

SOME EARTHWORMS FROM QUEENSLAND.

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(Text-figures 1-2).

Family MEGASCOLECIDÆ.

Subfamily MEGASCOLECINÆ.

Genus DIGASTER E. Perrier.

DIGASTER LONGMANI, sp. nov.

External Characters.—Length about 520 mm.; diameter behind the clitellum about 18 mm, in front 20 mm., but dimensions difficult to determine accurately owing to distortion and swelling of the specimen. Colour in formalin: Behind the clitellum light mole-brown, in front deeper mole-brown; clitellum very dark brown. Number of segments about 315; segments v.-xiii. biannular, iii. and iv. faintly so; vii.-xiii. have also an additional less well-defined annulus between the main one and the posterior furrow; iii.-vii. show more or less faintly defined annular rings, one in front of, one behind, the principal annulus.

Prostomium proepilobous.

Dorsal pores begin in furrow 5/6.

Setæ widely paired. In front of the clitellum $ab = \frac{1}{4} aa = \frac{1}{2} bc = \frac{2}{5} cd$; behind the clitellum $ab = \frac{1}{5} aa = \frac{1}{5} bc = \frac{3}{7} cd$; at midbody $ab = \frac{1}{3} aa = < \frac{1}{2} bc = \frac{7}{10} cd$; dd is greater than half the circumference. The setæ are very difficult to discern on the pre-clitellar region except on a couple of segments immediately preceding the clitellum.

The clitellum is well developed, complete all round, and embraces segments xiv.-xviii. (= 5). The intersegmental furrows are visible, dorsal pores absent, setæ (except a and b on xviii.) present.

Male pores paired on xviii., in form of transverse slits lying within, and almost as long as, ab ; lips tumid, cream in colour. The left pore is excentrically placed on a somewhat ovate papilla with uncertain boundaries which extends a little beyond ab dorsally and ventrally, placed rather nearer the ventral and posterior boundaries.

The right pore is placed at the ventral-most corner and slightly nearer the posterior than the anterior edge of a somewhat diamond-shaped, flattened, glandular area which extends from just ventral of *a* to a distance beyond *b* about equal to *ab*. Between the two papillæ there is a well-defined groove which bifurcates at the papillæ to include about a half or less of them in the fork so formed. The posterior limb of each bifurcation is the continuation of a deeper, narrower groove which forms the posterior portion of the main one.

The female pores are paired and close together on xiv., anterior of the setæ ring.

The spermathecal pores are two pairs situated at the anterior edge of viii. and ix. in grooves 7/8 and 8/9. The setæ are not visible on these segments, but the pores seem to be about in line with, or just dorsal of, *a*.

On the ventral surface of segments viii.-xii. there is a glandular strip posteriorly bounded by the segment edge, anteriorly just clear of the central annulation furrow, and extending beyond *b* on each side to about half way between *b* and *c*. These strips have a definite deep pink colour.

Internal Anatomy.—Septum 6/7 muscular and thick ; 7/8 somewhat thicker ; 8/9 considerably thicker than 7/8 but only about half as thick as 9/10 ; 11/12 enormously thickened ; 10/11 and 12/13 less stout but still very thick, 12/13 being the stouter ; 9/10 a little thinner than 10/11 ; 13/14 about the same as 8/9.

Gizzards well developed and bulbous in vi. and vii.

Large intestine commences in xviii. There is in xi. a structure which looks like and probably is a calciferous gland ; it is unpaired and placed saddle-wise on the intestine of which it embraces about two-thirds. Vascular swellings present in xii.-xv.

Last heart in xiii.

The excretory system is micronephric with numerous micronephridia in each segment, which are particularly plentiful in the segments in front of xix. ; in xix. and from thence backwards micronephridia less numerous and tend to be aggregated in a transverse band in the middle of the segment.

Testes and funnels paired and free in xi. There is a single pair of large, loosely granular seminal vesicles in xii. attached to the anterior septum of the segment and approximated above the intestine.

Prostates paired in xviii., flattened, tongue-shaped ; they are comparatively small and lie on the floor of the segment. The duct is short and slender and joins the gland at the level of the inner surface of the body wall.

Penial setæ absent.

Ovaries and funnels paired in xiii.

(Text-figure 1.)

Figure 1. *Digaster longmani*, sp. nov. Spermatheca from holotype.

The spermathecæ are two pairs normally occurring in viii. and ix., but the left one of the anterior pair has become displaced forward into vii. General shape of spermatheca tubular; ampulla ovoidal, half as broad as long, slightly less than half the total length of the organ. The duct is about one-third as broad as long; has one or two conspicuous, obliquely placed sacculations about half way from the ectal end, if two, they are on opposite sides and converge ectally. Diverticulum small, transversely elongate, ovoidal structure obliquely placed near the opening of the duct; extends almost across the flattened side of the duct, sessile. Within the diverticulum there are visible several iridescent clumps of sperm.

Remarks.—The species *Digaster longmani* seems to be most closely related to *D. brunneus* Spencer, from which, however, it differs in several characters, notably in the spermatheca. These two species are unique within the genus in being metandric.

Locality.—Tambourine Mountain, Southern Queensland. One complete specimen (the holotype) and four fragments including a head end. Donated by C. Colquhoun, and registered G. 684.

Genus WOODWARDIELLA Stephenson.

WOODWARDIELLA TRYONI (Fletcher).

1890. *Cryptodrilus Tryoni*, Fletcher, Proc. Linn. Soc. N.S.W., iv. (2), pt. 3, p. 994.

1916. *Woodwardia* (?) *Tryoni*, Michaelsen, Kungl. Sven. Vet.-Akad. Hand. 52, No. 13 (Mjöberg's Austral. Expd.), p. 62.

A single specimen from Brisbane, 580 mm. long, soft and poorly preserved, is referred to Fletcher's *Cryptodrilus tryoni*, although it differs in some points from the original description.

The nephridiopores are in furrows 1/2, 2/3, 5/6, and thence in alternate furrows in *d*; in 3/4, 4/5, and thence in alternate furrows to 10/11 in *c*, further back in *b*.

Fletcher describes the spermathecæ as "three pairs, each of them with two cæca." This would seem to indicate that the cæca or diverticula are simple. In the specimen before me the ampulla is somewhat tubular, bloated a little in its proximal half and at the widest portion one-third to a half as broad as long; the duct short, about two and a half times as long as broad, the length less than half the length of the ampulla. The two diverticula are attached close together on the anterior face of

the duct about half-way down; the form of the diverticulum is very variable; it may be a short, simple, club-shaped structure scarcely extending to the junction of the ampulla and duct or it may be composed of a cluster of from two to four tubules of varied lengths, sometimes somewhat convoluted and anastomosed (varying from slightly to almost completely) from the base distally. The component tubules of a compound diverticulum may be sufficiently long to extend well beyond the junction of the ampulla and the duct.

The prostates are small, narrow, tongue-shaped bodies confined to xviii., finely granular; the duct is very short, traversing only the body wall. Although not sectioned the external appearance of the prostate leaves little doubt that the glandular part has a branched canal system.

Penial setæ present but seemingly all with the tip missing and too damaged for examination.

Locality.—Brisbane, Queensland. Donated by W. E. Weatherill and registered Don. 14373.

WOODWARDIELLA YOUNGI, sp. nov.

External Characters.—Length 360 mm., diameter 9–10 mm. In alcohol the colour is mole-grey dorsally, with a greenish tinge on the head end as far back as and including the clitellar segments; brownish-cream ventrally. Number of segments 225.

Prostomium proepilobous.

Dorsal pores commence in furrow 6/7.

Setæ widely paired in regular lines. In front of the clitellum $ab = \frac{3}{7}$ $aa = > \frac{3}{4}$ $bc = \frac{2}{7}$ cd ; behind the clitellum $ab = \frac{7}{15}$ $aa = \frac{2}{3}$ $bc = \frac{1}{4}$ cd ; at midbody $ab = \frac{3}{7}$ $aa = \frac{3}{4}$, $bc = \frac{3}{11}$ cd ; dd is less than half the circumference.

The clitellum embraces segments xiv.– $\frac{2}{3}$ xviii. ($= 4\frac{2}{3}$) and also encroaches slightly on xiii.; the three anterior segments are complete all round; on xvii. extends to the dorsal limit of the genital pits on each side and then across the ventral portion of the segment as a strip immediately anterior of the genital pits; on xviii. cut away like a saddle. Setæ present, dorsal pores absent, intersegmental furrows visible.

Ventral surface of xviii. glandular generally; seta *a* on each side absent; seta *b* surrounded by a darkened, somewhat circular halo of slightly swollen epidermis about equal to *ab* in diameter; from these halos the pigmentation not so deep continues ventrally and finally fades out just beyond *a*. Male pores could not be discerned from an external examination; dissection demonstrates that they are paired and open in the immediate vicinity of *b*.

The female pores are distinct and paired on xiv.; they lie one at each end of a comparatively wide V-shaped groove just anterior of the setæ ring.

The spermathecal pores are three pairs in furrows 6/7, 7/8, and 8/9, slightly dorsal of *b*.

On the ventral surface of x. and xi. there is on each side a brownish, oval, glandular patch somewhat less than twice as long as broad; the posterior curve extends just beyond the setæ ring, anteriorly well clear of the intersegmental furrow; the dorsal limit is just beyond *b* and the ventral limit rather more beyond *a*. On xvii. there is a pair of transversely elongate "pits" each about three-fifths as wide as long with tumid, glandular lips; the posterior lip of each groove which is wide includes setæ *a* and *b*; the structures extend ventrally and dorsally a little beyond *a* and *b* respectively. On xix. there is a pair of raised, flattened, glandular cushions about twice as long as broad, somewhat rectangular in general shape with the angles rounded; setæ *a* and *b* are included in the posterior edge; ventrally and dorsally these areas extend a little beyond *a* and *b* respectively. On the right side of xx. there is what appears to be a similar but rudimentary cushion; it is much smaller, extends less distance beyond *a* and not quite to *b*.

Internal Anatomy.—Septa 5/6-9/10 progressively thickened; 10/11 and 11/12 very stout; 12/13 about the same as 8/9; 13/14 and 14/15 about the same as 6/7 and 5/6 respectively; 15/16 almost as thin as the normal ones further back.

Gizzard in v. large and bulbous.

Calciferous glands are five pairs in segments ix.-xiii.; they are attached ventrolaterally to the intestine by a broad base; large intestine commences in xvi.

Last heart in xiii.

Excretory system meganephric.

Testes and funnels paired and free in x. and xi. Seminal vesicles, two pairs, in ix. and xii., small; the anterior pair the smaller, attached rather high up to the front face of the septum; the posterior pair attached to the posterior face of the septum and situated lateral of the œsophagus.

Prostates paired in xviii., kidney-shaped; duct short, straight, and slender.

Penial setæ absent.

Ovaries and funnels paired in xiii.

(Text-figure 2.)

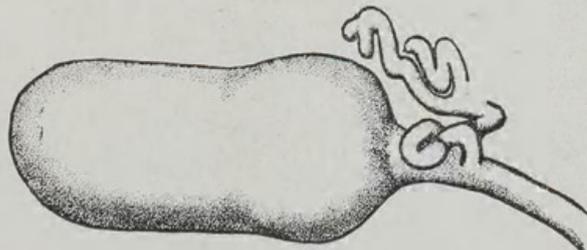


Figure 2. *Woodwardiella youngi*, sp. nov. Spermatheca from holotype.

The spermathecæ are three pairs in vii., viii., and ix. The duct is slender and slightly curved, above the diverticulum gradually expands towards the base of the ampulla; about two thirds as long as the ampulla. Ampulla generally cylindrical,



Boardman, W. 1932. "Some earthworms from Queensland." *Memoirs of the Queensland Museum* 10(2), 125–130.

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