

4.—EARTHWORMS FROM SOUTH-WESTERN AUSTRALIA.

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(Honorary Member.)

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The examination of two collections of Earthworms from South-Western Australia has induced me to review the Earthworm-fauna of this region. These collections have confirmed my opinion that the endemic species of South-Western Australian Earthworms in general are restricted to a very small district, and that such a small district harbours only a very small number of endemic species. At times one of these few dominates the others by its abundance and general distribution, occasionally only one endemic species may be present in a small district. The first of my series collected by Mr. W. S. Brooks for the Zoological Laboratory of the Harvard University in 1927 at Pemberton ($34^{\circ} 26'$ south lat., $116^{\circ} 1'$ east long.), consists of many specimens of *Megascolex syndetoporus* Jackson (1).^{*} The type specimens of this species also were collected at Pemberton (in the year 1928 or 1929). The two collectors, quite independently obtained one and the same species in a district from which no other endemic species is known. The second of my series was collected by Mr. John Whistler on his farm "Brancaster," a little south of Dinninup. Complying with my requests, Mr. Whistler investigated different localities of his farm, i.e., localities of rather different character. All those localities (4 of them) contained in abundance specimens of *Notoscolex brancasteri* Michaelsen (2), previously known from another locality at Brancaster. Only one of the five investigated localities contained a few specimens of a second endemic species, a new one which, in honour of the collector, is named *Plutellus whistleri*. The result of intensive collecting in the district of Brancaster has yielded only two endemic species, one of which is by far more abundant than the other rather rare one.

The new collections confirm my assertion that most genera of endemic Earthworms have in South-Western Australia very restricted ranges, the genus, *Plutellus* forming the single exception of this rule. It occurs in the whole region of Western Australia as far as its climate permits earthworms to live there (3). Miss Jackson (loc. cit. p. 73) mentioned three exceptions of this rule, but I am unable to regard them as valid. Firstly, the discovery of a *Plutellus* at Yalgoo in no way constitutes an exception to the rule, for this genus occurs, as I have stated above, in the whole region of Western Australia as far as it is habitable for earthworms. The new Yalgoo species only slightly extends the range of the genus as previously known to us. It is another matter with Miss Jackson's second exception, *Megascolex imparicystis* Michaelsen. Miss Jackson examined different specimens of this species, one from an unknown locality, one from a garden at Mount Lawley, near Perth. My type-specimen of *M. imparicystis* came from **Dongarra** (I omitted to mention this locality in my original description because I did not collect it myself and therefore could not answer for the accuracy of this statement, which seemed to be very doubtful.) As the faunistic character of

* Reference to bibliography at the end of this paper.

this species is now made clear by additional specimens, there remains no reason to doubt the accuracy of the Dongarra statement. This species is therefore known from at least two (perhaps three) different localities, very far from one another, and from the proper *Megascolex* district. Whilst this proper district with its 13 endemic *Megascolex* species extends from 35° S. to 33° S., Perth lies about 32° S. 116° E., and Dongarra 29° 10' S. 114° 55' E. Consequently, this species is not at all to be regarded as an endemic one; it is peregrine and probably transported by man. It is worth remarking that at least one specimen was found in a garden, that is in a situation very apt to receive transported earthworms and their cocoons. Probably also the third species mentioned as an exception by Miss Jackson, being found far from the proper district of its genus, namely, *Megascolex longicystis* Nicholls and Jackson (4), is to be regarded as peregrine to a certain degree. This species is found at two different localities, Armadale and Wongong.*

In Miss Jackson's list of South-Western Australian Oligochaets there are two other species which must be divested of their endemic quality. *Kerria nicholli* Jackson (l.c. p. 121) is not a new species. It is identical with the peregrine *K. saltensis*, imperfectly described by Beddard in 1896 (5), circummundane in the warmer zones and previously recorded from Australia under the name of *Acanthodrilus sydneyensis* by Miss Sweet. (The genus *Kerria* has endemic species only in the warmer regions of America.) The genus *Eiseniella* also has no endemic species in Australia. *Ei. intermedia* Jackson (l.c. p. 123) is an *Ei. teraedra* (Sav.) *forma typica*. The difference of the Western Australian form from it, suggested by Miss Jackson, does not exist. This excusable error is due to the erroneous description by Rosa (6) already corrected by E. de Ribaucourt in 1896 (7). After examining hundreds of specimens I found, as he recorded, the spermathecal pores nearly always at IX./X. and XI./XII., an anomaly with 3 pairs at IX./X., X./XI., and XI./XII. occurred only once. Miss Jackson's supposition that her species represents an intermediate condition between the genera *Eiseniella* and *Eisenia* cannot be sustained. As I showed in 1932 (8) *Eiseniella* is not allied to *Eisenia*, as I myself formerly supposed but to the genus *Allolobophora*. The position of the spermathecal pores is not bound to the median dorsal line as in *Eisenia*, but to the lines of the dorsal setae as in *Allolobophora*. They are variable in number. Often they occur in groups of two, one in the line of seta *d* (or even seta *c*), the other a little more dorsally, but always near the line *d*, and far from the median dorsal line. One of these twin spermathecae may often be absent and then there remains only the one situated somewhat dorsally from the setal-line *d*, thus delusively showing, or rather coming near the position characteristic for *Eisenia*.

Plutellus (Pl.) *whistleri* sp. nov.

Western Australia, Brancaster, near Dinninup (33 degrees 53 S, 116 degrees 33 E); Mr. John Whistler, leg. 1933 (6 specimens, one mature).

Dimensions of the largest mature specimen: Length, 65 mm.; thickness, 3-4 mm.; number of segments, about 150. The other specimens were not fully mature, one nearly mature is only a little smaller, the specimens with the first signs of external sexual organs very much smaller.

* (About two miles apart and about 18 miles south of Perth.—Ed.)

Colour of the preserved specimens: dirty yellowish gray.

Head tanylobous. The prostomium broad and short, its dorsal appendix broad, a little narrowed in its middle part, and here divided by a transverse furrow. The prostomium shows a median-dorsal longitudinal furrow continued over the appendix as far as to its transverse furrow.

The *segments* of the fore-end are simple as far as to the third inclusive; segments IV-VI divided by a more or less distinct transverse ringlet-furrow; segments VII-XIV three-ringed; the following ones not distinctly divided into ringlets.

The *setae* are S-shaped, with a distinct nodulus somewhat ectally from the middle, with simple, moderately sharp ectal end. The ectal end bearing a few small irregularly placed punctures more or less filled by a minute blunt thorn. The ornamentation distinct only at the large setae of the posterior part of the body, being indistinct at the smaller setae. The setae are in general small at the middle part of the body 0,16 mm. long at the nodulus $16\ \mu$ thick. The setae of the posterior end of the body (at about the 20 last segments) are enlarged, especially the most dorsally placed ones of the setae-lines *d*, the setae *c*, *b*, and *a* only a little. The largest setae *d* are 0,26 mm. long, and at the nodulus $32\ \mu$ thick. The setae are generally placed in quite regular longitudinal lines, the ventral ones, moderately close together, the dorsal ones very far apart. In the middle part of the body the distance between the ventral setae is about half as wide as the ventral median distance which is very little less than the middle lateral distances. The distances between the dorsal setae a little greater than the median lateral distance, and about half as wide as the median dorsal distance (here $aa: ab: bc: cd: dd:$ equal 26: 13: 29: 32: 61). Anteriorly the distance between the ventral setae diminishes a little (here *aa* equals 3 *ab*). In the more closely examined specimen many of the large setae *d* at the posterior end of the body, beginning with the 17th-segment from the anal-segment, are displaced to a rather large extent, partly ventrally, partly dorsally, but in a quite irregular manner, regular alternation occurring in only very short tracts.

First *dorsal pore* at the intersegmental furrow V/VI.

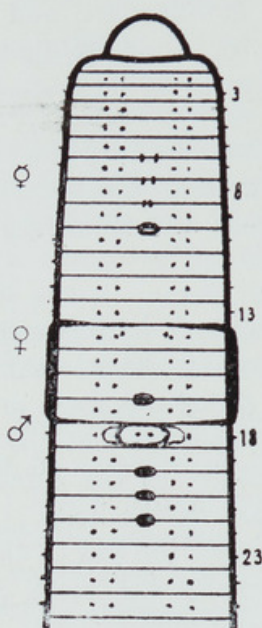
Clitellum whitish, somewhat prominent, indistinctly ring-shaped, ventrally at least less developed, occupying the four segments XIV to XVII inclusive. Intersegmental furrows distinct at the clitellum.

Male pores very delicate, hardly visible on the setal zone of segment XVIII near the ventral median line about 0,2 mm. distant from one another at the top of a common ventral median *male porophore*. This porophore has the shape of a transversely oval, rather high cushion reaching at each side as far as the setae-line *a*, and occupying the whole length of segment XVIII.

Female pores also very delicate, seen only in horizontal sections, close to setae *a* of segment XIV, medially from them.

Spermathecal pores as delicate as the other sexual pores, seen only in horizontal sections: 3 pairs at the intersegmental furrows VI/VII, VII/VIII and XIII/IX, near the ventral median line. The distance between the pores

of one pair diminishes towards the hindermost pair, the pores of VIII/IX being only 0,07 mm. distant from one another, the distance between those of VI/VII amounting to 0,15 mm.



External accessory glands: Single median-ventral intersegmental papillae transversely oval. At least four of them are constantly present at XVI/XVII, XIX/XX, XX/XXI and XXI/XXII, in one case a fifth one at XV/XVI, and in another an indistinct fifth one at IX/X. A pair of small glandular swellings without sharp borders at segment XVIII just lateral from the male porpophore, with which they are grown together.

Septa: VI/VII very little thickened, VII/VIII-XI/XII moderately thick, XII/XIII a little thickened, the following delicate.

Alimentary tract: A large gizzard in segment VI. The *oesophagus* moniliform in segments VII-XVI, widely swollen in the segments, strongly narrowed intersegmentally. Its wall has in this region the structure of chyle-organs, densely crowded shrivelled longitudinal folds, projecting into the lumen. The *intestine* seems to begin in segment XVIII, it has no typhlosole, but its lumen is irregularly narrowed, partly in an irregular spiral manner.

Anterior male organs holandric. Two pairs of (indistinctly recognised) testicles, and two pairs of small (not yet fully developed?) *sperm-funnels* ventrally free in segments X and XI, one pair of rather small, simple *sperm-sacs* in segment XII.

Posterior male organs: Prostates with a thick, cylindrical glandular part, irregularly bent, about 6 mm. long, and 0,4 mm. thick, uneven at the surface, the ental tops of the glandular cells projecting in the shape of warts. The axial channel simple and very narrow. The prostate-duct sharply set off from the glandular part, shorter and much thinner. It enters the body wall in the line of seta *b*, and then bends itself medialwards, within the layer of the longitudinal muscles running towards the male pore, in the meanwhile becoming more and more attenuated. *Penial* setae absent.

Female organs: One pair of tuft-like *ovaries* depends from septum XII/XIII into segment XIII. Opposite to the ovaries are a pair of small

oviducal funnels at the anterior side of septum XIII/XIV, being continued each into a slender, narrow tube in segment XIV, the *oviduct*, running in a nearly straight line towards the female pore.

Spermathecae: Ampulla more or less slender pear-shaped without a distinctly marked duct. Into the thin ectal end of the ampulla enters a simple diverticulum. It is club-shaped or slender pear-shaped, and much shorter and thinner than the ampulla. Its thin ectal end is not distinctly marked as a diverticulum stalk.

REMARKS.

P. whistleri belongs to the small group of Western Australia *Plutellus*-species, which are devoid of penial-setae. This group is restricted to the extreme southern part of W.A. *p. schönemanni* Mich., *p. carneus* Mich., and *P. asymmetricus* Mich. (Michaelsen, l.c. 1907, pp. 181, 182, 183), all from Albany belong to this group. *P. whistleri* is most nearly allied to *P. asymmetricus*, in which the pairs of male pores and of spermathecal pores are replaced by single median-ventral pores, whilst they approach this line in *P. whistleri*. On the other hand the new species is near to *P. blackwoodianus* Michaelsen (l.c. 1907, p. 179) from Bridgetown, not very far from Brancaster, agreeing with this species in the character (not in the arrangement) of the accessory glands. In the situation of the spermathecal pores (and of the male pores?) *P. whistleri* is intermediate between *P. asymmetricus* and *P. blackwoodians*. In the latter these pores seem to lie just inside the lines of setae *a*. *P. blackwoodianus* differs from *P. whistleri* in having only two pairs of spermathecae, and in possessing penial-setae.

BIBLIOGRAPHY.

- (1) Jackson, A. 1931.—The Oligochaeta of South-Western Australia. Jour. Roy. Soc. W.A. XVII, p. 117.
- (2) Michaelsen, W. 1910.—Oligochaeten von verschiedenen Gebieten in. Mit. Mus. Hamburg XXVII, p. 95.
- (3) Michaelsen, W. 1907.—Oligochaeta in Fauna Südwest Austr. 1, p. 121.
- (4) Nicholls & Jackson 1926.—Some new species of Megascolex from South-Western Australia. Jour. Roy. Soc. W.A. XII, p. 142.
- (5) Beddard, F. E., 1896.—Naiden. Tubificiden und Terriolen in Hamburg. Magalh. Sammelr. vol. 1, p. 42.
- (6) Rosa, 1893.—Revisione dei Lumbricidi in Mem. Acc. torino Ser 2. vol. XLIII, p. 74.
- (7) Ribaucourt, E. de, 1896.—Etude sur la faune lombricide de la Suisse in Rev. Suisse Zool. IV, p. 70.
- (8) Michaelsen, W. 1932.—Variations—und Mutationsverhältnisse bei den Arten der Gattung Eiseniella in Jena, Zeitschr. Naturw. LXVII, p. 155.



Michaelsen, W. 1935. "Earthworms from south-western Australia." *Journal of the Royal Society of Western Australia* 21, 39–43.

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