

XXIV.—*Miscellanea Zoologica*. By GEORGE JOHNSTON, M.D., Fellow of the Royal College of Surgeons of Edinburgh. With Plates VI. and VII.

THE BRITISH NEREIDES.

[Continued from vol. iii. p. 295.]

2. PHYLLODOCE*, *Savigny*.

CHAR. *Body* linear-elongate, with numerous segments: *head* distinct: *proboscis* thick, clavate, the orifice encircled with papillary tentacula: *no jaws*: *antennæ* frontal, small, four or rarely five: *eyes* two: *tentacular cirri* four on each side, unequal, setaceous: *feet* uniramous, overlapped with a leaf-like veined cirrus: *bristles* setaceous, slender, jointed: *no branchiæ*: posterior extremity terminated with a pair of short fleshy *styles*.

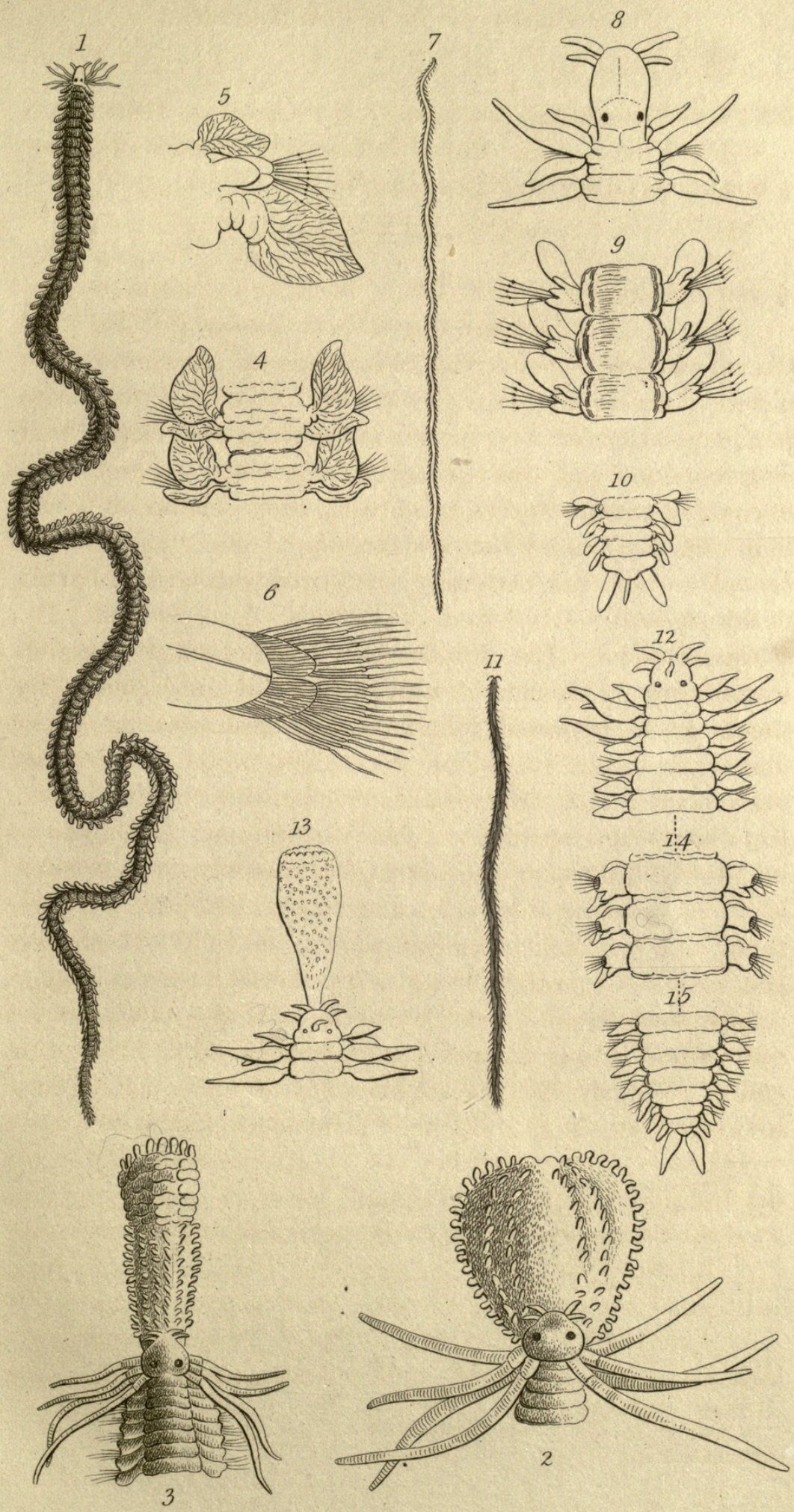
Observations. The Phyllodoces are the most beautiful worms† among the Nereides, and are readily distinguished by the series of compressed foliaceous lamellæ, originating immediately above the insertions of the feet, which garnish the sides of the body. The peculiar office of these organs is conjectured to be respiratory‡, but they also aid the animal in its progress through the water, for, following the motions of the feet and capable of being partially altered from a horizontal to a perpendicular position, they act as a bank of oars, and must be especially useful when the worm glides from a solid surface, and finds itself unsupported in the water. Hence the species are quick and lively, and swim with considerable ease§. We have found them buried occasionally in light sand between tide marks; but they principally reside in deeper

* The name of a sea-nymph, of the train of Cyrene.—Virg. Georg. iv. 336. It is synonymous with the *Nereiphyllæ* of Blainville, but not with the *Phyllodoce* of Ranzani. A genus of plants has been named *Philodice*, and to those who think it against the canon to give the same name to any subjects of Fauna and Flora, this might be a reason to prefer the nomenclature of Blainville.

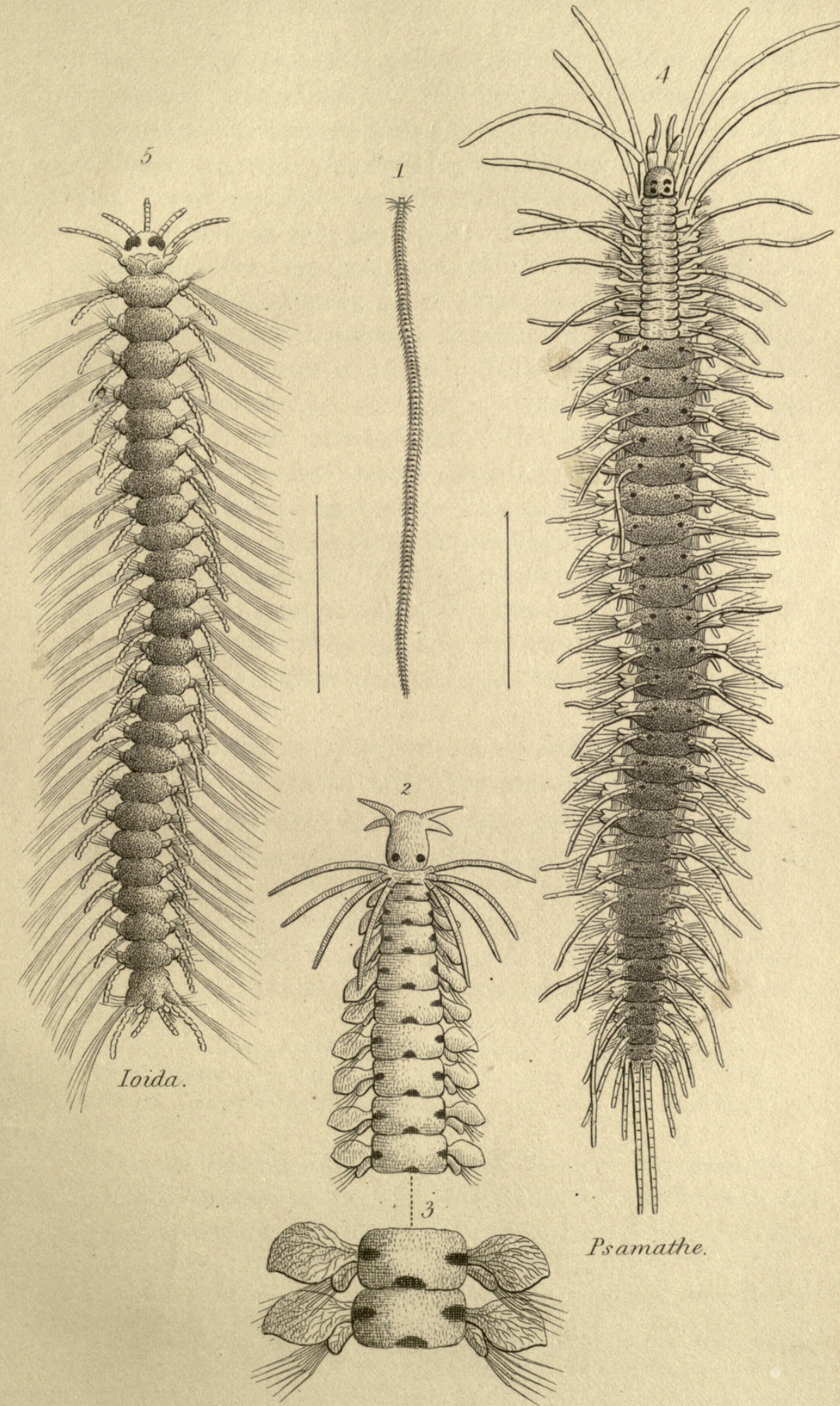
† “*Virgines pulcherrimæ inter Nereides.*”—*Otho Fabricius*.

‡ Cuv. Reg. Anim. iii. p. 202. It would be wrong to overlook their resemblance to the branchiæ in the larvæ of the Ephemerides: see Reaumur, Hist. des Insect. vi. p. 468, pl. 45, fig. 2.

§ “*Currit egregie; natare etiam valet lamellis suis retroversis oblique sursum erectis.*”—*Fabr. Faun. Grœnl.* p. 298.







Iorda.

Psamathe.

British Nereides.



water amid the roots of corallines and the shells of mollusca and sedentary annelidans *. The body is much elongated and proportionably slender, composed of a numerous succession of similar segments, narrowed gradually towards each extremity, more especially towards the posterior, which is terminated by two short fleshy styles. From the mouth is protruded at will a large proboscis, divided into two rings by a fold sometimes scarcely visible (Plate VI. fig. 3.); the under half on the whole roughened with fleshy papillæ arranged in rows, while a series of larger papillæ encircles the orifice. There seem to be two eyes only †, occipital in position and larger than in the allied genera. The front of the head is armed with four small simple antennæ; and on each side of the post-occipital ring there are two pairs of unequal tentacular cirri, jointed at the base, and usually kept retroverted when the creature is at rest. The feet are rather small, uniramous, furnished with a single spine and a brush of very elegant, slender bristles, divided by a joint near the middle into two portions, of which the terminal one is as sharp as the finest needle. (Plate VI. fig. 6.)

In the *Phyllodoce* the blood is not red as in the great majority of the Annelides, but yellowish or colourless ‡.

1. *Ph. lamelligera*, of a dusky-olive or sometimes oil-green; the colour often confined to the margins of the segments. (Plate VI. fig. 1—6.)

Nereis lamelligera, *Turt. Gmel.* iv. p. 90. *Turt. Brit. Faun.* p. 135. *Penn. Brit. Zool.* iv. p. 96. *Bosc, Vers.* i. p. 173. *Jameson in Wern. Mem.* i. p. 557.—*Phyllodoce gigantea*, *Johnston in Zool. Journ.* iv. p. 53.

Hab. Sometimes found at low-water mark, but more common among the refuse brought up on the lines of the fishermen. Deep water in the Frith of Forth, brought up by the oyster-dredges, *Dr. Neill*. Common in Berwick Bay.

DESC. *Body* 14 inches long, linear-elongate, somewhat compressed, tapered at the tail, smooth, dusky with blueish and greenish shades reflecting a metallic lustre, the branchial leaf-

* Audouin and M. Edwards, *Litt. de la France*, i. p. 237.

† According to Lamarck four, "mais les postérieurs sont peu apparens."—*Anim. s. Vert.* 2de édit. v. p. 556.

‡ Lam. *Anim. s. Vert.* 2de édit. v. p. 556. *Ann. des Sc. Nat.* n. s. x. p. 197.

lets generally clouded in the centre with a dark undefined spot. *Head* quadrangular; the *proboscis* covered, on its lower half, with fleshy papillæ arranged in about twelve rows; *eyes* black; *antennæ* very short, conical. *Segments* very numerous, the post-occipital not larger than the following, bearing on each side four rather short setaceous *tentacular cirri*, of which the two anterior are shorter than the posterior pairs, and under these there is a concealed rudimentary cirrus: *feet* all alike, the *superior cirrus* forming an obliquely heart-shaped shortly stalked leaflet, veined, entire, smooth; the *inferior cirrus* is similar in structure and nearly so in figure, but it is about two-thirds less: between them is the proper *foot*, not very protuberant, armed with a brush of bristles disposed in a somewhat semicircular manner, having a single straw-coloured spine in their middle: the *bristles* are slender, pellucid, jointed, the joint being cleft for the reception of the needle-like point: posterior extremity terminated with two very short fleshy *styles*.

This species is said to attain sometimes a size considerably greater than that of the specimen just described, but on this part of the coast one of 14 inches length is rare, while examples varying from 4 to 8 inches are not uncommon. It is liable to much difference in the tints of its colour, and the green often predominates, while in young individuals the colour is not diffused over the segments, but confined to their margins, which are dusky, while the centre may be a pale yellow. In these also the spots in the centre of the branchial leaflets are usually well-marked. These are liable to be slightly affected in their form by the motion and contractions of the worm; and near the tail they always incline more to the oval than the heart-shape. The proboscis is either clavate or cylindrical, according to its degree of protrusion. The worm tints the spirits in which it is preserved with a greenish colour: the body becomes blueish- or greenish-grey, and the lamellæ a uniform olive.

Plate VI. fig. 1. *Phyllodoce lamelligera*, of the natural size. Fig. 2. The head and proboscis, as this appears when half extruded, magnified. Fig. 3. The proboscis fully protruded. Fig. 4. Two segments magnified. Fig. 5. A lateral view of the foot reversed. Fig. 6. The setigerous papilla with its bristles and spine.

2. *Ph. maculata*, the body marked with dark-brown spots in three rows; branchial leaflets somewhat heart-shaped. Plate VII.* fig. 1—3.

Nereis maculata, Linn. *Syst.* 1086. *Mull. Zool. Dan. prod.* p. 217. *Bosc, Vers.* i. p. 171.—*Phyllodoce pulchra*, Johnston in *Zool. Journ.* iv. p. 54.

—The figure of *Baster* (*Opusc. Subs.* i. p. 14. tab. iv. fig. 1.) may possibly be intended for a representation of this species.

Hab. The shore at and within tide marks. Frequent on the coast of Berwickshire.

DESC. Worm sometimes 4 inches long, slender, depressed, tapered a little towards each extremity, yellowish, with a row of dark-brown spots along the back, and the sides spotted with the same colour; ventral surface paler, with a median row of small rather distant spots, and a series of larger ones on each side at the base of the feet. *Head* bluntly pointed, armed in front with four white conical *antennæ*; *eyes* black. *Post-occipital segment* with four pairs of setaceous *tentacular cirri*, of which the two anterior are the shortest: on each side of the other segments there is an oval or somewhat heart-shaped *branchial lamella*, with a brown spot in its centre, and supported on a very short spotted stalk: beneath them are the feet, each *foot* consisting of two papillary processes, the superior furnished with a brush of retractile *bristles* of the usual character. Anal segment terminated with two short conical *styles*.

3. *Ph. bilineata*, slender, pale greenish-yellow, with a continuous dark line drawn down each side at the insertions of the feet. Plate VI. fig. 7—10.

Nereis maculata? *Fabr. Faun. Grænl.* p. 298. *Turt. Gmel.* iv. p. 88.

Hab. On oysters from Preston-pans in the Firth of Forth. Berwick Bay, rare.

DESC. From 2 to 3 inches long, very slender, serpentine, somewhat narrowed in front, more so towards the tail, of a pale greenish-yellow colour, with a dark continuous line along each side, rendered sinuous by the emarginations at the junction of the segments, which are numerous and quadrangular. *Head* ovoid; *eyes* two, placed backwards; *antennæ* four, unequal, placed in a stellate fashion round the orifice of the mouth: *tentacular cirri* rather short, unequal: *branchial la-*

* Pl. VII. will be given in the Supplement to the present volume.

mellæ ovate or elliptical, smooth, veined; the *inferior cirrus* short and papillary, not extending beyond the apex of the *foot*, which is slightly emarginate and armed as usual with a brush of slender jointed *bristles* and a single *spine*.

PLATE VI. fig. 7. *Ph. bilineata*, natural size. Fig. 8. The head. Fig. 9. The middle segments; and Fig. 10. The caudal extremity:—magnified.

4. *Ph. viridis*, body roundish, of a uniform grass-green colour; branchial leaflets lanceolate; antennæ five. Plate VI. fig. 11—15.

Nereis viridis, Linn. *Syst.* 1086. *Mull. Zool. Dan. prod.* 217, no. 2636. *Fabric. Faun. Grœnl.* 297. *Turt. Gmel.* iv. 88. *Turt. Brit. Faun.* 135. *Adams in Linn. Trans.* v. 8. *Bosc, Vers.* i. 171. *Pen. Brit. Zool. edit.* 1812, iv. 94.—*Phyllodoce clavigera*, *Aud. et Edw. Hist. Nat. du Litt. de la France*, ii. 226. *pl.* 5 a. *fig.* 9—13.

Hab. Found on *Fucus pinnatifidus*, near Tenby (Pembrokeshire), *Adams*. Berwick Bay abundantly, and I believe it to be common on most parts of the British coast.

DESC. Worm from 2 to 3 inches long, elongate and narrow, slightly tapered towards the head, more so at the tail, of a uniform duck-green colour, paler on the ventral aspect. *Head* small, narrowest in front, but not pointed, the apex armed with four short conical *antennæ*, and a smaller *antenna* is less perceptible on the vertex: *eyes* two*, occipital, dark brown: *mouth* with a large clavate *proboscis*, greenish, rough under the magnifier, with minute papillæ, edentulous: post-occipital segment with four *tentacular cirri* on each side, twice the length of the branchiæ, the anterior pair one half shorter than the others, conical, simple: *segments* very numerous, often defined by a line of deeper green, shorter than their breadth, smooth, convex dorsally: *branchial leaflets* (or superior cirri) lanceolate, slightly compressed, retroflexed, longer than the foot, which is furnished with a bundle of very slender retractile acicular bristles and with a single spine: *tail* terminated with two fleshy *styles*, similar to the leaflets, but rather larger.

P. viridis lives under stones, or in the crevices of slaty rocks, between tide marks; but it abounds most near low-water mark, nor is it uncommon among the corallines and shells that are never left uncovered by the tide. It is an active spe-

* Audouin and Edwards say four, disposed in a transverse line, and very small, but their figure shows two only.



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