

March 16, 1886.

Prof. W. H. Flower, LL.D., F.R.S., President, in the Chair.

Mr. F. D. Godman, F.R.S., exhibited a series of examples of a Butterfly, *Danais plexippus*, from various localities, and made remarks on its distribution, which seemed to be gradually extending itself all over the world.

Professor Bell stated that the species of *Balanoglossus*, an imperfect example of which he had exhibited to the Society on November the 17th of last year, had been described and named by M. R. Koehler, who had called it *B. sarniensis*¹; the specimen on which his description was based had also come from the island of Herm. Since the reading of that description, M. G. Pouchet² had reported to the Academy of Sciences that the species in question had been found at various localities on the northern and north-western coasts of France.

The following papers were read:—

1. On new Genera and Species of *Endomychidæ*.
By the Rev. H. S. GORHAM, F.Z.S., F.E.S.

[Received March 5, 1886.]

(Plate XVII.)

The object of the following descriptions is to make known several most interesting and beautiful Coleoptera of the family *Endomychidæ* from various sources, but which are chiefly due to Mr. George Lewis's collections made in Ceylon in 1882-3. A portion, however, are species that have been long known to me, as they are based on specimens collected by Mr. Bates on the Amazons. Of these there were mostly but one or two of each species, and it would no doubt have been satisfactory to have seen more examples; of this, however, there seems but slender hope, while if left undescribed the specimens are practically lost. Two or three most interesting species, forming a new genus, are from examples in Mr. Cowan's Madagascar collection; for the opportunity of describing these my thanks are due to Dr. Sharp.

SPATHOMELES.

1. SPATHOMELES INFLATUS. (Plate XVII. fig. 5.)

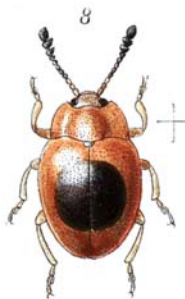
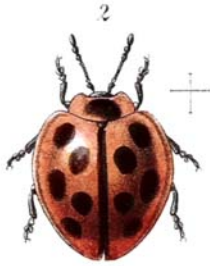
Oblongus, niger, nitidus; elytris piceo-purpurascensibus, marginibus nigris, humeris calloso-inflatis. Long. 10 millim. ♀?

Hab. Ceylon.

Head, antennæ, legs, prothorax, and underside shining black.

¹ Comptes Rendus, cii. (25 Jan. 1886) p. 224.

² *L. c.* p. 272.



W. Purkiss del.

Hanbart imp.

NEW COLEOPTERA OF THE FAMILY ENDOMYCHIDÆ.

Head with a few scattered but distinct punctures; club of the antennæ rather lax and dull. Thorax shining, not punctured, but with the surface uneven; anterior margin deeply excavated for the head, and with the anterior angles turned inwards; the sides much rounded in front; the disk with a short central elongate impression, and a round one on each side; the sides much puckered. Elytra smooth and waxy, impunctate; all the disk of a pitchy-purple tint, which in life was, as Mr. Lewis informs me, of a most beautiful violaceous colour. They have a double, not much elevated, tumidity each side of the scutellum. The humeral callus is much inflated, to the extent of about a quarter of the length of the elytra; this tumidity is scarcely carinate and not spinose; the reflexed margin of the elytra is complete, running as a fine line beneath the callus up to the basal angle; the epipleural fold is black and shining. The anterior tibiæ are very faintly incurved, and compressed into a shallow spoon-shaped hollow at their apices, and the middle pair are more strongly incurved at their tips, the hind pair slightly so; all the tibiæ have the apices pubescent inwardly; the hair at the tips is golden.

Of this very singular and beautiful *Spathomeles* a pair were beaten off a dead branch in the jungle by Mr. Lewis at Dickoya, at 5000 feet elevation.

2. SPATHOMELES ORNATUS.

S. decorato valde affinis, oblongus, niger, nitidus; elytris sub-violacæis, maculis tribus elevatis, una basilari rotundata, una ante medium transversa in medio constricta, una subapicali sub-lunulata, luteis. Long. 13-15 millim. ♂ ♀.

Mas. Elytris spina dorsali brevi obtusa, femoribus anticis, tibiis mediis ante apicem dentatis, tibiis posticis ante medium angulariter late dentatis.

Hab. Assam.

Very closely allied to *S. decoratus*, Gerst., and perhaps not more than a geographical form; the evident toothing of the hind tibiæ is, however, very important, and the union of the two middle yellow spots, which in *S. decoratus* are, so far as I have observed, always separate, seems to point to a permanent specific difference. The spots are all rather more developed than in *S. decoratus*; the basal one is round.

One male and two female specimens.

STICTOMELA, gen. nov.

Corpus ovatum. Elytris convexis, maris haud spinulosis. Prothorax antice ampliato-rotundus. Prosternum apice truncatum, coxas anticas superans. Mandibulæ apice bidentatæ. Palpi mazillares articulo ultimo conoideo apice minute truncato.

A genus very nearly approaching *Spathomeles*; the points in which it principally differs are, that in the males the elytra are not armed with a spine, and the prothorax is differently shaped, resembling more that of the *Amphisterni* of the second section without

spines. The apex of the prosternum is not so widely rounded but sub-mucronate. The apex of the jaws is notched, much as in *Encymon* and *Engonius*, the teeth being of equal length and the exterior one not bifid. The front tibiæ of the males have a very small tooth near their apex. *Engonius*, to which this genus approaches in some of its characters, has the apex of the elytra obliquely truncate, so that they are open at the sutural angle; in the present genus the elytra are together uniformly rounded.

1. STICTOMELA CHRYSOMELOIDES. (Plate XVII. fig. 6.)

Oblonga, elytris apice æqualiter rotundatis, nigro-ænea, nitida; capite prothoraceque inæqualibus, crebre sat fortiter punctatis, hoc profunde canaliculato; elytris crebrius subtiliter punctatis, perobsolete subsulcatis, callo humerali modice elevato, obtuse carinato, punctisque quatuor aurantiacis, duobus basalibus, duobus subapicalibus, oblique positis. Long. 9 millim. ♂ ♀.

Mas. Tibiis anticis ad apicem intus excisis, intermediis leviter curvatis, apice mucronatis.

Hab. Dickoya, Ceylon.

Head brassy black, a little shining; epistoma thickly and strongly punctured, posterior part less thickly; antennæ as in *Spathomeles*, but the club rather lax, apical joint obliquely compressed at the tips. Thorax with the surface shining but uneven, the principal impression being a central channel with a punctiform pit on each side in the middle, a basal transverse line, and the ordinary basal sulci; the sides are, however, wrinkled; the lateral margins are much rounded in front, and the front margin rather deeply excavated and bisinuate, the front angles being acute. The humeral callus is raised into a blunt carina, terminating in the external one of two basal, orange, round spots; the two apical ones are placed somewhat obliquely, that nearest the suture being furthest from the apex, and oblong but irregular in shape. The femora are clavate and distinctly punctured; the tibiæ are bent a little in both sexes, but more strongly so in the male, and in that sex terminate inwardly in a short micro; they are pubescent at the tips. The tarsi and claws are pitchy, clothed with golden pile beneath. The intercoxal plate of the basal ventral segment is sparsely but deeply punctate.

Four specimens, three males and one female, of this beautiful species were captured by Mr. Lewis.

2. STICTOMELA OPULENTA.

Oblonga, nitida, nigra; elytris confertim crebrius punctatis, singulis maculis sex rubris, tribus basalibus, tribus subapicalibus irregularibus, quasi fasciam formantibus. Long. 10 millim. ♂.

Mas. Tibiis anticis dente parvo adjacente, juxta apicem infra dentem excisis; segmento apicali ventrali, tuberculo instructo.

Hab. Ceylon.

Head strongly and deeply punctured, the epistoma especially so, with fewer and more scattered punctures; antennæ as in *Engonius*, but with the club a little more lax. Thorax uneven but shining,

with a marginal line round the entire edge uniting with the central channel in front; front margin deeply bisinuate; sides hardly so much rounded in front as in *S. chrysomeloides*. Elytra longer than in that species, thickly and distinctly punctured, hardly any trace of sulcation or striation; shoulders with a callus well raised, ending in a deep red spot, another spot near the scutellum, and a third between these two; posteriorly are two small oblong spots (united in the specimen described) near the suture about one third from the apex, and another between these and the margin. There is a fine sutural stria for the whole length of the elytra, and the margin is narrowly reflexed. Legs and underside shining black; femora punctate, but more finely than in *S. chrysomeloides*; anterior pair in the male compressed at the tip and with a very small fine calcar above the spatulate compression. The tubercle on the apical ventral segment is squarish and impressed on its top so as to seem faintly bidentate.

A single male specimen is all that Mr. Lewis secured of this species.

CYMONES.

Characteres plerumque ut in genere Encymon; differt mesosterno haud transverso, prothoracis basi medio vix marginato, sulco transverso nullo, antennarum clava elongata, laxe articulata, articulis nono et decimo vix latioribus, maris tibiæ anticarum dente lato.

I have no doubt that the species for which I propose this new genus is the Madagascar representative of *Encymon*, with which it is associated in the form of the mandibles. It has, however, a different facies, principally owing to the form of the pronotum, which is more convex, with its margins even and scarcely at all reflexed. The longitudinal basal sulci are present, but the transverse one is quite obsolete. The mode of toothing of the front tibia of the male is, moreover, quite different to that of *Encymon*; in the only species of that genus in which I have seen it take place, and which is figured by me (Endom. Recitati, tab. f. 10), the tooth is small and close to the apex; here it is wide and strong and near the middle of the tibia.

1. CYMONES SHARPI. (Plate XVII. fig. 4.)

Piceus; prothorace elytrorumque apicibus flavis, illo guttis duabus magnis oblongis, punctisque tribus parvis nigris, capite femoribusque saturatius nigro-piceis; trochanteribus, femoribus basi, tibiis tarsisque ferrugineo-flavis. Long. 9 millim. ♂.

Mas. Tibiis anticis dente basi latissimo, apice acuto infra medium, tibiis intermediis et posticis apice leviter incurvatis.

Hab. Madagascar, Betsileo (Cowan).

Head black, mouth and palpi testaceous, epistoma with a few indistinct punctures, crown smooth, antennal orbits raised. Antennæ piceous, rufo-piceous at the base; the proportion of the joints as in *Encymon* till the ninth, which with the tenth and apical joints are elongate, only rather longer and more widened at their tips than

those preceding them. Thorax about as long as wide if the projecting front angles are taken in, widest a little below the front; basal angles right angles, sides a little sinuate not angular, front margin rounded and a little prominent, basal margin nearly straight; on the disk, which is very even and smooth, are two large inky-black oblong marks a little obliquely placed, a small dot on each side where the thorax is widest, and one in the middle, near the base. Elytra pitchy, inclining to brown, the apex is yellow, and this colour returns some way up the suture and the margins; they are convex, evenly ovate, and rounded at the apex, narrower at the base, and with a very obsolete sutural stria and scarcely at all widened margin; the epipleural fold is yellow. There is no visible punctuation on their surface; but it is not glabrous as in *Encymon angulatus*, but very finely alutaceous, though the sculpture is hardly visible at all.

Only two specimens of this insect have come under my notice; both are males. One is in Mr. Lewis's collection, and the other in Dr. Sharp's, by whom they were obtained from Mr. Cowan.

2. CYMONES COWANI. (Plate XVII. fig. 1.)

Nigro-subviolaceus; capite, prothorace, antennis (clava excepta) pedibusque rufis, abdomine rufo-piceo. Long. 6½ millim. ♂ ♀.

Mas. Tibiis anticis dente acuto distante mediano, apicibus intermediis etiam leviter incurvatis.

Hab. Madagascar (Cowan).

More parallel than *C. sharpi*, and with the thorax not so convex above, and more quadrate, smaller, and differently coloured. The head and thorax are rusty red, very little shining, and without punctuation; palpi red; antennæ of moderate length, and with the club, which is black, abrupt, and with its two first joints transversely heart-shaped. The thorax is transversely quadrate, with the front angles a little prominent, the sides a little sinuate, nearly straight, base obsoletely margined, and the sulci distinct but not deep. Elytra dark blackish purple, their apex ferruginous, slightly shining but not bright. Legs in the male example pitchy, in the female clear rusty red.

Although this species and the following one differ in several particulars of their structure from *C. sharpi*, I have not been able to find any characters of sufficient importance to warrant their separation generically. In the abruptly formed club of the antennæ and in the form of the thorax these two species are nearer to *Encymon*, but the strongly toothed tibiæ in the male, and the form of the body, less swollen, and with its sides more parallel than in any eastern species of that genus, indicate a radical divergence from that type.

Only two specimens have come under my notice; they were obligingly placed in my hands by Dr. Sharp for description.

3. CYMONES HELOPIOIDES. (Plate XVII. fig. 3, ♂.)

Niger; parum nitidus; prothorace transversim quadrato, cum elytris subopacis. Long. 6½–7 millim. ♂ ♀.

Mas. *Tibiis anticis dente acuto, adjacente, infra medium; intermediis apice incurvato, posticis leviter sinuatis.*

Hab. Madagascar (Cowan).

Entirely black, subopaque above, body beneath shining. Antennæ rather short, a little longer in the male than in the female, their club not very wide nor abrupt; head rather uneven, with a few scattered obsolete punctures. Thorax half as wide again as long, opaque; punctuation very obsolete, minute and scarcely visible, basal sulci distinct; front angles very little produced, scarcely at all in the female, sides nearly straight, base finely margined. Elytra half as wide again as the thorax and slightly widened behind, callus only faintly raised. The male specimen has two minute red dots near the apex of the elytra, in the female they are wanting. Metasternum (in male) depressed between the hind coxæ, and first ventral segment with scattered small punctures.

Two specimens from Dr. Sharp's collection.

ANIDRYTUS, Gerst.

1. ANIDRYTUS QUADRIPUNCTATUS.

Oblongus, parum ovatus, rufo-piceus, nitidus, crebre subobsolete punctatus, cupreo-pubescentis; antennis nigris, articulis quatuor basalibus et apice summo rufis; prothorace punctis quatuor discoidalibus nigris. Long. 8 millim. ♀.

Hab. Brazil, Blumenau.

Head finely punctured, a little rugulose between the eyes; basal and three following joints of the antennæ pale ferruginous, the fourth joint being deeper in colour, and at its articulation with the third nearly black. Thorax just twice as long as wide, from the front angles the sides are very evenly rounded to near the base, where they become straight. The basal furrows are two distinctly impressed, converging, linear channels; within them, where they end on the front of the disk, halfway between the base and the front margins, are two round black points (as in *A. bipunctatus*); more in front and more widely apart are two other black points. The disk and sides of the thorax are evenly, thickly, not confluent punctured, but the surface of the black spots is smooth, or in the external spots with one or two punctures only. The elytra are somewhat parallel, not strongly convex, evenly and more thickly punctured; the punctures are (as is usual where they give rise to hairs) not pricked in, but irregular, somewhat linear, and flat-bottomed. Legs clear red, only a very little darkened at the base of the tibiæ. The underside wholly ferruginous red.

Although this appears to be a species very nearly allied to *A. bipunctatus*, Gerst. (a species also from Brazil), the description given above will show that it differs not only by the four black spots of the thorax, but by the colour of the underside and legs as well.

I have only seen one specimen, a female, which was sent to me by Herr Reitter, with other Coleoptera collected in the same district.

2. ANIDRYTUS LIQUEFACTUS, Gorch. Endom. Rec. p. 47.

I have received specimens of both sexes of what I consider identical with this species, of which the type is now in Mr. Lewis's possession from Peru, and one male from New Granada (?); but these have only *three* joints at the base of the antennæ red, and the apical joint is quite black. The size is from $7\frac{1}{2}$ – $8\frac{1}{2}$ millim.

3. ANIDRYTUS HUMILIS, Gorch. Endom. Rec. p. 48.

Further specimens were taken by Mr. Belt at Chontales, Nicaragua, and will be noticed in the 'Biologia Centr.-Amer.' in due course.

EPOPTERUS.

1. EPOPTERUS EGANUS. (Plate XVII. fig. 9.)

Ovatus, rufo-brunneus, nitidus; antennis nigris, articulis tribus basalibus testaceis; elytris singulis maculis tribus sat magnis eburneo-albidis nigro-cinctis, duabus basalibus oblique sitis, una subapicali. Long. 5–5½ millim. ♂ ♀.

Mas. *Tibiis anticis leviter curvatis, ad apices compressis.*

Hab. Amazon, Ega (H. W. Bates).

Head and thorax rather pale castaneous red, not perceptibly punctured, very finely and very sparsely pubescent at the sides of the latter, narrowed to the front angles, and very narrowly margined; basal sulci short, linear. Scutellum black. Elytra wider than the thorax, commencing to widen from the base to about one third from the base, whence they are evenly and ovally contracted to the apex; each with three large yellowish-white spots edged with black. The underside is brownish red, the tibiæ darker at their bases than the rest of the leg, as are also (but only very finely) the inner epipleural margins of the elytra.

Two examples from Mr. Bates's collection are now in Mr. Lewis's.

2. EPOPTERUS EPHIPPIGER. (Plate XVII. fig. 8.)

Ovatus, rufo-piceus, nitidus; elytris flavis macula magna discoidali communi nigra; antennis nigris, articulis tribus basalibus flavis; prothorace crebre, elytris parcius leviter punctatis. Long. 6 millim. ♂.

Mas. *Tibiis anticis ad apices interne compressis, leviter incurvatis.*

Hab. Amazon (H. W. Bates).

Nearly of the same oval form and of the size of *E. eganus*, but distinctly punctured. Head red, nearly smooth; thorax twice as wide as long, not so wide as the elytra at their base, thickly and distinctly punctured; basal sulci straight, a little converging, sides narrowing, slightly curved, margin distinct and faintly raised. Scutellum rufous, punctured. Elytra paler yellow than the thorax, punctures distinct, only a few scattered hairs at the sides; epipleuræ yellow, only very narrowly darker at their margins. Underside and legs uniformly pitchy red.

I have only seen one example of this species, a male. It is very distinct from any *Epopterus* yet described.

3. *EPOPTERUS LINEOGUTTATUS*. (Plate XVII. fig. 7.)

Ovatus, rufo-piceus, nitidus; elytris pallide flavis, sutura marginibusque lateralibus piceis, puncto humerali, lineolisque septem in singulis, 3, 3, 1, saturate piceis; antennis nigris, articulis tribus basalibus rufis. Long. 6 millim. ♂.

Mas. Tibiis anticis interne sat fortiter incurvatis, ad apicem compressis.

Hab. Amazon (H. W. Bates).

Head, thorax, underside, and margins of the elytra rather light pitchy red; punctuation of the thorax and elytra as in *E. ephippiger*, distinct. The curious marking of the elytra consists of a humeral small dot, two elongate dashes near the suture, two shorter ones in the middle of the disk, two still smaller near the margin above the middle, and one small one near the apex. These dashes are not placed regularly, but the three near the base form a sort of fascia, as do the three below the middle. The scutellum is pitchy black.

One small example.

SAULA, Gerst.

1. *SAULA NIGRIPES*, Gerst. Mon. p. 224, t. 3. f. 2.

Several specimens met with by Mr. Lewis, two of which were found in *copulá*, present no appreciable distinction between the sexes.

STENOTARSUS.

1. *STENOTARSUS VALLATUS*, Gerst. Mon. p. 342.

Four specimens which I identify with this species were obtained by Mr. Lewis in Ceylon at Dickoya. The antennæ are clear red; the series of punctures are more regular and not so coarse as in *S. russatus*.

2. *STENOTARSUS RUSSATUS*, Gorb. Trans. Ent. Soc. 1874, p. 446.

One specimen met with by Mr. Lewis fully confirms my opinion as to the distinctness of this species, and I would only remark, in addition to the characters already given, that the raised thoracic margin has its surface distinctly flat in both species, indeed the edges of this margin are themselves raised, so that concave is the correct term. The dark, stout, and gradually thickened antennæ will easily prevent this being confounded with *S. vallatus*.

3. *STENOTARSUS SICARIUS*.

Ater, valde convexus, pubescens; elytris basi thorace latioribus, distincte punctato-striatis; thoracis margine laterali deplanato, haud bene elevato, antrorsum subito latiore. Long. 3 millim.

Hab. Ceylon (Lewis).

At once distinguished from any other *Stenotarsus* known to me by its entirely black colour. It is allied to *S. vallatus* and *S. russatus*; but the form is different, the elytra suddenly widening from

the shoulder, and the thorax having the base narrower with the hind angles right angles, so that the insect is not so uniformly round as in its allies. The antennæ are formed much as in *S. vallatus*, the second to eighth joints being short and bead-shaped, but longer than wide, the club strong but laxly jointed, the apical joint quadrate and much (fully twice) wider than the ninth. The thorax is wider than long, narrowed to the front angles, but with its sides nearly straight in the basal two thirds; its flattened margin has its internal edge deeply impressed in front, where the flat part is widest, and it appears raised at the base only, where the disk is widely sulcate; the disk is convex, minutely but distinctly covered with small points, but the puncturing is much obscured by coarse floccose pubescence.

Only one specimen of this interesting species was obtained.

PANOMŒA.

1. PANOMŒA CINGALENSIS. (Plate XVII. fig. 2.)

Rufa-testacea; capite et thorace basi piceis; antennarum clava, articulo basali externe, scutello, sutura elytrisque maculis quinque sat magnis nigris; antennis articulis decem. Long. 5 millim.

Hab. Ceylon, Hadley (*Lewis*).

Antennæ ten-jointed, the basal joint is stout, a little curved, the second is scarcely longer than broad, and the third is apparently longer than usual, and is possibly really composed of the third and fourth joints together, but I can see no suture; the fourth to the seventh very short, club lax, the eighth and ninth joints rather trigonal. Head pitchy, smooth; eyes coarsely granulate (as in typical *Panomœa*). Thorax as in *P. pardalina*, but anterior angles rather more prominent, scarcely punctured, but a little uneven at the sides, finely margined, except at the middle of the base. Elytra more cordate than in other species, and viewed sideways rising to a point so as to appear more gibbous than in its allies, finely but closely punctured, with five largish black spots—one humeral, two near the suture, one marginal (larger than the others), one subapical; this last in one example connected with the marginal one; the underside and legs are deep ferruginous red.

Five or six examples were obtained.

ENDOCELUS, n. g.

Mr. Lewis has met with a very curious small beetle in Ceylon, which apparently comes very near *Panomœa*, which itself is synonymous with *Cyelotoma* of Mulsant, and of which a short description will be sufficient to render its identification certain. The antennæ, however, appear to me to be ten-jointed, and the two basal joints to be stout, the third to the seventh to be very short, the three last forming an elongate lax club.

The tarsi are four-jointed, almost linear, very similar to those of *Rhymbus*.

1. ENDOCÆLUS ORBICULARIS.

Rotundatus, ferrugineus; elytris conveaxis, fortiter parce punctatis, setulosis, marginibus latius explanatis, apice subacuminato; thoracis margine elevato deplanato, basi sulcis duobus punctiformibus. Antennarum clava fusca. Long. 1½ millim.

Hab. Ceylon (*Lewis*).

Orbicular, elytra subglobularly convex, with their lateral margin much expanded in the middle, but the widened rim vanishing in the apex, where they are conjointly deflexed and acuminate; their disk is evenly and strongly punctured, the margins less distinctly; the extreme limb of the expanded margin is itself finely reflexed. The head is exerted, with small prominent coarsely granulated eyes. The maxillary palpi have their apical joint subulate. The thorax is short, narrowed in front, with the margin raised, thickened and flattened as in *Stenotarsus*, the front angles being rounded in to form the emarginate opening for the head, than which it is much wider; the base is narrower than the elytra at their base, and is furnished with two very deeply impressed punctiform sulci, which are about halfway between the centre and the hind angle, on each side. One specimen, taken at Dickoya.

EXPLANATION OF PLATE XVII.

- Fig. 1. *Cymones cowani*, p. 158.
 2. *Panomæa cingalensis*, p. 162.
 3. *Cymones helopioides*, p. 158.
 4. — *sharpi*, p. 157.
 5. *Spathomeles? inflatus*, p. 154.
 6. *Stictomela chrysomeloides*, p. 156.
 7. *Epopterus lineoguttatus*, p. 161.
 8. — *ephippiger*, p. 160.
 9. — *egannus*, p. 160.

2. On the so-called Pelvisternum of certain Vertebrates. By
 R. J. ANDERSON, M.D., M.A., Professor of Natural
 History, Queen's College, Galway.

[Received March 1, 1886.]

Prof. Paul Albrecht in 1883 described¹ an interpubic bone which he found present in *Dasypus sexcinctus*, *Bradypus cuculliger*, and *Cholepus didactylus*. He compares the symphyseal cartilage found in many animals and this bone with the parts of the sternum, shoulder-girdle, and os hyoides, and gives several very instructive and clear figures of specimens in the museums at Berlin and Königsberg. The figures of the Lacertilian pelvis are copied from the papers of Profs. Huxley and Wiedersheim, and the scheme of homology he represents in a table at the end of his note.

¹ Bull. d. l'Académie royale de Belgique, nos. 9-10.

PELVIC GIRDLE.

1. Pubis.
2. Ischium.
3. Ilium.
4. Subilium.
5. Wanting.
6. Wanting.
7. Pelvisternum.
(Ischio-pubic symphyseal cartilage. Osseous pelvisternum of Edentates.)
8. Hemi-pelvisternum.
9. Ischio-pubic symphysis.
10. Prepelvisternum.
11. Hemi-pelvisterna.
Epipelvic ossicles of Chameleons.
Marsupial bones of Monotremes and Marsupials.
12. Post-pelvisternum.
Os cloacæ of Lacertilians.

SHOULDER-GIRDLE.

1. Procoracoid.
2. Coracoid.
3. Scapula.
4. Subscapula.
5. Clavicle.
6. Interclavicle.
7. Omosternum.
Coraco-procoracoid symphyseal cartilage.
8. Hemi-omosternum.
9. Symphysis coraco-procoracoid.
10. Preomosternum.
Preomosterna of Anoura.
11. Hemi-preomosterna.
Substernal bones of mammals.
12. Post-omosternum.

The pelvis of *Lacerta muralis* is figured by Prof. Hoffmann in Bronn's 'Thierreichs,' and Brühl also gives figures of the Amphibian forms. In a specimen of *Iguana tuberculata* in this museum the pubis is a separate bone, and contains a preacetabular foramen as well as a well-marked supra- or prepubic notch. A copula (bone) reaches from the anterior part of the ischium to the pubis, wider behind than in front. The os cloacæ fits into the ischial symphysis behind, and the ischial symphysis still shows the marks of union with the tuberosities. The ilia articulate each with two transverse processes, and the traces of union with the ischium are obliterated.

In the Australian *Monitor gouldii* which we have, a prepubic nodule fits in between the pubes in front; all traces of union between the parts of the ossa innominata are obliterated. A small nodule is situated in front of the ischial symphysis, and a distinct os cloacæ is present behind, and, as in the Iguana, fits in between the ischia. A prominent ischial spine behind is situated at the junction of the middle and outer third of the posterior border of that bone. In *Lacerta viridis* a prepubic nodule and a postischial are present. In the West-Australian *Moloch horridus* (marked 1845 in the catalogue) the postischial bone is quite evident, and a large copula runs forwards to the pelvis. In our Chameleon the three pelvic bones are short, and the os cloacæ seems to be cartilaginous; the ischio-pubic copula is reduced to a thread-like structure. The os cloacæ and prepubic bone are thin in our specimen of *Ameiva*, but they are very distinct.

Prof. Owen, in his 'Anatomy,' says that in the Potoroo there is a triangular ossicle developed at an early period, which is wedged into the posterior interspace of the ischio-pubic symphysis; and in his paper in this Society's 'Transactions' he figures the posterior epiphysal bone. In the skeleton of a Kangaroo in our museum the following measurements were made:—

	millim.
Length of ilium	140
Crest	20
Breadth opposite the acetabulum	35
Length of pubis	55
Interpubic bone, antero-posterior diameter	15
" " breadth of one side	35

In *Phacochoerus* the bone occupies the position of the triangular ligament in man, and is three-cornered and wedge-like. The following measurements were made :—

	millim.
Length of os innominatum	250
Crest	120
Breadth of ilium above acetabulum	32
" " at acetabulum	70
" " below acetabulum	34
Arch of pubis	75
Interpubic bone, breadth	24
" " superior depth	15
" " inferior depth	30
" " thickness at base	20

In the skeleton of the Beaver the bone is not so distinct as in *Phacochoerus*. The following are the measurements :—

	millim.
Length of os innominatum	160
Crest	30
Breadth opposite acetabulum	35
Arch of pubis	75
Depth of pubic bone	9
Breadth of one half	25

I do not find the bone present in any other mammalian skeletons that I have examined. The bone occupies the position of the triangular ligament and the os cloacæ of Lacertilians. Ligaments and fasciæ are so often the seat of ossifications, and bones in one set of animals are so often represented by ligaments in another set, that one is almost tempted to regard the bones above referred to as, in whole or in part, homologous with the triangular ligament of the urethra found in the higher animals.

The interpubic bone in *Bradypus* is mentioned by Prof. Flower in his 'Osteology.'

3. Note on *Bipalium kewense*, and the Generic Characters of Land-Planarians. By Professor F. JEFFREY BELL, M.A., Sec. R.M.S.

[Received March 16, 1886.]

(Plate XVIII.)

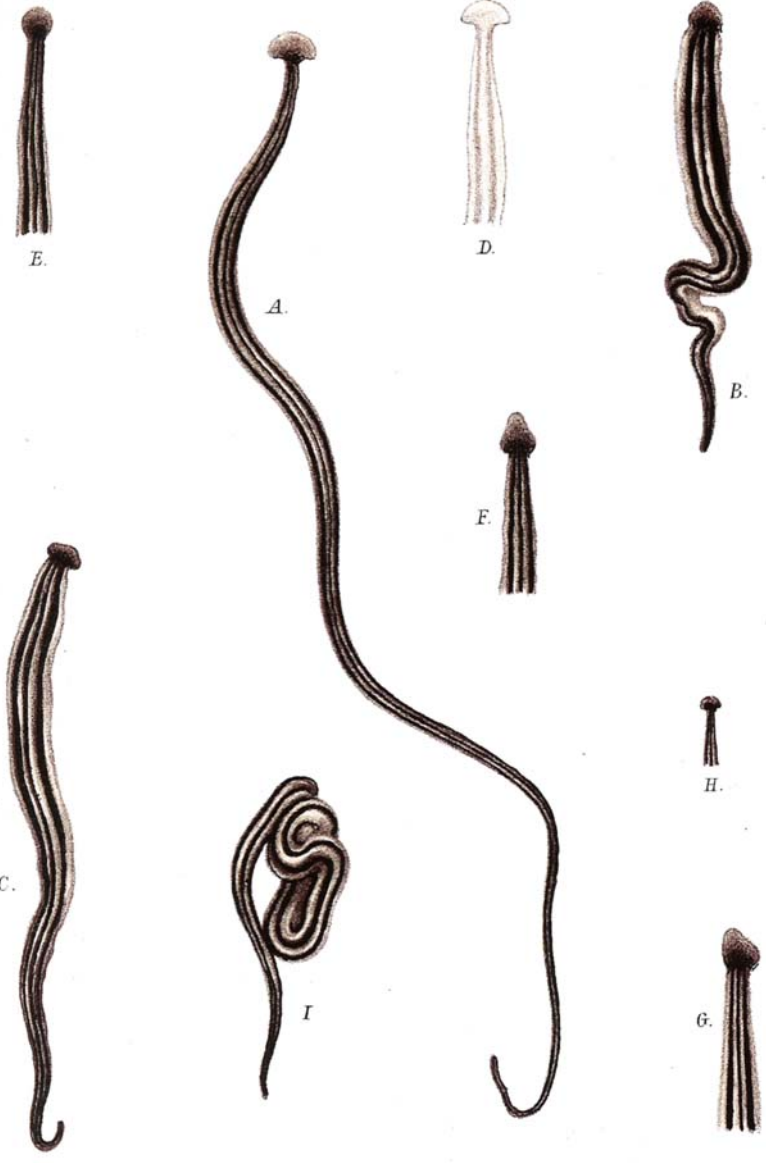
In the descriptions given by writers on Land-Planarians especial attention is always directed to the form of the head or, as more than one author has called it, the tail. This, no doubt, is partly due to the fact that in a number of the species the head is often seen to have a remarkable hammer-shaped or cheese-knife form, which has three times led to the institution of a genus for the reception of such species. In other cases, where the worm has been assigned to other genera, the head is described as obtusely rounded, or as not sharply distinguished from the body.

Having lately received from Mr. Osbert Salvin, F.R.S., a specimen of a Land-Planarian (apparently *Bipalium kewense*, Moseley), found by him among broken flower-pots in his garden in Sussex, of the origin of which nothing definite is known, I have been enabled to watch the creature exhibiting its activity. I had not long been studying it when I noted that the head varied considerably and almost constantly in form, so that I thought it well to at once enlist the skilful pencil of Mr. C. Berjeau to represent its various appearances.

Figure A represents the worm, not indeed at its greatest length, but in a position which it is apt to assume when in full activity; the head is carried a little higher than the rest of the body, its edges are sharp, its contour convex, and it is well marked off from the rest of the body. Figure B, on the other hand, shows the animal in a state of torpid quiescence; the head is now contracted, obtusely pointed, only separated by a shallow depression on either side from the surrounding region of the body. Fig. C shows an intermediate condition between A and B. Figs. D-G show various stages in the form of the head¹—hammer-shaped, knob-like, tongue-shaped, or altogether irregular. The body may be not more than 2 inches long, when the creature looks like a leech or a slug, or it may extend itself to 6 inches and even more, when it has rather the appearance of a thread-worm. In fact, as one looks at it extended on a white dish, it calls to mind the *Amœba* more than any other animal known to the zoologist.

I insist on the variations in the form of the body, and especially of the head, because all writers (even those who, like M. Humbert, Prof. Moseley, or, the latest of all, Dr. J. C. C. Loman, have had the opportunity of examining these forms alive or under natural conditions) direct, in their descriptions, especial attention to the form of the head; indeed, land-planarians with cheese-cutter or hammer-shaped heads (*cf.* figs. A and D) have been by all naturalists

¹ All the figures are of the natural size.



W. H. Edwards m.

Hanbart imp.

NEW COLEOPTERA OF THE FAMILY ENDOMYCHIDÆ.

assigned to the genus *Bipalium*¹. The only writer who seems to have remarked the variability in the form of the head is M. Humbert, who figures² the head of *Bipalium diana*, as living and when it is greatly contracted; the differences are, however, quite slight as compared with those in the figures now given (Plate XVIII.). Moreover, M. Humbert continues to use the form of the head as a distinctive character, and seems to have only incompletely appreciated the moral of what he saw. Referring to the paper of Prof. Perceval Wright, M. Humbert says:—"Il donne une figure . . . qui représente l'extrémité antérieure semilunaire et a du évidemment être faite d'après un individu conservé dans l'alcool, tandis que celle de la *D. grayia* a été dessinée d'après le vivant. C'est sans doute à ces deux manières d'observer, encore plus qu'à des particularités spécifiques qu'il faut attribuer les différences profondes que l'on remarque dans la forme des extrémités antérieures de ces deux espèces." But the differences shown in Prof. Wright's woodcuts of the two species are not as "profound" as those seen in the figures of the single living specimen here reproduced. So that, though M. Humbert recognized the difference between living heads and heads preserved in spirit, he does not seem to have recognized what is much more important—that the form of the head varies constantly during life.

If a Planarian in a torpid condition (Pl. XVIII. fig. I) be then and there seized and put into spirit, it will be found, no doubt, to have an obtusely blunted head, hardly wider than the body³; on the other hand, some, at any rate, if killed while in full activity, will be found to have heads shaped like a cheese-cutter or some modification thereof.

Hab. Mr. Salvin has lately received orchids from S. America and S. Mexico, and from Burmah; but he has also had specimens from Kew Gardens, whence the originals came to Mr. Moseley.

In 1883 Dr. Günther received some specimens from Welbeck Abbey⁴, where they had been known for three or four years previously; Mr. Thiselton Dyer tells me that there is no history of any communication between the gardens at that place and Kew, and adds "we have probably therefore been stocked from a common source." A specimen found in a greenhouse in Clapham Park was sent to Dr. W. M. Ord, and is now in the possession of Prof. Ray Lankester; the early history of this specimen is unknown. In the hope of being able to extend our knowledge of this worm, I have written a note to the editor of the 'Gardener's Chronicle'⁵, which may result in some further information, and perhaps in the discovery of fresh examples

¹ The French translator of the latest authoritative work on General Zoology by converting "Kopftheil durch Lappen-Vorsätze halbmondförmig" into "Région céphalique en croissant par la présence de deux appendices lobés," shows that he too regards the lateral parts of the head as being constant in form and position; nevertheless they are not so.

² Mém. Soc. Genève, xvi. p. 303, figs. 1, 1 a.

³ Fig. H in Plate XVIII. shows the form of the head in the specimen under description, now that it is dead and preserved in spirit.

⁴ See his letter in the 'Gardener's Chronicle,' xix. (1883) p. 415.

⁵ Published on March 13th, 1886.

and new localities¹. I am inclined to think that such information will support Dr. Günther's supposition that the worm has become acclimatized in this country; Mr. Dyer tells me that it is still to be found in the Kew hothouses, where it has now lived since at any rate the beginning of 1878.

Prof. Moseley was able to observe in Ceylon that *Bipalium* suspends itself by the tough slime which it secretes. My specimen had no opportunity of showing if it could so support itself; but I noticed that minute offending objects could be got rid of by being entangled in the slime which it secreted, and which, being gradually secreted from a point, say, one inch behind the head forwards, was as a continuous sheet of mucus thrown off from the anterior end. A small earthworm which was placed near it, but which was not attacked, had the same mucous sheet thrown over it, to its obvious embarrassment.

There can be no doubt as to the sensitiveness of *Bipalium* to light. The specimen now under notice was sent by Mr. Salvin on February 7th, lived and was more or less active till February 26th; for this interval of time the town was either enveloped in fog, or surrounded by a darkness which needed not to be called back to our recollection.

But on the 26th of February the sun shone, and though the room in which the Planarian had been placed was not illuminated by its rays, yet the exposure to diffuse light, which on other and earlier days had been harmless, was on this day fatal; the worm broke transversely into three pieces, and on being touched fell into four. Had it been kept in darkness it is possible it might have lived longer. The temperature of the room varied from about 50° to 64° F.

DESCRIPTION OF PLATE XVIII.

Illustrating the various forms assumed by *Bipalium kewense*.

A. Extended and moving freely. B, C. In various states of contraction. D-G. Some of the various forms taken by the head. H. Head and anterior end after contraction in spirit. I. The worm coiled and at rest.

All the figures are of the natural size.

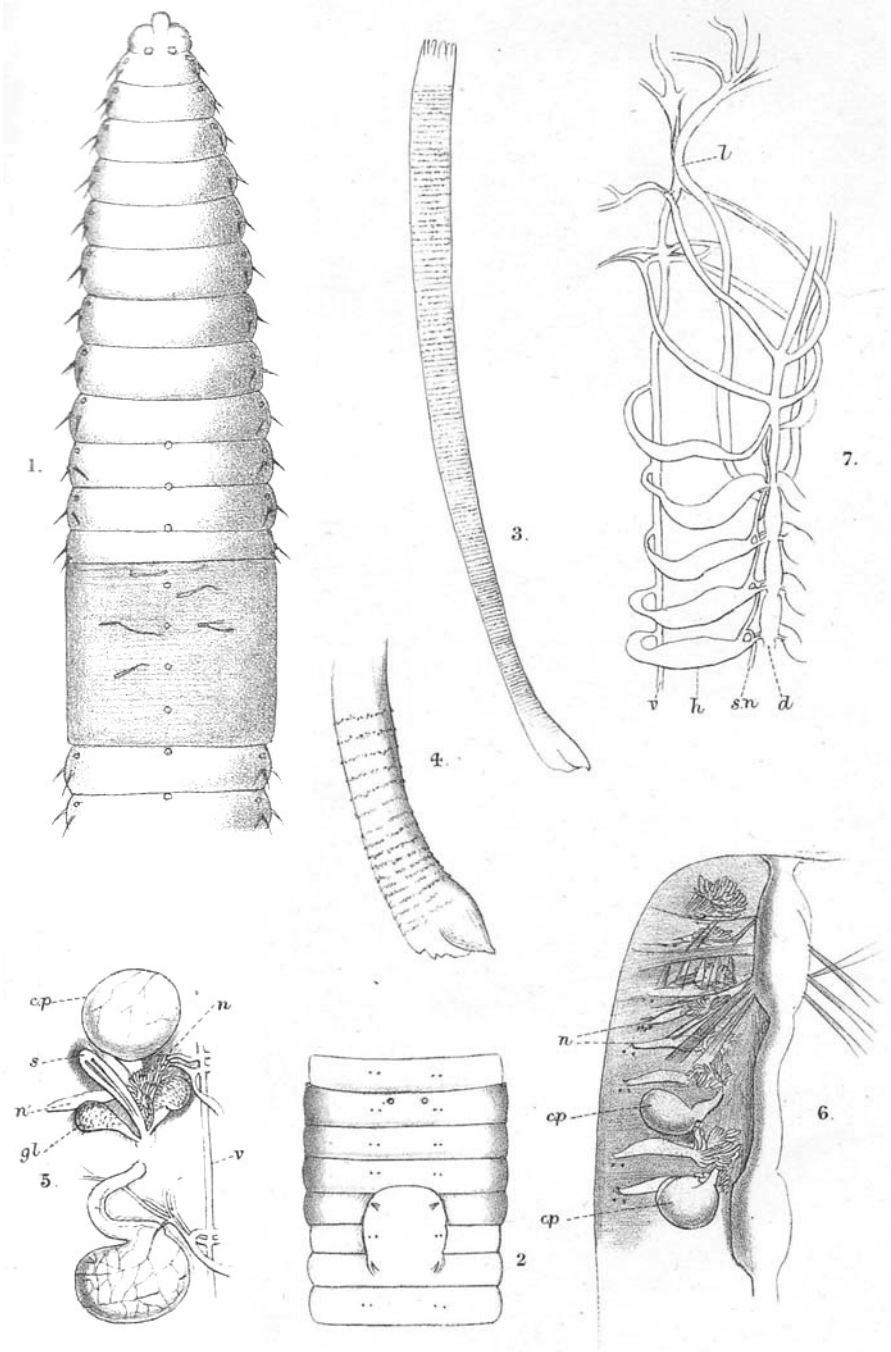
4. Note on the Structure of a large Species of Earthworm from New Caledonia. By FRANK E. BEDDARD, M.A., F.R.S.E., Prosector to the Society.

[Received March 15, 1886.]

(Plate XIX.)

Among a number of Earthworms forwarded to me from New Caledonia, through the kindness of Mr. E. L. Layard, F.Z.S., H.B.M. Consul at Noumea, were six specimens of a large worm several of which measured some 28 inches in length. All these specimens are referable to the same species, which belongs to the genus *Acantho-*

¹ Specimens have been found in the Zoological Society's Gardens, which have, and in gardens at Liverpool which have not had direct relations with Kew.



*drilus*¹. This genus is already known to inhabit New Caledonia; M. Perrier has described two distinct species from that region. The species which forms the subject of the present communication may be identical with one or other of these. The descriptions given by M. Perrier of *Acanthodrilus obtusus* and *A. angulatus* are necessarily insufficient, owing to the poor condition and immaturity of the specimens at his disposal; but certain facts, such as the position of the generative apertures and of the clitellum, could hardly be mistaken even in specimens greatly injured through bad preservation; in these points the present species differs from both of those described by Perrier, as will be apparent from the following notes on its structure.

External Characters.—I have sketched (Plate XIX. fig. 1) the anterior segments of the body from the dorsal aspect to indicate the main external features which are visible upon that surface. The buccal lobe divides the first segment², as also in *A. dissimilis* and *A. novæ zelandiæ*, two species recently described by myself³. Of a fourth species of the genus, viz. *A. verticillatus*, M. Perrier writes⁴:—“La lobe céphalique n’entame pas le premier anneau et paraît au contraire s’élargir à sa base de manière à ressembler à la partie supérieure d’un trèfle; mais cette apparence tient peut-être à un état particulier de conservation.” I mention these facts because the genus *Lumbricus* has been split up into other genera mainly on this account. It does not appear to me advisable, while there are so many internal structural differences, to make use of so small an external character for classificatory purposes; but in the case of the genus *Acanthodrilus* this mark of difference between species appears to be correlated with other differences of structure, inasmuch as M. Perrier hesitates to include *A. verticillatus* in the same genus with *A. obtusus*; the male generative pores in the former species are upon the 17th and 18th segments and are not separated by an intercalated segment as in the latter and all the other species of the genus at present known. On either side of the buccal lobe, and consequently between the first and second segments of the body, is a single pore; these may perhaps correspond to the single median dorsal pore which is the only orifice of the kind found in the Oligochæta limicolæ.

The *clitellum* was fully developed in several specimens, and extended from the 13th to the 17th segments inclusive, with the exception of a portion of the 13th segment; the glandular tissue composing the clitellum was only visible on the posterior half of that segment; the clitellum extends occasionally for a short distance on to the 18th segment. The anterior region of the clitellum down to the 15th segment completely encircles the body; the 17th and 18th segments, on the contrary, have a very considerable median area upon which there is no glandular development; the lateral margins of this

¹ Perrier, “Recherches pour servir à l’histoire des Lombriciens terrestres,” *Nouv. Arch. d. Muséum*, t. viii. (1872) p. 85.

² I have reckoned the first seta-bearing segment as the second segment of the body, in common with the majority of naturalists who have studied this group.

³ P. Z. S. 1885, p. 813.

⁴ *Loc. cit.* p. 93.

area are bounded by the ventral pair of setæ; this area, which is distinguished by its very pale colour, surrounds the male genital apertures, which are upon the 17th and 19th segments respectively (see fig. 2). In *A. unguatus* the clitellum extends from 14–17 inclusive and the male genital apertures are upon the 18th and 20th segments; in *A. obtusus* the clitellum is unknown, the male genital pores are upon the 19th and 21st segments.

Dorsal pores are stated by Perrier to be present in his two species; in my species they are present and commence apparently at the 13th or 14th segment; in one specimen the first dorsal pore was visible between the 12th and 13th segments, in a second specimen this pore was a segment further back. I have figured these apertures as extending over the clitellum, since they were visible on these segments in immature examples without a clitellum; when the clitellum was present they were apparently absent or, rather, perhaps rendered invisible by the swollen glandular integument.

In *Acanthodrilus multiporus* (see P. Z. S. 1885, pt. iv. p. 810) I observed dorsal pores commencing after the clitellum, the first pore marking the posterior boundary of that region of the integument. In *Acanthodrilus dissimilis* and *A. novæ zelandiæ* they appear to be present though very inconspicuous; I only noted them after the clitellum.

In the furrows separating segments 7–8 and 8–9 were a pair of distinct rounded apertures corresponding to the inferior pairs of setæ; these are the apertures of the copulatory pouches. The pair of setæ on segment 8 were in most instances greatly modified, being much larger and more conspicuous than the other setæ of the body; their appearance is very like that of the genital setæ on segments 17 and 19.

In describing the structure of the genital organs I shall call attention to those setæ which correspond to internal structures entirely novel in this genus.

The ordinary setæ of the body are distributed in pairs as in other species of the genus.

The apertures of the nephridia are very conspicuous and correspond in every case to the more dorsal pair of setæ.

The female generative pores are displayed in fig. 2; they are a pair of very minute pores situated on the 14th segment in front of and to the inside of the ventral pair of setæ; their position is nearly similar to the corresponding pores of *A. novæ zelandiæ*; they are on the same segment as in that species, where, however, the pores are placed in front of the outermost of the two ventral setæ. In *Acanthodrilus capensis* I find the female generative pores are upon the 14th segment and the ovaries in the 13th segment, and not, as erroneously stated in my paper on that species¹, in the segment anterior to these; in the present species, however, the pores are placed in front of the innermost of the two ventral setæ.

Vascular System.—In fig. 7 of Plate XIX. is illustrated the main vascular trunks of the anterior region of the body. The dorsal vessel

¹ Proc. Roy. Phys. Soc. 1885–6, p. 369.

(*d*), which is a single tube, and not composed of two separate or incompletely fused halves as in *A. multiporus*¹ and other Earthworms, communicates with the ventral vessel by seven transverse hearts (*h*) situated in segments 8-14 inclusive—a pair to each segment. The first three pairs are of less calibre than the following four, and appear to arise simply from the dorsal vessel; the four posterior pairs of hearts communicate also with a small supra-intestinal vessel, which, as shown in the figure (*sn*), lies beneath the dorsal vessel but above the intestine; in the anterior part of the body a pair of lateral vessels (*l*) supply the body-wall; in the 11th or 12th segment these vessels pass beneath the intestine and unite to form a single subintestinal vessel. This vessel appears to be continuous posteriorly with a vascular space within the walls of the alimentary canal. Each of the two anterior pairs of hearts supplies the spermatheca of its own segment; a strong branch arises from the vessel just before it unites with the ventral vessel, and a corresponding branch from the latter is also distributed to the spermatheca.

Body-cavity.—The body-cavity, as in all other Earthworms, is divided into segments by mesenteries which extend from side to side of the body; in the six anterior segments the mesenteries are more or less distinct, but there are in addition a number of muscular bands and tendinous-looking threads which bend the pharynx down to the body-wall, often passing through the mesenteries on their way; the gizzard and a portion of the anterior region of the œsophagus are only attached to the body-wall by a very few slight threads, mesenteries being absent in this region of the body. The mesentery which bounds the tenth segment behind and the succeeding four mesenteries are specially thickened and muscular.

Nephridia.—There is a very considerable variation in the characters of the nephridia in this genus, and I have already² referred to what has been written on the subject. In the present species the nephridia (fig. 6, *n*) are very conspicuous, especially in the anterior region of the body as far back as the 19th segment or thereabouts; in the posterior segments they are present but appear to differ slightly, principally in size, from the anteriorly placed nephridia. The external apertures are plainly visible in front of the dorsal pair of setæ in all the seta-bearing segments of the body; that is to say, the first segment of the body appears to be without nephridia and only this segment. The glandular portion of the nephridium forms a closely packed tuft of tubules which has much the appearance of the nephridia in those species of *Perichæta*³ in which these organs have been described; this glandular tuft lies in the region of the ventral pair of setæ and close to the mesentery which forms the anterior wall of its segment; the nephridium communicates with the exterior by a long, widish, thin-walled duct.

¹ See F. E. Beddard "On the paired Dorsal Vessel of certain Earthworms." Proc. Roy. Phys. Soc. 1884-5, p. 424.

² P. Z. S. 1885, p. 822.

³ E. g. *Perichæta indica*, Horst, Niederl. Arch. f. Zool. Bd. iv. (1879), pl. viii. fig. 3, *x*.

Generative System.—In the 12th segment are a pair of glands attached firmly to the mesentery which separates this segment from the one anterior to it; in two specimens these glands were paired, while in a third only the left-hand one of the two was present; in one specimen these glands have a racemose structure, and although a microscopic examination did not reveal any structure, I have little doubt that these glands are testes. Out of the seven examples at my disposal one specimen possessed a similar pair of glands in the 11th segment in addition to those found in the 12th segment; in all the remaining specimens save one, which was small and immature, the 10th segment (that which follows the segment containing the posterior pair of spermathecae) has a pair of glandular-looking bodies which are very similar in general appearance to the structures which I have regarded as the testes; they are attached, however, to the posterior wall of their segment, which, as in other Earthworms, is not separated by a mesentery from the 9th segment; these two segments, which are thus fused, contain the gizzard.

The fact that these glands are attached to the posterior and not to the anterior wall of their segment is perhaps against the view that they represent an anterior pair of testes; at the same time it happens that the segment in which they occur has no anterior wall, being fused with the preceding 9th segment; these glands were not present in the only specimen that had two pairs of testes. In *Acanthodrilus capensis*¹ there are three pairs of testes situated in segments 10, 11, and 12; but out of a number of examples that I dissected only one had the three pairs developed. There is therefore nothing unusual in supposing that the present species, like *A. capensis*, has three pairs of testes, although all the other species that are known appear to have only two pairs. On the other hand, the gland in segment 10 is very similar to a curious structure which exists in *A. capensis* in a similar position, *i. e.* attached to the posterior wall of the segment. In this species, however, the gizzard happens to be placed in front of the copulatory pouches, and not in the segment which contains them; so that the two pairs of pouches are separated from each other and from the following segments by fully developed mesenteries, which, as already stated, is not the case with the species that forms the subject of the present communication; in this species the gizzard lies in the 9th and 10th segments. If, however, these structures correspond to those recorded by me in *A. capensis*, it is no explanation of their nature; in neither case is their function at all evident.

The *vasa deferentia* were not visible. Each of the four male genital apertures are furnished with a long sac containing a number of *penial setae* which open on to the exterior in common with the duct of a long coiled *prostate* gland, which appears to be similar in structure to the prostates of *A. obtusus*²; on the other hand, the characters

¹ Proc. Roy. Phys. Soc. *loc. cit.* p. 375. I have written 11, 12, and 13 in error; the ovaries, as I have been able to assure myself by a subsequent examination, are in segment 13, and so presumably the testes are in the three segments anterior to that which contains the ovaries, *viz.* in segments 10, 11, 12.

² Perrier, *loc. cit.* p. 88.

of the penial setæ agree with those of *A. unguatus* as described by Perrier¹.

The ovaries and oviducts I have been unable to find.

There are two pairs of spermathecae situated in segments 8 and 9; each consists of a spherical thin-walled sac communicating with the exterior by a long stout-walled duct which is often curved (see figs. 5 and 6, *cp*); at the upper extremity of the duct, where it unites with the sac, it becomes somewhat bulged out on one side, though there is hardly so marked a diverticulum as is figured by Perrier in *A. unguatus*².

A very characteristic and remarkable series of structures now remain to be described, before concluding the account of the generative system. In describing the external characters attention was drawn to the modification of the lowermost pair of setæ in segment 8; the ordinary setæ, at any rate on one side of the body, have disappeared and are replaced by a conspicuous orifice through which protrude one or more stout long setæ, which appear on a naked-eye inspection to be very similar to those which project through the male generative pores. Fig. 5 of Pl. XIX. represents the internal structures which correspond to these peculiarly modified setæ; the latter are contained in a thin-walled transparent sac (*s*) precisely as are the genital setæ; on either side of this sac is a long somewhat sausage-shaped glandular body (*g.b*), which communicates by a slender duct with the orifice through which the setæ project on to the exterior. The presence of these glands renders the whole structure more similar still to the male generative pore, except that the "prostates" are paired. These structures were only present on the left side of the body in one specimen; in two others they were only developed on the right side; in two other specimens both immature, without a clitellum, these structures were entirely absent on both sides of the body; in a sixth specimen, which was also immature, with the clitellum undeveloped and with very minute spermathecae, the bundle of modified setæ was plainly visible on both sides of the body, but without its accessory glands; in the seventh specimen, also immature, there was no vestige whatever of these structures; wherever they were absent the setæ of the segment were perfectly normal.

I am not aware that any structures of this kind have been described in any other species of the genus or in any other Earthworm; they appear to be novel to the group. At the same time Perrier figures some structures in *A. unguatus*³ which may be identical, though the figure and his description are insufficient; the description (p. 92) is as follows:—"Les poches copulatrices sont situées aux anneaux huit et dix. Chacune est munie d'un lobe postérieur, assez petit, et n'a pas d'autre appendice. Dans le neuvième anneau se voient plusieurs sacs glandulaires, séparés par une glande multifide." The details are evidently different from the structures that I have just described, but the similarity of position, between the two spermathecae, renders it possible that they are identical; in

¹ *Loc. cit.* p. 90, pl. ii. figs. 21, 22.

² *Loc. cit.* pl. ii. fig. 20.

³ *Loc. cit.* pl. ii. fig. 18, x.

my species, however, these structures are in the same segment as that which contains the anterior spermatheca and are not in a segment intercalated between those which contain the anterior and posterior pairs of spermathecae respectively. One of the setae is displayed in the drawing (fig. 3), and the lower extremity, more highly magnified, in another drawing (fig. 4); the general aspect of these setae is very similar to that of the penial setae. The seta is curved slightly towards the extremity; its thickness diminishes gradually until near to the distal extremity, where it becomes again thicker and terminates in a swollen brush-like extremity, the exact shape of which can be gathered from an inspection of the figure. The distal extremity of the seta is ornamented with delicate transverse ridges projecting like the edges of scales and denticulated.

In *Lumbricus* Hering¹ has described, and Vejdovsky² confirmed for other species, the modification of certain of the setae in the neighbourhood of the genital orifices; those of the ventral pair in "the 10th, 15th, or one of the neighbouring segments, and furthermore in the region of the 26th segment and on the clitellum from segment 31 to segment 38": these setae are more slender than, and double the length of, the ordinary setae of the body. In the work referred to Vejdovsky goes on to point out that the penial setae in *Acanthodrilus* and other genera probably correspond to these and differ from the genital setae of *Chatogaster* &c., which are developed during the breeding-season in the neighbourhood of the ordinary locomotor setae, and in addition to them; the penial setae of *Acanthodrilus* replace the ordinary locomotor setae. Since in *Lumbricus* the modified setae developed in the generative segments are not confined to a single segment or even to the segments bordering upon the male generative pores, it is perhaps not surprising to find that in the present species of *Acanthodrilus* there are additional sacs of penial setae besides those normally found in the 17th and 19th segments of the body. The modified setae of *Lumbricus* are also furnished with a gland which projects into the body-cavity; these are apparently the capsulogenous glands of D'Udekem and Lankester, which are the equivalents of the setigerous glands, being simply enlarged in order to assist in the generative function. In *Acanthodrilus multiporus* I have figured a pair of glands³ corresponding to the setae which are probably the homologues of these glands, and I imagine that in the species of which the present note treats the two large glands related to the modified setae of segment 8 are in all probability to be referred to the same category and are not special structures.

After the foregoing notes on the structure of this Earthworm I may briefly refer to those points which seem to indicate that it is a distinct species differing from both the other two *Acanthodrili* which inhabit New Caledonia. With regard to external characters it appears to agree with *A. unguulatus* in the segments occupied

¹ Zeitschr. f. wiss. Zool. Bd. viii. p. 418.

² System und Morphologie der Oligochæten (Prag, 1884), pp. 156-7.

³ Ann. Sc. Nat. 7^e série, t. xix. pl. i. fig. 6 b.

by the clitellum, but to differ from both this and *A. obtusus* in the position of the male generative pores. The genital setæ of the 17th and 19th segments are almost exactly like those of *A. unguatus*, but the prostate glands, as in *A. obtusus*, are cylindrical coiled tubes and not multilobate glands as in *A. unguatus*; at the same time the prostate glands in several examples of my species are so closely coiled that they present an appearance which might easily be mistaken for that which has been stated by M. Perrier to be characteristic of *A. unguatus*; it is just possible that the condition of the specimen dissected by M. Perrier may be responsible for the lobed appearance of the prostate glands. Another difference between my species and *A. unguatus* is in the spermathecae, which can hardly be said to have a diverticulum, and are in segments 8 and 9, not 8 and 10. The structures lying between the two spermathecae of each side may, as I have already suggested, be identical with that described above, but evidently differ in detail. The most important difference between the species described here by myself and those of M. Perrier is undoubtedly in the position of the male generative pores; in so many species—in fact in all except *A. obtusus*, *A. verticillatus*, and *A. unguatus*—the male generative pores are upon the 17th and 19th segments¹.

EXPLANATION OF PLATE XIX.

- Fig. 1. *Acanthodrilus layardi*; anterior region of body, dorsal aspect.
 2. Segments 13-20, from ventral side, to show position of female generative pores upon 14th, and the male generative pores upon 17th and 19th segments. The clitellum is indicated by shading.
 3. Genital spicule from segment 8, magnified.
 4. The lower extremity of the same, more highly magnified.
 5. Spermathecae and accessory genital glands: *cp*, spermathecae; *v*, ventral blood-vessels giving off branch to the spermatheca; a corresponding branch is also given off from lateral heart; *s*, sac containing modified setæ (figs. 3, 4); *g.b.*, glandular bodies opening in common with seta sac; *n*, glandular tufts of nephridium; *n'*, duct of nephridium.
 6. Anterior region of body dissected: *cp*, spermathecae; *n*, nephridia.
 7. Principal vascular trunks of anterior region: *d*, dorsal vessel; *sn*, supra-intestinal; *v*, ventral; *l*, lateral; *h*, "hearts."

¹ Referring to my paper already quoted upon the New-Zealand species of the genus, I find that the male generative pores are there stated to be upon the 16th and 18th segments. A reexamination of the specimens has convinced me that that statement is wrong, and that they are, as in the present species, upon the 17th and 19th segments, while the spermathecae are in the 8th and 9th segments as indicated in the woodcut (P. Z. S. 1885, fig. 1, p. 815).

Should the specimens to which the present note relates prove to belong to a distinct species from either of those described by Perrier, I propose to term the species *Acanthodrilus layardi*.