

triangular-ovate bluntly-pointed spreading segments of the limb. Anthers cordate-ovate, apiculate. Corona closely adpressed to the corolla; its processes rather shorter than the tube of the corolla, broad, adpressed, deeply notched: the lobes diverging, truncate and fimbriated; separated by narrow linear interspaces, which occasionally extend almost to the base of the corolla, but usually the corona is continuous throughout half its length. The form of the summit of the coronal processes will be seen to vary considerably, but always retains a general outline very different from that of any other species with which I am acquainted. Germen roundish. Styles seated upon elevated prominent tubercles. Stigmas simple.

Introduced from the East Indies with the seed of *Melilotus officinalis*, upon which plant it preys.

EXPLANATION OF PLATE I.

Fig. 1. *Cuscuta approximata*, Bab.

a. The growing plant.

b. Clusters of flowers.

c. The calyx with an unopened corolla. Magnified.

d. An expanded flower. Magnified.

e. The corolla greatly magnified and laid open in order to show the structure and proportions of the corona.

e'. Slightly different forms of the corona observed in other specimens.

f. The germen.

Fig. 2. *Cuscuta Epithymum*, Murr.

c, d, & e. The calyx, expanded flower, and the corolla laid open, showing the corona.

Fig. 3. *Cuscuta Trifolii*, Bab.

c, d, e & f. The same parts as before.

II.—*Miscellanea Zoologica*. By GEORGE JOHNSTON, M.D., Fellow of the Royal College of Surgeons of Edinburgh.

[Continued from vol. xv. p. 148.]

[With a Plate.]

Class ANNELIDES. Order ERRANTES. Family NEREIDES.

Section NEREIDES NON-TENTACULATE.

No tentacular cirri: the antennæ rudimentary.

Genus POLLICITA*, *Johnston*.

CHAR. *Body* serpentiform: *head* rather indistinct, with three small frontal antennæ: *eyes* four: *proboscis* large, without jaws,

* This worm has been already published under the name of *Bebryce Peripatus* (Thompson's Rep. on the Fauna of Ireland, p. 273), but, having discovered that the generic name has been used by Philippi, I am under the necessity of changing it.

the orifice naked : *segments* numerous : *branchiæ* in the form of a globular tubercle over each foot, which is uniramous ; the *bristles* simple : *tail* truncate, without styles.

OBS. The relations of this genus are rather obscure. To *Nephtys* and *Glycera* it may be considered to approximate in the rudimentary state of the antennæ, but in all other respects there is too great a dissimilarity to allow us to consider them as very nearly affined. The branchial tubercles over the feet might suggest a comparison with *Phyllodoce*, but there is no structural resemblance ; the lamellæ in *Phyllodoce* being merely modifications of the superior cirrus, moveable and jointed at the base, and acting as a kind of oar in the animal's locomotion, while in *Pollicita* they are branchial only, being immoveable, and of no use or applicability as locomotive organs. The difference in internal structure is equally great, for in the one genus the organ is veined with the ramifications of the blood-vessels, while in this it is very distinctly areolar. I have seen one species only, which may be named—

1. *P. Peripatus*. Plate II. fig. 1—6.

Hab. In deep water amid corallines, &c. Berwick bay.

I have seen several Irish specimens in the collections of Mr. W. Thompson of Belfast.

DESC. Worm about 2 inches long, very slender, narrowed towards both extremities, almost cylindrical, of the usual yellowish-brown colour, roughish : *head* small, indistinctly separated from the following segment, longer than broad, rounded in front, where there are three unjointed *antennæ*, the medial nearly as long as the lateral ; on the sides of the head there are besides a few minute fleshy papillæ, and the feet advance on each side rather before the eyes, which are placed unusually backwards : *eyes* small, four, the anterior pair most approximate : *mouth* inferior : *proboscis* exsertile, large, smooth, emandibulate, the orifice plain : *segments* numerous, about the length of their own diameter, each of them furnished with a globose lamella or branchial tubercle on each side placed over and above the foot, immoveable, unjointed, smooth, with a small papillary tip : *feet* about sixty pairs, one pair to every segment, conoid, uniramous, papillary, not projecting beyond the branchiæ when at rest, but capable of being protruded beyond them, armed with four or five bristles and a spine ; the *bristles* simple, sharp, curved like a hedge-knife, altogether retractile : the *skin* is covered with minute papillæ or granules, only visible under a high magnifier : *anal segment* truncate, without styles, but on each side there is a mammillary foot, which is larger than the penultimate, and, like it, appears to be destitute of bristles.

The specific name attached to this worm was suggested by the resemblance it has to the *Peripatus juliformis* of the Rev. L. Guilding (Zool. Journ. vol. ii. pl. 14). It is slow in its motions. In some positions what appeared to be a minute antenna was visible on the top of the head, and such as our figure represents it, but of its real nature I could not satisfy myself, and the appearance may have been produced by a mere fold, or possibly by some refraction of the light. The areolated structure of the branchiæ seems to be peculiar; and a foot bristled with papillæ is a very rare formation among the *Annelides Errantes*.

PLATE II. fig. 1. *Pollicita Peripatus* of the natural size. Fig. 2. The same highly magnified. Fig. 3. The anterior portion of the body from below, to show the situation of the mouth and proboscis. Fig. 4. A few segments from nearly the middle of the body. Fig. 5. A single foot and branchiæ to show their structure. Fig. 6. Three of the branchial globes separate from the feet.

The figures were taken from a specimen that was only eight lines in length. The larger specimens were from the Irish coast.

Family EUNICÆ.

ONUPHIS TUBICOLA.

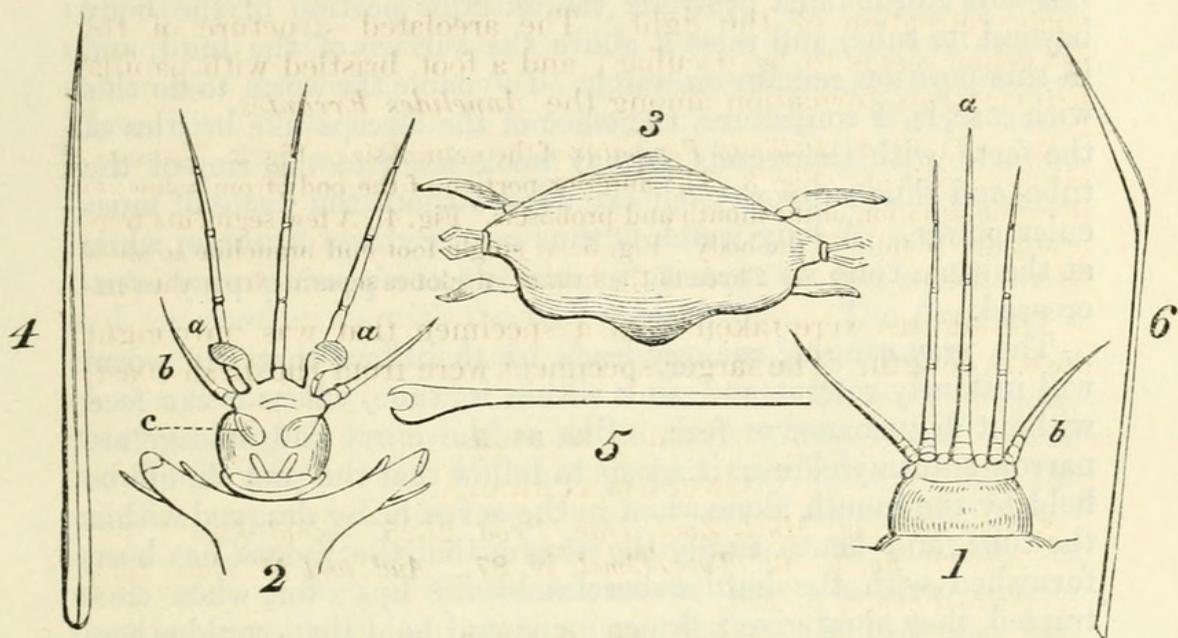
Nereis tubicola, Müll. *Zool. Dan. Prod.* 2625. *Zool. Dan.* i. 18. tab. 18. fig. 1—6. *Turt. Gmel.* iv. 87. *Aud. and M. Edw. Litt. de la France*, ii. 154.

I am indebted to Mr. C. W. Peach for my specimen of this worm. It has lost the posterior half of the body, but what remains is in excellent preservation, and will enable us to supply some deficiencies in the figures and description of Müller, which are very good so far as they go.

The shape of the body is similar to the *Nereis*, and composed of numerous homologous segments; it is somewhat compressed, but convex or rounded on both dorsal and ventral surfaces, which are smooth and polished. The colour appears to have been a uniform yellowish-brown.

The *cephalic segment* (for it can scarcely be recognised as a head) is very narrow, even behind, but tri-sinuated in front, and in each sinus there originates a long awl-shaped *tentaculum* (wood-cut, fig. 1 *a*), the three being of nearly equal length. They are smooth but annulated, the three basal joints very distinct and short, the others less distinct, elongate, and rather irregular. At the base of the tentacula are the *eyes*, which appear to be four in number, but they are so obscurely marked that the two outer ones may possibly be only dark spots. Underneath the tentacula and partly concealed by them are the *antennæ* (fig. 2 *a a*), which are minute organs reminding us of the antennæ of some beetles, having a short moveable pedicle with a clavate head. They arise from the rounded front margin.

The *mouth* is inferior, and so concealed that it can be seen only from the ventral aspect. The wide undefined orifice is surrounded by a thick *lip*, the upper lip being formed of two comparatively large egg-shaped tubercles (fig. 2 *c*); and within the under lip there are two processes like palpi. From the external side of the



anterior tubercles there arises, on each side, a *tentacular cirrus* (figs. 1, 2 *b*), similar to the tentacula in all respects, and projected in the same direction, but only one-third of their length.

The *proboscis* is armed with several small dark corneous jaws, denticulated on the inner side, and arranged in two rows, in the same way as in the genus *Eunice*. See Aud. and Edw. Litt. de la France, pl. 3. fig. 11.

The *occipital segment* has no appendages. The segment behind is nearly of the same size, but those which follow are narrower, the length being about one-third of the transverse diameter. Above and below the foot there is a *cirrus* (fig. 3). On the anterior segments the superior cirrus does not project beyond the foot, but it becomes considerably longer on the posterior, and is simple on all of them, with a joint at the base. The *foot* is formed of a tubercle and sheath, armed with bristles collected into two fascicles. Each fascicle is furnished with a *spine* (fig. 4), with two *forceps* (fig. 5), and with many lanceolate *bristles* curved at the points (fig. 6) and very sharp, with a double edge at the point of curvature. I have not before met with a worm furnished with forceps-like bristles; and none of the kind are figured by Audouin and Edwards.

The worm lives in a tube which has a singularly exact resem-

blance to the barrel of a dressed quill. It is about three inches in length; and the superior portion is thinner than the lower, which is very tough and not easily cut with a knife. I made a vain attempt to form it into a pen.

Let us see if, in its curious structure, we can find a key to the habits of the animal. We learn from Müller that it lives in soft mud, and one unceasing object of its life is the capture of prey. For this end it must protrude the anterior portion of the body beyond its tube, and raise it above the surface of the mud, and in this position remain on watch. To enable the worm to do this with ease, is, I conjecture, the office of the forceps-like bristles of the feet: with their ends it may hook itself to the rim of the tube, and thus support itself extended without the waste of muscular power. A long watch is thus rendered less irksome, while at the same time its capacity to seize upon a passing prey is increased.

The prey caught, analogy leads us to believe that the worm will instantly retreat and sink within its tube, where it can feed without disturbance or fear. But as the entry and passage are narrow and unyielding, it seems to follow that the prey should be held by the mouth alone when in the act of being dragged within the tube, and hence surely the reason that the mouth has been furnished with the hard tubercles to the lips; for, when contracted, they must give a firmer gripe and hold than could otherwise be taken.

The use of the tube is to protect the body from the pressure of the soft mud in which it stands immersed. When the tube is overset or cast out by the waves or accident, the worm leaves it, and becomes, in its turn, exposed to enemies. To protect itself from these while a new tube is being secreted, nature has amply furnished the *Onuphis* with a series of bristling lances on each side. These arms are of exquisite make, very fine and very sharp; and those of the upper bundle have their points bent and inclined towards those of the lower bundle, which are likewise bent to meet them. Do examine a foot under the microscope, and I defy you not to admire them: and your wonder will increase when you consider that a complex mechanism is also provided by which these polished instruments can be drawn within their sheaths, and pushed forwards and beyond at will. I can easily suppose that the wounds they inflict upon the tiny assailants of the *Onuphis* are severe and painful; but worms are too retentive of life to permit us to believe that the repulsed foe ever dies of them.

Family APHRODITACEÆ.

Genus SPINTHER, *Johnston*.

CHAR. Body oval, exannulate, scaleless, acephalous; antennæ

——— ? ; eyes none ; proboscis emaxillary : feet very numerous, all alike, uniramous, and all furnished with an inferior cirrus.

1. *Spinther oniscoides*. Plate II. fig. 7.

“Dredged off Castle Chichester (Belfast Bay) Aug. 26, 1844, in 6—10 fathoms, Mr. Hyndman,” *W. Thompson*.

DESC. Body ovate, convex dorsally, flat on the ventral surface, of a uniform cream-yellow colour, rounded and obtuse at both extremities, which are so much alike, that, without a close examination, the anterior is not to be distinguished from the posterior. There is no head, tentacula nor tentacular cirri. With a common magnifier we perceive that the back is crossed by numerous (about thirty) narrow roughish edges (fig. 8), the roughness being produced by a series of minute bristles which scarcely protrude beyond the skin : the ridges are regular and equidistant, and are continuous with the feet on each side. The *feet* form a close-set range round the body, interrupted only in front by a very narrow fissure in which the mouth is situated. They are all alike, short and equal, formed of a single thick stump armed with a bundle of bristles (fig. 10) that project very little beyond the margin, and are all glued together by a sort of albuminous membrane. There did not seem to be any cirrus above the foot, but at the root of each of them underneath there is a *cirrus* shorter than the foot itself, and with a large bulb at the base (fig. 11). The *bristles* are of three kinds : viz. (1.), the spinous (fig. 12), sharp and fashioned like a needle ; (2.), the forked (fig. 13), which are filiform with a bulbous root, and cut into two scarcely equal prongs at the apex ; and (3.), the clawed (fig. 14), a bristle which has a stem slightly incrassated upwards, where a strong curved and sharp claw is articulated by an oblique joint. The forked bristles are the most numerous ; and I did not observe more than one clawed bristle in each foot, but there were two or three from which the claw appeared to have been broken away. There are no anal styles.

For the only specimen of this singular worm that I have seen, I am indebted to Wm. Thompson, Esq. of Belfast. It is half an inch in length, with a breadth fully one half of the long diameter. It has at first glance more resemblance to a *Doris* than to any Annelide ; and when it was placed under a common magnifier, it was compared, aptly enough, to the *Cypræa europæa*, the comparison being suggested by the similarity in the ridges that cross the back.

The description, I am aware, is in several respects imperfect, but from the distinctness of the worm as a species, it is assuredly sufficient for its future recognition. Observations on living individuals seem necessary to ascertain the number and nature of

the oral appendages. That it is a member of the *Aphroditaceæ* no one can doubt, although it possesses few of the technical characters by which that family has been hitherto defined. It has no near ally in the family. In common with the *Palmyre*, the back is naked or destitute of scales; but there is nothing else in which the two genera agree.

PLATE II. fig. 7. *Spinther oniscoides* of the natural size. Fig. 8. The dorsal aspect viewed through a common magnifier. Fig. 9. A view of the ventral surface. Fig. 10. Two feet detached and viewed from the back. Fig. 11. A foot as seen from below. Figs. 12, 13, 14. The bristles.

[To be continued.]

III.—On the British Desmidiæ. By JOHN RALFS, Esq.,
M.R.C.S., Penzance*.

[With a Plate.]

Didymoprium, Kütz.

Filaments elongated, gelatinous, fragile, cylindrical or subcylindrical, with a bidentate process or angle on each side of the joints.

The filaments are elongated, simple, jointed, gelatinous and very fragile, and finally separate into single joints; each joint has two opposite, bidentate angles or processes. Hence the margins of the filaments are crenate, and as it is regularly twisted it not only appears of unequal breadth, but the form of its joints also varies as more or less of the angles is seen at the margin; in short, as they are at one time fully visible and at length entirely disappear.

For synonyms, habitats, and description of the species, I must refer to my former article on *Desmidium*.

1. *D. cylindricum*, Ktz. Filaments subcompressed, inclosed in a distinct mucous sheath; joints broad as long. Kütz. Phy. Gen. p. 165. *Desmidium cylindricum*, Annals of Nat. Hist. vol. xi. p. 373. pl. 8. fig. 1; Menegh. *l. c.* p. 204.

PLATE III. fig. 4. *Didymoprium cylindricum*, joint dividing into two.

2. *D. Borreri*. Filaments cylindrical, not inclosed in a sheath; joints inflated, twice as long as broad. *Desmidium Borreri*, Annals of Nat. Hist. vol. xi. p. 375. pl. 8. fig. 4.

Additional habitats. Ashdown Forest and near Battle, Sussex, Mr. Jenner; Ireland, Mr. Andrews.

PLATE III. fig. 5. *Didymoprium Borreri*, joints dividing.

Glæoprium, Berk. (*in lit.*)

Filaments elongated, simple, cylindrical, very gelatinous; joints

* Read before the Botanical Society of Edinburgh, July 11, 1844.



Johnston, George. 1845. "Miscellanea Zoologica." *The Annals and magazine of natural history; zoology, botany, and geology* 16, 4-10.

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