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CONTENTS OF VOLUME IV, PART II.

Art. XVII.—*Preliminary Description of Victorian Earth-worms. Part I. — The Genera Cryptodrilus and Megascolides.*

By W. Baldwin Spencer, M.A.

Professor of Biology in the University of Melbourne.

(With Plates XIV, XV, XVI, XVII, XVIII, XIX.)

[Read December 10, 1891.]

For the past four years I have been gradually collecting earth-worms as opportunities offered and the present paper merely contains brief descriptions of forms of the genera Cryptodrilus and Megascolides which have been met with in Victoria.

Mr. J. J. Fletcher, to whom we owe almost entirely our knowledge of Australian earth-worms described up to the present time, has already published brief accounts of, principally, New South Wales forms. I am much indebted to him both for specimens of those which he has described and for valuable advice and information, and it may perhaps be as well to state here that we are at present engaged together upon a somewhat extensive monograph dealing with Australian earth-worms. The completion of this joint work will of necessity occupy considerable time, though we hope to publish very shortly the first part, which will deal with the systematic arrangement of the forms.

Our collection is very extensive, and necessitates a revision of the genera, but meanwhile we have thought it advisable to adhere to existing genera and to give names which will serve at present for identification.

In the preliminary notices of Victorian forms, I have purposely refrained from dealing with any but macroscopic

characters, and have not even entered into details with regard to these, other than such as will serve for identification.

A full description, especially as regards the nephridia, genital organs and setæ, which will serve as the basis of a revised classification, is not attempted to be given in this preliminary account. This notice, therefore, contains merely brief descriptions of eleven new species of Cryptodrilus, and of ten new species of Megascolides. In addition to these, two more species have been previously described, viz., *M. australis* (McCoy), and *M. tuberculatus* (Fletcher).

It will be seen that the latter genus is much more strongly represented proportionately in Victoria than in New South Wales. It is one of those series of forms which are more or less characteristic of the south eastern corner of Australia, spreading thence to a slight extent up the eastern coastal district, but dying out to the north. Doubtless it will be found to be strongly developed in Tasmania, since in their faunas, Victoria, south of the Main Dividing Range, and Tasmania are closely allied.

The annual camping out expeditions of the Victorian Field Naturalists' Club have enabled me to collect in very inaccessible parts of the colony, especially in Croajingolong and the mountain ranges around the source of the Yarra, and I am much indebted for valuable assistance, both on these and other occasions, to Messrs. C. French, C. Frost, A. H. S. Lucas, T. Steel, J. Hulme, D. le Souef, W. Mann, J. Shephard, Hugh Copeland, C. Brittlebank, H. R. Hogg, the Rev. W. Fielder, and Dr. Dendy.

As stated above, the present classification can only be regarded as a temporary one with regard to the two genera now dealt with, but the collection which Mr. Fletcher and myself now possess will, we trust, enable us to satisfactorily deal with this question in a short time.

In the descriptions, I have used the terms employed by Dr. Benham in his valuable paper, "An Attempt to Classify Earth-worms"* and may here express the indebtedness of workers in this group of forms to the recent researches of Dr. Benham and Mr. Beddard.†

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* Q.J.M.S., Vol. XXXI, Part 2, p. 201.

† Published principally during the past few years in the *Quarterly Journal of Microscopical Science.*

(*a*) Cryptodrilus (Fletcher).

(1) *C. gippslandicus*, sp. n. (Figs. 1, 2, 3, 63). Spirit specimens 5 inches long, one-third inch broad.

Prostomium completely dovetailed into the peristomium.

Peristomium, with grooves, giving it a ribbed appearance.

Clitellum fairly well developed ; red-brown colour dorsally and laterally (in spirit), extending over segments 14–16, together with the posterior part of 13, and the anterior of 17.

Setæ, regularly arranged in couples along the anterior half of the body. Then the two outer rows become irregular, and along the posterior third of the body all the rows are very irregular, giving to this part of the body, at first glance, much the appearance of a perichæte.

Male pores on papillæ on segment 18, at the level of the interval of the two inner setæ of each side.

Oviduct pores on segment 14 ventral of, and slightly anterior to, the innermost setæ on each side.

Spermathecal pores five in number ; intersegmental ; at the level of the first seta. The first between segments 4 and 5.

Dorsal pores present. The first between segments 3 and 4.

Nephridiopores difficult to distinguish ; at the level of, and in front of the third seta of each side, commencing on the third segment.

Alimentary canal. Gizzard in segment 5. Vascular swellings on the œsophagus in segments 8–13.

Calciferous glands in segments 14 and 15. Large intestine commencing in segment 17.

Blood vascular system. Dorsal blood-vessel *double* from the sixth segment to within about twenty of the posterior end. That is, there is a very distinct double loop in each segment, the two halves uniting where they pass through the septa. Hearts in segments 6–12, the two first small. A supra-intestinal vessel in the segments containing the hearts.

Excretory system. Meganephric, with a coiled portion ventrally on each side, from which a duct runs upwards to the third seta.

Reproductive system. Testes, two pairs attached to the anterior walls of segments 10 and 11. Ciliated rosettes in the same segments.

Prostates, coiled, tubular, and in segments 18 and 19.

Sperm sacs finger-shaped, attached to the posterior walls of segments 9 and 10.

Ovaries attached to anterior wall of segment 13 ; oviducts open into the same segment.

Spermathecæ in segments 5–9. Each consists of a long sac, with a simple diverticulum about one-quarter the length of the sac.

Habitat. Croajingolong (East Gippsland). Collected during an expedition of the Field Naturalists' Club of Victoria.

(2) *C. intermedius*, sp. n. (Figs. 4, 5, 6, 64). Spirit specimens 7 inches long, one-quarter inch broad.

Prostomium very slightly dovetailed into the peristomium.

Peristomium, with grooves, giving it a ribbed appearance.

Clitellum well developed, extending over segments 14–17 and may include dorsally when fully developed the anterior part of 18.

The ventral parts of segments 17, 18 and 19, marked by transverse swollen bands.

Setæ in couples, regularly arranged, except at the very posterior end of the body, where the two outer rows are irregular. The outer couple placed laterally and slightly further apart from one another than the inner.

Male pore, on segment 18, at the level of the first seta of each side, on a slight papilla.

Oviduct pores on segment 14 slight ventral of, and anterior to, the first setæ.

Spermathecal pores two in number; intersegmental; at the level of the first setæ, between segments 7 and 8, 8 and 9.

Dorsal pores present. The first between segments 5 and 6.

Nephridiopores at the level of, and anterior to, the third seta on each side.

Alimentary canal. Gizzard in segment 5. Vascular swellings on the œsophagus in segments 10–17. Those in segments 15–17 large. No true calciferous glands. Large intestine commencing in segment 19.

Blood vascular system. Single dorsal vessel. Hearts in segments 6–13. Lateral vessel in segments 5–8, sending branches on to the walls of the pharynx. A supra-intestinal vessel in the segments containing the hearts.

Excretory system. Meganephric. One pair of nephridia in each segment.

Reproductive system. Testes, one pair in segment 11. One pair of ciliated rosettes in the same segment. Prostates,

coiled, tubular, and in segment 18. Sperm sacs, large, grape-like, attached to the anterior wall in segment 12, with smaller ones on the anterior wall in segment 14.

Ovaries attached to the anterior wall of segment 13; oviducts open into the same segment.

Spermathecæ in segments 8 and 9. Each consists of a long sac with a small rosette-like diverticulum close to the base.

Habitat. S. Warragul, Gippsland. Collected by Mr. W. Mann.

(3) *C. tanjilensis*, sp. n. (Figs. 7, 8, 9, 65). Spirit specimens 5½ inches long, ½ inch broad.

Prostomium completely dovetailed into the peristomium, with a dorsal longitudinal groove continuous along the body. Ventrally, a median groove only at the very posterior end.

Clitellum strongly developed, complete, occupying segments 14–16, together with the posterior part of 13 and anterior of 17.

Setæ regularly arranged along the whole length of the body. The outer couple wider apart than the inner, and the fourth row placed dorso-laterally.

Male pores on papillæ on segment 18, at the level of the interval between the two innermost setæ of each side.

Oviduct pores on segment 14 ventral of, and slightly anterior to, the innermost setæ of each side.

Spermathecal pores five in number; intersegmental; at the level of the first setæ; the first between segments 4 and 5.

Accessory copulatory structures present at the level of the first setæ between segments 18 and 19, and 19 and 20.

Nephridiopores at the level of, and in front of the third seta of each side. Very prominent on the last few segments

Alimentary canal. Gizzard in segment 5. Vascular swellings on the œsophagus in segments 7–15; large in segment 15. No true calciferous glands. Large intestine commencing in segment 18.

Blood vascular system. Single dorsal vessel. Hearts in segments 7–12. Supra-intestinal vessel in segments containing the hearts and extending back into segment 13.

Excretory system. Meganephric, with a coiled portion ventrally, and a long sac-like part dorsally, which is larger in and before the clitellum than in the segments posterior to this.

Reproductive system. Testes, two pairs attached to the anterior walls of segments 10 and 11. Ciliated rosettes in the same segments, which are full in mature specimens of sperm.

Prostates, coiled, tubular, and in segment 18.

Sperm sacs attached to the anterior wall of segment 12, saccular in form.

Ovaries attached to the anterior wall of segment 13; oviducts open into the same segment.

Spermathecæ in segments 5–9. Each consists of a long sac, with a simple diverticulum, about one-quarter the length of the sac.

Habitat. Tanjil Track, near the source of the Yarra River. Collected during an expedition of the Field Naturalists' Club of Victoria to the Yarra Falls, near the source of the River Yarra.

(4) *C. frenchi*, sp. n. (Figs. 10, 11, 12, 66). Spirit specimens 3 inches long, $\frac{1}{8}$ inch broad.

Prostomium dovetailed into the peristomium to the extent of $\frac{1}{2}$ or $\frac{3}{4}$.

Clitellum occupying segments 14–16; not very distinctly marked ventrally.

Setæ in four couples, regularly arranged, except at the posterior end of the body. Prominent. The inner couple nearer together than the outer, the fourth row being dorso-lateral. For the posterior one-sixth of the body the two outer rows are irregular and on the last few segments all are except the innermost on each side.

Male pores on papillæ on segment 18, at the level of the interval between the inner couple of setæ on each side.

Oviduct pores on segment 14, close to the anterior margin and slightly ventral of the inner setæ.

Spermathecal pores, five in number, just on the very anterior boundaries of segments 5–9, at the level of the interval between the inner couple of setæ.

Accessory copulatory structures as follows:—Small oval patches anteriorly on segments 10 and 11 at the level of the spermathecal ducts. Patches on each side of the body at the level of the interval between the inner couple of setæ from segments 16–21. Each patch is composed of a small part of two contiguous segments and the pairs are united across the mid-ventral line by glandular ridges.

Dorsal pores present. The first between segments 4 and 5.

Nephridiopores at the level of the third seta in each segment, commencing on the third.

Alimentary canal. Gizzard small and in segment 6. Vascular swellings on the œsophagus in segments 9–15, but no true calciferous glands.

Blood vascular system. Dorsal blood-vessel single. Hearts in segments 7–12, the first two small. Supra-intestinal vessel in segments 8–12, and continued back into the anterior part of segment 13.

Excretory system. Meganephric.

Reproductive system. Testes, two pairs attached to the anterior walls of segments 10 and 11. Ciliated rosettes in the same segments. Sperm sacs attached to the anterior wall of segment 12 and the posterior of segment 9, the latter finger-shaped.

Prostates long, tubular, and coiled, occupying segments 18–21.

Ovaries attached to the anterior wall of segment 13; oviducts open into the same segment.

Spermathecæ in segments 5–9. Each with a long sac and short diverticulum about one-third the length of the main sac.

Habitat. Croajingolong (E. Gippsland). Collected during an expedition of the Field Naturalists' Club of Victoria.

(5) *C. dubius*, sp. n. (Figs. 13, 14, 15, 67). Spirit specimens $3\frac{1}{2}$ inches long, less than one-quarter inch broad.

Prostomium completely dovetailed into the peristomium, which is ribbed.

Clitellum distinct and complete, occupying segments 14–17.

Setæ in four couples, regularly arranged; interval between the inner and outer couples, and between the two rows of the outer couple double that between the two rows of the inner couple. The fourth row, dorsally placed.

Male pores on distinct papillæ in segment 18, slightly ventral of the level of the second row of setæ.

Oviduct pores on segment 14, slightly anterior to, and ventral of, the innermost setæ.

Spermathecal pores, two in number, on the very anterior margin of segments 8 and 9, at the level of the innermost setæ.

Accessory copulatory structures. Two small glandular patches on segment 17, at the level of the intervals between the inner rows of setæ, and a median ventral patch on the anterior margin of segment 18.

Dorsal pores present, the first between segments 5 and 6.

Nephridiopores conspicuous, commencing on the second segment, and placed on each side anteriorly to, and at the level of, setæ 1, 3 and 4.

Alimentary canal. Gizzard in segment 5. Vascular swellings on the œsophagus in segments 12, 13 and 14. True calciferous glands well developed in segments 15 and 16. Large intestine commencing in segment 18.

Excretory system. Meganephric (?) with three coiled tubes on each side in each segment, corresponding to the nephridiopores. (The nephridia of this form are very interesting and probably indicate an aggregation of plectonephric tubules into three groups).

Reproductive system. Testes doubtful. One pair present, but small, in segment 10, attached to the anterior wall; probably a pair in segment 11. Ciliated rosettes distinct in segments 10 and 11.

Prostates double. A smaller anterior coiled tubular mass in segments 17 and 18; a posterior larger mass in segments 18–21. Separate duct from each, the two uniting together and having a single opening in segment 18.

Sperm sacs in segments 11 and 12. Each has the form of a saccular dilatation attached to the anterior wall of the segment. The anterior one probably encloses a testis.

Ovaries in segment 13. Oviducts opening into the same segment.

Spermathecæ, two pairs. Each consists of a long sac, with two short club-shaped diverticula arising from the duct.

Habitat. Victoria. This probably comes from Croajingolong but the distinct locality other than Victoria is not noted.

It is evidently closely allied to *C. fastigatus*, Fl., but is distinct from this (1) in the possession of well developed calciferous glands in segments 15 and 16, and (2) in the sperm sacs not being racemose. The curious double nature of the prostates, and the identical arrangement of the nephridia shows the two forms to be closely allied, but at present, pending the publication of our full report, they are placed as distinct species in the genus Cryptodrilus.

(6) *C. macedonensis*, sp. n. (Figs. 16, 17, 18, 68). Spirit specimen 3 inches long, one-eighth inch broad.

Prostomium not dovetailed into the peristomium, which is ribbed.

Clitellum distinct, complete and brown coloured in spirit specimens, the rest of the body being bleached.

Setæ, four couples, regular along the whole length. The intervals between the two couples of each side, and between the two rows of the outer couple very nearly equal and each more than twice as great as that between the rows of the inner couple. The fourth seta nearly dorsally placed.

Male pores on papillæ on segment 18, at the level of the interval between the two inner rows of setæ.

Oviduct pores on segment 14 slightly anterior to and ventral of, the innermost setæ.

Spermathecal pores, four in number, on the anterior margins of segments 6–9, slightly ventral to the level of the innermost setæ, each on a distinct little papilla.

Accessory copulatory structures very well marked. A large tumid patch occupying the median ventral part of segment 11, the anterior edge of segment 12 and the posterior of segment 11; or this may be divided into two parts, one occupying the anterior ventral part of segment 11 and the posterior part of segment 10; the other, the corresponding parts of segments 11 and 12.

Behind the clitellum, tumid ridges are present, the first of which occupies the posterior ventral part of segment 17, and anterior of segment 18, and others occupying corresponding positions on segments 18 and 19, 19 and 20, 20 and 21, 21 and 22. Each has a median linnear groove, corresponding in position to the intersegmental groove.

Dorsal pores present, the first between segments 4 and 5. Nephridial pores not easily seen, but are placed at the level of the third seta on each side.

Alimentary canal. Gizzard in segment 5, but not occupying the whole of the segment. Vascular swellings on the œsophagus, but no true calciferous glands. Large intestine commencing in segment 18.

Excretory system. Meganephric.

Reproductive system. Testes, two pairs in segments 10 and 11. Ciliated rosettes in the same segments.

Prostates in segment 18, coiled, tubular, with distinct coiled duct.

Sperm sacs small, and slightly racemose, in segment 12.

Ovaries in segment 13, and oviducts opening into the same segment.

Spermathecæ, four pairs in segments 6–9, each one markedly large in comparison to the size of the body and consisting of a distinct stalk, with swollen sac, and at the base of the stalk, a small diverticulum.

Habitat. Mt. Macedon, Victoria. Collected by Mr. H. R. Hogg and myself.

(7) *C. victoriæ*, sp. n. (Figs. 19, 20, 21, 69). Spirit specimen 4 inches long, three-eighths inch broad.

The prostomium completely dovetailed into the peristomium. There is a very distinct median, dorsal and ventral groove running the whole length of the body (in spirit specimen).

Clitellum fairly distinct and complete, occupying segments 14–16.

Setæ prominent, and in four couples regularly arranged, except at the posterior end of the body, where the last few segments are distinct from and smaller than the others. Male pores on papillæ on segment 18, each slightly dorsal to the level of the innermost setæ.

Oviduct pores on segment 14, slightly anterior to, and ventral of, the position of the innermost setæ.

Spermathecal pores, five in number; intersegmental; the first between segments 4 and 5.

Accessory copulatory structures feebly developed. A median, ventral, glandular patch on the anterior halves of segments 9 and 10, together with faintly marked intersegmental patches immediately in front of and behind the male openings.

Dorsal pores present, the first probably between segments 2 and 3, one certainly present between segments 3 and 4.

Nephridiopores at the level of the third setæ, commencing at the second segment.

Alimentary canal. Gizzard in segment 5. No true calciferous glands, but vascular swellings present in segments 9–15. Large intestine commencing in segment 17.

Circulatory system. Single dorsal vessel with the last pair of hearts in segment 12.

Excretory system. Meganephric, with a coiled tube in each segment ventrally, from which a long duct leads up to the level of the third setæ.

Reproductive system. Two pairs testes, in segments 10 and 11, with funnels opening into the same segments which are filled with sperm.

Prostates, long coiled tubes, extending through segments 18–26.

Sperm sacs. Saccular structures, attached to the anterior wall of segment 12 and the posterior of segment 9.

Ovaries, one pair in segment 13, with oviducts opening into the same.

Spermathecæ. Five pairs in segments 5–9. Each consists of a large sac with a tubular diverticulum arising from the stalk, and about one-third the length of the sac.

Habitat. Collected at Warburton, Yarra Valley, by Dr. Dendy.

(*Var. a*) Length of spirit specimen $2\frac{3}{4}$ inches, one-quarter inch broad.

The general anatomy closely similar to the typical form, from which it differs (1) in the irregularity of the setæ extending slightly further along the body; (2) in the presence of a curious elongate white smooth surface, extending ventrally from segment 17 to segment 23; (3) in the openings of the spermathecæ being slightly dorsal of the level of the innermost setæ, and (4) in the diverticulum of the spermathecæ being relatively longer than in the typical form.

Habitat. Thompson Valley. Tanjil Track.

(*Var. b*) Length of spirit specimen 3 inches, one-quarter inch broad. The body more robust and lighter colour than in *var. a.*

The irregularity of the setæ extends further forwards along the body than in *var. a.* A white smooth surface of skin extends ventrally in the region of the male pores, as in *var. a*, and there is present in addition a similar surface ventrally on segments 4–9.

No testes can be seen, though the rosettes are well developed in segments 10 and 11. Prostates long and coiled, exactly as in the typical form. The spermathecæ have very small knob-like diverticula.

Habitat. Victoria (exact locality not known).

(8) *Cryptodrilus willsiensis*, sp. n. (Figs. 22, 23, 24, 70). Spirit specimen $7\frac{1}{2}$ inches long, half inch broad.

Prostomium very slightly dovetailed into the peristomium, which is ribbed. Median ventral furrow on prostomium.

Clitellum not strongly glandular, but clearly indicated by its reddish colour in spirit, extending over segments 14–17.

Setæ prominent. Four couples of which, the outer on each side, is dorso-lateral in position. As far back as the clitellum they are regularly arranged, the rows of the outer couple being nearly three times as far away from one another as those of the inner couple. The fourth row is slightly irregular in the clitellar region but is fairly regular for about two-thirds the length of the body, then it becomes exceedingly irregular. The third row is noticeably regular till quite the posterior end of the body, when it becomes slightly irregular. The second and first rows are regular till within 20 segments of the posterior extremity, when they become irregular. At the posterior end there may be 5 setæ present on each side of the body.

Male pores placed on papillæ, in segment 18, at a level corresponding to the interval between the two rows of the inner couple of setæ.

Oviduct pores on segment 14.

Spermathecal pores intersegmental in position, between segments 4 and 5, 5 and 6, 6 and 7, 7 and 8, 8 and 9.

Accessory copulatory structures scarcely indicated.

Nephridiopores on the anterior margin of each segment at the level of the third seta.

Alimentary canal. Gizzard in segment 5. No true calciferous glands, but vascular swellings. Large intestine commencing in segment 18.

Circulatory system. Dorsal vessel double in each segment, as far forward as the fifth segment. In the latter, the two halves unite on the top of the gizzard and run forward as a single vessel. Hearts in segments 5–12.

Excretory system. Meganephric.

Reproductive system. Testes in segments 10 and 11, into which also the rosettes open.

Prostates coiled, tubular, in segment 18.

Sperm sacs. Saccular in nature and attached to the anterior wall of segment 12, and the posterior of segment 9.

Ovaries in segment 13, into which the oviducts open.

Spermathecæ, 5 pairs in segments 5–9. Each consists of a sac, with a double diverticulum.

Habitat. Mt. Wills. Collected by Mr. T. Lidgey.

(9) *Cryptodrilus narrensis*, sp. n. (Figs. 25, 26, 27, 71). Length in spirit 1¾ inches long, one-eighth inch broad.

Prostomium incompletely dovetailed into the peristomium (about one-half).

Clitellum well marked, occupying segments 14–17, whilst the posterior part of 13, and the anterior of 18, may be modified dorsally. The posterior half of segment 17 ventrally, may be sharply marked off, and not glandular in appearance.

Setæ regularly arranged in four rows. At the anterior end, the outer couple is lateral in position, the rows of setæ being slightly further apart than those of the inner couple. Posteriorly, the rows gradually separate from one another, until the fourth becomes dorsal in position.

Male pores on papillæ in segment 18, at the level of the interval between the rows of the inner couples of setæ.

Oviduct pores on segment 14, on a slight glandular space in front of, and ventral of the level of the innermost setæ.

Spermathecal pores intersegmental in position, between segments 7 and 8, and 8 and 9. Slightly dorsal to the level of the innermost setæ.

Accessory copulatory structures. Two circular patches, one immediately in front of and one immediately behind the male openings; each small and in the mid-ventral space, between the innermost rows of setæ of each side.

Nephridiopores at the level of the third setæ (?)

Alimentary canal. Gizzard in segment 5. No true calciferous glands, but vascular swellings in segments 15 and 16. Large intestine commences in segment 20.

Circulatory system. Single dorsal blood-vessel. Last heart in segment 12.

Excretory system. Meganephric.

Reproductive system. Testes, two pairs in segments 10 and 11, into which the rosettes also open.

Prostates, coiled, tubular, and in segments 18 and 19.

Sperm sacs, grape-like, attached to the anterior walls of segments 14 and 12, and the posterior wall of segment 9.

Ovaries in segment 13, into which the oviducts open.

Spermathecæ, two pairs in segments 8 and 9. Each consists of a long saccular part, with a diverticulum about one-third its length.

Habitat. Narre Warren, Gippsland. Collected by Mr. C. French and myself. Very abundant under logs in wet weather.

(10) *Cryptodrilus lucasi*, sp. n. (Figs. 28, 29, 30, 72). Length in spirit 4½ inches, slightly more than one-eighth inch broad.

Prostomium only slightly dovetailed into peristomium (about ⅓).

Clitellum well marked, occupying segments 14–17, together with the anterior part of segment 18, and posterior of segment 13. The middle of segment 17 is not included ventrally, but together with the same part of segments 18 and 19, is white and swollen in spirit specimens.

Setæ in four couples, all of which, for the greater part of the length of the body, are placed close to the ventral surface. For the posterior third of the body, the two outer rows are irregular.

Male pores on small papillæ on segment 18, slightly dorsal of the level of the innermost row.

Oviduct pores on segment 14, slightly anterior to, and ventral of the level of the innermost setæ.

Spermathecal pores, two pairs, intersegmental, between segments 7 and 8, 8 and 9, and at the level of the innermost setæ.

Dorsal pores present, the first between segments 4 and 5.

Alimentary canal. Gizzard in segment 5. No true calciferous glands, but the œsophagus is markedly swollen and vascular in segments 9–13. Large intestine commences in segment 15.

Circulatory system. Single dorsal vessel, hearts in segments 6–12, those in segments 9–12 large.

Excretory system. Meganephric.

Reproductive system. Testes, two pairs in segments 10 and 11, rosettes opening in the same segments.

Prostates, tubular and coiled, in segments 16–18.

Sperm sacs, grape-like, in the anterior wall of segment 12, and posterior of segment 9.

Ovaries in segment 13, the oviducts opening into the same segment. An extra pair of ovaries may be present in segment 14.

Spermathecæ. Two pairs in segments 8 and 9. Each consists of a large sac with a diverticulum, having the form of a rosette.

Habitat. Tallarook, Goulburn River. Collected by Mr. A. H. S. Lucas, M.A.

(11) *Cryptodrilus minor*, sp. n. (Figs. 31, 32, 33, 73). Length in spirit 2–5 inches. Very narrow.

Setæ, for the greater part of the length of the body, arranged in four couples, of which the two rows in each are close together, the outer couple being dorso-lateral in position. The ventral row is straight throughout, the second row becomes irregular at the very posterior end, and about $\frac{9}{10}$ of the way down the body, the two upper rows suddenly become very irregular.

Prostomium very slightly dovetailed into the peristomium.

Clitellum well developed, occupying segments 14–17 very slightly, the anterior part of 18 dorsally.

Male pores on segment 18, at the level of the interval between the two innermost setæ of each side.

Oviduct pores in a linnear depression on segment 14, anterior to, and ventral of, the innermost setæ.

Accessory copulatory structures. Two depressed elliptical patches, one on segment 17 ventrally, and another on segment 19.

Dorsal pores not visible in front of the clitellum.

Nephridiopores at the level of the third setæ (?)

Alimentary canal. Gizzard in segment 5. No true calciferous glands, but large swollen portions of the œsophagus in segments 13–18. Large intestine commencing in segment 20.

Circulatory system. Single dorsal vessel, with the last heart in segment 12.

Excretory system. Meganephric.

Reproductive system. Testes, one pair in segment 11, into which open the rosettes.

Prostates, small, tubular, and coiled, in segment 18.

Sperm sacs, grape-like, in segment 12 on the anterior wall.

Ovaries in segment 13, into which open the oviducts.

Spermathecæ, two pairs in segments 8 and 9, each one consisting of a large sac with a triple diverticulum.

Habitat. South Warragul, Gippsland. Collected by Mr. W. Mann.

(*b*) Megascolides, McCoy (= Notoscolex, Fletcher).

(1) *M. cameroni*, sp. n. (Figs. 34, 35, 36, 74). Length of spirit specimen $8\frac{1}{2}$ inches, half inch broad.

Prostomium incompletely dovetailed into the peristomium (about $\frac{1}{2}$). Peristomium ribbed.

Clitellum well marked, but incomplete ventrally, especially at the anterior end.

Setæ somewhat difficult to see. In four couples, the outer couple being placed laterally, and having its two rows slightly farther apart than those of the inner couple. The setæ become irregular in the upper two rows in the clitellar region, the innermost row of each side being regular along the whole length.

Male pores on two papillæ on segment 18, at the level of the innermost setæ.

Oviduct pores on segment 14.

Spermathecal pores, five in number; intersegmental; the first between segments 4 and 5.

Dorsal pores present, the first between segments 3 and 4.

Alimentary canal. Gizzard occupying half of segments 5 and 6. No true calciferous glands, but vascular swellings present in segments 8–14. Large intestine commences in segment 19.

Circulatory system. Dorsal vessel double in each segment as far forward as the fifth segment. The last heart is in segment 13, and a lateral vessel is present on each side in segments 5–11, and a supra-intestinal in segments 8–14.

Excretory system. Plectonephric. The little nephridial tufts are very minute, but for the posterior third of the body, large paired nephridia are present ventrally, with internal funnels.

Reproductive system. Testes, two pairs in segments 10 and 11, with rosettes opening into the same segments.

Prostates flattened with the surface mammillated in segment 18. Sperm sacs, a pair of grape-like structures on the anterior wall of segment 14, and of sac-like structures on the posterior wall of segment 9.

Ovaries in segment 13, into which the oviducts also open.

Spermathecæ. Five pairs in segments 5–9. Each consisting of a sac with a diverticulum about half the length of the sac. The spermathecæ are small in relation to the size of the body.

Habitat. Croajingolong. Collected during an expedition of the Field Naturalists' Club of Victoria.

(2) *Megascolides insignis*, sp. n. (Figs. 37, 38, 39, 75). Length of spirit specimen 6 inches, slightly more than one-quarter inch broad.

Prostomium feebly developed, and not at all dovetailed into the peristomium.

Clitellum distinct and light coloured in spirit specimens, extending over segments 13–18. Well and sharply marked dorsally; saddle shaped with ridges on the mid-ventral surface, though it tends to extend over the ventral surface and include the ridges.

Setæ in four couples, the outer couple being lateral in position and having its two rows twice as far apart as those of the inner couple. Posteriorly, the intervals between the rows composing each couple increases considerably.

Male pores on slight papillæ, in a depression on segment 18, at the level of the interval between the two rows of the inner couples of setæ.

Oviduct pores on segment 14, slightly ventral of, and anterior to the innermost setæ.

Spermathecal pores intersegmental, between segments 7 and 8, 8 and 9; at the level of the interval between the rows of the inner couples of setæ.

Accessory copulatory structures very strongly developed, white swollen ridges ventrally on segments 15–21, the setæ of the inner couples being placed on the ridges.

Dorsal pores present, the most anterior one being between segments 9 and 10.

Alimentary canal. Gizzard in segment 6. Vascular swellings on the œsophagus in segments 10 and 11, small white diverticula (calciferous glands ?) in segments 12, 13, 14, and large prominent calciferous glands in segments 15, 16, 17. Large intestine commences in segment 19.

Circulatory system. Dorsal vessel single; hearts in segments 7–13, those in segments 6–9 small.

Excretory system. Plectonephric, with larger paired nephridia at the posterior end of the body, with internal openings.

Reproductive system. Testes, a single pair in segment 11, with rosettes opening into the same. Prostates somewhat small and flattened. Sperm sacs grape-like on the anterior wall of segment 12. A small pair on the anterior wall of segment 14.

Ovaries in segment 13, with oviducts opening into the same.

Spermathecæ, 2 pairs in segments 8 and 9, each consisting of a long sac, with very short blunt diverticulum.

Habitat. Dandenong Ranges. Collected by Mr. J. Hulme.

(3) *Megascolides hulmei* sp. n. (Figs. 40, 41, 42, 76).

Of several specimens, none are perfect, some wanting the anterior, others the posterior end. These worms are remarkably long and attenuated. One specimen, which is incomplete posteriorly, measures 3 ft. 5 in. in length. Another measures the same length, but lacks the anterior end. A perfect spirit specimen will probably measure 4 feet; width $\frac{1}{3}$–$\frac{1}{4}$ inch.

Prostomium feebly developed and not at all dovetailed into the peristomium.

Clitellum remarkably developed, extending over segments 13–20, and measuring 2 inches in length. Complete and very sharply marked off at either end. The indications of the segments are completely obliterated.

Setæ, in four couples, regularly arranged; the rows of the outer couples which are lateral in position, being slightly further apart than those of the inner couple.

Male pores on segment 18 inconspicuous. Difficult to determine their position with regard to the setæ, but they are probably at the level of the innermost setæ.

Oviduct pores on segment 14.

Spermathecal pores, two pairs between segments 7 and 8, 8 and 9.

Accessory copulatory structures. A circular patch in front of the oviduct pores, partly on segments 13 and 14. Two circular patches, one on each of the segments 16 and 17. Three elliptical patches, the first half on segment 19, and half on 20; the second and third with the same relationship to segments 20 and 21, 21 and 22.

Dorsal pores present, the first between segments 8 and 9.

Alimentary canal. Gizzard in segment 5. No true calciferous glands. Large intestine commencing in segment 17.

Circulatory system. Dorsal vessel single. Hearts in segments 6–13. Supra-intestinal in segments 8–13.

Excretory system. Plectonephric. No large paired nephridia.

Reproductive system. Single pair of testes in segment 11 ; two pairs of rosettes, one in each of segments 10 and 11.

Prostates, flatted bodies with mammillated surface in segment 18.

Sperm sacs, grape-like, attached to the anterior wall of segment 12.

Ovaries in segment 13, into which the oviducts open.

Spermathecæ, two pairs in segments 8 and 9. Each consists of a moderately long sac, with a small blunt diverticulum.

Habitat. Dandenong Ranges. Collected by Mr. Joseph Hulme.

I have much pleasure in associating the name of Mr. Joseph Hulme with this interesting form. I am indebted to that gentleman for a valuable collection of earth-worms, including no fewer than four new species of the genus *Megascolides*, as at present described. This form ranks next in length to the giant Gippsland earth-worm.

(4) *Megascolides obscurus*, sp. n. (Figs. 43, 44, 45, 77). Length of spirit specimens 16 inches, one-half inch broad. One incomplete specimen measures 17 inches, so that probably the above is a minimum length, though the specimen is mature.

Prostomium feebly developed, and not at all dovetailed into the peristomium.

Clitellum purple in spirit specimens. Lines of the segments not obliterated, and the position of the setæ marked by minute papillæ. Extends over segments 14–18, and includes also the posterior part of segment 13, and the anterior of segment 19.

Setæ in four couples, difficult to see, except the inner two pairs. Regularly arranged (?)

Male pores on papillæ on segment 18, at the level of the interval between the rows of the inner couples.

Oviduct pores on segment 14.

Spermathecal pores, two pairs between segments 7 and 8, 8 and 9, at the level of the innermost setæ.

Accessory copulatory structures in the form of prominent ridges, the first half on segments 13 and 14, the second in segment 18, and the third and fourth half on segments 19 and 20, 20 and 21.

Dorsal pores present, the first between segments 5 and 6.

Alimentary canal. Gizzard in segment 6. No true calciferous glands. Vascular swellings on the œsophagus in segments 13, 14, and 15. Large intestine commences in segment 18.

Circulatory system. Dorsal blood-vessel single. Hearts in segments 6–13. Supra-intestinal vessel in segments 9–15.

Excretory system. Plectonephric. No large paired nephridia.

Reproductive system. Testes in segment 11. Rosettes in segments 10 and 11, those in the former small.

Prostates comparatively small, flattened, with mammillated surface, in segment 18.

Sperm sacs large in segment 12; a small pair on the anterior wall of segment 14.

Ovaries in segment 13, with oviducts opening into the same segment.

Spermathecæ, two pairs in segments 8 and 9. Each consists of a sac, with two small rounded diverticula at the base.

Habitat. Dandenong Ranges. Collected by Mr. J. Hulme.

(5) *Megascolides manni*, sp. n. (Figs. 46, 47, 48, 78). Length of spirit specimen 10 inches, one-quarter inch broad.

Prostomium not completely dovetailed into the peristomium (about half), which is ribbed.

Clitellum well marked, and slightly darker than the rest of the body in spirit specimens. Extending over segments 14–18. Complete.

Setæ in four couples, regularly arranged, the distance between the rows of the outer couple, which are laterally placed, being slightly greater than that between the inner couple.

Male pores on segment 18, slightly ventral of the level of the innermost setæ.

Oviduct pores on segment 14, on a small whitish elliptical patch on the anterior part of segment 14, the pores ventral of the level of the innermost setæ.

Spermathecal pores, two pairs between segments 7 and 8, 8 and 9, ventral of the level of the innermost setæ.

Accessory copulatory structures. Two club-shaped tumid patches, the first half on each of segments 17 and 18, the second half on each of segments 18 and 19; a depression in

each half of the patches at the level of the interval between the rows of the inner couple of setæ.

Dorsal pores present, but not visible in front of the clitellum.

Alimentary canal. Gizzard occupying half of segment 5 and the whole of segment 6. No true calciferous glands present, but vascular swellings in segments 15 and 16. Large intestine commencing in segment 18.

Circulatory system. Dorsal vessel single. Hearts in segments 6–12. Supra-intestinal vessel in segments 9–13. Strong development of blood-vessels on the walls of the gizzard.

Excretory system. Meganephric. Remarkable paired tufts of nephridiæ tubules in segments 5, 6, and 7.

Reproductive system. Testes, two pairs in segments 10 and 11, into which open the rosettes. Prostates coiled in segment 18. Sperm sacs grape-like, attached to the anterior walls of segments 11, 12, and 14.

Ovaries in segment 13, into which open the oviducts.

Spermathecæ, two pairs, one in segment 7, the other in segment 9. Each consist of a large sac and small rounded diverticulum.

Habitat. South Warragul, Gippsland. Collected by my assistant, Mr. W. Mann, to whom I am indebted for many interesting specimens of Victorian earth-worms.

Megascolides manni, var. *variabilis*.

This form, collected by Mr. Mann, in the same locality, is evidently very closely allied to the above form. It may be clearly distinguished from it, however, by the fact that the accessory copulatory structures, instead of being club-shaped, are circular in form, each one having a single median depression. The internal anatomy is closely similar to that of the typical form. In one specimen there is a pair of spermathecæ in segment 7, a single one on the left side in segment 8, and a single one on the right side in segment 9. Another specimen dissected, had two pairs as in the typical form, one in segment 7, and another in segment 9. This probably indicates that one pair present in segment 8 has in some way become suppressed.

Habitat. South Warragul, Gippsland. Collected by Mr. W. Mann.

(6) *Megascolides victoriensis* (Figs. 49, 50, 51, 79). Length of spirit specimen 3 feet, one-quarter to one-half inch broad.

Prostomium not dovetailed into the peristomium.

Clitellum well marked, and coloured purple in spirit specimens, with small white papillæ indicating the position of the setæ.

Setæ, four couples, the rows of the outer ones being four times as far apart as those of the inner ones. Setæ irregular at the posterior end of the body, where they are very difficult to see.

Male pores on papillæ on segment 18, at the level of the intervals between the setæ of the inner couple.

Oviduct pores on segment 14.

Spermathecal pores intersegmental, between segments 7 and 8, 8 and 9.

Accessory copulatory structures. White elliptical patches, the first half on segment 13, and half on segment 14. The second, third and fourth occupying the same relative positions on segments 19 and 20, 20 and 21, 21 and 22.

Dorsal pores present, the first between segments 11 and 12.

Alimentary canal. Gizzard in segment 5. No true calciferous glands. Large intestine commences in segment 17.

Circulatory system. Dorsal vessel single, the last heart in segment 13.

Excretory system. Plectonephric. No large paired nephridia.

Reproductive system. Two pairs of testes in segments 10 and 11, into which open the rosettes.

Prostates flattened, with mammillated surfaces in segment 18.

Sperm sacs, grape-like, on the anterior wall of segment 12, with a small pair on the anterior wall of segment 14.

Ovaries in segment 13, into which open the oviducts.

Spermathecæ, two pairs in segments 8 and 9. Each consisting of a large sac, with a pair of small rosette-like diverticula.

Habitat. Victoria (exact locality unknown).

(7) *M. incertus*, sp. n. (Figs. 52, 53, 54, 80). Length of spirit specimens 10 inches, one-quarter inch broad.

Prostomium completely dovetailed into the peristomium.

Clitellum, when fully mature, includes segments 13–18, but when not fully developed, only includes the posterior part of 13, and the anterior of 18.

Setæ arranged regularly in four couples, the rows of the outer couple, which is lateral in position, being about twice as far from one another as those of the inner couple.

Male pores on papillæ on segment 18, at the level of the interval between the setæ of the inner couples.

Oviduct pores on small papillæ on segment 14, anterior to, and ventral of, the level of the innermost setæ.

Spermathecal pores, two pairs on slight papillæ in the anterior part of segments 8 and 9, at the level of the interval between the setæ of the inner couples.

Accessory copulatory structures. A round tumid patch between the male pores. Elliptical elevations, with median depressions, situated at the level of the intervals between the setæ of the inner couples, and placed half on each of the segments 16 and 17, 19 and 20, 20 and 21, 21 and 22, 22 and 23.

Alimentary canal. Gizzard in segment 6. No true calciferous glands and no well marked vascular swellings. Large intestine commences in segment 18.

Circulatory system. Dorsal vessel single. Hearts in segments 6–12, those in segments 6–8 small.

Excretory system. Meganephric.

Reproductive system. Testes, two pairs in segments 10 and 11, rosettes opening into the same segments. Prostates, coiled, tubular, and in segment 18. Sperm sacs, grape-like, attached to the anterior wall of segment 12, and the posterior wall of segment 9.

Ovaries in segment 13, the oviducts opening into the same segment.

Spermathecæ, two pairs in segments 8 and 9, each consisting of a large sac with a very small diverticulum scarcely noticeable.

Habitat. Victoria (exact locality unknown).

(8) *Megascolides sinuosus*, sp. n. (Figs. 55, 56, 57). Length of spirit specimen 20 inches, slightly more than one-quarter inch broad.

Prostomium not at all dovetailed into the peristomium.

Clitellum only indicated by a slight colouration (in spirit) in the region about the genital openings, where also ridges are present.

Setæ, in four couples, the rows of the inner couple being close together, those of the outer far apart ; the third row is lateral, and the fourth dorsal in position. The two outer rows are sinuously arranged in the middle and posterior parts of the body.

Male pores on slight elevations on segment 18.

Oviduct pores on segment 14, ventral of, and anterior to, the innermost setæ.

Spermathecal pores, two pairs between segments 7 and 8, 8 and 9.

Accessory copulatory structures. Two ridges, one half on segments 19 and 20, the other half on segments 20 and 21 ventrally.

Alimentary canal. Gizzard in segment 5. No true calciferous glands, but slightly vascular swellings in segments 13–17. Large intestine commences in segment 18.

Circulatory system. Dorsal blood-vessel single. Hearts in segments 7–13. Supra-intestinal and lateral blood-vessel in the region of the hearts.

Excretory system. Plectonephric. No large paired nephridia present.

Reproductive system. Testes, two pairs in segments 10 and 11, with rosettes in the same segments.

Prostates, coiled, tubular, in segment 18.

Sperm sacs, grape-like, attached to the anterior walls of segments 12 and 14, the former large.

Ovaries in segment 13, into which open the oviducts.

Spermathecæ, two pairs in segments 8 and 9, each consisting of a long sac, with a short diverticulum at the base.

Habitat. Dandenong Ranges. Collected by Mr. J. Hulme.

This is evidently very closely allied to *M. obscurus*, from which, however, it differs amongst other points, in the fact that the spermatheca has only one small diverticulum, whilst two are present in *M. obscurus*.

(9) *M. roseus*, sp. n. (Figs. 58, 59, 60, 81). Length of spirit specimen 7 inches (length when alive 10–12 inches), one-quarter inch broad.

Prostomium completely dovetailed into the peristomium. The latter ribbed.

Clitellum strongly marked, including segments 13–18, only the posterior dorsal part of the former, and the anterior

two annuli of the latter. Complete in segments 14, 15, and the posterior part of 13, and anterior of 16; saddle-shaped in segment 17, and the posterior part of 16, and anterior of 18. Bright pink colour when alive, the body being flesh-coloured.

Setæ, four couples, regularly arranged. The rows of setæ of each couples in the anterior median part of the body being very close together, and the outer ones latero-ventral in position. The rows gradually become wider apart posteriorly.

Male pores on papillæ on segment 18, at the level of the interval between the rows of setæ of the inner couples.

Oviduct pores on segment 14, ventral of, and anterior to, the level of the innermost setæ.

Spermathecal pores, two pairs, between segments 7 and 8, 8 and 9.

Accessory copulatory structures. Swollen, round, tumid patch between the male pores. In front of these, on segment 17, are two round elevations, each at the level of the interval between the rows of the inner couples of setæ. Elliptical elevatiors, with median depressions, placed half on each of the segments 19 and 20, 20 and 21, 21 and 22, 22 and 23.

Dorsal pores present, but not visible in front of the clitellum, and may be obliterated in this.

Nephridiopores at the level of the third row of setæ.

Alimentary canal. Gizzard in segment 5. Two large pairs of calciferous glands in segments 15 and 16. The large intestine commences in segment 18.

Circulatory system. Dorsal vessel single. The last heart in segment 12 A supra-intestinal vessel present in the region of the hearts.

Excretory system. Meganephric.

Reproductive system. Two pairs of testes in segments 10 and 11, with rosettes in the same segments. Prostates, coiled, tubular, and in segments 17, 18, and 19. White elevated patches are seen in segments 18, 19, 20, 21, and 22, corresponding in position to the accessory copulatory structures seen externally. Sperm sacs, grape-like, attached to the anterior wall of segment 12.

Ovaries in segment 13, into which also open the oviducts.

Spermathecæ, two pairs in segments 8 and 9, each with a large sac and small rosette-like diverticulum.

Habitat. Warragul, about one foot under ground.

(10) *M. attenuatus*, sp. n. (Figs. 61, 62, 82). Length of spirit specimen 6–8 inches. Only one-eighth inch broad at most, and often only half of this. Very thin and attenuate; more than one foot long when alive. Dull greyish colour when alive.

Prostomium not at all dovetailed into the peristomium.

Clitellum purple in spirit specimens, and well marked, occupying segments 13–18, but not complete on the ventral surface of the latter.

Setæ in four couples, the interval between the rows of the outer couple, which are lateral in position, being slightly greater than that between the rows of the inner couple. The fourth row slightly irregular in the last ten segments, and coming to lie dorsally.

Male pores, inconspicuous, on segment 18.

Oviduct pores on segment 14, ventral of, and anterior to, the level of the innermost setæ.

Spermathecal pores, two pairs, between segments 7 and 8, 8 and 9.

Dorsal pores present, the first between segments 5 and 6; obliterated in the clitellar region.

Alimentary canal. Gizzard in segment 5. No true calciferous glands.

Circulatory system. Dorsal vessel single, the last heart in segment 12.

Excretory system. Meganephric.

Testes difficult to determine exactly, but almost certainly two pairs in segments 10 and 11, into which open two distinct pairs of rosettes.

Prostates, coiled, tubular, in segment 18. Around each prostatic duct lies a curious structure, consisting of minute grape-like processes.

Sperm sacs, grape-like, attached to the anterior wall of segment 12, and the posterior of segment 9.

Ovaries in segment 13, with oviducts opening into the same segment.

Spermathecæ, two pairs, in segments 8 and 9, each with a long sac and small diverticulum.

Habitat. Warragul, Gippsland. Obtained by digging in gullies, and found along with *Megascolides australis, tuberculatus, manni, roseus, &c.* Always some distance under ground.

(11) *M. australis* (McCoy).

The first description of this was published by Professor Sir F. McCoy in the Prodromus of the Zoology of Victoria.* It was subsequently re-described by Mr. Fletcher† under the name of *Notoscolex gippslandicus*, and its anatomy described by myself in the Transactions of the Royal Society of Victoria.‡

(12) *M. tuberculatus* (Fletcher).

This has been described by Mr. Fletcher§, who obtained it from Warragul. I have since obtained it from Camperdown, Victoria.

DESCRIPTION OF PLATES 14, 15, 16, 17, 18, 19.

The Plates contain diagrammatic drawings representing the arrangement of the various organs and parts mentioned in the foregoing account in each different species. In the case of each species one drawing represents the external anatomy, a second the alimentary canal, circulatory system and the disposition of the nephridia, and a third the reproductive organs. On Plate 19, the spermathecæ are drawn in outline (under the camera lucida, × 4).

REFERENCE LETTERS.

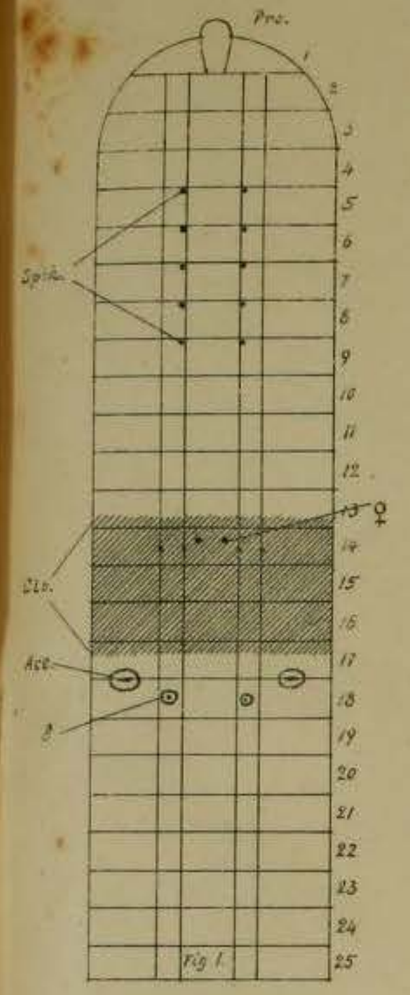
Acc.	Accessory copulatory structures.	*Ovd.*	Oviduct.
Calc.	Calciferous glands.	*Pr.*	Prostate gland.
Clt	Clitellum.	*R.*	Sperm rosette.
D.Bv.	Dorsal blood-vessel.	*Spth.*	Spermathecæ.
Gz.	Gizzard.	*T.*	Testis.
Hts.	Hearts.	*Vasc.*	Vascular swellings on œsophagus.
L.	Intestine.	*V.S.*	Sperm sacs.
Ov.	Ovary.		

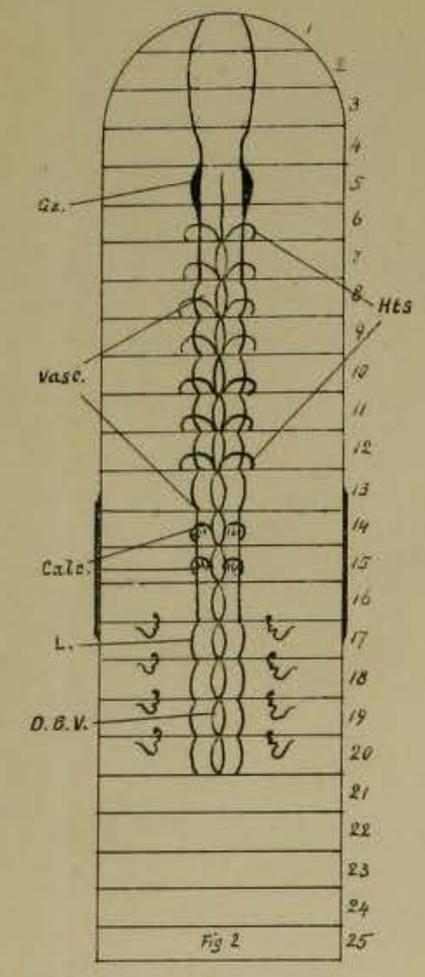
* Decade I.

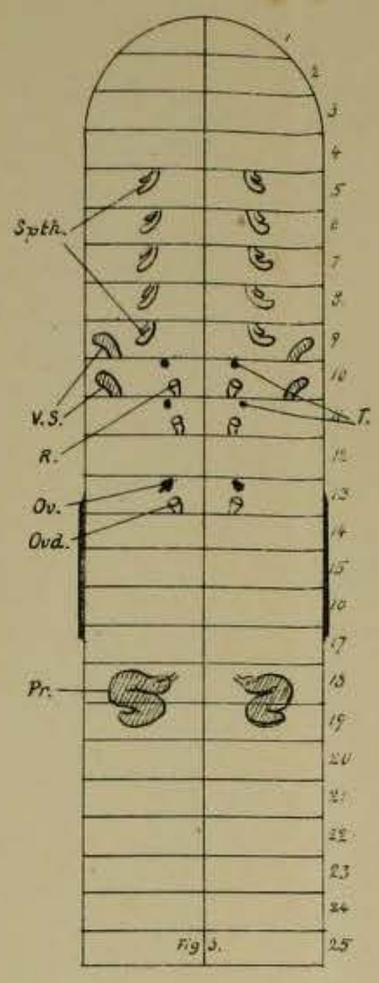
† Notes on Aust. Earth-worms. Proc. Linn. Soc. N.S.W., Vol. II (Series 2nd), 1887, p. 603.

‡ Trans. R. S. Victoria, Part I, 1888.

§ *Loc. cit.*, p. 611.







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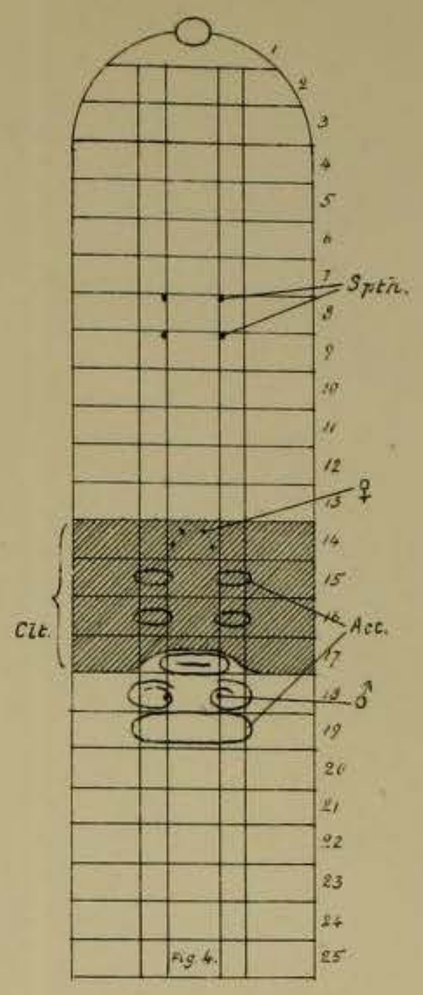

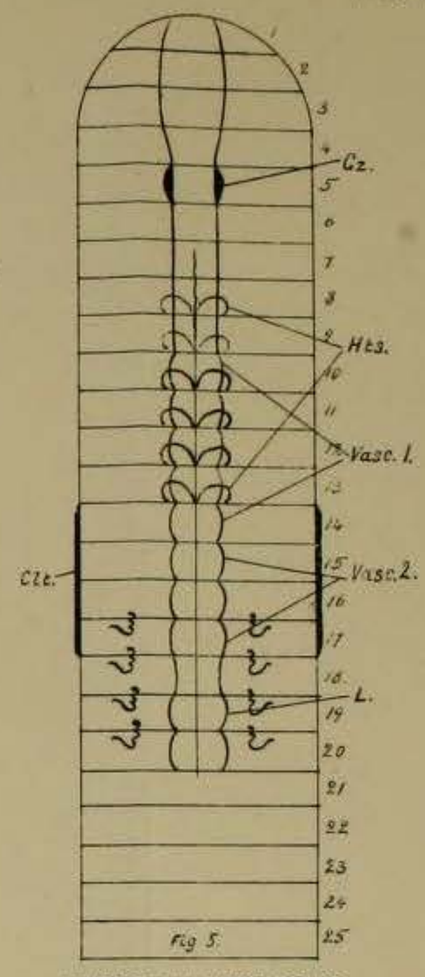

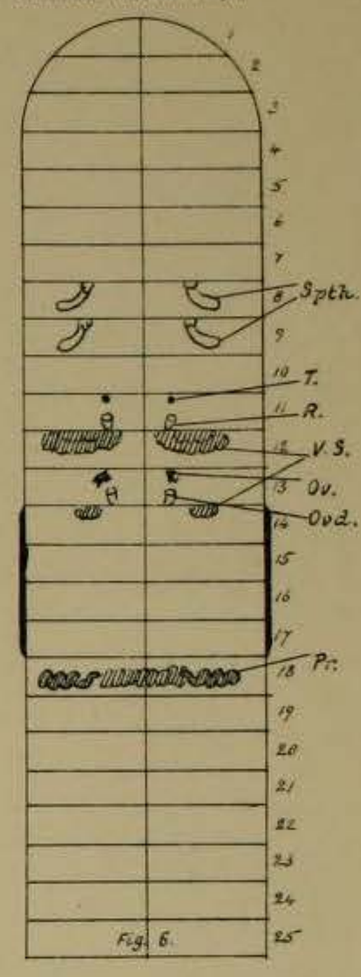

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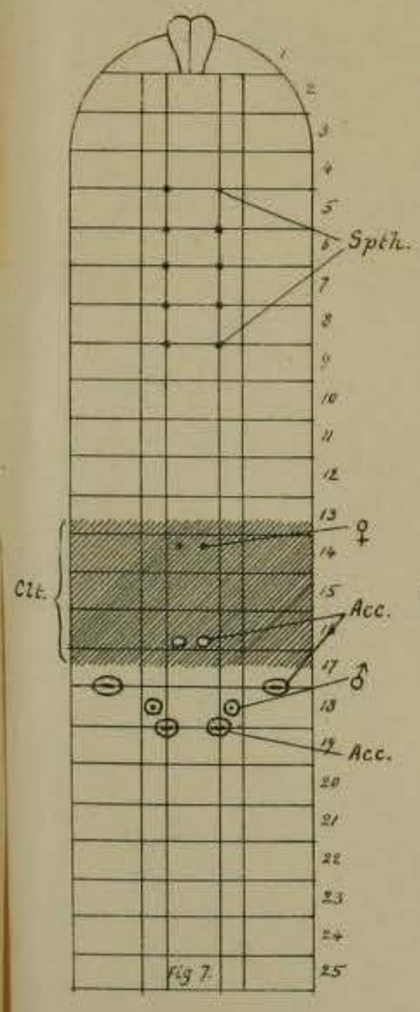

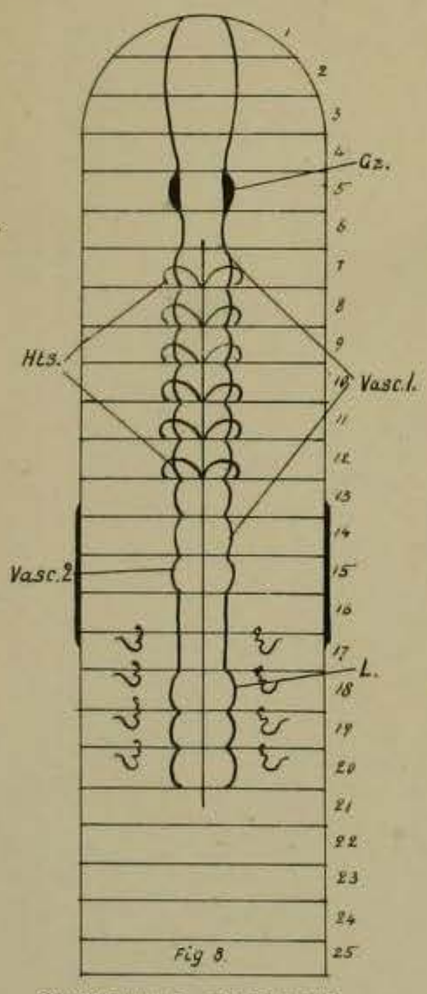

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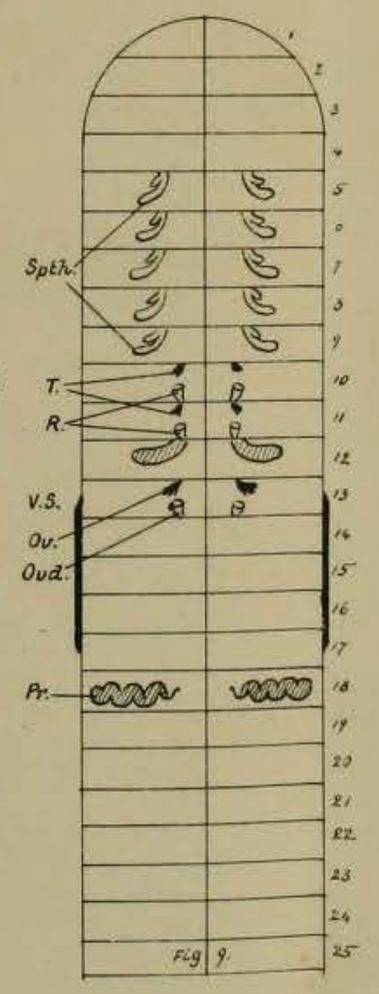
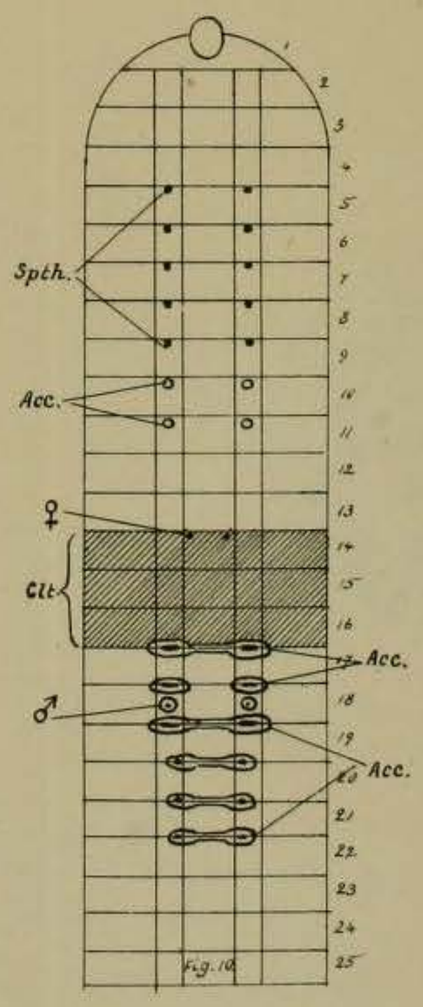
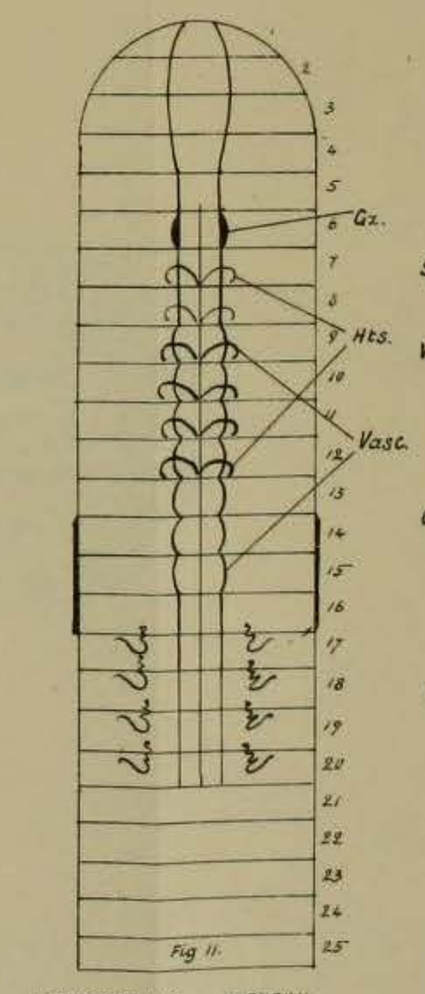
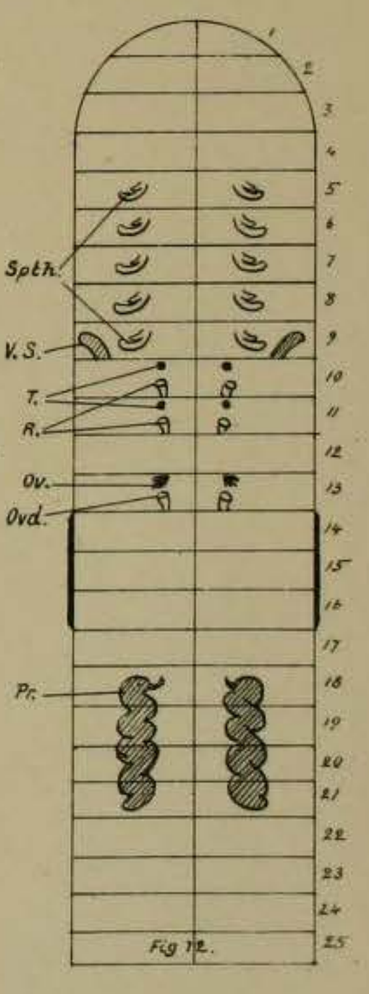








CRYPTODRILUS FRENCHII.

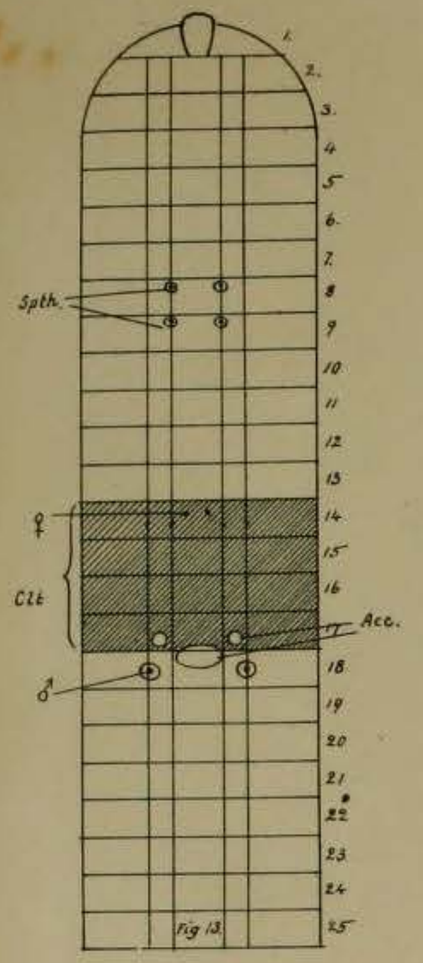


Fig 13.

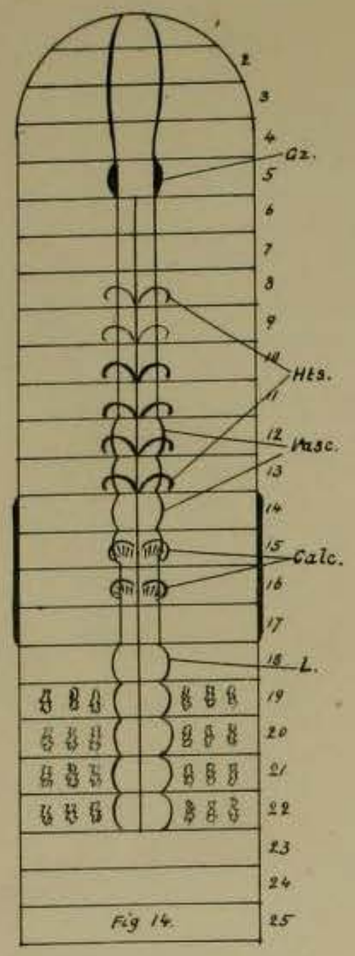


Fig 14.

CRYPTODRILUS DUBIUS.

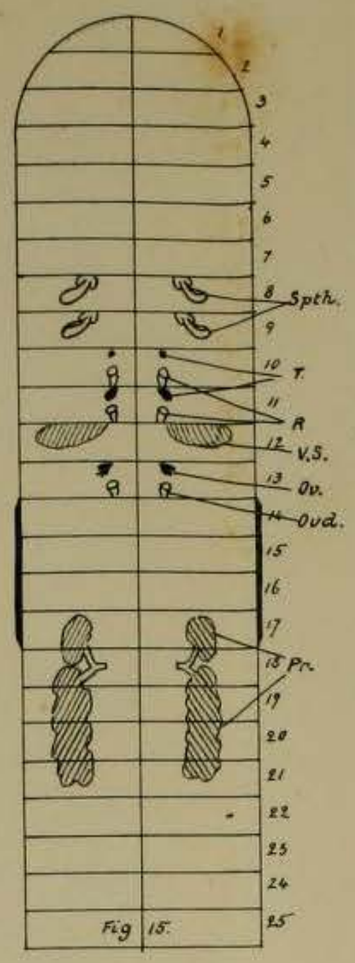


Fig 15.

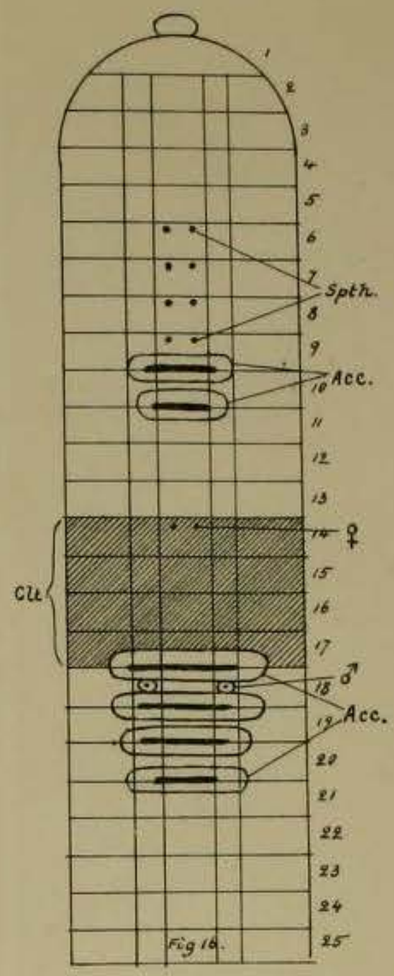


Fig 16.

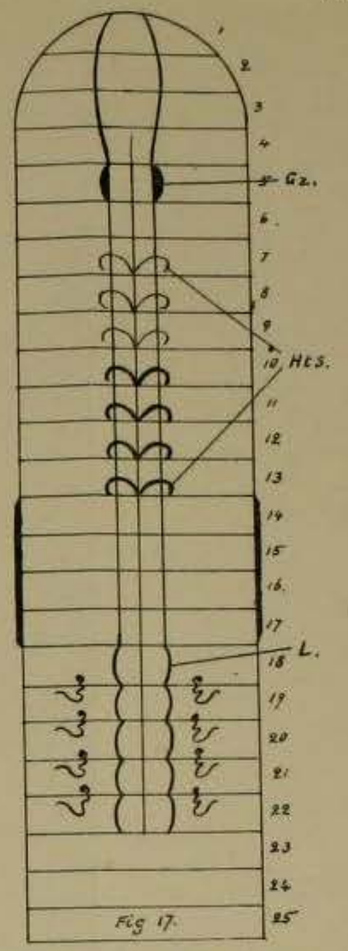


Fig 17.

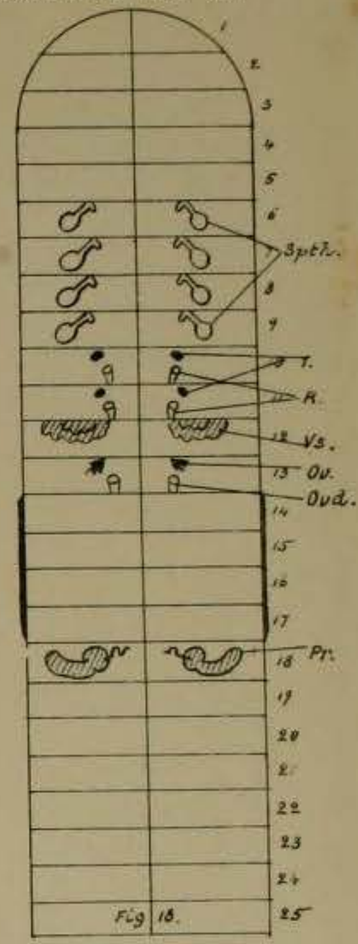


Fig 18.

CRYPTODRILUS MACEDONENSIS.

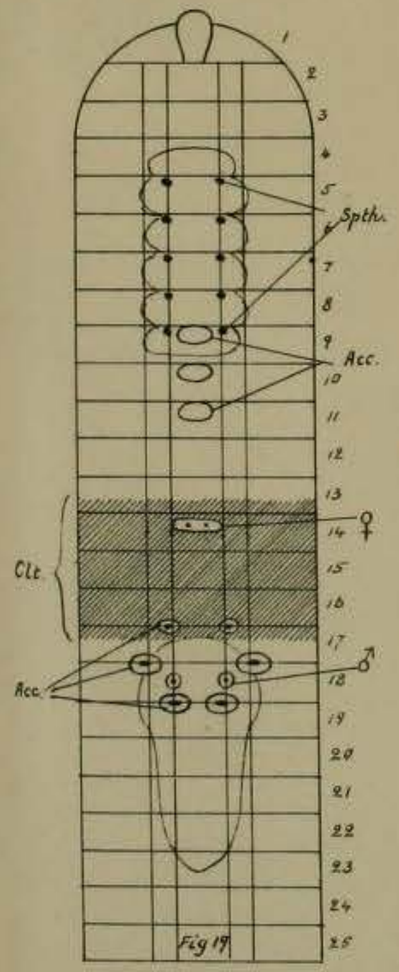


Fig 19.

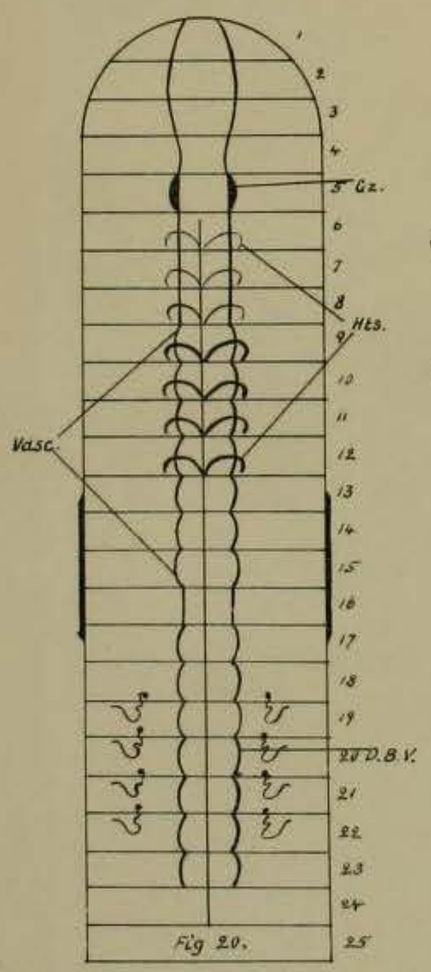


Fig 20.

CRYPTODRILUS VICTORIÆ.

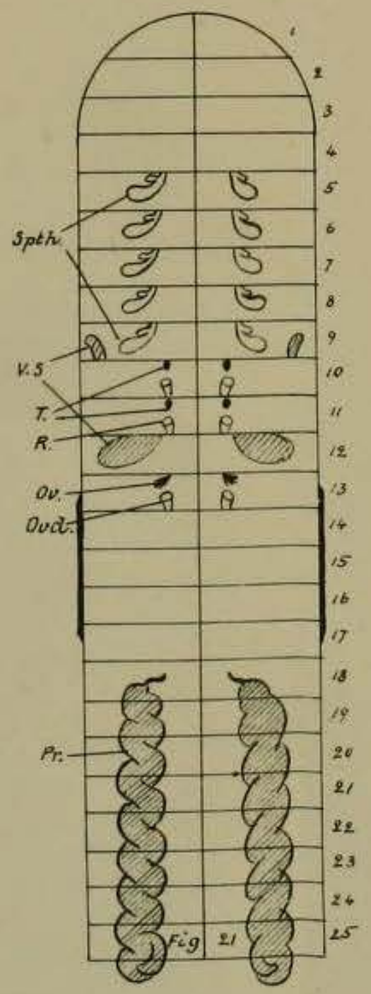


Fig 21.

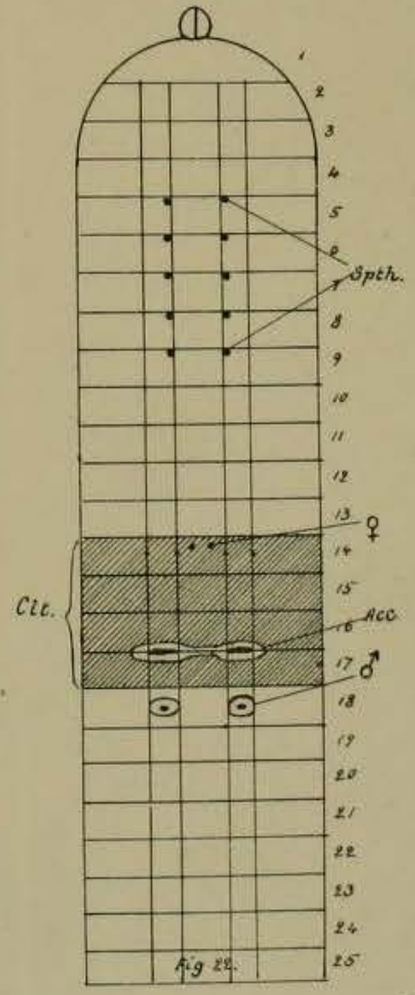


Fig 22.

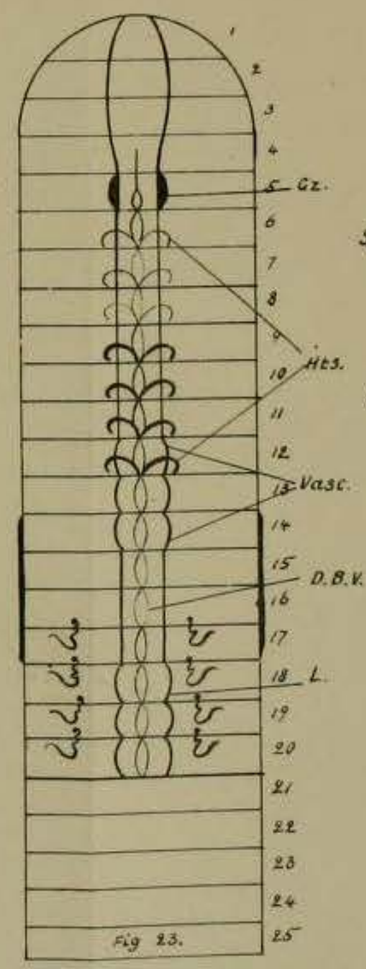


Fig 23.

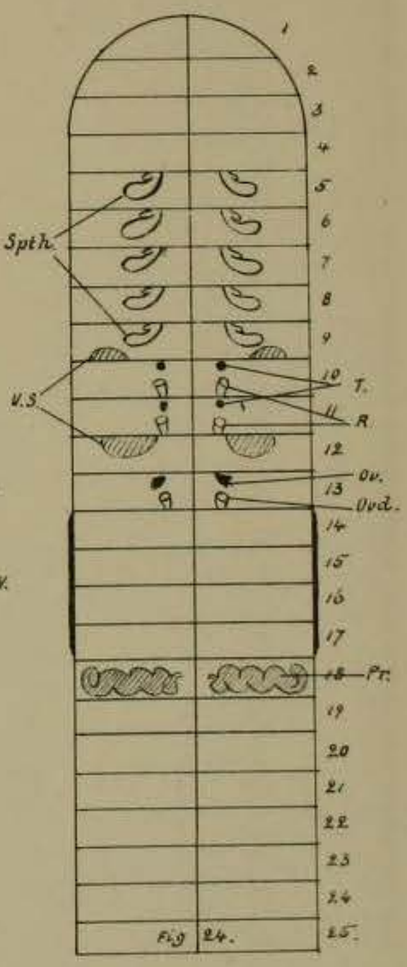


Fig 24.

CRYPTODRILUS WILLSIENSIS.

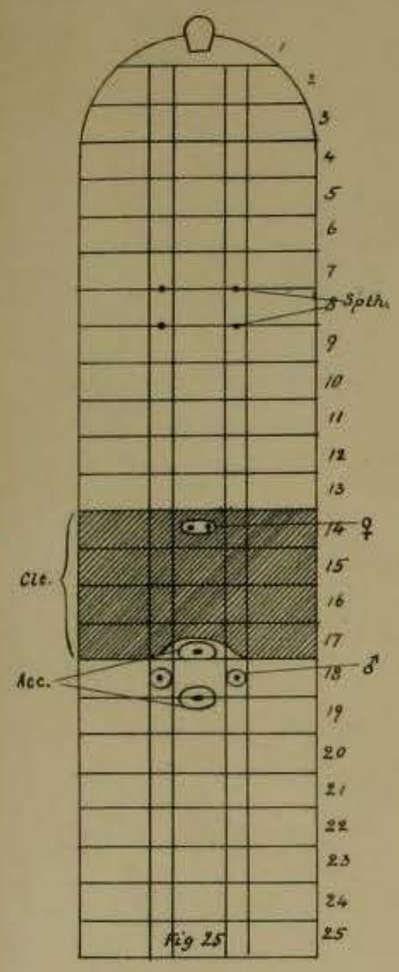


Fig 25

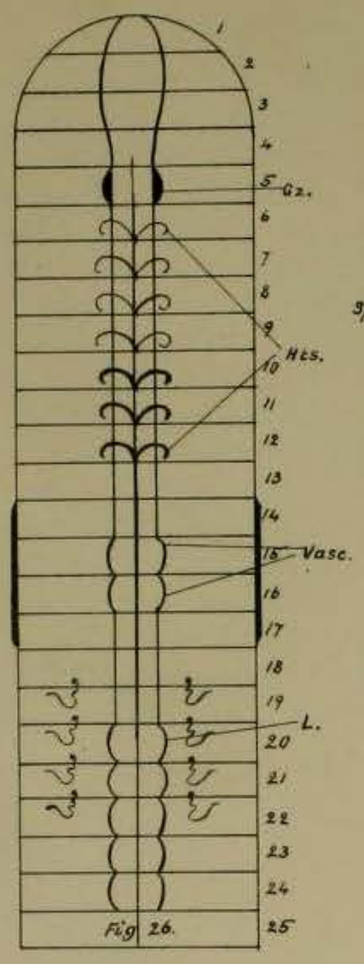


Fig 26.

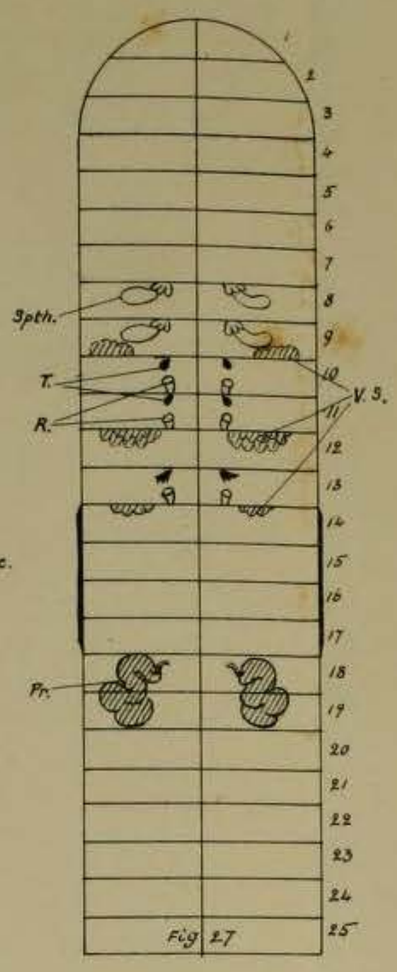


Fig 27

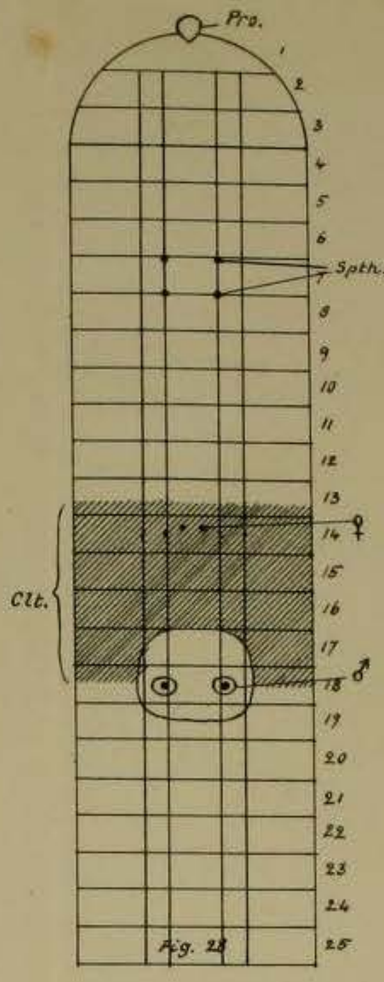


Fig. 28

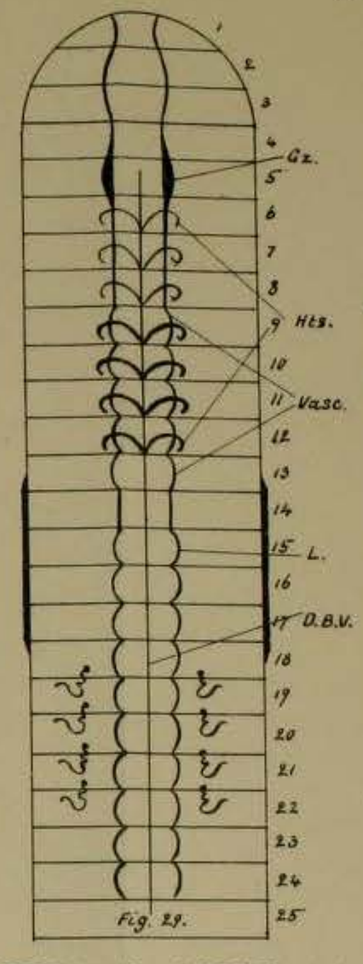


Fig. 29.

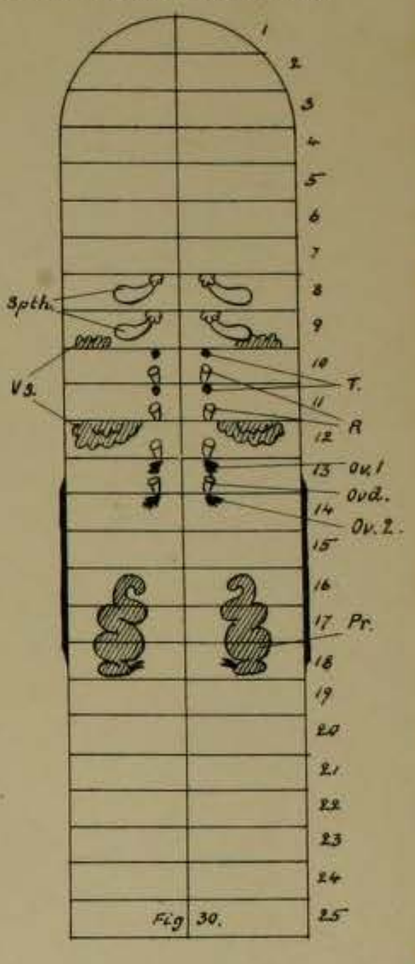


Fig 30.

CRYPTODRILUS NARRENSIS.

CRYPTODRILUS LUCASI.

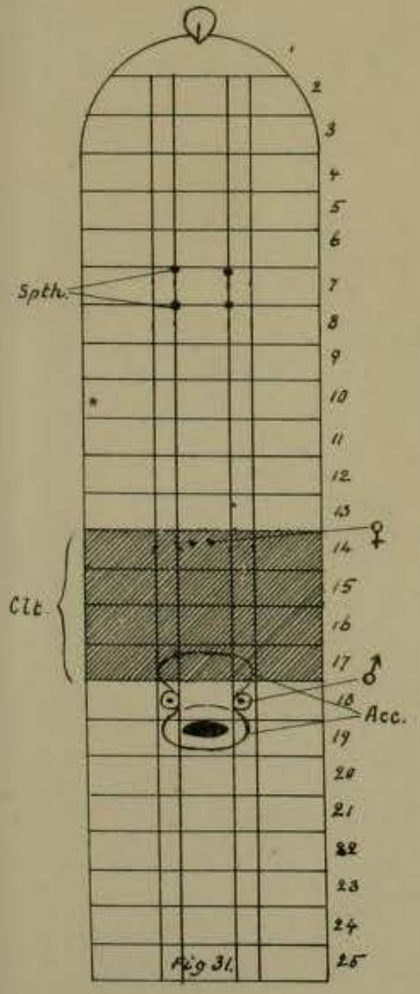


Fig 31.

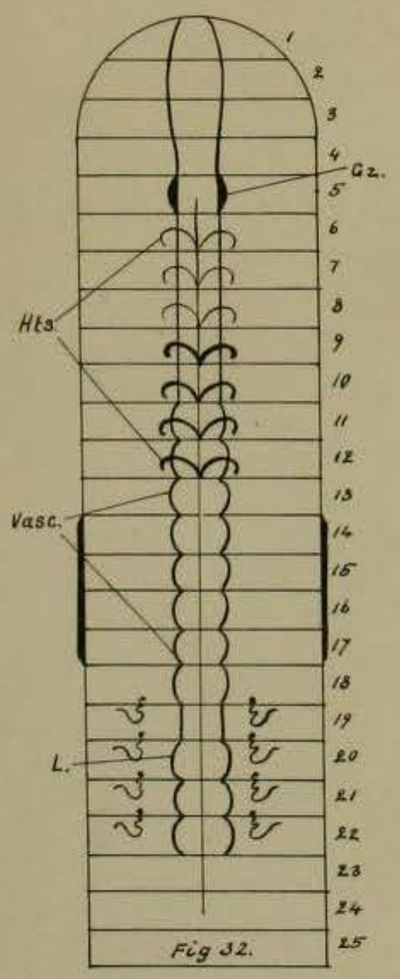


Fig 32.

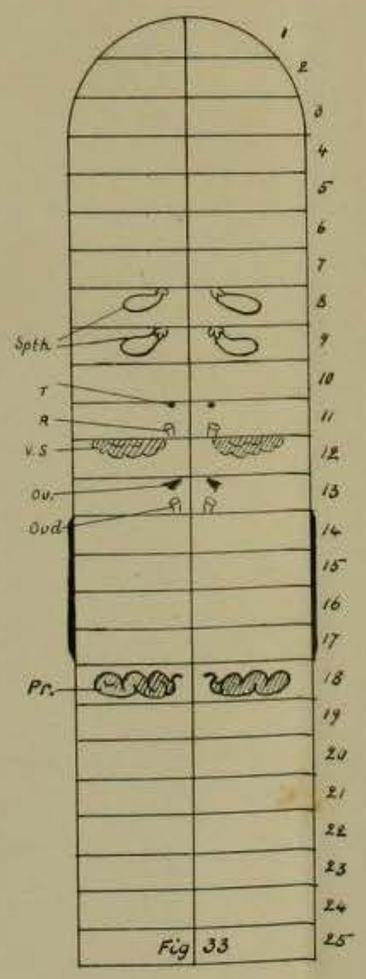


Fig 33

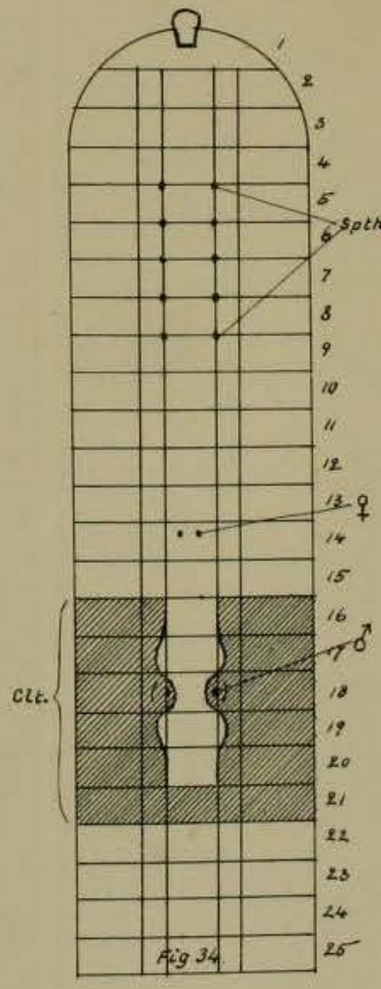


Fig 34

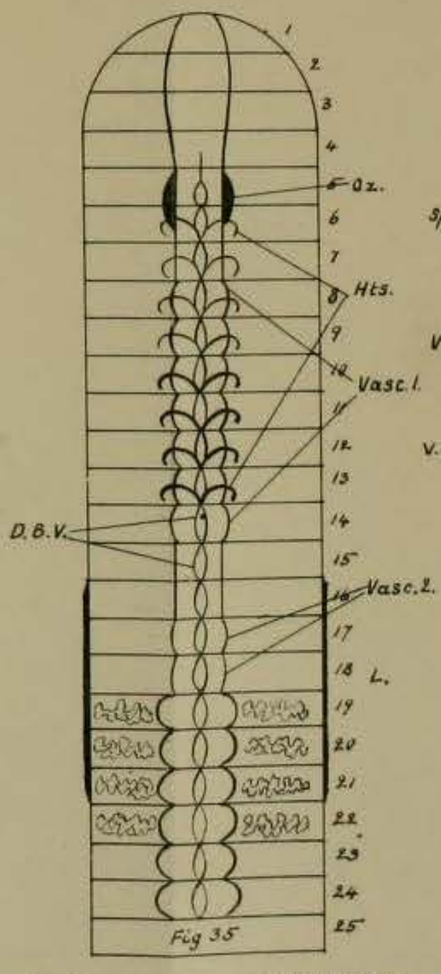


Fig 35

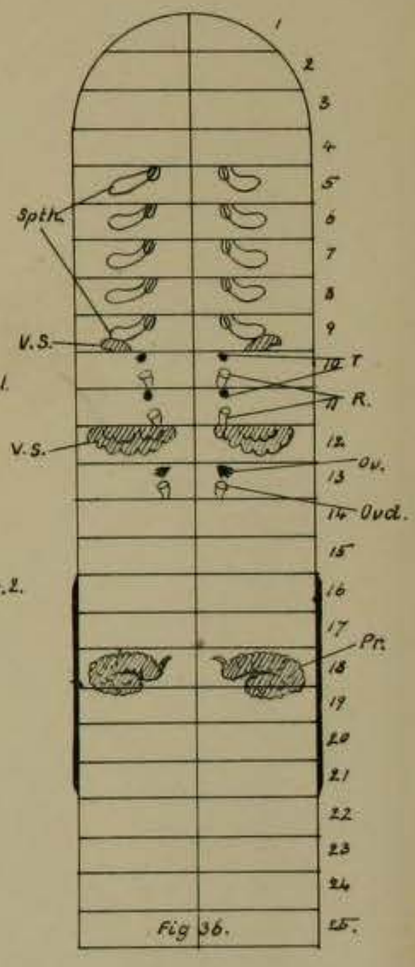


Fig 36.

CRYPTODRILUS MINOR.

MEGASCOLIDES. CAMERONI.

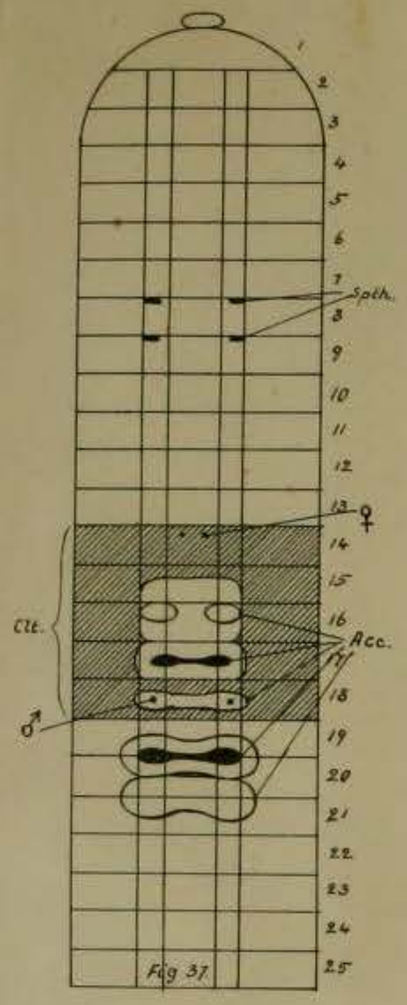


Fig 37.

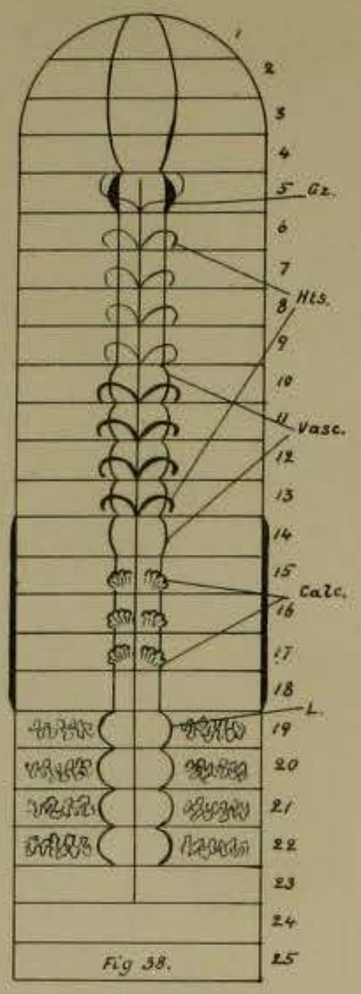


Fig 38.

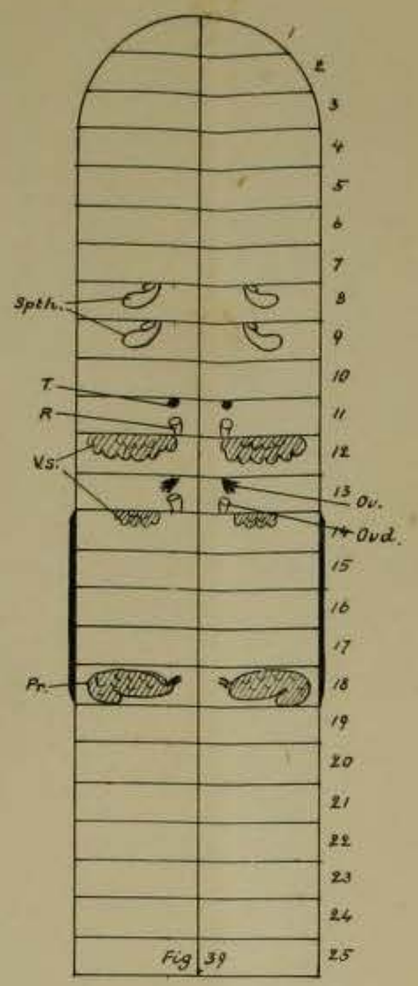


Fig 39.

MEGASCOLIDES INSIGNIS.

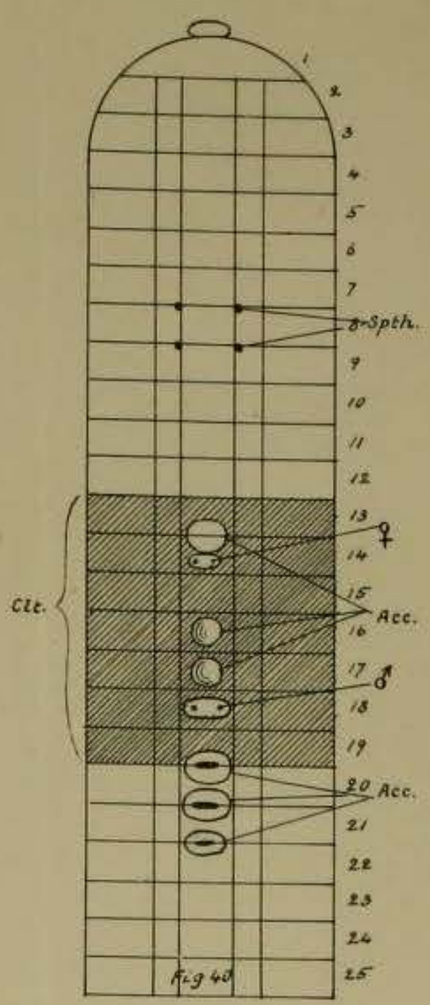


Fig 40.

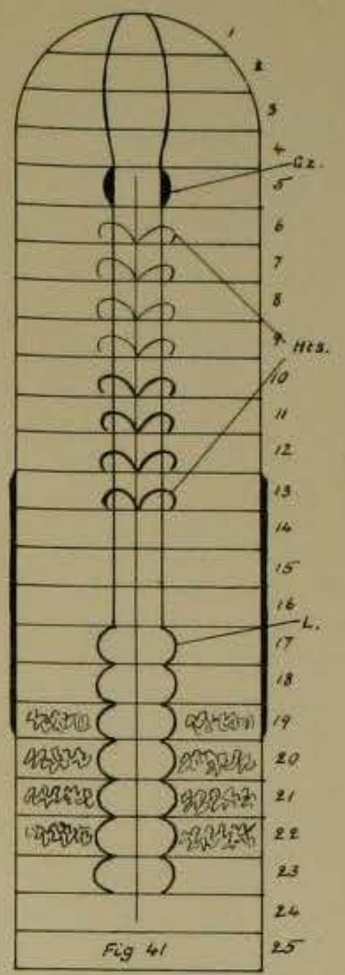


Fig 41

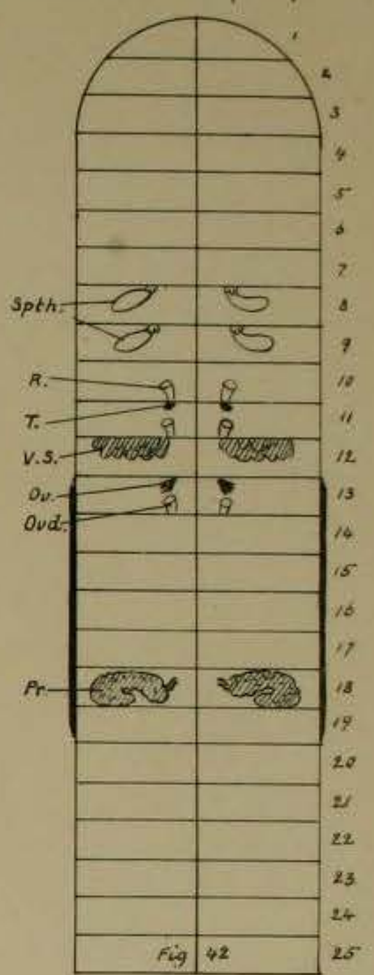


Fig 42.

MEGASCOLIDES HULMEI.

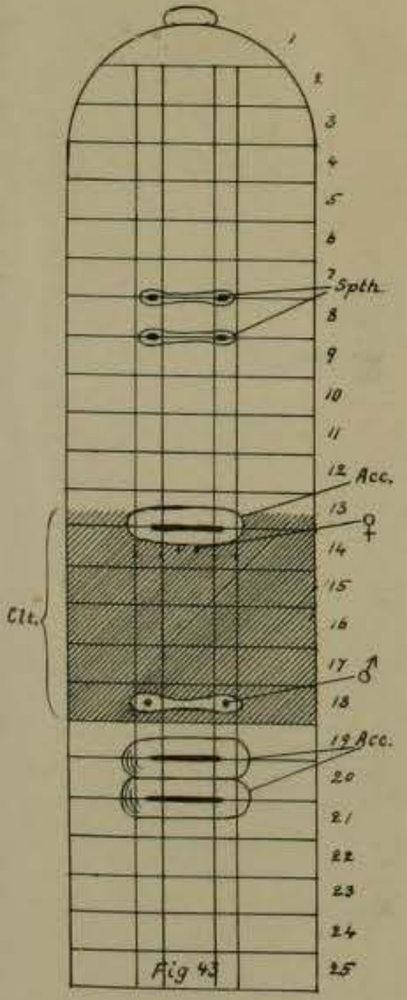


Fig 43

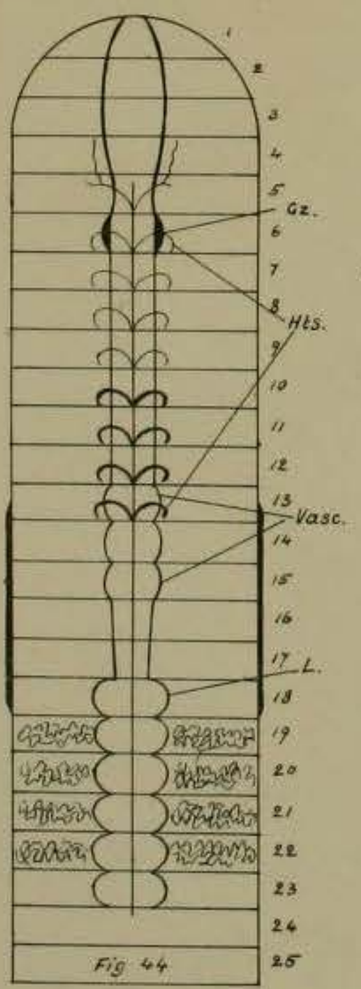


Fig 44

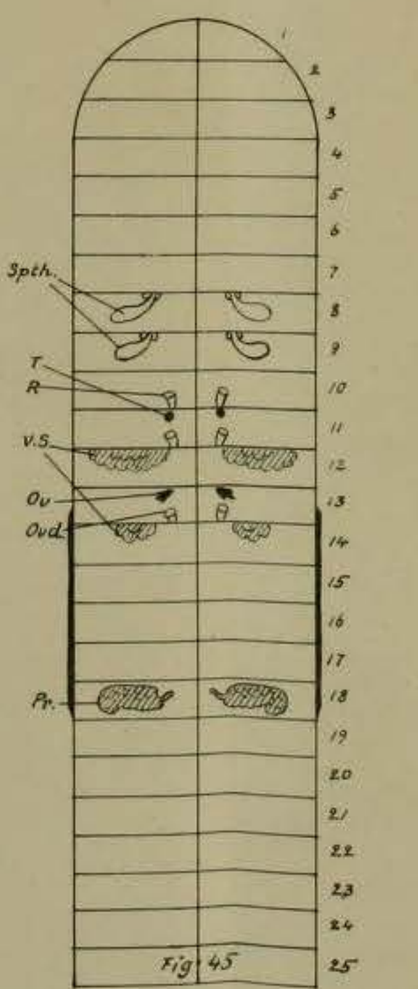


Fig 45

MEGASCOLIDES OBSCURUS.

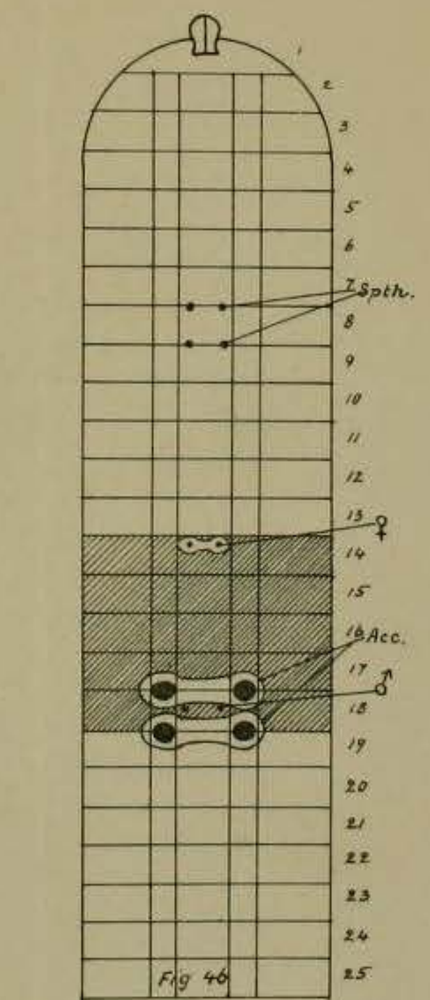


Fig 46

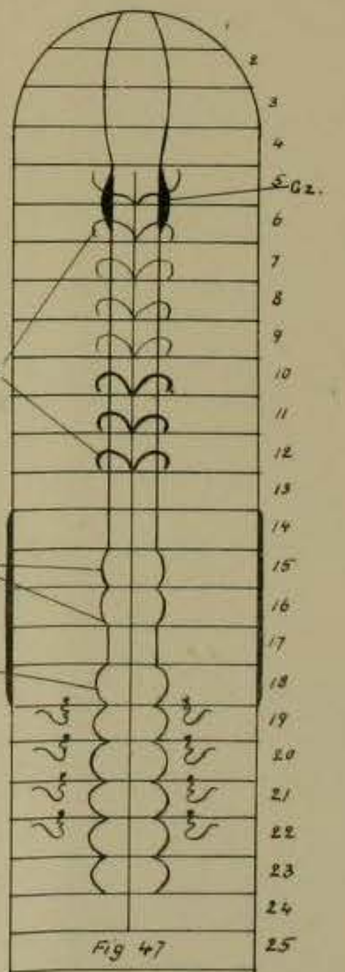


Fig 47

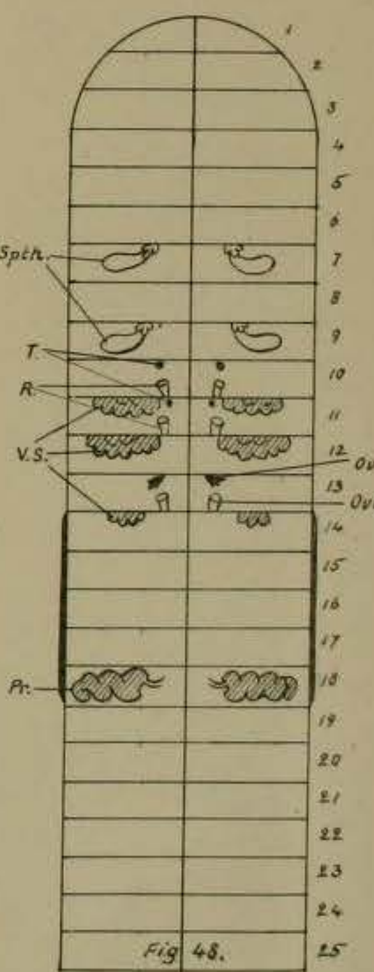
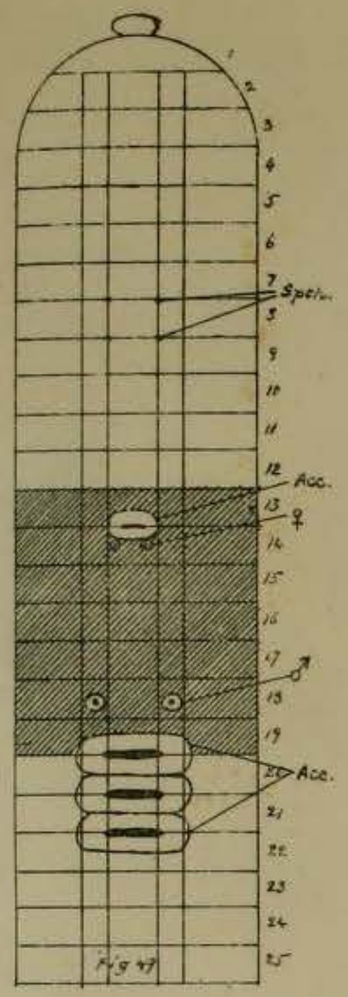
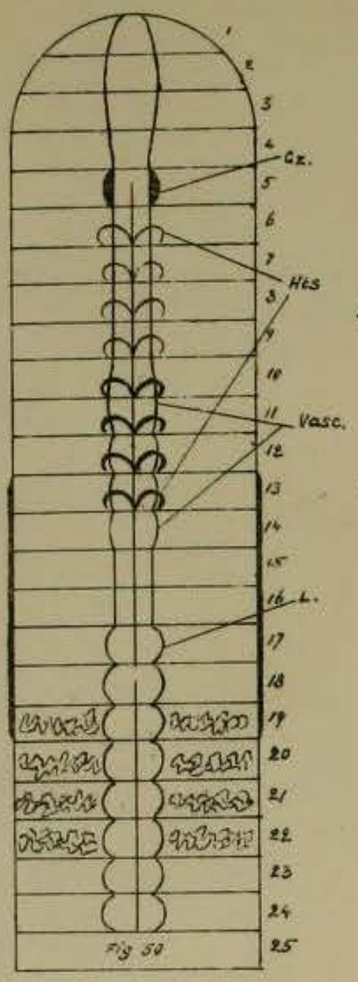
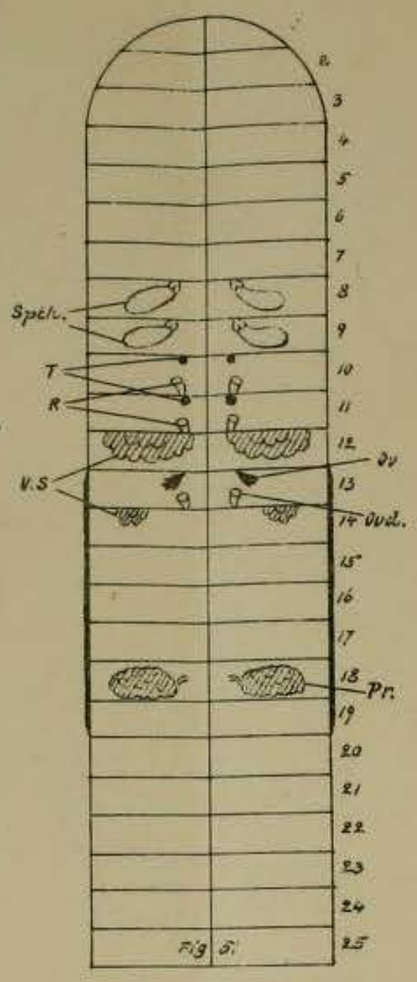


Fig 48.

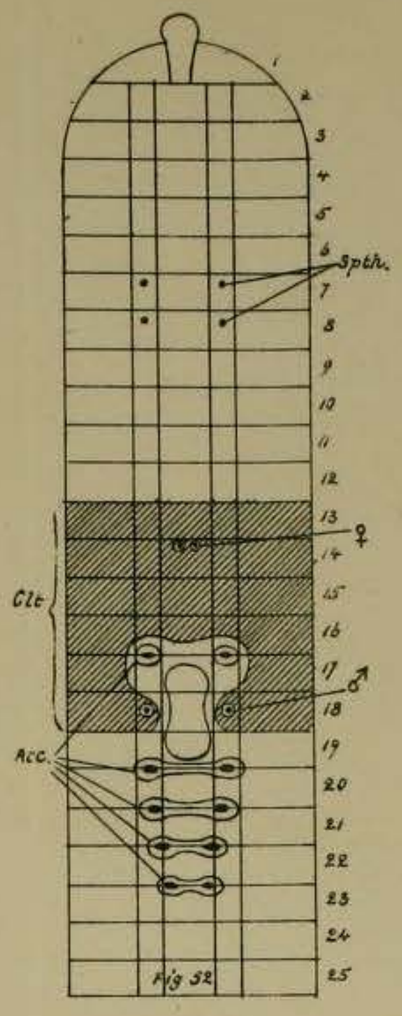
MEGASCOLIDES MANNI.

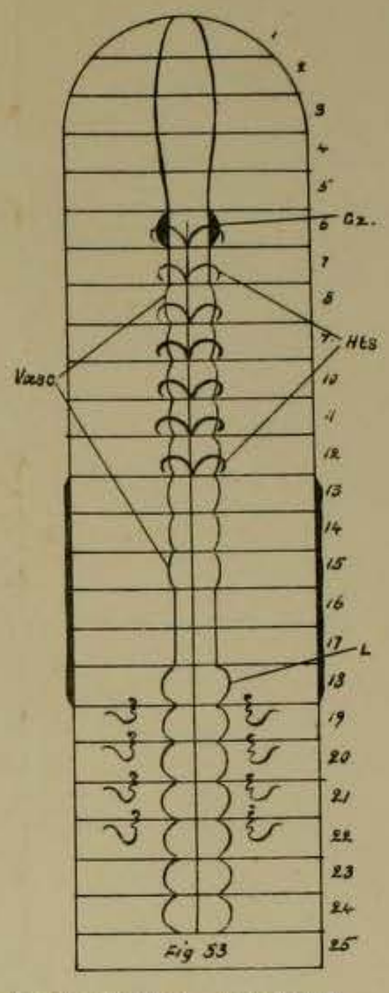


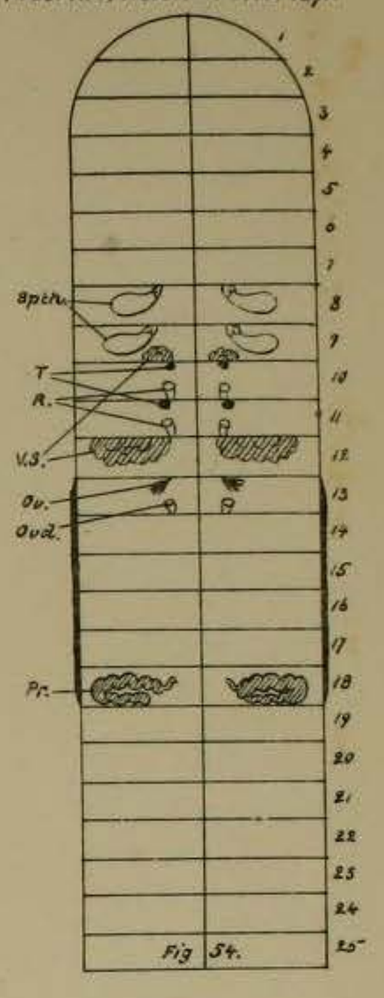




MEGASCOLIDES VICTORIENSIS.







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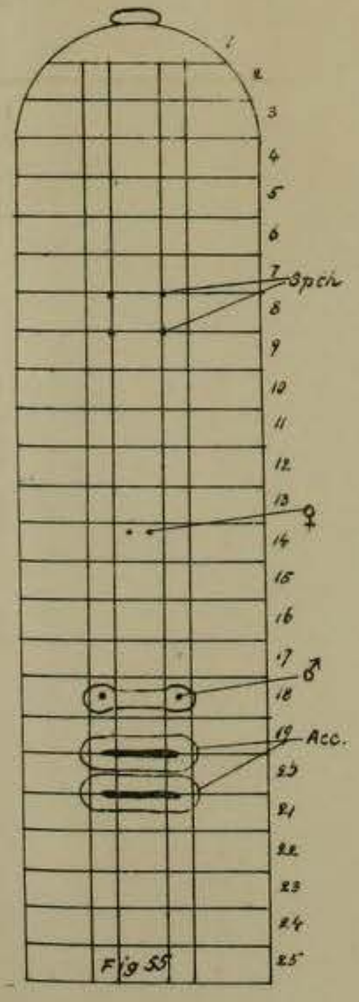

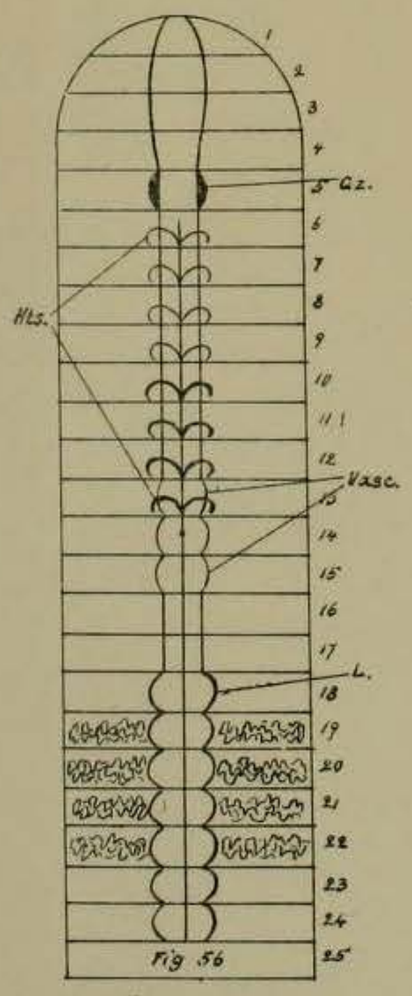

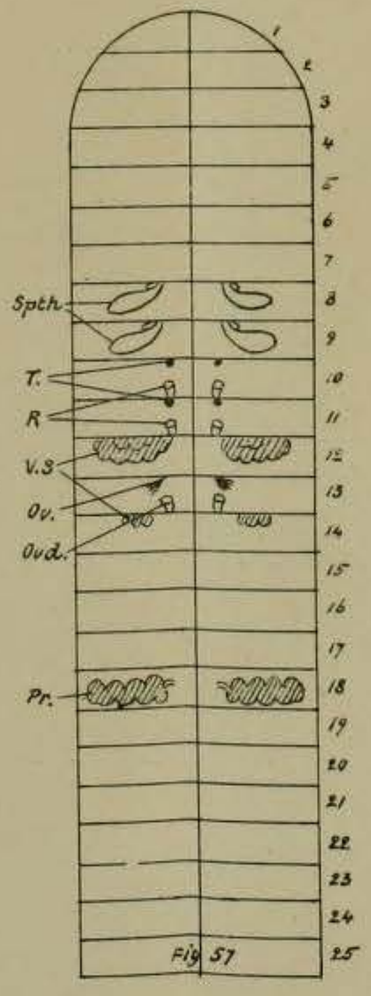

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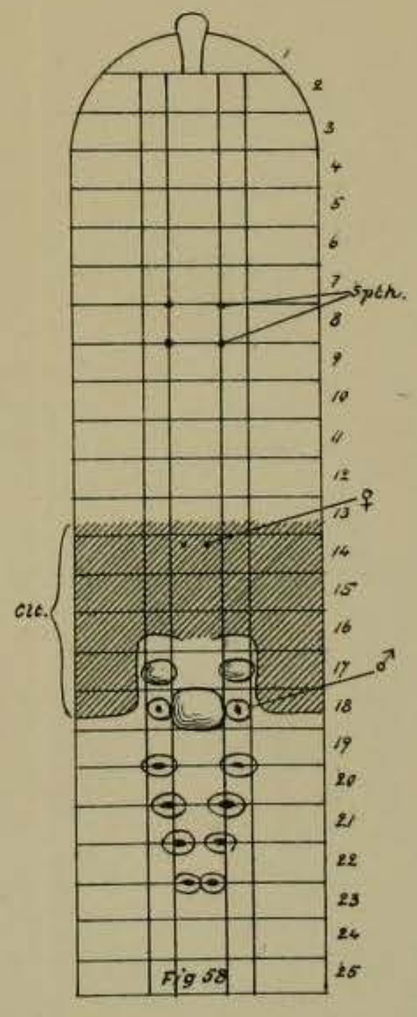

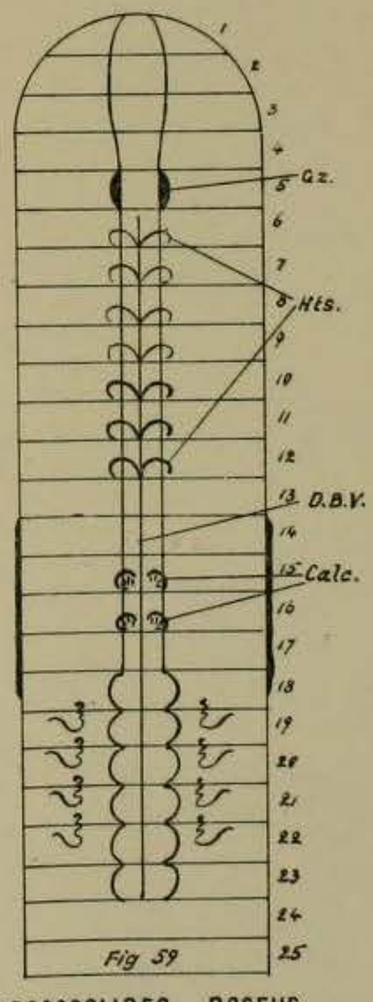

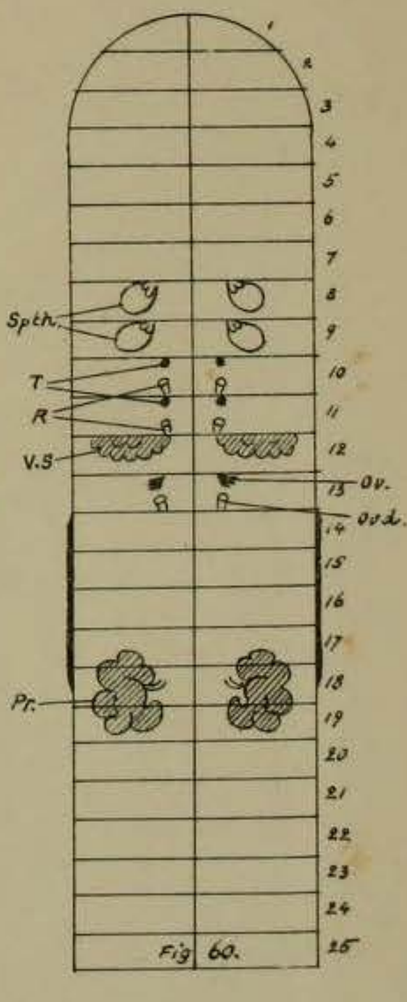

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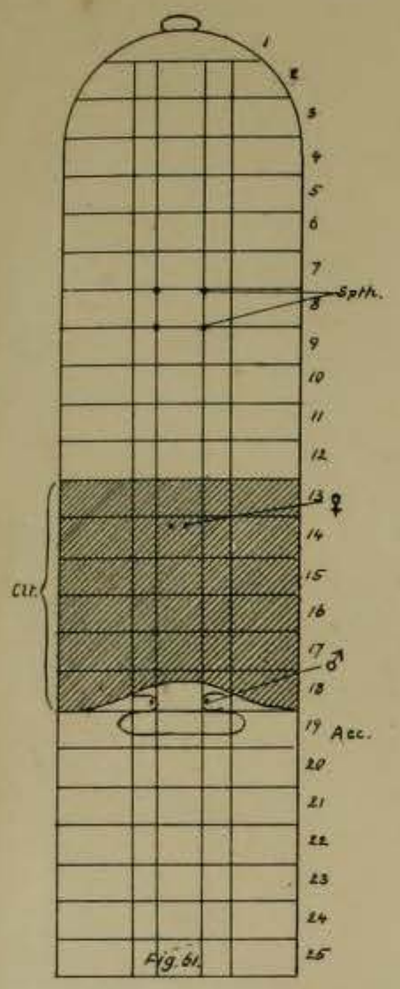

Fig. 61.

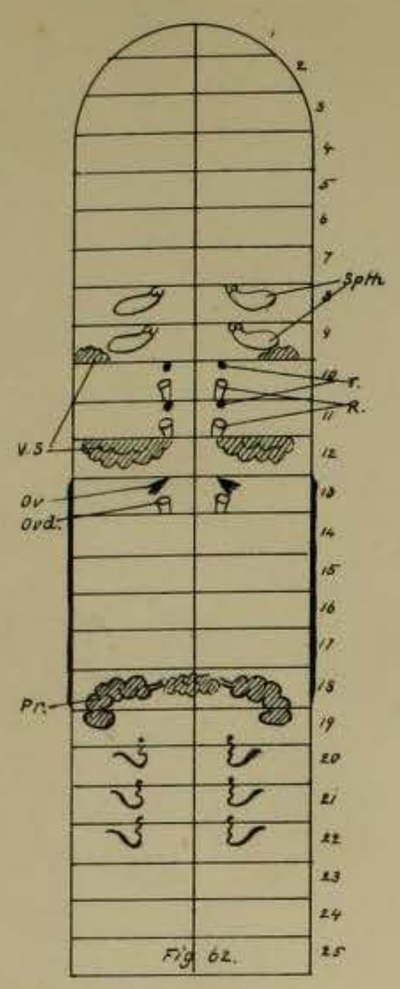

Fig. 62.

MEGASCOLIDES ATTENUATUS.

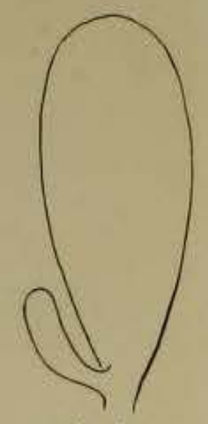

Fig. 63.

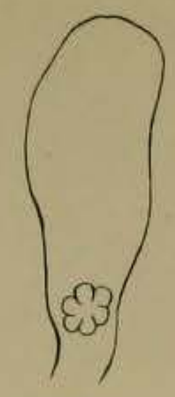

Fig. 64.

Fig. 65.

Fig. 66.

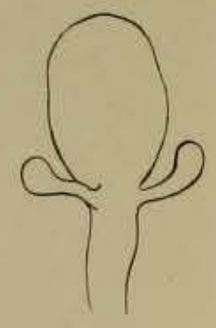

Fig. 67.

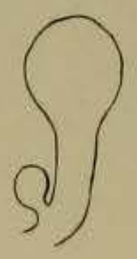

Fig. 68.

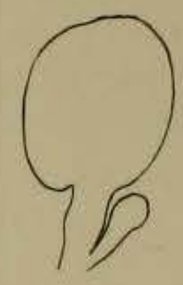

Fig. 69.

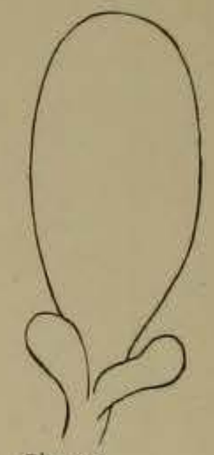

Fig. 70.

Fig. 71.

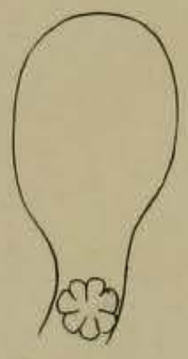

Fig. 72.

Fig. 73.

Fig. 74.

Fig. 75.

Fig. 76.

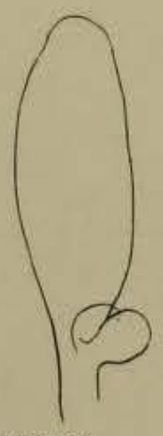

Fig. 77.

Fig. 78.

Fig. 79.

Fig. 80.

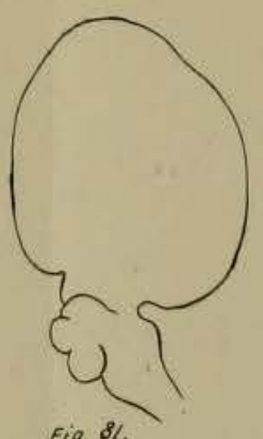

Fig. 81.

Fig. 82.