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XIV.—Zoological Notices

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1 l. labrum; *m* × maxilla; 1 2. labium; 5 b. labrum; 5 c. mandible; 5 d. maxilla; 5 e. labium; 5 f. antenna; 5 g. thorax and basal joints of abdomen; × prothoracic collar; + mesothorax; 0 metathorax.

Fig. 6. *Carebara lignata*, W. Mag. nat.

6 a. mandible; 6 b. maxilla; 6 c. labium; 6 d. antennæ.

Fig. 7 a. Thorax and basal joints of abdomen of *Pheidole providens*, W.; × prothoracic collar; + mesothorax; 0 metathorax; 7 b. and 7 c. mandibles in different position.

XIV.—*Zoological Notices*. By Dr. A. PHILIPPI*.

[With Two Plates.]

1. On *Clavagella balanorum*, Scacchi. Plate III. fig. 1—6.

Cl. vagina adnata, abbreviata, apertura simplici; valvis subtriangularibus; libera tenui, rugosa, parum convexa; spinis fistulosis irregularibus absconditis.

Habitat in cespitibus Balanorum ad costam Pausilypi prope Neapolin.

IN December of the preceding year Sig. Scacchi made the highly interesting discovery of this living species of *Clavagella*, and communicated it to the Royal Neapolitan Academy; but since years will pass away before the Memoirs of this Academy will appear in print, I believe I shall be doing a great service to zoologists in giving a detailed description of his discovery. We have examined the animal in company, but the observation on the formation of the spinoid tubes is due alone to Sig. Scacchi.

The tube is short, at the most $1\frac{1}{2}$ inch long, very thin walled, and cohering most intimately with the surrounding bodies (almost always *Balanus balanoides*); rarely does it project one or two lines. It is compressed, measures about $2\frac{1}{2}$ lines in the one, $1\frac{1}{2}$ —2 in the other dimension; its superior (upper) aperture is simple; it terminates inferiorly in general in a pear-shaped expansion, in which the *shell* is situated. This consists of a free and of an adhering shell. The *free shell* is the right one; it is of an irregular structure at the dorsal margin (Rückenrande), frequently concave, and seldom exceeding 6 lines in length and 4 in breadth. It is thin and very slightly vaulted, so that there is a wide space on the ventral side between the two shells, which is closed by the thick mantle of the animal. The *lines of growth* are very distinct, and what is very remarkable, they do not run parallel with the

* Translated from Wiegmann's 'Archiv,' Part 2, June, 1840.

ventral margin, but with the anterior margin; so that the point of commencement of the shell is situated at its hinder end, and not at the vertex (Wirbeln), as in other Conchylia. It appears that a great portion of the dorsal margin is subsequently re-absorbed. The vertices thence appear in part uncinatè. The left *adhering shell* is exceedingly thin, otherwise similar to the other. The two shells inwardly, as well as the tube, are of a nacreous lustre; thus rendering it extremely difficult to distinguish mantle and muscular impressions. A *hinge* is entirely wanting, and there is even no peculiar cartilaginous ligament; I merely find a weak fibrous corneous ligament. (Fig. 4 *b*.) Where the two shells touch one another at the back there is frequently a projection in the tube, and we in general meet with an oblique projection (Vorsprung) where the space for the shell ceases and the true tube commences. The *spinoid tubes* are present; they are irregular, and are only employed by the animal where it finds a free space in the *Balanus* mass. They are in general lost on loosening the house, so that rarely any other trace remains of them than the point-like apertures in the interior of the shell, as I have represented in fig. 2 *c*. In some successful cases, however, they are seen very distinctly.

The *animal* has exactly the form of a sack, which in front has but a very small fissure, out of which the apex of the very thin foot can scarcely exert itself. (Fig. 1. and 4.) Posteriorly the mantle is prolonged into two *siphons*, cohering nearly to the apex, which reach to the extremity of the tube. The common portion of the siphons terminates with a fringed border, and then follow two very short tubes, of which the inferior or branchial siphon is broadest. Both are provided at their aperture with simple cirrhi, and are carmine red, while the remainder of the animal is colourless. It has, moreover, to be observed, that the common tube before its border is covered with a quantity of grains of sand, which are not easily separable from it. (See Fig. 3.) Fig. 4. exhibits the animal, after having been some time in spirits, lying on the right shell. The two *adductores*, of which the posterior one is round and large, the anterior one kidney-shaped and small, are at present very distinct. If the mantle is cut open in the ventral line, it is first observed that the mantle in the ventral side is very thick and fleshy; posteriorly the strong muscles which draw back the siphons are in view; in the centre, the semicircular branchiæ, out of which the small narrow vermiform *foot* (*d* in fig. 5. and 6.) projects; and above this, on each side, two very long, linear, somewhat curved *appendices buccales*, *c*. On each side there is only one

branchia, which however has fixed itself in the neighbourhood of the back, and has above the seam another narrow appendix, which might be compared with the second branchia, and which half surrounds with its free margin the anterior closing muscle. The branchiæ of both sides cohere in the seam with the posterior half. They are strongly and distinctly striped. Remarkably small is the mass of intestines which project free between the branchiæ. See fig. 6, where this is separately represented.

Respecting the formation of the spinoid tubes Sig. Scacchi says, in his memoir read to the Academy, which he has communicated to me in manuscript, as follows:—

“Rang is of opinion that the spinoid tubes served the purpose of allowing the exertion of a kind of byssus, with which the animal fastened itself to the basis of its dwelling; but no observation supports this view, and I believe I may say with certainty that the *Clavagellæ* have no byssus; moreover, every one will easily conceive how useless this would be to them, since they cohere immoveably to one of their shells. Since they live in the midst of sea-acorns (*Balani*), which form a group of empty shells which grow one upon the other, it must necessarily happen that the *Clavagella* on increasing meets with the cavities of the surrounding *Balani*, when it absorbs or destroys everything round about in order to render its dwelling more spacious. Now observation has shown me, that when such cavities open near the animal, some fleshy fibres proceed from the great muscle which joins the margins of the mantle, and there direct themselves to the place where the cavity of the balanite is open, and form small calcareous tubes. They generally terminate with two small branches which finally close, yet I have sometimes found in some a small aperture at the end. These tubes prevent the entrance of any foreign body, and distribute themselves like the roots of plants, so that those which come near to the inner surface of the *Balani* adhere to it; the others either remain free or attach themselves to sand, and any other foreign substances they accidentally meet with. It appears that but few days are necessary for the formation of these tubes, as among so many individuals which I have had occasion to examine alive, I have only twice had the pleasure to surprise the animal with the above-mentioned fleshy filaments, which lie in the tubes that were just formed; and some other times I have met with some of these filaments, which having performed their office, were dried and now hung as appendices of the epidermis to the great muscle of the mantle.” These spinoid tubes serve then the animal to fix itself, and are consequently most

strongly developed in those species which live in sand, as for instance, *Clavagella bacillaris*.

PLATE III. *Fig. 1. Clavagella Balanorum*, Scac. Sitting in a mass formed for the greatest part of *Balani* overgrown with Sponges, *Scrupulæ*, &c., in natural size somewhat contracted; the one wall of the cavity is removed.

a. The fissure in the mantle, through which the foot is exerted.

Fig. 2. The animal is removed; the left shell cohering with the tube is seen, upon which the two muscular impressions are indicated. The points *e.* are the apertures of the spinoid tubes.

Fig. 3. The end of the siphons, magnified, to show that the common part of it possesses its peculiar fringed border.

Fig. 4. The animal killed in spirits, much contracted, lying on the right shell.

a. The mantle fissure for the foot.

b. The rudimentary ligament.

c, d. The two adductors.

Fig. 5. The same, the mantle cut open in the neighbourhood of the ventral line, and thrown back. The branchiæ, the foot *d*, the *appendices buccales*, of which only the two of the one side are represented, are seen.

Fig. 6. The foot with the belly or intestinal mass of the animal, magnified.

2. The genus *Zoë* is the first state of *Pagurus*. (*Fig. 7. and 8.*)

No genus among the Crustacea is perhaps more remarkable, and has more exercised the ingenuity of naturalists with respect to the place it must occupy in the System, than the curious animal discovered by Bosc, and named by him *Zoë*, and but exceedingly few naturalists have seen it again after him. He placed it between the Branchiopoda and the Flea-crabs (*Flohkrebs*); Latreille, in the first edition of Cuvier's 'Règne Animal,' in the order Branchiopoda, between *Polyphemus* and *Cyclops*; at the same time expressing the opinion that it might perhaps belong to the division of the Schizopoda. This latter opinion was adopted by Leach, but most zoologists have placed *Zoë* among the Branchiopods. To these doubts respecting the nature of this animal a new one associated itself, by Mr. Thompson announcing that these curious animals were nothing more than the larvæ of the common crab (*Carcinus Mænas*), which underwent a true metamorphosis. This opinion was strongly opposed by Mr. Westwood. Lastly, Milne-Edwards is of opinion (see Lamarck, 'Hist. Nat. des Anim. sans Vert.' edit. 2. vol. v. p. 195.) that *Zoë* might indeed only be the young state of a species of Decapod, but belonging probably to his division of the Anomura (in which he includes *Dromia*, *Homola*, *Albunea*, *Pagurus*, &c.). Accident has afforded me the opportunity of

making the direct observation, that in effect *Zoë* is nothing more than the first stage of *Pagurus*.

On the 13th of March of this year, I found in Palermo, in a basin in which I kept several sea animals, to my great joy, about a dozen individuals of *Zoë*, but unfortunately already all dead. I hastened to examine them under the microscope as well as possible. The next morning I found to my great surprise the same basin, in which I had the previous day fished out with great trouble a dozen *Zoë*, quite filled with several hundred *Zoë*. I had among other animals in the basin a *Pagurus hungarus*, Herbst., which sat in a *Natica millepuncta*: I immediately conceived the suspicion that the *Zoë* must be its young, broke carefully the *Natica*, and found, in fact, the ovary of the *Pagurus* nearly quite empty, while in the remaining ova I distinctly recognised the little *Zoë*. I freed it with some trouble from the tunics (Eihäuten of the ovum). These small *Zoë* were perfectly transparent, with black eyes, a red spot in the medial line immediately behind the eyes, and at times with a second red stripe before the anus. These red spots are evidently in the intestinal canal, and are remains of the yolk. The cephalothorax occupies two-fifths of the length of the animal, and is prolonged in front into an apparently horizontal beak, posteriorly rounded, behind the eyes slightly constricted. The neighbourhood of the eyes projects vesicularly. The *abdomen* is not quite twice as long and five-articulated. The four first segments are cylindrical and gradually increase in length; the last has the form of a fan, and bears twelve radiately-placed spines, of which the outer ones are the shortest. The *eyes* are sessile, very large, black, reticulately latticed. The *exterior antennæ* are biramificate, and originate on the under side; their common petiole scarcely projects to the margin of the cephalothorax; the outer branch is pretty broad, terminates exteriorly with a spine, and bears at its apex a number of bristles: the inner branch is shorter, much narrower, and bears only two bristles. Between the two ramifications there is another short semifalcate, slightly ciliated member. The *inner antennæ* are as long as the outer ones, narrow, biarticulated, and terminate with two bristles. Of all the other organs I only recognised the two perfectly similar pair of feet, which are biramificate, and recall to mind *Cyclops*. The outer branch is triarticulated, the inner somewhat stronger one quadriarticulated. The terminal joint is in both short and acute, and furnished with long bristles. All the longer bristles of the feet, as well as those of the *antennæ*, are ciliated.

Fig 7. *Zoë*, the young of *Pagurus hungarus*, Herbst, very highly magnified.
Fig. 8. The same, still in the egg, likewise very highly magnified.

3. *Asterope*, a new Genus of Ostracopoda.
Plate III. fig. 9—11.

I had frequently found in the sea-sand, and between Zoo-phytes, *Cytherina*-like shells of several species, which differed essentially from *Cytherina* by an incision (indentation) in the shell, but only on the 6th of March of this year did I succeed in finding in Palermo an individual with the animal. If indeed it was not possible for me to distinguish all its organs, yet I fully convinced myself that the animal also is so considerably distinct both from *Cypris* and *Cytherina*, as well as from *Cypridina*, Milne-Edwards (which genus I have likewise been so fortunate as to observe), that it must necessarily form a separate genus.

The shell is only half a line long, of a brownish colour, perfectly elliptical, but has in front and beneath an incision, and on both sides of this incision the margin is thickened. Beneath the incisure lie the antennæ; behind the first pair of feet, at the hinder extremity, the apex of the tail peeped out. With a greater magnifying power the shells appeared beset with opaque white points. The shells could be easily removed, and the animal now appeared as shown in fig. 11. Immediately behind the eye, which on being pressed between the glass plates showed itself to be a *double* one, a pear-shaped *muscle* is directed upwards, and serves to fasten the animal on each side to the shells; behind which I observed a couple of cylindrical annulated filaments provided with some bristles, and behind these still two other pair, shorter, thicker filaments, not annulated, and not furnished with bristles. These organs probably serve for the adhesion of the eggs. There is only one pair of *antennæ*, the greatest organ on the whole animal, as it equals the body in length. They are situated immediately beneath the eyes, have a large ovate basal joint, which forms with a second cylindrical joint of the same length the petiole, and terminates with a short many-jointed flagella (Geissel) beset brush-like with long bristles. There are two pairs of feet, both of which are directed forwards, and seem to be only biarticulate; both joints are subelongate, much compressed, nearly foliaceous, and ciliated with few but strong bristles. The *tail* is compressed, broad, curved downwards, and somewhat forwards, and furnished with about ten hooks, which are first at the apex bent, then curved backwards, and which gradually decrease in size from the front hindwards. At the base of each foot are situated two nearly triangular lamellæ, which are anteriorly bent outwards, and densely beset with long stiff cilia, fig. B. query branchiæ? Behind these and before the tail I

noticed another differently formed, and short ciliated lamella, fig. *g*. I moreover found three pairs of falcate palpi or foot-jaws with long cilia, fig. *c*. I did not, however, succeed in observing the other cibarian organs.

Notwithstanding the imperfection of these observations, they still sufficiently prove the independence of this genus. It differs from *Cypris*; 1. by the incision of the shell; 2. by the existence of two eyes; 3. by the broad hook-bearing tail; 4. by having only two pairs of foliaceous feet; 5. by possessing peculiar organs for bearing the eggs, which function in *Cypris* is performed by the third pair of feet. *Asterope* is distinguished from *Cypridina*; 1. by the incision of the shell; 2. by the presence of only two pairs of foliaceous feet; 3. by its simple tail (in *Cypridina* it consists of two lamellæ), &c. *Cytherina* differs from *Asterope*; 1. by the want of the incision of the shell; 2. by the presence of *four pairs of feet*, as quite correctly stated by O. F. Müller; 3. by the tail consisting, as in *Cypridina*, of two lamellæ. (I have observed about eight species of *Cytherina* near Naples.)

The generic characters were accordingly as follows:—

Testa bivalvis, corpus abscondens, antice subtusque incisa. *Antennæ* duæ simplices, apice penicillatæ. *Oculi* duo! *Pedes* quatuor compressi, subfoliacei. *Fila* peculiaria ad retinenda ova. *Cauda* compressa uncinis pluribus terminata.

The species might be characterized in the following manner:—

Asterope elliptica. *A.* testa exacte elliptica, nitida, sublente fortiori, punctis opacis albis adspersa.

PLATE III. Fig. 9. *Asterope elliptica*, Phil. Magnified.

A. Its natural size.

Fig. 10. The left shell, inside view, moderately magnified.

Fig. 11. The animal magnified sixty times.

B. One of the four lamellæ attached to the base of the feet, still more highly magnified.

C. One of the three pair of lamellæ, which are situated near the cibarian apparatus.

g. The lamellæ between the feet and tail.

4. Short characteristic of several new Genera of the Family of the Copepoda.

During the great heat of the summer months I have occupied myself in Sorrent in examining the minute animals which live among the small Algæ. Here dwell, only to speak of the Crustacea, especially *Caprellæ*, some *Dynamene*, *Janira*, *Jassa*, *Juera*, which latter three appear to be very rare; numerous

Amphithöe, some *Gammari*, and above all *Cytherinæ*, and a vast number of *Cyclops*-like animals, together with *Peltidiæ*, and an allied genus. The new genera which I found among them I will now briefly enumerate, reserving a more detailed description of them for a longer labour.

1. *Nauplius*, mihi (non O. F. Müller*). (Fig. 12.)

Corpus elongatum, postice sensim attenuatum, segmento primo s. capite (cum segmento primo thoracis connato) maximo; *cauda* bifida, setigera. *Antennæ* quatuor; superiores multiarticulatæ, apice penicillatæ; inferiores tri-articulatæ, apice setis uncinatis, basi seta pectinata munitæ. *Pes masticatorius* ungue incurvo falcato. *Pes primus* capiti insertus, desciscens, biramus, ramis elongatis, apice unguiculatis. *Pedes natatorii* birami sex. *Pedes spurii* duo, e lamellis duabus basi communi insidentibus formati, sacculum ovorum ex parte obtegentes.

This genus is abundant in species. It is distinguished from *Cyclops*; 1. by the varying construction of the first pair of feet which do not serve for swimming; 2. by the foot-jaw; 3. by the lamella, with cover for the greater part of the ovary. It is remarkable that the foot-jaw and first pair of feet are exactly so constructed as in the genus *Pelidium*†, which genus I have been able to investigate more completely on a couple of new species than it was possible on *P. purpureum*.

2. *Laophonte*, mihi. (Fig. 13.)

Omnia ut in *Naupliis*, sed primum corporis segmentum cum capite non coalitum, ideoque *par primum pedum desciscens* non capiti sed segmento peculiari thoracis insertum, biramum, ramo altero minimo rudimentario, altero ungue unico maximo terminatum.

Only one species, but very common; the back appears serrated, from the individual segments being placed sharply from one another.

3. *Psamathe*, mihi. (Pl. IV. fig. 1.)

Corpus elongatum, semiteres. *Pes masticatorius* lamellis duabus terminatus. *Pedes* sex, birami, natatorii. *Pedes spurii* duo, biarticulati, angusti. Reliqua ut in *Cyclope* vel in *Nauplio*.

Only one species, rare, elongated as *Cyclops*, but at the same time flat, thus forming the transition to the scutiform Copepoda. The cibarian apparatus is very peculiar, almost exactly as in the scutiform genus *Thyone*. Very remarkable

* O. F. Müller gave this name to the young state of *Cyclops*.

† For description and figure of this new genus, see Ann. Nat. Hist. vol. iv. p. 303. Pl. IV. fig. 12, 13.—EDR.

is the parallelism between *Nauplius* and *Peltidium*, and between *Psamathe* and *Thyone*.

4. *Thyone*, mihi. (Pl. IV. fig. 2.)

Corpus depressum scutiforme, ovatum, segmentis quinque constans, segmento primo maximo. *Cauda* e lamellis duabus formata. *Oculi* duo confluentes. *Antennæ* quatuor; anteriores multiarticulatae; inferiores triarticulatae, apice setis uncinatis, basi seta pectinata munitæ. *Pes masticatorius* apice lamellis duabus terminatus. *Pedes* sex, natatorii, birami; *Pedes spurii* duo lamellares, spatium inter segmentum penultimum caudamque opplentes.

Three species, the one, *Th. viridis*, nearly $\frac{3}{4}$ ''' long, common. The cibarian apparatus exceedingly complicated.—*Peltidium* differs by the foot-jaws, the tail, and by the first pair of feet being differently constructed; *Sapphirina*, Thompson, from the body having nine segments. There are two pairs of peculiar fringed lamellæ near the cibarian organs (fig. 2 *e.* and *g.*), perhaps analogous to those lamellæ in *Cypris*, regarded by Strauss as branchiæ.

5. *Peneus siphonoceros*, mihi. (Pl. IV. fig. 3.)

P. rostro brevissimo, supra 7-dentato inermi; flagellis antennarum superiorum æqualibus, omnibus quatuor canalem clausum formantibus.

I have gradually obtained in Naples about half a dozen individuals of this *Peneus*, so highly remarkable for the curious formation of the flagella of the upper antennæ. They are flesh-coloured, the antennæ, feet, and the hinder margins of the abdominal segments darker. The length from the apex of the beak to the extremity of the tail amounts to $2\frac{1}{2}$ inches, of which the abdomen is 1 inch 7 lines, and the beak scarcely $2\frac{1}{2}$ lines. The cephalothorax has no longitudinal furrows. The abdomen is, as usual, very much compressed, the last three joints keeled. The terminal segment has in the centre a broad groove, and terminates with two points. The scale (Schuppe) of the *exterior antennæ* is quite twice as long as the beak, of usual form, with a longitudinal groove; the stalk does not attain to half the length of the scale; the flagellum is once and a half as long as the body. The *inner antennæ* have a very thick stalk, as long as the scale of the outer antennæ, at the base excavated, as usual, for the large black eyes, and with a curved anteriorly directed appendage (process). They have two equally long, and as above stated, very peculiarly formed flagella. They form, namely, with those of the other side, an almost closed tube. For this purpose each single

flagellum is vaulted exteriorly with a keel, interiorly grooved, serrated and finely ciliated at the margins, so that they close completely. The canal continues in the stalk (Stiel), but here only the upper half is formed by the stalk, and is closed inferiorly by the scales of the outer antennæ, as it seems the upper lip divides the canal, which then proceeds right and left to the branchiæ. As far as I am aware, no similar formation exists among the Crustacea.

The *feet* are exactly as in the other species of *Peneus*; all have at the base a filamentary process corresponding to the palpi of the foot-jaws; the three first pair have pincers (*chela*), and increase from the first to the third in length, which increase is effected, namely, by the growth of the tibia. The fourth pair of feet is as long as the second, the fifth as long as the third. The *exterior foot-jaw* is nearly twice as long as the first pair of feet, and consists of rather cylindrical and capillary joints.

The figure Pl. IV. fig. 3. will render a more detailed description superfluous.

PLATE III. Fig. 12. *Nauplius ciliatus*, Phil. Sixty times magnified.
a. Natural size.

PLATE III. Fig. 13. *Laophonte cornuta*, Phil. Female, sixty times magnified.

PLATE IV. Fig. 1. *Psamathe longicauda*, Phil. Magnified sixty times.
x. Natural size.
a. The outer foot-jaw magnified 150 times.

PLATE IV. Fig. 2. *Thyone viridis*, Phil. Examined with a power of sixty.
a. Nat. size.
b. The outer foot-jaw, with its palpus more strongly magnified.
d. The second pair of antennæ.
e. The mandible, near it a foliaceous fringed organ similar to the one designated by g: should it be considered as branchia?
f. The one foot-jaw.

N.B. The maxillæ could not be represented on this scale.

PLATE IV. Fig. 3. *Peneus siphonoceros*, Phil. Nat. size.
a. Cross section of the tube formed by the flagella of the upper antennæ, magnified.

6. *Pontarachna punctulum*, Ph., an Hydrachnidan of the Ocean. (Pl. IV. fig. 4. and 5.)

Hitherto Hydrachnæ have been found solely in fresh water, but I have met with, and not at all unfrequently in the bay of Naples, a spider belonging to this division of the Arachnida likewise in sea-water. Unfortunately it is so minute, scarcely $\frac{1}{3}$ rd of a line in length, that I have not been able to recognise all its parts, although I have frequently examined several specimens. The *body* is rather globular, anteriorly somewhat acute, quite bare. Its colour is brownish-yellow, more fre-

quently orange-red or brown-red, sometimes even brown with whitish transparent variously indented (gezacktem) margin, so that rarely two individuals look perfectly like one another; I once found one which was very beautifully marked with a white T on a dark-brown ground. The pale margin is anteriorly broader, so that the two minute distant *eyes* may distinctly be recognised. The front *feet* scarcely exceed the length of the body; the posterior ones are nearly twice as long. The four coxæ are close to each other on every side, and the anterior ones even touch in the central line. (See Pl. IV. fig. 5.) Between the coxæ I find two small points, of the importance of which I am not able to form an opinion. Of the following joints the first are the shortest, the last the longest; in gradual progression they are all nearly cylindrical; nevertheless the *femur* seems to be excavated above, the tibia slightly below. All the joints, with the exception of the last, are beset on the under side, at the extremity, and likewise in the centre, with bristles. The last is perfectly bare, at the extremity obliquely truncated above, and bears two hooked claws curved under a rather acute angle. Upon the under side of the body there is an annular pointed lamella which surrounds the fissure of the generative organs, fig. 5. f, as in *Diplodonta* and *Atax*. Of the cibarian organs I have only been able to distinguish the two *palpi*. These are nearly half as long as the anterior feet, filiform, and quinquarticulated. The first joint is very short; the second and third thick and cylindrical; the fourth the longest of all, likewise cylindrical, but much thinner; the fifth short and acute. Palpi and feet are nearly colourless, at the most yellowish.

Of the six genera which at present constitute the division of the Hydrachnæ, viz. *Diplodonta*, *Atax*, *Arrhenurus*, *Eulais*, *Limnochares* and *Hydrachna*, it agrees by the annular lamellæ surrounding the sexual apparatus and other characters, mostly with the first; but differs from them;—1. by the four coxæ being close on each side; 2. by the construction of the palpi, which in *Diplodonta* have at the fourth joint an apex of the length of the fifth;—*Atax* possesses a very long fourth joint, which at the extremity is somewhat excavated in order to receive in the outer bend the fifth joint. The other four genera differ still more: *Arrhenurus* and *Limnochares* by the very short palpi; *Eulais* by the palpi and the hips; and *Hydrachna* by the palpi, the beak, &c. It hence follows, that even disregarding the maxillæ not discovered by me, there are differences enough to justify the establishment of a new genus, which I call *Pontarachna*, and characterize as follows:—

Corpus subglobosum. Oculi duo, remoti. Mandibulæ . . . nullæ?

minimæ? Palpi duo, elongati, 5-articulati; articulo quarto longiori, quinto brevi, acuminato. Coxæ utriusque lateris unitæ, anticæ duæ in linea mediana quoque sese tangentes. Pedes unguibus duobus uncinatis terminati. Vulva lamina crustacea granulata cincta.

PLATE IV. *Fig. 4. Pontarachna punctulum*, Phil. Drawn magnified sixty times.

g. Nat. size.

Fig. 5. The body beneath, magnified ninety times.

d. The palpi.

e. The coxæ.

f. The plate surrounding the fissure of the generative organs.

7. *Desmophyllum Stellaria*, Ehrenberg. (Plate IV. fig. 6.)

The genus *Desmophyllum*, established by Prof. Ehrenberg in the Memoirs of the Berlin Academy, is not less remarkable by the characters of its calcareous stem, which is constantly unramified, and has fascicularly united lamellæ of the star (Sterne), than by its animal. In this the surprising thinness of the mantle is above all remarkable, which seems to be entirely missing, so that we can most distinctly perceive through it the cells at the margin of the star, nay, even the slightest roughness of the surface. Indeed the animal mass is in proportion to the calcareous mass a true minimum, and so retracts itself on the contraction of the animal into the cavities of the lamellæ, that I regarded the individual I received in this state for the mere house, long before deprived of its inhabitant. I have likewise observed the same on *Cladocora cespitosa*, Ehrenberg (*Caryophyllia*, Lamk.), while the animal mass of *Cladocora* (*Caryophyllia*) *Calycularis* is far more considerable, and even on drying remains as a pretty thick membrane. When the animal of *Desmophyllum Stellaria* has fully expanded itself, it projects about a line above the star, while the border to a good breadth seems to be without any animal envelope. The yellowish coloured oval *mouth*, surrounded by an inwardly and outwardly folded lip, is distinctly perceptible. True *tentacula* are missing; a greenish fleshy mass extends from the mouth to near the margin of the star, and is there drawn out into several folds, at the apex yellowish, which, however, do not evince any definite arrangement, yet generally exhibit two rows. When the folds are most distinct they project at the furthest only $\frac{1}{3}$ rd of a line; greater I have never seen, although I have preserved the animal alive, and observed it for several days. By this want of true *tentacula* the genus differs, likewise with respect to the animal, very essentially from *Cyathina*, Ehrenberg, where the *tentacula* are very regular, filiform, and orbiculate (geknöpft). All

the motions of the animal are in the highest degree slow and sluggish, which I have likewise observed in *Cyathina*, *Oculina* and *Cladocora*.

PLATE IV. Fig. 6. *Desmophyllum Stellaria*, Ehrenberg. Nat. size, sitting on *Nullipora Lithophyllum expansum*, Phil.

XV.—*Thoughts on the Equivocal Generation of Entozoa*. By JAS. L. DRUMMOND, M.D., Professor of Anatomy and Physiology in the Royal Belfast Institution, &c.

IN studying the *Entozoa*, one of the first things which demands our attention, is the peculiarity of the situations which they occupy. When we look abroad upon the features of the globe which we inhabit, we find that every part is filled with animal and vegetable life; whether we visit the frozen regions of the poles, or the countries for ever exposed to the heat of an equatorial sun, we see that every clime has its animals and plants, and these in general, so constituted in their structure and œconomy, as to be fitted peculiarly for the circumstances of the place in which they reside. The White Bear delights in the perennial snows and ice of its native region, and the Lion in the fervour of the torrid zone; but were they to change situations, the former would die from the excessive heat, and the latter would as certainly perish from the intolerable cold.

And so it is with the *Entozoa*; they have been ordained to inhabit, alone, the interior of other animals; and though many of them will live for several days when removed from that situation and put in water, yet that can only be deemed a lingering death, for at length they infallibly perish from the unnatural circumstances in which they are placed. It has been asserted, indeed, that some of the intestinal worms have been found living in other situations. Thus, Linnæus supposed that the Fluke-worm (*Distoma hepaticum*) was to be found in fresh water, as also the common Tape-worm in muddy pools, and the *Ascaris vermicularis* in marshes among the roots of decaying plants. (Rudolphi, i. 371.) But it has been shown by Muller and Rudolphi, that he had mistaken other external species of animals for true *Entozoa*; that his supposed Tænia and Fluke-worm were the *Planaria lactea*, and his *Ascaris vermicularis* a quite different animal.

But even admitting that a true entozoon should be found in a pool or rivulet of fresh water, still something more would be necessary to prove that such was its natural habitat. Every one knows that when an animal is infested with Tape-worm, portions of the latter are frequently ejected along with the