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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.
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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 0·38 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

* ὁμοῦς, 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 $\cdot 225$ by $\cdot 016$ 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, $\frac{1}{8}$ 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 $\cdot 1$ millim. thick. Spicules short, stout, slightly curved, cylindrical; size $\cdot 17$ by $\cdot 0094$ 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 $\cdot 37$ by $\cdot 021$ 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 $\cdot 3$ by $\cdot 013$ 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 $\cdot 2$ by $\cdot 01$ millim.

Locality. St. Jago, Cape Verdes, 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 $\frac{1}{2}$ 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 $\cdot 25$ by $\cdot 016$ millim.

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

Pachychalina elongata, n. sp.

Digitate, ramose; branches long, diameter about $\frac{1}{8}$ 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.

† *δαρύς*, 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 $\cdot35$ millim. thick. No distinct sheath of spongin. Spicules acerate, large, slightly curved, abruptly and rather bluntly pointed; size $\cdot42$ by $\cdot02$ 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 $\cdot175$ by $\cdot0126$ 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 $\cdot14$ millim. thick, and scattered spicules. Spongin very abundant in the finer dermal fibres. Spicules small slender acerates, abruptly pointed, often blunted; size $\cdot1$ by $\cdot0032$ millim.

Localities. Off Bahía, 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 $\cdot 06$ millim. Spicules short, stout, abruptly sharp-pointed acerates; size $\cdot 088$ by $\cdot 009$ millim.

Locality. Station 208, Philippine Islands, 18 fath.

Genus SIPHONOCALINA (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 $\cdot 032$ 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 $\cdot 1$ millim. long and $\cdot 006$ 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, $\cdot 07$ millim. thick, cored by polyserial spicules. Spicules subfusiform acerates, sharply and rather gradually pointed; size $\cdot 1$ by $\cdot 0065$ 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. *PHLEODICTYINA* (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 (Lamarek ?).

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 $\cdot 195$ by $\cdot 013$ 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 $\cdot 25$ by $\cdot 009$ 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 $\cdot6$ by $\cdot023$ millim. Bihamates of usual shape, size $\cdot02$ by $\cdot0012$ 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 laevis, 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 $3\frac{1}{4}$ inches long by $1\frac{1}{4}$ 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 $\cdot65$ by $\cdot036$ millim. Bihamates large, of usual shape, size up to $\cdot07$ by $\cdot0063$ 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 $\cdot42$ by $\cdot018$ millim. Bihamates very long, much curved, doubled on themselves, size $\cdot06$ by $\cdot0021$ 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 $3\frac{1}{2}$ 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 $\cdot 7$ by $\cdot 022$ millim.; (2) bihamates of usual shape, $\cdot 02$ by $\cdot 002$ 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 $\cdot 7$ by $\cdot 03$ millim.; (2) bihamates, much curved, stout, $\cdot 07$ by $\cdot 0063$ millim.; (3) tricurvates smooth, with very obtuse central angle, very large, size $\cdot 18$ by $\cdot 0063$ 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 $\cdot 2$ by $\cdot 014$ millim.; (2) large slender bihamates, size $\cdot 12$ by $\cdot 004$ 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 acute 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 $\cdot 3$ by $\cdot 0042$ millim.; (2) bicapitate cylindricals with slightly developed oval heads, size $\cdot 35$ by $\cdot 004$ millim.; (3) fine hair-like trichites, $\cdot 13$ 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 $\cdot 7$ by $\cdot 03$ millim.; (2) cylindrical, straight, hastately pointed, sometimes with small heads, size $\cdot 45$ by $\cdot 013$ millim.; (3) acerate trichites up to $\cdot 8$ 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 $2\frac{1}{2}$ 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 $\cdot 54$ by $\cdot 015$ millim.; (2) slender bicapi-

tate cylindricals with oval heads, size $\cdot 28$ by $\cdot 0063$ millim.; (3) slender trichites, size $\cdot 35$ by $\cdot 002$ 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 $\frac{3}{4}$ inch. Colour greyish brown. Texture soft and spongy. Pores in a definite narrow zone about $\frac{1}{2}$ 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 $\cdot 87$ by $\cdot 03$ millim.; (2) hastately-pointed cylindricals, size $\cdot 56$ by $\cdot 019$ millim.; (3) acerate trichites, size $\cdot 56$ by $\cdot 0031$ 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 $\cdot 35$ by $\cdot 0125$ millim.; (2) short, straight acerates (cylindricals), subfusiform, somewhat hastately pointed, size $\cdot 245$ by $\cdot 007$ millim.; (3) very fine acerate trichites, length about $\cdot 2$ 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 acute 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 $4\frac{2}{3}$ 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 $\frac{1}{8}$ 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 $\cdot 245$ by $\cdot 016$ millim.; (2) palmate inequianchorates, with long narrow palm at large end, length $\cdot 025$ millim.; (3) simple and contort bihamates, size $\cdot 12$ by $\cdot 0063$ 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 $\cdot 455$ by $\cdot 0126$ millim.; (2) palmate inequianchorates, length up to $\cdot 063$ millim.; (3) slender, usually much contort bihamates, length $\cdot 044$ millim.; (4) small compact oblong trichite bundles, size $\cdot 0315$ by $\cdot 0063$ 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 $\cdot 4$ by $\cdot 0072$ millim.; (2) small, slender, palmate inequianchorates, $\cdot 028$ millim. long; (3) simple and contort bihamates, size $\cdot 077$ by $\cdot 0048$ millim.; (4) large trichite bundles, size $\cdot 35$ by $\cdot 07$ 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 $\cdot 4$ by $\cdot 0145$ millim.; (2) large palmate inequianchorates, $\cdot 072$ millim. long, with palm $\cdot 036$ millim. wide, the small ends abruptly truncated, and often attached to the spiculofibre; (3) large, stout, contort bihamate, size $\cdot 24$ by $\cdot 019$ millim.; (4) smooth tricurvates, size $\cdot 145$ by $\cdot 003$ 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 $\frac{1}{4}$ 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 $\frac{1}{8}$ 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 challenger (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 $\cdot 35$ by $\cdot 0126$ millim.; (2) palmate equianchorates, length $\cdot 031$ 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) acute to spinulate, gradually sharp-pointed, size $1\cdot 4$ by $\cdot 0157$ millim.; (2) large palmate equianchorates, length up to $\cdot 09$ millim., but more commonly about $\cdot 05$ 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 $\cdot 25$ by $\cdot 005$ millim., but commonly longer and slenderer; (2) very rare, very minute, very slender equianchorates, length about $\cdot 01$ 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 challenger*, 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 0·15 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 $\cdot 034$ to $\cdot 06$ 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 $\cdot 21$ to $\cdot 595$ millim., thickness about $\cdot 016$ millim., thickly scattered near the surface of the sponge; (3) tridentate equianchorates as usual, length about $\cdot 0315$ 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 $\frac{1}{3}$ inch. Spicules:—(1) large, slender, fusiform, blunt-pointed acuates, size about $2\cdot 0$ by $\cdot 0375$ millim. (but variable), forming the main fibres; (2) scattered fusiform spinulates, sharp-pointed and with club-shaped heads, size about $\cdot 63$ by $\cdot 0189$ millim.; (3) tridentate equianchorates, with much-expanded shaft, length $\cdot 03$ 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 $\cdot 7$ by $\cdot 0155$ 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 $\cdot 076$

millim.; (3) slender bihamates, size about $\cdot 09$ by $\cdot 0032$ 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 $\cdot 038$ millim.; (3) bihamates, with the ends produced into slender whip-like processes, length $\cdot 076$ millim. †; (4) large spicules with stout, straight, cylindrical shaft, and a rosette of usually five teeth at each end, length up to $\cdot 23$ 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 $2\cdot 2$ by $\cdot 038$ 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 $\cdot 085$ millim.; (3) slender bihamates, length $\cdot 055$ 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 $1\cdot 0$ by $\cdot 022$ millim.; (2) tridentate equianchorates of the usual *Chondrocladia*-type, length $\cdot 057$ millim.; (3) bihamates about $\cdot 044$ 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 $2\cdot 2$ by $\cdot 044$ millim.; (2) large, tridentate equianchorates of the usual *Chondrocladia*-form, length about $\cdot 1$ millim.; (3) slender bihamates, length about $\cdot 07$ 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 $\cdot 18$ by $\cdot 008$ millim.; (2) equianchorates, with three sharp teeth at each end, and no palms, length $\cdot 019$ millim.; (3) simple or contort bihamates, about $\cdot 038$ millim. long.

Locality. Off Bahia, 7–20 fath.

Desmacidon conulosa, n. sp.

Consisting of a stout peduncle expanding above into broad flattened lobes. Height $3\frac{3}{4}$ 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 $\cdot7$ by $\cdot057$ millim.; (2) small palmate equianchorates with large anterior palms, length $\cdot032$ millim.

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

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

Consisting of irregular, vermiform, anastomosing branches about $\frac{1}{4}$ 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 spiculo-fibre 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 $\cdot6$ by $\cdot022$ millim.; (2) tridentate equianchorates, the shafts of which appear to be extended into slight lateral processes, length $\cdot02$ millim.

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

Subgenus HOMÆODICTYA (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*.

Homæodictya 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 $\cdot35$ by $\cdot0189$ 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

* φελλός, cork; δέρμα, skin.

at intervals, size $\cdot 65$ by $\cdot 0126$ 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 $\cdot 044$ 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 $\cdot 28$ to $\cdot 595$ millim., diameter in middle of shaft $\cdot 0063$ to $\cdot 0126$ millim.; (2) very fine long trichites, in bundles measuring about $\cdot 45$ by $\cdot 17$ millim.; (3) contort bihamates, large, measuring $\cdot 06$ by $\cdot 0047$ millim., and small measuring $\cdot 0189$ by $\cdot 0015$ millim.; (4) tridentate equianchorates, length $\cdot 019$ 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 $\cdot 01$ millim. ‡

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

Genus *IOPHON* (Gray).

Skeleton-spicules:—(1) dermal, cylindrical, usually bicapitate; (2) main, acute, 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 chelififer, 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 $\frac{1}{8}$ to $\frac{3}{8}$ 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 $\cdot 28$ by $\cdot 008$ millim.; (2) acuates, generally spined at the base and also slightly at the apex, size $\cdot 35$ by $\cdot 0126$ millim.; (3) large palmate inequianchorates, $\cdot 0378$ 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 $\cdot 315$ by $\cdot 0063$ millim. (dermal); (2) stout, smooth acuates, size $\cdot 5$ by $\cdot 0168$ millim. (in main skeleton); (3) small palmate equianchorates, length $\cdot 015$ millim.; (4) large tricurvates with spined ends, size $\cdot 3$ by $\cdot 0045$ 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 $\cdot 24$ by $\cdot 003$ millim.; (2) palmate equianchorates, length $\cdot 025$ 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 $\cdot 42$ 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, inequinded, 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. KÖHLER.

[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