(Særtryk af Vidensk. Medd. fra Dansk naturh. Foren. Bd. 77.)

Papers from Dr. Th. Mortensen's Pacific Expedition 1914—16.

XXIII.

Sponges from New Zealand. Part I.

By
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This paper is the first part of a treatise on the sponges collected by Dr. Mortensen at New Zealand in 1914—15. It contains a report on the Tetraxonida; a second and concluding part will deal with the groups Euceratosa and Calcarea; Hexactinellida are not represented in the collection. In the second part, which is in preparation, a general discussion of the sponge-fauna of New Zealand will be given.

The material is, as most material from expeditions, in a state of preservation only permitting coarser investigations; it is partly preserved in rather thin formaline, and specimens thus preserved are nearly all slimy and a good deal macerated; also Dendy has had the same experience (7,[1]) pag. 272).

I take the opportunity here to express my deep sense of gratitude towards Dr. Mortensen for handing me over this most interesting collection. It forms a very important supplement to the report on the sponges of the "Terra-Nova" Expedition, so admirably dealt with by Dendy 1924 (7), and very considerably increases our knowledge of the New Zealand sponge fauna.

Order **Tetraxonida.**

Suborder **Astrotetraxonida.**

Myriastra biformis nov. spec.
(Fig. 1, a—e.)

Off New-Plymouth. 8 fathoms. Hard bottom. 12/I.1915.

One little specimen, globular, 23 mm in diameter; surface strongly hispid; one osculum(?) at the side of the body, flush with the surface.

[1]) The numbers correspond to the literature-list.

There is a not very distinct cortex, about 0,25 mm thick. Consistence hard, colour grey and white.

The *skeleton* is typically radiate, the primary fibres are mostly built up of triaenes; they are running perpendicularly towards the surface. The spicules are not densely packed, hence the ground-substance must be very tough, as the consistence of the sponge appears rather hard; the outermost placed triaenes are mainly orthotriaenes with recurved cladi; long dermal oxea are projecting out from the sponge body, being placed perpendicularly towards the surface between the dermal brushes of the primary fibres. Chiasters are found everywhere in the body.

Spicules: 1. Orthotriaenes (fig. 1 a, b), shaft straight, thickest at the base, tapering evenly towards the generally sharp-pointed apex; about 2000×42 μ; the cladi are straight or more or less recurved, tapering towards the sharp-pointed or somewhat blunt apices; width of cladome about 320 μ. 2. Anatriaenes (fig. 1 c); shaft straight, slender, generally sharp-pointed; length up to 2000 μ, thickness 24 μ; cladi short, width of cladome ca. 92 μ. 3. Oxea, (fig. 1 d); slender, thickest in the middle, evenly tapering, sharp-pointed or a little blunt; about 1700×29 μ. 4. Cortical oxea; of the same shape as 3, but only ca. 1100×17 μ; intermediate sizes between the two forms occur. 5. Chiasters (fig. 1 e); with numerous comparatively short tylote rays; total diameter about 10 μ.

Stelletta novae-zealandiae nov. spec.

(Fig. 2 a—e.)

2 miles East of North Cape, N. Z. 55 fathoms. Hard bottom. 2/I. 1915. One specimen.

The body is nearly spherical, though provided with a ridge half way round; greatest diameter 19 mm; surface hispid. No oscula are to be seen. There is a dense and hard cortex, ca. 1 mm thick, very fibrous, of whitish colour. Numerous lacunes, up to 1 mm in diameter are situated just beneath the cortex, leading into wide canals; there are many more canals in the outer part of the sponge-body than in the interior. The dermal-membrane is densely packed with an one-layered crust of oxyasters. Colour dark grey. Consistence hard.

The *skeleton* is distinctly radially arranged; bundless of triaenes and oxea are running vertically towards the surface from the centre

of the sponge-body; there are no special cortical brushes of megascleres; the fibres of the interior run right through to the surface; the big dichotriaenes are, however, mainly restricted to the

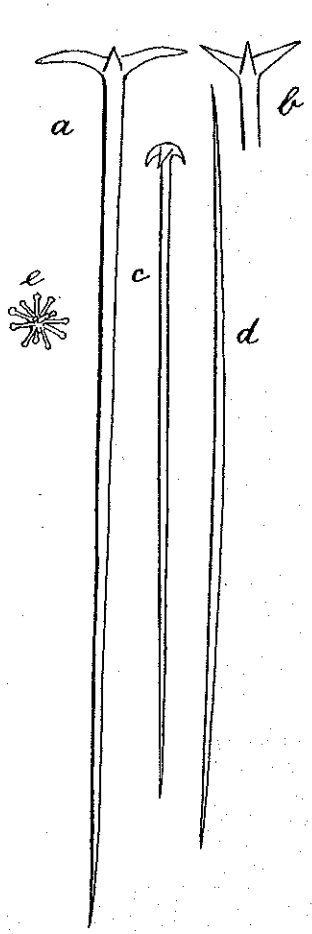

Fig. 1. *Myriastra biformis* nov. spec. *a.* Orthotriaene with recurved cladi. *b.* Orthotriaene with straight cladi. *c.* Anatriaene. *d.* Oxeote. *e.* Chiaster.

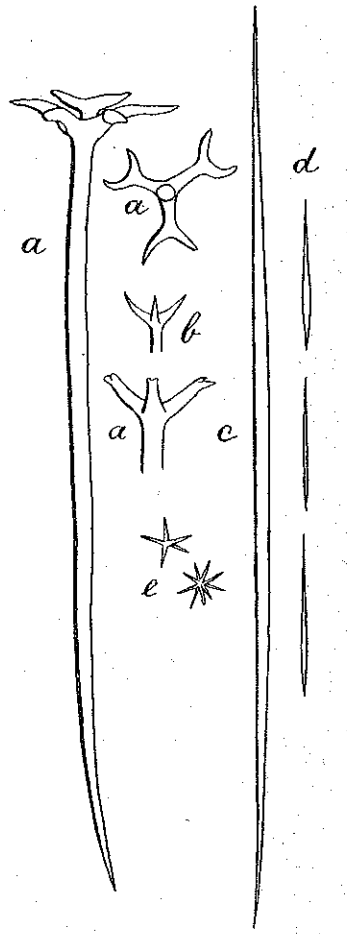

Fig. 2. *Stelletta novae-zealandiae* nov. spec. *a.* Dichotriaenes. *b.* Plagotriaene. *c* Large oxeote of the main skeleton. *d.* Small oxea of the cortex.

distal part of the fibres, the cladome of those outermost placed often pierce the dermal-membrane; this latter is sustained by a single layer of densely packed oxyasters; small cortical oxea, mainly

placed vertically towards the surface, contribute to make the sponge hispid; several of the oxea are also placed pell-mell in the cortex, tending, however, to form brushes. In the interior of the sponge-body oxyasters are assembled in greater numbers, especially in places, where megascleres are only scantily found.

Spicules. 1. Dichotriaenes (fig. 2a); shaft generally thickest at the base, then for a smaller part even, and then again tapering towards the sharp-pointed apex; length varying from, say, 1500—3000 μ by a thickness of about 50 μ. The primary cladi are issuing from the shaft at the usual oblique angle, the secondary cladi, of about the same length as the primary ones, are mainly directed perpendicularly towards the shaft; they are conical and generally rather sharp-pointed; entire width of the cladome about 350 μ; some of the dichotriaenes, however, have cladomes, which are only very slightly branched, and, as a matter of fact, all intermediate forms between dichotriaenes and plagotriaenes occur. 2. Plagotriaenes (fig. 2b); generally more slender than the dichotriaenes; length the same, but thickness only 30—40 μ. 3. Oxea (fig. 2c); slightly curved, thickest in the middle, tapering evenly to the sharp-pointed apices; 1200—3000 $\times$ 45 μ or less. 4. Cortical oxea (fig. 2d); straight, thickest near the middle, rarely just in the middle, tapering evenly to the sharp-pointed apices; 200—400 $\times$ 10 μ. 5. Oxyasters (fig. 2e); with from 4—10 long, sharp-pointed, conical rays, only a small body; entire diameter 26—32 μ.

Stelletta sandalinum nov. spec.
(Fig. 3, a—e.)

Slipper Island; the coast, at low water. 20/XII.1914.

2 specimens, only fragments, flesh-coloured, somewhat flattened, 55 mm in largest diameter, about 15 mm thick. The sponges are unfortunately preserved in formaline, therefore rather macerated. Where the surface is intact it is coarsely hispid. No oscula are to be seen. Through the dermal-membrane are seen the ends of numerous narrow canals giving the sponge an appearance, when seen through a pocket lens, as if it were pricked with a needle all over. The cortex is thick and rather hard, being built up of the densely packed brushes of plagotriaenes; it is up to 2 mm thick.

The *skeleton* is rather lax in the interior, consisting of rather irregularly placed spicule-tracts; the external skeleton is, as said before, made up of cortically placed brushes of plagotriaenes so densely packed together, that they form a crust; the cladomes are placed just beneath the dermal membrane, which is sustained by a single layer of small spherasters; these latter together with the oxyasters also occur in great numbers in the interior of the sponge.

Spicules. 1. Plagotriaenes (Fig. 3a); shaft stout, long conical, tapering evenly to a very sharp point, straight or a little curved; the cladi are placed obliquely to the shaft; they are short, conical, sharp pointed or blunt; shaft about 2000—2500 $\times$ 80 μ at the base; the cladi are about 160 μ long, at the base just as thick as the shaft. 2. Dichotriaenes (fig. 3b); of the same shape and dimensions as the plagotriaenes; the cladi often several times bifurcated. 3. Oxea (fig. 3c); rather slender, fusiform, slightly bent at the middle, sharp-pointed, 2000—3000 $\times$ 52 μ; they are mainly restricted to the interior of the sponge, but may also part-take in the building up of the cortex, being intercalated between the plagotriaenes. 4. Oxyasters (fig. 3d); with rather few slender, sharp-pointed rays; no sphere; about 50 μ in greatest diameter. 5. Spherasters (fig. 3e); with relatively big centra and short truncated rays, about 8 μ in total diameter.

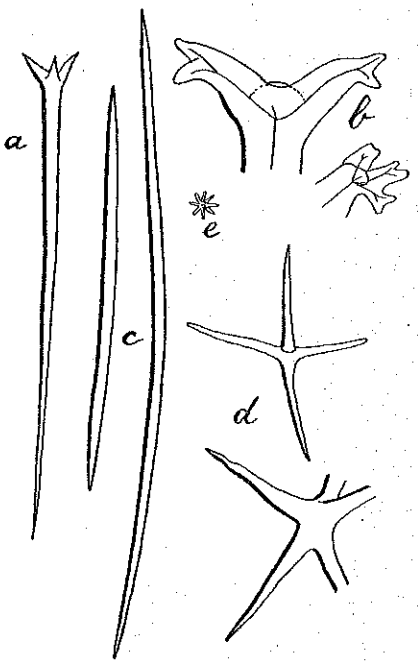

Fig. 3. *Stelletta sandalinum* nov. spec. *a*. Plagotriaene. *b*. Dichotriaenes. *c*. Oxea. *d*. Oxyasters. *e*. Spheraster.

Ancorina alata, Dendy.

Dendy (7), p. 298. Pl. V, figs. 1—2; Pl. VIII, figs. 1—7.

We have this beautiful and well marked sponge from two localities: New-Plymouth. 8 fathoms. Hard bottom. 12/I.1915. — North

Channel, Kawaii Isl., Hauraki Gulf. 10 fathoms. Hard bottom. 29/XII.1914. The specimen from the first locality is massive in outer form, not lamellar; the surface exhibits all over subglobular prominences as seen on Dendy's fig. 2, Pl. V to the left. The specimen from the second locality is only a fragment; the sponge has apparently been lamellar. General structure, skeletal arrangement, and spicule-measurements agree closely with the type.

Hitherto known from 7 miles E. of North Cape, N. Z.

Penares tylotaster Dendy.

Dendy (7) pag. 303, Pl. VII, figs. 16—19.

Three specimens, the two only fragments, somewhat macerated; all from Slipper Isl., the coast, at low water. 20/XII.1914.

The cortex is very distinct, may easily be peeled off from the soft choanosome. The skeleton agrees very well with that of the type. There are rather few dichotriaenes, the tetractines mostly being orthotriaenes of the same size and situated in the same manner as the former. As the two spicula-forms may substitute one another in the same individual, and none of them are very numerous, I see no necessity for laying any stress upon this divergence from the type as being of any taxonomic value. The oxea only attain a length of ca. 1000 μ and there are all intermediate stages between these and the small ones of ca. 25 μ; some of them have the apex narrowly constricted. The tylasters are here about 12—14 μ in total diameter. Some styli of about 800 μ occur; they are mostly a little pathologic in structure, f. i. exhibit beginnings to twin structures.

Hitherto known from 7 miles E. of North Cape, N. Z.

Geodia regina Dendy.

Dendy (7) pag. 308, pl. V, fig. 5; pl. VIII, fig. 16—22.

Slipper Isl. The coast, at low-water. 20/XII.1914.

Two specimens of somewhat irregularly subspherical outline, attached with a broad base to a stone. The structure agrees pretty well with that of the type. The spicule-measurements are: Dichotriaenes 2000—3000 μ; anatriaenes and protriaenes 4000—5000 μ; oxea 2000—3000 μ; cortical oxea about 250 μ; sterrasters 110—160 μ; oxyspherasters 12—30 μ. I have not seen the cortical anatriaenes.

Hitherto known from 7 miles E. of North Cape, N. Z.

Geodinella vestigifera Dendy.

Dendy (7) pag. 313, Pl. VIII, figs. 29—37.

2 miles East of North Cape. 55 fathoms, hard bottom, 2/I.1915.

Outer appearance and skeletal arrangement agree very well with the type. The same spiculation is also found and of nearly the same dimensions; it is very curious that the styli are here likewise often abnormal; several of them bear the mark of being of tetraxonoid origin, which is proved by their having the axial canal split up into three branches at the base; other indications of the same fact are given by Dendy, and are also seen here. The choanosomal oxea are often centrotylote. The short curved oxea measure down to about 200 μ, and transitory stages between these and the bigger ones are found.

Hitherto known from Spirits Bay, near North Cape, N. Z,

Monosyringa nov. gen.

Stellettidae with the body produced into a special cloacal tube, which has its own special skeleton built up of orthodiaenes. The microscleres are oxyasters, chiasters, and trichodragmata.

This is an extremely interesting new genus; as will be seen from the description of the species it comes very near to *Tribrachium* and *Disyringa*, mainly differing from these in having chiasters and no sanidasters. There are now two possibilities: 1. *Monosyringa* is a converging genus, which has developed the curious cloacal tube independently; this view is sustained by the fact, that the genus does not possess sanidasters, but chiasters. Or 2. *Monosyringa* is really closely related to the two mentioned genera; this view is sustained by the construction of the tube, which is nearly identical with that of the two others; but if there is a close relationship, then the occurence of sanidasters is of no far-reaching taxonomic value. The question cannot be solved as yet. I should, however, think, that the former view is the right one: A cloacal

tube should, I think, more easily be produced, than a new type of aster, involving a lesser alteration of the genotypical construction; at least it seems that the cloacal tube may be an answer to environmental influence[1]) while we can hardly imagine environmental influences to alter the asters; consequently an alteration of the asters must evidently be due to a higher degree of germinal variation than the production of the cloacal tube.

Monosyringa Mortenseni nov. spec.
(Fig. 4 a—g.)

10 miles N.W. of Cape Maria van Diemen. 50 fathoms. Hard bottom, 5/I.1915. One specimen, but only the cloacal tube, 30 mm long, 3 mm thick. Three Kings, 65 fathoms, hard bottom, 5/I.1915. One specimen, likewise only the cloacal tube. Colville Channel, 35 fathoms, sand and mud. 5/I.1915. One beautiful specimen.

The body is spherical, 20 mm in diameter; the surface of the body is completely covered with sand, fragments of shells, etc.; the sandgrains can only with difficulty be removed from the sponge; where they have been there are seen small corresponding hollows in the surface of the sponge; other orifices than those at the top of the cloacal tube could not be detected; the cloacal tube is distinctly set off from the main body; it is completely free from foreign particles at the surface, white of colour, cylindrical, curved, ca. 30 mm long, 4,5 mm in diameter; the outermost part of the tube in all three specimens is, unfortunately, damaged, perhaps torn off. Consistence hard.

The *skeleton of the body* is distinctly radially arranged; it consists of long spicula-fibres running from the center of the sponge to the surface, projecting a little beyond this; the fibres are composed of oxea and orthotriaenes, the latter mainly restricted to the outermost part of the fibres; there is a distinct fibrous cortex, about 0,5—1 mm thick, and of a somewhat bluish colour, resembling porcelain; all the sponge-tissues are crowded with microscleres; in the cortex the asters and trichodragmata are often lying in definite strands; both forms of microscleres, especially the trichodragmata, also lie packed close together in the septa, which divide the several subcortical crypts from one another.

[1]) Perhaps even many tetraxonoid sponges may be able to produce such a tube when covered by sediments, which has evidently been the case with the specimens found of the three mentioned genera.

The *skeleton of the cloacal tube* consists of an axis composed of shafts of stout orthodiaenes and oxea; the stronger cladus of the orthodiaenes projects vertically outwards from the axis; they are placed in stories in the same plane, one above another, connected with thin lamellae of organic tissues, thus building septa dividing the entire cloacal tube into 4—6 canals; the outer walls of these canals are made up of a dermal-membrane suspended between the apices of the overgrown cladi of the orthodiaenes from row to row; the dermal-membrane and the lamellae separating the clocal canals are sustained by microscleres. The cloacal canals are only prolonged a few mm into the sponge-body, they are here in connection with numerous finer canals lying in the sponge-body itself.

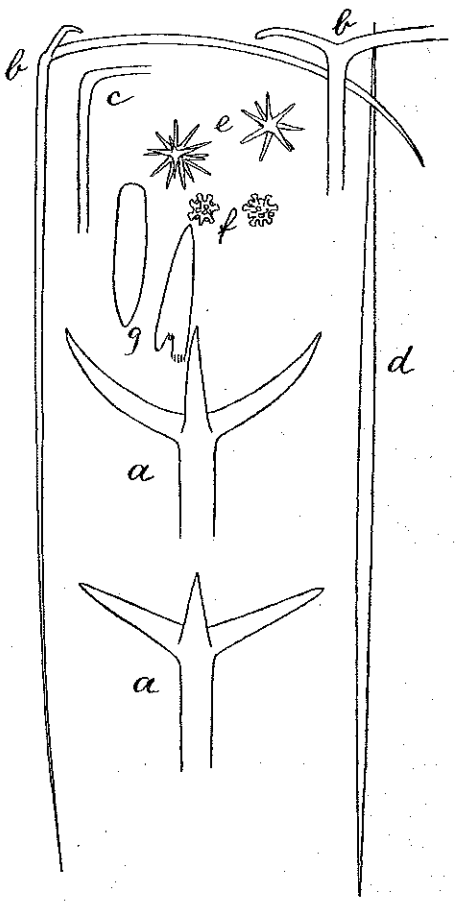

Fig. 4. *Monosyringa Mortenseni* nov. spec. *a*. Orthotriaenes. *b*. Orthodiaenes. *c*. Orthomonaene. *d*. Oxeote. *e*. Oxyasters. *f*. Chiasters. *g*. Trichodragmata.

Spicules. 1. Orthotriaenes (fig. 4 a), in the main body; shaft straight or slightly bent near the base, evenly tapering to the sharp-pointed apex up to 4000 × 60 μ; cladi straight or a little upwards curved; width of cladome about 430 μ. 2. Orthodiaenes (fig. 4 b) of the cloacal tube; shaft straight, up to 4500 × 45 μ, thickest near the base, tapering evenly to the very sharp-pointed apex; the stronger cladus is a little backwards curved, nearly as thick as the shaft, tapering to a fine point, up to 1700 μ in length; the other cladus is inserted

between the spicules in the axis, adding to the strength of this latter; it issues from the shaft at about a right angle to this and to the bigger cladus; it is a little backwards curved, only about 400 μ long; it is nearly always thinner than the bigger cladus, about 30 μ; in a few spicules it is entirely missing, thus giving rise to orthomonaenes (fig. 4c). 3. Oxea (fig. 4d), long slender, thickest in the middle, tapering to fine points, about 4000 $\times$ 52 μ; they are found both in the main and the cloacal skeleton. 4. Oxyasters (fig. 4e) comparatively few in number; rays rather slender, conical, ca. 16 μ in total diameter. 5. Chiasters (fig. 4f) with comparatively large sphere and short rays, which are not always distinctly tyloted, 7—8 μ in total diameter; they are exeedingly numerous. 7. Trichodragmata (fig. 4g), resembling scales of butterflies, more or less truncated at one end, more or less pointed at the other; about 28 $\times$ 6,5 μ.

Donatia japonica (Soll.).

Tethya japonica Sollas 1888 (16).
For further synonyms vide Dendy 1916 (3) p. 262.

As I have no wish to accumulate the number of more or less ill-defined species of the greatly varying genus *Donatia*, I have tried to insert the several specimens of the collection from New-Zealand in the specific limits given by Dendy in 1916 (3); as a result of this all specimens seem to belong to *Donatia japonica* (Soll.).

The diameter of the specimens ranges from 5—90 mm. I shall give here som details of spicula-sizes, as it is of great interest to know the variational range of a given species. It is an interesting fact, that the styli are generally bigger in the larger, that means older, specimens, ranging up to ca. 4000 μ in the largest ones.

Paterson Inlet, Stewart Island, The coast. 18/XI.1914. Styli up to 1300 μ, asters 19 μ and 40—45 μ. — Halfmoon Bay, Stewart Island, the coast. 19/XI.1914. Styli up to 1700 μ, asters 45 μ and 40 μ. — Rangitoto, Auckland. The coast, under stones. 27/XII.1914. Styli up to 1400 μ, asters 15 μ and 60 μ. — Bay of Islands. The coast. 31/XII.1914. Styli up to 1000 μ, asters 15 u and 45 μ. — 2 miles East of North Cape. 55 fathoms. Hard bottom. 2/I.1915.

Styli up to 1200 μ, asters 16 μ and 30 μ. — 10 miles N.W. of Cape Maria van Diemen. 50 fathoms. Hard bottom. 5/I.1915. Styli up to 700 μ, and asters 16 μ, (I have found no big asters). Another specimen from the same locality, but much larger, has: Styli up to 4000 μ, asters 12—15 μ, and 70 μ (scarce). — Off New Plymouth. 8 fathoms. Hard bottom. 12/I.1915. Styli up to 1800 μ, asters 15 μ, and 40 μ.

Hitherto known from several localities ranging from the Mediterranean to the Philippines; (vide for details Dendy 1916).

Suborder **Sigmatotetraxonida.**

Cinachyra novae=zealandiae nov. spec.

(Fig. 5 a—f.)

Hen and Chicken Island, Hauraki Gulf, 50 fathoms. Hard bottom. 30/XII.1914. 5 specimens.

Globular or somewhat elongated, largest specimen 15 mm in diameter. The surface is strongly hispid on account of the spicula-fibres lifting the dermal-membrane up into small conical elevations, and piercing these at the top; this feature is easily seen with the naked eye, as the spicula-tufts outside the sponge-surface reach a length of one mm, or even more; small orifices in the dermal-membrane, occur here and there, mostly hiding under an overshading spicula-tuft; they are leading into spacious cavities lying just under the dermal-membrane, but over the cortex; these cavities often appear as small tents between the spicula-tufts. Consistence of the sponge hard; colour whitish. The ectosome is ca. 0,5 mm thick, in a section it appears bluish against the yellow choanosome.

Skeleton typically radiate, consisting of long spicula-fibres running from the center of the sponge towards the surface right through the dermal-membrane, making the surface strongly hispid; in the interior the fibres are mainly made up of long slender oxea, while the dermal-tufts are mainly made up of triaenes; in the ectosome are placed shorter curved oxea, arranged almost perpendicularly towards the surface as rows of palisades; the before mentioned dermal conical elevations, raised by the projecting main fibres, are to a great extent filled up with small curved oxea, which are so placed,

that they lean towards the main fibres with their distal ends and with their convex sides towards the fibres; they resemble piles of arms, lending a very characteristical appearance to a vertical

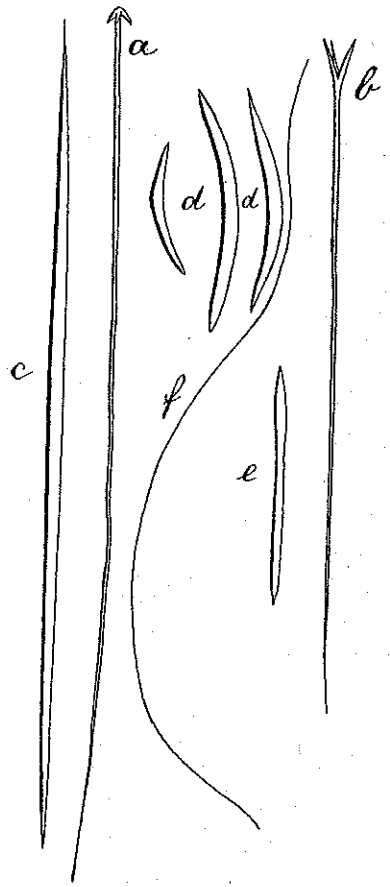

Fig. 5. *Cinachyra novae-zealandiae* nov. spec. *a*. Anatriaene. *b*. Protriaene. *c*. Big oxeote. *d*. Smaller oxea. *e*. Bayonetformed oxeote. *f*. Siliceum-thread.

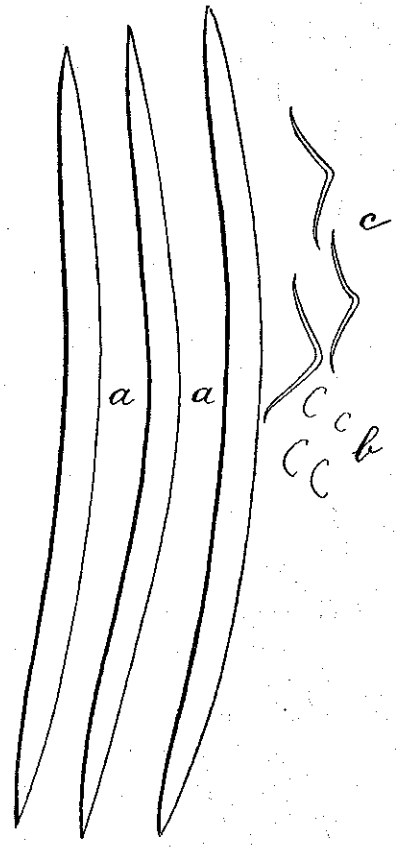

Fig. 6. *Gellius regius*, nov. spec. *a*. Oxea. *b*. Sigmata. *c*. Toxa.

section of the sponge. Small oxea and curved siliceum-threads occur everywhere in the sponge.

Spicules. 1. Anatriaenes (fig. 5a). Shaft very slender, straight or curved in the distal part, about 2500×18 μ. Cladi short, conical, curved, width of cladome about 68 μ. 2. Protriaenes (fig. 5b). Shaft slender, generally straight, about the same dimensions as the anatriaenes, though often somewhat shorter. 3. Oxea (fig. 5c). Straight, slender, thickest in the middle, tapering towards a sharp point; ca. 2200×24 μ. 4. Oxea (fig. 5d). Stout, curved, thickest in the middle, tapering more or less evenly towards the sharp points; varying from ca. 150—800×20—28 μ; length in the ectosome commonly about 650 μ, in the dermal tufts about 400 μ; a few bayonet-like oxea (fig. 7e) are seen, perhaps of foreign origin, perhaps pathological forms. 5. Curved siliceum-threads (fig. 5f), up to 3000 μ in length, but may be much smaller; sometimes they are assembled in bundles; I regard them as degenerated anatriaenes, since anatriaenes are met with, the cladomes of which are very feebly developed, the shaft thin and curved, closely resembling the siliceum-threads.

Gellius regius nov. spec.

(Fig. 6a—c.)

Three Kings. 65 fathoms. Hard bottom. 5/I.1915.

One specimen forming a cake-like expansion with somewhat irregular outlines; largest diameter ca. 65 mm, thickness ca. 4 mm; a lobe of the sponge is rising perpendicularly to the main body, ca. 20 mm high, 8×14 mm thick and broad. Dermal-membrane thin, shaggy from the numerous piercing spicules; big dermal cavities and irregular canals are seen through it. Oscula numerous, only situated at one side of the cake, 0,5—1 mm in diameter; no surrounding elevations. Consistence hard, brittle. Colour (formaline) greyish, with a reddish tint.

The *skeleton* is halichondroid; the spicules are lying pell-mell in every direction, and rather dense, no indication of fibre-formation being recognizable; no special dermal skeleton, not even so that the spicules here may lie tangentially, but they are lying in every direction, thus making, as before said, the surface shaggy. The microscleres are found everywhere in the choanosome; the toxa are rather scarce.

Spicules. 1. Oxea (fig. 6a), stout, a little curved, sometimes only in the middle, sometimes the curvature may reach over the entire length of the spicule; tapering gradually to the elegantly pointed apices, only rarely the oxea are blunt; length varying,

about 560 μ; thickness about 27 μ. 2. Sigmata (fig. 6 b), very regularly curved, seldom contorted, delicate, the apices rather abruptly inwardly curved; 10—18 μ from curvature to curvature, thickness 1 μ. 3. Toxa (fig. 6 c), elegantly arrowshaped, rather sharply bent in the middle, apices a little recurved; ca. 55 μ.

Gelliodes strongylofera nov. spec.

(Fig. 7 a—b).

Little Barrier Island. 30 fathoms. Shell-bottom. 29/XII.1914. Colville Channel. 35 fathoms. Sand, mud. 21/XII.1914. (The type). Three specimens.

Typically barrelshaped; in all specimens several barrels are, by a budding-process, issuing from the more or less lump-shaped basis; largest specimen ca. 70 mm in its greatest extension; the barrels up to ca. 35×18 mm, all bearing an osculum at the top; oscula from 1 to 5 mm in diameter; the numerous subdermal cavities are seen as dark spots through the dermal-membrane; they are up to 1 mm in diameter, giving the sponge a characteristic appearance. Texture tough, elastic. Colour dark, with a reddish tint.

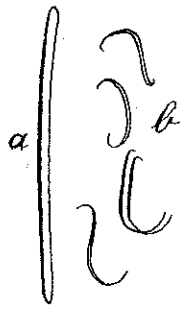

Fig. 7. *Gelliodes strongylofera* nov. spec. *a*. Strongylote. *b*. Sigmata.

The *skeleton* is a coarse network of stout spicula-fibres and spicula-lamelles, i. e. broad flat fibres; the spicules are lying very densely, and cemented together by a little amount of very pale inconspicuous spongin; the network is very irregular; the meshes, or rather the interstices between the fibres, are up to ca. 600 μ in diameter; primary and secondary fibres cannot be distinguished; the fibres and lamelles are up to ca. 400 μ thick; they reach the dermal-membrane perpendicularly as well as obliquely at any angle. Everywhere in the choanosome spicules are scattered, both strongyla and sigmata. The dermal-membrane is sustained by autogenetic spicules lying tangentially, as well as by imbedded foreign particles; also the fibres and choanosome contain foreign matter.

Spicules. 1. Strongyla (fig. 7 a), straight or slightly curved, cylindrical, with evenly rounded ends; 170—190×6—8 μ. 2. Sigmata (fig. 7 b), very numerous, often contorted, 10—20×1 μ.

Gelliodes biformis nov. spec.

(Fig. 8 a—c.)

Colville Channel. 35 fathoms. Sand, mud. 21/XII.1914.

Two specimens, both with long, branching, cylindriform bodies, one ca. 220 mm, the other 270 mm in length, at a diameter of 4—7 mm; one is attached to a shell with an irregular root-network, the other torn loose from the attachment; this latter specimen has a curious outer aspect: the oscula are nearly all situated on one side of the body, with a mutual distance of 10—30 mm; they are ca. 2 mm in diameter, and situated on the top of conical elevations varying in length up to 6—7 mm; these elevations may give origin to new branches; at least one of the three branches is situated exactly as the oscular elevations issuing from the stem at exactly the same angle as these obliquely upwards. The former specimen also has oscula, but of a smaller diameter, and lying in a level with the surface of the sponge, not situated on elevations, and not so regularly arranged, though one side of the cylinder is more richly set with them. Surface very finely hispid from spicules piercing the dermal-membrane perpendicularly. Texture soft, elastic. Colour (formaline) light yellowish, stem darker, greyish on account of incorporated foreign matter.

Fig. 8. *Gelliodes biformis* nov. spec. *a*. Connecting fibre. *b*. Oxea. *c*. Sigmata.

The *skeleton* is a coarse reticulation of spongin-fibres cored with oxea; the meshes are more or less irregular, up to 650 μ in width; the main fibres are only slightly thicker than the connecting ones (ca. 52 μ as against ca. 40 μ), but they are generally polyspicular, whereas the connecting fibres are one- to bispicular (fig. 8 a), the main fibres are on a transverse section seen to radiate towards the surface in a more or less pronounced perpendicular

way, but they never run unbroken from the center to the surface, they are always here and there bent and fusing into secondary ones.

Spicules. 1. Oxea (fig. 8b), slightly bent, cylindrical for the greater part; the apices sharp-pointed, rather abruptly set off. Length from 78—91 μ often 81 μ, thickness ca. 6 μ. 2. Sigmata (fig. 8c), evenly C-shaped, seldom a little contorted, rather scarce; 26—34 μ from curvature to curvature, ca. 2 μ thick.

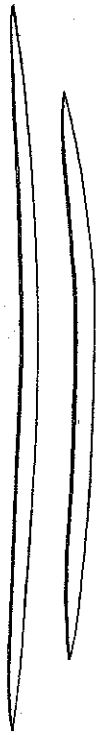

Fig. 9. *Halichondria reticulata*, nov. spec. Oxea.

This species is closely related to *G. flagelliformis* Brstd., and *G. filiformis* Brstd., both from the South Sea (Auckland- and Campbell Islands) (Brøndsted 1923. (1)); the oxea are pointed as in the latter, of even thickness as in the former, a little larger than in both forms. Perhaps they will prove to belong to the same species when more extensive material is at hand.

Halichondria reticulata nov. spec.

(Fig. 9.)

Wellington Harbour. 5—10 fathoms. Hard bottom. 16/II.1915.

One specimen, lumpshaped; growing on a little stone and a shell. 5 mm high. Dark-brown. Surface glabrous. With a pocket-lens one can see the very beautiful reticulate dermal-skeleton through the thin dermal-membrane. Numerous oscula are spread over the surface; they are from $^1/_4$—1 mm in diameter; the oscular rim is slightly elevated, made firm by the densely packed spicules in it. Consistence firm.

Skeleton. The main skeleton consists of fairly well developed spicular-fibres running in every direction, though tending to reach the surface under more or less right angles; the distal ends of these fibres embrace the very numerous dermal-cavities. The fibres are of various thickness, the spicules lying in rows of one to, say, ten, side by side. Many isolated spicules lying pell-mell give, however, the typically Halichondrioid aspect to the skeleton. The dermal skeleton is supported by the main one; it is beautifully developed; the oxea are

lying paralell with the surface in fibres splitting out and crossing each other so as to form a polygonal network; also here, however, are isolated spicules veiling the picture.

Spicules. Oxea (fig. 9), slightly and evenly curved, typically in the middle; from here the spicules taper very evenly to the very sharp points. Dimensions: 150—500 × 8—14 μ; typically 450 × 12 μ.

The species comes very near to *H. panicea*, but is clearly distinguished by the well defined spicular-fibres, especially those of the dermal-membrane.

Halichondria panicea Johnst.

This cosmopolitan sponge we have from two localities: Bay of Islands. The coast, under stones. 1/I.1915. Several damaged specimens. Off New Plymouth. 8 fathoms. Hard bottom. 12/I.1915.

Reniera pulcherrima nov. spec.

(Fig. 10.)

Colville Channel. 35 fathoms. Sand, mud. 21/XII.1914. One specimen.

Erect, branched, hollow cylinders, 30 mm high, ca. 4 mm in diameter; wall only ca. 0,5 mm thick. Oscula, ca. 1 mm in diameter, at the top of the cylinders. Dermal-membrane thin, supported by a beautiful dermal reticulation of spicules. If the sponge be held against the light, one may easily with a pocket-lens see the fibres of the main skeleton running in the wall of the cylinders from base to summit.

Fig. 10. *Reniera pulcherrima* nov. spec. Oxea.

The *skeleton* consists of 1. the main skeleton, just mentioned, composed of longitudinal, stout, polyspicular fibres, every now and then connected by fibres at acute angles, and by unispicular fibres at every angle; main fibres 150—200 μ thick and ca. 300 μ apart; and of 2. the before mentioned dermal-skeleton; this consists of spicules forming a Renieroid reticulation with irregular meshes; the layer is very thin.

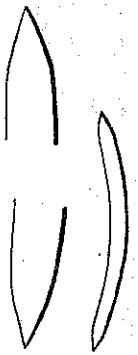

Fig 11. *Reniera scyphanoides* Lam. Oxea.

Spicules. Oxea (fig. 10), evenly curved in the middle third, cylindrical; only the apices are conically set off, very sharp-pointed; size rather constantly 260 × 13 μ.

In external form this specimen resembles *R. aquaeductus* Schm. (15), but it is strongly marked off from that species by the construction of the skeleton. In its spiculation it also comes near to *R. clavata* Levins. (10) and *R. hyalina* Ldbck. (12), but the fibres are very different in construction.

Reniera cinerea Grant.

This cosmopolitan sponge we have from two localities. Port Pegasus, Stewart Island, the coast, under stones. 22/XI.1914. Slipper Island, the coast, at low water. 20/XII.1914. The length of the oxea varies from 125—160 μ.

Reniera scyphanoides Lamk.

(Fig. 11).

Spongia scyphanoides Lamarck. Ann. Mus. Hist. Nat. V. 20, p. 437.
Reniera scyphanoides Lindgren (12), p. 7.

Off New Plymouth. 8 fathoms. Hard bottom. 12/I.1915.

This is apparently a very heterogeneous species, and is very probably to be divided up into two or three distinct species. Provisionally I incorporate our specimens into the species, as they all fall within the variations given by Lindgren 1909 (12). There are three specimens, erect, hollow cylinders, up to 15 mm high, 2—3 mm in diameter, walls ca. 0,5 mm thick. White; resembles a calcareous sponge. Dermal-membrane very thin.

Skeleton. The main skeleton consists of densely packed spicula-fibres, ca. 60—70 μ thick, which support the body-wall, partly running parallel with the long axis of the sponge, partly perpendicularly to the surface as short thick bundles of spicules. The dermal-skeleton is a one layered reticulation supporting the dermal membrane, and resting upon the points of the transverse bunches from the main skeleton.

Spicules. Oxea (Fig. 11), ca. 160 × 13 μ; rather stout, cylindrical, tolerably evenly curved in the middle part; apices short, conical, sharp-pointed. As will be seen, the oxea are here a little

longer than in Lindgren's specimen (130 μ) and thicker (Lindgren 6 μ). Ridley (13) has 210 × 11 μ.

Hitherto known from the Red Sea, South China Sea and Australia.

Reniera clathrata Dendy.

Reniera clathrata Dendy (2), p. 237.
» » Brøndsted (1), p. 125.

Queen Charlotte Sound. 3—10 fathoms. Hard, in places soft bottom. 19—20/I.1915. Also from Long Reef, N. of Port Jackson; at low water. 29/X.1914.

From the first locality we have one specimen covering a shell, from the second several specimens. Dimension of the oxea, first locality, 90—105 × 6 μ, second locality, 80—95 × 4 μ.

Hitherto known from Port Philip Heads and Campbell Island.

Reniera laxa Ldbck.

Reniera laxa Lundbeck (12), p. 46, Pl III fig. 6, Pl. XI fig. 13.
» » Brøndsted (1), p. 124, fig. 6.

Colville Channel. 35 fathoms. Sand, mud. 21/XII.1914.

One damaged specimen, encrusting as a 1—3 mm thick layer on a shell; *R. laxa* seems otherwise typically to be barrelshaped. Skeleton fibres hardly to be seen, the skeleton consisting of a rather irregular reticulation; in the typical form the fibres are easily to be seen; I think, that the lack of clearly marked fibres is due to the encrusting habit of our specimen. The shape of the oxea is identical with that of the specimen from the Campbell Isl. (Brøndsted (1)); size 190—200 × 7—8 μ, a little more slender than the type.

Hitherto known from North of Iceland and the Davis Strait (Lundbeck) and Campbell Isl. (Brøndsted).

Petrosia coralloides Dendy.

Petrosia coralloides Dendy (7), p. 324, Pl. XI fig. 1 and 1 a.

2 miles E. of North Cape. Hard bottom. 55 fathoms. 2/I.1915.

There is one fragment of this beautiful and interesting sponge agreeing in every respect with the description given by Dendy; the fragment seems to be a piece of just such a shallow cup as figured by Dendy. The fragment in hand is 50—80 × 6 mm.

Hitherto known from near Three Kings Isl.

Pachychalina conica nov. spec.

(Fig, 12.)

Slipper Isl. The coast, at low water. 20/XII.1914.

Several fragments consisting of irregular, cylindrical branches, sometimes fused into one another. 8—18 mm in diameter, largest dimension in length ca. 50 mm. Dermal-membrane exceedingly fine and delicate, with numerous small ostia; oscula ca. 2 mm in diameter, with a mutual distance of ca. 8 mm; they are situated on small conical elevations leading into the cylindrical cloacal cavities of the same width. Colour yellowish, texture soft, elastic; surface smooth, but not quite glabrous.

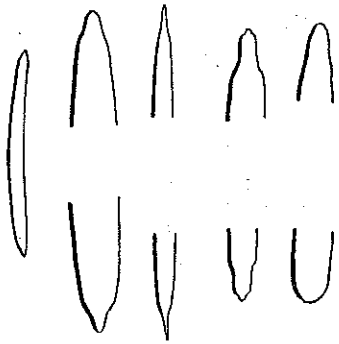

Fig. 12. *Pachychalina conica* nov. spec. Variously ended Oxea.

Fig. 13. *Pachychalina affinis* nov. spec. Oxeote.

Skeleton consists of spongin-fibres building a network with rather irregular meshes; the spongin is very pale; it contains the spicules which are generally completely enveloped therein; they are lying rather densely, overlapping one another, 1—5 or 6 in the row; one can scarcely speak of main and connecting fibres, though as a matter of fact, the fibres running towards the surface, taken as a whole, are a little heavier than the other fibres; the meshes are from ca. 15 μ to ca. 55 μ broad. No special dermal-skeleton is to be seen.

Spicules. Oxea (fig. 12), of a peculiar form, slightly curved, thickest in the middle; the apices are more or less conically set off. Some strongyla of the same dimension as the oxea are found. Ca. 130 $\times$ 12 μ.

Pachychalina affinis nov. spec.

(Fig. 13).

Little Barrier Island. 30 fathoms. Shellground. 29/XII.1914. Colville Channel. 35 fathoms. Sand, mud. 20/XII.1914.

Three specimens, the one very beautiful; copiously ramified with cylindrical branches, total length ca. 420 mm, diameter of branches ca. 8 mm. Numerous oscula on a level with the surface, 1—1,5 mm in diameter, occurring mainly on one side of the branches, although some may be found on the opposite side. Texture tough, elastic. Colour (formaline) yellowish grey.

The *main skeleton* consists of a rather dense reticulation of stout spongin-fibres, of a thickness of about 60—80 μ; this holds good for both primary and secondary fibres; the only difference between the two sorts of fibres being that of the spicules enveloped in the fibres: the oxea are polyserially arranged in the main fibres, mono- or biserially in the secondary fibres. The meshes are tolerably rectangular, width about 500 μ. The primary fibres are running perpendicularly towards the surface, so that in a transverse section of the sponge they roughly resemble spokes in a wheel. The dermal-skeleton forms a more irregular network of fibres, which are, as a whole, a little narrower than the fibres in the main skeleton, and always with only uni- or biserially arranged oxea.

Spicules. Oxea (fig. 13), about 70$\times$6 μ, cylindrical, with rather sharply set, pointed apices.

This species comes very near to *Euchalina exigua* Lendf. (Dendy 4 & 7); it differs from that species in having slightly stouter fibres (*exigua* 40 μ), larger diameter of the meshes (*exigua* 100 μ), and the spicules somewhat shorter but thicker (*exigua* 90 $\times$2 μ). It is also related to *Chalina ramosa* Gray, which forms, together with *Euchalina exigua* Lendf. and *Pachylina elongata* Ridl. and Dendy, a little group of nearly allied species.

Pachychalina lunae nov. spec.

(Fig. 14.)

Halfmoon Bay, Stewart Island. The coast. 19/XI.1914. Puhoi Rock, Hauraki Gulf. The coast, under stones. 29/XII.1914.

Three specimens; only fragments, which are of irregularly

roundish appearance; ca. 25×15×15 mm. Dermal-membrane very delicate, pierced by small, numerous ostia, ca. 0,15 mm in diameter; oscula situated at one side, ca. 2 mm in diameter, surrounded by a low crater wall; cloacal cavities ca. 2 mm in width. Surface slightly granulose, on account of the numerous primary fibres raising the dermal-membrane. Texture soft, elastic. Colour light grey or yellowish.

Fig. 14. *Pachychalina lunae* nov. spec. Oxea.

Skeleton consists of an irregular reticulation of fibres up to ca. 100 μ thick; one can scarcely distinguish between primary and secondary fibres; only just beneath the surface are fibres to be discerned running distinctly perpendicularly towards the surface, raising it into the before mentioned small granules. Width of meshes varying about ca. 250 μ. The fibres contain only comparatively little spongin; the spicules in the outer layer are often almost free from spongin, which is, besides, very pale and difficult to observe; thus the spicules are everywhere forming the greater part of the fibres. Many spicules, especially developmental forms, are lying scattered in the choanosome between the fibres. No special dermal-skeleton is to be seen.

Spicules. Oxea (fig. 14), ca. 120× 9—10 μ; they are slightly curved, the grown-up spicules cylindrical, tapering in the last fourth into the sharp points.

This species comes very near to *Pachychalina conica*, though distinctly marked off from that species by the form of the spicules.

Tetrapocillon nov. gen.

Esperellinae with peculiar microscleres (tetrapocilli). Megascleres monactinal. No special dermal-skeleton. Isochelae may occur.

I propose to include in this new genus sponges with Esperelline skeleton possessing the very interesting and characteristical tetrapocilli. I have not been able to find these peculiar spicules mentioned anywhere in the literature. The following species is not unique; I have at my disposal a sponge from Port Western, Victoria, containing just the same tetrapocilli, and also in any other respect this sponge may be referred to the new genus; (I hope in

a future paper to have the opportunity of taking the question up again in dealing with sponges collected by Dr. Th. Mortensen in the Australian seas). It is very interesting that the tetrapocilli are found as foreign bodies in several sponges from the locality: 2 miles E. of North Cape, N. Z. 1915.

Tetrapocillon novae=zealandiae nov. spec.

(Fig. 15 a—f.)

Slipper Isl. The coast, at low water. 20/XII.1914.

One fragment; seems to have been encrusting and then torn loose from the body of attachment; it is forming a cake-like expansion, ca. 3 mm thick, 30 mm and 25 mm in the other dimensions. Consistence like felt. Surface finely granular. Colour black, though the interior of the sponge light grey. Some few openings, ca. 0,8

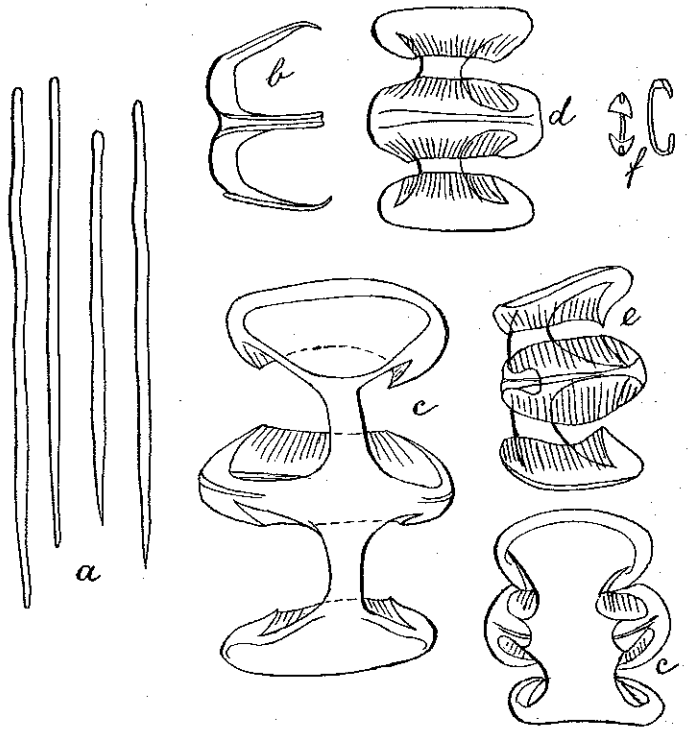

Fig. 15. *Tetrapocillon novae-zealandiae* nov. spec. *a.* Styli. *b—e.* Tetrapocilli. *f.* Isochelae.

mm in diameter are seen, but I think they are made by foreign organisms.

The *skeleton* consists chiefly of scattered monactines, which are however here and there forming distinct fibres, ca. 60 μ thick; there is no special dermal-skeleton.

Spicules. a. *Megascleres.* Styli or subtylostyli (fig. 15 a), straight or slightly undulated; generally thickest in the middle, apex sharp-pointed or sometimes blunt; 260—325 × 10 μ. b. *Microscleres.* 1. Tetrapocilli (fig. 15 b—e). It will be convenient to start the description with the young stages (fig. 15 b); here the spicule is distinctly seen to consist of a cylindrical shaft, which appears as formed by two parts, both nearly semicircularly curved and cemented together with end towards end; it appears so, but I think, that the two parts are really one spicule built in one cell; then both ends expand, forming disc-like plates, which are placed nearly, but never quite, at right angles to the axis of the shaft, and both to the same side. Also in the middle of the shaft two plates are being formed, which, so far as I am able to see, begin as separated, but later coalesce with their outer rim; they are standing perpendicularly towards the axis of the shaft, directed towards the same side as the terminal plates. The perfect spicules (fig. 15 c—e) is then completed so, that the rim of all four plates is growing obliquely inwards as a fine lamella; thus four cups are built, situated in couples, with their hollow sides to each other, quite as if two *Iophon*-bipocilli were cemented together with the ends. Length from 40—80 μ, ca. 50 μ the most common. 2. Isochelae (fig. 15 f), of common form, very thin and delicate, ca. 15 μ long.

Guitarra bipocillifera nov. spec.

(Fig. 16 a—f.)

Colville Channel. 35 fathoms. Sand, mud. 21/XII.1914.

Several specimens; the largest one measures 290 × 65 × 32 mm; they are all roundish lump-shaped, the smaller ones nearly globular. The surface has a very characteristic appearance: it looks as if some animal had been gnawing shallow furrows all over the sponge, these furrows now and then expanding to broad patches; in this way small and big "islands" are formed; the furrows are 0,5—1 mm deep, and from a fraction of a mm to several mm broad; the dermal-membrane is covering both furrows and "islands", it is very thin and delicate; in the furrows it covers spacious dermal cavities and canals, and only here are situated the oscula (and ostia?), which are up to 1 mm in diameter. The surface is all over very finely hispid. Texture rather firm, somewhat crumbling. Colour dirty grey with a reddish tint in the bigger specimens (formaline), light grey in the smaller ones (spirit).

The *skeleton* is a triangular reticulation of spicula-strands; the sides of the meshes are ca. 450 μ, the strands are ca. 60 μ thick; no distinction between primary and secondary fibres can be drawn; many megascleres are scattered disorderly everywhere in the soft tissues; in one of the examined specimens this condition is the prevailing one, so as to nearly extinguish the before mentioned regular reticulation.

Spicules. a. *Megascleres.* Oxea (fig. 16 a) long, slender, straight or nearly so, often a little irregularly undulated, the apices rather abruptly set off; up to ca. 450 μ in length and ca. 9 μ thick; a few styli of about the same dimensions are seen. b. *Microscleres.* 1. Plachochelae (fig. 16 b—c), the ordinary *Guitarra*-form, varying in length from 40—100 μ. 2. Bipocilli (fig. 16 d—f); seen in side-view they closely resemble sigmata, and, in fact, I first took them for sigmata, only two feeble transverse lines, dividing the shaft in three parts, show that we here have to deal with cheloid spicules. The shaft is C-shaped, the distal third expanding into a shallow cup with nearly circular margin; the cups are obliquely placed towards the middle portion of the shaft; the bipocilli are 10—14 μ long. These spicules are exceedingly delicate, and their real nature easily overlooked. It is very interesting to meet these *Iophon*-like spicules in quite another genus. Perhaps the sigmata of some of the other described *Guitarra*-species will prove to be of the same nature.

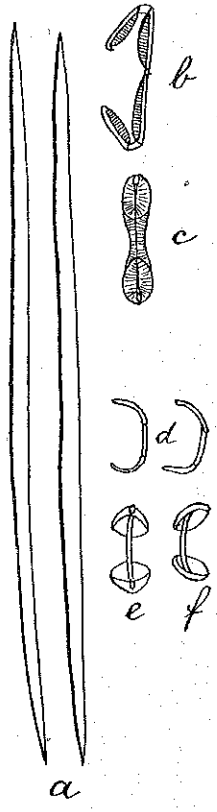

Fig. 16. *Guitarra bipocillifera* nov. spec. *a.* Oxea. *b.* Side-view of plachochel. *c.* Front-view of plachochel. *d.* Side-view of bipocilli. *e.* Front-view of bipocillon. *f.* Half front, half side view of bipocillon.

Desmacidon novae-zealandiae nov. spec.

(Fig. 17 a—d.)

Off New Plymouth. 8 fathoms. Hard bottom. 12/I.1915.

One specimen, irregularly and thickly encrusting on a shell; greatest extension ca. 30 mm, about 5 mm thick. Surface very minutely hispid. Ostia very numerous, about 40 mm in diameter; a few minute oscula with slightly elevated margins, about 0,3 mm in diameter are found. Texture tough, colour whitish.

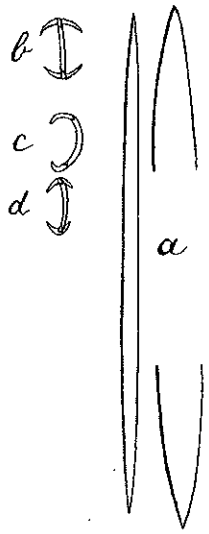

Fig. 17. *Desmacidon novae-zealandiae* nov. spec. *a*. Oxea. *b*. Front-, *c*. Side-, *d*. Half front-, half side-view of Isanchorae unguiferae,

The *skeleton* consists of stout polyspicular fibres arranged more or less radially; they are somewhat serpentined, running more or less perpendicularly towards the surface, where they expand to tufts making the dermal-membrane hispid; in the interior they here and there coalesce and branch; they are up to ca. 200 μ in thickness; isolated oxea are seen throughout the choanosome.

Spicules. a. *Megascleres.* Oxea (fig. 17 a) rather slender, straight, evenly tapering towards the pointed ends, about 350 × 6 μ. b. *Microscleres.* Isanchorae unguiferae (fig. 17 b—d), very delicate, strongly curved; the lateral teeth are standing almost vertically outwards and are rather long, which fact makes the anchorae broad. 12—14 μ in length.

This species seems to be somewhat related to *Desmacidon maeandrina* Kirkp. (8), *Desmacidon intermedia* Dendy (2) and *D.* (?) *ramosa* R. & D. (14), the latter having radially arranged fibres like the species in hand.

Iophonopsis Dendy.

Iophonopsis Dendy (4), p. 348.

I follow Dendy in his establishment of this new genus. Dendy has on p. 348 "usually acanthostyles, but sometimes smooth (?)", which (?) now has to disappear.

Iophonopsis major nov. spec.

(Fig. 18 a—h.)

Stewart Island. Ca. 35 fathoms. Sand and mud. 20/XI.1914. Little Barrier Island. 30 fathoms. Shell bottom. 29/XII.1914. Colville Channel. 35 fathoms. Sand, mud. 21/XII.1914.

There are several specimens from both the North- and the South-Island, which seems to indicate, that the species may be found also in intermediate places at the coast of New-Zealand. The sponge is apparently encrusting when young, but more or less erect and branching when growing older; we have both encrusting specimens on shells, encrusting ones sending off an erect cylindrical outgrowth, and one beautiful branched specimen; this latter is the biggest one and attains a length of ca. 65 mm; the branches are subcylindrical, often somewhat flattened at the apex, 5—15 mm in diameter. The surface is smooth; the dermal-membrane tough, on account of the strongyla lying therein. Oscula few and scattered, on a level with the surface, ca. 0,8 mm in diameter. Texture soft, elastic. Colour (both spirit and formaline) dark or even black, though a little lighter in the interior. The pigment is in sections easily seen as dark branched sacks.

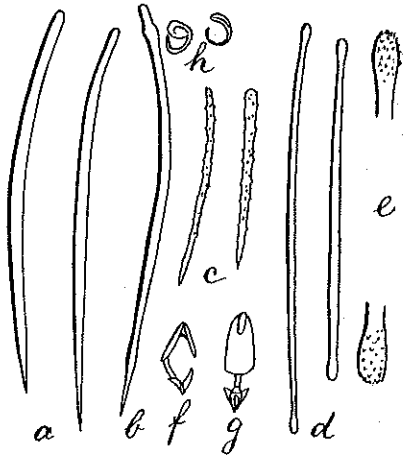

Fig. 18. *Iophonopsis major* nov. spec. *a*. Styli. *b*. Subtylostylote. *c*. Acanthostyli. *d*. Tylota. *e*. Ends of Tylote. *f*. Side-, *g*. Front-view of Anisochelae. *h*. Bipocilli.

The *skeleton* is built up of smooth styli. Main skeleton typically consists of stout primary spicula-fibres, ca. 65 μ thick, running up through the sponge and bending vertically towards the surface, connected ladderlike by transverse spicules lying in bundles of a few together; in this way a coarse reticulation is made up of rather square meshes, the sides of which are the length of one spicule; but this rather regular edification is disturbed by isolated spicules lying pell-mell, sometimes so densely, that they nearly extinguish the regular picture of the reticulation; the main fibres can, how-

ever, always be made out. The fibres are never plumose; in a few cases they are so clear-cut, that they are seen as compact spicula-columns running a rather long course without any spicule breaking out. When the main fibres reach the surface, they generally break up so as to form fan-spread spicula-tufts sustaining the dermal-membrane. The dermal-skeleton is an one-layered tangentially arranged reticulation of tylota.

Spicules. a. *Megascleres.* 1. Styli (fig. 18a—b), smooth, forming the main skeleton, more or less regularly curved, tapering evenly to the sharp-pointed apex; middle length ca. 260 μ by a thickness of 10 μ. 2. Acanthostyles (fig. 18c), very scarce, not echinating the fibres, straight or a little curved, coarsely spined all over, thickest at the base, evenly tapering to the apex; 100×6 μ. 3. Tylota (fig. 18d—e), with slightly spinous heads, straight or a little curved, slender; shaft of even thickness all over; 260×10 μ. b. *Microscleres.* 1. Anisochelae (fig. 18f—g) of the usually *Iophon*-type; 14—20 μ in length, 4—5 μ broad. 2. Bipocilli (fig. 18h), very scarce, 6—8 μ.

Iophonopsis major nov. spec., var. *tenuis* nov. var.

Port Pegasus, Stewart Island. Ca. 25 fathoms. Clayey mud. 20/XI.1914.

One specimen, encrusting on a shell. Colour light greyish. Skeleton almost as that of *I. minor*. The spicular set is the same as that of *I. major*, but the dimensions of the spicules differ in the following points: Smooth styli ca. 230 μ; tylota ca. 230 μ; anisochelae exceedingly numerous; bipocilli very numerous, ca. 10 μ.

Iophonopsis minor nov. spec.

Wellington Harbour. 5—10 fathoms. Hard bottom. 16/II.1915. North Channel, Kawaii Island. Hauraki Gulf. 10 fathoms. Hard bottom. 29/XII.1914. Little Barrier Isl. 30 fathoms. Shell-bottom. 29/XII.1914. Colville Channel. 35 fathoms. Sand, mud. 21/XII.1914.

Several specimens. Encrusting or branching, with cylindrical or flattened or irregularly formed branches, which often coalesce; largest specimen attains a length of ca. 400 mm; it consists of irregularly flattened branches growing in one plane, and coalescing

in several places, provided with rounded subglobular outgrowths. Surface glabrous, though a little roughish to the touch, on account of the contracted state of the dermal-membrane, whereby this latter attains a finely granular appearance when seen under an ordinary pocket-lens. Oscules scattered, few, ca. 1 mm in diameter. Texture soft, elastic, rather tough. Colour dark brown to greyish brown.

The *skeleton* resembles that of *I. major*, but is not so regularly square-meshed; in fact, secondary fibres are only very feebly developed, in most places substituted by scattered spicules; as a whole the skeleton appears more diffuse than that of *I. major*; in the few cases where meshes are formed (this being the case mostly under the surface) the sides of these latter are two to more spicules in length. The dermal-membrane is sustained by spicula-tufts from the main skeleton, just as in *I. major*. The dermal-skeleton also like that of *I. major*: a diffuse reticulation of one-layered tangentially placed tylota.

Spicules. There is found the same spicular set as in *I. major*, except the acanthostyles, which I have not been able to find. The megascleres are all much smaller: The smooth styli about 145×8 μ; tylota ca. 150×8 μ; thus both forms of megascleres are relatively stouter than in *I. major*. The isocheles are 10—16 μ; the bipocilli, very scarce, (I have only seen a few), 6—8 μ.

This species is evidently closely related to *I. major*, and most probably the var. *tenuis* is an intermediate form, thus indicating the possibility, that all three forms may be one and the same species, which will in that case have a wide variational range.

Microcionia novae-zealandiae nov. spec.

(Fig. 19a—e.)

Slipper Isl. The coast, by low water. 20/XII.1914.

One encrusting specimen, growing as a 0,5 mm thick brownish layer on a stone; the surface is, when seen against the light, finely shaggy, as if covered with an exceedingly fine velvet of projecting spicules.

The *skeleton* can hardly be said to consist of fibres, these being represented by plumose brushes of big styli going from the stone vertically outwards and piercing the dermal-membrane. From the base and half way up the brushes small acanthostyles are radiating

horizontally outwards, with their apices nearly touching the neighbouring brushes; seen from above the skeleton therefore appears as if it were reticulated with mostly triangular meshes, the sides of which are made up of small acanthostyles. The tylostyli are dispersed through the body of the sponge seemingly without order.

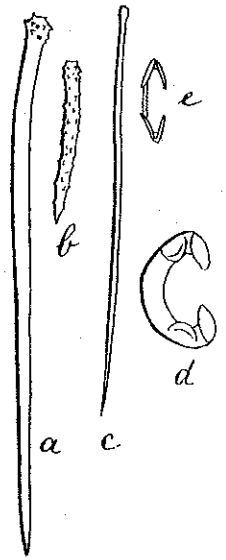

Fig. 19. *Microcionia novaezealandiae* nov. spec. *a.* Subtylostylote. *b.* Acanthostylote. *c.* Tylostylote. *d.* Isochele. *e.* Smaller isochele.

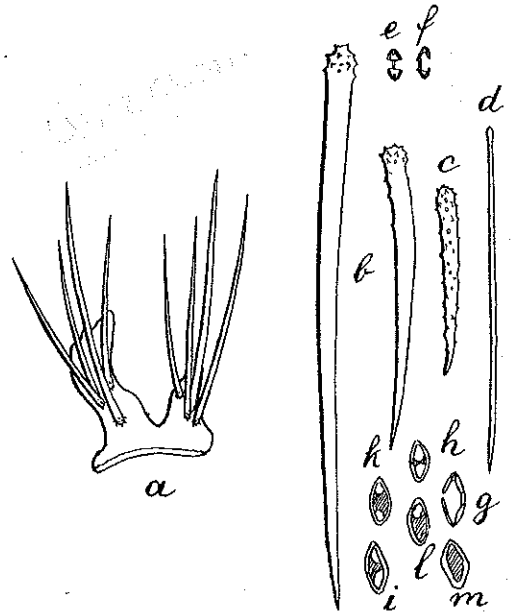

Fig. 20. *Microcionia heterospiculata* nov. spec. *a.* Spicula-tufts. *b.* Bigger acanthostyli. *c.* Small acanthostylote. *d.* Subtylostylote. *e.* Front-, *f.* Side-view of isochelae. *g—m.* Various developmental stages of abnormal isochelae.

Spicules. a. *Megascleres.* 1. Subtylostyli (Fig. 19a), with slightly spinous heads, a little curved, evenly tapering to the sharp points; 260—300×12 μ. 2. Acanthostyli (fig. 19b), a little curved, of even thickness in the greater part, spined all over, ca. 90—140×11 μ. 3. Tylostyli (fig. 19c), straight or nearly so, evenly tapering to the sharp points; heads sometimes rather feebly developed. 260×6 μ. b. *Microscleres.* 1. Isochelae (fig. 19d), strongly curved, ca. 30—34 μ. 2. Isochelae (fig. 19d), slightly curved, 10—18 μ.

Microcionia heterospiculata nov. spec.

(Fig. 20a—m.)

Colville channel. 35 fathoms. Sand, mud. 21/XII.1914.

One specimen encrusting on a shell, as a 0,3 mm thin layer.

The *skeleton* consists of spicula-tufts, raising perpendicularly from the body of attachment (fig. 20a); they are built of acanthostyli, the bases of which are imbedded in short stout spongin-columns: the tufts are standing so close to one another, that the spicules often overlap one another from neighbouring columns; the subtylostyli are for a great deal scattered irregularly throughout the body, but in many places they are arranged as small brushes together with and partly continuing the acanthostyli-tufts. Both forms of microscleres are scattered abundantly in the choanosome.

Spicules. a. *Megascleres.* 1. Acanthostyli (fig. 20b—c), the base often subtylostylote; the bigger ones only spined at the base, the small ones spined all over; they are slightly curved, tapering evenly to the sharp points; length varying from ca. 80—400 μ, a common length is 300 μ; thickness up to ca. 14 μ. 2. Subtylostyli (fig. 20d), or styli, with rounded base, tapering evenly towards the sharp points; straight or only a little curved; length up to 320×4 μ in thickness. b. *Microscleres.* 1. Isochelae (fig. 20e—f), of the usual type, only a little curved, length 10—15 μ. 2. Abnormal Isochelae (fig. 20g—m), these bodies are of a very strange shape; they somewhat resemble the curious microscleres figured by Dendy (6) on plate 14, fig. 4. Accordingly I have tried them with water after the method of Dendy 1916 (4), but they do not seem to be of the same nature as the colloscleres; they seem to have developed from isochelae without fimbriae or broad teeth, or even beginnings thereto. I have seen such imperfect chelae, whose teeth have not yet coalesced; and there are others the teeth of which have coalesced, so as to form oval rings; the foramen, which is being built in this way, is then filled up more or less with siliceous matter forming a more or less continuous lamella. Length 12—18 μ. These curious bodies also resemble the clavidiscs of *Merlia*, thus perhaps giving a clue to the origin of these spicules. At any rate the occurrence of degenerated chelae, as I think they are, in the genus *Microcionia* is extremely interesting.

Microcionia pyramidalis nov. spec.

(Fig. 21 a—d).

Slipper Isl. The coast, at low water. 20/XII.1914.

Encrusting as a 0,5 mm thick layer on a stone. Surface finely hispid; colour brownish.

Skeleton in places consists of brushes formed by acanthostyles, but more frequently the acanthostyli are standing isolated with the base on the stratum of the sponge-attachment, and pointing vertically upwards; sometimes many styli are standing pretty close together, the biggest ones in the middle, thus expressing a certain tendency to build brushes; in this way the skeleton becomes much more irregular in appearance than in the other two just described *Microcionia*-species. The tornota are scattered seemingly without order, but are rather abundant everywhere; the same is the case with the isochelae.

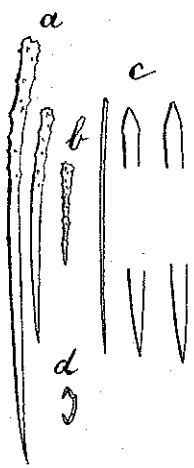

Fig. 21. *Microcionia pyramidalis* nov. spec. *a*. Big acanthostyli. *b*. Small acanthostylote. *c*. Tornota. *d*. Isochele.

Spicules. a. *Megascleres.* 1. Acanthostyli (fig. 21 a—b), evenly tapering to the sharp points, a little curved; length varying from about 90 to 300 μ, by a thickness of up to 11 μ. The larger ones (commonly about 260 μ in length) are slightly spinous, and only in the first third; the smaller ones are comparatively coarser spined, and spined all over; every intermediate form occurs. 2. Tornota (fig. 21 c), smooth, nearly straight, ca. 160—170 × 4 μ; they are the thickest in the middle, from here tapering evenly towards the one end, but only very little towards the other end, which is then conically set off, often a little head-like. Sometimes this end is blunt, so that the spicule is not to be distinguished from styli in outer appearance. b. *Microscleres.* 3. Isochelae (fig. 21 d), with evenly curved shafts, short tooth and fimbriae, 16—30 μ, often ca. 20 μ.

Anchinoë novae-zealandiae Dendy.

Anchinoë novae-zealandiae. Dendy (7) pag. 360 Pl. XII. fig. 2; Pl. XV, figs. 9—11.

Wellington Harbour. 5—10 fathoms. Hard bottom. 16/II.1915. Little Barrier Isl. 30 fathoms. Shell bottom. 29/XII.1914. Off New Plymouth. Hard bottom. 12/I.1915. Queen Charlotte Sound. 3—10 fathoms. Hard, in places soft bottom. 19/I.1915. Paterson Inlet, Stewart Isl. 5—15 fathoms. Soft bottom. 17/XI.1914.

There is plenty of material of this beautiful sponge, all closely agreeing with the description giving by Dendy; several specimens are encrusting; the only difference is that the tornata here are up to 200—210 μ.

The name '*novae-zealandiae*' has, indeed, proved to be a very adequate one, since we have specimens from the North- to the Southend of New-Zealand, giving the evidence also, that the species is a very good and constant one.

Hitherto known from off North Cape, N. Z.

Anchinoë affinis nov. spec.

(Fig. 22 a—e).

Wellington Harbour. Ca. 5 fathoms. Mud. 16/II.1915. Off New Plymouth. 8 fathoms. Hard bottom. 12/I.1915.

Three specimens; the two encrusting as thin layers; the third (from Wellington) oblong roundish, pointed at both ends; the sponge has apparently been freely growing, only attached at one end; it is ca. 35 mm long, 13 mm thick. This specimen has a very characteristic appearance: The ostia are placed on distinct circular areas up to one mm in appearance, surrounded by a low wall; the whole figure is very much like a low crater, up to 3 mm in diameter including the walls; the ostia are 20—30 μ in diameter. The dermal-membrane is very thin, transparent; through it can be seen subdermal-cavities and canals. Colour whitish. Consistence elastic, tough.

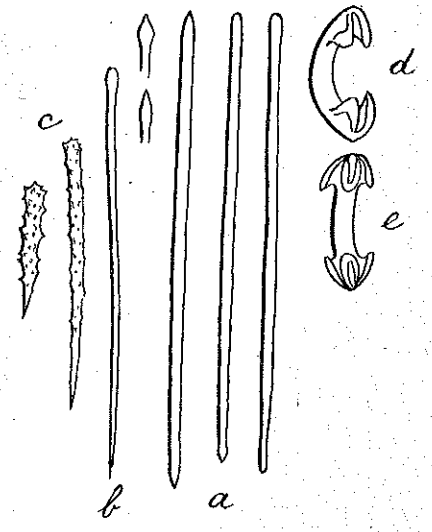

Fig. 22. *Anchinoë affinis* nov. spec. *a, b.* Variously ended diactines. *c.* Acanthostyli. *d.* Side-, *e.* Front-view of isochelae.

The *skeleton* consists of long curved fibres, frequently splitting up into several branches, which join other fibres at acute angles; the fibres are up to ca. 250 μ thick, and are built up of the smooth

megascleres, more or less echinated by acanthostyles; spongin very scarce; the fibres are running obliquely towards the surface, there giving off tufts of smooth diactines sustaining the dermal membrane. Everywhere in the choanosome are scattered smooth megascleres. In the dermal-membrane lie several isochelae, and sometimes a good deal of acanthostyli arranged tangentially and in one layer. The above mentioned walls surrounding the ostia-areas are sustained by tangentially arranged smooth diacts, placed so as to point towards the centre.

Spicules. a. *Megascleres.* 1. Smooth, nearly straight diactines (fig. 22 a—b), ca. 320 × 5—6, variously ended: as strongyla, tylota, tornota; sometimes the two ends are so unlike one another, and the one blunt, as not to be distinguishable from styli. 2. Acanthostyli (fig. 22 c), from ca. 90—180 × 13—14 μ, the smaller forms very coarsely spined. b. *Microscleres.* Isochelae (fig. 22 d—e), of common form, strongly curved, ca. 26 μ.

The fact that this sponge is found at two distinct localities at a comparatively long distance from one another, and in both localities together with the foregoing species, seems to justify the erection of the sponge as a distinct species, and not merely as a variation of the former.

Myxilla crelloides nov. spec.

(Fig. 23 a—d).

2 miles East of North Cape. 55 fathoms. Hard bottom. 2/I.1915.

One large specimen. Very richly ramose; branches 3—4 mm thick, often somewhat flattened, or otherwise a little deviating from the purely cylindrical shape; total length of the specimen ca. 230 mm. Oscules very small and inconspicuous, scattered, rather scarce. Surface just a little rough to the touch. Consistence hard but brittle; colour (formaline) dirty reddish.

The *skeleton* is a dense reticulation of acanthostyles, only very faint tentatives to fibre-formation can be seen; meshes often rather triangular, the sides built up of one or a few spicules, but only of one spicule's length. Here and there are tylota found irregularly distributed; these latter spicules are forming brushes under the dermal-membrane; otherwise no special dermal-skeleton is to be found; the acanthostyles are even more scarcely distributed in the

dermal- than in the main skeleton; only the isanchorae are found in a very great number in the dermal-membrane; hence no crelloid crust is built.

Spicules. a. *Megascleres.* 1. Acanthostyles (fig. 23 a), generally thickest at the base, where they are also most coarsely spined; from the base in most cases a little tapering to near the apex, which is markedly set off; the longer styli are often without spines in the last fourth; length varying from ca. 90—210 μ, commonly about 145 μ, by a thickness of ca. 12 μ. 2. Tylota (fig. 23 b), straight or nearly so, with beautiful oval heads; they are often slightly swelled in several places on the shaft; length ca. 260 × 4 μ. b. *Microsclera.* Isochelae (fig. 23 c—d), with strongly curved shafts, rather stout, total length ca. 28 μ, ca. 10—12 μ broad, 18 μ deep.

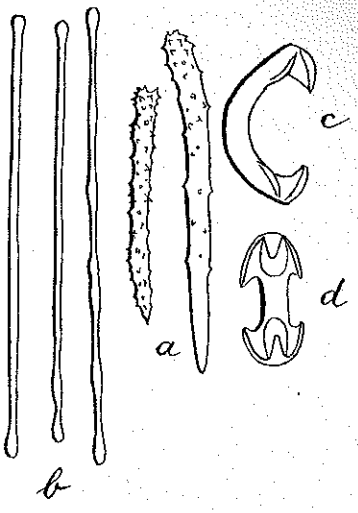

Fig. 23. *Myxilla crelloides* nov. spec. *a.* Acanthostyli. *b.* Tylota. *c.* Side-, *d.* Front-view of isochelae.

This species is very interesting; it comes very near to Dendy's *Crellomyxilla intermedia*; the external shape is nearly the same, the skeletal arrangement likewise, but no dermal crust is being built; and this point is the only real difference (save specific ones) from the said species; it strongly confirms the view set forth by Dendy, that the Crelleae are specialised Myxillae.

Crellomyxilla intermedia Dendy.

Crellomyxilla intermedia Dendy (7), p. 364, Pl. XV figs. 16—21.

Hen and Chicken Isl. Hauraki Gulf. Hard bottom. 30/XII.1914. Colville Channel. 35 fathoms. Sand, mud. 21/XII.1914.

Two specimens. Encrusting, the one specimen very irregular, seemingly corresponding in shape with the "main body of compressed flabellate form" of the specimen, which Dendy has described. In most features agreeing very well with the type specimen; only the tornota are here a little longer, up to 260 μ; the isochelae are up to 40 μ and by intermediate forms connected with small forms of ca. 12 μ.

Lissoplocamia nov. gen.

Plocamiae with a reticulation of smooth dumb-bell shaped spicules building the main skeleton, and smooth styli echinating from the surface of the sponge. Microscleres toxa.

I propose to regard the following very characteristic and interesting species as the type of a new genus; all the hitherto described Plocamia-species have spined megascleres; I therefore think it convenient to create a new genus for species with smooth megascleres. I am inclined to regard the sponge as a degenerate *Plocamia*.

Lissoplocamia prima nov. spec.

(Fig. 22a—d.)

2 miles East of North Cape. 55 fathoms. Hard bottom. 2/I.1915.

One specimen, slender, cylindrical, richly branched, ca. 260 mm long, 4—8 mm thick. Very characteristic is the beautiful velvet

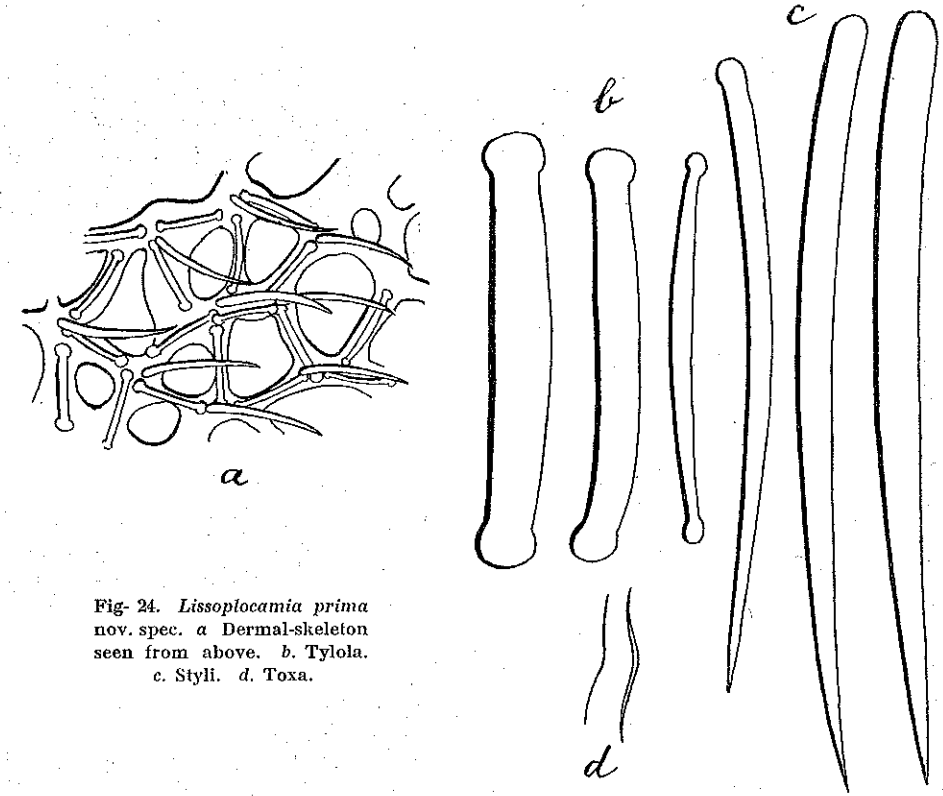

Fig. 24. *Lissoplocamia prima* nov. spec. *a* Dermal-skeleton seen from above. *b*. Tylola. *c*. Styli. *d*. Toxa.

covering the whole sponge, caused by the countless styli projecting almost perpendicularly from the surface. Oscula and ostia could not be made out. Colour dark, consistence rather hard, somewhat elastic.

The *skeleton* consists of a stout reticulation of spongin-fibres, cored by the tylota, which are in most places arranged uniserially, only rarely biserially; the sides of the meshes are generally only of ca. one spicule's length, the meshes themselves are often triangular or quadratic; the fibres are up to 130 μ thick, generally only about ca. 60 μ; primary and secondary fibres are not distinguishable. The nodes of the meshes are often rather thick, and from the dermally placed nodes styli are projecting perpendicularly outwards (fig. 24 a), only their bases are imbedded in spongin; as before said these spicules are lending the sponge-surface a velvety appearance. Everywhere in the soft tissues (or rather the remainder thereof) are found numerous toxa and foreign spicules.

Spicules. a. *Megascleres.* 1. Tylota (fig. 25 b), very stout, straight or a little curved, with short thick heads; about 270 μ long and up to 35 μ thick. 2. Styli (fig. 24 c), a little curved, sometimes a little subtylostylote, generally thickest at the base, from here evenly tapering to the sharp points; they are always longer than the tylota, reaching up to 800 μ, by a thickness of up to 35 μ. b. *Microscleres.* Toxa (fig. 24 d), slightly and beautifully curved, about 75 μ in length, 2 μ in thickness.

Tedanione connectens nov. spec.

(Fig. 25a—d.)

Little Barrier Islands. 30 fathoms. 29/XII.1914.

Three fragments. Sponge irregularly encrusting, giving off digitiform hollow processes; the elder parts of the sponge filled up with sand; largest specimen 27 mm in greatest diameter; the processes are generally broader at the base, ca. 2—3 mm, tapering to the apex, which is ca. 1 mm broad, length up to ca. 17 mm. Colour whitish, surface smooth, consistence soft. Oscula and other orifices could not be made out.

Skeleton composed of loose strands and wisps of tylota, in the interior intermingled with a few styli, where the spicules also are lying more close together; the main direction of the spicula-wisps

is obliquely upwards, reaching the dermal-membrane at nearly right angles. The dermal-membrane is very delicate, supported by rather few tangentially but irregularly placed tylota and raphides; these latter are also distributed throughout the entire body of the sponge.

Spicules. a. *Megascleres.* 1. Styli (fig. 25 a), up to 430 × 11 μ, slightly curved in the first half part, evenly thick in the greater

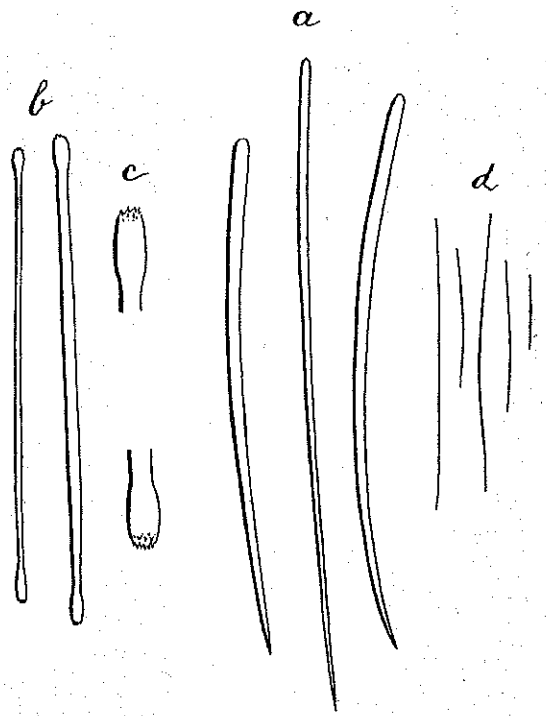

Fig. 25. *Tedanione connectens* nov. spec.
a. Style. *b.* Tylota. *c.* Ends of Tylota. *d.* Raphides.

part, apex tolerably sharp-pointed. 2. Tylota (fig. 25 b—c), straight or a little (seldom strongly) curved; beautiful oval heads, which are spined at the top; about 300 × 6 μ. 3. Tornota, ca. 160 × 3 μ, very scarce, probably not belonging to the sponge. b. *Microscleres.* Raphides (fig. 25 d), up to ca. 200 × 1 μ, finely spined at the ends, straight or curved, numerous.

This species is very interesting in still having stylote spicules as an integrating part of the main skeleton, thus retaining a reminiscence of the monactinal skeleton of *Tedania*; it gives the clue to

the way in which *Tedanione* has probably developed from *Tedania*, viz. by an invasion of dermal diactinal spicules into the main skeleton; of course also the reversed process may have taken place: the evolution of *Tedania* from *Tedanione* by a stronger development of monactinals in the main skeleton; but a comparison with other Desmacidonidae seems to prove the other way of evolution as the more probable, since the styli in the main skeleton everywhere seem to be the more primitive state of things.

Cornulum novae-zealandiae nov. spec.

(Fig. 26 a—d.)

10 miles N.W. of Cape Maria van Diemen. 50 fathoms. 5/I.1915.

One large beautiful specimen, about 200 mm in largest diameter, formed as a somewhat oblong pillow; it is torn loose from the body of attachment. The sponge is covered with numerous fistulae up to 30 mm in length, by a thickness of ca. 4—8 mm at the base; the apex of these hollow whitish fistules is often swollen button-like. I have not been able to see any oscula. Colour (formaline) light grey with a reddish tint.

The main *skeleton* is a stout reticulation of smooth spicular fibres up to 1000 μ thick, thus easily seen with the naked eye; the fibres are branching and irregularly interwoven, often 6—8 mm apart. Under the dermal-membrane the fibres are expanding fanwise. The dermal skeleton and the skeleton in the fistulae consist of a dense feltwork of interwoven tylota, all lying tangentially.

Spicules. a. *Megascleres.* Tylota (fig. 26 a—c), slender, slightly but irregularly curved, with beautiful, oval heads, sometimes somewhat narrow just beneath the head; up to 870 × 15 μ. b. *Microscleres.* Isochelae palmatae (fig. 26 d), slender, short alae and teeth, ca. 27 μ in length.

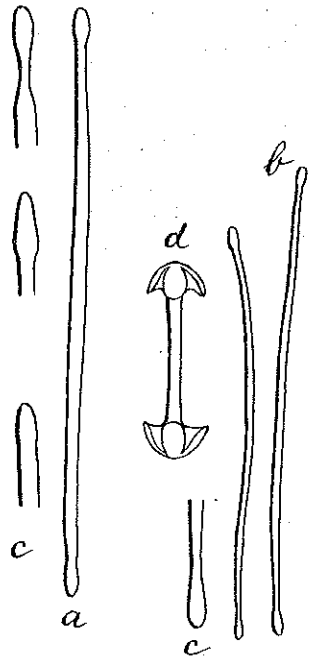

Fig. 26. *Cornulum novae-zealandiae* nov. spec. *a—b.* Tylote (b from fistulae). *c.* Ends of Tylota. *d.* Palmate Isochele.

There are also some small fistula-fragments of the species from the same locality; in these the tylota measure only up to 650 × 12 μ, and the isochelae only ca. 22 μ.

Axinella colvillii nov. spec.

(Fig. 27 a—b.)

Little Barrier Island. 30 fathoms. Shell-bottom. 29/XII.1914. Colville Channel. 35 fathoms. Sand, mud. 21/XII.1914.

Three specimens. The base is lump-shaped and encrusting with shells and sand; from this base numerous slender processes arise vertically; the largest specimen attains 95 mm in its greatest extension; the largest processes are about 12 mm in diameter at the base, apices pointed, about 55 mm high; their appearance is very characteristic: they are spined, the spines being up to 4 mm in length, and placed in longitudinal rows, here and there coalescing with the bases so as to form ridges, and a transverse section of the process will appear rather like an aster. The surface is everywhere shaggy. Numerous apertures from a fraction of 1 mm to 4 mm in diameter are seen everywhere; they are probably ostia. Consistence rather soft, but somewhat brittle. Colour of the body dirty grey, of the processes whitish with a red tint.

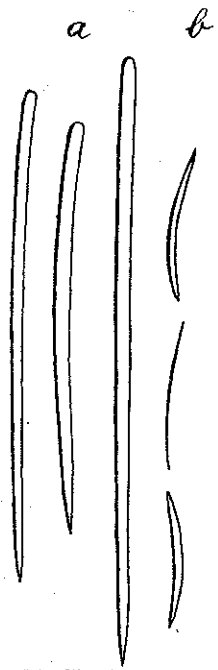

Fig. 27. *Axinella colvillii* nov. spec. *a*. Styli. *b*. Oxea.

The *skeleton* is composed of densely aggregated spicula-columns directed outwards towards the surface in the main body, longitudinally in the processes; the fibres are so densely packed, that their outer spicules, which are directed a little obliquely outwards, are partly crossing those of the neighbouring fibres; the before mentioned spines at the processes are mainly composed of spicules issuing from the main fibres at nearly right angles; many scattered spicules occur, mostly oxea, which only form a small part of the main skeleton of the fibres; they occur in greater number in the outer parts of the sponge than in the interior.

Spicules. 1. Styli (fig. 27 a), straight or slightly bent, generally

thickest in the middle, sharp-pointed; sometimes beginnings to subtylostyli are found; length about 700 μ most common, but the styli may vary from ca. 500—900 μ, by a thickness of 14—25 μ. 2. Oxea (fig. 27 b), slightly and generally evenly curved, tapering from the middle towards the pointed apices, varying in length from 170—320 μ, in thickness from 7—9 μ.

Axinella globula nov. spec.

(Fig. 28.)

2 miles East of North Cape. 55 fathoms. Hard bottom. 2/I.1915.

One little specimen, hemispherical, torn loose from the body of attachment; 13 mm in largest diameter, 8 mm high; numerous small apertures up to 0,25 mm in diameter are seen everywhere on the surface, which is very hispid. Consistence nearly stony, colour grey.

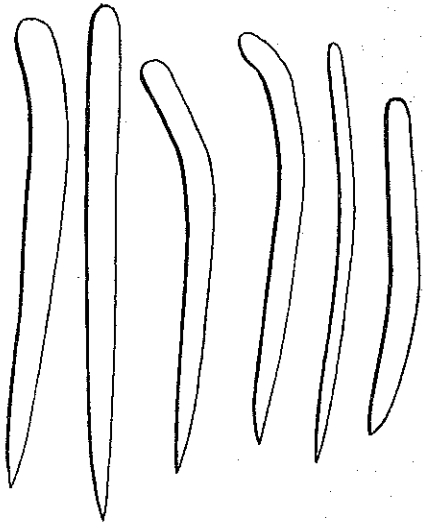

Fig. 28. *Axinella globula* nov. spec. Styli.

The *skeleton* is distinctly radially arranged; the main fibres run unbroken from the centre of the sponge vertically outwards to the surface, every now and then giving off new branches at very narrow angles to fill up the ever increasing spaces between the original fibres; most spicules in the fibres are arranged so that they point obliquely outwards in a true Axinelloid manner; some spicules, however, are placed so, that the point is directed vertically outwards from the fibre in an Ectyonine manner; these latter spicules always reach the neighbouring fibres, thus adding to the strength of the entire skeleton. No special dermal skeleton is found, the distally placed spicules in the fibres pierce the dermal-membrane, making it hispid.

Spicules. Styli (fig. 28), somewhat varying in appearance, in most cases somewhat crooked a little above the base, only rarely nearly straight; they are generally thickest at the base and at the

bending, from here tapering to the sharp points; some styli, however, are of even thickness for the greater part of the spicule, only the apex abruptly and sharply set off. They vary in length from ca. 250—400 μ by a thickness up to 22 μ.

Hymeniacidon racemosa nov. spec.
(Fig. 29 a—b).

Three Kings. 65 fathoms. Hard bottom. 5/I.1915.

Several specimens, apparently fragments. The sponge seems to form branching and coalescing, more or less cylindrical stems; the

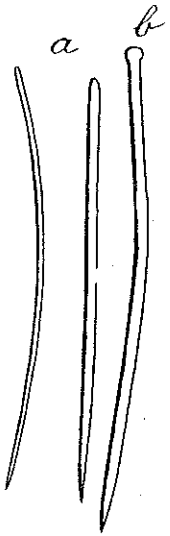

Fig. 29. *Hymeniacidon racemosa* nov. spec. *a*. Styli. *b*. Subtylostyli.

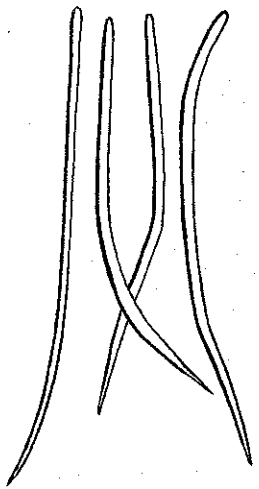

Fig. 30. *Hymeniacidon haurakii* nov. spec. Styli.

largest specimens attain a length of 18 mm, a thickness of 3 mm. The surface is hispid; the dermal-membrane thin, covers numerous small subdermal cavities; it is pierced by numerous ostia, which are just seen with the pocket lens. Oscula could not be made out. Consistence soft, a little elastic; colour yellowish.

The *skeleton* consists of a loose feltwork of spicules often forming rather distinct fibres, which do not, however, attain a great length before they dissolve, then being replaced by others; these short fibres are forming a very irregular reticulation, being connected by short whisps of spicules. When the fibres reach the surface, they split up into short tufts of spicules; such tufts are also formed by isolated spicules under the dermal-membrane, where no fibres reach this latter.

Spicules. Styli (fig. 29 a) or subtylostyli (fig. 29 b), nearly straight or somewhat bent, tapering to the sharp points; about 300 μ long by a thickness of 7—8 μ.

Hymeniacidon haurakii nov. spec.
(Fig. 30.)

North Channel. Kawaii Isl. Hauraki Gulf. 10 fathoms. Hard bottom. 29/XII.1914.

Encrusting. Several shells are cemented together by the sponge, so that the whole aggregation forms a lump-shaped body of ca. 45 mm in greatest extension; the surface is beset with small cones, up to 1 mm in hight, 1—3 mm apart. Spicules are piercing the dermal-membrane, especially at the top of the conuli; texture tough, elastic; colour light grey. Several small ostia, which can just be seen with a pocket lens, are leading into spacious subdermal-cavities; oscula rather numerous, 1—2 mm in diameter, not elevated over the level of the sponge-surface.

The *skeleton* consists mainly of scattered spicules, lying without order; but rather distinct fibres are met with, in a few places of tolerable Axinelloid structure. No special dermal skeleton is found; here and there, however, the fibres, which are all directed more or less perpendicularly towards the surface, are bending in a right angle when reaching the dermal-membrane, and passing tangentially along this in ca. one spicule's length.

Spicules. Styli (fig. 30), more or less irregularly curved, of even thickness for the greater part, then tapering towards the very sharp point; length varying from about 400—800 μ, by a thickness of up to 14 μ.

Hymeniacidon novae-zealandiae nov. spec.
(Fig. 31 a—d).

Little Barrier Island. 30 fathoms. Shell-bottom. 29/XII.1914.

One specimen. A long slender stalky body, near the apex dividing into two branches; length ca. 160 mm, thickness 2 mm in

the first two thirds, then gradually growing thicker, to ca. 4 mm; apex of the one branch torn off; the other branch about 35 mm long, 4 mm thick. Surface strongly hispid, especially on the distal

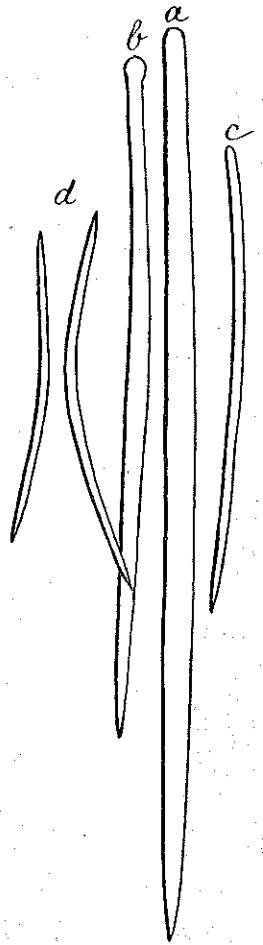

Fig. 31. *Hymeniacidon novae-zealandiae* nov. spec. *a*. Stylote. *b*. Substylotylote. *c*. Small stylote. *d*. Oxea.

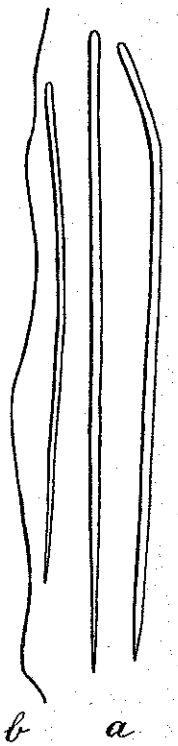

Fig. 32. *Hymeniacidon erecta* nov. spec. *a*. Styli. *b*. Siliceum-threads.

part of the body. Dermal-membrane macerated. Oscula and ostia could not be made out. The consistence of the stalk hard, of the upper parts of the sponge softer but tough. Colour dirty orange.

The *skeleton* is a dense feltwork of spicules lying pell-mell;

they are especially dense in the axis of the sponge; from here arise indistinct fibres directed obliquely upwards and outwards. Both oxea and styli are taking part in the building up of the skeleton.

Spicules. 1. Large styli (fig. 31 a—b), only few in number; straight or a little curved, of even thickness over the greater part, then tapering to the sharp apex; length varying from about 450—800 μ by a thickness of ca. 16—26 μ; a few subtylostyli (fig. 31 b) are found. 2. Smaller styli (fig. 31 c), very numerous, of the same shape as the foregoing, but only up to ca. 500 μ in length, by 7—8 μ in thickness. 3. Oxea (fig. 31 d), more or less curved in or near the middle, of even thickness over the greater part, then tapering to the sharp points; length varying from ca. 200—400 μ, by a thickness of 6—7 μ.

Hymeniacidon erecta nov. spec.

(Fig. 32 a—b).

Little Barrier Isl. 30 fathoms. Shell-bottom. 29/XII.1914.

One specimen, attached to a shell; cylindrical; ca. 45 mm long, 3—4 mm thick. Surface even, but hispid; dermal-membrane thin, covering numerous subdermal cavities; several inconspicuous apertures, ca. 0,5 mm in diameter, are found, especially on the lower half of the sponge. Colour light grey; consistence tough, only a little elastic.

The *skeleton* consists of a very dense feltwork of spicules, partly lying pell-mell, partly forming longitudinally directed fibres; these fibres cannot, however, be followed very far, as they soon dissolve, and other short fibres take up their tracts; the fibres are lying close together.

Spicules. Styli (fig. 32 a), some nearly straight, some more or less, often irregularly, curved; in the axial portion of the sponge-body many styli are elongated so as to form irregularly curved, slender siliceum-threads. The styli vary in length from ca. 250—650 μ by a thickness of up to 8 μ; the threads may attain nearly the double length; they are not numerous.

This sponge somewhat resembles *Hymeniacidon haurakii* in spiculation, but is distinctly separated from that species in outer appearance.

Latrunculia spinispiraefera nov. spec.

(Fig. 33 a—e).

2 miles E. of North Cape. 55 fathoms. Hard bottom. 2/I.1915.

One specimen; subspherical, ca. 100 mm in largest diameter, beset with numerous short funnelshaped papillae, probably containing pore areas, which could not, however, be discerned with certainty, as the sponge has unfortunately been preserved in formaline, and therefore is rather macerated; the papillae are from 1—3 mm high, from 1—10 mm in diameter; they are situated all over the surface with a mutual distance of, say, 10 mm. The surface is very finely granulated on account of the discorhabds, and very firmly rough to the touch. Consistence soft, colour dark brown.

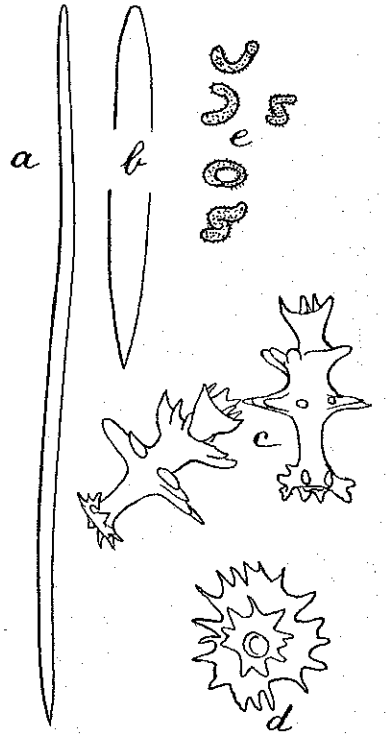

Fig. 33. *Latrunculia spinispiraefera* nov. spec. *a*. Stylote. *b*. Ends of stylote. *c*. Side-view of discorhabds. *d*. Basal-view of Discorhabd. *e*. Spinispirae.

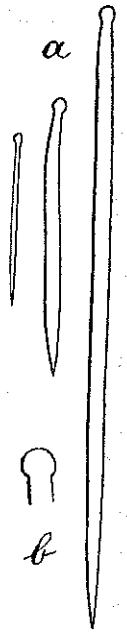

Fig. 34. *Suberites axinelloides* nov. spec. *a*. Tylostyli. *b*. Head of tylostylote.

The *skeleton* consists of an irregular reticulation of thick spicula-fibres, 150—200 μ in diameter; these fibres are, however, very indistinct in most places, everywhere loose spicules lying scattered about. Throughout the body are also scattered spini spirae and discorhabds; the latter as usual form a thin, one-layered crust, a dermal cortex.

Spicules. a. *Megascleres*. Styli (fig. 33 a—b), generally slightly and irregularly curved, with narrow base, sharp point, of nearly even thickness all over; about 420 × 10 μ. b. *Microscleres*. 1. Discorhabds (fig. 33 c—d), the base roughly spined; with three whorls, the first of the greatest diameter and placed vertically to the axis; the second is bending a little towards the apex, the third is distally placed, with spines nearly parallel with the axis; length of the whole spicule about 45 μ, largest whorl about 25 μ in diameter. Developmental forms are found, confirming the observations set forth by Dendy 1917 (5), and hence I use the new term discorhabd instead of discaster. 2. Spinispirae (fig. 33 e) strongly spined all over, 10—12 μ; the occurrence of this spicule in the genus *Latrunculia* is extremely interesting, as it gives further evidence of the relationship of *Latrunculia* to other Spirastrellinae.

Suberites axinelloides nov. spec.

(Fig. 34 a—b.)

2 miles East of North Cape. 55 fathoms. Hard bottom. 2/I.1915.

Several specimens encrusting on coral fragments as thin dark-coloured covers, only a fraction of a mm thick. Openings could not be detected. Surface finely hispid.

The *skeleton* is made up of almost the dermal skeleton alone, the main skeleton being reduced to a one-layered irregular felt-work of spicules close to the body of attachment. The dermal skeleton consists of brushes of tylostyles placed close together; the spicules in the brushes are arranged so that they diverge a little from one another with their distal ends, the brushes are accordingly much narrower at the base than at the summit, thus recalling short Axinelloid fibres. The larger spicules form the main skeleton, the shorter ones the dermal.

Spicules. Tylostyli (fig. 34 a—b), straight or slightly curved,

generally thickest about the middle, evenly tapering to the sharp points; the heads are beautifully marked off; they vary in length from ca. 200—700 μ by up to 21 μ in thickness.

Suberites perfectus R. & D.

Suberites perfectus, Ridley & Dendy (14), p. 200, Pl. XLI fig. 9, Pl. XLV figs. 3, 3a, 3b.

Three Kings. 65 fathoms. Hard bottom. 5/I.1915.

One fine specimen and some fragments, resembling the type in general appearance; unfortunately the specimens are preserved in formaline, therefore somewhat macerated, so that the beautiful dermal reticulation, mentioned by Ridley and Dendy, could not be seen. As in the type, the oscula are also here situated on small, thinwalled elevations. The skeletal arrangement agrees fairly well with the type. The spicules are of the same shape, varying from ca. 200—1400 μ, thus a little larger variation-range than in the type.

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