spicules diverge as they advance towards the surface and leave wide intervals between them, forming a cavernous kind of excretory canal-system which opens at the vents. Spiculation comprising five or six forms, viz.:—1, the body-spicule (which is by far the largest), acerate, nearly straight, fusiform, smooth, gradually sharp-pointed, nearly  $\frac{1}{8}$  by 1-600th inch in its greatest dimensions (*l. c.* fig. 7, *a*); 2, zone-spicule, smooth, trifid, arms straight, diverging laterally and a little forwards, placed at equal angles from each other and from the shaft, which is so like them in size and shape that, when not *in situ*, it is not only almost impossible to say which is which, but whether the spicule is or is not a gigantic 4-rayed stellate, arm about 1-56th inch long, sometimes one or more are abnormally bifid (*l. c.* fig. 7, *bb*); 3 and 4, anchors and forks, heads as usual, but filiform from the great length of their whip-like, delicate shafts (*l. c.* fig. 7, *c, d*); 5 and 6, flesh-spicules, viz. the usual form of bihamate,  $2\frac{1}{2}$ -6000ths inch long (*l. c.* fig. 7, *f, h*), and a thin, fine acerate about 1-100th inch long (*l. c.* fig. 7, *g*). No. 1, together with nos. 3 and 4, projecting in great abundance far beyond the surface, from their extreme length give the hispid character which characterizes the sponge. Pigmental cells, which are abundantly scattered throughout the sarcode generally, and from whose brown granules the dark colour is derived, about  $1\frac{1}{2}$ -6000th inch in diameter. Size of specimen about 10-12ths inch in its greatest horizontal diameter (which is between the base and the summit), 6-12ths inch high.

*Hab.* Growing on hard objects.

*Loc.* King Island.

*Obs.* The black colour together with the presence of a circumferential line of zone-spicules distinguishes this species from *Tethya cranium* and its foregoing variety, viz. var. *robusta*, although in its general structure it is like the latter. As far back as 1869 (Ann. & Mag. Nat. Hist. vol. iv. p. 4) I noticed the presence of an *isolated patch* of zone-spicules in the circumference of *Tethya arabica*, and afterwards observed them in a small specimen from the tropics, mounted on a card in the British Museum (No. 452). In these cases they differed from those above described in the possession of a longer shaft and shorter arms (*op. cit.* 1883, xi. pl. xv. fig. 9), thus resembling the zone-spicule of *Geodia*. Sometimes the bihamate flesh-spicule is wanting in these sponges, but I only know of one instance of this, viz. in *Tethya antarctica*, Carter. Very often the heads of the anchor-spicules outside appear to be absent when they really were not during life, for they are so delicate that the least contact of their arms with any opposing object will break them off, and thus their absence may lead to the conclusion that they never existed.

The reticulate fibro-dermal structure covered by a layer of sarcode rendered cribriform by the pores, and more strikingly marked by being densely charged with the dark pigmental cells and flesh-spicules, recalls to mind that which is so characteristic of the dermal structure in *Thenea Wallichii*, just below the pileus or hat-like upper portion of this sponge. There is only one specimen of *Tethya merguensis* in Dr. Anderson's collection.

#### GENERAL OBSERVATIONS.

On referring to the table at the commencement of this Report it will be observed that the collection consists of 89 specimens, referred to 38 species, 13 of which, including representatives of one new genus, have not been made known before, 9 are new varieties, and the rest have already been named and described. Most of the sponges have been examined and characterized in the dried state by preference, although the greater part arrived in spirit.

In estimating the sponge-productiveness of a locality, and, indeed, its fauna and flora generally, the number of species should

not be taken into account; for a short sojourn in any part of the world can only give the prevailing features, while the more exceptional ones can only come to notice by an extended residence, so that the wonder is that, in so short a time, Dr. Anderson should have done so much at King Island in respect of the Spongida.

Again, the nature of the sea-bottom makes a difference in regard to sponges, as they undoubtedly prefer clear water and a sandy or rocky sea-bed to dirty water; yet, like most animals, and even man himself, they will, if their lot has not been cast in a too uncongenial locality, adapt themselves to it, that is live and thrive there in spite of all its difficulties. Thus, even if we did not know it for a fact from Dr. Anderson himself, the appearance of the specimens of this collection would testify to their having grown more or less in the neighbourhood of dark grey mud, *i. e.* "on stones and rocks in the muddy flats of the north-eastern side of King Island," and yet they are large, numerous, and beautiful.

Although neither the CARNOSA (of my classification) nor the CERATINA are represented, there are many large specimens of the PSAMMONEMATA, among which is the ubiquitous "*Polytherses*" of Duchassaing and Michelotti (Caribbean Sponges, 1864), first described and well illustrated by the late Dr. Bowerbank under the name of "*Stematomenia*" (Ann. 1845, vol. xvi. p. 406, pl. xiv. figs. 1-5), and shown by myself to be a *Hircinia* transformed into this state by, or into, a terminally-bulbed filament, for which I proposed the name of *Spongiophaga communis* in 1871 (see Ann. & Mag. Nat. Hist. 1878, vol. ii. p. 165 *et seq.* and illustration). This is not an instance of what has lately been termed "symbiosis," where two organisms live together without injuring each other, even from a very early period, but one of the destruction of the whole of the sarcode or vitalized portion of its host the *Hircinia*, which is thus replaced by this filament. After these comes a new and beautiful species of *Dysidea* with its varieties in large quantity. The RHAPHIDONEMATA are not so profusely, but still well represented by a large specimen of another ubiquitous sponge, *viz.* *Chalina oculata*, here assuming a strongly-marked variety. Of the ECHINONEMATA there are several specimens, but they are chiefly small, among which is the British one named by Dr. Bowerbank "*Dictyocylindrus hispidus*." It is in the HOLO-

RHAPHIDOTA, however, as this is by far the largest order, that, as might be expected, the greatest number of species are to be found; while here we see the first four groups of the Renierid family together with the groups "Fibulifera" and "Esperina," and the Suberitida generally, most prominent in the matter of quantity.

That the orders HEXACTINELLIDA and CALCAREA should not in any way be represented may be probably explained by the muddy character of the locality, combined with the shallowness of the water, which therefore must be continually kept in a state of agitation by the tides and waves of the sea.

In *Tethya merguensis* and in the new genus *Amorphinopsis* we have the addition of a trifold "zone-spicule" &c. to characterize the former; with the spiculation and excavating habit of a sponge very much in appearance like *Halichondria panicea*, Johnst., = *Amorphina*, Schmidt, to establish the latter.

But as the peculiarities of all the species have already been stated in the foregoing descriptions, I need not repeat more here. Suffice it, in conclusion, to state that there is a strong British *facies* in the collection, somewhat modified by the difference in locality.

#### DESCRIPTION OF THE PLATES.

##### PLATE V.

- Figs. 1 & 2. *Chalina spinifera*, n. sp.? 1. Specimen, of natural size. 2. A portion of the same, enlarged 3 diam. to show the surface-reticulation.
- Figs. 3-6. *Dictyocylindrus acerat us*, n. sp. 3. Specimen, about natural size. 4. An acerate fibre spicule. 5. An acute setaceous spicule. 6. A short, spined echinating spicule. The spicules all magnified to the same scale.
- Figs. 7-10. *Microciona acerato-obtusa*, n. sp., the various kinds of spicules, all magnified to scale. 7. Long skeleton-spicule. 8. Shorter stouter acuates. 9. A tricurved flesh-spicule. 10. Navicular equianchorate spicules.
- Fig. 11. *Acinella virgultosa*, n. sp. Represented of natural size. (Compare figs. 6 & 7, Plate VII.)
- Figs. 12-15. *Amorphinopsis excavans*, nov. gen. et sp. 12. A small portion of the surface of the sponge, of natural size. 13. A similar piece considerably enlarged, showing its star-like character. 14. Two skeletal acerate spicules. 15. An acute spicule, also magnified to the same scale.

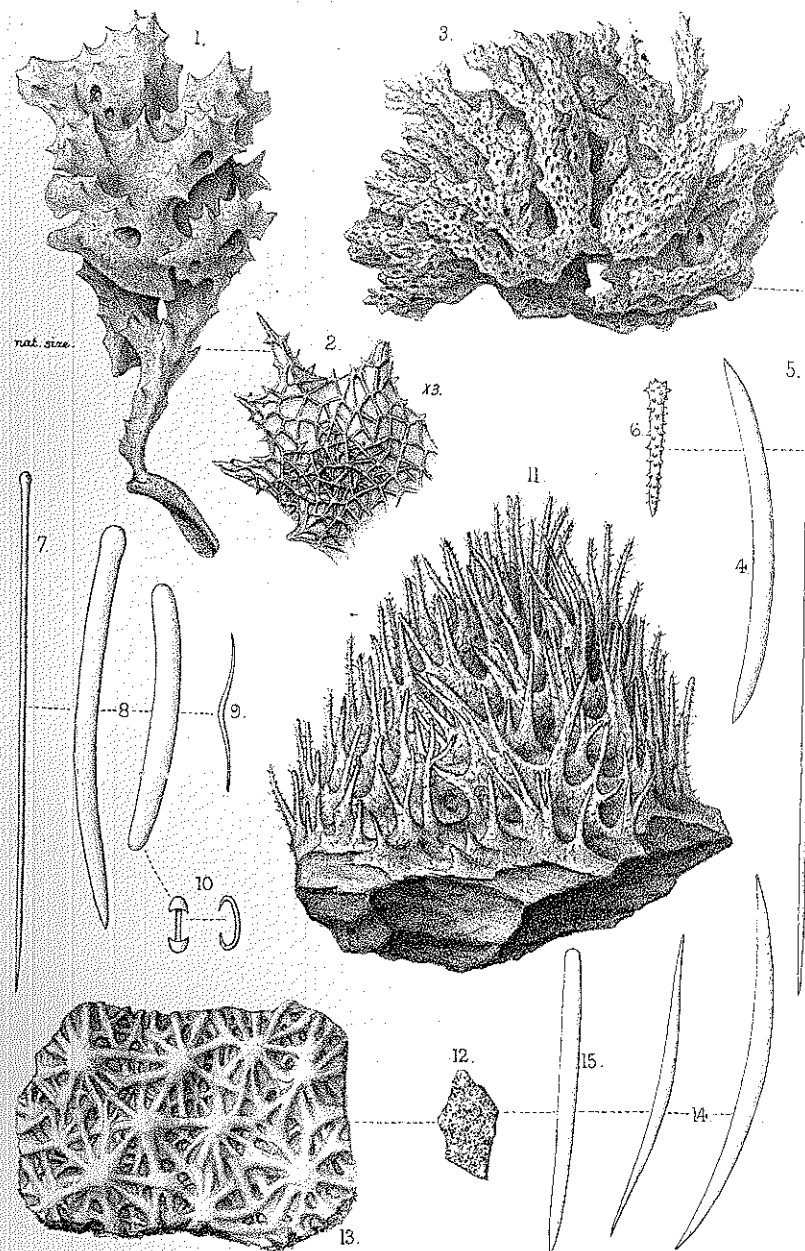


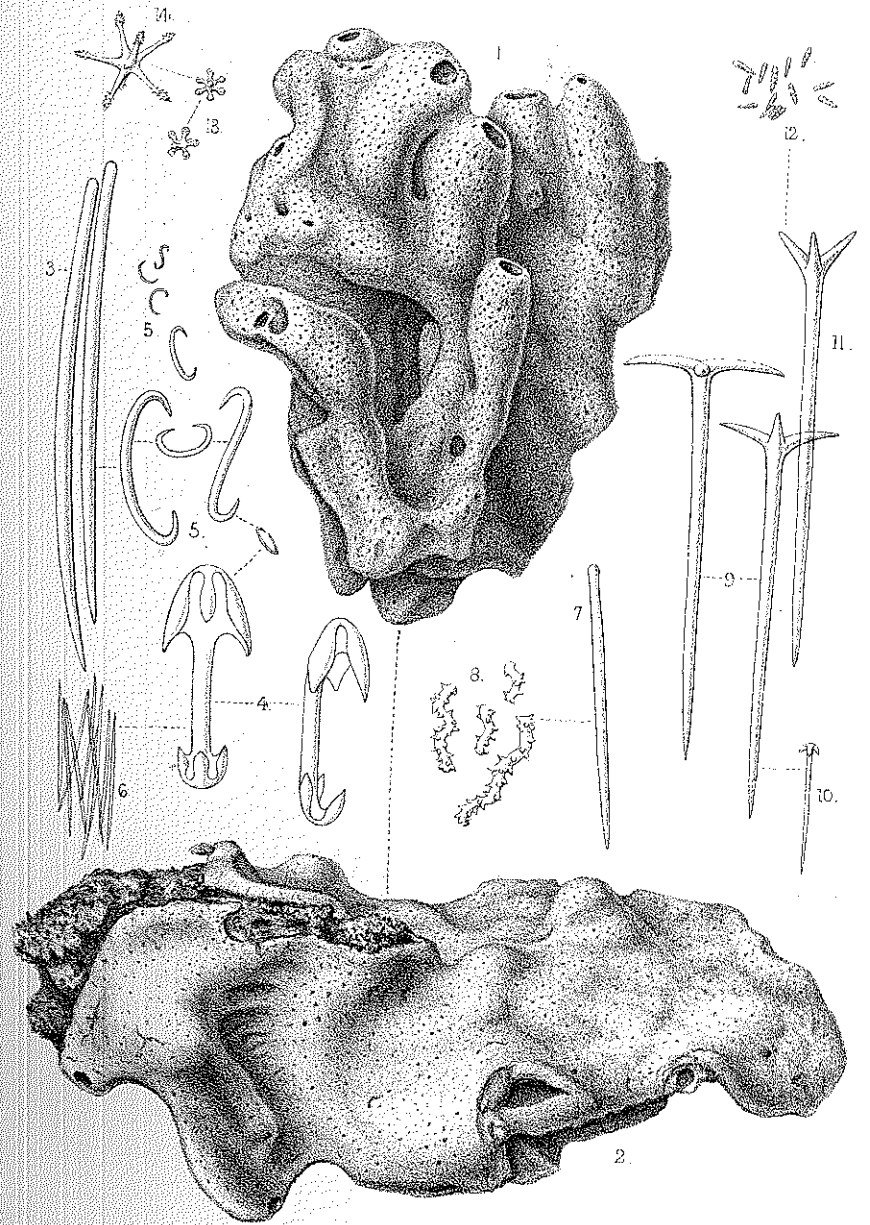
## PLATE VI.

- Figs. 1 & 2. *Isodictya simulans*, Bowerbank. 1. A branched fragment, var. *tubuloramosa*, nat. size. 2. The variety *incrustans*, also natural size.
- Figs. 3-6. *Esperia indica*, n. sp. The various kinds of spicules, all greatly magnified to scale. 3. Two acute skeletal spicules. 4. The inequi-anchorate spicules; side and front views. 5. Various-sized bihamate flesh-spicules. 6. Minute acerate flesh-spicules (trichites).
- Figs. 7 & 8. *Suberites trincomaliensis*, n. sp. 7. A pin-like skeletal spicule. 8. Spinispirular flesh-spicules. All magnified to one scale.
- Figs. 9-14. *Stelletta bacillifera*, n. sp. Spicules of various sorts, all highly magnified to the same scale. 9. Two zone-spicules. 10, Anchor, and 11, a fork-spicule. 12. Minute microspined bacilliform spicules. 13 and 14 (enlarged). Minute stellate flesh-spicules.

## PLATE VII.

- Figs. 1-3. *Fibularia ramosa*, Carter. 1. A portion of the sponge on a *Gorgonia*, of nat. size. 2. The whole specimen, much reduced, showing the habit of growth. 3. A small portion, enlarged 3 diam., showing the reticulate character of the surface.
- Figs. 4 & 5. *Suberites coronarius*, Carter. 4. A spinulate spicule. 5. Crown-like flesh-spicules, all magnified.
- Figs. 6 & 7. *Acinella virgultosa*, var. *massa*, nov. Two different views of the exterior of this variety of sponge, both natural size. 6, the upper, and 7, the side view.

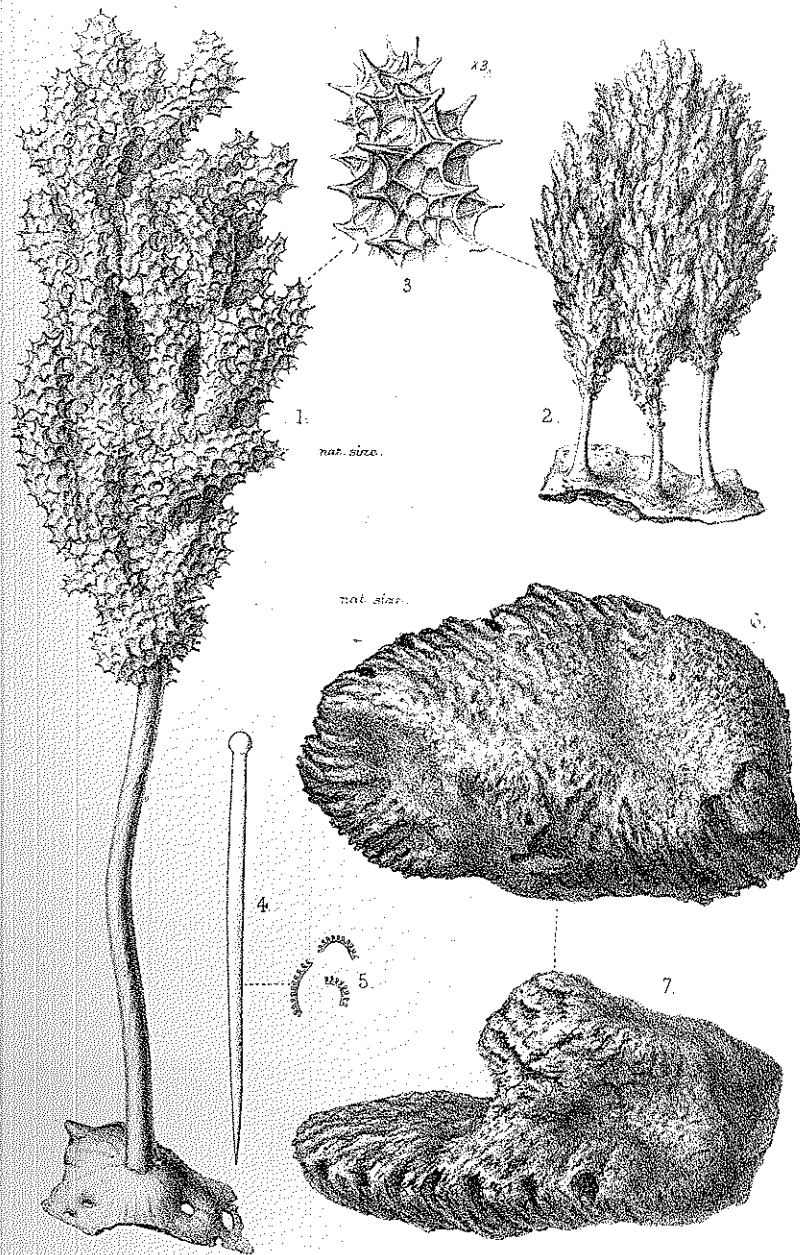




Bergeau del et lith.

SPONGES, MERGUI ARCHIPELAGO.

Mixterri imp.



Bezeau del et lith.

SPONGES, MERGUI ARCHIPELAGO.

Mintern imp.