THE ANNALS

AND

MAGAZINE OF NATURAL HISTORY.

[FIFTH SERIES.]

No. 107. NOVEMBER 1886.

XXXIV.—*Preliminary Report on the Monaxonida collected by H.M.S. 'Challenger'**. By STUART O. RIDLEY, M.A., F.L.S., of the British Museum, and ARTHUR DENDY, B.Sc., Associate of the Owens College, Manchester.

PART I.

THE following brief descriptions of genera and species are published by kind permission of Dr. John Murray, F.R.S.E., Director of the 'Challenger' Commission. We propose to describe in this place none but the new species, and those only very briefly. The classification adopted is a modification of those already in use, which seems to meet the requirements of the case.

Order MONAXONIDA.

Siliceous sponges with uniaxial skeleton-spicules.

Suborder I. HALICHONDRINA (Vosmaer).

Typically non-corticate; skeleton usually reticulate. Skeleton-spicules usually acerate or acuate.

* For figures we must refer the reader to our forthcoming Report.

Family 1. **Homorrhaphidæ** *.

Skeleton-spicules acerate to cylindrical; no flesh-spicules.

Subfamily i. *Renierina.*

Spicules never completely enveloped in horny fibre.

Genus Halichondria (Fleming).

Skeleton confused; spicules acerate, long and slender; little spongin.

Halichondria solida, n. sp.

Massive, incrusting. Greyish yellow. Compact, firm. No special dermal skeleton. Skeleton a confused dense mass of felted acerates; no fibres. Spicules smooth, curved, fusiform acerates blunted at the ends; length up to 1·1 millim., thickness up to 038 millim.

Localities. Reefs, Tahiti, 30–70 fath.; Api, New Hebrides, 60–70 fath. (var. *rugosa*).

Halichondria pelliculata, n. sp.

Erect, lobose, annulated. Vents at summits of lobes. Yellow. Surface glabrous, covered by a chitinous membrane. Soft internally. Dermal reticulation composed of scattered acerates. Main skeleton sparse, with few distinct fibres. Spicules stout fusiform acerates, curved, sharp-pointed; size ·45 by ·028 millim.

Locality. Amboyna, 100 fath.

Halichondria latrunculioides, n. sp.

Erect, lobose. Light grey. Soft and spongy internally. Surface corrugated but glabrous; with rounded pore-areas elevated above the rest. Dermal membrane parchment-like, except in the pore-areas, where it is very thin and reduced to a sieve by the numerous pores. Vents singly on conical processes, chiefly at summit of sponge. Dermal skeleton a continuous sheet of spicules laid side by side. Main skeleton loose, irregularly fibrous. Spicules almost straight, fusiform acerates sharp-pointed, size ·7 by ·022 millim.; also a larger form, with unequal ends, size 1·25 by ·031 millim.

Locality. Station 320, off Rio de la Plata, 600 fath.

Genus Petrosia (Vosmaer).

Texture firm to stony. Vents conspicuous. Skeleton

* ὁμός, one and the same; ῥαφίς, needle.

confused, but with broad compact tracts of spicules. Spicules acerate to cylindrical, commonly short and stout.

Petrosia similis, n. sp.

Repent, branched, or erect, lobose. Vents large, on upper surface. Yellowish grey. Texture more or less firm, fibrous. Surface smooth. Dermal membrane distinct, supported on ends of primary fibres. Skeleton, of primary and secondary fibres forming rectangular meshes. Spicules slightly curved acerates, fairly sharp; size ·225 by ·016 millim.

Localities. Stations 142 and 150, Southern Ocean, 150 fath.; Station 314, off Falkland Islands, 70 fath. (var. *massa*); Station 208, Philippine Islands, 18 fath. (var. *compacta*).

Petrosia truncata, n. sp.

Massive, sessile. Yellowish. Hard and stony, but rather brittle. Surface smooth. Only one vent present in the single specimen, $\frac{1}{6}$ inch in diameter, at the summit of a large tubular projection. Skeleton a reticulation of stout spiculo-fibre, primary and secondary fibres distinct. Fibre compact, about ·1 millim. thick. Spicules short, stout, slightly curved, cylindrical; size ·17 by ·0094 millim.

Locality. Station 208, Philippine Islands, 18 fath.

Petrosia hispida, n. sp.

Massive, sessile, lobate, narrowing at base; with numerous small papillæ, each bearing a single small vent. Yellowish grey. Fairly compact, rather brittle. Surface uneven, minutely hispid. Skeleton a reticulation of spiculo-fibre, in which the primary lines are fairly distinct, but the secondary very confused and almost obliterated by numerous scattered spicules. Spicules slightly curved acerates, not very sharply but rather gradually pointed; size ·37 by ·021 millim.

Locality. Royal Sound, Kerguelen, 25 fath.

Genus Reniera (Nardo).

Skeleton composed of definite rectangular (sometimes triangular or polygonal) typically unispicular meshes. Spicules short acerates or blunted acerates.

Reniera subglobosa, n. sp.

Sessile, subglobular, hollow, thick-walled, with a wide circular opening at the summit. Diameter about 1 inch. Yellowish grey. Texture firm but very brittle, cavernous.

Main skeleton a confused but subrectangular reticulation of loose fibre two or three spicules wide. Also a unispicular dermal reticulation. Spicules slightly curved, subhastately and sharply pointed acerates; size ·3 by ·013 millim.

Locality. Station 307, south-west coast of Patagonia, 147 fath.

Reniera tufa, n. sp.

Massive, sessile, cake-like. Greyish yellow. Texture firm, almost stony, but brittle. Surface smooth but uneven. Dermal membrane readily peeling off. Vents rather small, circular, level with surface. Skeleton a compact but rather irregular, almost unispicular reticulation with triangular meshes. Spicules slightly curved, subhastately pointed acerates; size ·2 by ·01 millim.

Locality. St. Jago, Cape Verds, 100–128 fath.

Subfamily ii. *Chalinina.*

A considerable amount of spongin present, typically forming a thick sheath around the fibres.

The classification of the Chalinina is at present in a very unsatisfactory condition. We hope to learn much from Dr. v. Lendenfeld's forthcoming descriptions of his Australian species, and must acknowledge our indebtedness to him for allowing us to examine his specimens, a few of which are identical with species here described.

Genus Pachychalina (Schmidt).

Lobose or digitate, solid, with even surface. Fibres stout, with spicules numerous, arranged polyserially.

Pachychalina megalorrhaphis, n. sp.

Long cylindrical branches up to ½ inch thick. Pale yellow. Compressible and elastic. Surface nearly smooth. Dermal membrane thin. Vents small, subuniserially arranged. Skeleton :—(*a*) dermal, not very distinct, small-meshed, loose-fibred, echinated at nodes by ends of primaries; (*b*) main, a subrectangular reticulation of spiculo-fibre and scattered spicules, primary lines distinct. Fibres strong; no distinct sheath of spongin. Spicules slightly curved, gradually sharp-pointed acerates; size ·25 by ·016 millim.

Locality. Station 163 D, off New South Wales, 120 fath.

Pachychalina elongata, n. sp.

Digitate, ramose; branches long, diameter about $\frac{1}{3}$ inch. Compressible and elastic, tough and fibrous. Dermal membrane with its supporting skeleton-reticulation forming a tough skin. Vents small, scattered, chiefly on one side. Skeleton:—(*a*) dermal, close-meshed, fibre echinated by projecting spicules; (*b*) main, a rectangularly meshed reticulation of spiculo-fibre. Fibre ·07 millim. thick, with much spongin, spicules not confined to centre. Spicules slightly curved acerates; size ·1 by ·0065 millim.

Locality. Station 162, Bass Straits, 38 fath.

Pachychalina (?) *punctata*, n. sp.

Erect, flattened, lobate; thickness about $\frac{1}{4}$ inch. Dark greyish yellow. Tough and leathery, compressible and elastic. Surface uneven but glabrous. Vents minute, on one side only. Pores unusually large, visible to the naked eye as minute openings abundantly scattered on both sides, lined by spongin, which projects into the cavity in large bosses, frequently giving it a cruciform outline *. Skeleton:—(*a*) dermal, close-meshed; fibre echinated by projecting spicules: (*b*) main, primary fibres ·07 millim. thick, vertical to surface, crossed by secondaries; fibres polyspiculous, but with a thick sheath of spongin; numerous spicules occur scattered between the fibres. Spicules sharp-pointed acerates; size ·09 by ·0055 millim.

Locality. Station 162, Bass Straits, 38 fath.

Pachychalina (?) *pedunculata*, n. sp.

Erect, stipitate, cylindrical, stalk short. Height $5\frac{1}{2}$ inches; diameter of body $\frac{3}{4}$ inch, of stalk $\frac{1}{4}$ inch. Greyish yellow. Soft and spongy, elastic. Very minutely hispid. Dermal membrane thin and delicate. Vents small, scattered. Skeleton of loose fibres and scattered spicules; main fibres alone distinct; no special dermal skeleton. Spongin scanty. Spicules rather slender, slightly curved, gradually sharp-pointed acerates; size ·5 by ·017 millim.

Locality. Kerguelen Island, 10–100 fath.

Genus Dasychalina †, n. g.

Solid, coarsely spined on surface; skeleton-fibres stout, spicules polyserial; amount of spongin variable, never very great.

* These projections doubtless serve to prevent the entrance of small animals.

† δασὺς, rough.

Dasychalina fragilis, n. sp.

Irregularly ramose, subcylindrical, aculeated. Branches about $\frac{3}{4}$ inch in diameter. Light greyish or brownish yellow. Texture hard and brittle. Vents large and scattered, chiefly on one side. Skeleton:—(*a*) dermal, an irregular network of spiculo-fibre and spicules, backed behind by a coarse reticulation of stout fibre: (*b*) main, an irregular reticulation of very stout, compact fibre and scattered spicules; fibre about ·35 millim. thick. No distinct sheath of spongin. Spicules acerate, large, slightly curved, abruptly and rather bluntly pointed; size ·42 by ·02 millim.

Locality. Station 208, Philippine Islands, 18 fath.

Dasychalina melior, n. sp.

Irregularly ramose, subcylindrical or subangular, coarsely aculeated, but not so much so as *D. fragilis*. Diameter of branches about $\frac{1}{2}$ inch. Greyish or brownish yellow. Rather hard, compressible, fibrous. Vents small and shallow, chiefly on one side. Skeleton:—(*a*) dermal, a close-meshed reticulation of loose spiculo-fibre, echinated at nodes by bundles of spicules: (*b*) main, a rather irregular reticulation of spiculo-fibre and scattered spicules; fibre much slenderer than in *D. fragilis*, but no distinct sheath of spongin. Spicules rather slender, slightly curved, gradually sharp-pointed acerates; size ·175 by ·0126 millim.

Locality. Station 208, Philippine Islands, 18 fath.

Dasychalina fibrosa, n. sp.

Branched, coarsely spined. Vents large and circular, mainly on one side. Branch $\frac{1}{4}$ to 1 inch thick. Greyish yellow. Coarsely fibrous, elastic. Skeleton:—(*a*) dermal, a coarse reticulation of stout spiculo-fibre, meshes triangular, broken up by a much finer reticulation of very slender spiculo-fibre; (*b*) main, of stout, branching, and anastomosing spiculo-fibre, up to ·14 millim. thick, and scattered spicules. Spongin very abundant in the finer dermal fibres. Spicules small slender acerates, abruptly pointed, often blunted; size ·1 by ·0032 millim.

Localities. Off Bahia, 7–20 fath.; Station 208, Philippine Islands, 18 fath.

Genus Chalina (Grant).

Form various, not tubular, smooth. Skeleton reticulation

rectangular, with much spongin and a few spicules; fibre, typically thin, with a single axial series of spicules.

Chalina rectangularis, n. sp.

Incrusting, thin, with low mound-like prominences, each bearing a vent. Pale yellow. Texture compact but compressible and elastic. Surface subglabrous. Vents small. Skeleton:—(*a*) dermal, a polygonally, small-meshed reticulation of spiculo-fibre, polyspiculous, with little spongin, echinated by tufts of spicules; (*b*) main, a very regular rectangular reticulation of strong polyspiculous spiculo-fibre, with much spongin completely enveloping it, thickness ·06 millim. Spicules short, stout, abruptly sharp-pointed acerates; size ·088 by ·009 millim.

Locality. Station 208, Philippine Islands, 18 fath.

Genus Siphonochalina (Schmidt).

Tubular. Tubes smooth inside and out, usually narrow, each with a round oscular opening at summit.

Siphonochalina intermedia *, n. sp.

Bushily ramose; branches stout, short, sometimes anastomosing. Greyish yellow. Soft and spongy, but tough and fibrous. Surface glabrous. Skeleton:—(*a*) main, a regular rectangular network of spiculo-fibre; fibre rather slender, with much spongin, cored by polygonally arranged spicules; thickness of fibre about ·032 millim.; also scattered spicules: (*b*) dermal, a very delicate reticulation of spiculo-fibre, with much spongin and uniserially arranged spicules. Spicules slender acerates, rather abruptly pointed, up to ·1 millim. long and ·006 thick.

Locality. Port Jackson, 7–8 fath.

Siphonochalina annulata *, n. sp.

Rooted, stipitate, ramose. Branches long, distinctly annulated, often anastomosing; stem short and slender. Soft and spongy, but tough and fibrous. Surface glabrous. Skeleton:—(*a*) dermal, a reticulation of rather stout spiculo-fibre with much spongin, echinated by tufts of spicules; (*b*) main, a feebly developed subrectangular reticulation of spiculo-fibre, ·07 millim. thick, cored by polyserial spicules. Spicules subfusiform acerates, sharply and rather gradually pointed; size ·1 by ·0065 millim.

Locality. Station 162, Bass Straits, 38 fath.

* Specific name given by Dr. v. Lendenfeld in MS. Catalogue.

Family 2. Heterorrhaphidæ *.

Spicules of various forms; flesh-spicules commonly present, but never anchorates.

Subfamily i. *Phlœodictyina* (Carter).

Sponge divisible into body and fistulæ; with a strong spicular rind. Skeleton-spicules acerate to cylindrical.

Genus Rhizochalina (Schmidt).

Flesh-spicules absent.

Rhizochalina putridosa (Lamarck ?).

Large, massive, subspherical. Upper surface bearing numerous short closed fistulæ directed upwards. Pale yellow. Texture dense. Surface uneven. Skeleton arranged as in *R. fistulosa*, Bk. Spicules slightly curved, abruptly but fairly sharply pointed acerates; size ·195 by ·013 millim.

Localities. Station 162, Bass Straits, 38 fath.; off Port Jackson, 30–35 fath.; off Bahia (?).

Rhizochalina pedunculata, n. sp.

Roundedly elongate, narrowing below into a short stout peduncle; height $1\frac{5}{8}$ inch, breadth 1 inch. Fistulæ very short (? all broken off). Brownish yellow. Rind very thin, like paper. Surface rugose. Texture compact. Skeleton arranged much as usual; bast-layer very thin, with fibres compact. Spicules slightly curved acerates, sometimes blunted, measuring up to about ·25 by ·009 millim.; also in the dermal reticulation occasional cylindricals, size variable.

Locality. Api, New Hebrides, 60–70 fath.

Genus Oceanapia (Norman).

Bihamate flesh-spicules present.

[*Oceanapia robusta*, Bk.

Locality. Bahia (?).]

Subfamily ii. *Gelliina.*

Skeleton-spicules acerate. Flesh-spicules present, viz. bihamates or tricurvates. No rind or fistulæ.

* ἕτερος, different; ῥαφίς, needle.

Genus Gellius (Gray).

Very little horny matter, never forming distinct fibre.

Gellius carduus, n. sp.

Sessile, oval, small. Greyish yellow. Texture loose but firm; interior cavernous. Surface with numerous angular projections, many with oscula at summits. Dermal membrane distinct. Large subdermal cavities. Skeleton:—(*a*) dermal, a unispicular reticulation; (*b*) main, loose, with no definite fibres. Spicules blunted acerates, curved, rounded at each end, size ·6 by ·023 millim. Bihamates of usual shape, size ·02 by ·0012 millim.

Localities. Station 148 *a*, Crozet Island, 240–550 fath.; off Prince Edward's Island, 85–150 fath.; off Marion Island, 50–75 fath.; Station 311, south-west coast of Patagonia, 245 fath. (var. *magellanica*).

Gellius lævis, n. sp.

Massive, sessile, large. Surface smooth; oscula large and even with surface; spiculation as in *G. carduus*.

Locality. Station 320, off Rio de la Plata, 600 fath.

Gellius glacialis, n. sp.

Massive, sessile, globular, lobate, or cylindrical; size up to 3¼ inches long by 1¼ broad. Colour pale greyish yellow. Texture firm but very brittle. Surface even. Dermal layer distinct, flaking off. Vents large, scattered, even with surface. Skeleton arranged as usual. Spicules large stout acerates, slightly curved, sharply and rather suddenly pointed, size ·65 by ·036 millim. Bihamates large, of usual shape, size up to ·07 by ·0063 millim.

Localities. Station 142, Agulhas Bank, 150 fath.; Station 145, Prince Edward's Island, 75 fath. (var. *nivea*).

Gellius flagellifer, n. sp.

Massive, sessile. Diameter about 1 inch. Pale greyish yellow. Soft and brittle. Surface even. Skeleton an irregular reticulation of very loose spiculo-fibre. Spicules slightly curved acerates, tapering to sharp points, size ·42 by ·018 millim. Bihamates very long, much curved, doubled on themselves, size ·06 by ·0021 millim. (smaller ones also present).

Locality. Off Marion Island, 50–75 fath.

Gellius calyx, n. sp.

Hollow pyriform body, with round opening at summit and long slender stalk; length $3\frac{1}{3}$ inches. Greyish yellow. Body soft and fragile, stem hard and stringy. Surface minutely hirsute. Skeleton loosely fibrous in body, compactly fibrous in stem. Spicules:—(1) sharply and gradually pointed acerates, sometimes tending to become blunt, size ·7 by ·022 millim.; (2) bihamates of usual shape, ·02 by ·002 millim.

Locality. Station 320, off Rio de la Plata, 600 fath.

Gellius flabelliformis, n. sp.

Erect, compressed, forming thin lamellæ (? cup-shaped). Greyish yellow. Very fragile. Surface even. Vents? minute, abundant, on concave surface. Pores numerous, on convex surface. Skeleton a loose, irregular reticulation of spicules. Spicules:—(1) large acerates, sharply pointed, slightly bent, size ·7 by ·03 millim.; (2) bihamates, much curved, stout, ·07 by ·0063 millim.; (3) tricurvates smooth, with very obtuse central angle, very large, size ·18 by ·0063 millim.

Locality. Station 320, off Rio de la Plata, 600 fath.

Genus Gelliodes (Ridley).

Distinct and well-developed fibre, with more or less spongin. Bihamates present.

Gelliodes poculum, n. sp.

Consisting of a thin incrusting lamella, from which arise large funnel-shaped calices. Brownish yellow. Texture soft, spongy, but very tough and fibrous. Surface uneven but fairly smooth. Skeleton:—(*a*) main, a reticulation of stout horny matter, sparsely cored by uniserially arranged spicules; (*b*) dermal, a closer reticulation of stout horny fibre, with few axial spicules, but echinated abundantly by tufts of outwardly projecting spicules. Spicules:—(1) short fusiform acerates, sharp-pointed, slightly curved, size ·2 by ·014 millim.; (2) large slender bihamates, size ·12 by ·004 millim.

Locality. Port Jackson, 30–35 fath.

Genus Toxochalina (Ridley).

Fibre as in typical Chalinina, but tricurvate flesh-spicules present.

[*Toxochalina robusta*, Ridley.

Locality. Off Bahia, 7–20 fath.]

Subfamily iii. *Tedaniina.*

Spicules acuate and cylindrical (the latter chiefly dermal), and long hair-like trichites.

Genus Tedania (Gray).

Acuates smooth.

Tedania commixta, n. sp.

Massive, amorphous. Creamy yellow. Soft and compact, with much foreign matter. Surface slightly corrugated. Dermal membrane thin, distinct. Skeleton of loose wisp-like fibres. Spicules:—(1) hastately-pointed acuates, slightly curved, size ·3 by ·0042 millim.; (2) bicapitate cylindricals with slightly developed oval heads, size ·35 by ·004 millim.; (3) fine hair-like trichites, ·13 millim. long.

Locality. Station 162, Bass Strait, 38 fath.

Tedania massa, n. sp.

Massive, cake-like, attaining enormous dimensions. Very soft and spongy. Surface fairly even, very minutely hispid. Vents scattered, level with surface. Skeleton loosely reticulate. Spicules:—(1) stout acuates, curved, subhastately pointed, often blunted, size ·7 by ·03 millim.; (2) cylindrical, straight, hastately pointed, sometimes with small heads, size ·45 by ·013 millim.; (3) acerate trichites up to ·8 millim. long, often collected into fibres.

Localities. ? Station 163 D, New South Wales, 120 fath.; Station 313, east of Straits of Magellan, 55 fath.; Station 320, off Rio de la Plata, 600 fath.

Tedania infundibuliformis, n. sp.

Erect, lamellar, funnel-shaped. Height 2½ inches, breadth 2 inches. Pale yellow. Soft and very fragile. Vents small, scattered on inside of cup. Skeleton a loose, slightly fibrous reticulation of rather slender acuates, with bicapitate cylindricals, in tufts or scattered, at the surface. Spicules:—(1) almost straight slender acuates, sharply and rather suddenly pointed, size ·54 by ·015 millim.; (2) slender bicapi-

tate cylindricals with oval heads, size ·28 by ·0063 millim.; (3) slender trichites, size ·35 by ·002 millim.

Locality. Off south-west coast of Patagonia.

Tedania actiniiformis, n. sp.

Sessile, cylindrical, attached by narrowed base; abruptly truncate above, forming a flat surface, which bears small oscular tubes. Height ¾ inch. Colour greyish brown. Texture soft and spongy. Pores in a definite narrow zone about $\frac{1}{12}$ inch below top, very abundant. Main skeleton a diffuse and irregular reticulation of acuates. Dermal reticulation below the pore-zone irregular, above it forming a low wall of thickly-packed, vertically-disposed acerates (cylindricals). Spicules:—(1) stout, slightly curved, rather blunt acuates, size ·87 by ·03 millim.; (2) hastately-pointed cylindricals, size ·56 by ·019 millim.; (3) acerate trichites, size ·56 by ·0031 millim.

Locality. Station 299, off Valparaiso, 2160 fath.

Genus Trachytedania (Ridley).

Acuates spined.

Trachytedania patagonica, n. sp.

Massive, amorphous. Pale yellow. Soft and crumbling. Skeleton a very loose and irregular reticulation of spicules, with tufts of acerates (cylindricals) near the surface. Spicules:—(1) rather stout, slightly curved, entirely spined acuates, size ·35 by ·0125 millim.; (2) short, straight acerates (cylindricals), subfusiform, somewhat hastately pointed, size ·245 by ·007 millim.; (3) very fine acerate trichites, length about ·2 millim.

Locality. Station 308, off south-west coast of Patagonia, 175 fath.

Subfamily iv. *Desmacellina.*

(Characters as given for the sole genus, *Desmacella.*)

Genus Desmacella (Schmidt).

Skeleton-spicules acuate to spinulate. Flesh-spicules bihamates or tricurvates or both.

[*Desmacella annexa*, Schmidt.

Locality. Station 24, West Indies, 390 fath.]

Subfamily v. *Vomerulina.*

Characterized by the presence of a trenchant bihamate spicule *.

Genus Vomerula (Schmidt).

Skeleton-spicules acuate. Flesh-spicules large trenchant bihamates, to which others may be added.

Vomerula esperioides, n. sp.

Erect leaf-like expansions, up to 10 inches high. Pale yellow. Surface uneven, conulose. Dermal membrane thin and transparent, with well-marked skeleton reticulation; subdermal cavities large and irregular. Texture tough and coarsely fibrous. Vents upon small thin-walled tubular projections. Spicules:—(1) smooth acuates, size ·7 by ·019 millim.; (2) large trenchant bihamates, contort, notched at the inner angles and in the centre of the shaft, as in Bowerbank's figure (*l. c.*), length ·177 millim., breadth of shaft ·019 millim.; (3) small bihamates of the usual kind, length ·038 millim.

Localities. Station 142, Agulhas Bank, Cape of Good Hope, 150 fath., abundant; Station 320, off Rio de la Plata, 600 fath., one fragment.

Family 3. **Desmacidonidæ.**

Skeleton-spicules of various forms. Anchorate flesh-spicules normally present.

Subfamily i. *Esperina.*

Fibre not echinated by laterally projecting spicules.

Genus Esperella † (Vosmaer).

Skeleton-spicules smooth, acuate to spinulate. Flesh-spicules palmate inequianchorates, to which may be added bihamates &c. Main skeleton with conspicuous primary fibres.

Esperella mammiformis, n. sp.

Sessile, hemispherical, about $\frac{2}{3}$ inch in diameter, with short

* *Vide* Bowerbank, Mon. Brit. Spong. vol. i. pl. v. fig. 112.
† *Esperia*, Nardo.

oscular projections (usually one only) at summit. Greyish yellow. Soft and stringy. Spicules:—(1) slender acuate, finely pointed, size 1·0 by ·019 millim.; (2) palmate inequianchorates, with well-rounded palm, length ·072 millim., breadth of palm ·034 millim.

Locality. Station 147, east of Prince Edward's Island, Southern Ocean, 1600 fath.

Esperella lapidiformis, n. sp.

Massive, sessile, boulder-like (size $5\frac{1}{4}$ by $3\frac{1}{2}$ by $2\frac{3}{4}$ inches). Soft but fibrous, minutely hispid. Vents numerous short wide tubular processes, confined to the summit. Spicules:—(1) acuate, tending to spinulate, rather sharp-pointed, size ·9 by ·02; (2) large palmate inequianchorate, with three strong teeth at each end, size ·094 millim. long.

Locality. Station 320, off Rio de la Plata, 600 fath.

Esperella murrayi, n. sp.

Massive, lobate, sessile, with narrowed base. Height $6\frac{1}{2}$ inches; greatest breadth $4\frac{2}{5}$ inches. Pale yellow. Hard and dense. Surface smooth and even except for numerous meandering cracks (pore-areas), which form a reticulation everywhere, except on the summits of the lobes. Vents grouped on summits of lobes, about $\frac{1}{6}$ inch in diameter. Pores in the cracks of the surface, reducing the dermal membrane here to a sieve. Dermal skeleton a dense felted layer of acuate spicules. Spicules:—(1) acuate, slightly fusiform, size ·7 by ·019 millim.; (2) large palmate inequianchorates, length ·072 millim., breadth of palm ·019 millim.; (3) bihamates, often much contort, size ·053 by ·0024 millim.; (4) trichite bundles, size ·076 by ·013 millim.

Locality. Off Port Jackson, 30–35 fath.

Esperella porosa, n. sp.

Cylindrical, diameter about $\frac{1}{4}$ inch. Fibrous but rather soft. Surface minutely hispid, but with a porous appearance, due to the close reticulation of the dermal skeleton. Vents few, small. Dermal skeleton a compact reticulation of dense spiculo-fibre with meshes ·3 millim. wide. Spicules:—(1) spinulate, sharp-pointed, with small heads, size ·38 by ·016 millim.; (2) palmate inequianchorates, length ·05 millim., with long narrowed palm at large end; (3) large simple and contort bihamates, size ·16 by ·0085 millim.

Locality. Off Port Jackson, 30–35 fath.

Esperella nuda, n. sp.

Incrusting (?). Pale yellow. Soft, minutely hispid. Dermal membrane thin and transparent; pores in groups, groups scattered. Spicules:—(1) spinulate, with small head, abruptly sharp-pointed, size ·245 by ·016 millim.; (2) palmate inequianchorates, with long narrow palm at large end, length ·025 millim.; (3) simple and contort bihamates, size ·12 by ·0063 millim.

Locality. Off Bahia, shallow water.

Esperella fusca, n. sp.

Sublobose, rounded. Dark greyish brown. Soft, resilient. Vents few, with slightly tubular margins. Pores scattered. Spicules:—(1) spinulate, with distinct oval head and usually much blunted apex, size ·455 by ·0126 millim.; (2) palmate inequianchorates, length up to ·063 millim.; (3) slender, usually much contort bihamates, length ·044 millim.; (4) small compact oblong trichite bundles, size ·0315 by ·0063 millim.

Locality. Off Bahia, 17 fath.

Esperella arenicola, n. sp.

Massive, flat, cake-like (largest measuring 7 by $3\frac{1}{4}$ by $\frac{2}{3}$ inch). Light brown. Brittle, extremely sandy. Dermal membrane thin and transparent. Vents small and scattered. Skeleton very loose. Spicules:—(1) long and very slender spinulate, with distinct head and sharp point, size ·4 by ·0072 millim.; (2) small, slender, palmate inequianchorates, ·028 millim. long; (3) simple and contort bihamates, size ·077 by ·0048 millim.; (4) large trichite bundles, size ·35 by ·07 millim.

Locality. Station 162, Bass Strait, 38 fath.

Esperella simonis, n. sp.

Ramose, cylindrical, or more or less massive. Fibrous, elastic. Minutely hispid. Pores scattered. Spicules:—(1) spinulate, with small heads, sharply and gradually pointed; size ·4 by ·0145 millim.; (2) large palmate inequianchorates, ·072 millim. long, with palm ·036 millim. wide, the small ends abruptly truncated, and often attached to the spiculofibre; (3) large, stout, contort bihamate, size ·24 by ·019 millim.; (4) smooth tricurvates, size ·145 by ·003 millim.

Locality. Simon's Bay, Cape of Good Hope, 10–20 fath.

Esperella biserialis.

Consisting of a long, straight, slender axis, somewhat flattened, giving off short, slender, spicular processes in two opposite series along the margins; coated by a thin crust of soft tissues. Length of sponge $3\frac{2}{3}$ inches, longer diameter $\frac{1}{24}$ inch. Surface hispid. Spicules:—(1) long, slender, fusiform acuates, very thin at both ends, length may reach over 2·0 millim., diameter ·038 millim.; (2) spinulates, hastately pointed, size ·44 by ·01 millim. (dermal); (3) minute palmate inequianchorates, length ·0126 millim.; (4) small slender bihamates, length ·025 millim.

Localities. Station 281, South Pacific, 2385 fath.; Station 291, South Pacific, 2250 fath.

Genus Esperiopsis (Carter).

Acuate or subspinulate skeleton-spicules and palmate equianchorate flesh-spicules.

Esperiopsis symmetrica, n. sp.

Erect, slender, cylindrical, covered with numerous long, slender, spicular processes, which cause it to resemble a bottle-brush. Diameter $\frac{1}{6}$ inch (including spicular processes). Colour dark chocolate-brown. Skeleton radiately arranged, but with no definite central axis. Spicules:—(1) slender, fusiform, subspinulate, size about ·8 by ·028 millim. (or slenderer); (2) large palmate equianchorates, length ·037 millim.; (3) very minute slender bihamates, length ·013 millim.; (4) much larger, very slender bihamates, rather scarce.

Locality. Off Prince Edward's Island, Southern Ocean, 310 fath.

Esperiopsis cylindrica, n. sp.

Erect, cylindrical, dichotomously branched. Height 11 inches. Yellowish grey. Hard and tough, minutely hispid. Skeleton a central core of dense horny fibre, covered by a thin coat of granular choanosome. Spicules chiefly imbedded in spongin in the axis and in fibres radiating to the surface. Spicules:—(1) smooth acuates, (*a*) stout, up to ·7 by ·023 millim., (*b*) slender, up to ·7 by ·0063 millim.; (2) small palmate equianchorates, length ·025 millim.; (3) smooth tricurvates, ·07 millim. long (? foreign).

Locality. Off Port Jackson, 30–35 fath.

Esperiopsis challengeri (Ridley) *.

The best idea of the external form of this sponge will be obtained from the figure referred to *. Erect, stipitate, giving off branches on one side only, each of which terminates in a concave lamellar expansion. Length up to about 8 inches, with six or seven lamellæ. Light yellow. Stem densely fibrous, lamellæ rather fragile and soft. Pores very abundant on concave surface of lamellæ. Vents small, abundant on convex surface of lamellæ. Spicules:—(1) curved acuates, gradually sharp-pointed, size about ·35 by ·0126 millim.; (2) palmate equianchorates, length ·031 millim. This species possesses the most remarkable and beautiful external form of all known Monaxonid sponges.

Localities. Station 196, east of Celebes Island, 825 fath., abundant; Station 214, south of Philippines, 500 fath. (var. *meangensis*, fragments only).

Esperiopsis profunda, n. sp.

Stipitate, with narrow tubular head; height up to about 4 inches. Light yellowish grey. Soft and spongy. Hispid. Skeleton very loose in the head. Spicules:—(1) acuate to spinulate, gradually sharp-pointed, size 1·4 by ·0157 millim.; (2) large palmate equianchorates, length up to ·09 millim., but more commonly about ·05 millim.

Locality. Station 147, Southern Ocean, 1600 fath.

Esperiopsis anomala, n. sp.

Digitate; irregularly ramose. Greyish yellow or grey. Soft and compressible, but elastic and very fibrous, *Chalina*-like. Dermal membrane delicate and transparent. Skeleton:—(*a*) dermal, loose tufts of spicules; (*b*) main, rectangular, composed of stout spiculo-fibre with much spongin and few spicules. Spicules:—(1) long slender acuates, tending to subspinulate, sharp-pointed, size about ·25 by ·005 millim., but commonly longer and slenderer; (2) very rare, very minute, very slender equianchorates, length about ·01 millim.

Locality. Honolulu, 16–20 fath.

Esperiopsis (?) *pulchella*, n. sp.

Very small, thin patches of a blackish colour, incrusting a *Myxilla*. Pores in definite areas or sieves, each area about

* *Amphilectus challengeri*, Ridley, Narr. of Cruise of H.M.S. 'Challenger,' vol. i. pt. 2, p. 570, fig. 187.

·45 millim. in diameter, visible to the naked eye as a minute lighter-coloured oval spot on the surface. Colour due to very numerous minute cells of a blackish-green colour. Spicules :—(1) acuate or subspinulate, sharp-pointed, usually with several slight bulbous inflations along the shaft, size ·3 by ·0063 millim.; (2) palmate equianchorates, large, and of peculiar shape, length ·1 millim., the young forms very short and broad, with the two front palms united by their apices; (3) very minute, slender equianchorates, of the ordinary "Amphilectus" type, length 015 millim.

Locality. Station 192, S.W. off New Guinea, 140 fath.

Genus Cladorrhiza (Sars).

External form usually definite and symmetrical. Skeleton-spicules acuate or (and) spinulate. Characteristic flesh-spicule inequianchorate, with three or more claw-like teeth at each end, and a curved shaft expanded laterally into wing-like processes, especially near the large end.

Cladorrhiza moruliformis, n. sp.

A small globular head perched on the summit of a stalk. Head conulose, owing to the ends of radiating skeleton-fibres; like a mulberry; diameter, excluding the conuli, $\frac{5}{12}$ inch. The stalk is prolonged through, and projects for a short way above, the head. Colour (dry) white. Skeleton composed chiefly of a main longitudinal axis giving off stout radiating fibres in the head. Spicules :—(1) straight, slender acuates, reaching over 2·0 millim. long, diameter ·05 millim., hastately pointed; (2) inequianchorates with three prominent teeth at each end, length ·063 millim.; (3) large, contort bihamates, size up to ·35 by ·145 millim.

Locality. Station 157, Southern Ocean, 1950 fath.

*Cladorrhiza longipinna**, n. sp.

Consisting of a subglobular body, somewhat flattened below, with a fringe of very long fine supporting processes (twenty-five or thirty) projecting outwards and downwards, while a circlet of very short stiff processes crowns the summit of the body. From the centre of the lower surface depends a long

* For the very remarkable external shape which characterizes this and certain other species we propose the name "*Crinorrhiza-form*" after Schmidt's genus *Crinorrhiza*. The function of the long radiating processes is evidently to support the sponge on the soft mud on which it lies.

root-like process. Diameter of body $\frac{1}{5}$ inch, length of supporting processes $\frac{3}{4}$ inch. Pale yellow. Spicules:—(1) long slender acuates of various sizes, the longest in the main fibres; (2) small tridentate inequianchorates, length ·034 to ·06 millim.

Locality. Station 264, North Pacific, 3000 fath.

Cladorrhiza similis, n. sp.

Sponge of *Crinorrhiza*-form, consisting of a conical body with a root-like process depending from the centre of the base, and with a fringe of long stiff supporting processes radiating outwards and downwards. Diameter of base of cone $\frac{1}{4}$ inch. Colour dirty yellow. Spicules:—(1) very long slender acuates, as usual, forming the fibres of the various processes; (2) short inflated spinulates with distinct head, sharp-pointed, length from ·21 to ·595 millim., thickness about ·016 millim., thickly scattered near the surface of the sponge; (3) tridentate equianchorates as usual, length about ·0315 millim.

Locality. Station 281, South Pacific, 2385 fath.

Cladorrhiza inversa, n. sp.

Sponge of *Crinorrhiza*-form. Consisting of a small conical body, produced upwards into a long slender process; base of cone nearly flat, with a fringe of short stiff processes radiating outwards and downwards, and a single very short stiff process projecting downwards from near the centre. Diameter of base $\frac{1}{9}$ inch. Spicules:—(1) large, slender, fusiform, blunt-pointed acuates, size about 2·0 by ·0375 millim. (but variable), forming the main fibres; (2) scattered fusiform spinulates, sharp-pointed and with club-shaped heads, size about ·63 by ·0189 millim.; (3) tridentate equianchorates, with much-expanded shaft, length ·03 millim.; (4) bihamates (?).

Locality. Station 332, South Atlantic, 2200 fath.

Cladorrhiza tridentata, n. sp.

Sponge small, hemispherical. One surface slightly concave with inwardly-turned margin; the other convex, sometimes attached. Height $\frac{1}{4}$ inch, diameter $\frac{1}{2}$ inch. Pale greyish yellow, soft and yielding. No distinct fibres in the skeleton. Spicules:—(1) long very slender spinulates, fusiform, with very small head, gradually and finely pointed, size about ·7 by ·0155 millim.; (2) large inequianchorates, with stout, strongly-curved shaft bearing large wing-like lateral processes, and with three stout sharp teeth at each end, length about ·076

millim.; (3) slender bihamates, size about ·09 by ·0032 millim.

Locality. Station 147, between Prince Edward's and Crozet Islands, 1600 fath.

Genus Trochoderma *, n. g.

Acuate skeleton-spicules and inequianchorate flesh-spicules of the *Cladorrhiza*-type; also the characteristic spicules of the genus, consisting each of a long straight shaft with (usually) five equal teeth arranged in a star at each end.

Trochoderma mirabile, n. sp.

Sponge of the *Crinorrhiza*-form. Consisting of a conical body with concave lower surface. Margin fringed with numerous (thirty or forty) very long spicular processes, projecting outwards and downwards. From the centre of the lower surface depends a long slender root-like process. The summit of the body is produced into a papilla bearing numerous, very short, slender spicular processes. Diameter of body $\frac{1}{4}$ inch. Spicules:—(1) straight, slender acuates, which may attain a length of over $3\frac{1}{2}$ millim.; (2) tridentate equianchorates of the usual *Cladorrhiza*-type, length about ·038 millim.; (3) bihamates, with the ends produced into slender whip-like processes, length ·076 millim. †; (4) large spicules with stout, straight, cylindrical shaft, and a rosette of usually five teeth at each end, length up to ·23 millim. These spicules form a dense layer incrusting the body.

Locality. Station 291, South Pacific, depth 2250 fath.

Genus Chondrocladia (Wy. Thomson).

Usually of symmetrical external form. Skeleton-spicules acuate to spinulate. Characteristic flesh-spicules equianchorates, with curved shaft expanded laterally near each end, and with three or more teeth at each end.

Chondrocladia stipitata, n. sp.

A spherical head perched on the end of a long stalk. Diameter of head about $\frac{1}{2}$ inch, length of stalk 1 inch, attached at the base. Pale yellow. Soft, hispid. Spicules:—(1) long, sharp-pointed, fusiform spinulates, with very faintly marked heads, size up to 2·2 by ·038 millim.; (2) large equianchorates with curved shafts bearing five prominent claw-like

* *τροχός*, a wheel; *δέρμα*, the skin.

† The length of bihamate spicules is always measured from bend to bend.

teeth at each end, lateral processes well developed, length ·085 millim.; (3) slender bihamates, length ·055 millim.

Locality. Station 147, between Prince Edward's and Crozet Islands, 1600 fath.

Chondrocladia clavata, n. sp.

A very small globular head perched on the end of a slender stalk, which is short, and at the bottom breaks up into a tuft of rootlets. From various parts of the head radiate long slender processes. Diameter of head about $\frac{1}{12}$ inch. Pale yellow. Spicules:—(1) slender acuates, size variable, up to 1·0 by ·022 millim.; (2) tridentate equianchorates of the usual *Chondrocladia*-type, length ·057 millim.; (3) bihamates about ·044 millim. long. This sponge makes a near approach to the typical *Crinorrhiza*-form.

Locality. Station 174, Fiji Islands, 140 fath.

Chondrocladia crinita, n. sp.

Sponge of the *Crinorrhiza*-form; consisting of a conical body, terminating above in a spike-like projection. Base fringed by a number of long, coarse, hair-like processes, and with a stout papilla projecting from its centre. Diameter of base $\frac{7}{12}$ inch. Brownish yellow. Spicules:—(1) slender acuates, size in the main fibres about 2·2 by ·044 millim; (2) large, tridentate equianchorates of the usual *Chondrocladia*-form, length about ·1 millim.; (3) slender bihamates, length about ·07 millim.

Locality. Station 216 A, north of New Guinea, 2000 fath.

Genus Desmacidon (Bowerbank).

Form various. Skeleton-spicules acerate to cylindrical. Flesh-spicules equianchorates and usually bihamates.

Desmacidon reptans, n. sp.

Incrusting other sponges or free, massive, amorphous, or digitate. Greyish yellow. Texture fairly firm, resilient. Vents and pores small and scattered. Dermal skeleton usually well developed, with fibre composed of proper spicules and foreign bodies, and with meshes which vary a good deal in width. Spicules:—(1) smooth acerates, sharply and rather abruptly pointed, size ·18 by ·008 millim.; (2) equianchorates, with three sharp teeth at each end, and no palms, length ·019 millim; (3) simple or contort bihamates, about ·038 millim. long.

Locality. Off Bahia, 7–20 fath.

Desmacidon conulosa, n. sp.

Consisting of a stout peduncle expanding above into broad flattened lobes. Height 3¾ inch. Greyish yellow. Firm, tough, resilient. Surface conulose. Vents small, scattered over both surfaces. Skeleton, a coarse reticulation of stout fibre with little spongin. Spicules:—(1) stout, fusiform, gradually sharp-pointed acerates, size ·7 by ·057 millim.; (2) small palmate equianchorates with large anterior palms, length ·032 millim.

Locality. Simon's Bay, Cape of Good Hope, 10–20 fath.

Desmacidon (?) *ramosa*, n. sp.

Consisting of irregular, vermiform, anastomosing branches about ¼ inch in diameter. Pale greyish yellow. Tough and leathery. Surface minutely hispid, often with a reticulate appearance. Vents scattered, with their margins slightly produced. Skeleton composed of a central axis of spiculofibre from which bands of fibre radiate to the surface, beneath which they break up into divergent tufts of spicules, which support the dermal membrane and sometimes project beyond it. Spicules:—(1) sharp-pointed, fusiform acerates, size ·6 by ·022 millim.; (2) tridentate equianchorates, the shafts of which appear to be extended into slight lateral processes, length ·02 millim.

Localities. Station 142, south of Cape of Good Hope, 150 fath.; off Marion Island, 50–75 fath.

Subgenus Homœodictya (Ehlers).

Differing from *Desmacidon* in the form of the equianchorate spicule. This has a distinct anterior palm, usually slightly curved outwards at the free end and always giving off in the median line a backwardly projecting process, which, when viewed laterally, gives to the anterior palm a forked appearance. Usually also the shaft of the spicule is laterally expanded all the way along *.

Homœodictya kerguelenensis, n. sp.

Lobate or digitate. Light brownish yellow. Soft, spongy, resilient. Surface woolly-looking and minutely hispid. Vents small and scattered. Skeleton very loose and ill-defined. Spicules:—(1) short, stout, sharp-pointed acerates, size ·35 by ·0189 millim.; (2) palmate equianchorates of the typical

* For an excellent figure of this spicule *vide* Carter, Ann. & Mag. Nat. Hist. 1882, vol. x. p. 111, fig. 1, *a*, *b*.

form, anterior palms oval, may be slightly turned out at the end, shaft with a delicate lateral expansion all the way along, length ·028 millim.

Locality. Royal Sound, Kerguelen, 25 fath.

Homœodictya grandis, n. sp.

The single specimen consists of a large, broad, very much flattened lamella, presumably of erect growth, at the upper edge proliferating into compressedly digitate branches. Greatest breadth of specimen 11 inches, greatest height 6 inches, thickness $\frac{1}{10}$ to $\frac{1}{4}$ inch. Greyish yellow. Firm, tough, fibrous, resilient. Surface fairly even, but minutely conulose and minutely hispid. Vents small, in stellate groups of about four each, on one side only of the frond; very abundant. Skeleton well developed, composed of stout Axinellid-like spiculo-fibre. Spicules:—(1) stout, fusiform acerates, bent in the middle, gradually sharp-pointed, size ·45 by ·04 millim.; (2) large palmate equianchorates of the usual type, but with the middle portion of the shaft not laterally expanded, though often with an irregular swelling, length ·063 millim.

Locality. Simon's Bay, Cape of Good Hope, 10–20 fath.

Genus Artemisina (Vosmaer).

Sponge compact, texture cork-like, as in typical *Suberites*. Skeleton-spicules acuates or subspinulates. Flesh-spicules equianchorates, and tricurvates with spined ends.

[*Artemisina suberitoides*, Vosmaer.

Locality. Station 49, south of Nova Scotia, 85 fath.]

Genus Phelloderma *, n. g.

Corticate, with cork-like rind. Skeleton radiately arranged. Skeleton-spicules smooth acuates. Flesh-spicules equianchorate.

Phelloderma radiatum, n. sp.

Subglobular, with concave base of attachment, $\frac{1}{2}$ inch in diameter, with cork-like cortex ·24 millim. thick. Light brown. Vents (? few, scattered, each on a small papilla). Skeleton radiately arranged, fibres terminating at the surface in brushes of spicules whose points are imbedded in the dense cortex. Spicules:—(1) straight acuates or subspinulates, gradually sharp-pointed, with the shaft slightly bulbously dilated

* φελλὸς, cork; δέρμα, skin.

at intervals, size ·65 by ·0126 millim.: (2) equianchorates of characteristic form, with three rather palmate teeth at each end, and diamond-shaped "tubercle" (*Carter*); often the two anterior teeth are united by their apices to one another; length ·044 millim. The sponge also contains a good deal of sand.

Locality. Station 320, off Rio de la Plata, 600 fath.

Genus Sideroderma *, n. g.

Sponge with mammiform projections and a dense external rind of closely packed, horizontally laid skeleton-spicules, and a soft internal "choanosome" (*Sollas*). Skeleton-spicules: smooth, bicapitate cylindricals. Flesh-spicules: equianchorates, trichites, and (usually) bihamates.

Sideroderma navicelligerum (Ridley) †.

Hemispherical, sessile. Rind hard and dense, composed of densely packed bicapitate cylindricals; about 1 millim. thick. Surface covered by numerous papillæ, some vent-bearing. Pale yellow. Spicules:—(1) bicapitate cylindricals with a long cylindrical shaft and an oval head at each end, length ·28 to ·595 millim., diameter in middle of shaft ·0063 to ·0126 millim.; (2) very fine long trichites, in bundles measuring about ·45 by ·17 millim.; (3) contort bihamates, large, measuring ·06 by ·0047 millim., and small measuring ·0189 by ·0015 millim.; (4) tridentate equianchorates, length ·019 millim.; (5) very minute equianchorates of peculiar form, shaft much expanded laterally all along, so as to become oval and flattened, and notched in front in the centre, with one small oval tooth at each end, sharply recurved; length ·01 millim.‡

Locality. Station 188, off New Guinea, 28 fath.

Genus Iophon (Gray).

Skeleton-spicules:—(1) dermal, cylindrical, usually bicapitate; (2) main, acuate, generally more or less spined. Flesh-spicules:—(1) palmate inequianchorates, the small end

* σίδηρος, iron; δέρμα, the skin.

† "*Crella navicelligera*, Ridley, Voyage of H.M.S. 'Challenger,' Narr. of Cruise, vol. i. part 2, p. 571.

‡ We are indebted to the kindness of Dr. R. v. Lendenfeld for the opportunity of examining a second species of this remarkable genus, which occurs in his large collection, whereby we have been able to give a more satisfactory generic diagnosis than would otherwise have been the case.

terminating in a sharp spur (constant); (2) bipocillate spicules * (almost always present).

Iophon chelifer, n. sp.

Massive, honeycombed. Light brown to black. Soft and crumbling. Skeleton loose. Spicules:—(1) spined acuates, size ·4 by ·02 millim.; (2) bicapitate cylindricals, size ·3 by ·01 millim., with microspined heads; (3) palmate inequianchorates as usual, ·019 to ·03 millim. long; (4) large bipocillated spicules ·019 millim. long, of very peculiar form, shaft narrow and much bent, small end clawed, with two prongs, large end bearing two, three, or four expanded, flattened flukes, which together form a cup.

Localities. Station 142, off Cape of Good Hope, 150 fath.; Station 145 A, off Prince Edward's Island, 310 fath.; Station 148 A, between Prince Edward's and Kerguelen Islands, 550 fath.

Iophon cylindricus, n. sp.

Erect, cylindrical; diameter $\frac{1}{4}$ inch. Brown. Brittle and crumbling. Spicules:—(1) bicapitate cylindricals with smooth shaft and distinct, microspined heads, size ·22 to ·29 by ·008 millim.; (2) smooth acuates, sharp-pointed, size ·29 by ·01 millim.; (3) palmate inequianchorates as usual, length ·025 millim.; (4) bipocillates of usual shape, length ·0127 millim.

Locality. Station 163 A, off Cape Howe, Australia, 120 fath.

Iophon laminalis, n. sp.

A number of irregular, flat or slightly curved, cake-like expansions; possibly cup-shaped when perfect. Thickness of lamellæ $\frac{1}{6}$ to $\frac{2}{3}$ inch. Dark reddish brown. Texture loose, crumbling. Spicules:—(1) bicapitate cylindricals, heads sometimes microspined, size ·34 by ·0013 millim.; (2) large, smooth subspinulates, size ·63 by ·022 millim., rather abruptly sharp-pointed; (3) palmate inequianchorates, ·025 millim. long; (4) bipocillates, ·013 millim. long, consisting of a curved shaft with a large cup-shaped expansion at one end and a small one at the other.

Locality. Station 145 A, off Prince Edward's Island, 310 fath.

* For a figure of this spicule *vide* Bowerbank, 'Mon. Brit. Spong.' vol. i. pl. v. figs. 124, 125, 126.

Iophon abnormalis, n. sp.

Cylindrical, branched; brittle and crumbling. Black. Spicules:—(1) bicapitate cylindricals with spined heads, size ·28 by ·008 millim.; (2) acuates, generally spined at the base and also slightly at the apex, size ·35 by ·0126 millim.; (3) large palmate inequianchorates, ·0378 millim. long, and of the usual *Iophon* type, chiefly in rosettes. Also smaller ones of about half the size, but not in rosettes. No bipocillates.

Locality. Off Marion Island, 50–75 fath.

Genus Amphilectus (Vosmaer).

We make use of this genus in the manner indicated by its founder, namely, as a provisional receptacle for a number of species of doubtful position.

Amphilectus apollinis, n. sp.

Massive, amorphous. Light greyish yellow. Rather soft and spongy. Skeleton loose, confused. Spicules:—(1) slender acuates or subspinulates, gradually sharp-pointed, often microspined at the base, size ·315 by ·0063 millim. (dermal); (2) stout, smooth acuates, size ·5 by ·0168 millim. (in main skeleton); (3) small palmate equianchorates, length ·015 millim.; (4) large tricurvates with spined ends, size ·3 by ·0045 millim.

Locality. Royal Sound, Kerguelen, 20–60 fath.

Amphilectus ceratosus, n. sp.

Massive, lobate. Dark reddish brown. Spongy, elastic, but fairly compact. Surface glabrous, but with small angular conuli. Vents small and scattered. Skeleton:—(*a*) main, a reticulation of horny fibre, 07 millim. thick, with no spicular core, and irregularly scattered spicules, which occur also in wisps near the surface; (*b*) dermal, irregularly scattered spicules. Spicules:—(1) smooth bicapitate cylindricals with oval heads, size ·24 by ·003 millim.; (2) palmate equianchorates, length ·025 millim.

Locality. Off Port Jackson, 7 fath.

Amphilectus pilosus, n. sp.

Pedunculate, lobate. Dark chocolate-brown; texture coarse and hairy, but rather compact. Surface pilose, shaggy, with deep longitudinal grooves. Spicules:—(1) bicapitate cylindricals, heads usually microspined, size ·42 by

·0063 millim. (dermal) ; (2) smooth acuates, size up to 2·0 by ·025 millim. ; (3) acerates—(*a*) small, tricurvate, size about ·35 by ·0063 millim., (*b*) large, almost or quite straight, size up to 2·0 by ·01 millim. (*a* and *b* connected by intermediate forms) ; (4) very minute palmate equianchorates, ·0065 millim. long ; scarce.

Localities. Christmas Harbour, Kerguelen, 70 fath. ; off Marion Island, 50–75 fath.

Amphilectus annectens, n. sp.

Massive, lobate. Greyish yellow. Soft and spongy. Skeleton very loose and irregular. Spicules :—(1) smooth acuates, gradually sharp-pointed, size 1·0 by ·037 millim. ; (2) bicapitate cylindricals, inequiended, ends microspined, size ·525 by ·01 millim. (dermal) ; (3) small palmate equianchorates, length ·02 millim. ; (4) slender tricurvates with faintly spined ends, length up to ·2 millim. (few) ; (5) usually contort bihamates, length ·063 millim. (few).

Locality. Station 320, off Rio de la Plata, 600 fath.

[To be continued.]

XXXV.—*Contributions to the Study of the Littoral Fauna of the Anglo-Norman Islands* (*Jersey, Guernsey, Herm, and Sark*). By Dr. R. Kœhler.

[Plate XI.]

[Continued from p. 307.]

HERM.

The island of Herm is situated about 3 miles from the east coast of Guernsey, from which it is separated by a narrow channel, the Little Russel, in which the sea presents exceedingly violent currents. The island of Herm is not much more than half a mile broad and nearly 2 miles in length. The coast, which is nearly perpendicular to the east and especially towards the south, falls with a gentle slope to the north and west. On the west coast the sea in retiring lays bare an immense sandy beach, which extends at spring-tides to a distance of more than half a mile. Thus the surface of the

of trunk-appendages become the first and second pairs of antennæ, really seem to him to be "precisely the same thing" as the upward movement of the first trunk-appendages, converted into the second pair of antennæ, such as is rendered probable by the origin of the nerves upon the subœsophageal ganglion and their change of position in the higher Crustacea? And it is upon such a fantastic argument as this that Ray Lankester ventures to bring against me the calumnious charge:—"Prof. Claus further has given expression to the remarkable conception that he is justified in ignoring the work of other zoologists, and treating their results as his own, provided that he does so not more than three years after they have published those results;" and in connexion therewith he feels himself justified in adopting a magisterial tone, and finally in posing as a moralizing judge,—Ray Lankester, who himself in so many controversies has had to submit to be set right, and has just furnished so fine an example of his proficiency in the noble art of sophistical falsification!

It only remains for me, with reference to my previous article (July 1886, p. 55), to point out that Ray Lankester has not given the revocation called for in its concluding passage, and therefore has himself pronounced judgment—a judgment which is strengthened and confirmed by the method adopted in his "Rejoinder."

XLIV.—*Preliminary Report on the Monaxonida collected by H.M.S. 'Challenger.'* By Stuart O. Ridley, M.A., F.L.S., of the British Museum, and Arthur Dendy, B.Sc., Associate of the Owens College, Manchester.

[Concluded from p. 351.]

Part II.

Family 3. **Desmacidonidæ** (*continued*).

Subfamily ii. *Ectyoninæ*.

Fibre normally echinated by laterally projecting spicules.

Genus Myxilla (Schmidt).

Skeleton-spicules:—(1) main, acuate, usually spined;

(2) dermal, cylindrical. Flesh-spicules tridentate equianchorates and sometimes bihamates. Skeleton usually reticulate*.

Myxilla digitata, n. sp.

Digitate. Greyish yellow. Soft and spongy. Oscula small, scattered. Fibre very indefinite. Spicules:—(1) entirely spined acuates, size ·4 by ·014 millim.; (2) bicapitate cylindricals, with well-marked heads, size ·24 by ·006 millim.; (3) tridentate equianchorates, with strongly curved shaft, length ·044 millim.

Locality. Station 142, south of Cape of Good Hope, 150 fath.

Myxilla paucispinata, n. sp.

Massive, amorphous. Pale yellow. Rather soft, fragile. Spicules:—(1) acuates, large, stout, usually curved, rather blunt, sometimes slightly spined, size ·7 by ·03 millim.; (2) smooth bicapitate cylindricals, with small oval heads, size ·4 by ·008 millim.; (3) tridentate equianchorates, with stout, strongly-curved shafts, length ·05 millim.; (4) slender bihamates, simple and contort, up to ·056 millim. long.

Locality. Station 192, south of New Guinea, 129 fath.

Myxilla mollis, n. sp.

Massive, amorphous. Creamy yellow. Very soft and spongy. Spicules:—(1) smooth acuates or spinulates, sharp-pointed, size ·42 by ·01 millim.; (2) smooth bicapitate cylindricals, with distinct oval heads, size ·22 by ·006 millim.; (3) tridentate equianchorates, shaft slightly curved, often laterally expanded at each end, length ·04 millim.; (4) simple and contort bihamates, length up to ·063 millim.

Locality. Off south-west coast of Patagonia.

Myxilla spongiosa, n. sp.

Massive, incrusting, extremely soft and spongy. Skeleton confused. Spicules:—(1) smooth, stout acuates, gradually sharp-pointed, size ·7 by ·02 millim.; (2) bicapitate cylindricals, with well-developed oval heads, usually microspined at end, size ·4 by ·01 millim.; (3) tridentate equianchorates, with shaft laterally expanded towards each end, length ·05

* As described by Bowerbank for *Halichondria*. The fibre in this genus is not echinated by laterally-projecting spicules, except where so stated; the genus is therefore in a transitional state.

millim.; (4) bihamates, usually much contort, size ·063 by ·0045 millim.

Locality. Station 320, off the Rio de la Plata, 600 fath.

Myxilla hastata, n. sp.

Lamellar, about $\frac{1}{4}$ inch thick. Soft and spongy. Skeleton confused. Spicules:—(1) stout, gradually sharp-pointed, smooth acuates, size ·77 by ·04 millim.; (2) smooth hastately-pointed cylindricals, size ·35 by ·01 millim.; (3) tridentate equianchorate, with stout and strongly curved shaft, length up to ·04 millim. (more commonly ·025); (4) bihamates, often much contort, size ·07 by ·004 millim.

Locality. Station 320, off the Rio de la Plata, 600 fath.

Myxilla cribrigera, n. sp.

Digitate. Dark yellowish grey. Soft and spongy. Minutely hispid. Oscula small, scattered. Pores in definite rounded areas, diameter of areas 1·0 millim., of pores ·1 millim. Skeleton confused. Spicules:—(1) stout, smooth acuates, size ·65 by ·025 millim.; (2) bicapitate cylindricals, with oval heads, sometimes minutely spined at the end, size ·3 by ·008 millim.; (3) large tridentate equianchorates, with slightly curved shaft, laterally expanded towards each end, length ·08 millim.

Locality. Station 306 A, off south-west coast of Patagonia, 345 fath.

Myxilla fusca, n. sp.

Massive, amorphous. Rather dark brown. Texture fairly firm and elastic. Sometimes minutely hispid. Spicules:—(1) entirely spined acuates, sharp-pointed, size ·52 by ·034 millim.*; (2) bicapitate cylindricals, head faintly developed, smooth, size ·42 by ·01 millim.; (3) tridentate equianchorates, with strongly curved shaft, teeth rather widely divergent, length ·047 millim.; (4) very slender bihamates, usually much contort, length ·05 millim.

Locality. Station 150, Southern Ocean, 150 fath.

Myxilla mariana, n. sp.

Massive. Pale yellowish grey. Fairly compact, but soft. Main skeleton an ill-defined reticulation of spined acuates,

* No distinctly echinating spicules seen, but sometimes entirely spined acuates, much smaller than those described, occur.

sparsely echinated by spined acuates. Spicules:—(1) entirely spined acuates, slightly curved, gradually sharp-pointed, size ·42 by ·016 millim.; (2) as (1), but much smaller, and usually straight, size ·16 by ·012 millim. (echinating); (3) smooth bicapitate cylindricals, with small oval heads, size ·3 by ·0094 millim.; (4) tridentate equianchorates, with only slightly curved shaft, length up to ·04 millim.; (5) bihamates, length up to ·057 millim.

Localities. Off Marion Island, 50–75 fath.; off south-west coast of Patagonia (var. *massa*).

Myxilla compressa, n. sp.

Massive (?), flattened. Yellowish grey. Soft and spongy. Pores in groups. Main skeleton reticulate, with triangular meshes one spicule wide. Spicules:—(1) entirely spined, sharp-pointed acuates, size ·28 by ·0155 millim.; (2) as (1), but smaller, size ·12 by ·008 millim., echinating the fibre; (3) smooth cylindricals, somewhat hastately pointed, or with small oval heads, pointed at the ends, size ·22 by ·0063 millim.; (4) tridentate equianchorates, shaft very strongly curved, length ·044 millim.; (5) bihamates, length ·02 millim. (very rarely up to ·063 millim.).

Locality. Station 320, off the Rio de la Plata, 600 fath.

Myxilla nobilis, n. sp.

Massive or lobate, may be incrusting. Greyish yellow. Soft, spongy, rather cavernous. Pores in groups. Spicules:—(1) acuates, entirely smooth or very slightly spined at base, slightly curved, gradually sharp-pointed, size ·52 by ·03 millim.; (2) much smaller, entirely spined, straight acuates or spinulates, size ·18 by ·013 millim. (echinating); (3) bicapitate cylindricals, heads slightly expanded, very short, abruptly truncated, often slightly spined at the end, size ·33 by ·0063 millim.; (4) tridentate equianchorates, shaft stout, strongly curved, length up to ·044 millim.; (5) bihamates (?).

Localities. Station 148 A, Southern Ocean, 240–550 fath. (var. ?); Station 320, off the Rio de la Plata, 600 fath. (type); Station 311, off south-west coast of Patagonia, 245 fath. (var. *patagonica*); Station 307, south-west coast of Patagonia, 140 fath. (var. *bacillifera*).

Myxilla frondosa, n. sp.

A single broad, flattened frond, ¼ inch thick. Tough,

fibrous, elastic. Conulose, especially on the convex side, which also bears the oscula, which are small and numerous. Pores on concave surface. Fibre stout, *Axinella*-like, the spicules with their bases in the centre and their apices projecting obliquely forwards. Spicules:—(1) entirely but slightly spined acuates, gradually sharp-pointed, size ·6 by ·03 millim.; (2) smaller acuates as (1), but more strongly spined, size ·28 by ·013 millim.; (3) bicapitate cylindricals, with oval heads (sometimes not distinguishable), spined at ends, size ·25 by ·01 millim.; (4) tridentate equianchorates, shaft curved and slightly swollen in the centre, length ·027 millim.; (5) bihamates, usually much contort, size ·044 by ·004 millim.

Locality. Station 170, off Kermadec Islands, 520 fath.

Genus Clathria (Schmidt).

Horny fibre well developed, cored by acuate spicules, and echinated by smaller spined acuates. Flesh-spicules small palmate equianchorates. No special dermal crust of spicules.

Clathria Lendenfeldi, n. sp.

Subrepent, cylindrical. Light yellow. Soft, fibrous, elastic. Surface hispid. Fibre stout. Spicules:—(1) straight smooth acuates or subspinulates, gradually and sharply pointed, sometimes faintly spined at base, size ·35 by ·005 millim. (dermal); (2) stout, smooth, gradually sharp-pointed acuates, slightly curved, size ·6 by ·02 millim.; (3) short, straight, bluntly-pointed acuates (main skeleton), strongly spined all over, size ·08 by ·005 millim., echinating the skeleton-fibre in great numbers; (4) minute palmate equianchorates, ·005 millim. long.

Locality. Off Port Jackson.

Clathria elegantula, n. sp.

Sessile, composed of much-flattened, expanded, divided lobes (height and breadth each about $3\frac{1}{4}$ inches, thickness $\frac{5}{12}$ inch). Pale brownish yellow. Soft, spongy, fibrous. Surface conulose, with a thin dermal membrane stretched between the conuli over large subdermal cavities. Skeleton complicated, primary lines alone cored by smooth subspinulates. Spicules:—(1) slender straight subspinulates, size ·2 by ·003 millim.; (2) slender, sharp-pointed, entirely spined echinating acuates, size ·07 by ·0032 millim.; (3) palmate equianchorates, length ·02 millim.

Locality. Station 162, Bass Straits, 38 fath.

Clathria? inanchorata, n. sp.

Erect, slender. Surface proliferating into inosculating ridges. Dull yellowish brown. Tough and fibrous. Surface minutely hispid. Fibre stout; primary lines alone cored by smooth acuates. Spicules:—(1) smooth acuates, size variable, up to ·54 by ·024 millim.; (2) sharp-pointed, entirely spined acuates, size ·072 by ·006 millim. (echinating); (3) smooth tricurvates, size ·029 by ·0016 millim.

Locality. Station 163 A, Bass Straits, 120 fath.

Genus Rhaphidophlus (Ehlers).

Differs from *Clathria* only in the possession of a distinct dermal crust of outwardly-projecting spicules.

Rhaphidophlus filifer, n. sp.

Irregularly ramose, gnarled. Greyish yellow. Hard. Surface rugose and uneven. Dermal brushes densely packed, arranged reticulately. Spicules:—(1) straight, slender, gradually sharp-pointed acuates, base usually slightly spined, size ·2 by ·0065 millim. (dermal); (2) smooth, slightly curved, stout acuates, size ·3 by ·018 millim.; (3) straight, entirely spined acuates, size ·1 by ·01 millim. (echinating); (4) minute palmate equianchorates, ·016 millim. long; (5) long hair-like tricurvates, length ·16 millim.

Locality. Station 208, Philippine Islands, 18 fath.

Genus Plumohalichondria (Carter).

Skeleton arranged in plume-like columns. Spicules of the main skeleton acuate and acerate; no special dermal spicule. Equianchorate flesh-spicules.

[*Plumohalichondria mammillata*, Carter.

Locality. Station 162, Bass Straits, 38 fath.]

Genus Plocamia (Schmidt).

Skeleton-spicules dumb-bell-shaped and acuate; flesh-spicules equianchorate and (usually) tricurvate.

[*Plocamia coriacea*, Bowerbank, var.

Locality. Station 75, off Azores, 450 fath.]

Genus Acarnus (Gray).

Acuate and cylindrical skeleton-spicules and an echinating grapnel-spicule. Flesh-spicules palmate equianchorates and tricurvates.

[*Acarnus ternatus*, Ridley.

Locality. Tahiti, 20 fath.]

Genus Echinoclathria (Carter).

Sponge usually made up of a honeycombed mass of anastomosing flattened trabeculæ. Skeleton reticulate, with much spongin. Skeleton-spicules smooth acuates or bicapitate cylindricals; smooth echinating acuates commonly present. Minute palmate equianchorates may or may not be present.

Echinoclathria Carteri, n. sp.

Cylindrical, ramose; each branch composed of flat, ribbon-like, anastomosing trabeculæ. Pale yellow. Tough; very minutely hispid. Spicules:—(1) smooth, sharp-pointed acuates, size ·132 by ·009 millim. (in and echinating the fibre and scattered); (2) smooth, very slender subspinulates, size ·16 by ·002 millim. (scattered); (3) palmate equianchorates, length ·015 millim.

Localities. Station 162, Bass Straits, 38 fath.; Station 163 A, South-east Australia, 120 fath.; off Port Jackson, 30–35 fath.

Echinoclathria glabra, n. sp.

Massive, honeycombed. Yellow. Firm and parchment-like, glabrous. Skeleton a reticulation of well-developed horny fibres, sparsely cored by bicapitate cylindricals and sparsely echinated by smooth subspinulates. Spicules:—(1) smooth, fusiform, subspinulate, sharply pointed, size ·11 by ·0063 millim.; (2) smooth bicapitate cylindricals, size ·22 by ·0032 millim. (in the fibre and scattered). No flesh-spicules.

Locality. Station 162, Bass Straits, 38 fath.

Genus Agelas * (Duchassaing and Michelotti).

Well-developed horny fibre, echinated by verticillately-spined acuates (cylindricals). No other spicules.

* This genus is inserted here on the supposition that it has had anchorate spicules and lost them.

[*Agelas mauritianus*, Carter.

Locality. Off Tristan d'Acunha ?]

Genus Echinodictyum * (Ridley).

Skeleton reticulate, with little spongin. Skeleton-spicules smooth acerates in the fibre, sometimes accompanied by partially-projecting slender acuates; spined cylindricals or acuates echinating the fibre. No flesh-spicules.

Echinodictyum rugosum, n. sp.

Stipitate, palmato-digitate. The short stem surmounted by a broad flattened expansion. Height $7\frac{1}{2}$ inches, breadth $5\frac{1}{4}$ inches, thickness $\frac{1}{6}$ inch. Greyish yellow; hard, very rugose, with conuli. Spicules:—(1) smooth acerates, subhastately pointed, size ·3 by ·015 millim.; (2) entirely spined acuates (subspinulate), size ·13 by ·012 millim. (echinating).

Locality. Station 190, south-west of New Guinea, 49 fath.

Echinodictyum asperum, n. sp.

Bushy, cavernous, coarsely aculeated. Height and breadth about 2 inches. Deep chocolate-brown. Coarse and fibrous. Surface glabrous where intact. Fibre stout, about ·5 millim. thick. Spicules:—(1) smooth, slightly curved, gradually sharp-pointed acerates, size ·35 by ·0063 millim.; (2) straight, tapering, bluntly-pointed, entirely spined acuates, size ·17 by ·0075 millim. (echinating).

Locality. Papeete Harbour, Tahiti, 20 fath.

Family 4. **Axinellidæ.**

Skeleton typically non-reticulate, consisting of ascending axes of fibres, from which arise subsidiary fibres radiating to the surface. Fibres typically plumose. Skeleton-spicules chiefly acuate, to which acerates and (or) cylindricals may be added. Flesh-spicules rarely present, never anchorates.

Genus Hymeniacidon (Bowerbank).

Skeleton reticulate, of ill-defined spiculo-fibre, not plumose. Skeleton-spicules acuate or subspinulate.

[*Hymeniacidon caruncula*, Bowerbank.

Locality. St. Vincent, Cape Verd Islands, shallow water.]

* This genus is inserted here on the supposition that it has had anchorate spicules and lost them.

Hymeniacidon ? subacerata, n. sp.

Massive, consisting of irregularly anastomosing trabeculæ. Pale yellow, with a waxy translucent look. Rather brittle. Surface uneven, subglabrous. Main skeleton an irregular reticulation ; at the surface a thin sheet of spicules, also densely and irregularly reticulate, supporting numerous small outwardly-projecting spicules. Spicules :—(1) smooth fusiform acuates, somewhat curved, apex finely and gradually sharp-pointed, base tapering, but evenly rounded off, size 1·2 by ·031 millim. ; (2) straight, gradually sharp-pointed, smooth acuates or subspinulates, size ·2 by ·0063 millim., base not constricted.

Locality. Station 208, Philippine Islands, 18 fath.

Genus Phakellia (Bowerbank).

Typically flabellate or cup-shaped. Skeleton somewhat reticulate. Spicules acuate and often acerate.

Phakellia flabellata, n. sp.

Erect, stipitate, a short stem surmounted by a broad flattened lamella, $\frac{1}{8}$ inch thick. Greyish yellow, soft. One surface ribbed and furrowed, without oscula, the other comparatively smooth, bearing numerous stellate groups of minute oscula. Skeleton of stout ascending ribs, between which a rather irregular reticulation of spicules, with meshes of smaller spicules at the surface. Spicules :—(1) smooth, slightly curved, gradually sharp-pointed acuates, size ·5 by ·03 millim. ; (2) smooth, straight acuates or subspinulates, rather abruptly sharp-pointed, size ·22 by ·0063 millim.

Locality. Port Jackson, 30–35 fath.

Phakellia papyracea, n. sp.

Very thin, lamelliform (? cup-shaped), minutely punctate on both surfaces ; thickness $\frac{1}{12}$ inch. Yellow or brown ; fragile. Very minutely hispid. Skeleton reticulate, rather rugose. Spicules :—(1) smooth, sharp-pointed acuates, size ·7 by ·02 millim. ; (2) smooth, sharp-pointed acuates or subspinulates, size variable (*e. g.* ·35 by ·0063 millim.).

Localities. Station 145 A and Station 148, Southern Ocean, 310 and 210 fath.

Genus Ciocalypta (Bowerbank).

Skeleton of very definite columns of spiculo-fibre radia-

ting from a fibrous or reticulate axis, spreading out at their tops and supporting the dermal membrane with its reticulation of spiculo-fibre. Very large subdermal cavities. Spicules acuate (and sometimes acerate).

Ciocalypta hyaloderma, n. sp.

Cylindrical, ramose. Dirty brown; very delicate and fragile. Dermis stellately marked, transparent. Skeleton of axial portion both fibrous and reticulate. Spicules smooth, slightly curved, fairly gradually, but not very sharply pointed acuates; size in the dermal reticulation ·53 by ·014 millim., in the central portion 1·0 by ·037 millim.

Locality. Station 320, off the Rio de la Plata, 600 fath.

Ciocalypta amorphosa, n. sp.

Massive, amorphous. Grey. Very spongy, fibrous, honeycombed. Dermal membrane stretched on top of numerous projecting fibrous tufts. Main skeleton confused. Spicules:—(1) smooth, slightly curved, fusiform, sharp-pointed acerates, size up to 1·7 by ·02 millim.; (2) slightly curved smooth acuates, size up to about 1·47 by ·028 millim.

Locality. Station 320, off the Rio de la Plata, 600 fath.

Genus Acanthella (Schmidt).

Ramose or bushy. Texture cartilaginous. With glabrous surface beset with ridges and spines. Skeleton-spicules smooth (acuate, cylindrical, and acerate).

Acanthella pulcherrima, n. sp.

[=*Acanthella*, sp., Ridley, Zool. Coll. H.M.S. 'Alert,' Brit. Mus. 1884, p. 463, *q. v.* for description *.]

Locality. Torres Straits, 3–11 fath.

Genus Axinella (Schmidt).

Typically ramose (may be massive). Fibre plumose. Skeleton-spicules acuate and sometimes acerate or cylindrical.

Axinella arborescens, n. sp.

Erect, ramose, cylindrical or flattened. Height 8½ inches, diameter of branches ⅓ inch. Greyish yellow. Texture firm

* We must add that an unequal-ended acerate is also common, though not originally mentioned, measuring about the same as the acuate.

but rather woolly. Central skeleton-axis ill-defined, giving off radiating fibres terminating in dense brushes of spicules. Skeleton-spicules smooth, slightly curved, rather abruptly pointed acuates; size ·28 by ·024 millim.

Locality. Port Jackson, 30–35 fath.

Axinella balfourensis, n. sp.

Erect, stipitate, with spreading, branched root and long, cylindrical stem, surmounted by a large head of dichotomizing finger-like, tapering branches. Height 14 inches. Yellowish grey. Stem firm and compact, branches extremely soft and spongy. Very slightly hispid. Skeleton loose, poorly developed. Spicules smooth, straight or slightly curved acuates, gradually sharp-pointed, size ·42 by ·0075 millim., of the same shape in both the dermal tufts and the main skeleton, but in the former of about half the size.

Locality. Kerguelen Island, 20–60 fath.

Axinella mariana, n. sp.

Erect, delicately branched; branches slender, somewhat flattened. Height about 2 inches. Greyish yellow. Hirsute. Texture soft and friable externally, internally tough. Skeleton, a central axis of irregularly-packed, short, bent acuates, amongst which are imbedded the bases of very large stout acuates, whose apices project far beyond the surface. Spicules:—(1) smooth (rarely slightly spined) acuates or subspinulates, sharply bent near the base, finely pointed, size variable (*e. g.* ·3 by ·013 millim.); (2) smooth acuates, usually slightly bent towards the base, finely pointed, size 2·2 by ·03 millim.

Locality. Off Marion Island, 50–75 fath.

Axinella profunda, n. sp.

Small, stipitate, branching dichotomously in one plane, slightly flattened. Height about 2 inches. Yellowish grey. Texture: axis tough and woody, with a soft spongy coat. Surface hispid. Skeleton, a central axis of longitudinally disposed large acuates, from which similar spicules radiate in tracts or brushes, surrounded by bunches of smaller slender acuates. Spicules acuate, straight, sharp-pointed, size from ·55 by ·0084 to 2·0 to ·037 millim., the bases, with few exceptions, very minutely spined.

Localities. Station 241, North Pacific, 2300 fath.; Station 281, South Pacific, 2385 fath.

Axinella fibrosa, n. sp.

Massive, lobate. Height 6½ inches. Greyish yellow. Soft, spongy, coarsely fibrous. Surface subglabrous but conulose. Skeleton of stout branching fibres, coming to the surface in tufts. Fibre consisting of a plumose core of acuate spicules almost entirely sheathed in spongin, diameter about ·4 millim. Spicules smooth acuates, slightly bent towards the base, usually very gradually sharp-pointed, size ·63 by ·015 millim.

Locality. Station 313, east of Straits of Magellan, 55 fath.

Axinella reticulata, n. sp.

Massive, sessile, with short, thick-walled, oscular tubes above. Height 1½ inch. Pale yellow. Very firm. Surface conulose, but glabrous. Skeleton an irregular reticulation, with loose plumose fibres. Spicules:—(1) smooth, slightly curved acuates, sharp-pointed, size ·45 by ·02 millim.; (2) smooth, curved acerates, sharp-pointed, of same size, scarce.

Locality. Bahia, 7–20 fath.

Axinella monticularis, n. sp.

Massive, sessile, apparently free; diameter about 1½ inch. Yellowish grey. Firm and compact, containing much foreign matter. Surface abundantly conulose. Skeleton composed of stout plumose columns ending in the surface-conuli. Spicules:—(1) smooth, gradually sharp-pointed acuates, size ·6 by ·0126 millim.; (2) entirely spined, usually subspinulate, gradually sharp-pointed, size about ·12 by ·0066 millim.

Locality. St. Vincent, Cape Verd Islands, shallow water.

Axinella? *lunæcharta*, n. sp.

Massive, sessile. Diameter about 1½ inch. Pale yellow. Fairly firm, but rather spongy. Surface glabrous, with numerous small monticular eminences, and fewer but much larger projections, each with a crateriform depression at the top, in which are the minute oscula. Skeleton loosely reticulate. Spicules:—(1) smooth acuates, gradually sharp-pointed, size ·4 by ·014 millim.; (2) smooth acerates, usually gradually sharp-pointed, commonly with unequal ends, size ·35 by ·0126 millim.

Locality. St. Vincent, Cape Verd Islands, shallow water.

Axinella? tubulosa, n. sp.

Erect, tubular; tubes open widely above or closed finger-like. Height 2 inches. Greyish yellow. Fairly firm. Skeleton very confused, no distinct fibre. Spicules smooth acuates:—(1) stout, fusiform, more or less bent, fairly gradually sharp-pointed, size ·87 by ·03 millim.; (2) similar, but much smaller, size ·45 by ·009 millim.; the latter especially in loose brushes near the surface.

Locality. Station 320, off the Rio de la Plata, 600 fath.

Axinella? paradoxa, n. sp.

Sessile. Massively lobate. Diameter 1 inch. Greyish yellow. Texture indiarubber-like, internally fibrous. Surface glabrous, but conulose. Oscules grouped on tops of lobes. Skeleton of large smooth acerates, size ·87 by ·022 millim., forming very stout but very loose *Axinella*-like fibre.

Locality. Inaccessible Island, South Atlantic, 90 fath.

Genus Raspailia (Nardo).

Long, slender. A central axis of spiculo-fibre, containing much spongin, always present, from which loose tufts of spicules radiate to the surface. Skeleton-spicules chiefly acuate or subspinulate; spined echinating acuates sometimes present.

Raspailia tenuis, n. sp.

A very long, slender, flexible stem, giving off branches of the same nature as itself, and produced into a long unbranched terminal portion; no secondary branches. Diameter $\frac{1}{12}$ to $\frac{1}{10}$ inch. Greyish yellow; tough, stringy, externally friable. Surface minutely conulose, hispid. Spicules:—(1) smooth, slender acuates, almost straight, size up to 1·75 by ·018 millim.; (2) smooth slender cylindricals, size up to ·77 by ·01 millim.; (3) very slender smooth acuates, surrounding the large ones, size ·42 by ·0035 millim.; (4) small spined acuates, rather rare, imbedded in the axis, size ·175 by ·0125 millim.

Locality. Off Bahia, shallow water.

Raspailia flagelliformis, n. sp.

Stipitate, branched; stem short, rigid; branches long, whip-like. Diameter $\frac{1}{6}$ inch. Yellowish. Axis very dense. Rind thick, friable. Spicules of one form only, almost or

quite straight, smooth, gradually sharp-pointed acuates; size in surface-tufts ·3 by ·0032 millim., in deeper parts ·45 by ·009 millim.

Locality. Simon's Bay, Cape of Good Hope, 10–20 fath.

Raspailia? rigida, n. sp.

Erect, straight (single specimen with one incipient branch). Maximum diameter $\frac{1}{6}$ inch. Yellowish grey. Tough, subrigid. Hispid. Skeleton a dense central axis of closely-packed spicules, from which rather sparse bands radiate to the surface, ending in great divergent brushes. Little or no spongin. Spicules, straight smooth spinulates or subspinulates, finely pointed; size variable, up to 2·0 by ·025 millim., usually smaller, especially in the dermal brushes.

Locality. Station 142, Agulhas Bank, Cape of Good Hope, 150 fath.

Genus Dendropsis *, n. g.

Skeleton-arrangement *Raspailia*-like. Skeleton-spicules acuate of various forms. Flesh-spicules minute spined acerates.

Dendropsis bidentifera, n. sp.

Erect, stipitate, dichotomously branched, branches flattened; all approximately in one plane. Greyish yellow. Tough, hard; minutely conulose and hispid. Skeleton an axial core of close-packed spicules, from which much larger spicules radiate to the surface in loose bundles surrounded by dense sheaves of the "bidentate" acuates. Spicules:—(1) smooth, gradually sharp-pointed acuates, fusiform, bent near the base, size in axis ·35 by ·025 millim., in radiating tufts 1·1 by ·044 millim.; (2) slender, smooth acuates, size up to 1·75 by ·019 millim., sometimes cylindrical; (3) slender, straight, hastately-pointed acuates, each with two sharp spikes projecting from the base, size ·56 by ·0075 millim.; (4) small spined acerates, bent, size ·09 by ·0045 millim.

Locality. Simon's Bay, Cape of Good Hope, 10–20 fath.

Genus Thrinacophora (Ridley).

Long, cylindrical, axiate. Skeleton-spicules acuate and (or) acerate. Flesh-spicules trichites.

Thrinacophora cervicornis, n. sp.

Erect, dichotomously branched, like a stag's antler. Greyish

* δένδρον, tree, from the arborescent form of *D. bidentifera*.

yellow. Firm, tough, flexible, elastic. Surface minutely conulose and strongly hispid. Axis a dense reticulation of acerate spicules imbedded in spongin. Spicules:—(1) acerates, abruptly sharp-pointed, size ·28 by ·018 millim.; (2) long smooth acuates projecting from surface, size 5·2 by ·037 millim.; (3) smooth slender acuates in whorls around the last named, size ·52 by ·0075 millim.; in the rind long slender spicules, acerate to cylindrical, of about the same size; (4) trichite-bundles ·0126 millim. long.

Locality. Station 208, Philippine Islands, 18 fath.

Thrinacophora funiformis, n. sp.

Cylindrical, elongated, may be branched; flexible, rope-like. Dirty yellow. Surface beset with prominent conuli. Skeleton a dense axis of spiculo-fibre from which fibres radiate to the surface. Spicules:—(1) slender acuates, finely pointed, size up to 1·8 by ·025 millim.; (2) slender acerates with unequal ends, size up to 1·7 by ·023 millim.; (3) fusiform acerates with equal ends, bent at centre, size up to ·6 by ·023 millim.; (4) crooked acuates with apex branched into irregular short fangs, size ·52 by ·0063 millim., often in bundles; (5) trichite-bundles, size ·1 by ·01 millim.

Locality. Off Buthia, shallow water.

Suborder II. Clavulina (Vosmaer).

Typically corticate, skeleton typically radiate; skeleton-spicules almost always spinulate. Flesh-spicules may be present, but never anchorates.

Family 1. Suberitidæ.

Without flesh-spicules.

Genus Suberites (Nardo).

Skeleton-spicules spinulate or subspinulate, with smaller spicules of the same form radiately arranged at the surface. Surface without mammiform projections.

Suberites caminatus, n. sp.

Sessile, hemispherical; diameter about $\frac{3}{4}$ inch; with one or more usually chimney-like oscula at the summit; often forming colonies by lateral budding. Cortex dense, well defined, and packed with outwardly projecting spicules. Main skeleton of separate radiating fibres. Spicules smooth, spinulate,

size in cortex ·35 by ·01 millim., heads roundedly triangular; in main skeleton 1·2 by ·017 millim., heads pointedly oval.

Localities. Off Marion Island, 50–75 fath.; Station 320, off the Rio de la Plata, 600 fath.; Station 150, Southern Ocean, 150 fath. (a slight variety with very minute, non-tubular oscula).

Suberites senilis, n. sp.

Sessile, hemispherical; covered with very long, delicate, projecting spicules. Diameter, excluding spicules, $\frac{1}{3}$ inch. Skeleton composed of great divergent brushes of spinulate spicules arising from various levels in the sponge, with shorter spicules scattered between. Spicules spinulate:—(1) slender with oval heads, length up to 3·0 millim., diameter ·019 millim.; (2) shorter, stouter, more fusiform, with constricted neck and subglobular head, size about ·5 by ·015 millim. (intermediate forms occur).

Locality. Station 246, North Pacific, 2050 fath.

Suberites perfectus, n. sp.

Erect, lobose, but unbranched. Size $3\frac{1}{4}$ by $\frac{3}{4}$ inch. Brownish yellow. Hard, firm, very minutely hispid. Dermal membrane fairly distinct, but reduced to a network by numerous pores. Oscula small, scattered, each on a small papilla. Skeleton of radiating fascicles of large spinulate spicules, with smaller ones in close-placed brushes at the surface. Spicules spinulate, slightly fusiform, with well-marked subglobular heads, sharply and rather abruptly pointed. Size in dermal crust ·28 by ·0126 millim., in main skeleton 1·0 by ·025 millim. (but very variable).

Locality. Port Jackson, 30–35 fath.

Suberites axiatus, n. sp.

Irregularly lobose or digitate. Soft and spongy, with a thick dense axis; hispid. Skeleton, a thick central axis of longitudinally and closely-placed spicules, from which bands of spiculo-fibre radiate to the surface, where they diverge. Spicules spinulate, fusiform, with subglobular heads; size variable, in the deeper parts 1·75 by ·03 millim., towards the surface ·7 by ·0126 millim.

Locality. Station 320, off the Rio de la Plata, 600 fath.

Suberites durissimus, n. sp.

Pedunculate, rounded, lobate. Light yellow. Hard, woody,

solid throughout. Surface even, but covered with a velvet-like pile. Skeleton very dense, consisting of closely-packed fascicles of chiefly acuate spicules radiating to the surface, and a dense dermal crust of projecting spinulates. Spicules: —(1) spinulate, with well-marked globular heads and fusiform shafts, size ·24 by ·0063 millim. (but variable), chiefly dermal, passing into (2) straight, smooth, fusiform acuates and subspinulates, size 1·5 by ·0157 millim.

Locality. Off south-west coast of Australia.

Suberites mollis, n. sp.

Stipitate, with expanded lobose head. Height 1¼ inch. Pale yellow. Stem firm but brittle; head very spongy and soft; minutely hispid. Skeleton: in the stem a dense axis of longitudinally placed spicules; in the head very diffuse, consisting of loose bands of spiculo-fibre radiating upwards and ending in brushes of smaller spicules. Spicules smooth spinulates, with fairly well-marked subglobular heads, size very variable, length up to 2·0 millim., diameter up to ·03 millim.; in the surface-brushes about ·45 by ·01 millim.

Locality. Station 148, Southern Ocean, 240–550 fath.

Suberites elongata, n. sp.

A slender fleshy stalk, expanding into attaching rootlets below, and an oval, elongated, narrow head above. Relation in length between head and stalk very variable—diameter of stalk $\frac{1}{21}$ inch, of head $\frac{1}{6}$ inch; total height about 2 inches. Pale yellow. Firm, cork-like, minutely hispid. Skeleton, a central axis of acuate spicules from which, in the head, bands of spiculo-fibre radiate outwards and upwards, branching towards the surface; also a dense dermal crust of small projecting spinulates. Spicules: — (1) straight, smooth acuates or subspinulates, size 1·8 by ·016 millim.; (2) straight spinulates, with well-marked subglobular heads, size variable, ·35 by ·0063 millim. &c.

Locality. Station 75, off Azores, 450 fath.

Suberites spiralis, n. sp.

Stipitate, cylindrical. Height 3½ inches, diameter of body ¼ inch. Stalk and axis of body very dense, body rather open and compressible. Minutely hispid. Skeleton, a dense axis of spicules from which, in the body, radiate loose fibres to the surface, arranged in a somewhat spiral manner and ending in loose brushes of smaller spicules. Spicules:—(1) straight, slender spinulates with subglobular heads, size 1·0

by ·013 millim., in the fibres; (2) similar, but much smaller, length about ·4 millim., in the surface-brushes.

Locality. Off the S.W. coast of Patagonia.

Suberites ramulosa, n. sp.

Stipitate. Stem long, slender, simple or branched, ending below in spreading rootlets, and each branch expanding above into a pear-shaped head. Texture rather soft and spongy. Surface hispid. Oscula, one at the summit of each head. Skeleton, a dense spicular axis in the stem, and in the head longitudinal tracts of similar spicules with loose brushes of smaller ones at the surface. Spicules:—(1) straight, stout, fusiform spinulates, usually blunt, and with well-marked subglobular heads, size 1·8 by ·063 millim.; (2) slenderer, usually sharp-pointed spinulates, size 1·0 by ·028 millim., but variable, in the surface-brushes.

Localities. Station 207, Philippine Islands, 700 fath.; Station 209, Philippine Islands, 95 fath. (var. *cylindrifera*, with large blunted acuates in place of the large spinulates).

Genus Polymastia (Bowerbank).

Massive, sessile, corticate; differing from *Suberites* in the presence of mammiform processes on the upper surface. Skeleton-spicules spinulate or acuate. No long supporting fringe of spicula as in *Trichostemma*.

Polymastia corticata, n. sp.

Cushion-shaped; cortex 2½ millim. thick. Milky white. Very minutely hispid. Mammiform processes of two kinds:—(1) very numerous, hollow, flattened, closed, height ⅛ inch, breadth ⅛ inch; (2) a very few flattened conical tubes, sometimes fairly widely open at summit, height 1 inch, breadth at base ½ inch; these are the oscular tubes. Skeleton:—(*a*) Of body: (1) on the outside a dense layer of brushes of small spinulates, ·28 millim. thick; (2) below this a much thicker layer of vertically set large acuates or subspinulates; below this "cortical" layer the skeleton is confused, with loose fibres. (*b*) Of the mammiform processes, outermost cortical layer as before, then stout longitudinal fibres of large spicules and a loose network of the same. Spicules:—(1) sharp, fusiform spinulates with oval heads, size ·28 by ·008 millim.; (2) fusiform acuates or subspinulates, sharp-pointed, size ·98 by ·022 millim.

Locality. Station 125, between Pernambuco and Bahia, 1200 fath.

Polymastia agglutinans, n. sp.

Sessile, subglobular, incrusting and enveloping pebbles &c., and cementing on to its own surface numerous small foreign objects. Giving off long, stiff, slender, cylindrical, hollow processes closed at the top, free from foreign objects. Diameter of body about $\frac{3}{4}$ inch, length of fistulæ up to $\frac{1}{2}$ inch. Skeleton:—(*a*) Of body: a dermal layer of dense brushes of small spicules only present between the foreign bodies, which replace it; beneath this scattered spicules and stout columns of spiculo-fibre running to the surface. (*b*) Of processes: outside is a dense crust of small projecting spinulates, then a reticulation of larger spicules parallel with the surface, backed by a circle of stout longitudinal bands of spiculo-fibre. Spicules:—(1) straight acuates or subspinulates, subfusiform, size up to 1·17 by ·0157 millim.; (2) very small slender spinulates, size ·175 by ·004 millim. (chiefly dermal).

Locality. Station 75, off the Azores, 450 fath.

Genus Proteleia * (Dendy & Ridley).

Differs from *Polymastia* in the presence of a grapnel-like spicule projecting from the surface of the body.

[*Proteleia Sollasi*, Dendy & Ridley.

Locality. Simon's Bay, Cape of Good Hope, 10–20 fath.]

Genus Trichostemma (M. Sars).

Corticate, free-living, discoidal or hemispherical, with a marginal fringe of long supporting spicula. Skeleton-spicules mainly spinulate.

Trichostemma Sarsii, n. sp.

Discoidal; flattened, especially on the upper surface. Diameter of largest specimen $\frac{1}{2}$ inch, thickness $\frac{1}{8}$ inch. One osculum (or more?) on the summit of oscular tube (or tubes?) on the flat surface. Skeleton: a dense thatch of spicules covers the lower convex surface, radiating outwards and upwards; the upper surface is provided with a thick cortex of projecting spicules, beneath this lies a confused mass of spicules. Spicules:—(1) straight, slender spinulates or subspinulates, forming the thatch and fringe, length up to 4·7 millim., diameter ·02 millim.; (2) short, stout, fusiform spinulates, in the interior

* For full description and discussion of genus and species *vide* Ann. & Mag. Nat. Hist. ser. 5, vol. xviii. p. 152, pl. v.

of the sponge, with globular heads, size ·3 by ·016 millim. Spicules of cortex spinulate or subspinulate, intermediate in size.

Localities. Station 73, off the Azores, 1000 fath.; Station 184, S.E. off Cape York, Australia, 1400 fath.

Trichostemma irregularis, n. sp.

Resembling *T. Sarsii* in general shape, but less regular, thicker, and with strongly hispid upper surface. Diameter $\frac{2}{3}$ inch, thickness $\frac{1}{3}$ inch. Skeleton arranged as in *T. Sarsii*. Spicules, all spinulate or subspinulate, of very variable length, those of cortex and interior much longer and slenderer than in *T. Sarsii*, the former often projecting 1 millim beyond the surface; size of the latter about ·5 by ·012 millim., often longer.

Locality. Station 299, west of Valparaiso, 2160 fath.

Genus Tentorium * (Vosmaer).

Sessile, columnar or conical, with a dense cylindrical sheath of large, external, longitudinally arranged spicules. On the top a proper cortex containing bundles of smaller spicules with large subdermal cavities between them. Pores on upper surface only. Oscula tubular, in centre of upper surface.

[*Tentorium semisuberites* (Schmidt).

Localities. Stations 49 and 50: S. of Nova Scotia, 85 and 1250 fath.; Inaccessible Island, South Atlantic, 60–90 fath.]

Genus Stylocordyla (Wyville Thomson).

Corticate. With distinct head and stalk. Skeleton in head radiate, with cortical layer of smaller spicules. Skeleton-spicules acerate.

[*Stylocordyla stipitata* (Carter).

Localities. Station 49, South of Nova Scotia, 85 fath.; Station 147, Southern Ocean, 1600 fath.; off Bahia 7–20 fath. (Station 145, Southern Ocean, and off Kerguelen, 10–100 fath.: var. *globosa*, n.; characterized by globular bullet-like head.)]

Genus Quasillina (Norman).

Sponge corticate, stipitate, with oval body †, bearing a single

* = *Thecophora*, Schmidt.

† The soft internal tissues generally shrink up and disappear, and thus give to the sponge a characteristically hollow form.

osculum at the summit, and a short stalk. In the cortex primary skeleton-fibres ascend in parallel lines from the base, crossed at right angles by secondary ones. Skeleton-spicules large and small acuates.

[*Quasillina brevis* (Bowerbank).

Locality. Station 49, south of Nova Scotia, 85 fath.]

Genus Cliona (Grant).

Sponge of boring habit. Skeleton-spicules spinulate.

Cliona dissimilis, n. sp.

Incrusting and boring into a flat porous Madreporarian coral. A thin cortex incrusts the entire corallum on both surfaces, varied by abundant, small, round, cushion-like thickenings, each of which blocks up the entrance to an excavated canal. On one surface these cushions are more abundant than on the other, and present no opening to the naked eye; they are, however, perforated by minute inhalant canals. On the other surface each is perforated by a small osculum. Skeleton chiefly developed in the thin cortical layer, where it consists of spinulate spicules usually more or less vertically placed. Spicules rather slender spinulates with very well-marked "enormi"-spinulate heads; size about ·32 by ·0065 millim.

Locality. Station 188, south of New Guinea, 28 fath.

Family 2. **Spirastrellidæ.**

With special flesh-spicules, which chiefly form a dermal crust.

Genus Spirastrella (Schmidt).

Massive, sessile, with spinulate or acuate skeleton-spicules and spinispirular flesh-spicules*.

Spirastrella massa †, n. sp.

Massive, large. Pale yellow. Of somewhat cheese-like texture, rather spongy. Dermal membrane thin. Pores very abundant in some parts. Skeleton very diffuse, with no

* For figure *vide* Carter, Ann. & Mag. Nat. Hist. ser. 5, vol. iii. pl. xxix. figs. 11, 12, which represent two forms of spinispirular spicules.

† Represented by two large squarish blocks, evidently cut from one or two large specimens.

distinct spiculo-fibre; most compact just below the surface, forming a cortical layer. Also with irregular tufts of projecting spicules at the surface. Spicules:—(1) smooth acuates, rather irregular in form, size ·45 by ·0065 millim.; (2) spinispirulæ, the largest slender, with five or six bends, length ·044 millim.; more abundant are smaller ones, often with only one joint, ·0095 millim. long.

Locality. Station 162, Bass Straits, 38 fath.

Spirastrella solida, n. sp.

Sessile, lobate: 3½ inches high by 2⅓ inches at base. Light yellow. Very firm and hard, with much foreign matter at base. Surface uneven, subglabrous in appearance. Dermal membrane rather dense, heavily laden with spinispirulæ. Oscula at tops of lobes. Pores scattered. Skeleton a dense but irregular reticulation of spinulate spicules; no fibre; with loose radiating brushes of smaller spinulates at the surface. Spicules:—(1) spinulates, with well-developed subglobular heads, size in main skeleton ·7 by ·019 millim., in dermal brushes ·31 by ·0094 millim.; (2) spinispirulæ, (*a*) minute, slender, with about three bends, size ·0126 by ·0025 millim., (*b*) a few much larger and relatively slenderer, size ·056 by ·0025 millim.

Locality. Station 208, Philippine Islands, 18 fath.

Spirastrella papillosa, n. sp.

Erect, sessile, conically lobose. Oscula at apex. Surface covered with abundant low papillæ. Height 6 inches. Grey. Texture fairly firm, rather spongy. Dermal membrane thin, loaded with spinispirulæ, arranged so as to leave small pore-bearing areas. Skeleton diffuse, fibres very slightly developed, especially dense just below surface; at the surface also are irregular brushes of small spinulates. Spicules:—(1) spinulates, with broadly oval heads, size ·5 by ·0157 millim.; (2) similar, but smaller (dermal), size ·3 by ·008 millim.; (3) spinispirulæ, stout, with three or four bends and strong spines, size (excluding spines) ·05 by ·009 millim.; smaller ones (young forms?) also occur.

Locality. Port Jackson, 30–35 fath.

Genus Latrunculia (Bocage).

Massive, sessile, with acuate (or acerate?)-skeleton-spicules and "sceptrella"* flesh-spicules forming typically a dense

* For figure *vide* Carter, Ann. & Mag. Nat. Hist. ser. 5, vol. iii. pl. xxix. fig. 14, which represents one modification of the "sceptrella."

dermal crust. Typically corticate; beset with mammiform projections, some of which bear oscula and others pores.

Latrunculia apicalis, n. sp.

Sponge hemispherical. Osculum-bearing and pore-bearing processes distinct: the former at the top of the sponge, in form conical; the latter smaller, more abundant, abruptly truncated. Yellowish grey. Corticate. Fairly compact, but spongy internally. Skeleton: the sceptrellæ form a continuous dermal crust, below which the skeleton is loose and irregular, denser towards the surface. Spicules:—(1) smooth acuates, size ·6 by ·014 millim.; (2) sceptrellæ, with expanded spinose base, straight shaft, and four or five discoid whorls with indented margins, the lowest whorl the largest; shaft produced upwards into a long, smooth, terminal portion; length of spicule ·126 millim., diameter of largest whorl ·044 millim.

Localities. Off Christmas Harbour, Kerguelen, 70 fath.; Station 320, off the Rio de la Plata, 600 fath.

Latrunculia brevis, n. sp.

Much resembling in appearance and skeleton-arrangement *L. apicalis*, but the corticate skeleton of acuates is barely represented. Spicules:—(1) smooth acuates, size ·6 by ·0126 millim.; (2) sceptrellæ, differing from those of *L. apicalis* in having no apical prolongation. The upper whorls are approximated so as to form a thick bush at the top; length ·05 millim., diameter of largest whorl ·044 millim.

Locality. Station 320, off the Rio de la Plata, 600 fath.

Latrunculia Bocagei, n. sp.

Subglobular, sessile; resembling *L. apicalis* in appearance and skeleton-arrangement. Corticate. Spicules:—(1) smooth acuates, size ·6 by ·018 millim.; (2) sceptrellæ, with slightly expanded base, armed with two whorls of spines, and a smooth, stout shaft, bearing three distinct, subequal, separate whorls towards the apex, and ending in a tuft of spines which follows close upon the last whorl. Each disk-like whorl is deeply but unequally notched all round; length ·07 millim., diameter of whorls ·03 millim.

Locality. Kerguelen, 10–70 fath.

Latrunculia (?) *acerata*, n. sp.

Massive, cake-like; without mammiform projections.

Pores scattered through a distinct dermal membrane. Skeleton :—(*a*) dermal, an irregular feltwork of slender cylindrical spicules; (*b*) main, a reticulation of large acerate spicules, with fibres distinct in parts. Spicules :—(1) smooth, slightly curved cylindricals, size ·48 by ·012 millim., chiefly dermal; (2) long, smooth, curved acerates, sometimes sharp and sometimes blunt, size ·9 by ·025 millim.; (3) a very small and slender sceptrella-like spicule, consisting of a slender shaft, bearing two saucer-like whorls near the base, with very slightly denticulated margins, length ·037 millim., diameter of larger (upper) whorl ·0125 millim. Occurring scattered, chiefly in the dermal membrane.

Locality. Station 135 ?, 60 fath.

Erratum.—We find that the generic name *Trochoderma* (p. 344, *suprà*) has been already used; we therefore propose instead the name *Axoniderma*, from Greek ἄξων, a wheel (type species *Axoniderma mirabile*, Ridley and Dendy).

XLV.—*On* Harpacanthus, *a new Genus of Carboniferous Selachian Spines.* By Dr. R. H. Traquair, F.R.S., F.G.S.

Under the name of *Tristychius fimbriatus* a small but interesting Selachian spine from the Carboniferous Limestone of Gilmerton, near Edinburgh, was described and figured by Mr. T. Stock in a paper "On the Structure and Affinities of the Genus *Tristychius*," published in this journal three years ago *.

The spine is described as being $1\frac{2}{3}$ inch in length; it is tolerably slender, and, according to the figure, is pretty sharply curved backwards beyond the middle. "Its surface is smooth; but a shallow and wide groove occupies a nearly central position along the middle third of the spine." Posteriorly it shows along its distal fourth seven strong, pointed, recurved denticles, in connexion with which the writer remarks that "the second row (if existent) is concealed in the matrix." The walls are described as being "apparently thick and the pulp-cavity small," and it is further stated that the inserted portion of the spine is not preserved.

* Ann. & Mag. Nat. Hist. (5) xii. pp. 177–190, pl. vii.