Hyla agrestis, Bell, *l. c.* p. 46, pl. xix. fig. 3.
Hyla prasina, Burm. Erläuter. p. 106, pl. xxxi. fig. 2.
Hyla lateralis, Raddi, Mem. Soc. Ital. xix. p. 76.
Hyla rubicundula (non Reinh. & Lütk.), Hens. *l. c.* p. 158.
Hyla bracteator, Hens. *l. c.* p. 159.

B. M.; v. I.

Hyla Guentheri.

Hyla leucotænia (non Burm.), Günth. Proc. Zool. Soc. 1868, p. 489, pl. xl. fig. 4.
Hyla bracteator (non Hens.), Bouleng. Cat. p. 395, and Ann. & Mag. Nat. Hist. (5) xv. p. 196.

B. M.; v. I.

PHYLLOMEDUSA, Wagl.

Phyllomedusa Iheringii.

Phyllomedusa Iheringii, Bouleng. Ann. & Mag. Nat. Hist. (5) xvi. p. 88.

B. M.; v. I.

APODA.

CHTHONERPETON, Ptrs.

Chthonerpeton indistinctum.

Siphonops indistinctus, Reinh. & Lütk. Vidensk. Medd. 1861, p. 203; Hens. *l. c.* p. 162.
Chthonerpeton indistinctum, Peters, Mon. Berl. Ac. 1879, p. 940; Bouleng. Cat. Batr. Caud. p. 104.

XLII.—*Supplement to the Descriptions of Mr. J. Bracebridge Wilson's Australian Sponges.* By H. J. CARTER, F.R.S. &c.

[Plate X.]

[Concluded from p. 379.]

Order VI. HOLORHAPHIDOTA.

Reniera vasiformis, n. sp.

Vasiform, infundibular; wall thin, margin round, uneven, sloped out on one side, truncated (? by the dredge) at the bottom, where the point of attachment is solid. Consistence fragile. Colour light fawn. Surface more or less even generally, but smoother and more cribrate externally than internally. Pores on the outside. Vents numerous, chiefly scattered over the upper and inner side of the margin. Structure fragile, presenting in a vertical section the plumose arrangement generally seen in thin-walled sponges, where the fibres are directed upwards and outwards curvedly from

the axis to the surface on each side, traversed by the canals of the excretory system. Spicules of one form only, viz. acerate, fusiform, curved, sharp-pointed, about 60 by 3-6000ths in., arranged fascicularly. Size of specimen about 3 in. high and 3½ in. across the brim, cup 2½ in. deep, wall in its thickest part about ¼ in.

Loc. Port Phillip Heads.

Obs. This specimen is very like Bowerbank's figures of his *Isodictya infundibuliformis* (B. S. vol. iii. pl. liv.); but I could see no acuate spicules among the acerates of the Australian species.

Phlœodictyina.

There are several fragments of the tubular appendages of Bowerbank's Australian form of *Desmacidon Jeffreysii* (*Oceanapia*, Norman), viz. *D. fistulosa*, Bk. (Proc. Zool. Soc. 1873, p. 19, pl. iv. figs. 7 and 8), but no entire specimen, together with a thick fragment in which several tubes appear to be joined together longitudinally, hence might be termed provisionally:—

Phlœodictyon cohærens.

This fragment, which is cylindrical, consists of the free end of a portion 2½ in. long by 1¼ in. in diameter at the base, which is truncated, diminishing slightly towards the free end, which is round, flat, and obtuse; the truncated end presents a septate structure composed of about twenty tubes, large and small, in juxtaposition, and these, much diminished in calibre, present themselves in the form of as many circular holes or vents at the free end, which is thus rendered cribriform, like the top of a "pepper-box;" hence the structure, instead of being a simple single tube as in *Desmacidon fistulosa*, is a composite one in which many tubes cohere together like a gun with a plurality of barrels. In other respects the structure is just like that of the tubular appendages of this species, and the spicule (of which there is only one form, viz. acerate, curved, cylindrical, and abruptly pointed, about 35 by 2-6000ths in.) is also much the same if not identical; so that it is possible that this may be only another but composite form of one of these appendages, hence it has been "provisionally" designated "*cohærens.*" Until therefore it is known whether this is the whole of the sponge minus its base, or whether it is only part of the tubular appendages of a turnip-shaped body like that of *Desmacidon fistulosa*, the question must remain undetermined.

Loc. Port Western.

There is also another fragment of a large cylindrical tube similarly truncated (probably by the dredge), but of a *very different* kind, inasmuch as this consists of a portion of a large tube which is divided into several finger-like small ones, in which also the spiculation is so different that there can be no hesitation in at once making it the type of a new species, if not genus, in this family; hence it will be described and illustrated under the following name :—

Phlœodictyon birotuliferum, n. sp. (Pl. X. figs. 1–5.)

Fragment consisting of a stiff, hollow, cylindrical tube with thin wall, about 2½ in. in diameter and the same in length, which afterwards divides into three branches, one of which, about 2 in. long, remains single, but with a bud upon its middle (Pl. X. fig. 1, and *c*), while the other two become united about their middle, and then divide into four, which vary a little under 2½ in. from the first division; branches tubular, cylindrical, slightly diminishing towards the free ends, which are round and closed. Tubulation resilient, open, chiefly on account of the structural arrangement, of which hereafter. Colour grey. Surface smooth, especially over the main or lower portion (fig. 1, *a*) and for more than two thirds of the branches, *the rest poriferous* (fig. 1, *f*). Pores in the dermal structure covering the last third of the branches respectively. Vents not seen. Structure of the main portion of the tubulation (fig. 1, *a*) consisting of three coats, of which the external is composed of a layer of small cells in juxtaposition, about 2-6000ths in. in diameter, but being mixed with those of *Melobesia* and Polyzoa, which have overgrown this part, I am unable to say whether they are or are not all epithelial: the middle, a layer of skeletal spicules arranged parallel and close to each other, transversely to the direction of the tube; and an internal layer consisting of soft fleshy sarco-fibre, so voluminous and loose that a portion (fig. 1, *d*) hangs outside the basal end of the tube. As the main portion of the tubulation approaches the last third of the branches the sarco-fibrous or internal structure, which is of considerable thickness, gradually assumes a reticulated or clathrous character, in which the holes, which are more or less circular, infundibuliform, and fenestral in appearance, open externally in the way that will be presently mentioned. During this transition the spicules of the spiculiferous layer gradually lose their transverse arrangement and become bundled into a skeletal structure, which is fibro-reticulated longitudinally, that is the meshes are elongated in this direc-

tion; while the external layer of the smooth part becomes poriferous and supported by an additional but slighter skeletal framework, more or less composed of single spicules intercrossing each other, which support in their interstices the pore-structure; thus the smooth portion of the tubulation (fig. 1, *a*, *b*), which is imperforate for about two thirds of its course, becomes poriferous in the last third of the branches (fig. 1, *f*). Following now the structure of the latter, that is the wall of the poriferous portion, we find that it consists from without inwards of first a layer of small epithelial cells, rendered cribriform by a great number of pores (fig. 5, *b b b b*) and supported on a framework of slender intercrossing spicules (fig. 5, *c c*); second, a skeletal layer, which consists of the longitudinally fibro-reticulate spicular layer, now transformed into a quadrangular fibro-reticulate one (fig. 5, *a a a a*); and lastly the sarco-fibrous layer (fig. 4, *a*), which has assumed the structure above mentioned, in which the clathrous holes, which are infundibular (fig. 4, *b b b*), open by circular, contracted, sphinctral apertures under the pores (fig. 4, *c c c c*), so that, by placing the object between the eye and the light, the pore-structure of the surface may be seen through the infundibular spaces (fig. 4, *d d d d*), showing that whatever passes through the pores must fall directly, without the interposition of any canals, into the tubular cavity of the branch, thus affording an undoubted instance of the "mode of circulation in the Spongida" to which I have alluded in the 'Annals' of 1885, viz. that the whole of the water and its contents which enters through the pores passes directly into the interior of the sponge before the nutritive particles of it are deflected towards their destination in the spongozoa of the ampullaceous sacs or elsewhere ('Annals,' vol. xv. p. 119), for there are no excretory or any other canals here to receive it. Spicules of two kinds, viz. skeletal and flesh-spicules:—1, skeletal spicules of two sizes, the largest, elliptically inflated at one end, followed by a straight fusiform shaft, ending in a smaller inflation of the same kind at the other end, about 55 by 1-1800th in., and the lesser one a little thinner, cylindrical, and undulating, but similarly although less inflated at the extremities (fig. 2, *a*, *b*): 2, flesh-spicule, a birotulate, consisting of a thick straight shaft, slightly swollen in the middle, terminated at each end by an umbrella-shaped head (fig. 2, *c*, and fig. 3, *a*, *b*) consisting of eight or more compressed ribs, each of which radiates from the centre of the summit backwards and outwards to a free point, while the inner or concave surface of the arched rib is united to the shaft by a thin falciform septum; total length of the birotu-

late 12-6000ths in., head 2-6000ths in. longitudinally and 3-6000ths in. transversely, shaft 2-6000ths in. thick in the centre. Skeletal spicules alone forming the middle layer of the large or lower main portion of the tubulation and that of the branches throughout, as above described; flesh-spicules chiefly in the dermal layer, rather scanty. I see one simple bihamate, about 8-6000ths in. long, in the *mounted preparation*, but cannot say for certain that it belongs to the spiculation. Size of specimen 3 in. in length.

Loc. Port Western. Depth not mentioned.

Obs. This, as the above description will show, is a remarkable sponge both in respect of general form and spiculation, irrespective of the peculiar mode of circulation. The structure of the wall of the poriferous portions is analogous to that of the tubular appendage of a Phlœodictyon, viz. *Desmacidon fistulosa* &c. Whether the specimen has been simply cut off from its base of attachment or from the body of a large sponge I am unable to say; but the difference in structure of the basal or larger portion and the quantity of fleshy fibrous sarcode hanging out of it (fig. 1, *d*) would seem to indicate that this was an extension of the body-substance of the sponge, whatever the form of the rest might be.

Halichondria scabida, Cart.

Halichondria scabida, 'Annals,' 1885, vol. xv. p. 112.

In the collection from "Port Western" there are three more specimens of this remarkable sponge, which I mention more particularly to show how a number of specimens of the same species may be necessary to describe the whole of the adult forms that it may assume.

Thus the first specimen described (*l. c.*) was "globular, compressed, and sessile," whereas the largest of the specimens from "Port Western" is branched and stipitate, $3\frac{1}{2}$ in. high by 3×2 in. horizontally; the branches thick and flabelliform, ending in subdigitate margins respectively; the largest branch about 3 in. broad by $\frac{1}{2}$ in. thick. The next in size, which has grown over the end of a large calcareous (?) *Serpula*-tube, is pyriform in shape, and presents a nodose surface whose nodes or humps are in high relief all over; while the third is so small and shapeless that it is not worth description.

All these forms may be easily derived from one another; and this kind of transition is so common in the different species of the Spongida, that it might be almost premised with certainty that at one time or another they may be found under any one of them. Hence the futility of describing the adult form of any species from a single specimen.

Halichondria pustulosa, Carter (dry).

Halichondria pustulosa, 'Annals,' 1882, vol. ix. p. 285, pl. xi. fig. 1, *a–g*.

Specimen small, massive, convex above, about ½ in. high by 1¼ in. in diameter. Colour light grey. Surface closely overscattered with discoid and pustuliform eminences composed of linear spicules extending from the circumference to the centre, which can thus, by being raised or depressed, be opened or closed as occasion may require; each presenting a poriferous area charged with the flesh-spicules of the species, or a simple oscular hole for a vent, as the case may be; in all respects the same as the Falkland-Island specimen (*op. et loc. cit.*), but with the large acuate spicule smooth instead of spined, and the "tibiella" or straighter spicule for the most part obtuse or only slightly inflated at the ends. I did not see any bihamates, but then these were very scanty in the Falkland-Island specimen.

Halichondria compressa (incertæ sedis).

Massive, erect, compressed; thick, with wide flat border; longitudinally convex, contracted towards the base or point of attachment. Consistence subcompact. Colour sponge-yellow. Surface even, covered with a cribriform dermal structure composed of small spiniferous spicules, circumscribing the pores and vents respectively, the former chiefly confined to the sides and the latter entirely to the flat border. Structure subcompact, consisting of sarcode densely charged throughout with spiniferous spicules in the midst of fibre chiefly composed of smooth ones, the whole plentifully traversed by the canals of the excretory systems. Spicules of two kinds, both acuates, but the larger smooth and the smaller remarkably spinous:—1, smooth spicule, acuate, long, curved, fusiform, subcapitate, abruptly pointed, 50 by 1-6000th in.; 2, spiniferous, acuate, curved, remarkably prickly from the size, number, and unequal length of the spines, which cover the whole of the shaft, 26 by 3-6000ths in., including the spines, which, base to base on both sides, are together equal to the transverse diameter of the shaft. No. 1 is confined to the fibre and no. 2 chiefly to the sarcode, especially on the surface, but is sometimes mixed with no. 1 *in* the fibre, and sometimes appears to be arranged in a linear form by itself; very abundant thoroughout. No flesh-spicules, that is anchorates or bihamates, while the spiniferous spicule, although chiefly confined to the sarcode, seems to be too large to be considered a flesh-spicule. Size of largest specimen

(for there are three of different sizes, but all of the same shape) 4 in. high, 5 in. long, and 1 in. thick, which is the breadth of the flat border or summit.

Loc. Port Western.

Obs. This species is chiefly characterized by the intensely prickly aspect of the spiniferous acuate, while the smooth acuate, which is confined to the fibre, very much resembles one of the forms assumed by the "tibiella" in the *Halichondriæ*. But at present, as I cannot find an undoubted skeletal acuate and there are no flesh-spicules, I can only place it among the *Halichondriæ* provisionally.

Halichondria stelliderma (incertæ sedis).

Specimen subglobular, bicornute, growing round the small stem of a *Gorgonia*, imbedding at the same time much foreign material together with the spicules of the *Gorgonia*. Consistence soft, resilient. Colour grey. Surface uniformly scattered over with small cones rising out of a general, fibro-reticulate, dermal structure, which, together with the opacity of the conical eminences, gives the stellate appearance of which the latter form the centres of the stars respectively; cones about 1-24th in. in diameter at the base, about the same height, and about twice this distance apart, surmounted by a single short filament of the internal fibro-skeletal structure. Pore-areas occupying the interstices of the dermal fibro-reticulation. Vents mostly large, sparsely scattered over the surface, one at the end of each horn-like process of the body, each provided with a strong sphinctral sarcodic diaphragm. Internal structure loose, consisting from without inwards of a thin skin followed by large subdermal cavities opening into "fold-bearing" ?excretory canals, which traverse plentifully the body-substance and end in the vents mentioned, the sarcode being supported on a reticulated spiculo-fibrous structure whose circumferential filaments terminate in the summits of the cones, also as above mentioned. Spicules (which, from their smallness and delicacy, cannot be distinctly seen until a minute fragment of the sponge has been mounted in balsam and placed under the microscope) of two kinds, viz. skeletal and flesh-spicules. Skeletal spicule very slender, smooth, almost cylindrical, slightly inflated at each end, 40 by ½-6000th in.; flesh-spicule a very minute equianchorate, whose shaft is so curved that it looks almost equal to half a circle, and of whose three flukes the two lateral ones are spread out almost at right angles to the head; about 2½-6000ths in. long, but so fine that it can hardly be seen

satisfactorily with a microscopic power of less than 300 diameters; while the skeletal spicule is chiefly confined to the spiculo-fibre, the flesh-spicule is very abundant everywhere, and at first so much presents the appearance of a minute bihamate, from the minuteness of the flukes and their lateral expansion, that without microscopical examination it might easily pass for one. Size of specimen $2\frac{1}{2}$ in. high by $2 \times 1\frac{1}{2}$ in. horizontally.

Loc. Port Western.

Obs. This anomalous species, characterized by the stelli-dermatous structure and its spiculation, especially the form of the equianchorate, I shall also provisionally place among the *Halichondriæ*, to which it appears to me to be most nearly allied. In the mounted specimen I see a *single* bihamate of the common form about $7\frac{1}{2}$-6000ths in. long, that is much larger than the anchorate, and the skeletal spicule looks very much like the "tibicella" of a *Halichondria*; but here, again, I could find no skeletal acuate, and the bihamate might not belong to the spiculation.

There is a certain amount of resemblance between this species and that which will presently be described under the name of "*Pseudohalichondria clavilobata*;" but there is no sand-fibre, although much foreign material is dispersed through the sarcode, while the dermal structure is closely analogous, each species being covered with conical eminences, through which a filament of the skeletal structure protrudes, although this of course is different in composition, being spiculiferous in one and areniferous in the other.

Histioderma verrucosum, n. sp.

Specimen flat or slightly convex, growing over agglomerated sand, presenting a great number of wart-like appendages on the surface. Colour grey when fresh. Surface even, smooth, interrupted only by the wart-like appendages, which consist of small, hollow, ficoid bodies scattered irregularly over it, each consisting of a constricted neck, which is in continuation with the histiodermal surface, and an inflated portion or head, which is composed of hollow, thin, reticulated, clathrous structure, the whole averaging about 3-12ths in. long by 1-12th in. in its greatest transverse diameter. Pores in the interstices of the reticulated structure of the head. Vents opening below, not well seen. Structure consisting of a flat basal or body-mass of sarcode and spicules covered with a compact, thick, textile, dermal layer, from which the wart-like appendages are prolonged; appendages opening into the subdermal cavities and through them again into large canals entering into the body-

substance. When dry the body-substance, which is massive and brown in colour, contrasts strongly with the dermal layer, which, becoming corrugated and more or less detached by contraction in the line of the subdermal cavities, permits the openings of the wart-like appendages to be seen from the inner side, where they open into these cavities. Spicules of two kinds, viz. skeletal and flesh-spicules:—1, skeletal, smooth, cylindrical, straight, slightly inflated at one end and more or less obtuse or round at the other, about 100 by 1-6000th in.; 2, flesh-spicules of two forms, viz. bihamate and equianchorate, the former C-shaped, elongate, about 9-6000ths in. long, and the latter slightly "angulate" in the shaft, about 5-6000ths in. long, both belonging to the common forms. No. 1 is the skeletal spicule generally and no. 2 the flesh-spicule, which is most abundant in the clathrous structure of the wart-like appendages. Size of specimens, of which there are three, now in their dry and corrugated state, about an inch high by 1½ in. in horizontal diameter, each bearing upwards of forty wart-like appendages.

Loc. Port Western.

Obs. At first sight this species looks very like a *Polymastia*, especially *P. robusta*, Bk. (Mon. Brit. Spong. vol. iii. pl. x. fig. 5), although not so like *P. bicolor*, Cart., of these parts ('Annals,' 1886, vol. xvii. p. 119), in which the nipple-like process, instead of being clathrous in structure (like basket-work), is uniformly covered with a close villous surface, which arises from the usual addition in *Polymastia* of a layer of minute pin-like spicules intermingling with the sharp outer ends of the large skeletal ones of the interior. In *Polymastia*, too, there are no flesh-spicules, ? excretory system as in *Polymastia*.

Our species, viz. *Histioderma verrucosum*, is more nearly allied to *H. appendiculatum*, Cart., which was found among the "Deep-sea Sponges" dredged up from the Atlantic Ocean on board H.M.S. 'Porcupine,' of which I have given an illustrated description ('Annals,' 1874, vol. xiv. p. 220, pl. xiv. figs. 23–25), and to *Halichondria phlyctenodes*, also a histiodermal sponge (*ib.* 1876, vol. xviii. p. 314, pl. xv. fig. 35).

Histioderma polymasteides, n. sp.

Very similar in all respects to *H. verrucosum*, but with the "wart-like appendages" a little larger, more pointed, lanceolate, and the spiculation different generally. Appendages pointed, leaf-like in outline, *i. e.* when compressed, about ½ in. long and 2-8ths in. in their greatest trans-

verse diameter. Body-substance yellowish grey in colour. Spicules of two kinds, viz. skeletal and flesh-spicules:—1, skeletal, inflated at each end, or with one end more or less sharp-pointed, varying greatly in size, the thickest in the mounted preparation being about 90 by $2\frac{1}{2}$-6000ths in., and the thinner ones about 180 by $1\frac{1}{2}$-6000th in., but hardly any two alike in this respect; 2, flesh-spicule, a simple navicular-shaped anchorate of the common form, about 8-6000ths in. long. No. 1 is the skeletal spicule generally, and no. 2 the flesh-spicule, which is most abundant in the clathrous structure of the appendages. Size of specimen now dry and corrugated about $\frac{1}{2}$ in. high by 2 in. in horizontal diameter; bearing upwards of twelve appendages.

Loc. Port Western.

Obs. The same observations apply to this species as to the foregoing one, *H. verrucosum*. Without microscopical examination of their elementary parts it would be very easy to mistake both species for specimens of *Polymastia*.

Pseudohalichondria clavilobata, n. sp. (Pl. X. figs. 6–9.)

Specimen large, massive, composed of several claviform lobes of different sizes, large and small, united together into a common mass, which becomes contracted towards the base into a substipitate form, expanding again below, to produce the root-like attachment (Pl. X. fig. 6). Consistence subcompact, yielding. Colour yellowish white. Surface even, presenting a stout, soft, fibro-reticulation (fig. 9, *a a*), indistinctly covered with small epithelial cells and pore-areas (fig. 9, *b b*), in the midst of which are a great number of circular, monticular elevations, terminated respectively by a single sand-cored filament (fig. 6, *b b b b*, and fig. 9, *d*). Pores in the interstices of the fibro-reticulation (fig. 9, *b b*). Vents small, in the prominent parts of the lobes (fig. 6, *c c c c*). Structure internally subcompact, covered with a cortical layer 1-24th in. thick, composed of soft, compact, fibrillous structure, through which the pores, which are about 4-1800ths in. in diameter, have to pass before they reach the subdermal cavities; skeletal support consisting of thick sand-fibre, which, extending in more or less longitudinal lines from the base upwards, branches out towards the circumference of lobes, where it ends in the monticular elevations mentioned (fig. 9, *d*), which, from the transparency of the quartz-sand coring the filaments by which these are surmounted, presents the appearance of a punctum like a small vent; mixed with strongly developed spiculiferous

fibre in the sarcode bearing spicules proper tothe species; the whole traversed plentifully by the canals of the excretory systems, which end in the vents mentioned. Spicules of two kinds, viz. skeletal and flesh-spicules:—1, skeletal, straight or flexuous, fine, smooth, almost cylindrical, slightly constricted at one end, so as to present the appearance of an incipient inflation, abruptly pointed or obtuse at the other, about 65 by $\frac{2}{3}$-6000th in. (fig. 7, *a*); 2, flesh-spicule, very peculiar in form, consisting of a thick, cylindrical, C-shaped shaft, about 3-6000ths in. long, spined over the convexity towards each end (fig. 7, *b*, and fig. 8, *a*, *d*); spines obtuse, erect, six or more in number, continued backwards from each end for about one third of the length of the shaft, leaving the central third smooth (fig. 8, *a*); ends, when viewed directly, presenting a triangular form simulating those of an equianchorate (fig. 8, *d*). Sand-fibre, which greatly predominates in quantity over the spiculation, and thus affords the chief skeletal support, composed of comparatively large grains of quartz and other foreign microscopic bodies forming a thick fibre about 1-90th in. in diameter, that is, about as broad as the skeletal spicule is long (fig. 9, *d*). No. 1 scattered through the body generally or surrounded by a minimum of kerasine in fibrous bundles; no. 2 also scattered through the sarcode generally, most abundant on the surface. Size of specimen about 6 in. high by 4 × 4 in. horizontally.

Loc. Port Western.

Obs. Were there nothing but the peculiarly-shaped flesh-spicule, which, viewed in front, looks like an equianchorate, and laterally like a bihamate, to distinguish the species, this would be sufficient; but with the presence of the thick sand-fibre the combination is unmistakable, especially with the monticular elevations pierced by the circumferential ends of the sand-fibres and the unusual thickness of the skin or cortical layer which the pores have to traverse, so that instead of being holes in a thin film, they consist of so many short canals in a thick one.

In general structure and colour like a *Halichondria*, while the sand-fibre is like that of a Psammonematous sponge; hence I have named it provisionally *Pseudohalichondria clavilobata*, not forgetting that it possesses a spiculation which in form hitherto has not been found in any species of *Halichondria*, or, indeed, in any other kind of sponge.

Pseudoesperia enigmatica olim *Esperia parasitica*.

In 1885 ('Annals,' vol. xv. p. 108, pl. iv. fig. 1, *a*, *b*) I

gave a description of this sponge under the idea that it was a parasitic growth of an *Esperia* over the sand-fibre of a dead Psammonematous sponge; but having received another specimen of the same kind from Mr. Wilson, which shows that this could not have been the case, for skeletal spicules of the *Esperia* are mixed with the quartz-grains of the Psammonematous fibre, I saw that the name which I had given to it was not only altogether inappropriate, but misleading, in short that it was an *Esperia* which had built up the *whole* structure; hence I propose to change the name of "*Esperia parasitica*" to "*Pseudoesperia enigmatica*," following the course which I have laid down for the location of such compound sponges, explained in the 'Annals' of 1885 (vol. xv. pp. 319–321). Thus it might be placed in the order HOLORHAPHIDOTA at the end of the group to which it more particularly belongs, viz. the "Esperina." It is a very remarkable combination, but not more so than the covering of a Psammonematous structure with Luffarid fibre, as described above under the name of *Pseudoceratina typica* (p. 287), or that in the species just mentioned, viz. *Pseudohalichondria clavilobata*, which is accompanied by a Holorhaphidotic spiculo-fibre.

Suberites spinispirulifera, Cart.

Suberites spinispirulifera, 'Annals,' 1879, vol. iii. p. 345, pl. xxviii. figs. and –

Specimen consisting of a thick crust about ½ in. high and 4 in. square. Colour yellowish. Surface pitted, pits surrounded by ridges, altogether forming a subreticulated pattern. Pores not seen. Vents here and there in the pits. Spicules of two kinds, viz. skeletal and flesh-spicules:—1, skeletal spicule, subpin-like; 2, flesh-spicule, consisting of a spiniferous shaft, spirally twisted for about one turn and a half.

Loc. Port Western.

Obs. This is a varietal form of that from Port Elizabeth (Cape Colony), the type specimen of which, described and illustrated in 1879 (*l. c.*), is in the British Museum, bearing my running nos. 13 *h* and 15 *h*, registered 71. 5. 12. 1.

Suberites (*Hymeniacidon*) *carnosus*, Bk.

Suberites (*Hymeniacidon*) *carnosus*, Bk., Mon. B. S. vol. iii. pl. xxxiv. figs. 5–9.

Specimen fig-shaped, with globular head and contracted narrow stem. Head 1 in. in diameter. Growing on the valve of a *Pecten*.

Loc. Port Western.

Trachya globosa, var. *rugosa*, n. var.

This is a spherical variety with a dark grey cortex, pitted uniformly all over the surface, the pits consisting of subcircular depressions with raised borders in juxtaposition. Stipitate, with a large, round, single vent on the summit. Spiculation the same as that of the original species described in the 'Annals' of 1886 (vol. xvii. p. 121), viz. consisting of enormously long acerates accompanied by small bihamates.

Loc. Port Western.

Obs. In this variety the bihamates, on account of their smallness, do not come out distinctly until a bit has been dried and mounted in balsam, when they make their appearance abundantly, together with the groups of dark pigment-cells which colour the cortex, thus resembling the Tethyina (*T. cranium* &c.); but there are no trifid spicules anywhere.

Trachya horrida, n. sp.

Massive, irregularly elliptical, elongate or bolster-shaped, growing round a similarly-shaped nucleus of agglomerated sandy rocks; presenting a glistening villous surface, produced by the projecting ends of the spiculation. Colour grey. Surface uniformly even and villous. Pores not seen. Vents few and not conspicuous. Internal structure very compact, consisting of sarcode densely charged with the spicules of the species. Spicules of one form only, viz. acerate, but of two sizes, the largest, long, smooth, fusiform, curved, and gradually narrowed to a sharp point at each end, about 750 by 12-6000ths in., and the other, the smallest, of the same form but variable in measurement. No. 1 chiefly constitutes the body-mass, where the spicules are arranged parallel to each other, and, radiating from the base to the circumference, become mingled there with a layer of no. 2, thus causing the specimen (in a vertical section) to present a cortical layer about 1-18th in. thick. Size of specimen about 6 in. high from the base of attachment, which was at one end, and $3\frac{1}{2} \times 2$ in. in horizontal diameter, varying in thickness with the irregularities of the piece of rock over which it has grown, being in some parts 2 in. thick.

Loc. Port Western.

Obs. Designated "*horrida*" on account of the disagreeable manner in which the large spicules are torn away by adhering to the fingers when the specimen is handled.

Eccœlonida.

Cliona celata, Grant.

Infesting the shell throughout of a large smooth bivalve, about $2\frac{3}{4}$ in. long and $2\frac{1}{4}$ in. high.

Vioa Johnstonii, Schmidt.

Vioa Johnstonii, Atlantisch. Spongienf. 1870, p. 5, Taf. vi. fig. 18.

This carmine-coloured boring sponge, which, for the most part, is concealed under the calcareous crust of a *Melobesia*, presents itself externally under the form of little heads filling circular holes of the same size among the conceptacles of the *Melobesia*, where, under a 2-inch lens, it may be easily recognized by its bright carmine colour. The holes, which are about 1-48th in. in diameter, are occupied by the pore-areas and vents respectively, as in all other sponges of the kind, the latter being, as usual, provided with a sphinctral sarcodic diaphragm. Spicules of two kinds, viz. skeletal and flesh-spicules:—1, skeletal spicule, pin-like; 2, flesh-spicule, a spinispirula of four bends, about 10-6000ths in. long.

Loc. Port Western.

Obs. This chiefly differs from *Vioa Johnstonii* in the spiculation being smaller than that of the Adriatic species, but not sufficiently to constitute in any respect even a variety.

Stelletta ochracea, n. sp.

Specimen irregularly cylindrical, bolster-shaped. Colour bright ochre-yellow throughout. Surface even. Pores in juxtaposition over the surface generally. Vents few and scattered here and there. Structure compact, without marked cortex, but possessing a superficial layer of large epithelial cells mixed with small acerates and minute bacillar spicules. Epithelial cells 8-6000ths in. in their longest diameter, and the "granules" (cellulæ) which contain the yellow colouring-matter about $1\frac{1}{2}$-6000th in., the latter plentifully extravasated into the tissue generally, which gives the species its yellow colour. Spicules acerate, trifurcate, and bacilliform:—1, acerates of two sizes, both alike in form, one, the larger, about 240 by 6-6000ths in., constitutes the usual body-spicule, and the other, or smaller, the flesh-spicule of the surface, varying under 35 by 1-6000th in.: 2, trifurcate, consisting of three straight arms, radiating at equal angles from each other, each of which is furcated, that is divided into two

others, which are sharp-pointed, and all radiating from a common centre; diameter of the whole 63-6000ths in.: 3, flesh-spicule, bacillar, smooth, cylindrical, curved, often inflated in the centre, varying in length under 5-6000ths in. No. 1 in its large form belongs to the body-substance, and in its smaller one to the surface. No. 2 is congregated round the circumference immediately under the thin dermal layer; and no. 3 in the surface itself. Size of specimen about $1\frac{1}{2}$ in. high by $5\frac{1}{2} \times 3\frac{1}{2}$ in. horizontally.

Loc. Port Western.

Obs. The yellow colour at first sight seems to characterize this species; but the most peculiar feature is the presence of the *trifurcates* round the circumference, evidently representing the head of the "zone-spicule" without the shaft; hence there is *no zone-spicule* of this kind *here*, as in the usual forms of *Stelletta*. I saw neither "forks" nor "anchors," while the intense yellow colour of the excretory canals, where cut across, showed how the pigmental cells may be continued throughout the structure.

Stellettinopsis lutea, n. sp.

An irregular mass growing over and enclosing fragments of agglomerated sand and shells. Colour golden yellow throughout. Surface smooth, composed of fibro-reticulated tissue, whose interstices are plentifully pierced with pores, covering subjacent structure, whose irregularities cause it to present a number of small elevations of different sizes. Pores in the interstices mentioned. Vents numerous, large, scattered over the surface generally, chiefly on the larger elevations. Internal structure fibrous, charged with the spicules of the species, largely traversed by the canals of the excretory systems. Spicules of two kinds, viz. skeletal and flesh-spicules:—1, skeletal, a large, fusiform, curved, sharp-pointed acerate; 2, flesh-spicule, a minute stellate. No. 1 chiefly constitutes the body-mass as the skeletal spicule, among which the flesh-spicule, no. 2, is plentifully distributed, but so minute that it is not very easily seen except a fragment be mounted in balsam. Size of specimen about 5 in. high by 4×4 in. horizontally.

Loc. Port Western.

Stellettinopsis purpurea, n. sp.

An irregularly-shaped hemispherical mass, truncated by having been cut off from its place of attachment (probably by

the dredge). Consistence compact. Colour red-purple. Surface smooth, but very uneven. Pores punctate, general. Vents few, large and scattered. Structure compact, covered with a cortex about 1-48th in. thick; body-substance of the usual kind in these sponges, viz. subcompact, largely traversed by the canals of the excretory system. Spicules of two kinds, viz. skeletal and flesh-spicules:—1, skeletal, acerate of two sizes, viz. very small and very large, the former confined to the cortex and the latter to the body-substance; 2, flesh-spicule, a minute stellate about $1\frac{1}{2}$-6000th in. in diameter. Pigmental cellulæ containing the purple colouring-matter confined to the epithelial cells of the surface and the excretory canals or extravasated into the tissue generally. Size of specimen about $1\frac{1}{2}$ in. high by $1\frac{1}{2}$ in. horizontally.

Loc. Port Western.

Obs. This only appears to differ from the preceding species in presenting a red-purple colour instead of a bright golden yellow.

Tethya stipitata (dry).

Fig-shaped, stipitate, rugosely corrugated over the head, smooth over the stem, which is cylindrical and rather twisted, expanding into the head above and into a root-like mass below, which is charged with coarse sand. Consistence firm. Colour reddish purple above, becoming less so towards the stem, which is colourless. Surface rugosely corrugated over the head in lines running upwards from the smooth stem, covered with an epithelial layer of small granuliferous cells in which the granules on the exposed part (that is on the head) become more intensely coloured as the summit is approached. Pores not seen. Vents in plurality, the chief and largest single, on the summit. Structure internally pale yellow in colour, consisting of the usual bundles of long spicules radiating from the centre, held together by sarcode and traversed by cavernous excretory canals which open at the vents mentioned. Spicules of two kinds, viz. skeletal and flesh-spicules. 1. Skeletal, as usual, very long and slender, of two forms—one pointed at each end and the other provided with a trifid termination consisting of three more or less short, stout, and expanded arms; both forms variable in length according to their position. 2. Flesh-spicules also of two forms, viz. one minute, the usual C- and S-shaped bihamate, about 4-6000ths in. long, and the other much larger, whose form varies from a slight curve to a parabola, cylindrical, microspined, and obtuse at the ends, which are more or less separated according to the amount of curvature, *i. e.* 9 to 13-6000ths in. apart, with a

general thickness varying under $\frac{2}{3}$-6000th in. Skeletal spicules confined to the head and stem respectively, in which the trifid ones of the stem are much larger and stouter than the acerates of the head. I could find no anchors or forks in the spiculation of the head or stem either projecting or internally, and the trifid ends of the long spicules were only to be seen at the extremity of the root, amongst the grains of sand and shreds of sarcode which firmly held the whole together. Flesh-spicules of both forms mixed together in the head, but not in the stem, where the small one is absent. Size of specimen about 3 in. high, $1\frac{3}{4}$ in. of which is stem; head 1 in. in its largest transverse diameter.

Loc. Port Phillip Heads.

Obs. This sponge, whose root in composition at the extremity shows that it had grown in a sandy bottom, very much resembles *T. dactyloidea* ('Annals,' 1869, vol. iii. p. 15, and *ib.* 1872, vol. ix. p. 82), chiefly differing from it in the plurality of vents, the consolidation of the stem, and the presence of the large flesh-spicule, together with the corrugated surface of the head, which, not becoming smooth after much soaking, does not appear to have been occasioned by the desiccation to which the specimen had been exposed. The long consolidated stem causes this species to take a position in this respect between the sessile forms, ex. gr. *T. cranium*, and the stipitate ones, viz. *T. polyura*, Sdt., whose stem is composed of a flimsy bunch of more or less separated root-spicules. *T. euplocamus*, Sdt., had a "consolidated" stem and *T. polyura* was covered with bumps (Buckeln), extending into conical processes *below* (see 'Atlantisch.' and 'Küste v. Algier. Spongien,' 1870 and 1868, Taf. vi. fig. 8, and Taf. v. fig. 10, respectively).

List of Mr. J. Bracebridge Wilson's Sponges from the Neighbourhood of "Port Phillip Heads" and "Port Western," on the South Coast of Australia, which have been described and notified respectively in vols. xv., xvi., xvii., and xviii. of the 'Annals' for 1885–86.

From "Port Phillip Heads."

Order I. Carnosa.

Halisarca australiensis, vol. xv. p. 197.

Chondrilla nucula, *Sdt.*, p. 200.

Order II. Ceratina.

Luffaria digitata, vol. xv. p. 201.
Darwinella australiensis, p. 202.
Aplysina lævis, p. 204.
Pseudoceratina durissima, p. 204.
—— crateriformis, p. 205.

Order III. Psammonemata.

Holopsamma crassa, vol. xv. p. 211.
—— lævis, p. 212.
—— laminæfavosa, p. 212.
—— fuliginosa, p. 213.
—— turbo, p. 213.
Sarcocornea nodosa, p. 214.
Dysidea fragilis, *Johnston*, p. 215.
—— Kirkii, *Bk.*, p. 216.
—— hirciniformis, p. 217.
—— chaliniformis, p. 217.
Spongelia stellidermata, p. 219.
Carteriospongia caliciformis, p. 221.
Stelospongus levis, *Hyatt*, p. 303.
—— flabelliformis, p. 305.
—— tuberculatus (provisional), p. 306.
Geelongia vasiformis, p. 306.
Dactylia chaliniformis, p. 309.
—— impar, p. 309.
—— palmata, p. 310.
Hircinia solida, p. 310.
—— intertexta, p. 312.
—— flabellopalmata, p. 313.
—— communis, p. 314.
—— pulchra, p. 314.
Sponges infested with Spongiophaga communis, *Cart.* (1878), p. 315.
Euspongia anfractuosa, p. 316.
Coscinoderma lanuginosum, p. 318.
Paraspongia laxa, p. 318.
Pseudohircinida (family), p. 319.

Order IV. Rhaphidonemata.

Chalina polychotoma, *Esper*, vol. xvi. p. 284.
—— ——, var. trichotoma, vol. xv. p. 115.
—— —— ——, vol. xvi. p. 284.
—— ——, var. compressa, p. 284.
—— ——, var. oculata, p. 284.
—— ——, var. robusta, p. 285.
—— ——, var. angulata, p. 285.
Chalina polychotoma, var. moniliformis, p. 285.
Patuloscula procumbens, *Cart.* 1882, p. 286.
—— ——, var. flabelliformis, p. 286.
Cavochalina bilamellata, *Lam.*, p. 287.
Textiliforma foliata, p. 288.

Order V. Echinonemata.

Echinoclathria favus, vol. xvi. p. 292.
—— ——, var. arenifera, p. 350.
Echinonema flabelliformis, p. 352.
—— cæspitosa, p. 352.
—— pectiniformis, p. 353.
—— incrustans, p. 353.
Dictyocylindrus pinnatifidus, p. 353.
—— cacticutis, p. 354.
—— piniformis, p. 354.
Plumohalichondria mammillata, p. 355.
Echinoclathria tenuis, p. 355.
—— nodosa, p. 356.
—— subhispida, p. 356.
—— gracilis, p. 356.
Trachycladus lævispirulifer, *Cart.* (1879), p. 357.
Higginsia coralloides, *Higgin*, p. 357.
—— ——, var. natalensis, p. 293.
—— ——, var. massalis, p. 357.
—— lunata (provisional), p. 358.
Axinella chalinoides, p. 358.
—— ——, var. glutinosa, p. 359 (= A. cladoflagellellata, p. 377, vol. xviii.).
Axinella setacea, p. 359.
—— atropurpurea, p. 359.
—— stelliderma, p. 360.
—— ——, var. acerata, p. 360.
—— villosa, p. 361.
—— flabellata, p. 361.
—— pilifera, p. 362.
—— meloniformis, p. 362.
—— solida, p. 362.
Phakellia flabellata, p. 363.
—— crassa, p. 363.
—— brassicata, p. 363.
Acanthella cactiformis, vol. xv. p. 114.
—— ——, vol. xvi. p. 364.
—— hirciniopsis, p. 364.
—— (*mendose* -ina *in loco*) parviconulata, p. 365.
—— rugolineata, p. 365.
Ciocalypta penicillus, *Bk.*, p. 366.
—— Tyleri, *Bk.*, p. 366.
Leucophlœa massalis, *Cart.* (1883), p. 366.
Wilsonella australiensis, p. 366.
Plumohalichondria arenacea, p. 367.

Order VI. Holorhaphidota.

Amorphina anonyma, vol. xvii. p. 49.
—— nigrocutis, p. 50.
—— cancellosa, p. 50.
Thalysias massalis, p. 50.
Fibulia carnosa (provisional), p. 51.
Halichondria birotulata, *Higgin*, p. 52.
—— scabida, vol. xv. p. 112.
—— isodictyalis, vol. xvii. p. 52.
Tedania digitata, *Gray*, p. 52.
—— ——, var. verrucosa, p. 53.
Forcepia colonensis, *Cart.* 1874, vol. xv. p. 110.
—— ——, vol. xvii. p. 53.
—— crassanchorata, vol. xv. p. 111.
Spirastrella cunctatrix, *Sdt.*, vol. xvii. p. 113.
—— ——, var. robusta, p. 114.
—— ——, var. porcata, p. 115.
Suberites Wilsoni, vol. xv. p. 113.
—— ——, var. albidus, vol. xvii. p. 116.
—— globosa, p. 116.
Suberites flabellatus, p. 117.
—— biceps, p. 117.
—— insignis, p. 118.
—— parasitica, p. 119.
Polymastia bicolor, p. 119.
—— ——, var. glomerata, p. 119.
—— ——, var. crassa, p. 120.
—— massalis, p. 121.
Trachya globosa, p. 121.
Donatia (Tethea) Cliftoni, *Bk.*, p. 122.
Chondropsis arenifera, p. 122.
Stelletta bacillifera, *Cart.* (1883), p. 123.
—— ——, var. robusta, p. 123.
—— æruginosa, p. 123.
—— mamilliformis, p. 124.
—— geodides, p. 125.
Stellettinopsis simplex, *Cart.* (1879), p. 126.
—— tuberculata, p. 126.
—— coriacea, p. 126.
Tethya cranium, var. australiensis, p. 127.

Order VII. Hexactinellida.

None.

Order VIII. Calcarea.

Clathrina cavata, vol. xvii. p. 502.
—— osculum, p. 503.
—— tripodifera, p. 505.
—— ——, var. gravida, p. 507.
—— laminoclathrata, p. 509.
—— primordialis, p. 510.
—— ventricosa, p. 512.
—— latitubulata, p. 515.
Sycandra Ramsayi, *Lend.*, vol. xviii. p. 35.
Grantia subhispida, p. 36.
—— compressa, p. 37.
—— ——, var. fistulata, p. 37.
Sycothamnus alcyoncellum, *Häckel*, p. 38.
Teichonella labyrinthica, *Cart.* (1878), p. 38.
Hypograntia infrequens, p.
—— hirsuta, p. 41.
—— sacca, p. 42.
—— extusarticulata, p. 43.
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—— medioarticulata, p. 46.
—— polyperistomia, p. 47.
—— patulosculifera, p. 49.
Heteropia macera, p. 50.
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—— pluriosculifera, p. 52.
—— erecta, p. 53.
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Leuconia fistulosa, *Bk.*, var. australiensis, p. 127.
—— hispida, p. 128.
—— echinata, p. 129.
—— erinaceus, p. 130.
—— nivea, *Bk.*, var. australiensis, p. 131.
—— Johnstonii, *Cart.*, var. australiensis, p. 133.
—— multifida, p. 141.
—— lobata, p. 143.
—— compacta, p. 144.
Aphroceras asconoides, p. 134.
—— syconoides, p. 135.
Lelapia australis, *Gray*, p. 138.
—— ——, *Gray* (P.S. specimen), p. 148.
Leucaltis floridiana, *Häck.*, var. australiensis, p. 145.
Teichonella prolifera, *Cart.* 1873, p. 146.

SUPPLEMENT.

From "Port Western."

Order I. Carnosa.

Halisarca australiensis, *Cart.* (1885), vol. xviii. p. 273.
—— ascidiarum, p. 273.
—— reticulata, p. 274.
—— tessellata, p. 275.
Halisarca australiensis, var. arenacea, p. 277.
Chondrilla nucula, *Sdt.*, p. 277.
—— secunda, *Lend.*, p. 277.
—— papillata, *Lend.*, p. 278.

Order II. Ceratina.

Dendrilla rosea, *Lend.*, var. digitata, *Cart.* (1885), vol. xviii. p. 281.
Aplysina cæspitosa, p. 282.
—— massa, p. 284.
Aplysina nævus, *Cart.* (1876), p. 285.
—— cruor, p. 286.
Pseudoceratina typica, p. 287.

Order III. Psammonemata.

Stelospongus, vol. xviii. p. 369.
—— cribrocrusta, p. 371.
Hircinia flagelliformis, p. 372.
Hircinia (Spongelia) rectilinea, *Hyatt*, p. 373.
Euspongia infundibuliformis, p. 374.

Order IV. Rhaphidonemata.

Chalina oculata, var. repens, vol. xviii. p. 375.
Acervochalina claviformis, p. 376.

Order V. Echinonemata.

Plumohalichondria plumosa, var. purpurea, vol. xviii. p. 376.
Axinella chalinoides, var. cribrosa, p. 377.
—— cladoflagellata, p. 377, = Axinella chalinoides, var. glutinosa, p. 359, vol. xvi.
Axinella coccinea (incertæ sedis), p. 378.
Phakellia ventilabrum, var. australiensis, p. 379.
—— papyracea, p. 379.
—— villosa, p. 379.

Order VI. Holorhaphidota.

Reniera vasiformis, vol. xviii. p. 445.
Phlœodictyon cohærens (provisional), p. 446.
—— birotuliferum, p. 447.
Halichondria scabida, *Cart.* (1885), p. 449.
—— pustulosa, *Cart.* (1882), p. 450.
—— compressa (incertæ sedis), p. 450.
—— stelliderma (incertæ sedis), p. 451.
Histioderma verrucosum, p. 452.
—— polymasteides, p. 453.
Pseudohalichondria clavilobata, p. 454.
Pseudoesperia enigmatica, p. 455.
Suberites spinispirulifera, *Cart.* (1879), p. 456.
—— (Hymeniacidon) carnosus, *Bk.*, p. 456.
Trachya globosa, var. rugosa, p. 457.
—— horrida, p. 457.
Cliona celata, *Grant*, p. 458.
Vioa Johnstonii, *Sdt.*, p. 458.
Stelletta ochracea, p. 458.
Stellettinopsis lutea, p. 459.
—— purpurea, p. 459.
Tethya stipitata, p. 460.

Order VII. Hexactinellida.

None.

Order VIII. Calcarea.

The specimens of this order which came from "Port Western" are included in the list of those from "Port Phillip Heads," as above given.

Conclusion.

Thus have I described all the principal specimens of the Spongida which have been sent to me by Mr. J. Bracebridge Wilson, M.A., F.L.S., of the Church-of-England Grammar School, Geelong, Col. Victoria, South Australia. It might have been done better and more elaborately had time and youth been on my side, but could hardly have been done more correctly; therefore, so far as it goes, it places before the reader those facts which, if he be a spongologist, will not only serve to introduce him to the sponge-fauna of the locality of which it treats, but induce him to pursue the subject still further. If I have succeeded in doing this I shall be satisfied, for my sole object, like that of the generosity of Mr. Wilson, has been to advance our knowledge of this branch of natural history to the best of my ability. When we consider that, for this purpose, these sponges were at his own cost dredged by Mr. Wilson, numbered, and at the same time placed by him in a galvanized-iron vessel containing spirit, and the vessel with its contents hermetically sealed and forwarded to my address with a catalogue of the colour of the specimens respectively in accordance with their numbers and with their depths—while we (Mr. Wilson and myself) are totally unacquainted with each other personally, and I fear now (at my age) will never be otherwise—it must be admitted that, in a scientific point of view, there never was a more praiseworthy or disinterested act.

It must not be expected that the forms presented by the specimens are the only ones that may be assumed by the various species, for among the Spongida these are almost endless; but the elementary structure is *persistent*, and it is towards this for recognition that the student should direct his attention, since in this he will not be disappointed. A single fragment may afford this information, while to say what forms a sponge may assume in its adult state may require years of observation and an unlimited number of specimens.

I began the description of these sponges with, among other things, the fact that the inhalant or pore-areas might open directly into excretory canals, and thus the nutritive particles which passed into them with the water have to be deflected afterwards to the ampullaceous sacs or elsewhere where they were required ('Annals,' 1885, vol. xv. p. 117 &c. pl. iv. fig. 5 &c.); and in *Phlœodictyon birotuliferum*, which I have described and illustrated *suprà* (p. 447, Pl. X. figs. 4 and 5), this "mode of circulation" has been established by there being no *canals* at all present, in short nothing between the pore-areas

together with their subdermal cavities and the general cavity of that part of the sponge which is provided with this inhalant structure.

Again, with reference to the sponges which afford typical illustrations of the structure of two of my orders in one, nothing can be more decisive than that of *Pseudoceratina typica* (p. 287), *Pseudohalichondria clavilobata* (p. 454), and *Pseudoesperia enigmatica* (p. 455) respectively; since wherever they may be relegated hereafter, the fact of such opposite structures existing together as parts of the same sponge is established.

The type specimens of those species which I have described have, in accordance with Mr. Wilson's request, been deposited in the British Museum. It may be added that they were dredged in the month of January, and are mostly charged with ova.

EXPLANATION OF PLATE X.

Fig. 1. *Phlœodictyon birotuliferum*, nat. size. *a*, main trunk; *b*, branches; *c*, bud; *d*, portion of internal layer hanging out of the main trunk; *e*, smooth portion; *f*, poriferous portion, represented by the puncta.

Fig. 2. The same. Skeletal spicules and flesh-spicule relatively magnified to the scale of 1-12th to 1-1800th inch. *a*, large skeletal spicule; *b*, smaller one; *c*, flesh-spicule.

Fig. 3. The same. Flesh-spicule more magnified. *a*, lateral view; *b*, end view. Scale 1-12th to 1-6000th inch.

Fig. 4. The same. Surface of internal layer of poriferous portion of branches, magnified to the scale of 1-48th to 1-1800th inch. Diagrammatic, showing:—*a*, internal, clathrous, sarco-fibrous layer; *b b b b*, infundibular depressions of the same; *c c c c*, external apertures of infundibular depressions; *d d d d*, pore-structure of the surface as seen through the infundibular depressions when the object is placed between the eye and the light.

Fig. 5. The same. Surface of external layer of poriferous portion of branch, magnified to the scale of 1-48th to 1-1800th inch. Diagrammatic, showing:—*a a a a*, middle layer or large skeletal structure; *b b b b*, external layer, including epithelium and pore-structure; *c c*, spicular framework of this layer; *d*, pores; *e e e*, circles representing external apertures of "infundibular depressions" of inner layer, which can only be seen when the object is placed between the eye and the light.

Fig. 6. *Pseudohalichondria clavilobata*, half nat. size. *a a a*, lobes; *b b b b*, monticular elevations on the surface; *c c c*, vents.

Fig. 7. The same. Spiculation relatively magnified to the scale of 1-24th to 1-6000th inch. *a*, skeletal spicule; *b*, flesh-spicule, lateral and front views.

Fig. 8. The same. Flesh-spicule more magnified. *a*, lateral view; *d*, front view.

Fig. 9. The same. External surface relatively magnified to the scale of 1-96th to 1-1800th inch. *a a*, sarco-fibro-reticulate structure of surface generally; *b b*, pore-areas occupying the interstices of the same, in which the pores are represented by the little circles; *c*, monticular elevation of surface; *d*, projection of the sand-fibre.