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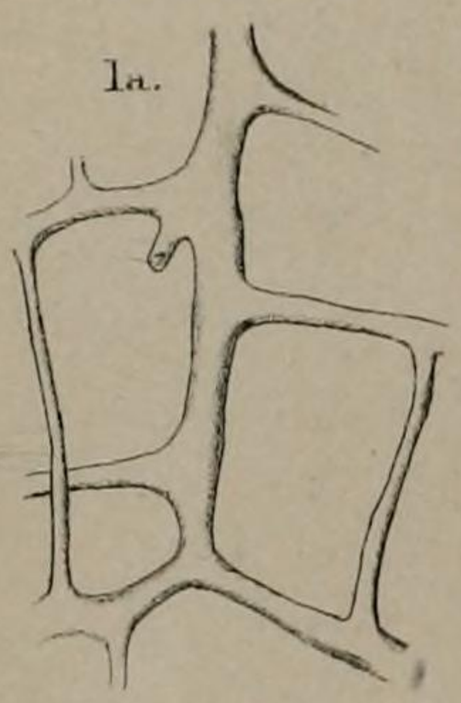
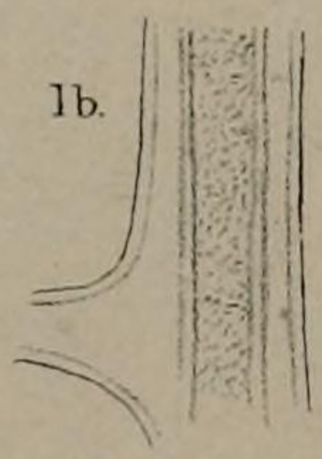
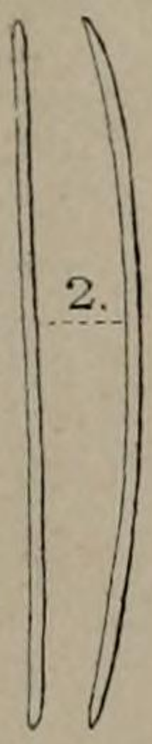
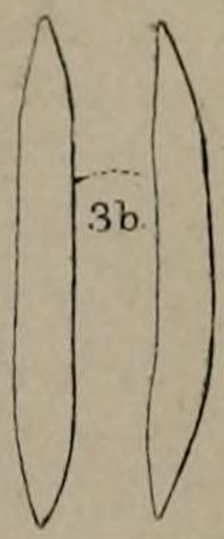
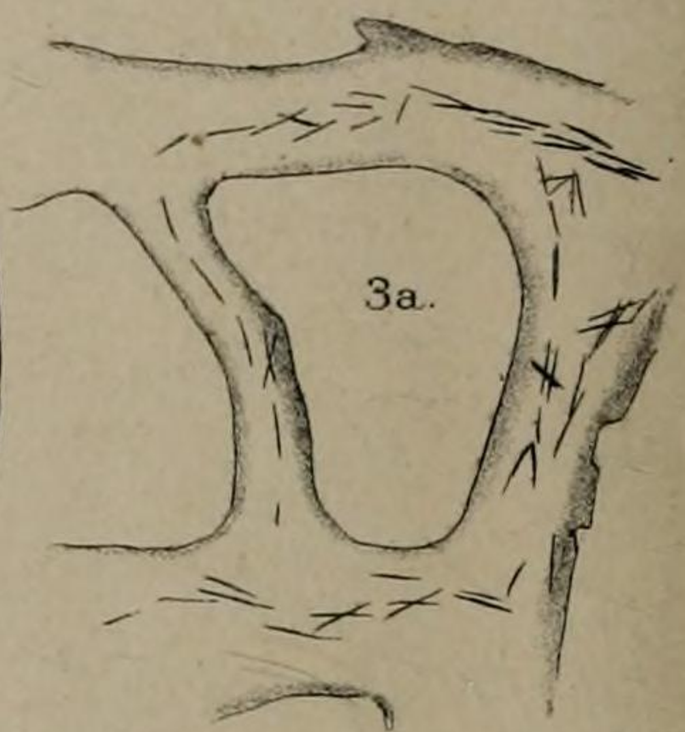
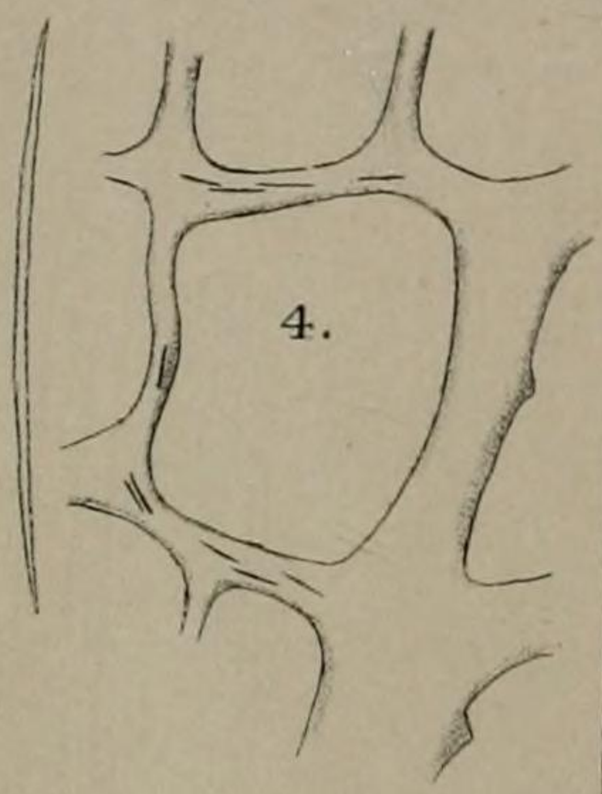


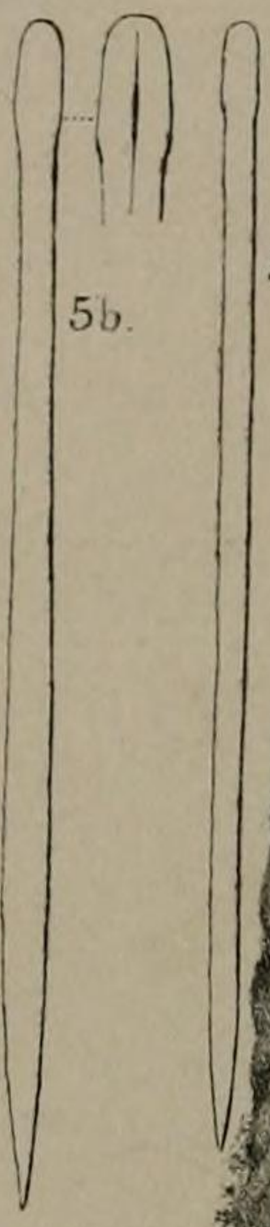


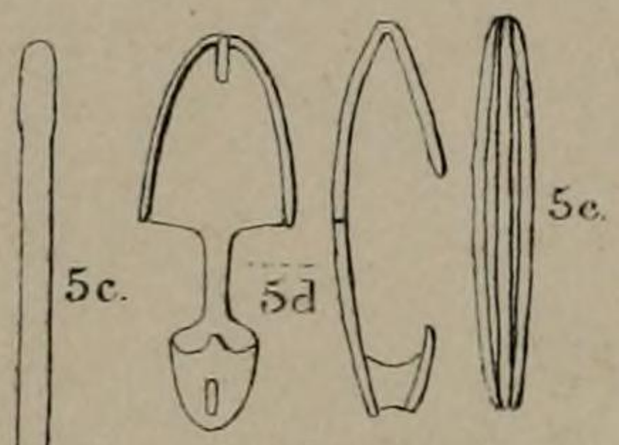


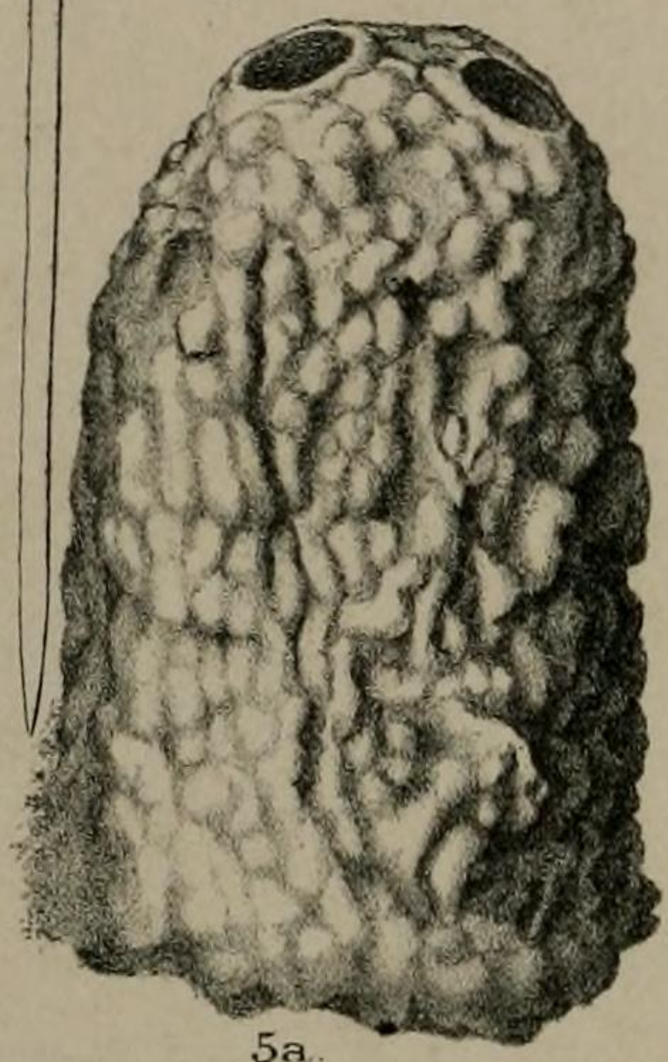


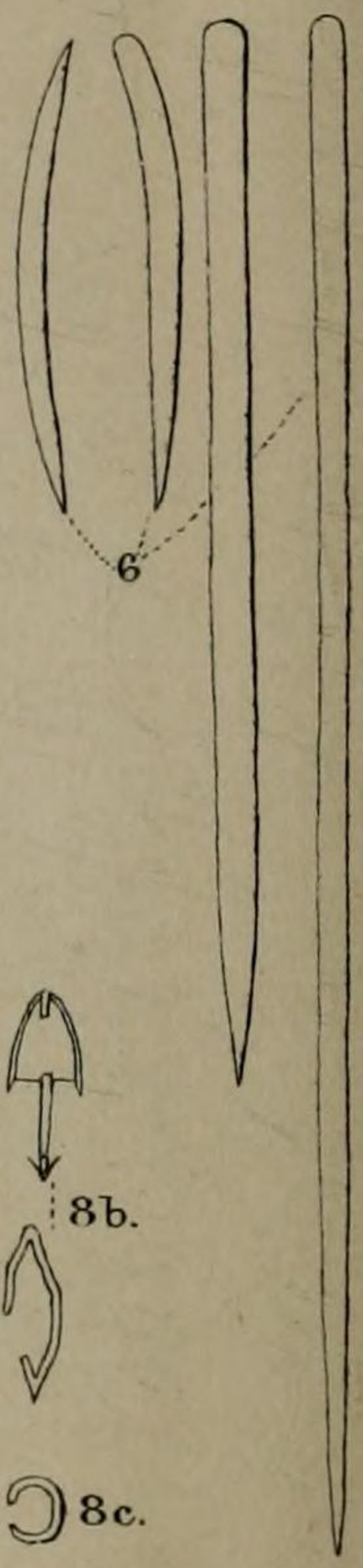


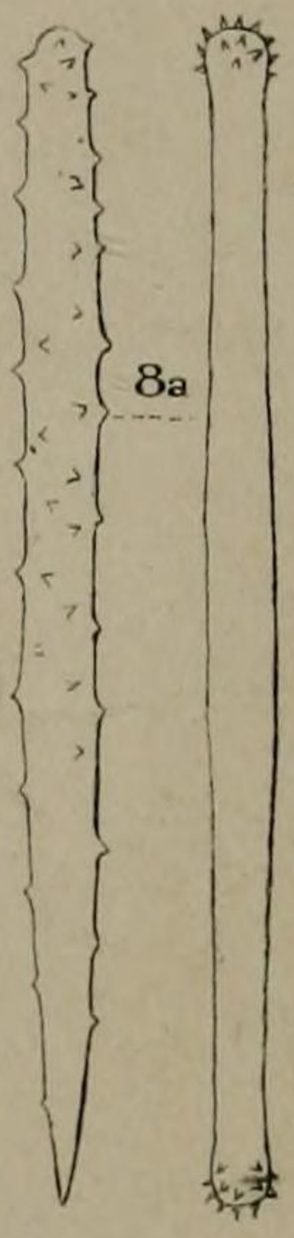


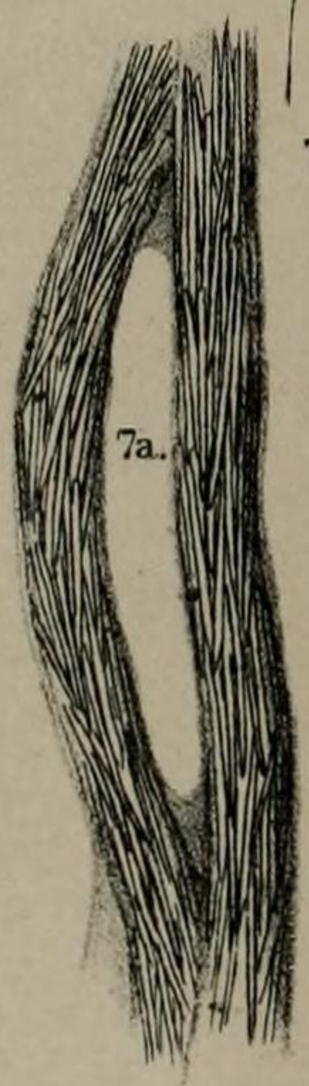


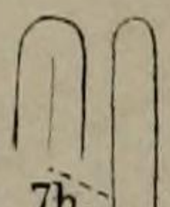


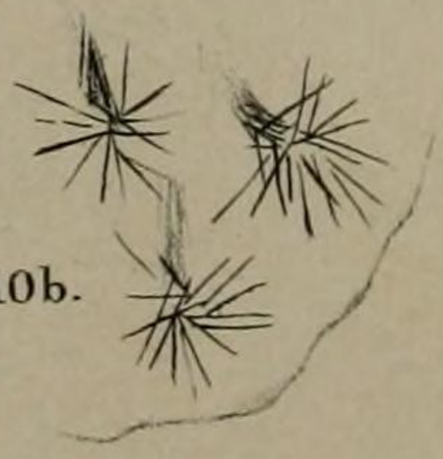


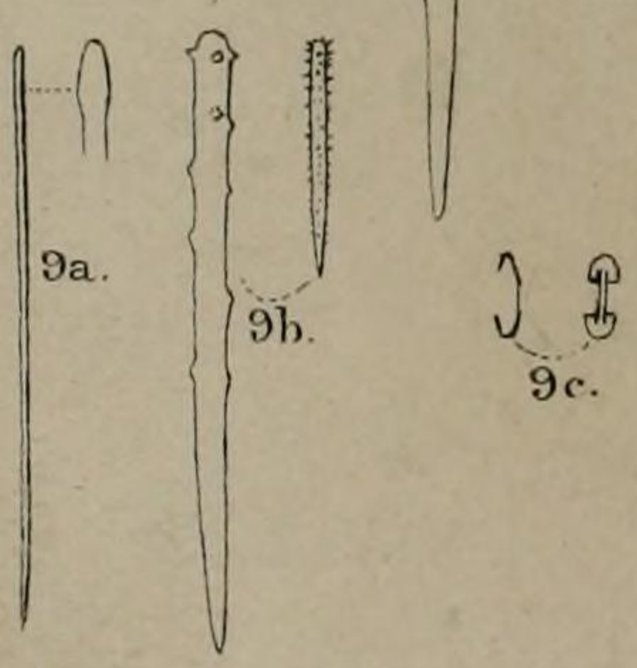


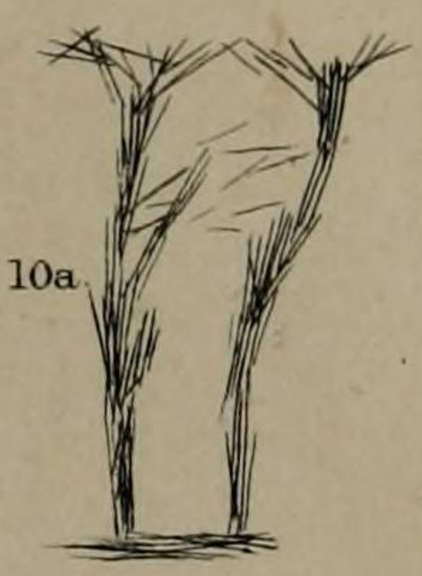


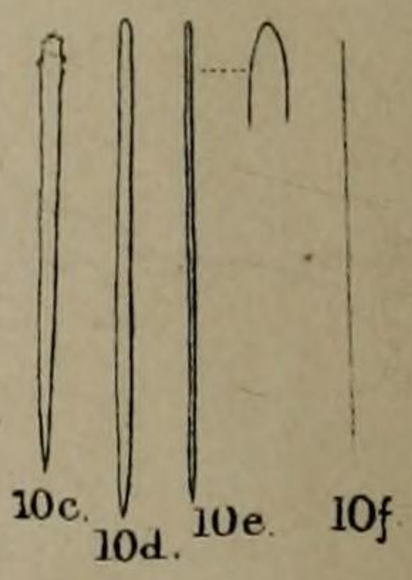












Edwin Wilson del. et lith.

Mintern Bros. imp.

SPONGES OF "ALERT" SURVEY.

latter reason they are with difficulty distinguishable with a lens in this position, though the naked eye is sufficient to make them out in *L. antarctica*; the bareness of the stem and of the greater portion of the chief branches is perhaps the most striking superficial point of difference.

The species is dedicated to Mr. H. N. Moseley, to whom we owe so much for conclusively determining the affinities of the group to which it belongs. It seems in some respects to connect *Errina* with *Labiopora*, representing a transition from the strongly to the feebly labiate character of the chief dactylopores. The comparative absence of prominent dactylopores from the anterior and posterior surfaces of the frond would be an important character, were it not that both this and the condition in which they are universally distributed are found in *Errinæ* in the Museum collection. The colour, too, cannot be appealed to, considering the variations which are shown in this respect by the kindred genus *Stylaster* and (if *E. fissurata*, Gray is an *Errina*, and if the figure by which we know it was taken from a macerated specimen) by *Errina* itself.

XI. SPONGIDA.

By Stuart O. Ridley.

(Plates X., XI.)

Horny and Siliceous Sponges of Magellan Straits, S.W. Chili, and Atlantic off S.W. Brazil.

With regard to the technical nomenclature of the different parts of the Sponges here described, the terms employed are used with the meanings which they bear in Mr. Carter's writings [1]. In *measuring* the spicules with the view of stating the typical form and size, the object has been to determine the *average largest* size of each described form; in each case at least *five* of the largest of each form were picked out and measured in order to decide this point. The *diameter* given for a spicule is the greatest diameter in each case, except that of spinulates or similar forms, where the diameter given is that of the body, not of the head; in the case of spined spicules the base alone of the spines is included in the measurements.

Considerable details have been given under many of the species with regard to the structure of allied forms elsewhere described (chiefly by Bowerbank, Schmidt, and Lamarck). It should be observed that these details are obtained from a fresh and independent study (1) of actual type specimens or slides as far as these could be fixed, in the case of the Bowerbankian species; (2) of the slides and specimens furnished to the Museum by Prof. Schmidt himself, in the case of the species described by him; (3) of a collection which undoubtedly represents the type specimens, in the case of Lamarckian species. The type specimen of *Ciocalypta tuberculata*, Carter (see *infrà*), has also been carefully examined. In all these

[1] *Cf.* especially his "Notes Introductory to the Study" &c., Ann. N. H. (4) xvi. pp. 1–40, 126–145, 177–200.

cases, therefore, the descriptions here given may be considered, so far as they go, as revisions of the species in question; I believe that such revisions of many of the current species are urgently needed.

Order CERATINA, Carter.

APLYSINA (?) REGULARIS, sp. n. (Plate X. fig. 1.)

Surface even, set with the slightly projecting ends of the primary skeleton-fibres at intervals of about ·5 millim. Vents inconspicuous. Skeleton regular, of primary fibres at right angles to surface, average greatest diameter ·057 millim.; and of secondary fibres, parallel to the surface at regular intervals between the primaries, average greatest diameter about half that of the primaries. Primary fibre pale amber-colour, composed of a multilaminar horny wall with a thick innermost lamina, enclosing a faintly granular axis closely resembling the wall in nature of substance; axis about one third the diameter of the fibre. Secondary fibre paler, generally fibrillated to its centre.

Examined. In spirit and by mounting in balsam.

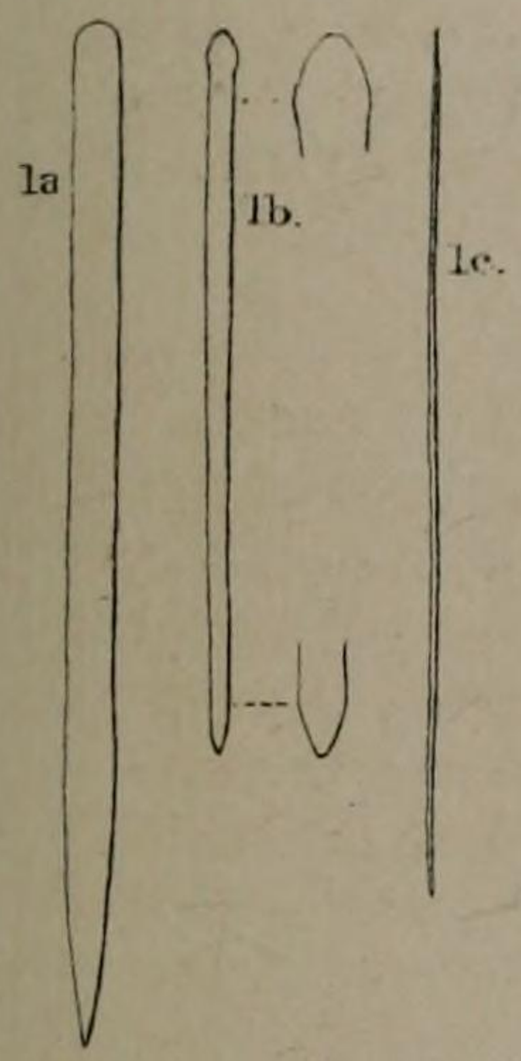
External Characters. Form incrusting. Consists of a sheet of substance about 2 millims. thick, with a level surface, spreading irregularly over about one square English inch of an immense flexible worm-tube. Texture soft, very elastic. Colour (in spirit) pale grey. The surface appears glossy, and is set with a number of minute projecting points, which occur with some regularity at about $\frac{1}{2}$-millim. intervals over it.

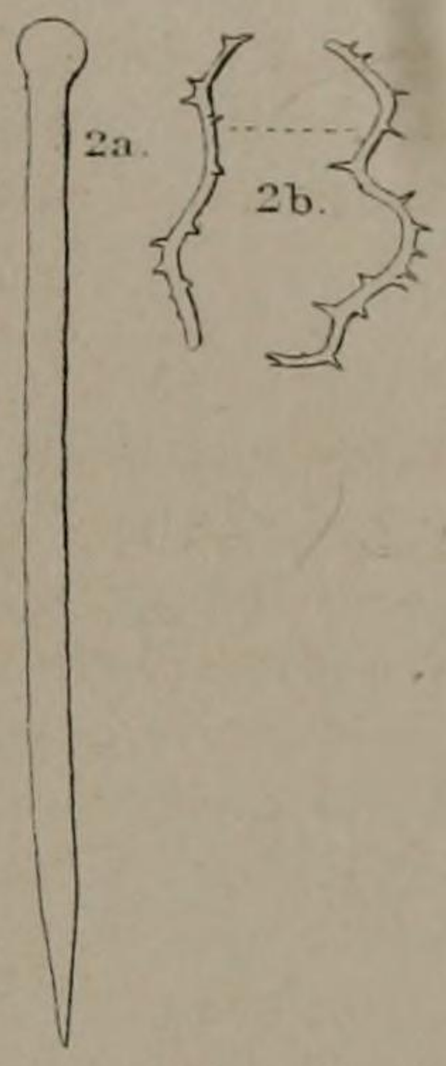
Vents. None apparent. *Pores* scattered between surface-points, ·04 to ·1 millim. in diameter.

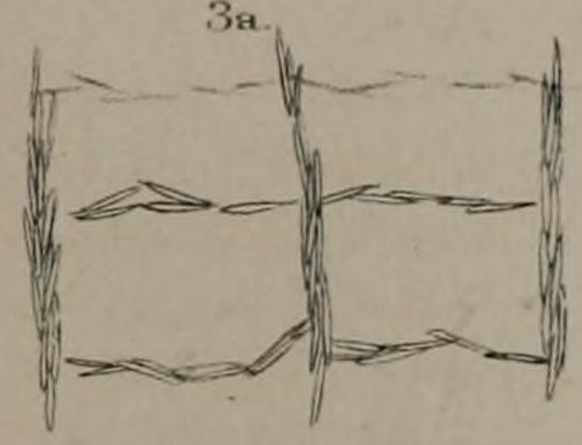
Main Skeleton. Composed of a set of primary fibres running outwards at right angles to surface, and projecting by attenuated points to a distance of from ·14 to ·32 millim. from the surface (they are distant from each other at the surface ·35 to ·7 millim.), of a secondary set, connecting these, approximately at right angles to them, distant from each other by ·18 to ·36 millim., and of a tertiary set, running parallel to the primary fibres and connecting the median portions of the secondary fibres. This tertiary set is not always so fully developed as to extend from the base to the surface of the Sponge; but it is generally represented by a fibre or two in the interval between each two primary fibres; it may possibly prove to be merely the young stage of the primary fibres, from which it differs in its diameter and structure, being about half as broad as an average primary fibre, and having but a thin uni- or bilaminar outer wall, and pale yellow colour, also apparently in not terminating on the surface by a point: it may give rise to a primary fibre.

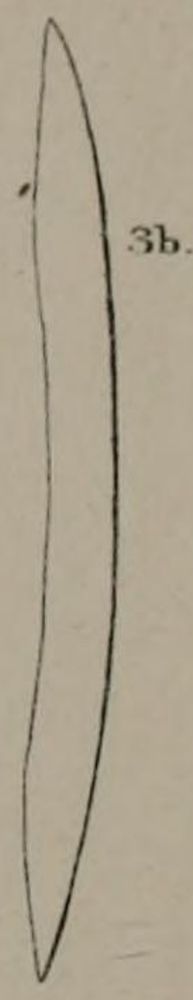
Hab. Sandy Point, 7–10 fathoms, on worm-tube.

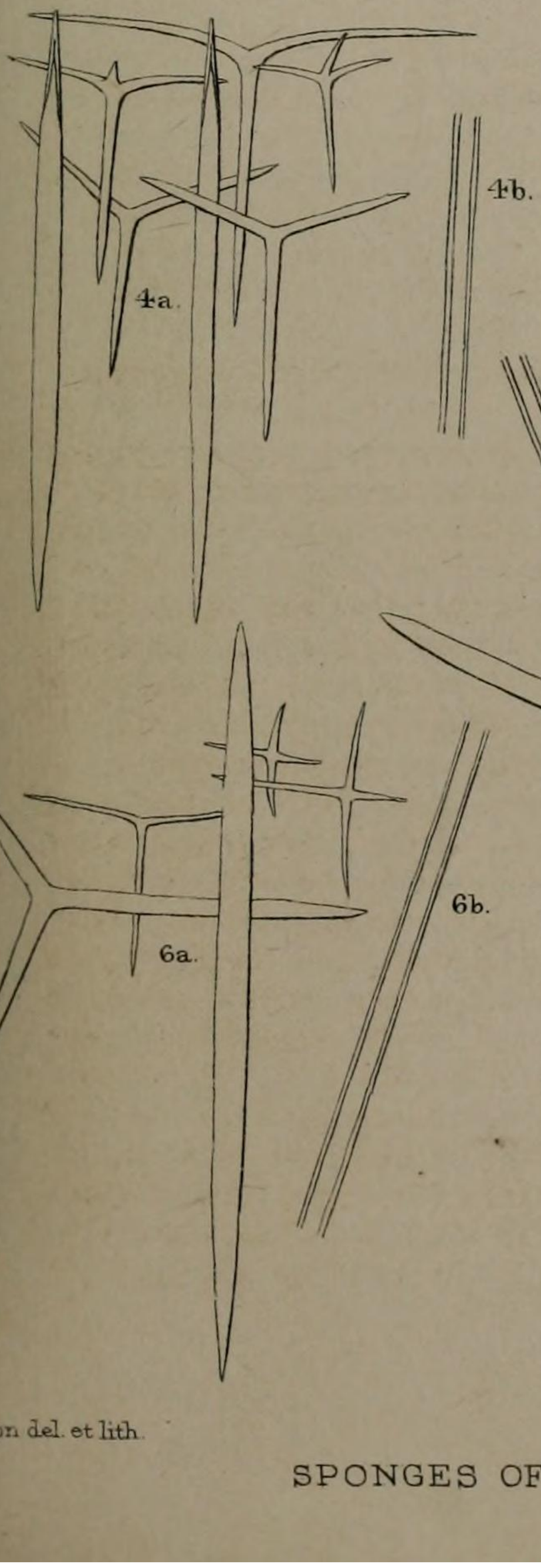
Obs. This is probably quite a young specimen; its habits and size, as compared with those of the other members of the genus *Aplysina*, seem to show this. The extremely slight difference in appearance between the horny wall of the primary fibre and its granular axis distinguishes it from most, if not all, other *Aplysinæ*.

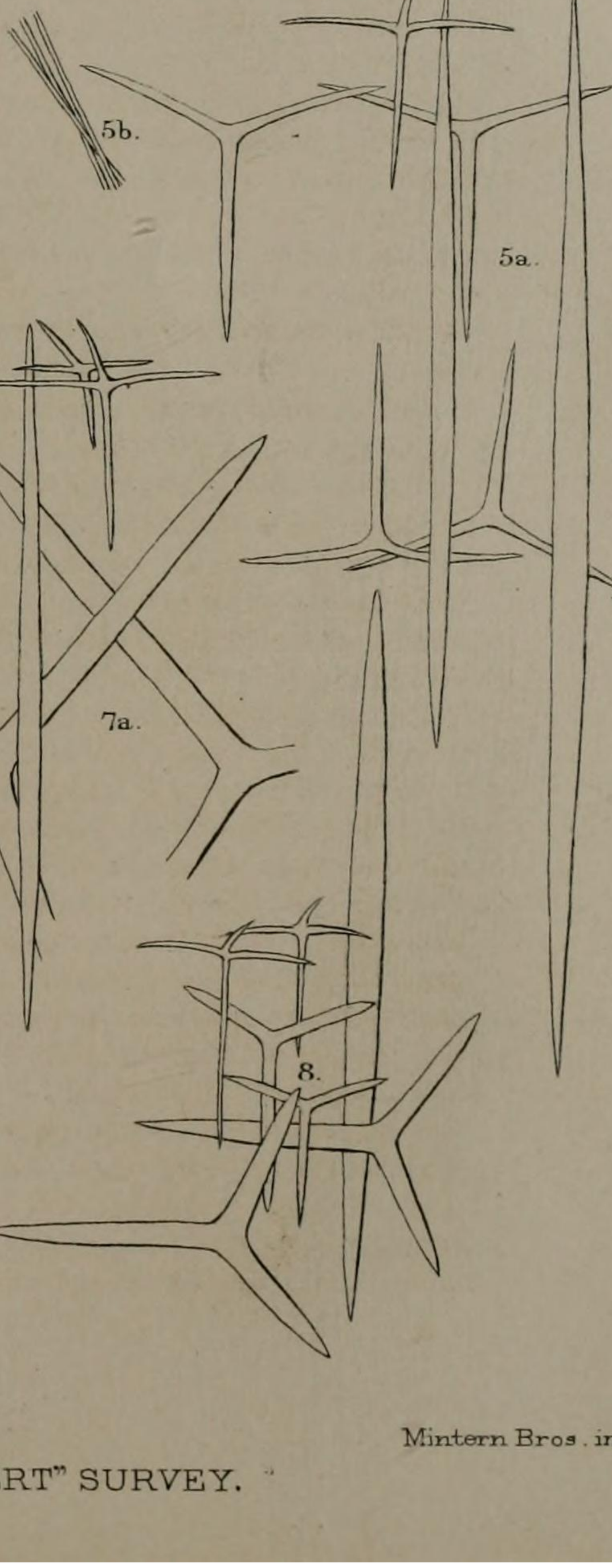












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SPONGES OF "ALERT" SURVEY.

The great regularity of its skeleton, and its distinction into two kinds of fibres differentiates it from *Dendrospongia*, Hyatt, as well as from the other known species of its genus. The characters of the axial fibre-substance distinguish it from *Verongia*, Bowerbank.

Order Psammonemata, Carter.

Hircinia hispida, Lamarck (sp.).

Spongia hispida, Lamarck, Ann. Mus. Hist. Nat. xx. p. 452.

External Characters[1]. The single (spirit) specimen agrees fairly well with the characters assigned to this species by Lamarck (*l. c.*), and with the specimen of the species already in the British Museum. It being, however, evidently young, the *branching* character is no more than indicated by the extension outwards of a rounded lobe from each side; and as it is a well-preserved spirit specimen, the small foramina of Lamarck's description and of the dried specimen are wanting. It is sessile by a broad base, and suboval in outline, the long axis extending from side to side. Surface uneven, rendered coarsely hispid by the projecting ends of the primary skeleton-fibres, arranged at intervals of from ·5 to 1·75 millim. (to 2 in the dried state). Colour in spirit dark brown, slightly rufous; of dry skeleton, pale yellow-brown.

Vents few, round; diameter in spirit 1·5 millim., in dried specimen 2 to 3·5 millims. *Pores*?

Skeleton. Consists of a set of stout primary, generally sand-cored, fibres running outwards from the interior, each terminating at right angles to the surface in one of the surface-papillæ. These are connected by a secondary set, consisting of an irregular network of much finer, uncored fibres, meeting the primary fibres at acute angles, and forming by their branching and anastomosis irregularly diamond-shaped meshes. Surface network formed by secondary fibres connected with the interior secondary-fibre network, and laterally with the apices of the primary fibres. Primary fibres cored by coarse foreign bodies, which are enveloped by pale-yellow horny matter, but which generally occupy all the fibre except a slight external film, and cause it to bulge largely at the sides; diameter from ·0507 to ·235 millim. in the spirit, from ·038 to ·0834 in the dry specimen. It should be noted with regard to this discrepancy that the foreign bodies in the latter are much smaller than in the former, and being many of them sponge-spicules, which protruded from the fibre, were not included entirely in the estimate of the diameter as given here. There is considerable irregularity as to whether the fibre is cored throughout or not in this specimen, which may be due to the reason suggested by Hyatt[2] for a similar fact observed in *Carteriospongia otahitica*, viz. the relatively smaller amount of accessible material for the core in the one case. Secondary fibres obscurely striated, the external laminæ denser than the internal ones,

[1] All the characters are taken from the spirit specimen, deviations in the dry one being noticed.

[2] Mem. Bost. Soc. ii. pt. iv. p. 541.

sometimes giving somewhat the appearance of an *Aplysina*-fibre to it; generally with a fine dark axial line (rarely seen in the dry specimen); transparent, pale yellow; diameter ·006334 to ·038 millim. in the spirit, ·006334 to ·057 in the dry specimen.

Parenchyma brownish yellow, granular, subopaque in the spirit specimen; apparently represented by shreds of almost colourless transparent material, carrying small and large foreign bodies, in the dry one.

Examined. In spirit in the dried state, and by mounting in balsam.

Hab. Tom Bay (Trinidad Channel, off chief island of Madre-de-Dios archipelago), in S.W. Chili, 0–30 fathoms, on *Idmonea* (*Dr. Coppinger*). "Southern Seas" (*Péron et Lesueur, apud Lamarck*[1]).

Obs. Advantage has been taken of the discovery of a good spirit specimen to give the characters of the sponge in full, as Lamarck's description is insufficient.

Order Rhaphidonemata, Carter.

Chalina coppingeri, sp. n. (Plate X. fig. 2.)

Sponge suboval, slightly compressed; sessile by elongate base. Colour bright amber-brown. Texture very elastic and soft. Surface almost smooth. A single round vent on one side, 3 millims. in diameter, penetrating deeply. Pores? Skeleton Chalinoid, very regular. Main primary fibres running at right angles to surface, from which they project by sharp points by ·088 to ·32 millim., spiculated throughout with two or three series of axially placed spicules; diameter of fibre ·07 to ·089 millim. Secondary fibres at right angles to the preceding, and of about the same diameter; spicula 1-serial; both kinds of a pale amber-colour, very distinctly laminated. A young, intermediate series of fibres, parallel to each of the preceding, occupies the wide spaces which exist between them, containing one series of spicula; diameter of fibre ·006334 to ·03167 millim. Dermal skeleton of same general structure as main skeleton, the intermediate fibres form smaller and less regular meshes. Spicules slender, smooth, acerate, straight or slightly curved, tapering to sharp points from near to the ends, average maximum size ·1013 by ·0025 millim.; sarcode transparent, almost colourless, with scattered spicula.

Examined. In spirit and by mounting in balsam.

Hab. Victoria Bank[2], off S.E. Brazil, 39 fathoms; growing on an erect calcareous Polyzoon. One specimen.

Obs. This Sponge is of the shape, and about two thirds the size, of a hazel-nut; it has lost most of its sarcode, but is otherwise well preserved. The MS. species *C. argus*, Schmidt, from Florida, resembles it very closely in microscopic characters; but the fibre is

[1] *Loc. cit. suprà.*

[2] This bank is not marked in the ordinary maps; its position is lat. 20° 42′ S., long. 37° 27′ W.

generally less thick than in our species. When the external characters of this Sponge are known, it may perhaps prove to be identical with our species.

Of several Sponges which have almost identically the same spicule may be mentioned:—*Spongia arborescens*, Lamarck, said to inhabit the "seas of America;" *Chalina limbata*, Bowerbank (Montagu?), and *C. gracilenta*, Bowerbank, Britain. The latter is probably the nearest-allied species which has been described, but differs in having the spicules much more numerous in the fibres, in having a less elaborate intermediate set of fibres, in the slightly inferior length (about ·08 millim.) of the spicules, and the coating habit of growth.

The specific name has been given to it in honour of the discoverer, Dr. R. W. Coppinger, who has, by the richness in species of this valuable collection, and by the good condition in which he has sent the specimens, made so important an addition to our knowledge of the Sponge-fauna of a region in which it has been hitherto almost entirely uninvestigated.

SIPHONOCHALINA FORTIS, sp. n. (Plate X. fig. 3.)

Erect, tubular. Tube dilated in some parts. Mouth single, unfringed. Main skeleton composed of a set of primary horny fibres radiating from inner to outer surface, projecting from the latter by short points, diameter from ·14 to ·25 millim.; and of a secondary set at right angles to the former, diameter from ·07 to ·14 millim.; both sets amber-brown in colour. Primary fibres cored by an axial series of proper spicules, 3 to 5 spicules broad, often somewhat scattered; secondary fibres cored by an axial series of proper spicules, 1 to 2 spicules in breadth. Dermal skeleton composed of a rectangular network of pale-brown fibre from ·0095 to ·025 millim. in diameter, extending between points of primary fibres, generally cored by 1 to 2 series of spicules. Parenchyma transparent, almost colourless. Spicules of one kind in skeleton and flesh, viz. smooth acerate, tapering to sharp points from about $2\frac{1}{2}$ diameters from the ends; size ·07284 by ·00739 millim.

Examined. Dry and by mounting in balsam.

External Characters. The single specimen consists of a tube which has been torn from a larger mass, and might well, when perfect, have had the general form of the specimen figured[1] as *Callyspongia bullata* by Duchassaing de Fontbressin and G. Michelotti, and referred by Schmidt[2], with great probability, to a species of *Siphonochalina*. The tube is 40 millims. in height, 17 millims. at its greatest, 11 millims. at its smallest diameter; it has somewhat the outline of an hour-glass, being constricted to 11 millims. at about 10 millims. from the mouth; it is circular, with walls varying from 1 to 4 millims. thick. It has lost most of its sarcode and much of its dermal skeleton. The edge of the mouth is level all round, and shows no trace of a fringe of projecting fibres.

Vents. These are probably represented by the single mouth.

[1] Spong. Mer. Caraib., pl. x. fig. 5. [2] Spong. atl. Geb. p. 33.

Pores. The dermis is not sufficiently well preserved to show them.

Hab. Portland Bay, Chili (in the channel between the chief island of the Madre-de-Dios archipelago and the mainland), 10 fathoms.

Obs. The nearest identifiable ally of this Sponge appears to be that described by Schmidt[1] as *Siphonochalina bullata*, which, as already observed, it probably resembled closely in external characters. It is not certain that that Sponge is identical with the *Callyspongia bullata* of Duchassaing de Fontbressin and Michelotti; and it certainly is not the *Spongia bullata* of Lamarck, which those authors consider their Sponge to be. The chief distinguishing characters of the two Sponges are as follows:—

	External Characters.	*Main Skeleton.*	*Spicules.*
Siphonochalina fortis (Chili).	Form tubular, perhaps rising from an enlarged base.	Network open. Two sets of fibres regularly arranged at right angles; fibres from ·07 to ·25 mm. in diameter.	Acerate, tapering abruptly. Size ·07284 by ·0079 millim.
S. bullata, Schmidt (?Duch. et Mich., non Lamk.), (West Indies).	Several tubes rising from one base.	Network close. Two sets of fibres regularly arranged at right angles; fibres from ·0355 to ·1065 mm. in diameter.	Acerate, tapering abruptly, size ·076 by ·025337.

CLADOCHALINA ARMIGERA, Schmidt (non Duch. de Fontbressin et Michelotti), var. PERGAMENTACEA, nov. (Plate X. fig. 4.)

Cladochalina armigera, O. Schmidt, Spong. atl. Geb. p. 35.

A fine dried specimen appears to represent this species, although it shows some important differences from it.

External Characters. Suberect, elongated, flattened from side to side, the long diameter being about three times as great as the short diameter; the upper of the two edges bears most of the vents. It is curiously bent to form an angle of 60° at about its middle, so that the apex nearly touches the rock on which it stands. Surface even except near the vents, and smooth, though finely striated by a subdermal and a dermal network of coarser and finer fibres respectively. Colour pale brown. *Vents* subcircular, long diameter from 1·5 to 3 millims., occurring at intervals of 8 to 15 millims. along the edges of the Sponge; they stand out on small rounded eminences to a height of about 1 millim. from the surface, and end in a reticulated bottom at from 2 to 4 millims. below the edge. *Pores*?

Main Skeleton. Composed of a vertical ("deep") set of strong horny fibres, of ·04434 millim. average diameter, coming from the centre, giving off numerous smaller branches laterally, and meeting at right angles a stout ("subdermal") set of fibres, diameter ·056 to ·14 millim., which run along parallel with the surface, branching and anastomosing so as to form the coarser meshes of the surface, and have a tetra- to polygonal outline. The subdermal network forms

[1] Spong. atl. Geb. p. 33.

an external framework, which is the main agent in giving the Sponge its firmness. Arising from this subdermal network, and generally closely enveloping it, is a much finer ("dermal") network or veil (corresponding in relations to the veil on which Schmidt based his genus *Ditela*, afterwards reunited to *Spongia*); its fibres are derived from the upper surface of the subdermal fibres by smaller branches, which branching out horizontally become much finer; the finest form the finer part of the network, of which the coarser form the supporting ribs; the diameter varies from ·02534 millim. for the coarsest to ·00475 millim. for the finest fibres. The "veil," however, at the free end and at the lower edge of the Sponge projects beyond it as a loose envelope. The fibres are very transparent, of a pale amber-colour of various shades, and are delicately laminated. The vertical and smaller subdermal fibres are cored by a uniserial row of fine acerate spicules, placed end to end. In the freely projecting parts of the veil the stouter dermal fibres may be cored by spicules quinqueserially arranged; the finer dermal fibres are cored by uniserial acerates, although these are often wanting for considerable tracts, or only present at intervals. *Parenchyma* transparent. The spicules apparently sometimes occur singly or in groups in the stout subdermal fibres; possibly others have been present and been absorbed. *Skeleton-spicules* smooth, fine, acerate, tapering somewhat gradually to sharp points, nearly straight; size ·076 by ·001267 millim.; many of them have undergone more or less absorption. *Flesh-spicules* same as of skeleton.

Examined. In the dried state and by mounting in balsam.

Hab. Hotspur Bank, off east coast of Brazil (lat. 17° 32′ S., long. 35° 46′ W.), 35 fathoms, on piece of calcareous rock.

Obs. As Schmidt's account is very short, and as the specimen is well preserved, the characters of the Sponge are given fully. The chief differences between this specimen and Schmidt's appear to be:—(1) the *superficial* (not axial) position in the stout subdermal fibre of the spicules in the former; (2) the inferior diameter of that fibre as compared with the present specimen (being as 3 to 5); (3) the branching of Schmidt's specimen, and (4) its bearing (as appears from his referring to Duch. de Fontbressin and Michelotti's species) small spinous processes on its surface; and (5), lastly, the superior proportions of the spicules of Schmidt's specimen, which measure ·0887 by 00211 millim. These differences justify the separation of this form at least as a well-marked variety, although our acquaintance with the Chalinidæ appears to be too limited and their characters too few to admit of distinguishing it as a species at present. Attention is particularly called to the beauty and complexity of the arrangement of the skeleton.

The above differences may be thus tabulated:—

	External Characters.	*Skeleton.*	*Spicules.*
Cladochalina armigera, Schmidt (Florida and Antilles).	Erect, branched; surface covered with spines; vents scattered, 3 millims. in diameter.	Stoutest fibre superficially cored by spicules; its maximum diameter about ·884 millim.	Size ·0887 by ·00211 millim.
C. armigera, var. *pergamentacea* (Atlantic, off East Brazil).	Suberect, unbranched; surface smooth, only rendered uneven by the two series of vents, 2 to 3 millims. in diameter.	Stoutest fibre sometimes cored, axially, by spicules; maximum diameter ·14 millim.	Size ·076 by ·001267 millim.

Order Echinonemata, Carter.

Phakellia egregia, sp. n. (Plate X. fig. 6.)

Form erect, stipitate, ramose; bases of branches flattened, ends rounded. Surface hirsute, owing to freedom of echinating columns from the axial skeleton for from ·7 to 1·25 millim. of their length. Colour (in spirit) yellowish white. Skeleton-axis typically Axinellid, diameter about the same as the length of an echinating column; longitudinal lines from ·18 to ·25 millim. apart, multispicular, compact. Echinating columns very distinct, connected with each other for about one third of their length by horizontal bars of single spicules, and strongly echinated from their bases upwards. Parenchyma very pale yellow, slightly granular.

Skeleton-spicules of four kinds, viz.:—(1) Setaceous acuate, smooth, slightly curved, tapering to sharp point, very frequently swollen near its base, size 1·207 by ·01268 millim., springing from axis and lying between echinating columns. (2) Stouter, smooth, slightly curved acuate, tapering to less sharp point, size either ·8875 by ·019 millim. from within echinating columns, or ·38 by ·07416 when echinating the columns. (3) Smooth acuate, sharply bent at about one fourth of its length from the base, tapering to sharp point, size ·2534 by ·0095 millim., forming the bulk of the echinating and axial meshwork spicules. (4) Smooth acerate, sharply bent, tapering to sharp points, size ·304 by ·01267 millim., forming part of the horizontal or cross series of spicules, which lie between the echinating columns and between the axial columns, not abundant. No flesh-spicules.

Examined. In spirit and by mounting in balsam.

External Characters. It is about 65 millims. high, and has a short pedicel rising from a slight basal expansion. The branches lie approximately in one plane. It is firm in texture, owing to its well-developed axis. The sarcode invests all but from ·5 to ·8 millim. of the ends of the echinating columns. No oscula or pores were made out. *Skeleton* very regular. The echinating spicules project in great numbers from the columns at the usual acute angle. *Spicules.* The thick long acuates apparently form the backbone of the echinating columns, though they are not always to be made out: the shorter ones, of nearly the same breadth, occur in small numbers among the smaller echinating spicules. The small number of acerates present may be due to the youth of the specimen; they are to be made

out, however, in almost every piece examined, and are well preserved and constant in their positions.

Hab. Sandy Point, 7–10 fathoms (on a piece of shell).

This specimen is finely preserved and is probably young.

Obs. The formation of the axial network mainly by short acuate spicules, and echination of the axial column by isolated long acuates in addition to the diverging columns, distinguish, at any rate by the perfection to which they are here carried out, this species from all the species which have been assigned to either of the closely allied genera *Phakellia* and *Dictyocylindrus*. The absence of cylindrical spicules differentiates it from *P. ventilabrum* and *P. folium*, Sdt., but can hardly be said to ally it very closely to the other two species, *P. robusta* and *P. tenax*, which are similarly circumstanced; for in the one the long isolated acuates are wanting, and in the other a small *spined* cylindrical echinates the fibres. The long acuate occurs, however, in many other Axinellida. Probably *Axinella cinnamomea*, Sdt., from the Adriatic and Algiers, is the species most closely allied to ours, of known forms—though the short acuate is scarcely bent at all as it is here, and it wants the very stout long and short acuates which seem to connect this species with the Atlantic species *A. mastophora*, where these assume such a striking size.

Some of the chief differences between *P. cinnamomea*, Sdt., and this Sponge may be thus stated:—

	Acerate Spicules.	*Shorter Slender Acuate.*	*Stout Acuate.*
Axinella cinnamomea, Sdt. (Adriatic and Algiers).	Sharply bent, tapering gradually. Size ·444 by ·01267 millim.	Very scarce; possibly not proper to sponge; slightly bent. Size ·2837 to ·3863 by ·01086 to ·01267 millim.	Wanting.
Phakellia egregia (Straits of Magellan).	As in preceding. Size ·304 by ·01267 mm.	Very abundant; sharply bent. Size ·2534 by ·0095 millim.	Two sizes occur.

Order Holorrhaphidota, Carter.

Ciocalypta calva, sp. n. (Plate X. fig. 7.)

Massive. Surface smooth. Structure of Sponge cavernous. Colour whitish. Skeleton of widely separate spiculo-fibres rising from base, where they are contorted and form a layer. Fibres stout, flattened, multispicular, spicules parallel in them; at base containing a margin of sarcode of one fourth of diameter of fibre, superiorly becoming approximately Holorrhaphidote; beginning to branch and anastomose about halfway between base and dermis, ending in dermal membrane in tufts of slightly diverging spicules, which spread on the membrane without meeting neighbouring tufts. Dermis otherwise naked, subopaque, thin, fragile. Skeleton-spicule acuate, slightly bent, tapering from head to a sharp point, size ·577 by ·01267 millim. No flesh-spicule.

Examined. In spirit and by mounting in balsam.

External Characters. Sessile, forming a beehive-shaped mass about 18 millims. deep by about 50 millims. long and 36 broad, growing on the surface of a large flexible worm-tube. Surface curved both actually and relatively to its base, so that the thickness of the Sponge at the edges is almost nil. Surface slightly irregular, owing to depressions between the ends of the skeleton-fibres, covered externally by a dirty-white dermis of the same colour as the fibres. Surface of dermis smooth.

Vents? *Pores* apparently represented by oval openings, from ·633 to ·16 millim. in diameter, occurring in groups.

Fibre resembling that of *Desmacidon fruticosum*, Johnston, in amount of soft material, except at base, where the spicules lying in the centre occupy only about half the diameter of the fibre, and give it a strongly Chalinoid appearance. Spicules lying parallel in the fibre, projecting from it only at the dermis. Soft material of fibre granular, yellowish, subopaque, not resembling ordinary horny fibre. Number of spicules in diameter of fibre varies from about 15 millims. in larger to 3 or 4 in small lateral fibres.

Parenchyma. Yellowish white, granular, adhering to fibres.

Dermal Membrane. Yellowish white, granular, in some parts possessing muscular or other fibres, apparently arising from beneath it.

Skeleton-spicule. Of one kind, acuate, slightly bent, tapering gradually from a well-rounded head to a sharp point. Size ·577 by ·01267 millim.

Flesh-spicule. None.

Hab. Sandy Point, 7-10 fathoms ; on large worm-tube.

Obs. The strongly ceratinous character of the base of the fibres, the absence of fistulæ, and the absence of dense spicular axes from which the fibres should radiate, all tend at first sight to separate this species from the genus *Ciocalypta*, and, in fact, exclude it from that genus, if we limit it to forms included by Dr. Bowerbank's diagnosis ; but the general structure of the fibre and the mode of termination of its outer extremity, together with the general agreement in the form of the spicules, ally it too closely to *C. penicillus* and *C. leei* to allow of a distinct generic appellation at this time, especially as the method of growth suggests that it may be merely a young or sessile form of a species closely allied to *C. leei*. The proportions of the skeleton-acuates are :—

C. penicillus,	Bowerbank.	Britain.	·6035	by ·02058	millim.
C. leei,	Bowerbank.	Britain.	·57	„ ·019	„
C. calva,		Magellan.	·577	„ ·01267	„

C. tuberculata[1], Carter, is closely allied to these, but has a skeleton-spicule ·023223 millim. in diameter.

The specimen is remarkable for containing in its dermis a number of spicules belonging to *Esperia magellanica*[2].

[1] Ann. & Mag. Nat. Hist. ser. 4, xviii. p. 235.
[2] *Cf.* Journ. Linn. Soc. (Zool.), xv. p. 149.

ESPERIA MAGELLANICA, sp. n. (Plate X. fig. 5.)

Massive, subcylindrical. Surface and interior coloured by cells containing a dark pigment. Dermis fragile, with a coarse skeletal network. Main skeleton composed of a central irregular compact meshwork, which sends ramifying and anastomosing fibres to the dermis. Fibres of main and dermal skeleton stout, composed of parallel spicula with a minimum of sarcode. Skeleton-spicules of one form only, viz. spinulate, with a very slightly marked oval head; length ·4615 to ·544 millim., breadth ·01267 millim. Parenchyma pale yellow to ochreous brown when dry, dirty white in spirit. Flesh-spicules of two forms, viz.:—(i.) inequianchorate with the large palm about $\frac{6}{13}$ of the total length of the spicule, and its lower angles turned upwards and inwards, length ·0444 to ·05384 millim., scattered; and (ii.) minute acerate, generally in bundles of two to four, sharply pointed, length ·0444 to ·0634, breadth about ·001055 millim., scarce.

Examined. In spirit, in dried state, and mounted in balsam.

External Characters[1]. Form irregularly cylindrical, rounded off rapidly below to a narrow base of attachment, and provided above with a slight neck at about 30 millims. from the superior extremity, where it is also rounded off. Below the neck the greatest diameter is about 60 millims., above it about 45 millims.; total length 120 millims. Colour in life very variable, yellow or green; in spirit grey, or dirty-white (in the dried specimens ranging from yellowish white to an ochreous brown). Surface entirely covered with mammiform papillæ, from 3 to 6 millims. in greatest diameter, often coalescing into ridges; provided at the superior extremity with two circular vent-openings, respectively 7 and 8 millims. in diameter, probably much larger in life. Texture delicate, very readily compressible. *Pores?*

Minute Structure of Surface. Surface covered by a fragile dermis, of the thickness and texture (when wet) of blotting-paper, composed of a single layer of more or less loose spiculo-fibre, with polygonal meshes from ·25 to ·5 millim. in diameter, tympanized by a very pale brown sarcode more or less interspersed with loose spicules and greenish-brown granular cells, sometimes having the centre occupied by a dark patch of pigment.

The minute acerates occur in bundles of two to four, occasionally scattered; they are straight and sharply pointed at both ends. They are found at the sides of the dermal and main skeleton-fibres. They are of scarce occurrence; and for that reason and from the need of an exceptionally good light for finding them, they constitute an inconvenient character for reference. Probably they invariably occur in the place of tricurvates in *Esperia*, where these are absent.

Hab. Sandy Point, 7–10 fathoms; bottom, dead *Balani*, some of which are still, together with a good-sized *Terebratula*, embedded in its base.

Seven dry specimens from Otter Island, Patagonia, representing

[1] These refer to the spirit specimen, except where otherwise stated.

three specimens, were already in the Museum collection, and are evidently pieces of those mentioned by Dr. Cunningham at p. 481 of his 'Notes on the Natural History of the Strait of Magellan.' The following are their chief characters, arranged for comparison with those of the type specimen. It cannot, unfortunately, be determined *which* pieces formed part of the same original specimens:—

	Subspinulate spicule.	Inequianchorate spicule.	Bundles of Acerates.	Other characters.
No. 1	Shape as in type; ·497 mm. long by ·01267.	Shape as in type; ·04434 mm. long.	Scarce; ·057 mm. long.	Surface *ridged* rather than papillose.
No. 2	Ditto	Shape as in type; ·05384 mm. long.	(Curved, very scarce; ·07842 mm. long?)	Surface do.
No. 3	Ditto	Shape as in type; ·04434 mm. long.	?	Surface do.; vents?
No. 4	Shape as in type; ·4615 mm. by ·01267.	Shape as in type; ·05067 mm. long.	Very scarce, generally scattered; ·06334 mm. long.	Surface papillose in one part, ridged in another.
No. 5 (most of surface gone).	As in No. 1	As in No. 1 ...	Very scarce; ·042339 mm. long.	Surface the same; a large internal cavity. Apparently 2 vents.
No. 6	Shape as in type; ·488 mm. by ·01267.	Shape as in type; ·047506 mm. long.	Very scarce; ·044339 mm. long.	Surface ridged. Vents 3?
No. 7	As in No. 1	Shape as in type; ·05067 mm. long.	Ditto.	Surface ridged and papillose. Vents 2?
Type specimen from Sandy Pt.	·544 by ·01267 mm.	·0475 mm. long.	Scarce; ·057 mm. long.	Surface mostly papillose. Vents 2.

All possess an abundance of the characteristic dark pigment, but concentrated at the centres of well-defined cells, whereas in the spirit specimen from Magellan's Straits it is generally, though not always, scattered over the cells.

It is very probable that the wrinkled or ridged character presented by the dermis of most of the dried specimens is due to the fact of their having been dried. In all cases except that of the extraordinarily broad specimen No. 6, the external characters of shape, surface-reticulation, and colour agree very closely in all the dried specimens, and must be almost, if not quite, identical with those which would be presented by the spirit specimen if it were dried.

Obs. This Sponge belongs to the section of *Esperia* which is devoid of bihamate flesh-spicules. It is to be wished that a distinct genus were formed for the reception of the numerous forms which belong to it. Possibly *Rhaphidotheca*, Kent, may ultimately be found to satisfy the requirements of the case (*cf.* Mr. Carter's remarks in the Journ. Roy. Micr. Soc. ii. p. 498); but until the questions which are suggested by the description of the type species

of that genus are settled, it will be well to adhere to the more comprehensive term *Esperia* for these forms.

The nearest allies of this Sponge, of which intelligible descriptions or specimens are available, appear to be:—

	Spinulate spicule.	*Inequianchorate.*	*Acerates.*
Esperia nodosa, Schmidt, Adr. Meer. Suppl. i. p. 33 (Adriatic).	·4117 by ·011085 mm.	·0577 mm.	·057 mm.
E. bowerbanki, id. Adr. Meer. p. 55 (Adriatic)...	About same as preceding.	·06334 mm.	Ditto.
E. tunicata, id. ibid. (Adriatic)	·399 by ·0095 mm.	·05384 mm.	·0475 mm.

E. rhopalophora and *E. intermedia*, Schmidt, from the North Atlantic, may perhaps prove, when more fully described, to come near this species. *Rhaphidotheca affinis*, Carter, from off the north of Scotland, differs but slightly from it in the forms of its spicules; but their sizes are greater.

For details of appearance in life see Dr. Cunningham's work on the Straits of Magellan above mentioned.

ALEBION PROXIMUM, sp. n. (Plate X. fig. 8.)

Incrusting. Surface covered with numerous narrow convolutions, and minutely roughened; vents scattered, ·2 to ·3 millim. in diameter. Colour dark brown. Main skeleton composed of primary columns of spiculo-fibre running from base towards surface; fibres 5 to 6 spicules thick, crossed by secondary bars approximately at right angles, bars 2 to 5 spicules thick. Dermal skeleton a regular polygonal network of spiculo-fibre, 1 to 5 spicules thick, beneath which lie irregular tracts of cylindrical spicules. Spicules united in fibres by a minimum of sarcode. Parenchyma very granular, reddish brown. Skeleton-spicules of two kinds:—(i) acuate, covered from base to apex with short spines, tapering from within about 5 diameters of apex to a sharp point, size ·15835 by ·0095 millim., in main and dermal skeleton; (ii) cylindrical, tapering from middle to a neck, terminated by a distinctly spined head, at each end, size ·15835 by ·0079 millim., in subdermal tracts. Flesh-spicules of two kinds:—(i) inequianchorate, upper palm conical in outline, inferior edges angulated, shaft slender, lower palm small, triangular, terminated by a sharp point, length ·02534 millim., scattered; (ii.) bipocillate, exactly similar to that of the British species *Halichondria hyndmani*, Bowerbank, size ·01056 millim. broad (from back of shaft to front of the curves), scattered.

Examined. In spirit and by mounting in balsam.

External Characters. This species is represented by a specimen coating one valve of a *Pecten*. It resembles *Halichondria hyndmani* and other nearly allied British forms in its corrugated surface. At the centre of the shell it is merely a brown film. The convolutions are sometimes substellately arranged, and may be as much as

2 millims. in height. *Pores*? *Vents* distant from each other by 2 to 7 diameters. Texture fragile.

Skeleton appears somewhat confused in transverse sections; but this is partly due to the opacity of the sarcode, which conceals in part the relations of the fibres. Spicules aggregated loosely in fibres. The colour of the *parenchyma* resembles that of most *Microcionæ* and most of the British *Halichondriæ* (Bowerbank) which are related to this species.

Skeleton-spicules. The heads of the cylindricals are well marked, being nearly as broad as the maximum diameter of the shaft; their external halves are covered with small but distinct spines. The whole spicule presents an exaggerated form of the corresponding type in *H. pattersoni*, *H. hyndmani*, and *H. ingalli* (in which species its head is faintly microspined). *Flesh-spicules*. The inequianchorate is of the same form, down to the inferior spine of the small palm, as in the above-named species, as is the bipocillate ("bipocillated anchorate" of Bowerbank, "grotesque spicule" of Carter). The latter, which was very seldom found in the microscopic mountings, is decidedly larger than in any of the British allied species. For further relations to these forms, see table of comparison (*infrà*) with the *type* specimens of Bowerbank's species.

Hab. Sandy Point, 7–10 fathoms (on a *Pecten*).

Spicules—Characters and Proportions.

	Spined Acuate.	Cylindrical.	Inequi-anchorate.	Bipocillate.
Alebion proximum (Straits of Magellan).	Slightly spined all over; tapering from near apex; ·15835 by ·0095 mm.	With distinct heads; ·15835 by ·0079 mm.	As in British species. ·025337mm. long.	As in British species. ·01056 mm. broad.
A. (*Halichondria*) *pattersoni*, Bowk. (Britain).	Slightly spined all over; tapering from near middle; ·23436 by ·010537.	Heads scarcely distinguishable from shaft; ·247 by ·006334.	·025337 long.	About ·008 mm. broad.
A. (*H.*) *hyndmani*, Bowk. (Britain).	Spines mostly near base; tapering from middle; ·228 by ·0095.	Very slight, faintly spined heads; ·19636 by ·038.	·02275 long.	·008445 mm. broad.
A. (*H.*) *ingalli*, Bowk. (Britain).	Spines mostly near base; tapering from middle; ·152 by ·006334.	Heads less visible and less spined than in preceding; ·1457 by ·02534.	·01583 long.	·008445 mm. broad.

Alebion, Gray (P. Z. S. 1867, p. 534) seems to be the only genus at all correctly defined, of the four in which he has placed these and the allied species; the character of "branching" should, however, be omitted from it.

Probably *Myxilla rubiginosa*, Sdt., from the Adriatic, is allied to these forms; but Schmidt does not mention any minute flesh-spicules from it.

HYMEDESMIA POLITA, sp. n. (Plate X. fig. 9.)

Incrusting, thin. Surface glabrous, with minute scattered points, dark umber-brown. Vents chiefly grouped two or three together, minute. Pores scattered. Main skeleton of short primary spicular columns extending directly from base to surface, which break into a slight brush just below surface, and slightly project from it; bases surrounded by groups of small spined acuate spicules. Dermal skeleton of a thin loose spiculo-fibre connecting the primary columns. Sarcode reddish brown. Main skeleton-spicules of two kinds:— (i) Spined acuate, spines reaching to within one fourth of length of the sharp apex, most strongly developed at base, size ·25337 by ·00887 millim.; (ii) smooth acuates tapering from head almost to the apex, which is abruptly pointed, size ·2407 by ·0038 millim. Dermal skeleton-spicules same as latter. The small spined acuates are entirely spined, size ·10135 by ·006334 millim. Flesh-spicules confined to dermis, of one kind, viz. equianchorates in rosette-like groups, shaft slender, front palms entire, with a straight lower edge, tubercle prominent, length ·01267 millim.

Examined. In spirit and by mounting in balsam.

In *external characters* the single specimen is incrusting, very thin (about ·6 millim. greatest thickness); surface slightly uneven, glabrous, minutely punctate. Colour very dark umber-brown in spirit. *Vents* chiefly in groups of 2 or 3, oval or circular, opening obliquely to surface; diameter about ·25 millim. *Pores* oval, scattered, numerous, about ·07 millim. in greatest diameter.

Skeleton. No distinct basal membrane. Some lines of fine long acuates lie at the base. A set of distinct primary spicular bundles spring from the base at from ·18 to ·36 millim. apart; their bases are surrounded by groups of spined acuate spicules; they proceed to surface approximately at right angles to it; and their spicules diverge laterally, echinating the fibre until just below the surface, where they diverge slightly; the apices of the terminal spicules project beyond the surface slightly.

Dermis. Lines of fine long subparallel acuate spicules extend between the apices of the primary skeleton-columns, diverging from one another where the lines are bent.

Hab. On a *Balanus* sessile on large worm-tube. Sandy Point, 7–10 fathoms.

Obs. It approaches *Microciona tuberosa*, Bowerbank, from the Straits of Malacca, very closely in spiculation and some other characters.

	Microciona tuberosa, Bowk. (Straits of Malacca.)	*Hymedesmia polita.* (Magellan.)
1. *Slender Acuate Spicule.*	Sometimes basally microspined very slightly. Length ·285 mm.; breadth ·00475.	Always smooth. Length ·2407 mm.; breadth ·0038.
2. *Stout Long Acuate.*	Only slightly uneven at base. Length ·2487 mm.; breadth ·095.	Spined for at least half of length. Length ·25337 mm.; breadth ·00887.

	Microciona tuberosa, Bowk. (Straits of Malacca.)	*Hymedesmia polita*. (Magellan.)
3. *Small Spined Acuate.*	Spined all over. Length ·1077 mm.; breadth ·0079.	Spined all over. Length ·10135 mm.; breadth ·006334.
4. *Equianchorate.*	Same characters in both.	
Habit	Very thinly incrusting ?, sending out at intervals echinated columns about ·34 mm. long.	Incrusting. Echinating columns buried in sarcode, with the exception of terminal spicule-points.
Dermis	Externally echinated by small spined acuates; sarcode dark, not constantly spicular.	Smooth, except at points of projection of skeleton-bundles; slightly but constantly spicular.
Sarcode	Granular, reddish brown.	Granular, reddish brown.

This appears to be its nearest described ally; but it is placed with *Hymedesmia* provisionally (in spite of its wanting the bihamate spicule found in the type, *H. zetlandica*) in preference to *Myxilla* and *Microciona*, owing to its fundamental divergence in spiculation from the type species of those genera.

(*Note*. Any discrepancies between this account of *M. tuberosa* and that given by Dr. Bowerbank in his description in Proc. Zool. Soc. 1875, p. 281, are justified by an examination of the type specimen. The "somewhat complicated rete," said to be formed by the "skeleton-columns" (*l. c.*) appears to be not due to the sponge-skeleton, but to an anastomosing mass of tubes formed probably by an arenaceous foraminifer; for the axis of the "columns" is, as a rule, not spicular, but formed of minute grains of sand.)

Trachytedania [1], n. gen.

Sponge. Main skeleton composed of vertical inferiorly distinct spiculo-fibres, terminating on surface in radiating brushes; spicula siliceous, united by a minimum of sarcode, lying parallel in fibre, of three forms, viz. spined acuate, smooth acuate, terminally or subterminally inflated cylindricals. Flesh-spicules siliceous, slender, acerate. Sarcode pale-coloured. A basal lamina of spicules may be present.

This genus is based on the new species *T. spinata*. It differs from all the known species of *Tedania*, Gray, in having three kinds of skeleton-spicules, one of them being spined; that genus, however, seems to be the nearest genus at present defined.

Trachytedania spinata, sp. n. (Plate X. fig. 10.)

Incrusting, laminar. Surface level, glabrous; under lens seen to be minutely but thickly pitted. Colour yellowish white. Vents? Pores? Main skeleton a series of independent, approximately vertical spiculo-fibres, about 3 to 6 spicules thick, rising from a basal lamina of fine cylindrical spicules, and deflected laterally at surface, there breaking up into a horizontal brush of somewhat radiating cylin-

[1] From τραχὺς, rough, in allusion to the *spined* basal spicules, and *Tedania*, the name of the allied genus.

drical spicules, which, with loose ones of the same kind, form the dermal skeleton by the crossing of their ends. Main fibre, spicules united somewhat loosely. Parenchyma compact, almost perfectly colourless and transparent. Skeleton-spicules of three kinds, viz.:— (i) acuate, covered with sparse, short spines for about 4 diameters, from base, tapering to point gradually, size ·1647 by ·006334 millim., forming basal portion of vertical fibres; (ii) acuate, smooth, head almost pointed, apex generally somewhat abruptly pointed, size ·196 by 006334 millim., forming median portion of vertical fibre; (iii) cylindrical, smooth, of mainly uniform diameter throughout up to the heads, which are slightly swollen, and then end in more or less sharp hastate points, size ·1774 to ·18736 by ·0038 millim., forming basal and dermal skeleton and summit of vertical fibres. Flesh-spicules, besides the last-named, fine acuates, very slightly blunted at base, tapering to very fine apex; size ·152 by ·0009 millim.; scattered universally through sarcode.

Examined. In spirit and by mounting in balsam.

External Characters. The single specimen, which is extremely well preserved, coats the valves of a *Pecten*, which was alive when taken. It forms a thin film, varying in thickness from about ·70 millim. to tissue-paper thickness. It fills up the depressions between the ribs, and thus presents a very smooth rounded contour; but the lens shows that it is covered with minute points and shallow pits, the former probably representing the terminations of the primary skeleton-columns. *Vents* are possibly represented by two or three irregular depressions or openings, ·25 to ·5 millim. in diameter, near the thickest part of the sponge. *Pores* not found.

The *skeleton* is simple in structure, and represents the type assigned to *Hymedesmia* by Dr. Bowerbank. The basal lamina is composed of loosely aggregated spicules, about 3 or 4 spicules thick. The composite structure of the vertical fibre is remarkable, and well adapted to secure, by the spination of the basal spicules, solidity of rooting, and, by its shading off into less stout spicules above, pliability. No special cementing sarcode is apparent. The structure of the dermal skeleton is essentially that of the *Tedaniæ*, though its connexion with the main skeleton is more marked than is usual in that genus. The parenchyma is slightly yellow, but in the almost entire absence of colour and of opacity resembles that of the Renieridæ in general. The two larger *skeleton-spicules* (acuates) are probably varieties of one original type; from its position, at the base of the columns with the roughened end downwards, the spined acuate is perhaps developed to suit the incrusting form of the Sponge; otherwise it differs from the smooth form mainly in being slightly shorter. The cylindricals are really sharply pointed; but the penultimate swelling is generally discernible, and sometimes gives a fine spear-head outline to the head; they seem to be a further development of the typical cylindrical form in the same direction as that shown by *Tedania tenuicapitata* (sp. n.).

Hab. Portland Bay, Chili (opposite the chief island of Madre-de-Dios Archipelago), 10 fathoms. On both valves of small *Pecten*.

TEDANIA TENUICAPITATA, sp. n. (Plate XI. fig. 1.)

Massive, almost white. Surface bearing scattered shallow pits from about ·17 to 1 millim. in diameter. Texture very soft and fragile. Vents small, scattered. Pores scattered. Main skeleton a very loose network of spicules, with triangular to polygonal meshes, extending from base to surface, crossed at nodes by spiculo-fibres lying parallel to surface; sides of meshes formed by groups of 2 to 5 acuate spicules (sometimes of cylindrical spicules in whole or in part), scarcely touching. Dermal skeleton composed of sheaves of 20 or more cylindrical spicules, closely aggregated at one end, and radiating outwards with the other over the surface. Parenchyma very pale yellow to colourless, finely granular. Skeleton-spicules of two kinds, viz.:—(i) smooth curved acuate, tapering to a sharp point from a distance of about 6 diameters from the point, size ·38 by ·01267 millim.; and (ii) cylindrical, double-headed, smooth, heads about one third as broad again as shaft, and oval, drawn out to a point, occurring in main skeleton, and alone forming dermal skeleton, size ·2787 by ·006334 millim. Flesh-spicules acerate, tapering from centre to very fine points, roughened almost imperceptibly on surface, one end slightly the stouter, scattered, size ·316 by ·0021114 millim.

Examined. In spirit, and by mounting in balsam.

External Characters. The single specimen forms a small subpyramidal mass, whose four uninjured faces form rounded angles of about 120° with one another. It appears to have been broken from a mass sessile by a broad triangular base. Among the numerous small pits of the surface, in which many of the pores are collected, and between which the Sponge forms insignificant ridges, are distributed the five *vents* which are still left. Three of these are close to the apex; they open on the surface level, and penetrate straight into the Sponge to a depth of 3 to 8 millims., where they suddenly terminate; they are oval, and 1·5 to 2 millims. in diameter. The *pores* lie on the ridges and in the small surface-pits.

The *main skeleton* is very vague, the spicules of the fibre being hardly in contact; it consists generally of the stout acuates; but sometimes groups of 6 to 10 cylindricals take their places, or they are mixed with a few of these; a horizontal network of stout acuates occurs throughout, but is especially developed just below the dermis. The *dermal-skeleton* bundles appear to radiate from certain centres with more or less regularity.

The *parenchyma* is very transparent, and is sufficiently well preserved to show, in Canada balsam, numerous round nuclei, of about ·0095 millim. diameter, transparent, and nucleolated.

The cylindrical spicule differs from that of all hitherto recognized species of the genus in being terminally pointed; the heads are very slightly marked and suboval in outline, and are not microspined as in the Mediterranean and Malacca species already known. The fine acerate has, as in other species, one end stouter than the other, though very slightly so: the roughening of the surface is often imperceptible; it takes the form, as far as can be made out, of subspiral scratches.

Hab. Trinidad Channel, near Madre-de-Dios Islands, off S.W. Patagonia, 30 fathoms.

Obs. The two already described species, *Halichondria aspera* and *Isodictya rudis*, Bowerbank, both from the Straits of Malacca, possibly merely varieties of one species, together with *Tedania suctoria*, Schmidt, from Iceland, resemble our species in important points. It is also noteworthy that Schmidt refers (Spong. atl. Geb. p. 43) to a shapeless white specimen of a *Tedania* from Rio de Janeiro, to which he gives no name. Looking at the locality and at this description, one would not be surprised to find that it proved to be our species.

The two Malacca species have a most interesting relation to the rest; for with the terminally microspined heads of the cylindrical spicule, characteristic of the Mediterranean *Tedaniæ*, they combine a very marked *roughening* of the fine acerate—an irregularity of the surface which is only possible to make out, in the case of *T. tenuicapitata*, with very good light, and then not always, and which is, so far as I am aware, peculiar to the acerates of this genus, being wholly distinct from spination or "microspination."

Tedania suctoria, Schmidt, has cylindricals with two smooth heads, as in our species; but they are not terminally pointed as here. It is probably the most nearly allied of described species. Its spicule-characters, for comparison with those of *T. tenuicapitata*, are:—

	T. suctoria. (Iceland.)	*T. tenuicapitata.* (S.W. Chili.)
Smooth Acuate Spicule.	tapering very gradually from head. Size ·5325 by ·01583 mm.	Beginning to taper about 6 diam. from end. Size ·38 by ·01267 mm.
Cylindrical Bicapitate..	Heads oval, rounded off terminally. Size ·3357 to ·38 by 008445 mm.	Heads slightly oval, pointed. Size ·2787 by ·006334 mm.
Fine Acerate	Surface-roughness generally perceptible. Size ·2924 by ·00285 mm.	Surface-roughness rarely perceptible with certainty. Size ·316 by ·002114 mm.
Skeleton	Main-skeleton fibres more compact. Dermal cylindricals radiate more regularly; bundles larger and less distinct than in the other species.	Skeleton-fibres as loose as possible. Dermal cylindricals in distinct bundles, radiating each from a separate point.

AMORPHINA sp. inc.

A minute, thin, incrusting patch on the worm-tube which bore *Alebion proximum*. It is white; and the sarcode is granular, but almost colourless; the spicules are smooth, sharply bent acerates, ending rather abruptly in points, and resembling those of *A. genetrix*, Schmidt, but far smaller, and massed in flattened tracts.

Hab. Sandy Point, 7–10 fathoms.

RENIERA FORTIOR, Schmidt? (Plate XI. fig. 3.)

Reniera fortior? O. Schmidt, Spong. atl. Geb. p. 40.

A poorly preserved spirit-specimen, which has lost most of the dermal membrane and much of the internal sarcode.

Examined. In spirit and by mounting in balsam.

External Characters. Form massive, irregular, subglobose, attached by a short pedicel about one fourth as broad as the greatest diameter of the Sponge. Texture very elastic. Colour semitransparent dirty white; surface in present state chiefly regularly and minutely hirsute.

Minute Surface-characters. Where the dermal membrane is present, this consists of a very thin brownish-yellow lamina, resting on the ends of the primary skeleton-columns, and formed by a skeleton network of 1- to 2-serial lines of fine acerate spicules, lying in a fine fibre, with meshes of $1\frac{1}{2}$ to 2 spicules' lengths in width, crossing each other at acute angles, the intervals being more or less occupied by fine and stouter acerates lying in the almost transparent, slightly granular sarcode which fills them. Where this membrane is absent, the ends of the skeleton-columns project as fine pencils.

Vents? apparently represented by 4 or 5 roundish apertures, of about 1 millim. diameter each, situated on a somewhat concave lateral surface; they appear to lead directly inwards.

Pores? apparently scattered or aggregated in twos, oval; largest diameter ·045 millim.

Main Skeleton. Composed, in the older parts, of Chalinoid fibre, containing only about half its bulk of horny matter; in the younger parts a margin of this material is but rarely seen to surround the spicular axis; possibly this is partly due to imperfect preservation. Colour absent, or of the faintish possible tinge of yellow. Primary fibres contain a 2- to 4-, generally 3-serial axis of moderately stout, short acerate spicula; they run from the centre to the surface, meeting the latter approximately at right angles, and are distant from each other by 2 to 4 spicule-lengths. Secondary fibres at right angles to the primaries, usually composed of a double series of identical spicules; occur at intervals of 2 to 3 spicule-lengths.

Skeleton-spicules. Of one form—short stout acerate, slightly and gradually bent, or with a slight angle, tapering gradually to the points; size ·13935 millim. long by ·0094 broad.

Flesh- and Dermal Spicules. Of one form—short slender acerate, slightly and gradually bent, tapering gradually to points; size of average largest ·10135 millim. long by ·0038 broad, in the case of the dermal, ·1077 long by ·006334 broad, in the case of the flesh-spicules, which latter are probably merely young skeleton-forms.

Hab. Elizabeth Island, Straits of Magellan (eastern portion), sandy bottom, 6 fathoms.

Chalina granti, Bowerbank, strongly resembles this Sponge in its chief essential characters; the main differences between the two are those of *degree* rather than of *kind*. Thus the skeleton-spicule measures ·133 by ·01056 millim., and is of the same type of acerate, though, as the measurements show, it is, although shorter, actually

as well as relatively stouter than in our Sponge. Outward form branching and fan-shaped. Its primary-skeleton fibres are far nearer together than here; in composition they are 1- to 2-spicular in some parts, 2- to 3-spicular in others, while 2 to 3, occasionally 4, is the proportion in the present species. The proportion of horny matter in the fibre is generally, as here, only just sufficient to bind the spicules into a pliable fibre.

The chief differences are shown in tabular form:—

	Chalinula granti, Bowerbank. (S. of England.)	*Reniera fortior*, Schmidt. (Antilles.)	*Reniera fortior*, Schmidt. (Magellan.)
Skeleton-spicule	·133 mm. by ·01056 mm.	·13788 mm. long.	·13935 mm. by ·0094 mm.
Composition of primary fibre ...	1 to 3 spicules broad.		2 to 3 (occasionally 4) spicules broad.
,, ,, secondary fibre..	1 spicule broad.		1 to 2 spicules broad.
Average maximum distance between primary fibres	·142 mm.		·284 mm.
External habit	Of irregularly shaped anastomosing branches, subsessile.	Amorphous.	Erect, subglobose.

R. fortior is only known to me by its *description*, as the Museum possesses no specimen of it.

SCHMIDTIA AULOPORA, Schmidt, var.

Schmidtia aulopora, Schmidt, Spong. atl. Geb. p. 44, pl. v. fig. 8.
Thalysias subtriangularis, Duchassaing de Fontbressin et Michelotti ?, Spong. mer Caraïb. p. 85, pl. i. fig. C., pl. xviii. fig. 1.
Isodictya mirabilis, Bowerbank ?, P. Z. S. 1873, p. 319, pl. xxviii.

External Characters. A single fistula, about 40 millims. long and 19 broad at the broken base, and 12 broad at the vent-opening. It has evidently been torn off from a larger specimen, as the oblique fracture of the base of the tube shows. The walls are thickest at the base, viz. about 7 millims., and taper gradually up to the edge of the mouth, where they are of the thickness of cardboard. The whole tube tapers in breadth from base to mouth; but the internal diameter remains the same throughout. It presents a slight constriction or neck about 7 millims. below the mouth, below which point it has obscure longitudinal ridges, which become more marked as they approach the base, and are there accompanied by slight papillary eminences. Besides the large mouth or *vent*, there is a lateral opening, about 3 millims. in diameter, leading upwards into the cavity of the tube. The colour is a dark brown throughout. The surface is regularly covered with minute points, between which lie the *pores*. Texture subelastic; the *interior* of tube has a honeycombed

surface, the openings being those of the excretory canals. *Main skeleton* of spiculo-fibre, the spicules united by a minimum of sarcode, consisting of a primary set of fibres, from 6 to 10 spicules thick, at right angles to the surface, from which they project (multiplying as they approach the surface by *branching*), connected by a secondary set at right angles to them, containing usually from three to four spicules in their diameter, and by an irregular network of single spicules or bispicular fibre, crossing the interspaces at various angles.

Dermal Skeleton. An irregular reticulation, 1 to 6 spicules thick, lying between the points of the primary-skeleton fibres in superficial pigmented layer. *Parenchyma* semiopaque, muddy-brown in colour. *Spicules*—but one form for all parts, viz. a smooth acerate, slightly bent at the middle, ending rather gradually; size ·17736 by ·00887 millim. *Embryos*, apparently in the *planula* stage, lie embedded near the interior surface of the Sponge; they are oval; the greatest diameter varies from ·24 to ·43 millim. In one place a dense mass of about 15 occurred. As the specimen was taken on March 3rd, 1879, the sexual period is hereby fixed.

Examined. In spirit, and by mounting in balsam.

Hab. Trinidad Channel, Chili (just north of chief island of Madre-de-Dios archipelago), 30 fathoms.

Obs. The specimen differs somewhat from the original specimens of the species, though hardly enough for it to form a new species. The chief differences are here tabulated:—

	External Characters.	*Skeleton.*	*Spicules.*
S. aulopora, West-Indian specimens (*Schmidt*).	Massive, suberect; vents along edge of column, in distinct tubes. Yellowish in dry state.	Primary[1] lines project slightly from surface; spicules 6- to 12-serial in them; secondary lines 5- to 7-serial.	Acerate, slightly bent at middle, tapering slowly off to points. Size ·165 by ·00792 mm.
S. aulopora, var., S.W. Chili.	Massive; vents on distinct tube or tubes. Dull brown in spirit.	Primary lines project considerably from surface; spicules 6- to 10-serial; secondary lines 3- to 9-serial.	As in preceding. Size ·17736 by ·00887 mm.

The probable type specimen of *Isodictya mirabilis*, Bowerbank, from the "East Indies," has spicules measuring ·1771 by ·0079 millim., and agrees well (apart from the presence of the polyp-cells) with Schmidt's species in external characters, although the tendency of the vents to become elevated on separate tubes towards the base is but slightly marked. If the locality for that species is correct, the distribution is a very wide one—assuming the identity of the

[1] It should be noted that the specimen from which the character was taken was probably dried before being mounted; therefore the ends of the fibres had probably been rubbed.

species. The skeleton, however, is less regularly rectangular; and the primary fibres appear to project but little.

VIOA CARTERI, sp. n. (Plate XI. fig. 2.)

Sponge composed of irregularly ramifying vesicular masses, lining similarly shaped perforations in solid bodies. Body-wall and membranes thin, carrying felted or fasciculated aggregations of the skeleton-spicule. Vents scattered, papillary. Colour (in spirit) vivid crimson. Skeleton-spicule smooth, stout, spinulate, slightly curved, tapering to point; head spherical, exceeding the body in diameter; length ·394 millim., breadth of body ·0152 millim. Flesh-spicules scattered, numerous, spiro-spinular (*i. e.* elongated, spiral, spined), the curves deep, alternately angular and convex; spines long and slender; length ·0412 millim., breadth (without spines) ·00127 millim.

Examined. In spirit, and by mounting in balsam.

Hab. Victoria Bank, off S. Brazil, lat. 20° 42′ S., long. 37° 27′ W., calcareous rock, nullipore (?) &c.; bottom, dead coral; 39 fathoms.

One specimen (or possibly more in the single mass of rock) represents this species in the collection, spreading in the interior of a flattish, irregularly excavated, calcareous mass, and appearing in section at the broken edge of the mass, as well as indicating its presence by its various vents scattered over the surface; at these points a dark-crimson central spot is seen, surrounded by a fainter colour, apparently the result of the staining of the surrounding rock by the Sponge.

External Form and Characters. To the above may be added that it forms botryoidal irregular deep-lying masses, which ramify irregularly to the exterior, by sending out long narrowing tubes which end on the surface in the vents.

Obs. The coloration of this sponge is exactly the same as that of dry specimens of *Vioa johnstoni*, Schmidt, or, rather, of the form wrongly described under that name in 1870 by Schmidt (Atl. Geb. p. 5, pl. vi. fig. 18), in which sponge, as in this, the tint is not permanently altered by the action of potash; it is almost identical with that of a reputed specimen of *Alcyonium purpureum*, Lamk., in the national collection referred to by Mr. Carter (Ann. & Mag. N. H. [4] xvi. p. 197).

The generic name *Vioa*, put forth in 1833 by Nardo (Isis, 1833, p. 523), for a genus said to be founded on "*Alcyonium asbestinum*, Linn.," and adopted by Schmidt (Spong. adr. Meer.), is here used in preference to *Cliona*, published in 1826 by Grant (Edin. New Philos. Journ. i. p. 79); for this name, under the form *Clione*, was already occupied, having been applied in 1774 by Pallas (Spicilegia Zool. fasc. x. p. 28) to a genus of Pteropodous Mollusca.

By the specific name the Sponge is dedicated to Mr. H. J. Carter, whose work in this difficult genus has done so much to elucidate its anatomy and determine its systematic position, and to whose assistance in my work among the British-Museum sponges I am so much indebted.

The species appears to stand near to the sponge figured by Schmidt as *V. johnstonii* in 1870 (*l. c. suprà*), and there set down as a variety of the form which he described in 1862 (Spong. adr. Meer. p. 78, pl. vii. fig. 14), but which is obviously specifically distinct from that of 1862, on the ground of its almost totally different spiculation; for to the latter are attributed acerate and stellate forms as its complement, while the 1870 species[1] possesses a spinulate and two forms of spiro-spinular spicules (*cf.* Carter, Ann. and Mag. N. H. [5] iii. p. 149, who suggests this solution of the discrepancy between the two descriptions). It differs from this species chiefly in the absence of a short stout spirospinular flesh-spicule, and in the much greater fineness of the thin spiro-spinular form (the diameter being as 1 to 3 and the length as 1 to 2 of those of that species).

It seems to be also not far removed from *Clione lobata*, Hancock (Ann. and Mag. N. H. [2] iii. p. 343, pl. xii. figs. 4, 8, and [3] xix. p. 239, pl. vii. fig. 6), but differs from it in the stoutness of the spinulate spicule and the globose character of its head, and in the greatly inferior diameter and the less frequent angulation of the spiro-spinular spicule. That species is described as being *dark* in colour when dry; but as the colour when in spirit is not mentioned, it is not safe to compare it with *V. carteri* as to this point. Sollas's *C. subulata*[2] differs from this, apart from the colour (which is unfortunately not mentioned by him), in the greater stoutness of the body and greater distinctness of the head of the spinulate; its length and the length and characters of the spiro-spinular agree almost exactly with those of our species.

Relations of the Horny and Siliceous Sponges of Magellan's Straits and the neighbouring Coasts to those of other Seas.—I have gone somewhat more into details, in comparing the sponges described in this paper with allied forms, than is usual in papers of this kind. But I felt this to be desirable for two reasons:—1st, because the characters of the Sponge-fauna of these localities have hitherto been hardly investigated at all, and it is therefore important to ascertain its relations to those of other localities; 2nd, because in certain groups, chiefly in the *Renierida*, the possible range of variation of individual species seems to have been not clearly ascertained, owing mainly to the imperfection of our present knowledge of the relative classificatory values of the different characters; and as the nearest allies of the species here described were mostly from the Northern and Equatorial Atlantic, it was to be expected that in the passage to the southern part of the Atlantic Ocean we should find indications of the nature and extent of the changes which species have undergone (if that is the right way of expressing the relation) in making the same or the converse passage.

In the present state of our knowledge, the genera of the above groups of sponges as a rule embrace many species and are widely distributed. This is due probably to the want of a more minute subdivision of the genera, but also certainly to some extent to the great age of the group in time, and to its members being but little limited

[1] This should be renamed, and would be well called *Vioa schmidtii*.

[2] Ann. N. H. [5] i. p. 65, pl. ii. figs. 26–28.

in *space* by the natural barriers (wide and deep seas) which serve to break up such groups as the marine Mollusca and Crustacea into a very great number of comparatively distinct faunæ. In this collection, all the species but one have been assigned to genera already known from the North Atlantic, and three of the four already described species which occur in it were previously known as West-Indian forms, while the species most nearly related to the new species are chiefly Atlantic. When the Pacific sponges are as well known as those of the Atlantic, we may expect, looking at the geographical relations between this district and the Pacific, to find a considerable though probably much slighter resemblance between them and the Magellan forms. No detailed descriptions have been hitherto published of any New-Zealand sponges; so that such descriptions will be received with much attention when they appear, considering the intimate relations which the Vertebrate and Invertebrate faunæ of that district bear to that of the one at present under consideration, as far as they have been investigated. But indications are not wanting of a close connexion between the sponges of the two localities.

The results arrived at by comparison of the species found here with allied forms from other parts of the world may be conveniently arranged thus:—

Species already known.	Present locality.	Originally described as	Original locality.
Hircinia hispida, Lamk.	S.W. Chili.	*Spongia hispida*, Lamk.	"Southern Seas."
[1]*Cladochalina armigera*, Sdt., var. *pergamentacea*.	Off E. Brazil.	*C. armigera*, Sdt.	Florida and Antilles.
Reniera fortior, Sdt.?	St. of Magellan.	*R. fortior*, Sdt.	Antilles.
Schmidtia aulopora, Sdt., var.	S.W. Chili.	*S. aulopora*, Sdt.	W. Indies and Florida.

New species.	Locality.	Nearest described allies.	Locality.
Aplysina? regularis.	St. of Magellan.	Not determined.	
[1]*Chalina coppingeri.*	Off E. Brazil.	*C. gracilenta*, Bowk.	Britain.
Siphonochalina fortis.	S.W. Chili.	*S. bullata*, Sdt.	West Indies.
Phakellia egregia.	St. of Magellan.	*Axinella cinnamomea*, Sdt.	Mediterranean.
Ciocalypta calva.	St. of Magellan.	*C. leei*, Bowk.	Britain.
Esperia magellanica.	St. of Magellan.	*E. nodosa*, Sdt.	Adriatic.
Alebion proximum.	St. of Magellan.	*Halichondria pattersoni*, Bowk.	Britain.
Hymedesmia polita.	St. of Magellan.	*Microciona tuberosa*, Bowk.	Straits of Malacca
Trachytedania spinata.	S.W. Chili.	Atlantic *Tedaniæ.*	Atlantic.
Tedania tenuicapitata.	S.W. Chili.	*T. suctoria*, Sdt.	Iceland.
[1]*Vioa carteri.*	Off S.E. Brazil.	*Cliona subulata*, Sollas.	Hab. ?
Species undetermined.			
Amorphinæ sp.	St. of Magellan.	?	

[1] These species cannot be reckoned as belonging to the Magellanic fauna.

With regard to the *amount* of distinctness between the new species and their nearest allies, the remarks or tables given under each sponge should be consulted. It should be remembered, in estimating the relations of this fauna, that comparatively few species have been intelligibly described from any seas but the Atlantic and Mediterranean; but even allowing for that, the fact that in but one case the nearest ally is to be found outside those two areas speaks strongly for the *Atlantic facies* of the Magellan and S.W. Chilian fauna.

Subclass CALCAREA.

The technical terms here used are those employed by Häckel in his 'Kalkschwämme,' and with the meanings there applied to them.

The collection, it will be seen, contains the British form *Clathrina coriacea* (hitherto known only from arctic and north temperate seas) and the Australian species *C. poterium* as its sole representatives of a Magellan fauna. Considering the number of dredgings in shallow waters which have been taken here, this result may be considered as probably showing the extreme poverty of this region in Calcisponges. A striking contrast to this is furnished by the dredgings at the Victoria Bank, a shoal to the north-east of Rio de Janeiro, which was not visited by the 'Challenger,' and from which no Sponges have hitherto been described. Of the four (or possibly five) species which come from this locality, three are new, and a fourth has been assigned with considerable doubt to one of the species obtained. The well-known littoral habits of the Calcarea are thus brought forcibly to mind; for had they been fitted to live in deeper waters, it is almost inconceivable that more of them would not have spread from the mainland, whose fauna is already somewhat known.

Clathrina coriacea, Johnston.

(*Clathrina*, Gray, P. Z. S. 1867, p. 557; *Ascetta*, Häckel, Kalkschwämme, ii. p. 14.)

Spongia coriacea, Montagu?, Wern. Mem. ii. p. 116.

Grantia coriacea, Johnston, Brit. Spong. p. 183, pl. xxi. fig. 9.

This species occurs on a few species of dead *Retepora*, forming either (*a*) a minute tube (*Auloplegma* form of Häckel) running over the surface, expanding at intervals into a bulbiform dilatation, and varying in diameter from ·18 to ·426 millim., or (*b*) apparently a thin-walled sac of not less than 2·5 millims. extreme diameter. The sarcode is coloured reddish brown by an unevenly distributed pigment. The spicules agree with the common type figured by Häckel in the 'Kalkschwämme,' pl. v. fig. 2, differing slightly from it in being sharply though abruptly pointed, and in being slightly inequiradiate; they measure:—in (*a*), basal ray ·1267 to ·14 millim., laterals ·095 to ·114 millim. long, diameter ·00844 to ·0095; in (*b*), basal ray ·114 to ·2027, laterals ·114 long, diameter ·00844 to ·0095 millim.

These measurements agree closely with those of the spicules of Johnston's specimens of *Grantia coriacea*. The distribution, already

increased by Carter (Ann. & Mag. Nat. Hist. ser. 4, xx. pp. 38, 40) to include the Arctic region, is now extended southwards and into the Pacific.

Hab. Tom Bay (S. W. Chili), 0–30 fathoms; on dead *Retepora*.

CLATHRINA POTERIUM, Häckel.

Ascetta primordialis, var. *poterium*, Häckel, Kalkschwämme, ii. p. 17, pl. v. fig. 1, *f–i*.

Found in the form of a running tube (*Auloplegma* form), as in (*a*) of the preceding species; diameter of tube ·25 to ·53 millim.; slightly pigmented with diffused red-brown pigment, concentrated into a granular mass in some places (possibly due to a siliceous or a horny sponge which grew in the neighbourhood). The triradiate spicules are of two sizes, as shown by Häckel for his Australian variety *poterium*; but they are connected by intermediate stages. The large dermal form (which is occasionally bluntly pointed) varies in the diameter of its rays from ·019 to ·02217 millim.; one ray is usually about 7 : 6 of the length of the other two, being from ·13937 to ·1774 millim. long, while the smaller rays are ·1267 to ·1584 in length. The smaller, subdermal spicules have rays measuring about ·118 and ·1267 (respectively, in the one spicule) by ·095 to ·01056 millim. The largest of the larger triradiates only form a single surface layer; the smaller subjacent forms are much more numerous. The extreme diameter of the rays of the larger spicules is thus considerably less than the *average* diameter given by Häckel for the Australian form, viz. ·025 millim.; and the smaller spicule-rays are considerably shorter in proportion to their length than in that form.

Hab. Tom Bay (S.W. Chili), 0–30 fathoms; on an *Idmonea* on which a horny sponge was growing.

Obs. I have followed Häckel's suggestion (p. 23, *tom. cit.*), and advanced this form to the rank of a species, being justified, as I consider, in this course by the fact that it is constant to its main characters as described from the Australian specimens, even at the great distance from which it is now recorded. It is distinguished from *A. primordialis*, Häckel, by the minimum diameter of its largest spicule-rays exceeding ·02 millim., and by the possession of a special dermal set of triradiate spicules considerably larger than those subjacent to them.

NARDOA PELAGICA, sp. n. (Plate XI. fig. 4.)

(*Nardoa*, Schmidt, Adr. Spong. p. 18; *Ascandra*, Häckel, Kalkschwämme, ii. p. 80.)

Sponge forming a flattened cylinder, of about equal diameter from the mouth to the base, which is almost flat. Length 19 millims.; long and short diameters respectively 7 and 3 millims. Wall 1 millim. thick. Lip? Skeleton consisting of scattered stout acerates piercing the wall from the dermal to the cloacal surface, of an external layer of triradiates whose longest ray either points inwards or towards the base, of a less number of similar spicules imme-

diately interior to these and similarly arranged, and a gastral layer of sagittal triradiates, the basal ray pointing away from the gastral surface, which is covered with quadriradiates. Body-acerates straight, tapering from centre to sharp points, external end flattened, knife-like, with a central thicker longitudinal ridge, minutely roughened; size 1·25 by ·06334 millim. Fine linear spicules of lip smooth, straight, size about ·3 by ·00475. Triradiates smooth, external ones irregular, angles about equal, all rays somewhat curved; rays respectively ·1013 to ·20 millim., ·23 to ·4, ·32 to·45 in length by ·019 to ·022 in breadth; intermediate triradiates sagittal, angles equal or oral angle about 130°; basal ray ·4624 by ·03167 millim.; lateral rays curved, ·2724 by ·03167 millim.; gastral triradiates sagittal, oral angle 160°, proportions and shape of rays the same as of intermediate spicules. Quadriradiates, two sizes: (1) with characters of gastral triradiate but with small straight apical ray; (2) smaller, lateral rays curved towards cloaca: sizes respectively, basal rays ·38 by ·03167 and ·1267 by ·0095 millim.; laterals ·29 by ·03167 and ·1267 by ·0095 millim.; apical ·0565 by ·01267 and ·1267 by ·0095 millim. Ratio of thickness of stoutest acerate to stoutest triradiate 2 : 1.

Examined. In spirit and by sections in balsam.

Hab. Victoria Bank (off S.E. Brazil), 39 fathoms; bottom, coral.

Obs. One specimen represents this species; the mouth is not well preserved. It is covered in places with a brown coating of degenerate tissue. It belongs to the same group of the genus as *N.* (*Ascandra*) *echinoides*, Häckel, from Java, which it resembles in its flattened shape, and the form of the large acerate. But the largest triradiates are more than twice the size of those of that species, and two kinds of quadriradiate occur instead of one.

APHROCERAS SERICATUM, sp. n. (Plate XI. fig. 5.)

(*Aphroceras*, Gray, P. Z. S. 1858, p. 113; *Leucandra*, Häckel, Kalkschwämme, ii. p. 110.)

Sponge tubular, elongate; tube of almost equal diameter from the slightly fringed mouth to near the rounded basal end; length from 2 to 3 times as great as the maximum diameter. Canal-system and spiculation that of *Leucandra*, Häckel. Wall about 1 millim. thick, penetrated by long stout acerates measuring 2 to 3 millims. by ·06 to ·073 millim., smooth, sharply pointed, slightly thicker proximally, projecting from surface. Mouth fringed by a number of slender acerates about ·014 millim. in diameter, smooth and straight. Internal triradiates sagittal, rays smooth, tapering to sharp points, slightly undulating, oral angle varying from 110° to 160°, lateral angles equal, basal ray measuring from ·355 to ·52 by ·019 to ·032, the laterals slightly smaller; external triradiates with aboral lateral generally only about half the length of the sagittal. Quadriradiates, rays smooth, gently curved and sharply pointed, facial rays each measuring from ·18 to ·25 by ·0095 millim., apical ray from ·16 to ·2 by ·0095 millim. Ratio of diameter of stout acerate to maximum diameter of rays of triradiate between 2 and 3 :1. Colour (in spirit) white.

Examined. In spirit, and by sections in balsam and in spirit.

Hab. Victoria Bank (off S.E. Brazil), 39 fathoms; bottom, coral. Six specimens, one young.

Obs. This Sponge shows a considerable amount of variation in the size of the spicules in different specimens. One variety is especially well marked: its length is only twice as great as the breadth; its acerates reach the diameter of ·09 millim. and length of 3·6 millims., its triradiates increasing proportionally in size, the diameter reaching ·05 millim. It appears to be most closely allied to *A.* (*Leucandra*) *asperum*, Häckel, from the Mediterranean, of described species; but differs from it in the inferior ratio of the thickness of the acerates to that of the triradiates, in the much thinner body-wall, in the larger and more slender apical ray of the quadriradiate, and in the formation of the oral fringe out of a special fine acerate form of spicule.

Aphroceras caminus, Häckel (Plate XI. fig. 6), and var. crassior, sp. nov. (Plate XI. fig. 7).

Leucandra caminus, Häckel, Kalkschwämme, ii. p. 175, pl. xxxi. figs. 1*a*–1*d*, xxxvii. figs. 5 A, 5 B, 6.

Three specimens occur in this collection from the same locality, two of which are apparently identical, and one differs considerably from them. The arrangement of the canal-system has not been made out very clearly; but it appears to be of the "traubenförmig" type described by Häckel (*op. cit.* vol. i. p. 233) in *A.* (*L.*) *ananas*, Montagu, &c. with small circular cavities scattered through the walls of the body.

The two specimens, which agree with each other and with Häckel's description, are ovate, 6 to 7 millims. long by about 4 millims. broad; the body-wall is 1·5 millim. thick at the sides; the mouth is funnel-shaped owing to the downward convergence of the walls of a slightly projecting "collar," which is 2·5 millims. across; the body-cavity is about 1 millim. broad. The other specimen, which may be termed var. *crassior*, is 7 millims. long by 4 broad; body-wall 1·5 millim. thick at sides; mouth probably about the same as in the normal forms (most of it has been broken away). The microscopic characters are tabulated below. Var. *crassior*, however, has the triradiates much larger (maximum size of ray of those of *caminus*=·65 by ·075 millim.), the angles are all equal, not paired. The acerate is apparently longer; and the rays of the quadriradiates are straight, instead of the laterals and the apical being bent (as in *caminus*). Perhaps therefore *crassior* constitutes another species; but in the face of the single imperfect specimen it will be well to await better information.

	A. caminus from off Brazil.	Var. *crassior*.
Stout Acerate Spicules.....	1·4 to 1·6 mm. by ·04434, smooth, straight, tapering to sharp points, scattered, not projecting.	About 2·5 (?) mm. by ·04434 to ·06334, smooth, straight, tapering from near middle, scattered, not projecting.
Fine Acerate of "Collar" ...	About 1·4 ? mm. by ·0095 to ·01108, straight, smooth.	About 1·25 (?) mm. by ·095, straight, smooth.
Triradiates ...	From outer surface to near inner surface.	From outer surface to near inner surface.
i. Ray.....	Basal aborally (?) placed, ·497 mm. to ·53 by ·057 to ·075.	·64 mm. by ·06334.
ii. & iii. Rays	Laterals ·39 mm. to ·43 by ·0475 to ·057.	·816 mm. by ·06334.
	Rays tapering to sharp points from near base, slightly undulating. Gastrally-placed spicules directed towards cloaca, oral angle about 150° ; the rest irregularly placed.	Rays smooth, slightly undulating, tapering to sharp points from base ; angles equal ; spicules variously placed.
Quadriradiates ...	On gastral surface and aggregated in groups in interior of wall.	On gastral surface and aggregated in groups in interior of wall.
	Lateral rays ·14 mm. by ·01267, or ·228 by ·019.	Facials about ·32 mm. by ·019.
	Basal, aborally placed, ·14 mm. to ·19 by ·01267.	
	Apical ·076 mm. by ·0095.	Apical ·16 (?) or 32 mm. by ·019, and some smaller ones like those of the typical form.
	Rays smooth, tapering to sharp points from base ; basal and oral lateral slightly undulating, the rest straight. Oral angle 150° to 160°.	Rays smooth, tapering to sharp points from base, generally all somewhat curved. Oral angle either about 160° or 200°.

Examined. In spirit, and by sections in balsam.
Hab. Victoria Bank (off S.E. Brazil), 39 fathoms ; bottom, coral.

GRANTIA ATLANTICA, sp. n. (Plate XI. fig. 8.)

(*Grantia*, Fleming, Hist. Brit. Anim. p. 524. *Sycandra*, Häckel, Kalkschwämme, ii. p. 291.)

Sponge forming a single oval tube. Walls very thick (about two thirds the diameter of the cloaca) at centre, tapering to vent and closed end. Colour yellowish white in spirit. Vent surrounded by slight fringe of acerate spicules. Outer surface slightly roughened by points of acerate spicules, &c. ; inner surface similarly roughened by apical rays of quadriradiates. Arrangement of canal-system agreeing with that of *Sycandra*, Häckel ; the straight radial tubes extend to within a short distance of the dermal surface ; they are hexagonal, and are completely fused with each other by broad connexions ; this intermediate substance is penetrated by narrow roundish "intercanals" running parallel with the radial tubes. The dermal layer, interposed between the ends of the radial tubes and the surface, consists of stout triradiate spicules and the exterior ends of the acerates. The substance of the wall between this and the cloacal surface is filled with the bases of the acerates, and with some more slender triradiate

spicules, whose sagittal rays lie between the radial canals, and whose lateral rays serve to enclose them. The cloacal surface is formed of a layer of mingled small and larger quadriradiate spicules.

Acerate Spicules. Straight, surface minutely rough, tapering to sharp points from the centre. Average maximum size 2·1 by ·095 millim., extending from just beneath the cloacal to about one fourth of their length beyond dermal surface.

Stout Triradiates. Sagittal rays straight, surface slightly roughened, tapering to approximately sharp points from the base, forming three angles of about 120° each. Size of rays varying (average maximum size): basal from ·304 by ·04434 millim. to ·424 by ·05067, laterals from ·2217 by ·038 to ·3167 by ·04434—the proportion between the lengths of the two being thus 5 : 3 or 4 : 3. The basal ray is generally parallel to the long axis of the sponge, while one of the laterals projects from the dermal surface.

Slender Triradiates. Rays smooth, tapering from base to sharp points; the basal ray straight, the laterals either straight, or curving slightly forwards, or slightly undulating; the inwardly facing laterals form an oral angle of from 160° to 180° with each other; the basal points outwards; lateral angles equal. Size of rays varying (average maximum size): basal from ·38 by ·019 millim. to ·3167 by ·019, laterals from ·152 by ·0158 to ·139 by ·158; the proportion between the lengths of the rays is therefore 5 : 2 or 7 : 3.

Quadriradiates. Rays smooth, tapering from base to sharp points; basal straight, laterals slightly curved, either to or from cloacal surface, forming an oral angle of from 130° to 170°. Apical ray straight, projecting into cloaca. Size of laterals almost constant; apicals and basals vary inversely in length with each other. Basal ray either about ·285 by ·019 millim., or ·04434 by ·0095; laterals (average maximum) ·08235 by ·0095 to ·101 by ·01267; apical either ·019 or ·0507 by ·006334.

Examined. In spirit and by sections mounted in balsam.

Hab. Victoria Bank (off S.E. Brazil), 39 fathoms; bottom, dead coral.

Obs. The species is represented by a single specimen 10 millims. long by 5·5 in extreme breadth. The projection of the points of the acerate and stout triradiate spicules from the surface is disguised to some extent by an aggregation between them of a yellowish material, which appears to be the result of desquamation of the surface tissues. This species resembles *Leucandra cyathus*, Verrill[1], from Casco Bay, U.S., in its spicule-characters, and differs from all the species assigned to *Sycandra* in the 'Kalkschwämme' of Häckel by the possession of a cortical layer of triradiates with rays at least twice as stout as those of the triradiates forming the main substance of the sponge.

[1] Proc. Amer. Assoc. Adv. Science for 1873, p. 392.

EXPLANATION OF THE PLATES.

Plate I.

(Fishes.)

Neophrynichthys latus, two fifths natural size, p. 20.

Plate II.

(Fishes.)

Fig. A. *Melanostigma gelatinosum*, p. 21.
B. *Gymnelis pictus*, p. 20.
C. *Maynea patagonica* ad., p. 20.
D. —— —— juv. p. 20.

All of the natural size.

Plate III.

(Mollusca.)

Fig. 1. Terminal club of tentacular arm of *Onychoteuthis ingens*, p. 25.
1 *a*. Lateral view of one of the largest suckers.
1 *b*. A row of the teeth on the odontophore.
1 *c*. Upper mandible.
1 *d*. Lower mandible.
2. Dorsal view of *Loligo patagonica*, p. 24.
2 *a*. Side view of upper part of the body.
2 *b*. Lower or ventral side.
2 *c*. The shell.
2 *d*. A section of the broadest part of the shaft.
3. Dorsal view of *Rossia patagonica*, p. 22.
3 *a*. Ventral view of ditto.

Plate IV.

(Mollusca.)

Fig. 1. *Pleurotoma* (*Bela*) *cunninghami*, p. 27.
2. —— (*Mangelia*?) *coppingeri*, p. 27.
3. *Lachesis meridionalis*, p. 28.
4. *Trophon fimbriatus*, p. 28.
5. *Euthria atrata*, p. 29.
6. —— *meridionalis*, p. 29.
7. *Nassa* (*Tritia*) *coppingeri*, p. 30.
8. —— (—— ?) *tæniolata*, p. 30.
9, 9 *a*, 9 *b*. *Lamellaria patagonica*, p. 32.
10, 10 *a*. *Collonia cunninghami*, p. 33.
11. *Trochus* (*Ziziphinus*) *consimilis*, p. 34.
12, 12 *a*. *Tectura* (*Pilidium*) *coppingeri*, p. 35.
13, 13 *a*, *b*, *c*, *d*, *e*. *Chiton* (*Ischnochiton*) *imitator*, p. 35.
14, 14 *a*. *Helix* (*Patula*) *coppingeri*, p. 36.
15, 15 *a*, *b*. *Helix* (*Patula*) *magellanica*, p. 36.
16, 16 *a*. *Helix* (*Zonites*?) *ordinaria*, p. 36.
17, 17 *a*. *Succinea patagonica*, p. 37.
18, 18 *a*. *Chilina amœna*, p. 37.

Plate V.

(Mollusca.)

Fig. 1, 1 *a*, *b*, *c*. *Diplodonta lamellata*, p. 38.
2, 2 *a*, *b*. *Mactra* (*Mulinia*) *levicardo*, p. 39.
3, 3 *a*. *Malletia magellanica*, p. 39.
4, 4 *a*, *b*, *c*. *Pandora* (*Kennerlia*) *braziliensis*, p. 40.
5. *Loripes pertenuis*, p. 41.
6, 6 *a*, *b*. *Kellia magellanica*, p. 41.
7. *Astarte magellanica*, p. 41.
8. *Cardita* (*Actinobolus*) *velutinus*, p. 42.
9, 9 *a*, *b*. *Carditella pallida*, p. 43.

Plate VI.

(Polyzoa and Cœlenterata.)

Fig. 1. *Chaunosia fragilis*, p. 45. Zoœcia × 40 diam.
a. From front; *b*. From side.
2. *Lichenopora grignonensis*, p. 57.
a. Portion of peripheral part of colony, viewed from above, × 26 diam.; *b*. Single zoœcial tube from peripheral aspect, to show the outwardly opening sinus in its wall, × 26 diam.
3. *Gigantopora lyncoides*, p. 47.
a. Two adjacent zoœcia seen from front; *b*. Single zoœcium seen somewhat from the side: both × 40 diam.
4. *Lepralia appressa*, var. *vinosa*, p. 51.
Two zoœcia, × 40 diam.
5. *Retepora altisulcata*, p. 53.
a. Two adjacent oœcia, × 40 diam.; *b*. Portion of back, × 40 diam.; *c*. Avicularium from middle of front wall, × 80 diam.
6. *Schizoporella marsupium*, p. 48.
Group of two zoœcia and one oœcium, × 40 diam.
7. *Axohelia brueggemanni*, p. 102.
a. Part of branch of the Brazilian specimen, × 4 diam.; *b*. Single calicle of the same specimen, × 26 diam.
8. *Pedicellina australis*, p. 60.
Full-grown zooid, with part of basal stolon, showing partial expansion of the disk, × 17 diam.
9. *Smittia trispinosa*, var. *ligulata*, p. 53.
Two zoœcia, × 40 diam.
10. *Tubulipora dichotoma*, var. *serialis*, p. 59.
Part of zoarium, × 30 diam.
11. *Labiopora moseleyi*, p. 106.
a. End of small branch, × 4 diam.; *b*. Portion of surface of the same, × 40 diam.; *c*. Gonangium and surrounding tissue, from decalcified fragment, mounted in glycerine, × 67 diam.

[N.B. It should be noted that the preparation from which the last drawing was taken was made from the *dry* specimen; hence the indistinctness of the cœnosarcal canals.]

Plate VII.

(Crustacea.)

Fig. 1. *Glaucothoë rostrata*, sp. n., × 3 diam., p. 62.
2. Frontal and antennal region of the same, × 9 diam.
3. Fourth thoracic leg, × 12 diam.
4. Fifth thoracic leg, × 12 diam.
5. Terminal segment and uropoda, × 12 diam.
6. *Pandalus paucidens*, sp. n., × 1½ diam., p. 74.
7. Rostrum of the same, × 3 diam.
8. Terminal segment and uropoda of *Squilla gracilipes*, sp. n., nat. size., p. 75.
9. *Arcturus coppingeri*, sp. n., × 2 diam., p. 75.
10. *Ægа punctulata*, sp. n., × 1½ diam., p. 77.
11. Anterior view of the head of the same, showing eyes and antennæ, × 3 diam.
12. First thoracic leg of the same, × 3 diam.
13. Terminal segment and uropoda of *Corallana acuticauda*, sp. n., × 6 diam., p. 78.

Plate VIII.

(Echinodermata.)

Fig. 1. Apical area of *Strongylocentrotus bullatus*, slightly magnified, p. 88.
2. A small portion of the ambulacral area of the same, slightly magnified.
3. Apical area of *S.*, spec. juv., rather more highly magnified, p. 89.

4. A portion of the ambulacral area of the same, rather more highly magnified, p. 89.
5. *Calliderma grayi*, abactinal surface, natural size, p. 95.
6. *Ophioscolex coppingeri*, side view of part of an arm, to show the spines, magnified four times, p. 98.

PLATE IX.

(ECHINODERMATA.)

Fig. 1. *Asterias brandti*, sp. nov., × 2 diam., p. 91.
2. —— *alba*, sp. nov., × 2 diam., p. 92.
3. —— *obtusispinosa*, sp. nov., × 2 diam., p. 92.
4. —— *neglecta*, sp. nov., × 2 diam., p. 94.
5. *Cycethra simplex*, sp. nov., nat. size, p. 96.
6. —— ——, actinal surface of ray, × 1½ diam.

PLATE X.

(SPONGIDA.)

Fig. 1. *Aplysina? regularis*, p. 108.
a. Fibre of external portion of section taken perpendicular to surface, × 34 diam.; *b*. Portion of skeleton, × 375 diam.
2. *Chalina coppingeri*, p. 110.
Spicules, × 375 diam.
3. *Siphonochalina fortis*, p. 111.
a. Fibre from section perpendicular to surface, × 34 diam.; *b*. Spicules, × 375 diam.
4. *Cladochalina armigera*, var. *pergamentacea*, p. 112.
a. Fibre from section perpendicular to surface, × 34 diam.; *b*. Spicule, × 375 diam.
5. *Esperia magellanica*, p. 117. Specimen from Sandy Point.
a. Entire Sponge, reduced to one third nat. size; *b*. Main-skeleton spicule, × 134 diam., and head, further enlarged, to show character of central canal; *c*. Dermal-skeleton spicule, × 134 diam.; *d*. Inequianchorate flesh-spicule, from front and side, × 375 diam.; *e*. Bundle of fine acerate spicules, × 375.
6. *Phakellia egregia*, p. 114.
The various forms of spicules, × 67 diam.
7. *Ciocalypta calva*, p. 115.
a. Part of fibre near its base, showing the imperfectly Holorrhaphidote character of the fibre, × 67 diam.; *b*. Skeleton-spicule, × 134 diam., and head, further enlarged, to show character of central canal.
8. *Alebion proximum*, p. 119.
a. Skeleton-spicules; *b*. Inequianchorate flesh-spicule, from front and side; *c*. Bipocillate flesh-spicule: all × 375 diam.
9. *Hymedesmia polita*, p. 121.
a. Smooth acuate spicules, × 134 diam., and head, further enlarged; *b*. Spined spicules, × 134 diam.; *c*. Inequianchorate flesh-spicule, from front and side, × 375 diam.
10. *Trachytedania spinata*, p. 122.
a. Skeleton as seen in a perpendicular section of the entire thickness of the sponge, × 34 diam.; *b*. View of surface, showing dermal skeleton and its connexion with the main skeleton, × 34 diam.; *c*. Spined, and *d*, smooth acuate spicules, × 34 diam.; *e*. Cylindrical spicule, × 134 diam., and head, further enlarged; *f*. Fine acuate, × 134 diam.

PLATE XI.

(SPONGIDA.)

Fig. 1. *Tedania tenuicapitata*, p. 124.
a and *c*. Acuate and acerate spicules, × 134 diam.; *b*. Cylindrical spicule, × 134 diam., and extremities, further enlarged.

2. *Vioa carteri*, p. 129.
   a. Skeleton-spicule, × 134 diam.; *b*. Different forms of the flesh-spicule, × 375 diam.
3. *Reniera fortior* ?, p. 126.
   a. External portion of section of skeleton perpendicular to surface, × 34 diam.; *b*. Main-skeleton spicule, × 375 diam.
4. *Nardoa pelagica*, p. 133.
   a. Spicules of main wall in their natural mutual positions, as seen in a section perpendicular to surface, × 34 diam.; *b*. Portions of two of the fine acerate spicules, × 67 diam.
5. *Aphroceras sericatum*, p. 134.
   a. Spicules of main wall in their natural mutual positions, as in fig. 4 *a*, × 34 diam.; *b*. Portions of fine acerate spicules, × 34 diam.
6. *Aphroceras caminus*, p. 135.
   a. Spicules of main wall in their natural mutual positions, as in fig. 4, *a*, × 34 diam.; *b*. Portions of fine acerate spicules, × 67 diam.
7. *Aphroceras caminus* ?, var. *crassior*, p. 135.
   a. Spicules of main wall in their natural mutual positions, as in fig. 4 *a*, × 34 diam.; *b*. Portions of fine acerate spicules, × 67 diam.
8. *Grantia atlantica*, p. 136.
   Spicules of main wall in their natural mutual positions, with the exception of the acerate, which is displaced inwards, × 34 diam.

2. Descriptions of some new Exotic Species of Moths. By J. O. Westwood, M.A., F.L.S., &c.

[Received December 15, 1880.]

(Plates XII., XIII.)

Genus Castnia, Fabricius.

Castnia erycina, sp. nov. (Plate XII. fig. 4.)

Species minima in genere: alis anticis nigro-fuscis, certo situ metallice, basi chalybeo-, apice viridi-nitidis; alis posticis supra chalybeo-nigris, costa late sanguinea, dimidio postico læte viridi-argenteo, venis nigris diviso; corpore antennisque nigris chalybeo tinctis.

Expans. alarum anticarum lin. 19.

Hab. Eastern Ecuador (*Buckley*). In Mus. Salvin et Godman; etiam in Mus. Hopeiano Oxoniæ.

This lovely little insect formed part of a collection of insects from Eastern Ecuador, belonging to Messrs. Godman and Salvin, to whom the Hopeian Collection is indebted for a specimen. It was at first regarded as a butterfly and placed in the family Erycinidæ, to some of the species of which it bears a striking resemblance. The arrangement of the veins of the wings, however, proves its position in the genus *Castnia*, with none of the species of which, however, does it possess a very decided relationship. The branches of the postcostal vein form an oblong cell in front of the anterior division of the discoidal cell, which is closed in its upper part by the angulated base of the two discocellular veins (See fig. 1, p. 142, b 5* and c 3*). The anal vein emits a short branch in the middle of its hinder margin.

Mr. Clarence Buckley, by whom this species was captured, informs me that he took the specimens at Sarayacu, in a little clearing caused