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THE EARTHWORM GENUS *OREOSCOLEX* (OLIGOCHAETA: MEGASCOLECIDAE) IN NEW SOUTH WALES

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Figures 1-3

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SUMMARY

Descriptions are given of four species of *Oreoscolex* recently transferred to this genus from *Notoscolex*. All are shown to have the eight setae per segment and multiple caudal nephrostomes diagnostic of the genus. A key to the five species of *Oreoscolex* in New South Wales, including the type-species *O. imparicystis*, is given. Occurrence of a further eight species in Tasmania strongly suggests that the genus will also be found in intervening Victoria.

INTRODUCTION

The genus *Oreoscolex* was erected by Jamieson (1973) for a hitherto unknown species, from Mt Kosciusko, which formerly would have been assignable to *Notoscolex*. *Oreoscolex* was distinguished by the presence of multiple caudal nephrostomes (a feature of the Tribe Magascolecini) from *Notoscolex*, in which only the medianmost meronephridium on each side in the caudal region was stomate. The latter condition, where nephridia discharged to the exterior, had been shown (Jamieson, 1971a) to diagnose a tribe Dichogastrini.

Since *Oreoscolex* was erected, eight Tasmanian species and four species from New South Wales have been added to the genus (Jamieson, 1974). Whereas four of the Tasmanian species were new, those from New South Wales were known species originally referred by Fletcher (1887a, b; 1889a, b) to *Cryptodrilus* and *Notoscolex* and placed by Michaelsen (1900) in the latter genus.

The present account provides more exhaustive descriptions of the four additional species from New South Wales than were given by Fletcher and justifies assigning them to *Oreoscolex*. All of the material described is in the collections of the Australian Museum, Sydney.

The terminology employed is that normally used in oligochaete taxonomy. Explanations of it are available in Michaelsen (1900) and Jamieson (1971a, 1974).

SYSTEMATICS

Genus *Oreoscolex* Jamieson, 1973*Diagnosis:*

Setae 8 per segment. A pair of combined pores of vasa deferentia and racemose or tubuloracemose prostates on XVIII. Gizzard in V. Extramural calciferous glands and typhlosole present or absent. Meronephric, anterior nephridia astomate, avesiculate, exonephric or enteronephric, and usually tufted. Caudal nephridia with numerous preseptal funnels on each side in each segment, exonephric (or enteronephric?). Spermathecae in 2 or 3 segments, paired or median; diverticula uniloculate or multiloculate.

Distribution:

Eastern Subregion of Australia: New South Wales and Tasmania. (13 species).

Type-species:

Oreoscolex imparicystis Jamieson, 1973a.

NEW SOUTH WALES SPECIES

1. *Notoscolex grandis* Fletcher, 1887a
2. *Cryptodrilus illawarrae* Fletcher, 1889a
3. *Oreoscolex imparicystis* Jamieson, 1973a
4. *Cryptodrilus saccarius* Fletcher, 1887b
5. *Cryptodrilus simulans* Fletcher, 1889b

Remarks:

The four species listed above in addition to the type-species were not included in the amended generic definition (Jamieson, 1974), but they necessitate no further amendment of the definition beyond deletion of parenthetical references to individual species-names, omission of 'rarely' from the allusion to occurrence of seminal vesicles in XI and XII, and inclusion of the observation by Fletcher (1887b) for *C. saccarius*, of intestinal origin in XV which is not, however, confirmed in the present study. Only the brief generic diagnosis is therefore repeated above.

To allow comparison of New South Wales species with the remaining (Tasmanian) species of the genus the following key includes all known species of the genus.

Key to the Species of *Oreoscolex*

1. Spermathecal pores unpaired, midventral, posteriorly in VII and VIII.
 - *O. imparicystis* Jamieson, 1973. N.S.W.
 - Spermathecal pores 2 or 3 pairs, in or near 6/7-8/9 2
2. (1) Spermathecal pores 2 pairs, in or immediately behind 7/8 and 8/9 ... 3
 - Spermathecal pores 3 pairs in 6/7, 7/8 and 8/9.
 - *O. sexthecatus* Jamieson, 1974. Tas.

3. (2) Spermathecae each with 2 separate subspherical to clavate diverticula 4
 — Spermathecae each with a single uniloculate or multiloculate diverticulum 5
4. (3) A pair of reniform calciferous glands in each of XV and XVI.
 *O. bidiverticulatus* Jamieson, 1974 (part). Tas.
 — Extramural calciferous glands absent.
 *O. illawarrae* (Fletcher, 1889a). N.S.W.
5. (3) Spermathecal diverticulum uniloculate 6
 — Spermathecal diverticulum multiloculate 9
6. (5) Male pores in *ab* on XVIII..... 7
 — Male pores median to *a* on XVIII 8
7. (6) A pair of reniform calciferous glands in each of XV and XVI.
 *O. bidiverticulatus* Jamieson, 1974 (part). Tas.
 — Extramural calciferous glands absent.... *O. longus* Jamieson, 1974. Tas.
8. (6) Male pores almost contiguous medianly, on a circular porophore median to *b* lines. A median genital marking in 20/21.
 *O. irregularis* (Spencer, 1895). Tas.
 Male pores shortly median to *a* lines on a transverse porophore which extends lateral of *b* lines and impinges on adjacent segments.
 *O. peculiaris* Jamieson, 1974. Tas.
9. (5) Oesophagus vascularized, and sometimes with internal lamellae, but lacking extramural calciferous glands 10
 — Oesophagus with pairs of dorsolateral calciferous glands 13
10. (9) Penial setae present 11
 — Penial setae absent. *O. grandis* (Fletcher, 1887a). N.S.W.
11. (10) Eyelike or other paired genital markings absent..... 12
 — A pair of eyelike genital markings present in *ab* in 17/18 or XVII and in each of several intersegments behind XVII.
 *O. campestris* (Spencer, 1895). Tas.
12. (11) A large median transverse genital marking in each of intersegments 15/16–18/19, extending approximately to *b* lines.
 *O. leai* (Michaelsen, 1910). Tas.
 — A large midventral glandular pad in 19/20 or 20/21 extending laterally beyond *b* lines. *O. wellingtonensis* (Spencer, 1895). Tas.
13. (9) Calciferous glands in VIII, or IX, to XIII. Last hearts in XIII.
 *O. saccarius* (Fletcher, 1887b). N.S.W.
 — Calciferous glands in XIII, or XIV, to XV. Last hearts in XII.
 *O. simulans* (Fletcher, 1889b). N.S.W.

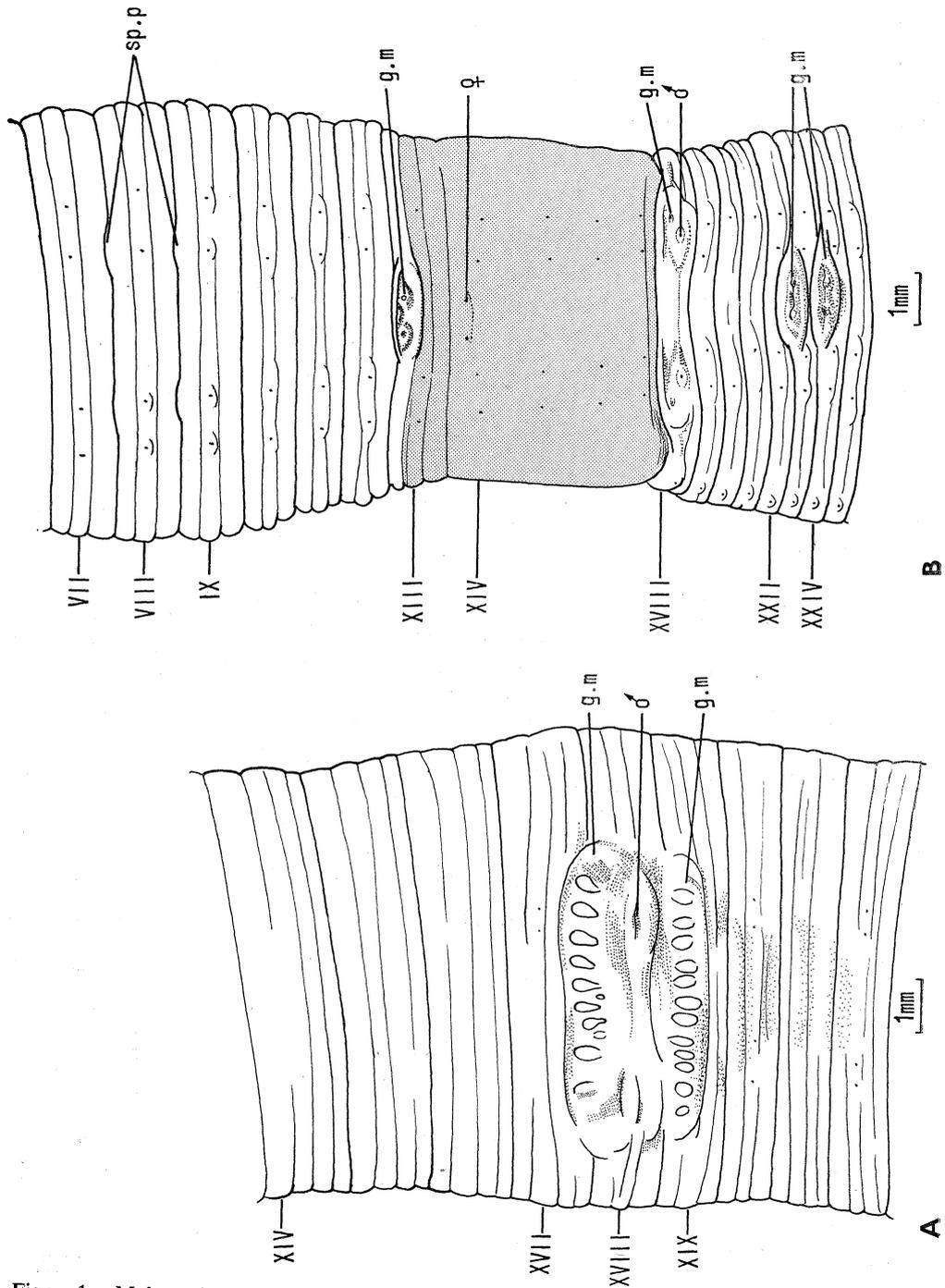


Figure 1.—Male genital field of A, *Oreoscolex grandis*, sexual specimen, W.1491; B, *O. saccarius*, W.1372 (1). Abbreviations: ♀ female pore; g.m. accessory genital marking; ♂ male pore. Roman numerals are segment numbers. Clitellum shaded. All figures drawn by camera lucida.

Oreoscolex grandis (Fletcher, 1887a)

Figs 1A; 3A

Notoscolex grandis Fletcher, 1887a: 551–554, pl. VIII, fig. 6.—Michaelsen, 1900: 190–191.—Jamieson, 1971b: 78.

Megascolides grandis.—Beddard, 1895: 448.

Cryptodrilus grandis.—Beddard, 1895: 505.

Oreoscolex grandis.—Jamieson, 1974: 303.

Description:

l = 570–760 mm, w = 10–11 mm, s?*. Prostomium probolous to propilobous; peristomium with numerous longitudinal grooves. First dorsal pore 10/11. Setae minute, only very sporadically visible (eight per segment); ventral setal couples closely paired; dorsal couples not seen. Nephropores not seen. Clitellum annular, posterior XIII, XIV–XIX; not developed in re-examined specimen. Male pores extensive transverse slits in *ab*, equatorially in XVIII, on a strongly protuberant midventral unpaired pad which extends laterally well beyond *b* lines and fills approximately the posterior and anterior third of segments XVII and XIX respectively; the anterior and posterior portions of the pad have each a transverse row of white glandular very slightly protuberant oval or elliptical markings (re-examination); more frequently the pad is divided into an anterior ridge on the anterior margin of XVIII and a posterior ridge in a similar position on XIX. Female pores on XIV, close together; not visible in re-examined specimen. Spermathecal pores 2 pairs, in 7/8 and 8/9, in *ab*, each surrounded by a conspicuous elliptical lip which is wider in front of the pore.

Last hearts in XIII, at least those in XII and XIII latero-oesophageal. Supra-oesophageal vessel present but well developed only in XII and XIII. Subneural vessel absent. Gizzard large and firmly muscular, in V; oesophagus strongly vascularized in XII–XVI but extramural calciferous glands absent. Intestinal origin $\frac{1}{2}$ XVIII (XVII according to Fletcher); typhlosole, caeca, and muscular thickening absent. Nephridia: very large apparently enteronephric (pharyngeal) tufts paired in III and IV; very dense bands of numerous integumentary micromeronephridia in succeeding segments; caudal nephridia very numerous and with approximately 13 ventrally situated preseptal funnels on each side in each segment (exonephric?). Holandric (funnels slightly iridescent in X and XI); seminal vesicles large, racemose in XI and XII. Metagynous (ovaries much-branched laminae); ovisacs in XIV. Prostates tongue-shaped, deeply incised in places, the short external duct continuous axially far into the gland but giving off only slightly thinner lateral branches with definite epithelium. Penial setae absent. Spermathecae 2 pairs, ampulla elongate, sessile, with ectal multiloculate diverticulum.

Type-locality:

Burrawang. New South Wales.

Material examined:

“Cotypes”, Australian Museum W.1494: fragments, several juveniles and one sexual but ac clitellate specimen which was used for the above account.

* l = length, w = maximum width, s = number of segments.

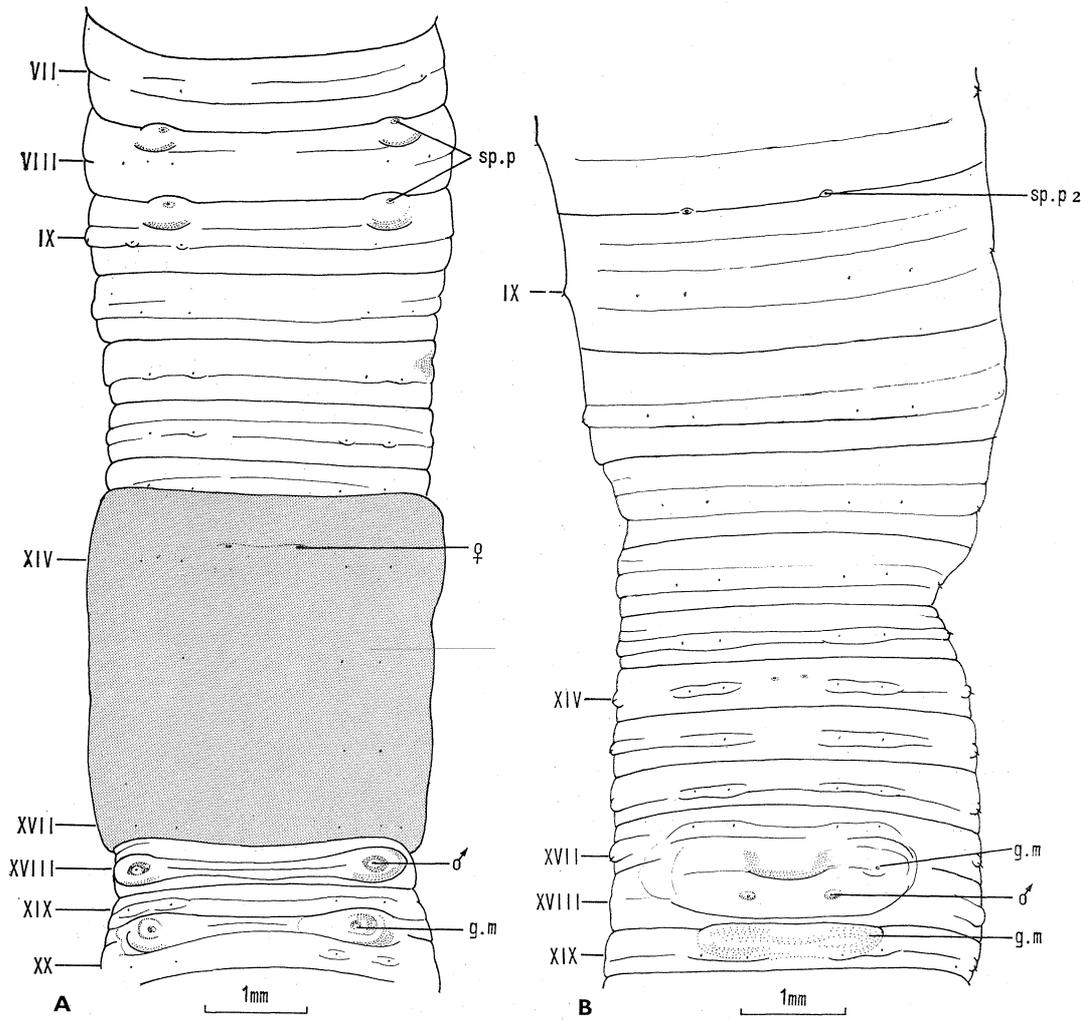


Figure 2.—Male genital field of A, *Oreoscolex illawarrae*, W.1311 (1); B, *O. simulans*, W.1499 (1). Explanation as for figure 1.

Oreoscolex illawarrae (Fletcher, 1889a)

Figs 2A, 3B. Table A

Cryptodrilus illawarrae Fletcher, 1889a: 1546–1547.*Cryptodrilus dubius* Beddard, 1895: 503 (non *Cryptodrilus dubius* Spencer, 1892: 136).*Notoscolex illawarrae*.—Michaelsen, 1900: 194–195.—Jamieson, 1971b: 79.*Oreoscolex illawarrae*.—Jamieson, 1974: 303.*Description*

l = 80–100 mm, w = 2–3 mm, s = 250–270. Prostomium epilobous $\frac{1}{2}$, narrow, open. First dorsal pore 10/11 or 11/12. Setae 8 per segment in regular longitudinal rows throughout. *a* and *b* absent in XVIII.

Nephropores not visible. Clitellum annular, $\frac{1}{2}$ XIII, XIV–XVII. Male pores slightly median of *b* lines on XVIII on well developed papillae which extend beyond *ab* laterally and ventrally and are medianly conjoined by the setal annulus which is tumid between them. Accessory genital markings a pair of similar papillae, also medianly conjoined, in 19/20 centred at mid *ab* (See Remarks). Female pores a pair, widely separated and approximately $\frac{1}{2}$ *aa* apart, anteromedian of setae *a* of XIV. Spermathecal pores 2 pairs, at the anterior margins of VIII and IX, shortly lateral of *a* lines, on low papillae which fill the presetal annulus.

Last hearts in XII; those in X–XII latero-oesophageal, arising from the supra-oesophageal vessel, but connectives from the dorsal vessel not demonstrable. Supra-oesophageal in $\frac{1}{2}$ IX– $\frac{1}{2}$ XIII, well developed. Gizzard large and firm, with anterior rim, in V. Extramural calciferous glands absent. Oesophagus segmentally dilated (moniliform), with circumferential blood vessels and numerous internal lamellae in VII–XIV; narrower in XV. Intestinal origin XVI; typhlosole, muscular thickening and caeca absent. Nephridia meronephric: very dense bands of innumerable spiral loops in VI anteriorly of which the medianmost, in VI at least, form an enteronephric tuft on each side with composite duct joining the pharynx. Succeeding nephridia very numerous exonephric micromeronephridia in lateral bands in each segment; several preseptal funnels observed on each side in caudal segments. Holandric (sperm funnels iridescent in X and XI); gymnorchous; seminal vesicles racemose, in IX and XII. Metagynous; large ovisacs in XIV. Prostates externally racemose and deeply lobulated in XVIII–XIX, XX but single central duct traceable far into the gland (i.e., tubuloracemose); vas deferens joining the muscular duct, which may be straight or sinuous, near the gland. Penial setae absent. Spermathecae 2 pairs, in VIII and IX; ampulla subspherical; duct wide and muscular with 2 inseminated, almost sessile, subspherical diverticula near its ental end.

Type-locality:

Illawarra, New South Wales.

Material examined:

9 clitellate and 2 sexual but aclitellate specimens labelled "*Notoscolex illawarrae*" and "*Crypto. illawarrae* Mt K.", Australian Museum W.1311, apparently the syntypes. Two specimens were closely examined and one of these was dissected.

Table A
INTERSETAL DISTANCES IN SEGMENT XII
Oreoscolex illawarrae

	mm								Standardized as percentage of periphery							
	<i>aa</i>	<i>ab</i>	<i>bc</i>	<i>cd</i>	<i>dd</i>	<i>dc</i>	<i>cb</i>	<i>ba</i>	<i>aa</i>	<i>ab</i>	<i>bc</i>	<i>cd</i>	<i>dd</i>	<i>dc</i>	<i>cb</i>	<i>ba</i>
W.1311 (1).. ..	1.76	0.53	1.34	1.11	2.92	1.07	1.34	0.53	16.60	5.05	12.63	10.46	27.43	10.10	12.63	5.05
W.1311 (2).. ..	1.34	0.34	1.03	0.88	2.38	0.88	1.03	0.34	16.27	4.18	12.55	10.69	28.83	10.69	12.55	4.18
Mean .. ..	..	..	..	..	..	..	..	..	16.43	4.61	12.59	10.57	28.13	10.39	12.59	4.61
Intervals/ <i>ab</i> .. ..	..	..	..	..	..	..	..	..	3.56	1.00	2.73	2.29	6.10	2.25	2.73	1.00

Remarks:

The above account extends and confirms that of Fletcher but the genital markings are shown to lie in 19/20 and not, as stated by Fletcher, in 18/19.

Oreoscolex saccarius (Fletcher, 1887b)

Figs 1B; 3C. Table B

Cryptodrilus saccarius Fletcher, 1887b: 951–953; 1889a: 1008–1013.—Beddard 1895: 502–503.—Buchanan, 1910: 221–223.—Raff, 1910: 251, Pl. LI, figs 13, 17, 18.

Notoscolex saccarius.—Michaelsen 1900: 189.—Jamieson, 1971b: 79.

Oreoscolex saccarius.—Jamieson, 1974: 303.

Description:

Unless otherwise indicated, where variation occurs, data in parentheses are from the re-examined specimen.

l = 50–195 mm, w = 3–12 mm, s = 140–290 (Fletcher); (l = 80 mm, w = 6 mm, s = 168). Prostomium epilobous (closed). First dorsal pore 10/11, 11/12 or 12/13 (11/12). Setae 8 per segment, commencing on II, in some specimens with a supernumerary seta; rows anteriorly regular but always becoming irregular at distances from the posterior end which vary from shortly preclitellar to one fifth of the body length precaudally; irregularity developing first in *d*, then in *c* and further posteriorly in *a* and *b*. (Regular in the fore- and mid-body; irregular further posteriorly). Setae *a* and *b* absent in XVIII. Nephropores not externally visible. Clitellum annular, $\frac{3}{4}$ XIII–XVII. Male pores in *ab*, or shortly lateral of *b* lines, on the lateral parts of the genital field. This field consisting usually of a rather broad but shallow transverse depression bounded by a tumid rim, most thickened just round and a little beyond the ends of the depression which reaches on each side to a little beyond *b* lines, the depression longitudinally narrowed near the midline so as to appear dumb-bell shaped, the small male papillae at the sites of the absent setae *ab*, confluent with the posterior slope of the depression so that the depressed area passes in front of and beyond them; sometimes with a small papilla, or small pit, dorsal of the male papillae. (The pits anterodorsal, presetally and shortly lateral of *b* lines in the re-examined specimen). The male field sometimes convex rather than depressed. 1 to 3 dots or pits sometimes present in the midline anterior to the male pores. Accessory genital markings: at maturity a pair of pits or papillae near the midventral line and in or near intersegments 11/12, 12/13, 18/19, 3 pairs between any two segments from XX–XXIV, and 1 on the ventral surface of XVIII, these markings surrounded by an elliptical transverse barrier which is concave with an enclosing raised rim or is convex; some or all of the accessory genital markings may be absent; (present anteriorly in XIII, XXIII and XXIV in the re-examined specimen). Female pores paired, anteromedian of *a* on XIV. Spermathecal pores 2 pairs in 7/8 and 8/9 on small protuberances, immediately lateral of *a* lines.

Table B
INTERSETAL DISTANCES IN SEGMENT XII
in *Oreoscolex saccarius*

	mm								Standardized to percentage of periphery							
	<i>aa</i>	<i>ab</i>	<i>bc</i>	<i>cd</i>	<i>dd</i>	<i>dc</i>	<i>cb</i>	<i>ba</i>	<i>aa</i>	<i>ab</i>	<i>bc</i>	<i>cd</i>	<i>dd</i>	<i>dc</i>	<i>cb</i>	<i>ba</i>
W.1372 (1)	2.42	0.88	3.00	2.62	5.92	2.30	2.76	0.76	11.71	4.28	14.49	12.63	28.62	11.15	13.38	3.71
W.1372 (2)	2.61	0.76	2.76	1.69	6.57	1.76	2.61	0.80	13.33	3.92	14.11	8.62	33.52	9.01	13.33	4.11
Mean .. ..	..	..	..	..	..	..	..	..	12.52	4.10	14.30	10.62	31.07	10.08	13.35	3.91
Intervals/ <i>ab</i> .. ..	..	..	..	..	..	..	..	..	3.05	1.00	3.48	2.59	7.57	2.45	3.23	0.95

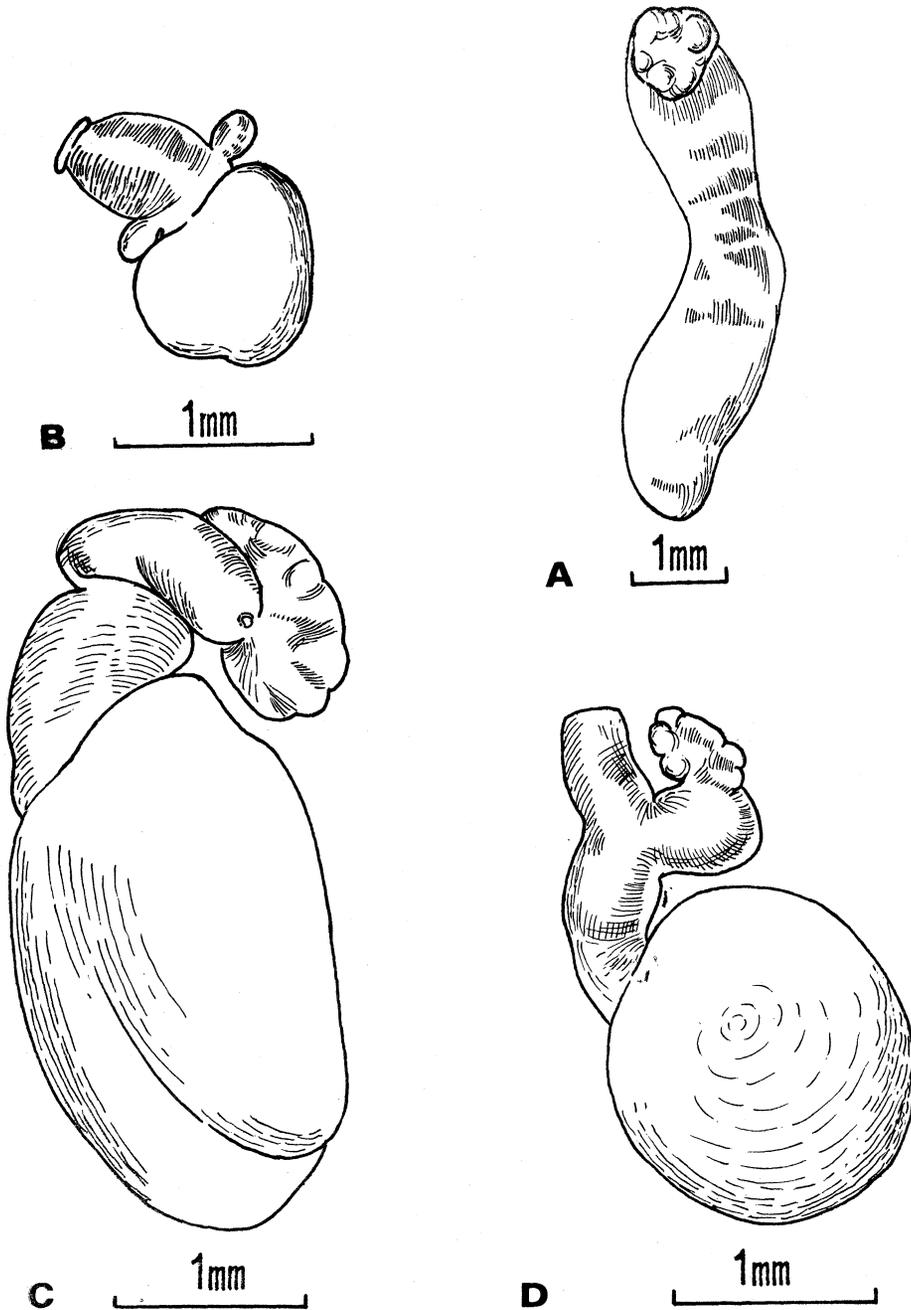


Figure 3.—Spermatheca of A, *Oreoscolex grandis*, W.1494 (1), right VIII; B, *O. illawarrae*, W.1311 (1), right VIII; C, *O. saccarius*, W.1372, (1), right IX; D, *O. simulans*, W.1499 (1), right IX.

Internal anatomy (from re-examined specimen unless otherwise indicated):

Last hearts in XIII (as Fletcher); hearts latero-oesophageal in X–XIII. Supra-oesophageal vessel in X (and further anteriorly?)—XIII, well developed. Gizzard large and firm, in V. Oesophagus with a pair of reniform calciferous glands in each of IX–XIII (VIII–XIII in Springwood specimens, Fletcher 1889a); the glands dorsolateral on the oesophagus with which they communicate by very short but narrow stalks; each gland encircled by a vessel and internally with numerous closely packed radial lamellae. Intestinal origin XVI (XV, Fletcher 1887b; Raff, 1910) typhlosole, muscular thickening and caeca absent. Nephridia: very large tufts in V and VI (salivary glands of Fletcher, 1887b), with innumerable spiral loops in V and VI, those in V at least with composite ducts running forwards to open into the pharynx; smaller, similar tufts in IV; small aggregations of nephridial tubules in II and III, the ducts of which were not traced. In VII posteriorly nephridia forming transverse parietal bands of numerous simple, astomate micromeronephridia. Caudally with numerous exonephric micromeronephridia, with preseptal funnels, on each side.

Holandric (testes and iridescent funnels in X and XI); gymnorchous; seminal vesicles racemose, in XI and XII (misidentified as testes by Fletcher, 1887b). Metagynous (confirmation); ovisacs in XIV. Prostates racemose and deeply incised, in XVIII and XIX (XIX or XX–XXIV, Fletcher); the duct unusually long and coiled (confirmation); vas deferens joining the junction of duct and gland. Penial setae absent. Spermathecae 2 pairs, in VIII and IX, each with cylindrical to elongate-ovoid ampulla and a longer, narrower, bent or coiled duct with ectal multiloculate (inseminated) diverticulum (confirmation).

Type-locality:

Hornsby (New South Wales).

Other localities:

Eastern portion of County of Cumberland north of Port Jackson (typical form). Springwood, Blue Mountains ("var. *montanus*"). Near Gosford ("var. *robustus*"), Fletcher 1889a.

Material examined:

25 sexual and 3 juvenile specimens, with fragments, labelled "*Crypto. saccarius*, Hornsby, Berowra, Manly, King Is., and *Notoscolex saccarius*, cotypes", Australian Museum, W.1372. Of these, one specimen was closely examined and dissected.

***Oreoscolex simulans* (Fletcher, 1889b)**

Figs 2B; 3D. Table C

Cryptodrilus simulans Fletcher, 1889b: 998–999.—Beddard, 1895: 505.

Notoscolex simulans.—Michaelsen, 1900: 193.—Jamieson, 1971b: 79.

Oreoscolex simulans.—Jamieson 1974: 303.

Table C
INTERSETAL DISTANCES IN SEGMENT XII
in *Oreoscolex simulans*

	mm								Standardized to percentage of periphery							
	<i>aa</i>	<i>ab</i>	<i>bc</i>	<i>cd</i>	<i>dd</i>	<i>dc</i>	<i>cb</i>	<i>ba</i>	<i>aa</i>	<i>ab</i>	<i>bc</i>	<i>cd</i>	<i>dd</i>	<i>dc</i>	<i>cb</i>	<i>ba</i>
W.1499 (1)	1.26	0.53	1.30	0.80	4.00	0.69	1.42	0.53	12.00	5.09	12.36	7.63	37.81	6.54	13.45	5.09
W.1499 (2)	1.11	0.38	1.15	0.73	4.23	0.73	1.15	0.38	11.28	3.89	11.67	7.39	42.80	7.39	11.67	3.89
Mean .. ..	..	..	..	..	..	..	..	..	11.64	4.49	12.01	7.51	40.30	6.96	12.56	4.49
Intervals/ <i>ab</i> .. ..	..	..	..	..	..	..	..	..	2.59	1.00	2.67	1.67	8.97	1.55	2.79	1.00

Description:

l = 82–108 mm, w = 4–5 mm, s = 220. Prostomium pro-epilobous $\frac{1}{2}$, open. First dorsal pore 10/11. Setae indistinctly visible, in 8 regular longitudinal rows throughout.

Nephropores not visible. Clitellum 1/n XIII–XVII? (Fletcher). Male pores on two small papillae a little dorsal of *a* lines on the setal annulus of XVIII which presents a ridgelike swelling separated from similar but less pronounced ridges on XVII and XIX by depressions, the ends of the first and last ridges bending round and fusing with that on XVIII, their extremities reaching a little dorsal of setae *b*; a pair of what appear to be pores on the anterior annulus of XVIII and XIX (Fletcher) or (re-examination, W.1499 (1)) male pores very slightly ventral of *a* lines on the transverse swelling; an ill-defined ridge on XVII laterally connecting with this, the marking in XIX restricted to a transverse tumescence in 18/19 reaching the setal annulus of XIX and laterally to *b* lines but not connected with that in XVIII. Female pores anteromedian of setae *a* of XIV, approximately $\frac{1}{3}$ *aa* apart. Spermathecal pores 2 pairs, in 7/8 and 8/9, a little dorsal (Fletcher) or very slightly ventral (re-examination) of *a* lines.

Last hearts in XII; those in X–XII latero-oesophageal. Supra-oesophageal vessel in IX–XII (?), well developed. Gizzard large and moderately firm, with anterior rim, in V. Three pairs of large reniform calciferous glands sessile dorsolaterally on the oesophagus, but well pinched off, in XIII, XIV and XV; each with many radial laminae crossing the entire lumen of the gland. Intestinal origin $\frac{1}{2}$ XVII; typhlosole absent but some segmental thickening of the roof of the intestine present; muscular thickening and caeca absent. Nephridia meronephridia: very large tufts in V with wide composite ducts passing forward to open into the pharynx shortly behind the brain. Nephridia further anteriorly reduced, exonephric, with a pair of small tufts in IV; aggregations of long exonephric tubules on the posterior septa of VI and several succeeding segments. Nephridia of the intestinal region many parietal exonephric micromeronephridia on each side which caudally have numerous preseptal funnels. Caudal nephridia also adherent to the intestine and possible enteronephric though no communication with the gut was demonstrable. Holandric (sperm funnels non-iridescent in X and XI); gymnorchous, seminal vesicles racemose, in XI and XII. Metagynous; ovisacs not seen. Prostates tubuloracemose, elongate, leaf-like and laterally incised, in XVIII and XIX, the thick muscular duct continuous as a midrib medianly through more than half of the length of the gland and giving off a succession of lateral ducts into the gland at rather regular intervals. Vas deferens joining junction of gland and muscular duct. Penial setae present. Spermathecae 2 pairs, in VIII and IX, the ampulla ovoid; diverticulum multiloculate but in this specimen borne on a distended muscular lateral duct which joins the long spermathecal duct near the ectal end of the latter.

Type-locality:

Bulli and Illawarra, New South Wales.

Material examined:

5 imperfectly sexual specimens labelled "*Crypto. simulans* (T.F.P. and T.G.S.), Bulli, 10/11/87, 16/10/89, and Appin" (date?), Australian Museum W.1499, apparently the syntypes, of which two were examined closely and one dissected.

Remarks:

The above account extends and confirms the original type-description excepting Fletcher's observation of only two pairs of calciferous glands.

ACKNOWLEDGMENTS

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