

ART. XV.—*Catalogue of Non-Calcareous Sponges collected by J. Bracebridge Wilson, Esq., M.A., in the Neighbourhood of Port Phillip Heads.*

PART III.

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INTRODUCTORY REMARKS.

The present instalment of the catalogue deals with the families *Axinellidæ*, *Suberitidæ* and *Spira-strellidæ*, together with a few specimens which, owing to the difficulty of determining their true systematic position, were accidentally omitted from their proper places in the preceding parts. Altogether forty species are included in this part, of which twelve are new to science. It has been necessary to erect two new genera, *Sigmaxinella* and *Pseudoclathria*.

This brings us to the end of the Monaxonida, at least according to the acceptance of that term in the Challenger Report, but there still remain a number of genera of doubtful position, whose consideration I postpone until I shall have been able to study more fully the Tetractinellid Sponges, with which they seem to have more or less affinity. Such are the genera *Tethea*, *Chondrilla*, *Stellettinopsis*, *Trachya*, *Halisarca* and *Chondrosia*.

At this stage of the work one cannot help being struck with the exceeding richness of the monaxonid sponge-fauna of the Victorian coast. The present catalogue includes altogether 135 species and no doubt many still remain to be discovered.

Perhaps I may be allowed in this place to express my very deep regret at the death of my old friend Mr. J. Bracebridge Wilson, to whose untiring exertions the study of Spongology is so deeply indebted, and whose loss leaves a gap in the list of Australian Naturalists which we can scarcely hope to see filled.

Family AXINELLIDÆ.

Skeleton typically non-reticulate; consisting of ascending axes of fibres from which arise subsidiary fibres radiating to the surface. Fibres typically plumose. Megascleres typically stylote but ranging to oxeote. Microscleres rarely present, never chelæ.

Genus *Hymeniacidon*, Bowerbank.

Skeleton reticulate, with or without well-defined spiculo-fibre, not plumose. Megascleres styli or subtylostyli. No microscleres. Von Lendenfeld's genus *Stylotella*, placed by himself amongst the Heterorrhaphidæ and by Topsent amongst the Esperellinæ, is clearly not distinguishable from *Hymeniacidon*, even when the latter is employed in the restricted sense of the Challenger Report.

Hymeniacidon rigida, Lendenfeld, sp.

Stylotella rigida, Lendenfeld, Catalogue of Sponges in the Australian Museum, p. 186.

I identify with this species a single specimen (R.N. 362) of digitate form, with thick, irregular branches and small vents chiefly on the sides of the branches. The skeleton is a loose reticulation of fairly stout and slender fibres, branching towards the surface, and with very wide irregular meshes between. The fibres contain a great many spicules densely packed together and invested by abundant spongin. A large number of spicules are irregularly scattered between the fibres. The dermal skeleton is very scanty, consisting of sparsely scattered spicules slightly projecting from the surface. The spicules are straight, slender styli, rather abruptly sharp-pointed and sometimes with slightly developed heads. They vary much in thickness, averaging say about 0.17 by 0.005 mm. when full-grown. Judging from the fragment sent for identification, I believe that B.M. sp. 73, left undescribed by Mr. Carter, also belongs to this species.

R.N. 362 (20 f.; "pale terra-cotta red").

B.M. sp. 73 (Reg. 86-12-15-35).

Genus *Axinella*, Schmidt.

Sponge typically ramose but may be massive. Skeleton fibre plumose. Megascleres stylote and sometimes oxeote. No microscleres.

Axinella villosa, Carter.

Axinella villosa, Carter, A.M.N.H., November, 1885, p. 361.

The only additional specimen of this species is short-stalked, bushy, with short, thick, digitiform branches, tapering rather abruptly to their apices and about half an inch thick in the middle. The surface is uniformly granular. The texture is firm and tough, with axial condensation. The skeleton is very regularly plumose, and the spicules are stout and rather short oxea, with a few stylole.

R.N. 1017 (x B).

B.M. d. 83 (" *Axinella villosa*," Reg. 86-12-15-398).

Axinella stelliderma, Carter.

Axinella stelliderma, Carter, A.M.N.H., November, 1885, p. 360.

There are three specimens in the collection which I have some hesitation in identifying with this species because, although they agree very well indeed with the fragment of the type sent to me from the British Museum, there is one feature in Mr. Carter's original description which I cannot find in any of the specimens examined by me. I refer to the long spicule "projecting from the summit of the granule and surrounded at its base sheaf-like by a number of shorter ones." In my preparations all the spicules either end naturally or are broken off short at or near the surface, and I cannot find any conspicuously differing in size from the remainder. I find that the largest spicules in the type measure about 0.68 by 0.008 mm., which agrees very well with Mr. Carter's own measurements.

The skeleton is very *Raspailia*-like; with a central axis of thick, anastomosing, laminated horny fibres, cored by the slender styli, from which loose, irregular slender whisps of similar spicules curve outwards towards the surface.

The external form varies somewhat, the branches being sometimes long and sometimes short, but always coming off more or less in one plane. Two specimens show minute vents, mostly marginal.

The name *stelliderma* is hardly well-chosen and evidently refers to a very minute character which entirely escaped my own observation, for I have noted the surface as being even but granular.

R.N. 271 (20 f.; "rich maroon-red mottled with a lighter shade"); 887 (s. 9); 889 (s. 9).

B.M. sp. 60 ("*Axinella stelliderma*, C. one of types." Reg. 86-12-15-33).

Axinella acerata, Carter.

Axinella stelliderma var. *acerata*, Carter, A.M.N.H., November, 1885, p. 360.

I identify with this species (which appears to be quite distinct from *A. stelliderma*), three specimens which agree with Mr. Carter's description fairly well, except that the colour in life was yellow or orange instead of purple, and I have been unable to recognise in my sections the stellate character of the dermis. The latter, however, I imagine to be due to the arrangement of the soft tissues and not to the spicules, and it may even be an effect of shrinkage. The slender oxeote spicules vary a good deal in size, as also does the length of the branches of which the sponge is composed. The *Raspailia*-like arrangement of the skeleton and the irregularity exhibited by the ends of the oxeote spicules are characteristically axinellid.

R.N. 355 (19 f.; "dull ochre-yellow"); 358 (19 f.; "orange"); 405 (x, 19 f.; "Indian yellow").

Axinella clathrata, n. sp.

The single specimen is erect, stipitate; composed of short, slender, subcylindrical branches extended in one plane and anastomosing in a clathrous manner. Surface glabrous and minutely conulose. Vents not visible. Colour in spirit nearly white. Texture tough and resilient.

Skeleton, consisting of a thick central axis of densely but irregularly packed spicules, occupying nearly half the entire thickness of the branch and giving off at frequent intervals thick, loose, irregular strands of spicules towards the surface, where they end in the low conuli. There is no visible spongin.

Spicules, long, slender, unequal-ended oxea; usually gently curved and sharply pointed at both ends and very finely at at least one, but sometimes becoming stylote; measuring about 0.4 by 0.006 mm.

The skeleton is very like that of a *Raspailia* but for the absence of spongin and of spined styli.

R.N. 1006 (x B).

Axinella pilifera, Carter.

Axinella pilifera, Carter, A.M.N.H., November, 1885, p. 362.

It is with some little hesitation that I identify with this species four specimens varying from massive to coral-like in external form. The surface is cactiform and glabrous, minutely reticulate between the conuli. The texture is very soft and spongy, and there is a scanty skeleton of stout horny fibre containing oxeote spicules which measure about 0.33 by 0.008 mm., and which are sometimes arranged in a typically axinellid fashion. The fibres end in the conuli. The specimens are very opaque, owing to the development of immense numbers of granular pigment cells. The colour in spirit is pale yellow.

R.N. 463 (s. 9, 20 f.; ("ochraceous-buff"); 493 (s. 10, 8 f.; "orange ochraceous"); 904 (s. 10); 1109 (x C).

B.M. sp. 62 ("*Axinella pilifera*, C. Type;" Reg. 86-12-15-135).

Axinella solida, Carter.

Axinella solida, Carter, A.M.N.H., November, 1885, p. 362.

This species has a sessile, spreading or proliferously lamellar habit, with conulose surface. The columnar structure, due to the plumose skeleton fibres, is very characteristic. The spicules are stylote, varying much in size.

R.N. 731 (x B; "wax-yellow"); 738 (x B; "orange"); 890 (s. 9); 1158.

(*B.M.* sp. 61, labelled "*Axinella solida*" and registered 86-12-15-59, contains *sigmata* and *trichodragmata*, and is evidently wrongly named; indeed, Mr. Kirkpatrick informs me that Mr. Carter suggests its being re-examined. It is a specimen of *Sigmaxinella flabellata*).

Axinella meloniformis, Carter.

Axinella meloniformis, Carter, A.M.N.H., November, 1885, p. 362.

The original type was globular, sessile, ridged like a melon, but it was very small and may well have been young. All the

three specimens now recorded are lobose and corrugated, and two of them have short stalks. The skeleton is very irregular, sub-reticulate, with a tendency to form slightly plumose fibres, in which the rather large spicules are held together by an abundant coating of pale spongin. Even in the type specimen a few styli occur amongst the oxea.

R.N. 337 ("dull grey-buff, with brownish-red on higher parts"); 503 (x, 20 f; "flame scarlet"); 605 (x, 20 f; "cadmium yellow").

B.M. sp. 65 ("*Axinella meloniformis*, C. Type." Reg. 86-12-15-117).

Axinella kirki,* n. sp.

Massive, sessile, hemispherical; sides rugose; upper surface covered with numerous conspicuous, short, slender, conical processes. Vents small, scattered on the upper surface between the conuli. Surface glabrous or sub-glabrous, with beautifully reticulate dermal membrane between the conuli but no dermal skeleton. Texture compact, firm, but compressible and resilient. Colour in spirit yellowish-grey or brown.

Skeleton very loose and irregular, with very stout, slightly plumose columns of loosely packed spicules ascending and ending in the conuli, which they completely fill and from which some of the spicules project beyond the surface. In the body of the sponge numerous spicules are irregularly scattered between the columns.

Spicules very variable, rather large but slender, gently curved; oxeote, stylote or strongylote. Size very variable, up to about 1.0 by 0.009 mm.

R.N. 686; 884 (s. 9).

Genus *Phakellia*, Bowerbank.

Sponge more or less flabellate or cup-shaped. Skeleton often more or less reticulate. Megascleres styli and often oxea. No microscleres.

Phakellia flabellata, Carter.

Phakellia flabellata, Carter, A.M.N.H., November, 1885, p. 363.

* Named after my friend Mr. H. B. Kirk, the New Zealand Spongologist.

Phakellia crassa, Carter, A.M.N.H., November, 1885, p. 363.

Phakellia villosa, Carter, A.M.N.H., November, 1886, p. 379.

(Not *Phakellia flabellata*, Ridley and Dendy, Challenger Monaxonida, p. 171).

Mr. Carter's three species appear to me to be indistinguishable. The sponge is characterised by its stipitate, flabellate, often proliferous external form, with granular surface and small stellate vents. The skeleton is subreticulate but with slightly plumose main fibres curving outwards towards the surface. The spicules are short stout styli, sometimes oxoete, measuring about 0.25 by 0.01 mm. in the type of *P. crassa*, and varying somewhat in different specimens.

(By an unfortunate oversight the name *flabellata* was given in the Challenger Report on the Monaxonida to a *Phakellia* from Port Jackson which is quite distinct from Mr. Carter's species. As the latter has priority, though only by a short while, I propose to re-name the Challenger species *Phakellia jacksoniana*).

R.N. 326 (18 f.; "orange-yellow"); 679 (s. 9; "orange"); 1162 (x).

B.M. sp. 58 ("*Phakellia crassa*, C. Type," Reg. 86-12-15-129); sp. 56 ("*Phakellia villosa*, C. one of types," Reg. 86-12-15-78); d. 86 ("*Phakellia villosa*," Reg. 86-12-15-437).

Phakellia tumida, n. sp.

The single specimen is compressed, lobose, irregular; varying greatly in thickness; thinnest in the middle and with the margin more than an inch broad. Vents very small, abundantly scattered on the margin. Surface uneven, slightly warty and rugose; subglabrous; very minutely reticulate on the flattened surfaces. Compact but very compressible and resilient. Pale greenish-yellow in spirit.

The skeleton is a pretty close-meshed but extremely irregular network of branching and anastomosing fibre. The fibres are about 0.09 mm. thick, not very definite, containing a great many spicules and no obvious spongin. Towards the surface the fibres subdivide rapidly and give rise to the dermal tufts of spicules, which in surface view are seen to be arranged in a close reticulation. Large numbers of spicules are thickly scattered in the soft tissues between the fibres of the main skeleton.

The spicules are slightly curved styli or subtylostyli; gradually sharp-pointed and measuring about 0.18 by 0.006 mm.

This species appears to combine the characters of *Hymeniacidon* with those of *Phakellia* and it is with some doubt that I include it in the latter genus.

R.N. 1155 (x).

Genus *Acanthella*, Schmidt.

Axinellidæ of ramose, bushy or frondose external form; of cartilaginous consistency, and with glabrous surface beset with ridges and spines. No distinct horny fibre. The smooth linear megascleres range from stylote to oxeote in form. No microscleres.

The arrangement of the spicules in dense wide tracts with intervening spaces almost or quite devoid of spicules appears to be also very characteristic.

Acanthella stipitata, Carter.

Acanthella stipitata, Carter, A.M.N.H., May, 1881, p. 380, pl. xviii., fig. 8.

Acanthella cactiformis, Carter, A.M.N.H., February, 1885, p. 114.

Acanthella hirciniopsis, Carter, A.M.N.H., November, 1885, p. 364.

Acanthellina parviconulata, Carter, A.M.N.H., November, 1885, p. 365.

Acanthellina rugolineata, Carter, A.M.N.H., November, 1885, p. 365.

The forms here included all appear to belong to one very variable species; at any rate there are so many intermediate characters that I can find no tangible points of distinction between them.

R.N. 389; 465 (x, 20 f.; "poppy-red"); 659; 740 (x B; "orange"); 1003 (two specimens, s. 1 and x B); 1004 (x B); 1058 (x A); 1159; 1161 (x).

B.M. sp. 49 ("*Acanthella cactiformis*, C.," Reg. 86-12-15-91); sp. 50 ("*Acanthella parviconulata*, C.," Reg. 86-12-15-56); sp. 51 ("*Acanthella hirciniopsis*, C.," Reg. 86-12-15-38); sp. 52 ("*Acanthella rugolineata*, C.," Reg. 86-12-15-94); d. 90 ("*Acanthella rugolineata*," Reg. 86-12-15-365).

Acanthella tenuispiculata, n. sp.

Compressed, flabellate, only about one-third of an inch thick; may be proliferous. Surfaces glabrous, closely beset with small conuli which are sometimes joined in short ridges; may be minutely porous between. Vents in one specimen not seen, in the other small but prominent, scattered on both surfaces, each on a small low eminence. Texture tough, compact, leathery, with strong skeletal condensation in the median plane. Pale yellowish pink or nearly white in spirit.

Skeleton without any visible spongin, composed of long slender spicules densely packed together in the median plane and extending obliquely outwards and upwards in thick looser parallel strands into the low conuli.

Spicules very long and slender styli (sometimes oxeote), gently curved and with irregular points, measuring about 0.64 by 0.008 mm.; with occasional very slender sinuous forms.

R.V. 542 (x, 19 f.; "orange-chrome"); 1188.

Genus *Ciocalypta*, Bowerbank.

Sponge with large subdermal cavities roofed over by the dermal membrane, which is provided with a well-developed dermal skeleton and supported on pillars of spiculo-fibre radiating outwards from the denser central portion of the main skeleton. Megascleres stylote or oxeote. No microscleres.

This genus includes Mr. Carter's *Leucophlæus*.*

Ciocalypta penicillus, Bowerbank.

Ciocalypta penicillus, Bowerbank, *Mon. Brit. Spong.*, vol. i., pl. xxx., figs. 360, 361; vol. ii., p. 81; vol. iii., p. 33, pl. xiii., figs. 2, 3, 4.

Leucophlæus massalis, Carter, *A.M.N.H.*, November, 1883, p. 323, pl. xiv., fig. 15.

? *Ciocalypta penicillus*, var. *aciculata*, Carter, *A.M.N.H.*, November, 1885, p. 366.

Leucophlæa massalis, Carter, *A.M.N.H.*, November, 1885, p. 366.

* For characters of *Leucophlæus* see *A.M.N.H.*, February, 1884, p. 130.

The sponge consists of a massive, rounded base, from which spring numerous upright, finger-like processes. The dermal membrane, with its abundant spicules, is supported over large subdermal cavities by columns of spicules radiating from a dense axial skeleton in the digitiform processes. The spicules are all, or nearly all, stylote, and of variable size, sometimes all of about the same diameter, sometimes with some of the internal spicules much stouter than the others.

Mr. Carter himself points out the close resemblance of his species to that of Bowerbank, as follows:—"The illustration of *C. penicillus* (*op. et l.c.*) closely resembles in figure that of *Leucophleus massalis*, only the latter is more compact towards the centre, but the form of the spicule is the same, viz., *acute*, while the two other species of *Ciocalypta* present *acerate* spicules;" etc.* In face of these remarks I am unable to understand why the genus *Leucophleus* should have been erected, or why *Ciocalypta penicillus* and *Leucophleus massalis* should have been both included as distinct species in the work on Mr. Bracebridge Wilson's sponges.

R.N. 379 (s. 8, 8 f.; "lemon-yellow").

B.M. sp. 55 ("*Leucophleus massalis*, C." Reg. 86-12-15-82);
d. 92 ("*Ciocalypta penicillus*" Reg. 86-12-15-457).

Ciocalypta tyleri, Bowerbank.

Ciocalypta tyleri, Bowerbank, Proc. Zool. Soc. Lond., 1873, p. 21, pl. iv., figs. 9-12.

Ciocalypta tyleri, Carter, A.M.N.H., November, 1885, p. 366.

The sponge is massive with digitiform processes, like *C. penicillus*, but with all or may of the spicules *oxeote*.

Specimens intermediate in spiculation between *C. penicillus* and *C. tyleri* are met with. *B.M.* sp. 54† is very remarkable in this respect and should perhaps form the type of a new species. It has a mixture of very stout and very slender *styli* in the main skeleton but only very slender *oxea* in the dermal skeleton.

R.N. 585 (s. 1, 14 f.; "ochre-yellow"); 595 (x, 19 f.; "primrose-yellow"); 810 (s. 5); 905 (s. 8); 949 (s. 9); 1089 (x A); 1133.

* A.M.N.H., November, 1883, p. 326.

† Labelled "*Ciocalypta penicillus*, Bk. P.P.H. 19 fms." Reg. 86-12-15-136.

Ciocalypta compressa, Carter, sp.

Leucophloeus compressus, Carter, A.M.N.H., November, 1883, p. 324, pl. xiv., fig. 16.

This species is at once distinguished from the preceding by its compressed, lobose, flabellate, proliferous, sometimes stipitate external form. The dermal skeleton gives to the surface a minutely reticulate appearance, and the densely spiculous dermal membrane is supported over large subdermal cavities by the expanded ends of the outwardly curving, plumose fibres of the main skeleton. The spicules are rather slender oxea, gently curved and gradually and smoothly pointed, very variable in size, up to about 0.4 by 0.0083 mm. in the specimen measured.

R.N. 272 (20 f.; "yellowish light brown"); 381 (19 f.); 449 (s. 9, 17 f.; "chrome-yellow"); 500 (s. 6, 6 f.; "ochre-yellow"); 754 (s. 5; wax-yellow"); 806 (s. 5); 917 (s. 8); 961 (s. 6).

Sigmaxinella, n. gen.

Axinellidæ with microscleres in the form of sigmata and trichodragmata.

The genus comes near to *Thrinacophora*, Ridley and Dendy, but differs in the addition of the sigmata, and as there are three well-marked species exhibiting this character in the collection, the erection of a new genus for their reception seems to be desirable. It is the only known genus of Axinellidæ in which sigmata are present and is therefore very remarkable.

Sigmaxinella australiana, n. sp.

Sponge consisting of a bushy bunch of rather slender, short, subcylindrical or somewhat compressed branches, sometimes anastomosing and supported on a short stalk. Surface granular or minutely hispid. Vents small, sometimes stellate, scattered or serial along the branches. Tough, compressible, resilient. Pale greyish-yellow in spirit.

Skeleton Raspailia-like; consisting of a thick, dense axial portion from which slender fibres curved outwards towards the surface, where they end in sparse, slightly projecting tufts of spicules. There is a strong development of pale coloured spongin, forming definite fibres rather sparsely cored by the

spicules. These horny fibres form a close reticulation in the axial portion of the sponge and to a less extent towards the periphery. The relation of the spicules to the spongin is not very definite, they are chiefly embedded in and projecting from the main fibres.

Megascleres slender, ranging from stylote to oxeote, often with irregular ends. Size very variable, up to about 0.3 by 0.006 mm.

Microscleres, (*a*) very slender, simple and contort sigmata, varying in size, up to about 0.33 mm. from bend to bend. Very abundant, in bundles (sigmadragmata) or scattered separately; (*b*) short, hair-like raphides, mostly in dense bundles (trichodragmata), about 0.025 mm. long. Very abundant.

This is one of the best characterised and altogether most satisfactory species in the collection.

R.V. 352 (19 f.; "brownish-red"); 388; 616 (x, 19 f.; "orange-rufous, lighter orange below"); 654 (x, 20 f.; "orange-rufous"); 812, 1063.

Sigmaxinella flabellata, Carter, sp.

Axinella flabellata, Carter, A.M.N.H., November, 1885, p. 361.

Sponge composed of proliferous lamellæ about a quarter of an inch thick, springing from a short, thick stalk. Surface coarsely granular or minutely conulose. Vents minute, marginal or scattered. Colour in spirit pale greyish-yellow. Texture tough, fibrous, resilient.

Skeleton, dense, composed of loose, plumose, spicular fibres, curving outwards towards the surface, beyond which the ends of the terminal spicules project slightly.

Megascleres, more or less curved styli, evenly rounded at the base and gradually and sharply pointed at the apex; commonly rather stout, up to about 0.29 by 0.0166 mm., but varying, especially in thickness.

Microscleres, (*a*) numerous, very slender, simple and contort sigmata, measuring about 0.0166 mm. from bend to bend; (*b*) trichodragmata and scattered raphides, up to about 0.049 mm. long.

Three of the specimens are beset with parasitic Actinozoa.

R.N. 480 (x, 20 f; "vinaceous-cinnamon"); 516 (s. 8, 9 f; "wood brown"); 681 ("sponge-brown"); 819 (s. 1); 944 (x A).

B.M. sp. 61 (wrongly labelled "*Axinella solida*." Reg. 86-12-15-59).

Sigmaxinella ciocalyptoides, n. sp.

Massive, sessile, rising above into short digitiform projections; the whole apparently formed by the incomplete fusion of numerous vertical processes enclosed below in a common dermal membrane. Surface acutely conulose, grooved vertically; with very distinct, minutely reticulate dermal membrane supported on fibrous pillars over large subdermal cavities. Vents sometimes large, in depressions of the surface. Texture somewhat cavernous but firm and resilient. Colour in spirit pale greyish-yellow.

Skeleton, composed of stout ascending columns of irregularly and rather loosely arranged spicules, from which stout plumose spicular fibres radiate outwards to the surface, where they end in small conuli from which the ends of the terminal spicules project somewhat. There is a good deal of spongin in some of the fibres but its development appears to be very irregular. Transverse sections of the vertical processes are extremely characteristic, showing the central mass of spicules occupying about a quarter of the diameter of the section, and the stout radiating fibres coming off from it at wide intervals like the spokes of a wheel and with the large subdermal cavities between their outer ends. There is no dermal skeleton.

Megascleres, ranging from stylote to oxeote, but chiefly styli; slightly curved; variable in size, up to about 0.5 by 0.018 mm. but seldom so stout.

Microscleres; (a) sigmata, small and slender but extremely numerous, simple and contort, about 0.0166 mm. from bend to bend; (b) trichodragmata, usually small bundles of short, slender rhabdites about 0.03 mm. long; often in dense agglomerations.

The specific name was suggested by a certain resemblance to the genus *Ciocalypta*, from which the present species differs, however, in the absence of dermal skeleton and the presence of microscleres.

R.N. 338 (18 f; "Projections yellow-buff, the tympanised interstices grey"); 442 (s. 9, 17 f; "cinnamon, the projections deep chrome"); 882 (s. 9); 1092 (x A).

Genus *Higginsia*, Higgin.

Axinellidæ of massive or lobose external form and irregular, confused skeleton. With oxeote or stylote megascleres and small spined oxea (microxea) for microscleres.

This genus appears to be nearly related to *Dendropsis*, Ridley and Dendy, but differs much in external form and skeleton arrangement.

Higginsia coralloides, Higgin.

Higginsia coralloides, Higgin, A.M.N.H., April, 1877, p. 291, pl. xiv., figs. 1-5.

Higginsia coralloides, Carter, A.M.N.H., November, 1885, p. 357.

Higginsia coralloides, var. *massalis*, Carter, *loc. cit.*

There are six more specimens of this remarkable sponge in the collection, and as Higgin's original type was a dried and washed out specimen, while Carter contents himself with little more than identification, it may be desirable to add a few particulars derived from well-preserved spirit specimens.

The external form varies from massive and irregular to stipitate and thickly flabellate with marginal vents. The surface is rugose or conulose, with reticulate dermal membrane stretched between the projections. Texture pretty compact but resilient and yielding. Colour in spirit nearly white.

The skeleton is very confused and irregular, without any definite fibre, composed of densely intermingled oxeote spicules, especially aggregated in wide tracts which trend towards the surface and end in the conuli. The presence of these ill-defined tracts of spicules, with intervening spaces almost free from megascleres, gives a somewhat columnar character to vertical sections. Internally all the tracts unite in one dense, irregular agglomeration of spicules.

The megascleres are, as pointed out by Higgin, of two kinds, stout oxea and slender oxea, the latter being chiefly aggregated in loose dermal tufts or brushes. The microscleres are slender, slightly curved, often angulated, spined oxea.

Having received from Mr. Carter a boiled out preparation of spicules from a Grenada specimen, doubtless Higgin's original type, I have been able to satisfy myself of the correctness of the

identification. The curvature of the ends of the stout oxeote spicule shown in Higgin's drawing appears to be immensely exaggerated, as a rule it is not noticeable.

R.N. 517 (s. 8, 9 f.; "hair-brown"); 643 (s. 8, 8 f.; "ecru-drab and about the edge maroon-purple, subdued with a wash of brown"); 891 (s. 9); 927 (s. 1); 1101 (x C); 1140 (x).

Higginsia lunata, Carter.

Higginsia lunata, Carter, A.M.N.H., November, 1885, p. 358.

There are three specimens of this sponge in the collection. They are all massive, sessile, rising above into short digitiform processes which sometimes bear vents at their summits. The surface is conulose, with subglabrous, minutely reticulate dermal membrane between the conuli. The texture is compact but soft and spongy.

The skeleton is feebly developed, sparse and irregular, consisting of very loose bands of spicules trending towards the surface. The megascleres are very long but fairly stout styli and oxea, commonly with irregular ends. There are also numerous very long, slender hair-like spicules which may be young forms of the last or possibly raphides. The microscleres are minute fusiform oxea, usually strongly curved, crescent-like; Carter describes them as microspined, but I can only find the faintest trace of roughening. All the specimens which I have seen are densely charged with pigment granules, which render the sections somewhat opaque.

R.N. 374 (18 f.; "Slate-brown with greenish tinge"); 589 (x, 19 f.; "clove-brown, at base sepia"); 680 (s. 5).

B.M. sp. 68 ("*Higginsia lunata*, C." Reg. 86-12-15-138).

Genus *Trachycladus*, Carter.

Axinellidæ with oxeote to stylote megascleres and minute spiral microscleres.

This genus probably includes Lendenfeld's *Spirophorella*,* as Topsent has already indicated, though the type species of that genus, *S. digitata*, from Port Jackson, appears from the description to be quite distinct from the common southern species *Trachycladus lævispirulifer*.

* Catalogue of Sponges in the Australian Museum, p. 236.

Trachycladus levispirulifer, Carter.

Trachycladus levispirulifer, Carter, A.M.N.H., May, 1879, p. 343, pl. xxviii., figs. 1-5, and November, 1885, p. 357.

This species forms a very characteristic element of the sponge fauna of Southern Australia and may be very readily recognised by its irregularly branched external form with usually long and slender branches, by its brilliant red or orange colour in life, disappearing in spirit, and by its abundant minute spiral microscleres. Scarcely less characteristic of the species is the presence of immense numbers of short, jointed algal rods, in which, according to Mr. Carter, the red colour is lodged and which give to sections of the sponge a very peculiar opaque appearance.

Some of my specimens exhibit faint microspination of the spiral microscleres. This is especially seen in *R.N.* 415 and 1046, which are also of more robust and shorter branched habit than usual. It must be remembered, however, that the original type figured by Carter was also short-branched.

R.N. 297 (20 f.; "orange-red"); 306 (20 f.; "orange-scarlet"); 366 (20 f.; "crimson"); 415 (x, 19 f.); 426 (x, 19 f.; "flame-scarlet"); 467 (x, 20 f.; "orange-chrome"); 470 (x, 20 f.; "scarlet"); 983 (s. 1); 984 (s. 1); 1000 (s. 1); 1035 (x B); 1046 (x B); 1061 (x A).

B.M. sp. 71 ("*Trachycladus levispirulifer* C," Reg. 86-12-15-42); d. 126 ("*Trachycladus levispirulifer*," Reg. 86-12-15-421).

Family SUBERITIDÆ.

Megascleres typically tylostylote, sometimes stylote. No microscleres. Sponge usually massive. Spongin usually absent. Usually with a dermal crust of radially arranged spicules.

Genus *Suberites*, Nardo.

Sponge usually irregular in form, massive to ramose, without mammiform projections and without marginal fringe of spicules. Usually with well-developed heads to the tylostyli.

Suberites carnosus, Johnston sp.

Halichondria carnosa, Johnston, British Sponges, p. 146, pl. xiii., figs. 7, 8.

Hymeniacion carnosa, Bowerbank, Mon. Brit. Spong., vol. ii., p. 203, vol. iii., pl. xxxvi., figs. 5-9.

Suberites carnosus, Ridley, Zool. Coll. H.M.S. "Alert," p. 465.

Suberites globosa, Carter, A.M.N.H., February 1886, p. 116.

Suberites (Hymeniacion) carnosus, Carter, A.M.N.H., December, 1886, p. 456.

Suberites carnosus, Ridley and Dendy, Challenger Monaxonida, p. 197.

This species is easily recognised by its globular to fig-shaped external form, compact structure and long, slender, pin-headed spicules (tylostyli) arranged confusedly in the interior and in radiating brushes at the surface. The spicules in my specimens measure about 0.29 by 0.004 mm., which is rather smaller than Bowerbank gives for the British form. My Victorian specimens are also characterised by conspicuous, usually large vents, while in the British form the vents are inconspicuous, but this difference can scarcely be specific.

R.N. 294 (20 f.; "brownish-yellow"); 427 (x, 19 f.; "Cinnamon"); 1010 (x B); 1034 (x B); 1090 (x A).

B.M. sp. 15 ("*Suberites globosa*, Carter?" Reg. 86-12-15-106); d. 119 ("*Suberites carnosus*," Reg. 86-12-15-386).

Suberites flabellatus, Carter.

Suberites flabellatus, Carter, A.M.N.H., February, 1886, p. 117.

? *Suberites globosa* (elongated form), Carter, A.M.N.H., February, 1886, p. 116.

This species is very common in Port Phillip and may be easily recognised by its compressed, lobose, digitate or branching form, its orange or yellow colour in life, fading in spirit, and its typical pin-headed spicules considerably larger than those of *S. carnosus*.

R.N. 296 (20 f.; "wax-yellow"); 378 (18 f.; "dark orange"); 488 (s. 10, 8 f.; "orange-ochraceous"); 623 (x, 19 f.; "orange"); 799 (s. 10); 809 (s. 5); 893 (s. 10); 988 (s. 9); 1012 (x B).

B.M. d. 115 ("*Suberites flabellata*," Reg. 86-12-15-384); d. 116 ("*Suberites globosa* (branching form)," Reg. 86-12-15-378).

Suberites insignis, Carter.

Suberites insignis, Carter, A.M.N.H., February, 1886, p. 118.

This species is distinguished by its massive form, with wide

canals internally, and its dark grey colour in life and in spirit. My specimen is only a piece, so that I cannot confirm Carter's observations on the remarkable canal system.

R.N. 705 (s. 5; "dark slate, turns green in spirit").

B.M. sp. 14 ("*Suberites insignis* C. Type;" Reg. 86-12-15-125).

Suberites wilsoni, Carter.

Suberites wilsoni, Carter, A.M.N.H., February, 1885, p. 113.

This species is quite unmistakable on account of its brilliant carmine or purple colour, which is not lost either in spirit or in drying, and which has a remarkable power of staining other objects when it is bruised in sea-water. It grows to a large size and is massively lobose, with large vents arranged along the prominent ridges, and it usually contains a great deal of coarse sand.

R.N. 331 (18 f.; "rich aster-purple"); 524 (x, 20 f.; "aster purple").

B.M. sp. 13 ("*Suberites wilsoni*, C.;" Reg. 86-12-15-107); d. 113 ("*Suberites wilsoni*"; Reg. 86-12-15-253).

Suberites spirastrelloides, n. sp.

? *Suberites wilsoni*, var. *albidus*, Carter, A.M.N.H., February, 1886, p. 116.

The single specimen is massively lobose, compressed to a narrow ridge at the top. Surface warty below, slightly rugose longitudinally above. Vents rather large, in close-set single series on the ridge-like margin. Wide oscular tubes lead up to the vents, running parallel up each flattened side just beneath the surface in a very characteristic manner. Texture compact but somewhat cavernous; scarcely compressible, with much coarse sand internally. Colour internally, in spirit, sandy-yellow. (The surface is now dark purple, but that this is due to artificial staining, probably by some other sponge, is proved by the fact that two of the cut surfaces have the same colour, and the colour does not penetrate beyond the surface).

Skeleton, extremely confused, composed of slender spicules, for the most part abundantly and irregularly scattered, but with a slight tendency to collect together in loose fibres which may then

form an irregular reticulation. The dermal skeleton is rather lax for a *Suberites*, composed of radiating tufts of similar spicules, frequently interrupted by a delicate pore-bearing membrane.

Spicules, long, slender, styli or subtylostyli, straight or slightly curved; with feebly developed and irregular heads or none at all; usually fairly sharply pointed at the apex. Size tolerably uniform throughout, say about 0.37 by 0.006 mm., with no marked distinction between the dermal and deep spicules.

I have little doubt that this species is identical with Mr. Carter's *S. wilsoni*, var. *albidus*, though in the absence both of proper description and specimen of the latter it is impossible to be certain, and it seems safest to give it a distinct specific name. The absence of the very remarkable and characteristic colour of *S. wilsoni* appears to be sufficient reason for specific distinction in this case.

R. V. 1128 (x).

Suberites difficilis, n. sp.

Sponge massive, rounded, lobulated, compressed. Vents? Surface granular to subglabrous. Texture compact, corky, scarcely compressible. Colour in spirit pale yellow (accidentally stained pinkish on the outside).

Skeleton, internally composed of loose, irregular bands of rather large spicules forming a very irregular network, the meshes of which are filled with numerous much smaller spicules thickly scattered through the soft tissues. Dermal skeleton composed of dense brushes of the smaller spicules arranged radially at the surface in the usual manner.

Spicules, of two very distinct sizes, though of course with intermediate forms; (*a*) relatively large, long and slender, straight or nearly so, fusiform, tapering gradually to each end, sharply pointed, without heads or with slightly developed annular swellings at some little distance from the evenly rounded base, size variable, averaging say about 0.9 by 0.01 mm., but difficult to measure, as owing to their great length they are generally broken in the section. (*b*) Of the same form as the above but very much smaller, averaging say about 0.12 by 0.014 mm.

This is an extremely difficult species to characterise, and may perhaps be best recognised by the subreticulate character of the main skeleton, and the two very different sizes of spicules of which it is composed, together with the feebly developed heads to the spicules, which are often simply stylote.

R.N. 1129 (x); ? 394.

[*Suberites parasiticus*, Carter].

Suberites parasitica, Carter, A.M.N.H., February, 1886, p. 119.

Our knowledge of this species is altogether too insufficient to justify its maintenance, the type being merely "a thin layer of small pin-like spicules about 40 by 1-6000th inch, together with others of ? *Halichondria panicea* about twice the length, parasitically covering a fucus." It is very possibly merely a young form of some common species.

B.M. sp. 11 (" *Suberites parasitica*, C. Type;" Reg. 86-12-15-110).

Genus *Polymastia*, Bowerbank.

Sponge massive, sessile, with more or less well-developed mammiform processes arising from the upper surface. Without marginal fringe of spicules. Spicules often collected in strands; often simply stylote.

Polymastia ? bicolor, Carter.

Polymastia bicolor, Carter, A.M.N.H., February, 1886, p. 119.

Polymastia bicolor, var. *glomerata*, Carter, A.M.N.H., February, 1886, p. 119.

This species is by no means a satisfactory one. It appears to be intermediate in structure between the genera *Suberites* and *Polymastia*, the well-developed mastoid processes of the latter being represented by mere warts or tubercles not sharply distinguished from the body, such as one finds in some species of *Spirastrella*. The strands of very long and stout spicules which run up into the processes of a typical *Polymastia* are also wanting, the larger spicules referred to by Mr. Carter by no means coming up to the usual standard.

R.N. 289 (18 f; "slate-brown with a yellowish-brown tinge in parts"); 538 (x, 19 f.; "gallstone-yellow"); 878 (s. 9); ? 286 (18 f; "dull lemon-yellow").

B.M. sp. 17 ("Polymastia bicolor Type," Reg. 86-12-15-97);
sp. 19 ("Polymastia bicolor, C. var. glomerata," Reg. 86-12-15-114).

Polymastia ? massalis, Carter.

Polymastia massalis, Carter, A.M.N.H., February, 1886, p. 121.

This species appears to resemble *P. bicolor* in external form and to differ from it chiefly in the smaller size of the principal spicules. It is probably a mere variety.

B.M. sp. 20 ("Polymastia massalis, C.," Reg. 86-12-15-53).

Polymastia crassa, Carter.

Polymastia bicolor, var. *crassa*, Carter, A.M.N.H., February, 1886, p. 120.

There are numerous specimens in the collection of a typical *Polymastia*, with well-developed mastoid processes containing the usual longitudinal bundles of very large and stout spicules, besides the smaller spicules. These specimens appear to agree sufficiently closely with Carter's *Polymastia bicolor*, var. *crassa* to justify an identification. The species must, however, be separated from *P. bicolor*, though whether it is distinct from previously described species of *Polymastia* may be considered doubtful.

R.N. 273 (20 f.; "sand-brown, projections dull yellow"); 440 (s. 9, 21 f.; "pinkish-buff"); 1098 (x C); 1135 (x); 1146 (x); 1169.

B.M. sp. 18 ("Polymastia bicolor, C. var. crassa," Reg. 86-12-15-39); d. 114 ("Polymastia bicolor, var. crassa," Reg. 87-7-11-29); ? d. 32 ("Polymastia bicolor," Reg. 86-12-15-354).

Genus *Cliona*, Grant.

Suberitidæ of boring habit, excavating narrow passages in shells, etc.

It appears certain that the sponge sometimes outgrows the shell which it attacks and then assumes a massive form (e.g. *Raphyrus griffithsii*).

Cliona celata, Grant.

Cliona celata, Grant, Edinburgh New Philosophical Journal, I., 78; II., 183, pl. 2, fig. 7.

Halichondria ? celata, Johnston, British Sponges, p. 125.

Hymeniacidon celata, Bowerbank, British Spongiadæ, vol. ii., p. 212, vol iii., plate. xxxviii., figs. 5, 6.

Cliona celata, Carter, A.M.N.H., December, 1886, p. 458.

I give only some of the more important references to the literature of this common species. As regards the identification of the Australian with the European form I rely upon Mr. Carter's great experience. There happens to be only one specimen in the present collection, perforating and inhabiting a dead oyster shell, but I do not think the species is by any means uncommon in Port Phillip. The sponge may be readily recognised by its perforating habit and only pin-head spicules.

R.N. 452 (s. 9, 17 f.; "gallstone-yellow").

B.M. sp. 16 ("*Cliona celata*, Grant?" [Westernport]; Reg. 86-12-15-135).

Family SPIRASTRELLIDÆ.

Main skeleton confused or reticulate. Megascleres usually tylostylole or stylole, occasionally becoming oxete. Microscleres some form of aster, often forming a dermal crust.

Genus *Spirastrella*, Schmidt.

Microscleres typically spined spirulæ (spirasters) ranging to double asters and irregular spherasters and spined microxea.

This interesting genus appears to have its head-quarters in Australian waters and is represented in the collection by some very remarkable and beautiful species.

Spirastrella spinispirulifer, Carter, sp.

Suberites spinispirulifer, Carter, A.M.N.H., May, 1879, p. 345, pl. xxviii., figs. 6, 7.

Suberites spinispirulifer, Carter, A.M.N.H., December, 1886, p. 456.

This beautiful species may be easily recognised by its minute spiral microsclere, resembling that of *Trachycladus*, but spined. The external form is massive, solid; the surface subglabrous but may be warty; the texture fairly compact and the colour in spirit pale greyish-yellow.

R.N. 622 (x, 19 f; "orange-ochraceous").

B.M. sp. 10 ("*Suberites spinispirulifera*, C.," Reg. 86-12-15-112).

Spirastrella papillosa, Ridley and Dendy.

? *Spirastrella cunctatrix*, Carter, *pars*, A.M.N.H., February, 1886, p. 114.

Spirastrella cunctatrix, var. *porcata*, Carter, A.M.N.H., February, 1886, p. 115.

Spirastrella papillosa, Ridley and Dendy, A.M.N.H., December, 1886, p. 491.

Spirastrella papillosa, Ridley and Dendy, Challenger Monaxonida, p. 232, pl. xli., fig. 5; pl. xlv., figs. 11-11g.

Sponge massively lobose, compressed or subcylindrical, usually with more or less warty but otherwise smooth and subglabrous surface. Vents variable in size, may be large, grouped on prominent parts. Texture firm, compact, corky, but penetrated by many large oscular tubes. Colour in spirit usually dark grey throughout. The surface is sometimes much infested by a parasitic Actinozoon.

Skeleton, in the deeper parts dense and confused, composed of abundant interlacing spicules, sometimes subfibrous and subreticulate. Dermal skeleton of abundant similar but smaller spicules, radially disposed, sometimes in pretty distinct brushes.

Megascleres, in the main skeleton rather long and slender, straight or slightly curved, with inconspicuous or fairly distinct, ovoid or rounded heads, with blunt or sharp apex; averaging about 0.46 by 0.0083 mm. In the dermal skeleton similar, though perhaps with proportionally larger heads, but of much smaller size, averaging say 0.2 by 0.004 mm.

Microscleres, spirasters of ordinary form, but as usual very variable. Mostly rather long and slender, with three or four slight bends, abundantly spinose, say about 0.05 by 0.012 mm., including the spines; varying to subglobostellate, up to 0.03 mm. in diameter. Scattered throughout, but most abundant at the surface.

The skeleton arrangement and spiculation agree well with the specimen of *Spirastrella cunctatrix*, var. *porcata*, in the British Museum. To judge from *B.M.* d. 120, Mr. Carter has given the length of the megascleres in his "*Spirastrella cunctatrix*" nearly twice what it should be. In spite of a little difference in the size of the megascleres, I think there can be no doubt of the

Victorian specimens being specifically identical with *Spirastrella papillosa*, obtained by the Challenger in Port Jackson.*

R.N. 674 (s. 10); 896 (s. 10); 934 (x A); 1051 (x B). The following also probably belong here, but they are mostly mere pieces and do not show the vents; 300 (18 f.; "dark slate"); 421 (x, 19 f.; "olive"); 486 (s. 10, 8 f.; "olive-grey"); 537 (x, 19 f.; "gallstone-yellow"); 620 (x, 19 f.; "slate-grey"); 1156 (x).

B.M. ? d. 120 ("*Spirastrella cunctatrix*" [south coast of Australia], Reg. 86-12-15-250); d. 125 ("*Spirastrella cunctatrix*, var. *porcata*," Reg. 86-12-15-351).

Spirastrella papillosa, var. *porosa*, nov.

? *Spirastrella cunctatrix*, Carter, *pars*, A.M.N.H., February, 1886, p. 113.

This variety is distinguished from the preceding by the sieve-like oscular areas replacing the distinct separate vents. The colour also appears to be lighter than is usual in the typical form and rather brown or yellow than dark grey. I can detect no difference in skeleton arrangement or spiculation. The best specimen is the upper part of a large, erect, compressed, thickly lobose sponge. The general surface is beset with large irregular conuli, wide apart and with a beautiful pore-bearing membrane stretched between; (these strongly developed porous inhalant areas may also be a varietal distinction). The upper margin is truncated, giving rise to a broad, slightly depressed area, perforated by innumerable small pores, beneath which the great vertical oscular tubes terminate. The colour in spirit is grey.

R.N. 290 (18 f.; "wax-yellow"); 301 (18 f.; "snuff-brown"); 562 (x, 20 f.; "raw umber").

B.M. ? d. 120 ("*Spirastrella cunctatrix*," Reg. 86-12-15-250).

Spirastrella robusta, Carter, sp.

Spirastrella cunctatrix, var. *robusta*, Carter, A.M.N.H., February, 1886, p. 114.

This sponge is lobose, compressed, thick, with smooth and even surface and small marginal vents. The texture is firm, compact and leathery, and the colour in spirit pale yellow. The megas-

* In the Challenger Report the length of the spiraster is accidentally given as 0.5 instead of 0.05 mm.

cleres are tylostyli, measuring about 0.44 by 0.01 mm. and the microscleres very robust spirasters of the ordinary form, by no means confined to the surface of the sponge but densely crowded throughout, intermingled with slenderer and probably young forms of the same. The spirasters measure about 0.044 by 0.033 mm. (including the spines) when fully grown. This species is certainly nearly related to Schmidt's *S. cunctatrix*.

R.N. 432 (x, 19 f.; "cadmium-orange"); 592 (x, 19 f.; "poppy-red, shading to buff below"); 1078 (x A).

B.M. d. 121 ("*Spirastrella cunctatrix* var. *robusta*." Reg. 86-12-15-353).

Spirastrella fibrosa, n. sp.

Sponge sessile, massively lobose or irregularly rounded, or tongue-shaped with narrow margin. Surface subglabrous, minutely reticulate in parts, almost smooth or faintly conulose, nodular or warty. Vents usually small but prominent, grouped on upper parts, sometimes on small, conical, thin-walled projections. There may be a distinct cortex, but this appears to depend upon the state of growth. Texture firm, compact (but with large exhalant canals), corky, resilient. Colour in spirit pale yellow or white.

Skeleton. The main skeleton is an irregular and very wide-meshed reticulation of stout, dense, compact spicular fibre. The main lines of this fibre are about 0.36 mm. thick, and are but sparingly interconnected by secondary lines in the deeper parts of the sponge. As it approaches the surface, however, each main fibre gives off numerous slender branches at different levels and these subdivide again and again until they end in brushes of radiating spicules whose apices, intermingled with abundant asters, sometimes form a definite dermal reticulation, and sometimes merely a rather scanty armature of slightly projecting points. There is no visible spongin and, although the megascleres are mostly collected in the stout multispicular fibres of the main skeleton, yet many of them are irregularly scattered in the intervening ground-tissue.

Megascleres. Straight, slender styli, evenly rounded or very slightly inflated at the base and gradually and sharply pointed at the apex; of very uniform shape and size, measuring about 0.33 by 0.007 mm.

Microscleres. Very beautiful double asters with the abundantly spiny ends separated by a well-developed, smooth, cylindrical shaft. The ends vary from subglobostellate to *Latrunculia*-like, with two whorls of spines, the terminal whorl being smaller, a condition especially distinct in the smaller and slenderer forms. The larger forms measure about 0.05 mm. in total length, the smooth shaft about one-third of the total length and 0.0083 mm. in diameter, and the heads about 0.029 mm. in transverse diameter including the spines. The smaller forms vary a good deal in their proportions but are relatively slenderer and with longer shafts. The microscleres are abundantly scattered both in the deeper parts of the sponge and in the dermal membrane, but they do not form a continuous dermal crust.

This very beautiful and well-marked species appears to be most nearly related to Carter's *Latrunculia (Spirastrella) corticata*, said to come from the Red Sea, both in the arrangement of the skeleton and in the form of the microscleres, but in the latter the megascleres are oxeote. It is at once distinguished from Schmidt's *Suberites histellatus* by the absence of distinct heads to the megascleres, and the well-developed, smooth shaft of the microscleres, which form an interesting transition to the unequal-ended discasters of *Latrunculia*.

R.N. 319 (18 f.; "orange-yellow"); 475 (x, 20 f.; "heliotrope-purple, fading into a whitish tint below"); 642 (x, 20 f.; "opiment-orange, shading to buff below"); 1171; 1179.

Spirastrella areolata, n. sp.

Sponge sessile, massively lobose, with rounded margin, upon which numerous small vents are scattered. The largest specimen has been dried and now measures about $7\frac{1}{2}$ inches high, 8 inches long, and $4\frac{1}{2}$ inches thick; it thus forms a large mass but it appears to be only half of a divided specimen. Surface in spirit subglabrous but more or less areolated or at least warty. In the dry specimen the areolation is extremely distinct, especially where the cortex is least contracted, the surface being marked out in very distinct polygonal areolæ about a quarter of an inch in diameter, separated from one another by fine but sharp raised boundaries, and each area with a slightly roughened raised centre. On the rounded margin of the sponge many of the vents may be

seen to occupy each the centre of such an areola. Where the surface is much contracted the polygonal outlines between the areolæ became much less distinct, and the surface may even appear simply warty. The inhalant pores appear to be located in the slight elevations which occupy the centres of the areolæ over the general surface; the vents occupy the apices of similar though more pronounced elevations on the margin of the sponge, a condition which reminds one somewhat of the arrangement in some species of *Latrunculia*.

There is a dense cortex 1 mm. thick or more. The texture in spirit is very compact and corky, but slightly compressible and resilient, and with large exhalant canals. A little very stout, anastomosing fibre may be visible to the naked eye in the interior. Colour in spirit pale dull yellow throughout. The dry specimen is very hard, tough and incompressible, and of a pale "sponge brown" colour.

Skeleton. The main skeleton is a very sparse and irregular network of very stout, ill-defined fibres or tracts of densely agglomerated megascleres. The very wide spaces intervening between these tracts are rather sparingly occupied by loosely and irregularly scattered megascleres. The cortical skeleton is very dense, the deeper part consists of megascleres lying confusedly in every position, in the more superficial part the megascleres are arranged more or less at right angles to the surface. Sometimes the lines of demarcation between the adjacent areolæ appear to be continued right through the cortex, as shown in vertical section by the peculiar arrangement of the megascleres, which diverge from the dividing plane like hair at the parting.

Megascleres; slender, slightly curved tylostyli, with well-developed heads inflated at a short distance from the base as in many species of *Suberites*; apex varying from bluntly rounded to sharp-pointed; size about 0.4 by 0.006 mm.; perhaps a trifle shorter in the outer part of the cortex, while in the deeper parts numerous long slender hair-like forms, with relatively large heads, occur amongst the ordinary ones, of which they are probably simply young individuals.

Microscleres; of two chief forms, both doubtless modifications of the spiraster; (a) short, straight, rod-like, thickly covered with small spines and blunt at the extremities; size about 0.015

by 0.003 mm. including the spines; (*b*) longer and slenderer spined microxea, slightly curved or even angulate, measuring about 0.06 by 0.003 mm. These spicules remind one forcibly of those of *Higginsia*. The microscleres are abundantly scattered both in the deeper tissues and in the dermal membrane, but they are so small that they form no conspicuous part of the skeleton. The short rod-like forms are the most plentiful.

R.N. 479 (x, 20 f.; "orange-chrome"); 1187; also dried specimen.

Genus *Pronax*, Gray.*

Sponge of boring habit; megascleres tylostylote, microscleres asters (spirasters).

Pronax carteri, n. sp.

Vioa johnstonii, Carter, A.M.N.H., December, 1886, p. 458.

The sponge described by Carter is certainly quite distinct from Schmidt's *Vioa johnstonii*, having tylostylote in place of oxeote megascleres, in virtue of which it falls under Gray's genus *Pronax*. As I have seen no specimen I must content myself with referring to Carter's original description.

ADDENDA.

The following have, owing to the difficulty of determining their true position, been accidentally omitted from their proper places in the first two instalments of this catalogue.

Genus *Rhaphisia*.

(Continued from Part I., p. 257).

Rhaphisia pallida, n. sp.

Sponge massive, sessile, irregular. Surface uneven; rugose, warty or conulose, but subglabrous. Vents inconspicuous, scattered on prominent parts. Texture compact but compressible and resilient, soft. Colour in spirit pale greyish-yellow or white. In life, usually at any rate, pale grey.

Skeleton very lax and rather scanty; consisting of slender megascleres loosely scattered, or in loose whisps which run

* Proc. Zool. Soc. Lond., 1867, p. 526.

mainly towards the surface and end in the conuli. Very loosely and irregularly reticulate in parts. No dermal skeleton.

Megascleres; long and slender, usually more or less curved, with variable ends; strongylote, oxeofe or stylote. Size very variable, commonly about 0.45 by 0.0055 mm.

Microscleres; numerous long, hair-like rhabdites; scattered and in loose bundles of very variable length; sometimes about 0.2 mm. long, but often more or less.

R.N. 314 (18 f.; "very light grey-buff"); 621 (x, 19 f.; "smoke-grey"); 737 (x B; "pale grey-slate"); 879 (s. 9); 982 (s. 1). ? 527 (x, 20 f.; "buff-pink"); ? 1015 (x B).

Genus *Stylotrichophora*.

Stylotrichophora rubra, Dendy.

(Continued from Part I., p. 260).

The following also belong to this species :

R.N. 510 (x, 20 f.; "coral-red"); 561 (x, 20 f.; "poppy-red"); 1043.

Genus *Pseudoclathria*, n. gen.

Skeleton reticulate, the fibres composed of smooth styli cemented together by spongin; with immense numbers of short spined styli scattered through the soft tissues and forming a dermal crust, but none truly echinating the fibre although often lying alongside it. No microscleres.

This genus is proposed for the reception of Carter's *Halichondria compressa*, regarded by its describer as "*incertæ sedis*." I was at first misled by the remarkable small, curved spined styli, and their irregularly scattered arrangement into supposing that the species might be nearly related to *Higginsia*, and therefore omitted it from the *Ectyoninae*, amongst which I have now little doubt that it should take its place as an aberrant form, intermediate in some respects between *Clathria* and *Plumohalichondria*.

The species might, according to definition, be included in Topsent's genus *Yvesia*,* but that appears to me to be a somewhat heterogeneous assemblage which will certainly have to be recon-

* Campagnes scientifiques du Prince de Monaco. Fascicule II., p. 102.

sidered. Meanwhile as *Yvesia* is said to have normally diactinal smooth megascleres (though Topsent mentions two exceptions) we may at any rate keep the present species apart.

Pseudoclathria compressa, Carter sp.

Halichondria compressa, Carter, A.M.N.H., December, 1886, p. 450.

This is a very remarkable and easily recognised species, evidently by no means uncommon in the neighbourhood of Port Phillip Heads. The compressed, but thick, flabellate form, with broad, vent-bearing margin, is very characteristic. The rather slender fibres, composed of smooth, straight, slender styli held together by spongin, run chiefly towards the surface, the secondary connecting lines being feebly developed. Mr. Carter speaks of the smooth styli as being curved, but this must be a mistake, for even in his type specimen they are characteristically straight. The short, curved, very richly spined styli, abundantly scattered throughout the sponge, and forming a dense dermal crust, are also very characteristic.

R.N. 371 (18 f.; "orange-red"); 541 (x, 19 f.; "vermilion"); 543 (x, 19 f.; "saturn-red"); 590 (x, 19 f.; "orange-chrome"); 632 (x, 19 f.; "orpiment-orange below deep chrome"); 1041 (x B).

B.M. sp. 28 ("*Halichondria compressa*, C. Type;" Reg. 86-12-15-9).