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## XXIX.—Brief descriptions of several terrestrial Planariæ, and of some remarkable marine species, with an account of their habits

Charles Darwin F.R.S. V.P.

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A specimen with different fruit was found by my daughter on the shore at Ardrossan. It had not the hemispherical urceolate capsules, but it had instead purple tufts not unlike the fruit of *Odonthalia dentata*: they had the appearance of a little mass of short truncate ramuli. In general they were sessile, but in one case the mass was raised on a short purple pedicel (Pl. IV. fig. 3. *a*).

The third kind of fructification consists of granules imbedded in the branches. In the specimens with tufted fructification these were small, of a purple colour, and situated in the upper ramuli, to which they gave a dotted appearance (Pl. IV. fig. 4. *b*). What I am disposed to think the most common kind of fructification occurred in other specimens, viz. large buff-coloured granules generally imbedded in distorted ramuli (Pl. IV. fig. 5). At times they are only partially imbedded, producing protuberances which are filled with countless very minute granules around the large granule. At other times the large buff-coloured granules are quite external but sessile, at a certain stage falling off, not to be lost in the depths of ocean, but in all likelihood to produce a fresh generation of young *Gloiosiphonia*.

Of these large buff granules there are seldom more than three in one branch, whilst the small granules imbedded in the ultimate branches are like purple points or dots, very numerous, but quite distinct from each other.

I may also state that the ultimate ramuli generally seemed jointed like *Ceramium rubrum*, and of a pink colour; yet there were occasionally intermingled little branches with fawn-coloured joints and white articulations so very like *Ceramium diaphanum*, that I should have concluded that this *Ceramium* had fastened as a parasite on the *Gloiosiphonia*, had I not seen that the same little branch which set out as a *Gloiosiphonia*, without any warning given suddenly assumed the aspect of *C. diaphanum*.

#### EXPLANATION OF PLATE IV.

Fig. 1. Capsule of *Polysiphonia parasitica*.

Fig. 2. *Polysiphonia parasitica*, with granules and dwarf capsule.

Fig. 3. *Gloiosiphonia capillaris*: *a*, tuft of fruit.

Fig. 4. Ditto, ditto: *a*, capsule; *b*, small imbedded granules.

Fig. 5. Ditto, ditto, with large granules in distorted ramuli.

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XXIX.—*Brief Descriptions of several Terrestrial Planariæ, and of some remarkable Marine Species, with an Account of their Habits.* By CHARLES DARWIN, F.R.S., V.P. Geol. Soc.

[With a Plate.]

IN my Journal I have given a brief account of the discovery of several species of terrestrial *Planariæ*: it is my intention here to

describe them. They all belong to the genus *Planaria*, as restricted by A. Dugès in his memoir\* on these animals, and to that of *Polycelis* of Ehrenberg. They may, however, form a section of the genus, being characterized by their more convex and narrow bodies; their more distinctly defined foot; their terrestrial habits; and frequently by their longitudinal bands of bright colours. From their colours, from their convex bodies, from their manner of crawling and the track of slime which they leave behind, and from their places of habitation, they present a striking analogy with some terrestrial gasteropods, especially with *Vaginulus*, with which snail I have several times found them associated under stones. I suspect that, differently from their aquatic congeners, they live on vegetable matter, namely on decayed wood; I suspect this, from having found them repeatedly under this substance, and from having kept some specimens in a box for twenty-one days with nothing else for food, where they increased considerably in size. The species which live under stones, both on the grassy, undulating land of northern La Plata, and on the arid, rocky hills of central Chile, generally inhabit small sinuous chambers, like those frequented by earth-worms, in which they lie coiled and knotted up. They are often found in pairs; and I once discovered a pair attached together by their lower surfaces, apparently in copulation. None of these species have the quick and vivacious movements of the marine species: they progress by a regular wave-like movement of the foot, like that of a gasteropod, using the anterior extremity, which is raised from the ground, as a feeler. One species which I tried could crawl well through moss; another being placed on dry paper was almost killed by it. I put several specimens into fresh water, but they appeared wholly unused to it, and would soon have perished: they seem, however, to prefer damp situations, and the specimens of *P. Tasmaniana*, which I kept in a box with rotten wood, having been neglected to be moistened, all perished, except one large individual which survived quite uninjured, although the wood had become perfectly dry. These animals (especially the *P. Tasmaniana*) had an immediate apprehension and dislike of light, which they showed by crawling, when the lid of the box was taken off, to the under side of the pieces of rotten wood. My observations, as far as they go, on the structure of these terrestrial species, agree with those given by Dugès on the structure of the aquatic species. The figure given by this author of the ramified digestive vessels of *P. lactea* is quite similar to a drawing that I made of this part in the *P. pallida* from Valparaiso (which, from being nearly colourless, allowed the best opportunity of observa-

\* Annales des Sciences Naturelles, October 1828.

tion), except in the entire absence of ramifications on the internal sides of the two posterior prolongations of the main digestive cavity. There is generally a colourless space round the alimentary and genital orifices. The mouth-sucker is bell-shaped, with a very short œsophagus: when contracted it forms either a globular or star-shaped hard ball: I never saw it voluntarily protruded, but have no doubt that it can be, for immersion into very weak spirits of wine or salt water caused its exertion, and on being touched it was immediately retracted. This mouth-sucker is highly contractile, and retains its irritability long after the death and even dissolution of the rest of the body: the external orifice, through which it is protruded, consists of a transverse slit. The genital orifice, also, consists of a transverse slit; in the aquatic species it is generally, if not always, circular. In my notes on several of the species, I find it stated that the under surface or foot is thickly studded with very minute, angular, opaque, white specks: may not these serve for the necessarily copious secretion of slime? These animals, when placed on a slip of glass, frequently propelled a globule of air, between their foot and the glass, from their anterior extremity towards their tail; and as the air came in contact with successive parts of the foot, a violent corpuscular movement (curiously resembling microscopical eels disturbed by a stick, and struggling in mud) was produced in the slimy surface. I could never perceive it in any part of the foot, except when in contact with air; but it was evident, though less energetic, on parts of the back, and at the extreme anterior extremity of the body. I presume that the appearance is due to vibratile cilia; and it is worthy of remark, that M. Dugès\* suspects that the foot, in the freshwater species, is the chief seat of this respiratory action, from having observed that they frequently arch their bodies, so as to allow fresh water to circulate under it. The position of the black eye-spots varies in the different species: it is remarkable that, in the *P. elongata* from Tres Montes, I could perceive no trace of these ocelli, although this is the largest species. According to Prof. Ehrenberg's arrangement, depending on the presence and number of the ocelli, this species would rank in his genus *Typhoplana*; but from the variability in number and position of these imperfect organs of vision, I should doubt whether they ought to afford generic characters. In the *P. pallida* I examined the ocelli with a strong lens, and found that they were not truly circular; the black part lies within a transparent envelope; in this species they are seated on the upper margin of the body, in groups of two and three, exactly over the extreme lateral subdivisions of the intestinal vessel. I was not able to see ova

\* Annales des Sciences Naturelles, October 1828, p. 28.

within any of the terrestrial species. The texture of the body, its prompt dissolution into fluid after death, its power of healing wounds, its irritability and contractile powers, appear to be exactly similar in the terrestrial and in the aquatic species, as described by Dugès. I will not here repeat the description which I have given in my Journal (p. 31) of the bisection of the *P. Tasmaniana*, and the production of two perfect individuals (with the exception of the external orifice for the mouth-sucker) in the course of twenty-five days. I will only add, that an individual being divided into many fragments, each crawled in the proper direction, as if furnished with its proper anterior extremity.

I found altogether twelve terrestrial species; two in the forests of Brazil; three on the grassy, open country northward of the Rio Plata; one on the arid hills near Valparaiso in Chile, and three in the damp wooded country southward of central Chile: the most southern locality was in lat.  $46^{\circ} 30'$  S. I found also one species in New Zealand (which I lost), another in Van Diemen's Land, and a third at the Mauritius; the latter I had not time to examine. Hence it appears that the terrestrial section of this genus is widely diffused; but as far as is at present known, only in the southern hemisphere. The existence of terrestrial *Planariæ* is analogous to that of terrestrial leeches in the forests of southern Chile and of Ceylon.

### 1. *Planaria vaginuloides*.

Alimentary orifice situated at two-thirds of the entire length of the body from the anterior extremity; width of orifice  $\frac{1}{60}$ th of an inch: at the distance of  $\frac{5}{10}$ ths of an inch posteriorly, lies the genital orifice, very plainly marked. Ocelli numerous, placed at regular intervals on the anterior extremity; irregularly, round the edges of the foot. Anterior part of the body elongated, with the extremity much pointed and grooved on the under side: tail bluntly pointed; body convex, flattened on the top. Sides and foot coloured dirty "opiment orange\*"; above, with two stripes on each side of pale "primrose-yellow," edged externally with black; on centre of the back a stripe of glossy black; these stripes become narrow towards both extremities. Length when fully extended  $2\frac{3}{10}$ ths of an inch; breadth in broadest part  $\frac{1\frac{5}{10}}{100}$ ths of an inch.

*Hab.* Under the bark of a decayed tree in the forest: Rio de Janeiro (June).

### 2. *Planaria elegans*.

Position of the orifices as in *P. vaginuloides*. Anterior part of the body little elongated. Ocelli absent on the anterior extremity, and only a few round the margin of the foot. Colours beautiful; back snow-white, with two approximate lines of reddish brown; near the

\* The colours, when placed between inverted commas, signify that they are given by comparison with Patrick Syme's Nomenclature.

sides with several very fine parallel lines of the same tint; foot white, exteriorly clouded, together with the margin of the body, with pale blackish purple: body crossed by three colourless rings, in the two posterior of which the orifices are situated. Length 1 inch; breadth more uniform, and greater in proportion to length of body, than in the last species.

*Hab.* Same as in *P. vaginuloides*.

### 3. *Planaria pulla*.

Mouth-sucker, when protruded and contracted in spirits of wine, globular. Ocelli numerous, placed at regular intervals on the anterior part of the body. Body slightly flattened, gradually increasing in width from the anterior extremity, which is much pointed and grooved beneath. Back rich "umber-brown," with a central narrow streak of "broccoli-brown" reaching entire length: foot broccoli-brown, with two clear spaces for the orifices. Length when fully extended  $1\frac{9}{10}$ ths of an inch; breadth  $\frac{1}{10}$ th of an inch.

*Hab.* Very frequent under stones: Monte Video and Maldonado (June and August).

### 4. *Planaria bilinearis*.

Ocelli numerous, placed at regular intervals. Body subcylindrical, narrow, of nearly uniform breadth. Colour above pale dirty yellow with two stripes of "umber-brown," which become narrower and unite at the two extremities. Length when fully extended  $1\frac{5}{10}$ ths; breadth  $\frac{7}{100}$ ths of an inch.

*Hab.* Same as *P. pulla* (June and August).

### 5. *Planaria nigro-fusca*.

Alimentary orifice situated at rather less than two-thirds of the entire length from the anterior extremity: genital orifice, with the body contracted, is situated at the  $\frac{25}{100}$ ths of an inch posteriorly. Ocelli very numerous; those on the extreme tip very minute and placed at regular intervals; those on the margin of the body grouped by two and three together. Body much depressed, tapering suddenly towards the anterior extremity; tail abruptly terminated in a point. Above uniform blackish brown, beneath pale. Length when fully extended 2 inches; breadth  $\frac{5}{10}$ ths of an inch.

*Hab.* Under rotten wood: Maldonado (May).

### 6. *Planaria pallida*.

The alimentary and genital orifices  $\frac{2}{10}$ ths of an inch apart, when the body is partially contracted: mouth-sucker when dissected out of the body  $\frac{15}{100}$ ths of an inch in length; its margin very sinuous. Ocelli numerous; eleven close together, being placed on the anterior extremity; and the others in groups of two and three on the sides, and chiefly on the anterior half of the body. Body much depressed and flat, with both extremities finely pointed. Upper and lower surfaces white, with the pinkish intestinal vessel seen through. Length when crawling 3 inches; breadth  $\frac{2}{10}$ ths of an inch.

*Hab.* Under stones on the dry hills near Valparaiso (July).

7. *Planaria elongata*.

Alimentary and genital orifices obscure. Ocelli absent: posterior extremity very obtusely rounded. Above "umber-brown," with a narrow medial line of darker brown; sides narrowly edged with pale brown, bordered with the umber-brown; beneath pale brown. Length when crawling 5 inches, when closely contracted  $1\frac{4}{10}$ ths of an inch, breadth when crawling  $\frac{1\frac{5}{10}}{100}$ ths, when contracted  $\frac{4}{10}$ ths of an inch.

*Hab.* On rotten wood in mountain-forests: C. Tres Montes, lat.  $46^{\circ} 30'$  S., Western America (December).

8. *Planaria semilineata*.

Body convex. Above greenish black, with minute white punctures; on anterior half of body four parallel bands of "gall-stone yellow," of which only the central and approximate pair are prolonged into the posterior half of body: foot leaden colour, with colourless spaces for the orifices.

*Hab.* Under stones, on one of the Chonos Islands (north of C. Tres Montes) (December).

9. *Planaria maculata*.

Edges of the body very thin; breadth nearly uniform. Upper surface quite black, with numerous, oblong, variously sized spots of yellow: foot mottled white and black. Length when crawling  $1\frac{7}{10}$ ths; breadth  $\frac{2}{10}$ ths of an inch.

*Hab.* Forest of Valdivia (February).

10. *Planaria Tasmaniana*.

Mouth-sucker widely extensile: alimentary orifice placed nearly in centre of the body; genital orifice  $\frac{1}{10}$ th of an inch posteriorly, but when the animal crawls it is  $\frac{2}{10}$ ths of an inch distant. Genital orifice very distinct, submargined. Ocelli scattered round the entire margin of the foot, but most frequent at the anterior extremity. Both extremities pointed. Colour dirty "honey-yellow," with a central dark brown line bordered on each side with a broader line of pale "umber-brown:" foot quite white. Length when crawling  $1\frac{5}{10}$ ths; when contracted  $\frac{8}{10}$ ths of an inch.

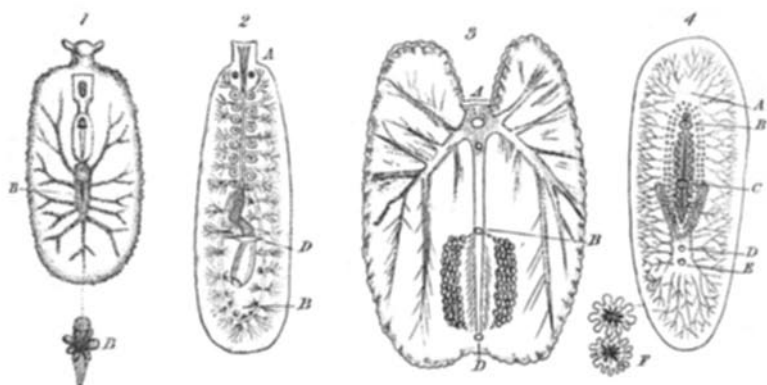
*Hab.* Beneath decayed trees in the woods of Van Diemen's Land: frequent (February).

I will now briefly describe five marine species of *Planaria*, which are remarkable, either as presenting novel points of structure, hereafter probably forming the types of new subgenera, or from the situations which they inhabit.

1. *Planaria*(?) *oceanica*.

PLATE V. fig. 1. Under-surface magnified.

Anterior extremity neck-shaped, with two ear-like processes.



1. *Planaria oceanica*.

2. *Planaria macrostoma*.

3. *Planaria incisa*.

4. *Diplanaria notabilis*.

Wm. del.



*Callithamnion Pollexfennii*.

Wm. del.

J.D.C. Sowerby. sc.



Ocelli, I believe, absent. Posterior extremity broadly rounded. Membranous margin of body jagged. Length  $\frac{2}{10}$ ths of an inch. Colour pale, uniform. Near the neck there is a quadrangular, internal, clear space, apparently lined by a membrane, within which there is a dark-coloured spot, and externally close by it an orifice, which the animal can dilate and contract at pleasure. Close behind this there is an internal oval space, within which there is a second dark spot united to a delicate vessel; I was unable to distinguish any orifice near this point: these organs form, I presume, the reproductive system. Close behind these organs there is a dark space formed by the union of eleven, branching, intestinal cavities, in the centre of which there is a longitudinal orifice situated rather behind the centre of the body. Through this orifice the animal can protrude a folding mouth-sucker: when it begins to unfold it is seen to be drawn into eight folds, as represented at (B).

*Hab.* Open ocean, lat.  $5^{\circ}$  S., long.  $33^{\circ}$  W. (February).

This I believe is the first instance of a species of this genus being found in the open sea, at the distance of 150 miles from the nearest part of S. America, and 80 miles from the small island of Fernando Noronha.

## 2. *Planaria*(?) *formosa*.

Body much depressed, oval. In the posterior half, on the under side, there is a very large alimentary orifice with folding lips (but apparently with no exsertile mouth-sucker), from which the two main intestinal cavities branch. Near the anterior extremity there is a minute orifice, and between it and the mouth a second orifice: these the animal can dilate and contract; they lie over an opaque, wedge-formed, internal mass, and form, I presume, two genital orifices. Back dotted with purplish red, with a central band of "vermillion-red," edged with white: this band sends off three branches on each side; at the extremity of each of the two anterior branches there is a longitudinal group of black ocelli, and before these two other circular groups, forming together four groups of ocelli. Length when extended half an inch. Inactive in its movements.

*Hab.* On corallines, at a depth of 30 fathoms, in southern Tierra del Fuego (December).

## 3. *Planaria*(?) *macrostoma*.

PLATE V. fig. 2. Under-side magnified.

External alimentary orifice situated in the posterior half of body: mouth-sucker nearly subcylindrical, bell-shaped, very long; when contracted within the body it lies in a serpentine position; when partly protruded it has the figure as represented; when fully extended it tapers only slightly from its mouth to its base, and is so long, that the animal can pass it from the under surface over the entire width of its back. Its base is united, in the middle of the body, to the three principal branches of the intestinal cavity; the two posterior branches unite and form a ring, enclosing the space in which the

mouth-sucker and its external orifice are situated. The three main branches receive the moss-like subdivision of the intestinal cavity, which reach all round nearly to the margin of the body. The main, medial, intestinal cavity ends at the anterior extremity in a small, opaque, wedge-formed mass; on each side of which, nearly on the dorsal surface, a black ocellus is situated. Between the lateral branches on each side of the medial cavity, seven or eight internal spherical cavities lie, including opaque balls, which I presume are immature ova; the anterior ones were most developed: they were not present in the smaller specimens, or in all the full-grown ones. I was unable to discover any genital orifice, though no doubt one or two exist: near the posterior extremity (at B) there was a colourless space, but I could not see any orifice. Anterior extremity square, truncate, with the edges thin and prehensile; the animal attaches itself by this part, almost like a leech with its sucker, and thus drags its body: posterior extremity broadly rounded. Above, faintly coloured brownish purple in striæ, with a colourless space over the alimentary orifice. Length  $\frac{2}{10}$ ths; breadth  $\frac{6}{100}$ ths of an inch.

*Hab.* Congregated in numbers under stones, in *brackish water*; Chonos Archipelago (west coast of S. America) (December).

The arrangement of the main branches of the intestinal cavity is the same as in the terrestrial *Planariæ*, with the exception of the two posterior branches being united near the extremity of the body into a ring, which structure I have not met with described in any other species. Hence this species probably ought to form the type of a new subgenus. I may here mention that I found amongst these islands an elongated marine species (with a very distinctly formed head placed on a narrow neck) which had the power of crawling either backwards or forwards,—a power I have never seen in any other species.

#### 4. *Planaria* (?) *incisa*.

PLATE V. fig. 3. Under-surface magnified.

Body oval, very much depressed, highly contractile; margin sinuous, anteriorly deeply indented, posteriorly less so. Ocelli very numerous and crowded together in several rows on the indented anterior (as is known by its progression) margin. Along the centre of the body an intestinal vessel extends, and in the middle of this (B) there is a well-closed orifice, through which the animal can protrude a thin, much-folded, sinuated mouth-sucker; this when fully expanded is quite as wide as the body. Posteriorly, on each side of the central vessel, there is a mass, apparently of immature ova. Near the posterior extremity there is a second subterminal orifice (D), through which, when the animal was placed in spirits, a little globular mass was protruded, like a small, much-contracted mouth-sucker. Near to the anterior extremity there are two slightly retractile paps with orifices, of which the anterior one is the largest. From this point diverging rays (intestinal cavities?) are sent off, which reach nearly

to the margin of the entire body: when the animal contracts itself, the back is raised in slight ridges, corresponding with these rays. This species, therefore, has four orifices on its under surface. Back finely reticulated with brownish purple. Length 1 inch; breadth three-quarters of an inch.

*Hab.* Under stones on the sea-beach, St. Jago; Cape Verd Archipelago (February).

This species is exceedingly active and irritable in its habits: it lives, like a *Nereis*, under stones firmly imbedded in the beach at low-water mark. It has the power of adhering with great tenacity to smooth stones: another allied species had the same power, could also swim well by a vertical movement of its body, and frequently rolled itself into a ball.

With respect to the four orifices: I presume, as in the *P. formosa*, the two anterior ones belong to the reproductive system. The central orifice undoubtedly is the mouth: the posterior one would naturally be thought to be the anus; but I am doubtful of this, considering the little globular body which was protruded through it, and from the existence in the following allied genus of a double mouth.

#### DIPLANARIA (nov. genus).

Alimentary orifice double, with two exsertile mouth-suckers. Two genital orifices in the posterior part of the body. A large forked ovarium (?). Ocelli in four groups, two superficial and two more deeply seated. The characters here given appear to me absolutely to require the institution of a new genus.

#### *Diplanaria notabilis.*

PLATE V. fig. 4. Under-side magnified.

Body very much depressed, with the edges very thin; anterior extremity thrice as broad as the posterior. On the under surface, towards the anterior extremity, there is a clear space, over which, on the back, the ocelli are situated; into this space, on all sides, the branching, clear, intestinal cavities enter. Each intestinal cavity generally bifurcates three times before its fine extremities reach the margin of the body. Towards the posterior extremity there is a second clear space (with the two orifices D and E), into which also the surrounding intestinal branching cavities enter; these two spaces are united by two longitudinal clear spaces (obscured by ovules in the drawing) passing on each side of the elongated, opaque, white, central organ. This organ, when the animal is contracted, has the appearance represented in the drawing, namely of an internal, elliptic mass, narrowing at each end, with deeply sinuated borders, and with two external, perfectly closed orifices over it, as shown at (B) and (C). But when these two orifices are opened, from both of them broad, shallow, saucer-like mouth-suckers are protruded, as represented at (F); these, when contracted within the body, appear united,

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and form a single, elliptic, sinuated body. These two mouth-suckers are quite similar; they are much shallower than those of any other species of the family which I have seen; their membranous edges are very thin, narrow, transparent and sinuous: in the act of contraction they become folded in a complicated manner, like the bud of a flower. I was able easily to dissect them out of the body, and they retained, in the characteristic manner described by Dugès, and as in the terrestrial *Planariæ*, an extreme degree of irritability and contractile power, long after the rest of the body had ceased to live.

In the elliptic space surrounding the two mouth-suckers when contracted, and between the mouths of the lateral, branching, intestinal cavities, innumerable ova are arranged in groups, from two to four in each; these are represented in the drawing only by double dots. These ova were easily separated; they are spherical,  $\frac{3}{300}$ ths of an inch in diameter, and contain a central opaque mass. In the posterior clear space there are two minute, but quite distinct, orifices (D and E), which I do not doubt are the reproductive pores: into this clear space a large fork, filled with opaque white matter, enters, as is shown in the drawing; this matter consists of minute, white globules in chains, imperfectly united together: I believe these are immature ova, and hence I suppose that the fork is the ovarium, from which the ova pass into the clear spaces surrounding the mouth-suckers and are there matured.

The ocelli are black and circular, and are arranged in four groups, two of which are round, and two in elongated bands inclined to each other: the ocelli in the bands are not seated on the dorsal surface, but deep within the body, near the ventral surface. Colour pale "tile-red," darkest on the dorsal ridge, with colourless spaces over the genital orifices and over the ocelli. Length  $\frac{5.5}{100}$ ths of an inch; breadth of anterior part of body  $\frac{5}{10}$ ths; of posterior part  $\frac{1}{10}$ th of an inch.

*Hab.* Under stones in tidal pools, Chonos Archipelago (Western S. America) (December).

This animal is very active, can crawl quickly, and can swim well by the movements of its thin marginal edges: it can adhere firmly to stones.

This is the most complicated and singular form of the large family of *Planariæ* which I have seen or met with described. The presence of two alimentary orifices and two mouth-suckers is another and interesting point of affinity between the *Planariæ* and the true parasitic worms, in which the number of mouths so often exceeds one. I believe that the presence of the large forked ovarium, and of groups of ocelli situated at different depths, are peculiarities of structure confined to this genus. If the small mass protruded from the posterior orifice (D) of the *Planaria* (?) *incisa* was really a small contracted mouth-sucker, this species is closely allied to our present new genus; with the chief difference of the two genital orifices being near the anterior, instead of the posterior extremity.

I will conclude by remarking, that the family of *Planariæ* is most widely diffused, and is adapted to the most different stations: on the land, it is adapted to forests and plains, in hot, temperate, and dry climates; in water, under all latitudes, to fresh, brackish and salt, on sea-beaches, at the depth of 30 fathoms, and in the open ocean.

XXX.—*Catalogue of Irish Entozoa, with observations.* By O'BRYEN BELLINGHAM, M.D., Fellow of and Professor of Botany to the Royal College of Surgeons in Ireland, Member of the Royal Zoological, Geological and Natural History Societies of Dublin, &c.

[Continued from p. 165.]

#### Genus 17. BOTHRIOCEPHALUS.

(Derived from *βοθρίον*, *fovea*, and *κεφαλή*, *caput*.)

*Gen. Char.*—Body long, flat, soft, and articulated. Head subtetragonal, with two or four opposite depressions.

THE genus *Bothriocephalus* was established by Rudolphi, and has been adopted by all zoologists since. Previous to his time the species were confounded with those of the genus *Tenia*.

The species are common in fish and birds, more rare in the mammalia, and very rare in reptiles; they usually inhabit the alimentary canal, sometimes the abdominal cavity. The genus is not very numerous in species, only thirty-four being enumerated by Rudolphi, of which ten are doubtful. He has arranged them in two subdivisions; in one the head is armed, in the other this part is naked or unarmed.

#### A. INERMES.

##### a. *Dibothrii*.

1. *Bothriocephalus latus* \*.. Small intestines of man (*Homo*).
2. ————— *claviceps*. Intestines of eel (*Anguilla acutirostris*).

\* We are indebted to Bonnet for the first description approaching to accuracy of the *Bothriocephalus latus*; but it is only within a few years that its zoological characters have been properly understood, and we are indebted to Bremser for having first determined these, who removed it from the genus *Tenia*, to which it had long erroneously been supposed to belong.

The *Bothriocephalus latus* is the only species of the genus which inhabits the human intestines, and it has received a number of different names. It is the *Tenia lata* of Linnæus, Pennant and Turton; the *Tenia* 'articulos non demittens' and the *Tenia* 'à anneaux courts' of earlier writers; the *Tenia vulgaris* and *Tenia grisea* of others; the *Tenia inermis humana* of Brera; the *Tenia osculis superficialibus* of