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Note on a New Species of the Genus Nais.

By

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Oxford.

With Plate XXXIII.

IN a gathering from a ditch in the neighbourhood of Oxford I found several specimens of a species of *Nais*, which present features differing from those recorded for any species of which I have been able to find a recognisable description.

Nais heterochæta, n. sp., is a small worm about a quarter of an inch in length, of a dull brownish colour. I have not yet come across any sexually mature forms, or specimens exhibiting zones of budding; the number of somites varies from about thirty-one to about forty-one in specimens which I have observed from this point of view.

The dorsal bundles of chætæ have a characteristic composition, which the specific name is intended to indicate. Normally there are only two chætæ to a bundle—cases with three being very rare. These two chætæ are of different shape and size. (*a*) One is capilliform, but comparatively short, being $\cdot 165$ mm. in length, not as long as the body is broad; (*b*) is a small furcate or "crochet," measuring $\cdot 045$ mm. (fig. 2).

The length of the capilliform chætæ varies slightly in different regions of the body; those of the Somites VI and VII being shorter than the above length, and those of Somite XII exceeding it to a slight extent. They gradually increase in

length then up to Somite XII, then decrease for a few somites, and retain a normal length to the end of the body. In one or two specimens I noted that the dorsal chætæ of Somite VI consisted only of crochets, one on one side, two on the other side; in Somite VII there were two furcates and a short capilliform, only slightly exceeding them in length. It is, perhaps, needless to remark that the dorsal bundles are absent in the first five somites.

A comparison of my figure of these dorsal chætæ with those of Vejdovsky¹ shows that the shape of the chætæ does not agree with those of either of the species, *N. barbata*, *N. elinguis*, or *N. josinæ*, described by him.

In the last species, however, the dorsal bundles do contain crochets in addition to capilliforms; but not only do these differ from those of *N. heterochæta* in position of the "node," but also in the fact that two of them and two capilliform exist in a bundle, and in the relative size of the two.

Another point of difference—if the above be not sufficient—is the presence of eyes in my species, whereas they are absent in *N. josinæ*.

The ventral chætæ (fig. 3) are of the usual Naid shape; usually there are four in a bundle, rarely three or five. Those of Somites II, III, IV, and V differ slightly from the remainder in that the distal prong is rather longer than the proximal; whilst in the normal chætæ the two prongs are, as nearly as I can make out, equal in length, though the proximal prong is distinctly the stronger.

The blood is yellow, and the connections between the dorsal and ventral trunks (fig. 1) are peculiar. The two lateral branches into which the dorsal vessel divides in the prostomium, in front of the brain, unite in Somite V to form the ventral trunk; these are connected with the dorsal trunk by four pairs of vessels, each of which branches more or less irregularly, as will be understood better by a reference to the figure than by a description.² The arrangement is

¹ 'System und Morphologie d. Oligochäten,' pl. ii, figs. 18, 19, 26.

² These branches are accompanied by irregular patches of brown pigment

less regular than in *N. elinguis*, or *Bohemilla*, or *Paranais*, but more regular than in *N. josinæ*. One very peculiar feature, hitherto unrecorded, I believe, is the connection which exists between the branch *d*, in Somite v, and the "commissural" vessel *e* in Somite vi, which connects the dorsal and ventral trunks; the branching of this commissural vessel is also peculiar. The shape of the brain is utilised by Vejdovsky for determining species, therefore I have appended a figure of this organ in *N. heterochæta* (fig. 5); it will be seen to resemble somewhat the brain of *N. josinæ* (Vej., Taf. ii, fig. 28) in the constriction of the anterior lobes from the posterior, but in *N. heterochæta* this is more marked, and at the same time the shape of the posterior lobes is different.

With regard to the gut, the "stomach," or dilatation in Somite viii, is not nearly as marked as in other species, and more nearly resembles that in *Paranais littoralis*.¹

The pigmented covering of chloragogenic cells commences in Somite vi, and is continuous thence throughout the body till quite near the posterior end.

The nephridia present the peculiarity which has scarcely been sufficiently insisted upon by recent writers, though it has been recorded by Carter² and by Timm,³ that very usually there is in Naids only a single nephridium in some or all the somites. In the present species there is never more than one nephridium per somite; the nephridium is very long, and frequently the coiling tube occupies two somites, communicating by means of a funnel with a third somite (fig. 4). In this case, then, there is one nephridium in the place of four (a pair in Somite xi and a pair in Somite xii). In most of the somites the nephridium lies on the animal's right side. So far as I have been able to observe, in the living animal there

¹ See A. G. Bourne, "Notes on Naidiform Oligochæta," 'Quart. Journ. Micr. Sci.,' xxxii, Pl. XXVI, fig. 2.

² "Spermatology of New Species of Nais," 'Ann. Mag. Nat. Hist.,' ii, 1858, p. 1.

³ "Beob. üb. Phreoryctes und Nais," 'Arb. aus Zool. Inst. Wurzburg,' vi, 1883.

is no trace of the other nephridia. It will be an interesting point to look for in the developmental history of the genus—the suppression of nephridia; for Michaelsen has described certain earthworms, *Kynotus*, in which the nephridia are stated to occur in alternate somites. I have suggested elsewhere that an error in observation may perhaps have occurred, and that the external markings indicating “somites” are in reality annuli. But in *Nais*, of course, there is no question of annuli.

The first nephridium lies in Somite VII; the arrangement in following somites is subject to a good deal of variation.

The post-septal glandular region of the tube is of a different shape from that figured by Vejdovsky for *N. elinguis*, and more nearly resembles therein *N. josinæ* (Vej., pl. iii, fig. 4, *a*); but with regard to the terminal dilatation this species differs considerably from *N. heterochæta* (cf. my fig. 4).

EXPLANATION OF PLATE XXXIII,

Illustrating Mr. W. Blaxland Benham's “Note on a New Species of the Genus *Nais*.”

FIGS. 1—5 illustrate specific characters of *Nais heterochæta*, n. sp.

FIG. 1.—The vascular system of the anterior somites. *D. v.* Dorsal trunk. *lat.* The two branches from the dorsal trunk which unite to form the ventral trunk (*V. v.*). *a, b, c, d.* Vessels more or less branched, passing from dorsal to lateral vessel. *e.* A commissural vessel from dorsal to ventral trunk, also branched.

FIG. 2.—A dorsal bundle of chætæ, consisting of one capilliform and one furcate chætæ.

FIG. 3.—A ventral chætæ.

FIG. 4.—A nephridium, showing its extension into two somites. *sept.* Septum. *a.* Granular post-septal region. *b.* Muscular (?) duct. *f.* Funnel.

FIG. 5.—Brain. *com.* Origin of œsophageal commissure.

