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# A Description of *Sterrhurus macrorchis* n. sp., with Notes on the Taxonomy of the Genus *Sterrhurus* Looss (Trematoda—Hemiuridae)

By

PETER W. CROWCROFT

*(Demonstrator in Biology, University of Tasmania)*

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PLATES II-III

A specimen of the common 'Rock Cod' of Tasmanian waters (*Physiculus barbartus* Günther) was found to be infested with thirty trematodes which represent a new species of the genus *Sterrhurus* Looss. The worms were found in the stomach and pharynx. The stomach also contained a number of specimens of another Hemiurid, which appears to be *Parahemiurus australis* Woolcock, and which has not been previously reported from this host. The intestine and pyloric caeca of *Physiculus barbartus* are commonly infested with an unidentified tape-worm, and less frequently with an unidentified nematode. A further nine specimens of the host were examined for parasites, but no specimens of the trematode described in the present paper were found.

The 'in toto' mounts were fixed in alcohol under slight cover-glass pressure, and stained with alum-carmine. Specimens intended for sectioning were fixed in Bouin's solution. Transverse and longitudinal sections were cut at 6-10$\mu$, and stained with Ehrlich's haematoxylin and eosin.

An examination of the literature dealing with the genus *Sterrhurus* shows that no satisfactory basis exists for separating *Sterrhurus* from the genus *Lecithochirium* Lühe. In the present paper it is proposed to separate the genera upon the basis of a fundamental difference in the structure of the terminal genital ducts.

## Family HEMIURIDAE

### Sub-family *Sterrhurinae*,

### **Sterrhurus macrorchis** new species.

*External features.*—Stout, spindle-shaped trematodes, little or not at all, flattened dorso-ventrally. The type-specimen measures 2·9 mm. long, and 1·09 mm. wide under slight cover-glass pressure, and has the 'tail' or 'ecsoma' completely withdrawn (fig. 1). The 'tail' is capable of eversion to a length of approximately 0·5 mm., being poorly developed in comparison with that of most other members of the genus *Sterrhurus*.

The oral sucker is sub-terminal and directed ventrally. It measures 0·36 mm. in diameter and is bounded anteriorly by a narrow lip. The acetabulum is situated at about the posterior limit of the front half of the body. It is circular in outline and measures 0·57 mm. in diameter. The ratio in diameter between the acetabulum and the oral sucker in the type and paratypes varies from 1·5 to 1·6. Immediately in front of the acetabulum there is a deep transverse groove, the pre-acetabular pit. The common genital aperture is situated in the mid-line, half-way between the anterior extremity and anterior border of the acetabulum. The excretory aperture is at the extreme tip of the ' tail '. The cuticle is quite smooth and spineless. The extensive uterus, filled with orange-brown eggs, imparts a brownish appearance to the posterior half of the body, which elsewhere appears light-yellow.

*Digestive System.*—The cavity of the oral sucker opens directly into the pharynx, a prepharynx being absent. The musculature of the pharynx is quite independent of that of the oral sucker. The pharynx measures 0·16 mm. in diameter and is of approximately the same measurement in length. The pharynx opens through a strong sphincter into a short irregular chamber, the oesophagus, the wall of which is strongly muscular, possessing inner circular and outer longitudinal muscles. There is also a strong sphincter at the posterior end of the oesophagus separating it from the gut. From the oesophagus the gut rami run directly outward as smooth tubes for a distance of about 0·1 mm. This region and the oesophagus, pharynx and oral sucker are lined by a thin layer of the cuticle. In each ramus a weakly developed sphincter separates the proximal smooth region from a short expanded chamber, lined by an epithelium which bears dense strands which almost fill the lumen. This is the gland-stomach. The strands in other species have been described as protoplasmic threads, strands of mucus, and as cilia. The left and right gland-stomachs narrow and then expand into smooth sinuous tubes which extend backwards, near the dorsal surface, almost to the posterior extremity, occasionally entering the ' tail ' for a short distance. Posterior to the gland-stomachs the rami are lined by columnar epithelial cells with basal nuclei. They possess a thin muscular wall consisting of inner circular and outer longitudinal fibres. The entire length of the gut is surrounded by a dense absorptive layer containing numerous nuclei, which is most developed in the vicinity of the oesophagus.

*Excretory System.*—The excretory vesicle extends from the excretory aperture to the level of the middle of the acetabulum as a thin-walled sinuous tube, which passes through the uterine coils, to the left of the ovary. At the anterior end, the ventral wall of the vesicle becomes raised in the mid-line, and further forward fuses with the dorsal wall, dividing the cavity into two approximately equal tubes. These paired vesicles diverge and come to lie near the lateral margins of the body. In this position they pass forwards to the level of the oral sucker, turn sharply inwards and fuse to form a continuous arc dorsal to the oral sucker.

When the ' tail ' is withdrawn the posterior vesicle lies contorted in the uterine region and the excretory aperture opens into a chamber lined by the invaginated body wall. The excretory products escape through a posterior narrow ridged channel.

The surface of the entire excretory system is covered by minute spherical droplets, arranged singly, in short chains or in small aggregates. They are also present on the surface of the posterior chamber formed when the ' tail ' is withdrawn and are apparently due to some excretory product.

*Genital System,* (1) *Male.*—The testes are two relatively large ovoid or roundly triangular bodies lying symmetrically near the lateral margins, slightly towards the dorsal surface, at about the middle length of the body. Their anterior border

is at the level of the middle of the acetabulum. They measure 0·4 mm. broad and 0·47-0·59 mm. long. The vasa deferentia leave the anterior borders of the testes and run forward obliquely to open together into the base of the large seminal vesicle. The vesicle is S-shaped and is divided into two regions, namely, (*a*) a large thin-walled posterior portion which is folded upon itself, and (*b*) a smaller anterior portion which has a thicker muscular wall composed of inner longitudinal and outer circular fibres, and which is connected to the posterior portion by a narrow neck. The anterior division connects with the pars-prostatica by a constricted muscular tube which terminates in a well-developed sphincter. The pars-prostatica has a muscular wall with a glandular lining of cubical empty-looking cells. It is tapered anteriorly and measures 0·16 mm. long, and near the posterior end 0·06 mm. in diameter. For the greater part of its length it is enclosed within the dorsal musculature of a large muscular sac, the so-called 'sinus-sac'. Anteriorly the pars-prostatica opens through the antero-dorsal wall of the sinus sac into a very large dorsal cavity within. The aperture is surrounded by a delicate nozzle or collar which projects into the cavity. The prostate gland extends over the entire antero-dorsal and postero-dorsal walls of the sinus sac and surrounds the pars-prostatica. The cells of the prostate gland are very large and vacuolate with prominent nuclei. The large sinus sac is ovoid in shape, having its long axis directed dorso-ventrally and measuring approximately 0·39 mm. x 0·21 mm.

The large dorsal cavity has its own wall. This is membranous and closely applied to the wall of the sinus sac dorsally. Ventrally and laterally there is a space between it and the sac wall filled by vacuolate spongy tissue. The wall of the expanded chamber is continuous with the ejaculatory duct and the musculature of the sac around the base of the small 'collar'. In the ventral floor of the expanded chamber there are distinct muscle fibres. A narrow pore leads through a muscular thickening of the floor into the cavity of the hermaphrodite duct at its junction with the female duct. The hermaphrodite duct is wide and highly muscular, having stout longitudinal muscles running from the body wall to the floor of the expanded chamber and inner circular muscles which project into the cavity. As the hermaphrodite duct is directed dorso-ventrally it does not extend posteriorly to the level of the common genital aperture as is the case in many other species of *Sterrhurus* (fig. 7).

(2) *Female.*—The ovary is a large, smooth, oval body lying immediately behind the right testis, slightly towards the dorsal surface. It measures 0·31 mm. x 0·42 mm. and has its long axis directed transversely. The largest ova in the ovary measure 0·008 mm. in diameter. The oviduct, the thin wall of which contains large flattened nuclei, leaves the ovary ventrally. On the right side it meets a duct which leads backwards into the receptaculum seminis. The oviduct passes ventrally a further 0·02 mm. and meets the short yolk duct. It then passes backwards as the ootype into the compact shell gland, turns upon itself, and passes directly forward to emerge anterior to the level of the origin of the oviduct. The tube expands slightly into the relatively narrow proximal portion of the uterus. This circumvents the shell gland and receptaculum seminis posteriorly and fills the body on the right side between the vitellaria. The uterus then passes backwards to fill the body posterior to them. The first loops of the uterus contain abundant sperms, indicating their function as a receptaculum seminis uterinum.

The shell gland and the receptaculum seminis are closely approximated into a compact organ between the ovary and vitellaria, the shell gland being antero-ventral and the receptaculum postero-dorsal. The shell gland contains dense gland cells arranged radially around the U-shaped ootype (fig. 6). The receptaculum seminis has an extensive cavity incompletely divided by thin partitions into four

or five compartments. In the four specimens sectioned the receptaculum was devoid of contents. The single pair of vitellaria lie near the dextro-ventral surface. Each is deeply cleft into three blunt expanded lobes. The yolk ducts arise near the inner borders of the vitellaria, converge sharply and unite to form a very short common yolk duct. The yolk cells measure as much as 0·012 mm. in diameter. The extensive coils of the uterus occupy the body space behind and to the left of the vitellaria and passing forwards fill the space between the testes. In extended specimens the posterior uterine coils may enter the base of the 'tail'. The innumerable uterine eggs are long-oval in shape, measuring 0·02-0·024 mm. long and 0·008-0·01 mm. broad and are orange-brown in colour. At the level of the hind edge of the acetabulum the wall of the uterus, which is membranous and contains flattened nuclei, abruptly narrows and becomes muscular, possessing outer longitudinal and inner circular fibres. This narrow muscular portion measuring approximately 0·01 mm. in length expands into a thin-walled tube of the same length, which abruptly narrows and passes into the metraterm. The metraterm is highly muscular and, in addition to the outer longitudinal and inner circular muscles, has a lining of cuticle. Anteriorly it penetrates the wall of the muscular sac and passes forward immediately below the thin-walled dorsal chamber. Directly below the male aperture in the floor of this chamber it passes into the short broad hermaphrodite duct.

The metraterm is divided into two portions by a constriction at the level of the middle of the acetabulum. In the contracted state the distal muscular and thin-walled portions of the uterus and the proximal portion of the metraterm are coiled into a compressed helix.

*Muscular System.*—The oral sucker and the acetabulum present no unusual features. They possess the normal equatorial meridonial and radial muscles. The body-wall is composed of the usual circular, longitudinal, and oblique muscles. It is highly muscular in the 'neck' region, but behind the acetabulum the musculature is weak. Throughout the body-length, the ventral body-wall is the more muscular. In addition to the posterior oblique retractor muscles of the oral sucker there are a few very large hollow fibres, derived from the longitudinal muscles of the dorsal body wall, which curve forwards and downwards and are inserted in the antero-dorsal wall of the sucker. Weak oblique muscles run forwards and downwards from the dorsal body wall to the pre-acetabular pit.

*Nervous System.*—The nerve ganglia are situated on either side of the anterior portion of the pharynx. Ganglion cells are numerous near their dorsal periphery. The dorsal nerve commissure bends slightly forwards and lies above the oral sucker, while the ventral commissure bends backwards and lies beneath the oesophagus, giving off nerves to the anterior regions of the gut. Ventrally the ganglia give off two slender nerves which run forwards and downwards to supply the pre-oral lip and the oral sucker. Posteriorly the ganglia are continuous with the paired lateral nerves which diverge and pass downwards to lie near the ventral surface. These lateral nerves were traced as far as the level of the genital aperture.

*Host.*—*Physiculus barbartus* Günther.

*Location in Host.*—Pharynx and stomach.

*Frequency.*—Present in one of ten hosts examined. Host obtained from Hobart Fish Market, October, 1944.

## The Structure of the Terminal Genital Ducts in the Genus Sterrhurus Looss

Looss (1907*a*) in his diagnosis of the genus *Sterrhurus* remarks of the terminal genital ducts, 'Der den Cirrusbeutel ersetzende Muskelsack hat birnformige Gestalt,

und umschliesst ausser dem Ductus ejaculatorius, auch den Anfangsteil des Metraterms und den kurzen Ductus ejaculatorius, dessen Endabschnitt zu einem kugelformigen Hohlraum erweitert ist. In diesen tritt von hinten her die ausserhalb des Beutels gelegene Pars prostatica wobei ihr innerer Belag lippenartig in den Hohlraum der Blase vorspringt. Oft setzen sich die Secretmassen auch mehr oder minder weit auf die Wand der Blase fort.' Looss includes in the genus the following species, *S. musculus*, *S. imocavus*, *S. grandiporus* (Rud.), and *S. fusiformis* (Lühe). In an extended account of the type species (*S. musculus*) Looss (1907*b*) states his conviction that the cavity or bladder within the cirrus sac represents an expanded portion of the ejaculatory duct. He says 'Der männliche Leitungsweg, der nach seinem Austritt aus dem Ductus hermaphroditicus als Aquivalent eines Ductus ejaculatorius betrachtet werden kann, erweitert sich nach kurzem Verlauf unvermittelt zu der mehrfach erwähnten Blase, deren Vorhandensein anscheinend die birnförmige Gestalt des Cirrussacks bedingt. Ihr innere Auskleidung ist ohne Zweifel eine stark verdünnte, aber direkte Fortsetzung der Auskleidung des Ductus ejaculatorius, denn man sicht beide kontinuierlich ineinander Ubergehen; eine aussere Muskelauflagerung scheint der Blase zu fehlen'. Looss also states that the pars-prostatica projects into the expanded bladder like the opening of the womb, and that the wall of the expanded portion of the ejaculatory duct is covered with droplets of prostatic secretion in most of his specimens, but in some is free from these, and the bladder filled with groups of spermatozoa.

Linton (1910), briefly describes *S. monticelli* and records some specimens of *S. fusiformis* (Lühe). The detailed structure of the terminal genital ducts is not given, but an illustration of a longitudinal section through the fore-body of *S. monticelli* shows a large 'cirrus' projecting into the common genital duct. Linton's figure of longitudinal section through the fore-body of the *S. fusiformis* shows the expanded bladder within the dorsal end of the cirrus sac lined by tall cells and labelled 'duct of prostate'.

Nicoll (1915) describes *S. brevicirrus* and states that a 'prostate vesicle' is present at the base of the cirrus sac. A detailed account of the species is not given, but Nicoll remarks that his species displays all the typical features of the genus *Sterrhurus* Looss.

Manter (1934) describes *S. laevis*, *S. floridensis*, *S. robustus*, *S. profundus*, and *S. praeclarus*. In *S. laevis* the cirrus or sinus sac is described as short and very broad and mostly occupied by the 'prostate vesicle' which is itself almost filled by the tall cells which line its wall. In this species the seminal vesicle is conspicuously divided into two parts, one of which is anterior and the other usually posterior to the ventral sucker. In *S. floridensis* there is a spherical 'prostate vesicle' within the base of a clavate cirrus sac. The vesicle is shown to be lined by tall cells similar to those usually lining the pars prostatica, and the metraterm meets the male duct immediately in front of the vesicle, forming a long, sinuous ductus hermaphroditicus. *S. praeclarus* differs from perviously described species in that the cirrus sac is much reduced and the metraterm meets the male duct at the anterior end of the pars prostatica which is near the genital pore. In *S. robustus* the cirrus sac or sinus sac is totally lacking, the ejaculatory duct and ductus hermaphroditicus being simply tubular in form. Manter describes the prostate gland as lying free around the prostate vesicle and shows the seminal vesicle lying mainly behind the acetabulum and conspicuously constricted into two parts. He remarks that *S. profundus* presents so many peculiarities that it might warrant the formation of a new genus; and in his specific diagnosis states 'Genital atrium very short; ejaculatory duct long, narrow, straight or slightly sinuous, widening opposite the pharynx to form a thick-walled prostate vesicle'. *S. profundus* differs from all previously described species

in that the seminal vesicle is undivided, the genital pore far anterior, etc. Manter states that as it is difficult to arrive at a logical generic limitation, at the time he prefers to place this species in the genus *Sterrhurus*. In none of the species of *Sterrhurus* described by Manter is there present any structure projecting into the cavity of the prostate vesicle as described by Looss.

Yamaguti (1934) describes *S. inimici*, and puts forward a new interpretation of the terminal portions of the genital ducts. He regards the expanded bladder at the base of the 'sinus sac' as a greatly expanded ductus hermaphroditicus. Since Yamaguti (1938) rescinds this interpretation after further examination of the specimens, it need not be elaborated further. Stunkard and Nigrelli (1934) describe *S. branchialis*. The copulatory organs and 'sinus sac' of this species agree with those of *S. musculus* Looss, except that the ductus hermaphroditicus is somewhat longer. These authors express the view that *S. praeclarus*, *S. robustus*, and *S. profundus* of Manter should not be included in the genus *Sterrhurus* Looss, but do not attempt to re-classify these species. Stunkard and Nigrelli express the view that the ductus hermaphroditicus is undoubtedly formed 'by fusion of the distal parts of the metraterm and ejaculatory duct'.

Park (1936) states that Looss refers to the vesicle at the base of the 'sinus sac' as 'merely the vesicular expansion between the pars prostatica and the ductus hermaphroditicus'. However, as shown above, Looss expresses the definite opinion that this vesicle represents an expanded portion of the ejaculatory duct. In *S. magnatestis* Park the pars prostatica projects into the 'prostate vesicle' within the 'sinus sac' (or cirrus sac) in the same manner as in *S. musculus* Looss, but it bears at its innermost extremity a nozzle or collar which, according to Park, is covered with minute spinules. Park regards this nozzle as representing a copulatory organ or true cirrus and designates the expanded portion of the male duct into which it projects a 'cirrus vesicle'. In view of the muscular nature of the 'sinus sac' and 'cirrus vesicle' Park predicts that the 'cirrus' may be protusible at the time of copulation. The aperture connecting the 'cirrus vesicle' with the hermaphrodite duct is regarded as representing a very short ejaculatory duct. Park remarks 'However this is not a true one in origin, although it may be functioning as such in those species lacking a cirrus. It is probable that the duct is derived from a modification of the anterior part of the cirrus sac'. Park considers that in his species the true ejaculatory duct is lacking or has become a part of the 'cirrus', and that on this account Stunkard and Nigrelli's statement that the hermaphrodite duct is formed by the fusion of the distal parts of metraterm and ejaculatory duct might need modification. Park considers that the hermaphrodite duct or genital sinus might rather be formed by invagination and elongation of the genital atrium in development, since the structure of the muscular vesicle shows 'a possible modification of the cirrus sac which contains a cirrus. Under this assumption the muscular vesicle is homologous with the cirrus sac or part of it. Therefore the name cirrus vesicle is preferable to prostate vesicle from the evolutionary point of view'.

Yamaguti (1938) describes *S. musigarei* and *S. magnus*. In *S. musigarei* two-thirds of the pars-prostatica projects through the wall of the 'sinus sac' into the cavity within the dorsal end of the sac. As this chamber is regarded as an expansion of the ejaculatory duct and discharges sperms into the hermaphrodite duct upon the contraction of the 'sinus sac', Yamaguti prefers the term 'ejaculatory vesicle' to 'prostate vesicle'. The pars-prostatica bears at its extremity a thin nozzle similar to the 'cirrus' of Park. The ejaculatory vesicle opens anteriorly into a short, wide hermaphrodite duct. In *S. magnus* the genital end-organs are of

similar construction. Yamaguti points out that *S. robustus* Manter should be transferred to *Dinosoma*. A year later Yamaguti (1939) describes a further species, *S. pagrosomi*, in which the pars prostatica is enclosed anteriorly in the dorsal wall of the 'ejaculatory vesicle'. The metraterm is described as running forwards along the ventral wall of the 'ejaculatory vesicle' and opening at its anterior end into the ductus hermaphroditicus. Jones (1943) re-describes *Sterrhurus fusiformis* (Lühe) in detail. The 'prostate vesicle' at the base of the 'sinus sac' is lined by large vacuolate cells similar to those lining the pars-prostatica. The prostate vesicle and the pars-prostatica are directly continuous, there being no inwardly projecting portion of the latter into the cavity.

In *S. macrorchis*, described above, the terminal genital organs correspond essentially to Yamaguti's description of *S. pagrosomi*, but resemble those of *S. magnatestis* in the possession of the collar, nozzle, or 'cirrus' of Park, which does not appear to be present in *S. pagrosomi*.

The above accounts of the terminal genital ducts of *Sterrhurus* species indicate that the expanded vesicle within the muscular pouch has arisen in two different ways. The organs of some species are adequately described by Looss' original diagnosis of the genus. These species possess a vesicular expansion of the ejaculatory duct, into which the terminal portion of the pars-prostatica may project, and which connects with the hermaphrodite duct by an unexpanded portion of the ejaculatory duct which may be more or less abbreviated. In view of the origin and function of the expanded vesicle in these species the term 'ejaculatory vesicle' proposed by Yamaguti should be applied to it. A gradual encroachment of the pars prostatica into the cavity of the ejaculatory vesicle is seen to have taken place. In *S. macrorchis* the anterior portion of the pars prostatica, while enclosed within the musculature of the 'sinus sac', yet does not project into the cavity of the ejaculatory vesicle (fig. 7). In *S. musculus* Looss, *S. branchialis* Stunk. et Nig. (fig. 5), *S. magnatestis* Park (fig. 3), and *S. inimici* Yamaguti, the pars projects a short distance into the vesicle. A further stage has been reached in *S. musigarei* Yamaguti and *S. magnus* Yamaguti in which as much as two-thirds of the entire length of the pars may project into the ejaculatory vesicle (fig. 4). The 'cirrus' of Park appears to be constantly present in some species and in *S. macrorchis*, at least, is not the copulatory organ. It is possible that the terminal genital organs have arisen in different ways in *Sterrhurus* species, but as this seems unlikely, Park's term 'cirrus vesicle' is not suitable.

In *S. fusiformis* (Lühe) (fig. 10), *S. floridensis* Manter (fig. 8), and *S. laevis* Manter, the expanded vesicle within the muscular pouch appears to have arisen by expansion of a portion of the pars prostatica. The vesicle is lined by a continuation of the lining of the pars prostatica, and the free part of the pars is directly continuous with the vesicle, there being no projection into the vesicle. The question arises as to whether these species should be included in the genus *Sterrhurus*. An indication of their true systematic position follows from a consideration of the structure of the terminal genital organs in the genus *Lecithochirium* (Lühe).

*The Terminal Genital Organs of Lecithochirium.*

Looss (1907*b*) re-defines the genus and includes two species, *L. rufoviride* (Rudolphi) and *L. gravidum* which has previously not been separated from the former. These two species are very similar, differing only in size, proportion, and size of suckers, etc. Looss states that the structure of the terminal ducts in the genus is essentially similar to that found in the genus *Sterrhurus*. The genus *Lecithochirium* is distinguished from *Sterrhurus* principally because of morphological differences in the fore-body. *L. rufoviride* (Lühe) and *L. gravidum* Looss possess

a pair of prominent muscular thickenings in the ventral wall of the oral sucker, which is preceded by a well-developed pre-oral lip or lappet, only weakly developed in the *Sterrhurus* species recognised by Looss. *Lecithochirium* is also distinguished by the presence of a pre-acetubular pit or groove.

Further species have been assigned to the genus, which have the pre-oral lip developed to a more or less degree, and none of which possess the muscular thickenings of the oral sucker. The terminal genital ducts of those species added to the genus since 1907 and which have been described in detail, have been essentially similar to those of *S. floridensis*, *S. laevis*, and *S. fusiformis* (according to Jones' re-description). Workers on the group have applied various terms to these structures. Chandler (1935), in his description of *L. microstomum*, states that the prostatic portion of the vas deferens was sac-like and constricted into two parts where it penetrated the sinus-sac (fig. 9). Yamaguti (1938) takes the view that the pars-prostatica is divisible into two parts. He proposes the use of the term 'prostatic vesicle' for the expanded portion within the sinus-sac. Manter (1940) adopts the term 'prostate vesicle' for the prostatic portion of the male duct, whether enclosed within the sinus-sac or free from it. Thus in species of *Lecithochirium* Manter refers to 'internal' and 'external' prostate vesicles. I concur with Yamaguti's proposal.

As Jones (1943) points out the present separation of the genera *Sterrhurus* and *Lecithochirium* is unsatisfactory as the genus *Sterrhurus* is defined upon negative features which for the most part are really only differences of degree. It can be seen that two fundamentally different types of terminal genital organs are present in the two genera. In all the adequately described species of *Lecithochirium* the bladder within the muscular pouch or sinus-sac is a portion of the pars prostatica. All those species in which the bladder is derived from a portion of the ejaculatory duct are included in the genus *Sterrhurus* but several species in which the bladder represents a portion of the pars prostatica have been included in this genus, namely, *S. fusiformis*, *S. floridensis*, and *S. laevis*. If the difference in structure of the terminal genital ducts is adopted as a means of distinguishing the genera, many anomalies pointed out by Jones disappear. *S. fusiformis* (Lühe), *S. floridensis* Manter, and *S. laevis* Manter are accordingly, transferred to the genus *Lecithochirium* (Lühe). Until adequate detailed descriptions of *S. brevicirrus* and *S. monticelli* appear their position is uncertain. However, from the descriptions available, the former appears to be correctly assigned, but the latter should be transferred to *Lecithochirium*. *S. robustus* Manter has been transferred to the genus *Dinosoma* Manter by Yamaguti (1938). *S. praeclarus* Manter and *S. profundus* Manter differ so markedly from the members of either genus that new genera should be set up to accommodate them.

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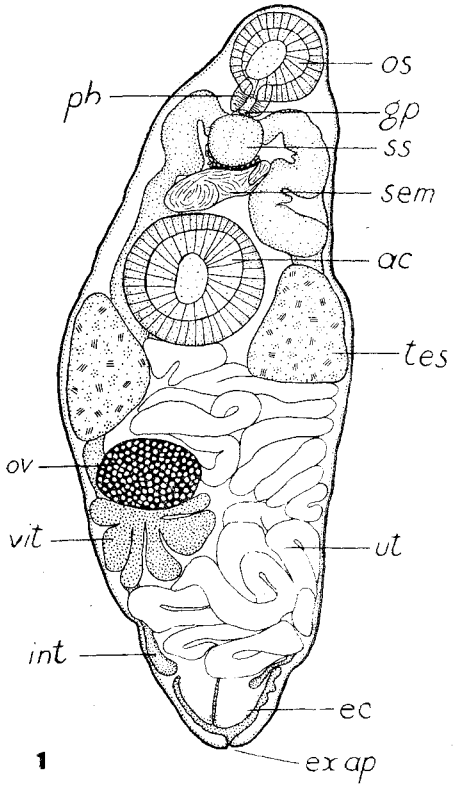
## PLATE II

FIG. 1.—*Sterrhurus macrorchis* n. sp., whole mount from the ventral aspect.
FIG. 2.—*Sterrhurus macrorchis* n. sp., transverse section at the level of the testes.
FIG. 3.—*S. magnatestis* Park, terminal genital organs, after Park.
FIG. 4.—*S. musigarei* Yamaguti, terminal genital organs, after Yamaguti.
FIG. 5.—*S. branchialis* Stunk. & Nig., terminal genital organs, after Stunkard and Nigrelli.

## ABBREVIATIONS USED IN PLATES

*ac.* acetabulum, *c.* cirrus, *ec.* ecsoma, *ev.* ejaculatory vesicle, *ex.* excretory vesicle, *ex ap.* excretory aperture, *gp.* common genital pore, *hd.* hermaphrodite duct, *int.* intestine, *met.* metraterm, *oo.* ootype, *os.* oral sucker, *ov.* ovary, *pg.* prostate gland, *ph.* pharynx, *pp.* pars-prostatica, *pv.* prostate vesicle, *rs.* receptaculum seminis, *sem.* seminal vesicle, *sh.* shell gland, *ss.* sinus-sac, *tes.* testis, *ut.* uterus, *vit.* vitellaria.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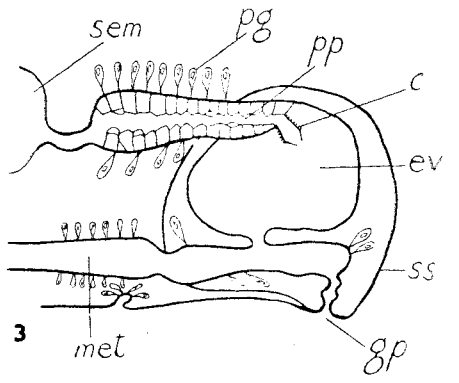
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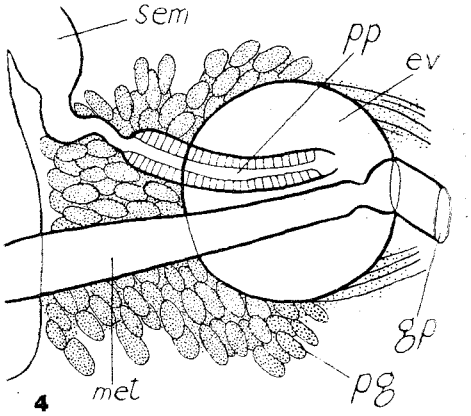
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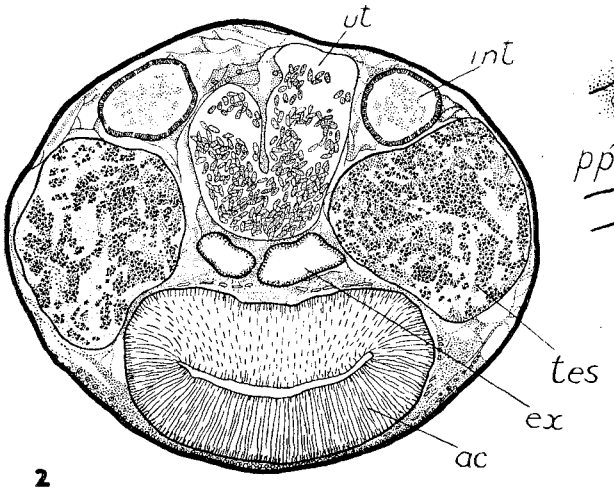
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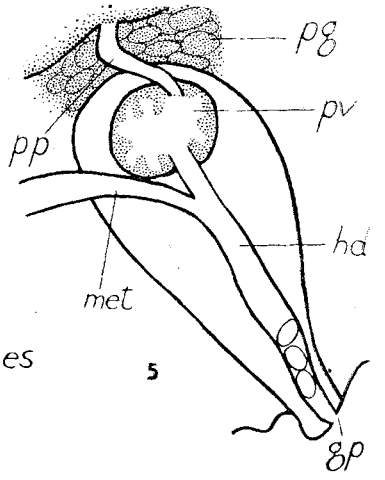
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## PLATE III

FIG. 6.—*Sterrhurus macrorchis* n. sp., transverse section through the female complex.

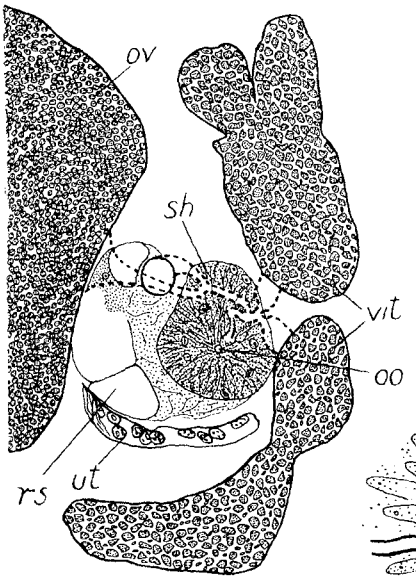
FIG. 7.—*Sterrhurus macrorchis* n. sp., sagittal section through the terminal genital organs.

FIG. 8.—*Lecithochirium floridense* n. comb. (*Sterrhurus floridensis* Manter), terminal genital organs, after Manter.

FIG. 9.—*Lecithochirium microstomum* Chandler, terminal genital organs, after Chandler.

FIG. 10.—*Lecithochirium fusiforme* Lühe (*Sterrhurus fusiformis* Lühe), terminal genital organs, after Manter.

For explanation of abbreviations see page opposite Plate II.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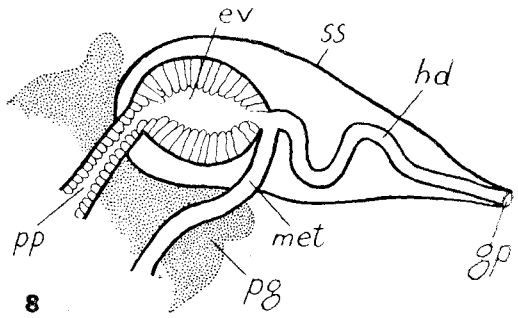
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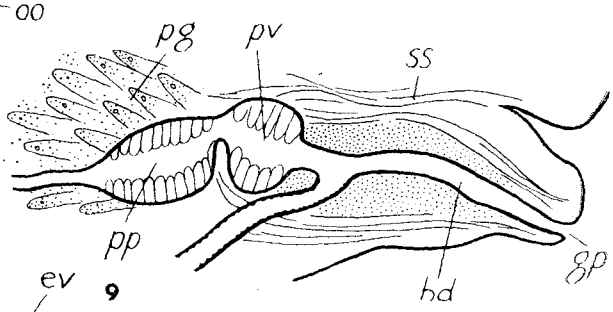
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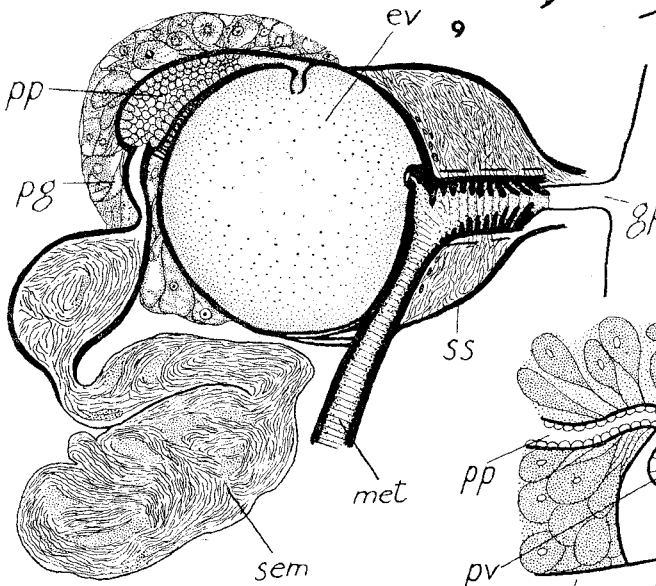
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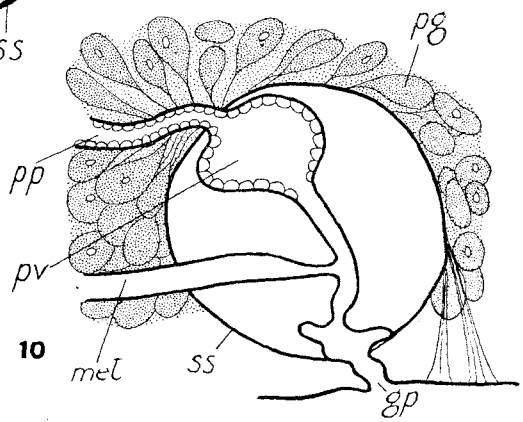
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