

5. On some Aquatic Oligochæτους Worms. By  
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In the following remarks I propose to bring together a few notes upon certain aquatic Oligochæta which I have had the opportunity of examining during the last year.

i. On a Species of *Dero*.

Our principal knowledge of this genus is due to Perrier<sup>1</sup> and to Stölc<sup>2</sup>. A recent paper by Bousfield<sup>3</sup> is mainly devoted to discriminating the species, though it contains a brief *résumé* of the structure of the genus *Dero*.

I have recently been studying a species which I cannot identify certainly with any known form; my failure to identify it is largely due to the fact that the differences in the vascular system of different species have not been worked out. Only in two, viz. *D. perrieri* and *D. digitata*, has the vascular system been described; and as these two show dissimilarities, it is at least possible that the remaining species do also. In any case, the *Dero* at which I have worked differs from both these species. According to Perrier, *Dero perrieri* has three pairs of contractile perivisceral trunks in segments vi., vii., and viii. Behind the viii<sup>th</sup> segment the dorsal vessel is not directly united with the ventral.

Of *Dero digitata*, Stölc says, in the French abstract with which his paper concludes, "Il y a toujours deux vaisseaux latéraux dans chaque anneau suivant jusqu'au treizième anneau (si l'animal est complètement développé). Dans les anneaux postérieurs les anses vasculaires remplacent les vaisseaux latéraux." I cannot, I confess, quite understand the distinction which is here drawn between the two kinds of perivisceral trunks; unless, indeed, it is meant that the anterior series are contractile. As Dr. Stölc's paper is in Bohemian I am unable to say whether this is stated.

The *Dero* examined by myself is a small species about a quarter of an inch in length. Like other *Deros* it fabricates a tube, which was always in the interior of half-decayed stems of plants; the stems had to be carefully torn up with needles to liberate the worms<sup>4</sup>. The number of segments varied from 16 to 52. The characters of the setæ call for no comment; the branchial processes most resemble those of *D. limosa*.

The vascular system is remarkable for the fact that there are six pairs of contractile lateral vessels in segments vi.-xi. Those of

<sup>1</sup> "Histoire naturelle du *Dero obtusa*," Arch. Zool. Exp. t. i. p. 65. Bousfield points out that the species investigated by Perrier is not *Dero obtusa*, but a new form for which the name *D. perrieri* is suggested.

<sup>2</sup> "*Dero digitata*," O. F. Müller &c., SB. böhm. Ges. 1885, p. 65.

<sup>3</sup> "The Natural History of the Genus *Dero*," J. Linn. Soc., Zool. vol. xx. p. 91.

<sup>4</sup> Bousfield mentions this habit in *D. furcata*.

segments viii. and ix. are wider than the others; the pair of segment vii. are hardly of less calibre; the other contractile lateral vessels are decidedly thinner. The non-contractile perivisceral vessels were obvious in the posterior segments of the body. The first pair of "hearts" each give off a slender branch, which runs forward in the direction of the pharynx. I did not find a corresponding branch to arise from the following "hearts."

The "stomach" is in segments x. and xi.; the wider part of the intestine commences in segment xiv., but there was some variability in this point. In some individuals I could recognize no narrow œsophagus following the "stomach." The lattice-work of blood-vessels upon the alimentary tract was in many specimens very clear. On the "stomach" this was particularly so, and I found a longitudinal trunk, such as Stolc has figured in *Nais*, on one side; the nephridia vary much as to the segment where they begin. Perrier mentions the sixth segment, so too does Bousfield. In the first individual which I examined they were apparent from the viii<sup>th</sup> segment; in another they did not begin until the xi<sup>th</sup> segment; in a third the ninth segment contained the first pair.

#### ii. *Note upon Pristina longiseta.*

In a valuable paper upon the Naidomorpha, published in a recent number of 'The Quarterly Journal of Microscopical Science,' Prof. A. G. Bourne<sup>1</sup> remarks of *Pristina longiseta*, "This species has been recently re-described by Vejdovsky. I have not seen it, nor has it, so far as I know, ever been recorded from England."

Having lately had the opportunity of examining a specimen, I offer the following remarks upon it. Firstly, its occurrence in England is of interest. There is no doubt, however, that the small number of aquatic Oligochæta hitherto recorded from Great Britain is simply due to the fact that they have not been looked for. The worm has been figured by Leidy<sup>2</sup>, d'Udekem<sup>3</sup>, and Vejdovsky<sup>4</sup>. Neither d'Udekem nor Tauber<sup>5</sup> appear to have known of Leidy's paper. Vejdovsky does not refer to it in the list of synonyms of *Pristina longiseta*, but does mention both the paper and the species, without comment, under the description of the family Naidomorpha; in the table of known species of Naids and their distribution Vejdovsky does not cite N. America as a locality for *Pristina longiseta*. The double omission therefore leads me to the opinion that Vejdovsky was not certain as to the identity of the species termed by himself and Leidy *Pristina longiseta*. Vaillant, moreover, considers that the identity of the two is not fully established; the only difference, however, to which he calls attention is a difference of

<sup>1</sup> "On the Naidiform Oligochæta, &c.," Q. J. M. S. vol. xxxii. p. 352.

<sup>2</sup> "Descriptions of some American Annelida Abranchia," J. Ac. Nat. Sci. Philad. vol. ii. p. 44.

<sup>3</sup> "Nouvelle Classification des Annélides Sétigères Abranches," Bull. Ac. Roy. Belg. t. xxii. p. 552.

<sup>4</sup> System und Morphologie der Oligochaeten: Prag, 1884, p. 31.

<sup>5</sup> Annulata Danica, 1879, p. 73.

size. Leidy's specimen measured 1 line (=2 mm.), Vejdovsky's 8 mm. My own specimen being somewhat intermediate in size perhaps removes this difference. But a more important difference remains, which is not alluded to by Vaillant<sup>1</sup>. In Vejdovsky's figure<sup>2</sup> of *Pristina longiseta* no sharp line of demarcation is indicated between the prostomium and the first segment of the body, and in the description of the species<sup>3</sup> he remarks:—"Der Kopfplatten verjüngt sich allmählig zu einem konischen fadenförmigen Rüssel." On the other hand, Leidy's figure indicates a sharp demarcation; the "proboscis" commences quite abruptly. So too, though perhaps to a less extent, does d'Udekem's figure. The specimen examined by myself resembles Leidy's figure much more than that of Vejdovsky. The location of the "stomach" by Leidy in the viith segment may be perhaps an error. I found, as Leidy has figured, tactile hairs to be very abundant upon the anal segment as well as upon the prostomium and first segment of the body. It appeared to me that the prostomium was deeply grooved upon the under surface, the groove becoming continuous behind with the mouth. In view of the slight difference recorded above, I am not assured that Leidy's and Vejdovsky's worms belong to the same species; the specimen seen by myself evidently is identical with the worms described by Leidy and d'Udekem. Prof. Bourne's paper, to which I have referred, seems to me to destroy the generic distinctions between *Pristina* and *Naidium*. Previous to the appearance of that paper they could be distinguished as follows:—

*Pristina* :

1. Dorsal setæ of segment iii. long.
2. Prostomium elongate.
3. Shorter dorsal setæ not bifid.

*Naidium* :

1. These setæ not longer than others.
2. Prostomium short with lateral processes.
3. These setæ bifid.

But in Bourne's *Pristina equisetata* the first character is that of *Naidium*, and in *P. breviseta* there are bifid setæ in the dorsal bundles much like those of *Naidium*. The only differential character which remains is therefore the prostomial tentacle; but in *Naidium luteum* the prostomium is said by Vejdovsky to be "lang ausgezogen," and in *P. longiseta*, as figured by the same author, the prostomial tentacle is not so distinct as in other species. I do not think, therefore, that these two genera can be any longer distinguished.

iii. On *Æolosoma niveum*.

The only description of this species was published nearly thirty years ago by Leydig<sup>4</sup>; it has since been met with by Timm<sup>5</sup>, who

<sup>1</sup> 'Annelés' in 'Suites à Buffon,' vol. iii. p. 360.

<sup>2</sup> *Loc. cit.* pl. ii. fig. 13.

<sup>3</sup> *Loc. cit.* p. 31.

<sup>4</sup> "Ueber die Annelidengattung *Æolosoma*," Arch. f. Anat. 1865, p. 360.

<sup>5</sup> "Beobachtungen an *Phreocoryetes*, &c.," Arb. z. z. Inst. Würzb. 1883, p. 155.

called it—evidently by a slip of the pen—“*Æolosoma lacteum*.” I have lately examined a single specimen of an *Æolosoma* which I refer to this species. Unfortunately I am not able to fix its locality with accuracy, as I found it in a bottle containing water and weeds from various sources.

Leydig himself was of opinion that the species might turn out on further study to be an immature stage of *Æ. hemprichii*, or of some species with coloured oil-drops in the integument; but he quoted, as against this possibility, Ehrenberg’s observation that the red colour is visible in embryos still within the egg, and was therefore, on the whole, inclined to regard the worm as an adult form of a species with a colourless integument.

I have, however, recently pointed out that<sup>1</sup> the supposed cocoons are in all probability merely cysts into which the worms can temporarily withdraw themselves; so that Leydig’s opinion as to the possibility of his *Æolosoma niveum* being an immature form is not necessarily rendered untenable by Ehrenberg’s observations.

Vejdovsky<sup>2</sup> in describing briefly the characters of his new species, *Æolosoma variegatum*, remarked that it was “höchst wahrscheinlich von Leydig beobachtet und als *Æolosoma niveum* beschrieben.” In a fuller account<sup>3</sup> of *Æ. variegatum* Vejdovsky establishes its distinctness from *Æolosoma niveum*; it agrees, however, with that form in possessing some colourless oil-globules in the epidermis, the rest being green. In *Æolosoma niveum* all the integumental oil-globules are colourless.

The most recent remarks upon Leydig’s *Æolosoma niveum* known to me are to be found in Vaillant’s account of the Oligochaeta in the ‘Suites à Buffon.’ In that work Vaillant considers it to be not yet established that the supposed species is not the young form of some other *Æolosoma*. I am therefore particularly glad to be able, I think, to definitely settle this question.

I had on the same slide and under examination at the same time no less than three species of *Æolosoma*—an experience which is not, I imagine, very common. These species were, *Æ. quaternarium*, *Æ. niveum*, and a species of whose identity I am not quite certain; it was as large as my *Æolosoma headleyi*<sup>4</sup>, but may be *Æolosoma variegatum*; I lost sight of it before I completed the examination. The worm which I believe to be *Æolosoma niveum* is at any rate a perfectly distinct species from any known to me. It comes nearest to *Æolosoma niveum* as described by Leydig. Nevertheless, it does not altogether agree with his description. It may therefore conceivably be a new form. It was fully as large as *Æ. quaternarium*, and there are other reasons for believing that it cannot be the young of that, or indeed of any other known species.

<sup>1</sup> “Note upon the Encystment of *Æolosoma*,” Ann. Mag. Nat. Hist., Jan. 1892.

<sup>2</sup> System und Morph. d. Oligochaeten: Prag, 1884, p. 113 footnote.

<sup>3</sup> “*Æolosoma variegatum*, Vejd., Prispěvek ku poznání nejzřídliších Annulatur,” SB. böhm. Ges. 1885.

<sup>4</sup> “Observations upon an Annelid of the Genus *Æolosoma*,” P. Z. S. 1886, p. 213.

The worm consisted of eight segments, after which came a bud that had been in part detached; but I succeeded in finding the rest of it upon the slide; the number of segments, therefore, is approximately the same as Leydig gives for *Æolosoma niveum*, and the same number also that Vejdovsky gives for *Æolosoma variegatum*. The prostomium, however, was large, squarish in front, and distinctly wider than the rest of the body. Leydig figures a very inconspicuous prostomium, which, in front at least, is actually narrower than the succeeding segments. With regard to the colourless oil-drops in the integument, I could see no structures that were at all obvious. There was no appearance such as is represented in Leydig's figures. Nor were there any clearly defined droplets such as Vejdovsky figures in his *Æolosoma variegatum*. I should be inclined to say that there were no oil-drops present at all. The epidermis was much more like that of a Naid or a *Chaetogaster* than an *Æolosoma*; and even when the worm was treated with potash, which produces such recognizable effects<sup>1</sup> upon the oil-globules of other species, no alterations were observable, except that the worm was stained a faint yellowish. And yet there is no doubt whatever that I am right in referring the Annelid to the genus *Æolosoma*. In all other particulars it agreed with that genus. The prostomium was ciliated on the under surface, and the lateral ciliated pits are present. The mouth appeared to be situated rather further back than it has been usually figured for this genus; the constriction which marks off the prostomium posteriorly was situated some little way in front of the actual mouth-opening.

The most important difference, however, from Leydig's description concerns the setæ. In all the species of *Æolosoma* at present known, with the exception of Vejdovsky's *Æolosoma tenebrarum* and (if it be really distinct from this) *Æolosoma leidyi*<sup>2</sup>, there are only capillary setæ present in both dorsal and ventral bundles. In the two species above mentioned cleft sigmoid setæ are also to be found<sup>3</sup>. In the specimen of *Æolosoma niveum* described here I have also found these sigmoid setæ, and it is principally the fact of the occurrence of these setæ which leads me to doubt the identity of this worm with Leydig's *Æolosoma niveum*. Had they been present Leydig would hardly have overlooked them. The existence of these sigmoid setæ also, I may point out, precludes the possibility of this worm being the young of *Æolosoma quaternarium*, and I do not think that it has anything to do with *Æolosoma tenebrarum*.

In the first seta-bearing segment there were not any sigmoid setæ, but four capilliform setæ in each of the dorsal, and three in

<sup>1</sup> "Note upon the Green Cells in the Integument of *Æolosoma tenebrarum*," P. Z. S. 1889, p. 51.

"Notes upon certain Species of *Æolosoma*," Ann. Mag. Nat. Hist., Oct. 1889.

<sup>2</sup> F. W. Cragin, "First Contribution to the Invertebrate Fauna of Kansas," Bull. Washb. Coll. Lab. 1887, no. 8, p. 31.

<sup>3</sup> I am not quite certain that the species described by me as *Æolosoma tenebrarum* (P. Z. S. 1889, p. 51) is really identical with Vejdovsky's species; I could not detect the cleft at the end of the setæ, and the colour of the oil-drops appears to be rather different.

each of the ventral bundles. The number of setæ per bundle diminishes in the posterior segments, and they become mingled with sigmoid setæ. In the seventh segment both setæ in one of the ventral bundles were sigmoid, as was one of the two setæ of the dorsal bundle. The sigmoid setæ occur, therefore, in both dorsal and ventral bundles; I was, however, quite unable to detect any bifurcation at the free extremity of these setæ, and I examined them with the highest power at my disposal (Zeiss's F lens with eyepiece). I could not detect the nephridia.

In the colourless integument and in the presence of two kinds of setæ this species evidently offers a transition to the Naidomorpha.

#### iv. On *Clitellio* and *Limnodrilus*.

These two genera, usually regarded as distinct, have been united by M. Vaillant in the recently published third volume of the 'Annelés' in the 'Suites à Buffon.'

M. Vaillant considers that the alleged absence of a prostate in *Clitellio* is not a sufficient difference.

As a matter of fact, my own paper<sup>1</sup> upon *Clitellio* showed other points of difference besides the absence of the prostate; the main distinction between the two genera, in addition to the want of a prostate, is the existence of two pairs of perivisceral trunks, which are specially enlarged and are contractile: I did not refer very definitely to their contractility in the paper cited, but I have since re-examined the species *Clitellio arenarius* and find that these dilated trunks are contractile, one pair contracting before the other. Now the fact of the existence of contractile trunks does not distinguish *Clitellio* from *Limnodrilus*. *Limnodrilus* has also two pairs of contractile periviscerals, but only one pair of these are dilated; whereas in *Clitellio* both pairs are wide tubes. This difference, at any rate, applies to the species of *Limnodrilus* known up to the present.

I take this opportunity of mentioning that *Clitellio arenarius* has, like *Limnodrilus*, a supra-intestinal blood-vessel. But I could find no integumental blood-capillaries such as are found in *Limnodrilus*. I looked for them very carefully, of course in living worms.

So far, therefore, my observations have rather tended to accentuate than remove the differences between *Clitellio* and *Limnodrilus*.

I have, however, found in a species of *Limnodrilus* an intermediate form between *Clitellio* and the typical *Limnodrilus*. This species is from New Zealand; I have already<sup>2</sup> recorded its occurrence in the South Island, though I was in error in stating that it presented no differences from the European species.

As a matter of fact, this New Zealand *Limnodrilus* has, like *Clitellio*, two pairs of greatly dilated hearts in segments viii. and ix.; there are no reasons for disbelieving that these wide trunks are

<sup>1</sup> "On certain Points in the Structure of *Clitellio* (Claparède)," P. Z. S. 1888, p. 485.

<sup>2</sup> "On the Oligochaetous Fauna of New Zealand, &c.," P. Z. S. 1889, p. 381.

contractile. This species is, of course, freshwater in habitat. It was found in a forest-pool along with *Phreoryctes smithii*.

None of the specimens were mature, so I am unable to say how far they may agree with *Clitellio* in other particulars; but, in any case, they have the two pairs of dilated vessels in viii. and ix. that have hitherto served to distinguish *Clitellio* from *Limnodrilus*.

v. *On a new Genus (Kerria) intermediate between Acanthodrilus and Ocnodrilus.*

Mr. J. Graham Kerr, who accompanied the "Pilcomayo Expedition" in 1890, has kindly given me a number of small Oligochæta which he collected in the upper reaches of that river. They were preserved with corrosive sublimate, and are in consequence in an excellent condition for microscopical examination. There are altogether about a dozen specimens, some fortunately being sexually mature. The water where they were met with was exceedingly salt and bitter, but contained a number of other animals, notably a few decapod Crustaceans. But animal life was not, Mr. Kerr informs me, very abundant in the stream. So far as I am aware, no Oligochæta of any kind has ever been described from a locality like the present, except a species of *Pachydrius* referred to by Semper as occurring in the brine-springs of Kissingen in Germany. Salt water is not, however, entirely inimical to the existence of Oligochæta, for there are a few species known from the sea-shore; for example, *Clitellio*, referred to in the present paper, *Pontoscolex*, *Pontodrilus*, &c. I expected, therefore, that these worms would prove to be interesting, and my expectations were realized.

The worms are all very small, an inch to an inch and a half in length by 1 mm. in diameter. They are about the size of, and resemble in general appearance, *Ocnodrilus eiseni*, and I at first was disposed to refer them to the same genus at least. Although a more careful examination of the worms showed that they could not be referred to the genus *Ocnodrilus*, it became very soon evident that they were nearly related to that genus; they serve, in fact, to indicate the probable relations of *Ocnodrilus*, concerning which I was formerly in doubt<sup>1</sup>. Eisen, the original describer<sup>2</sup> of the genus *Ocnodrilus*, placed it in the family Lumbriculidæ. This conclusion was subsequently abandoned by Eisen himself<sup>3</sup>, and I have myself<sup>4</sup> endeavoured to combat it; the genus is clearly to be referred to that very large and imperfectly known group of worms which I have called Cryptodrilidæ. I do not propose to give a detailed systematic account of the anatomy of this new worm, but merely to dwell

<sup>1</sup> "On the Anatomy of *Ocnodrilus* (Eisen)," Tr. Roy. Soc. Edin. vol. xxxvi. No. 21.

<sup>2</sup> "On the Anatomy of *Ocnodrilus*," Nov. Act. Reg. Soc. Upsal. ser. 3, vol. x.

<sup>3</sup> "On the Anatomy of *Sutroa rostrata*, &c.," Mem. Calif. Ac. Sci. vol. ii. no. 1.

<sup>4</sup> *Loc. cit.* p. 580.

upon its salient characters, particularly those which bear upon its affinities.

The setæ are strictly paired and show no noteworthy peculiarities ; they are not in any way modified upon any segments of the body. The clitellum occupies segments xiv. to xix.

The alimentary canal is chiefly remarkable for two points : there is a gizzard present, not a very usual occurrence with aquatic Oligochæta. The gizzard, moreover, is well developed ; it lies in segment vii.

In segment ix. are a pair of calciferous pouches ; these are complicated in structure, being composed of a much-folded cellular membrane. Although the segment which they occupy is the same as that which in *Ocnerodrilus* contains a pair of œsophageal diverticula, the organs are simpler in their minute structure in the latter genus.

Some of the anterior mesenteries, as is usually the case in Oligochæta, are thickened ; this statement applies to those which separate segments v./vi., vi./vii., vii./viii., viii./ix.

The nephridia are present in the genital segments ; the posterior set are invested by a thick layer of peritoneal cells.

The genital organs conform in almost every particular to the plan met with in the genus *Acanthodrilus*, and are illustrated in the accompanying drawing (woodcut, fig. 1).

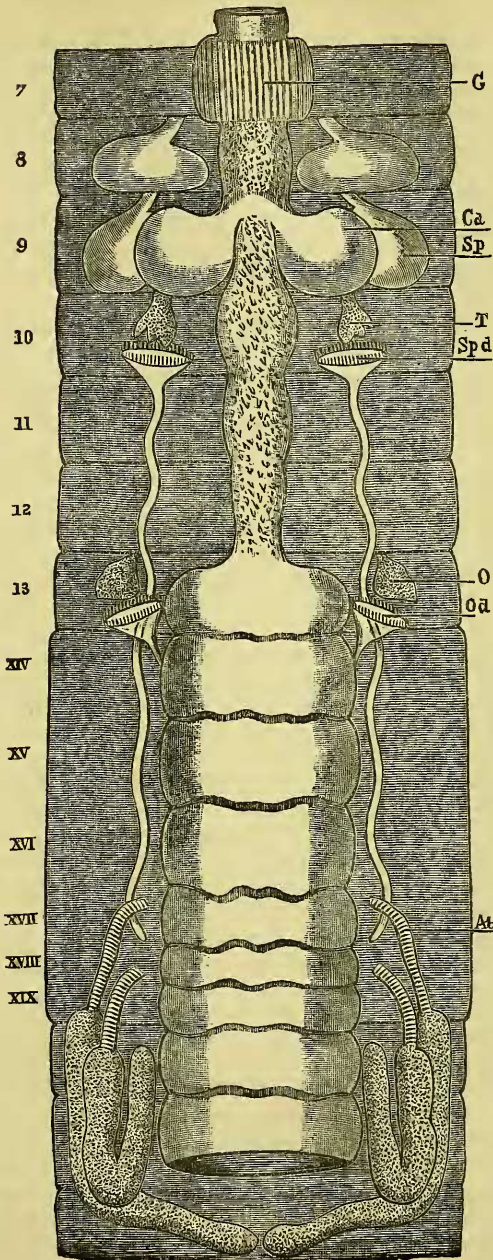
On segments xvii. and xix. are the openings of the atria ; the actual pores are placed upon the summits of elevations near to the median ventral line of the body. The atria, like those of other *Acanthodrilidæ*, are divisible into two regions : with the actual orifice is connected a narrow muscular tube ; this widens out distally into a glandular tube, but *this glandular tube is lined by a single layer only of cells*. In no species of *Acanthodrilus*, so far as I am aware, is this the case. Even in smaller species than the one described here the glandular part of the atrium has two layers of cells, resembling, as I have pointed out, the structure of the clitellum. On the other hand, *Ocnerodrilus* has an atrium which is exactly like the present species in having a lining of a single row of cells. These cells are tall and very granular in appearance. The atrial pores are close to the ventral pairs of setæ ; there are no penial setæ. Penial setæ are only rarely absent from *Acanthodrilus* ; *A. multiporus* and an allied species are the only forms which I can recollect that are thus deficient.

On the xviiiith segment open the vasa deferentia : there is only a single vas deferens on either side ; it runs in close contact with the body-wall, not embedded in it. In the xth segment the vas deferens widens out to form a funnel ; this funnel is not only very large but very much folded, and occupies the greater part of the segment in which it lies. It struck me as being unusually large ; there is only one funnel on each side.

The same segment, *i. e.* the xth, contained the single pair of testes. As a general rule, when there is a single pair of testes these gonads occupy the xith and not the xth segment. In the



Fig. 1.



Genital segments of *Kerria halophila*, as seen on a dissection.

G, Gizzard ; Ca, calciferous glands ; Sp, spermatheca ; T, testis ; Sp.d, spermatheca ; O, ovary ; Od, oviduct ; At, atrium.

Segments of clitellum indicated in Roman numerals.

present species, however, there is no doubt of their lying in the xth segment.

The sperm-sacs are in segments x. and xi. They partially involve the testes and vas deferens funnels. The ovaries are, it is almost unnecessary to state, placed in segment xiii. The oviducal funnels open opposite to them; the ovaries are so large that but little room is left between the end of the ovary and the funnel; I saw an ovum within the mouth of the oviduct. There are no egg-sacs. The oviducal pores are upon the xivth segment.

In the viii<sup>th</sup> and ix<sup>th</sup> segments are the spermatothecæ. These organs are large sacs, communicating with the exterior by means of a comparatively long duct; they were densely packed with spermatozoa, but had no diverticula.

It is evident from the above short and, in some respects, incomplete account of the Pilcomayo worm that it is most nearly allied to the genus *Acanthodrilus*. That genus, it should be remarked, is one which is less uniformly terricolous than any other genus of "earthworms." There are already several species known to occur in water. Among them are *Acanthodrilus stagnalis*, *A. dalei*, *A. schmardæ*. This is, however, the first species which has been met with in saline waters.

The other aquatic Acanthodrilidæ show no particular affinities to aquatic genera; but the present species does; and it distinctly approaches *Ocnerodrilus*. The resemblance is not only in the simplification of the structure of the atria; that of itself would not perhaps be a very important fact, since it might be put down merely to degeneration. A more important point of likeness is the existence of the single pair of œsophageal diverticula in segment ix.; this particular segment is not a usual one in which to find these calciferous glands. Besides, in other Acanthodrilids there are nearly always two or three pairs of these glands situated further back.

Very little is wanting to convert the species here described into an *Ocnerodrilus*; to refer it definitely to the genus *Acanthodrilus* would be to ignore the characteristic differences which it shows from that genus, with which, however, it undoubtedly agrees in all those points which are made use of to define the genus *Acanthodrilus*. On the other hand, it can hardly be put in the genus *Ocnerodrilus*. The principal difficulty in the way of this is the two pairs of atria and their position. The fact of there being two pairs of atria instead of one only would not deter me from this step; I think, for instance, that the genus *Neodrilus* must be merged in *Acanthodrilus*. The important difference appears to be the separation of the atrial and vas deferens pores by a septum in *Acanthodrilus*. If it were not for the position of the calciferous glands all the resemblances between this worm and *Ocnerodrilus* might fairly be set down to a convergence due simply to degeneration. As it is I am inclined to think that it will be necessary to institute a separate genus for this Acanthodriloid worm from the Pilcomayo; and I propose to call it *Kerria*, after Mr. Graham Kerr, with the specific term *halophila*. It may be useful to compare, by means of the following table, the

TABLE.  
Comparison of *Kerria* with allied genera.

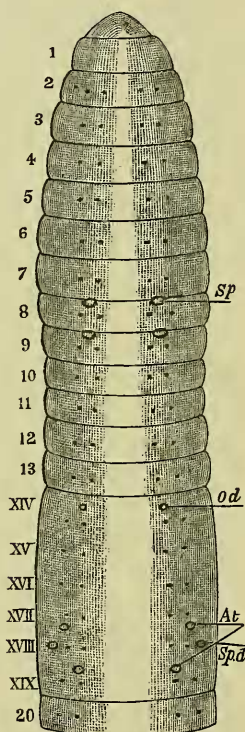
|                            | Atrial pores.                                    | Vas. def. pores.    | Atria.                        | Penial setae.          | Califerous glands.             | Gizzard.           | Spermatheca.                                    |
|----------------------------|--|---------------------|-------------------------------|------------------------|--------------------------------|--------------------|---|
| <i>Kerria</i> .....        | XVII. and XIX.                                   | XVIII.              | Lined by single row of cells. | None.                  | One pair in IX.                | Present.           | Two pairs in VIII. and IX.; no diverticulum.    |
| <i>Acanthodrilus</i> ..... | XVII. and XIX.                                   | XVIII.              | Lined by double row of cells. | Nearly always present. | 1-3 pairs in XIV. or XV.-XVII. | Rarely absent.     | Two pairs in VIII. and IX.; always diverticula. |
| <i>Gordiadrilus</i> .....  | XVII. and XVIII. or XVIII. and XIX. <sup>1</sup> | XVIII. <sup>1</sup> | Lined by single row of cells. | None.                  | Single pouch in IX.            | Present or absent. | Two pairs in VII. and VIII.; no diverticulum.   |
| <i>Oenodrilus</i> .....    | XVII.  | XVII.               | Lined by single row of cells. | None.                  | One pair in IX.                | Absent.            | One pair in VIII.; no diverticulum.             |
| <i>Pygmodrilus</i> .....   | XVII.  | XVII.               | Lined by single row of cells. | None.                  | One pair in IX.                | Present or absent. | One pair in IX., with or without diverticula.   |

<sup>1</sup> Further back in *Gordiadrilus tenuis*, n. sp.

present species with some allied forms. The table (p. 359) gives some additional facts not referred to in the above description. Also, I introduce a few worms not yet fully described, which I have recently been studying.

The position of the external apertures of the male reproductive apparatus is, however, rather different from what is found in the genus *Acanthodrilus*. The accompanying figure (fig. 2) illustrates

Fig. 2.



Ventral surface of *Kerria halophila*, to show generative apertures.

*Sp*, Spermathecal pores; *od*, oviducal pores; *At*, atrial pores; *Spd*, spermiducal pores.

The segments of clitellum are indicated by Roman numerals.

the arrangement in an individual which was studied by means of longitudinal sections; I found it impracticable to examine the ventral surface of the entire worm mounted in glycerine, for the reason that in the course of preservation a good deal of the corrosive sublimate used as a fixing reagent had crystallized upon the integument, rendering it therefore very opaque. In the sections the setæ were seen to be quite unaltered upon the genital segments, they were not even larger than those upon the neighbouring segments. The atrial pores, as well as those of the vas deferens, are in close relation to