

South African Helminths, Part VII. Miscellaneous Helminths, chiefly Cestodes.

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CATENOTAENIA CAPENSIS SP. NOV.

A single specimen was collected from the Striped Mouse. The specimen was 23 m.m. long with a maximum breadth of 2·0 m.m. towards its posterior end; immediately behind the scolex the body breadth is just over 1 m.m. The scolex (Fig. 1) in comparison with the

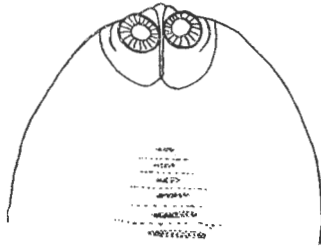


Fig. 1.—*Catenotaenia capensis* sp. nov. Anterior extremity.

body breadth immediately behind it, appears to be relatively small; across the suckers it is 0·41 m.m. wide. The suckers are roughly circular, their external apertures being 0·084 to 0·095 m.m. across, and their diameter including the musculature 0·18 m.m.; each sucker is separated from that adjoining it by a groove. A rostellum and hooks are absent. The first genital anlage appears 0·16 m.m. behind the scolex, so that this portion of the strobila, between the scolex and anlage, may be considered to form a very short and broad neck. No external signs of segmentation are apparent opposite the first few anlages; when these anlages are considered to represent segments then the whole strobila is composed of 49 segments, of which the anteriormost are much broader than long, the ratio gradually changing posteriorly until the posterior is longer than broad.

The excretory system consists of a number, about 20, of longitudinal canals which give rise to a branching network; probably these canals represent a much developed ventral canal system, as the outermost of these longitudinal canals limit the lateral extension of the tests and uterus.

Mature segments (Fig. 2), which are slightly more than twice as broad as long, occur in the 24th to the 28th segments; these segments are from 1.75 to 1.9 m.m. broad. The genital pores are not prominent and are situated near the anterior margin of the segment; they alternate irregularly; they alternate irregularly.

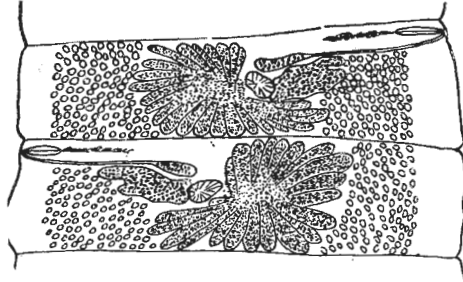


Fig. 2.—*Catenotaenia capensis* sp. nov. Mature segments.

The cirrus sac appears to be weakly muscular and consequently is not a well defined structure in the toto mount; it is almost 0.15 m.m. long by 0.05 m.m. thick. The cirrus is thick and smooth and has a thickness of 0.04 m.m. After emerging from the cirrus sac the vas deferens forms a coiled and transversely elongate mass. The testes, of which there are between 200 and 250, are arranged in an aporal and a poral group; the aporal group extends through the length of the segment, and the poral group from the anterior level of the yolk gland to the posterior segment margin; the groups are completely separated by the female glands, no testes being present behind the ovary. The vagina opens behind the aperture of the cirrus sac and passes almost transversely inwards; its inner portion is expanded to form a prominent receptaculum seminis which persists even in the oldest segments; in mature segments it is sausage-shaped, 0.18 to 0.2 m.m. long and 0.34 to 0.05 m.m. thick, and in the hindmost segments it is oval and about 0.25 m.m. long and 0.14 m.m. thick. The ovary is a large fan-like structure with long lobules; its aporal portion which is the largest, extends from the anterior to the posterior margin of the segment and its poral portion passes laterally between the yolk gland and the posterior margin of the segment. The yolk gland lies anterior of the poral portion of the ovary and posterior of the receptaculum seminis and vagina; it is a transversely elongate massive structure with shallow lobes and is from 0.3 to 0.36 m.m. long by 0.15 to 0.18 m.m. broad. The shell gland is roughly oval, measuring 0.12 to 0.144 m.m. by 0.084 to 0.096 m.m. and lies next to the yolk gland, between it and the ovary. The uterus makes its first appearance in the 28th segment as a median stem; transverse branches on either side soon appear, so that in older segments we find a uterus very similar to that found in members of the genus *Taenia*, consisting of a thin main stem and long transverse branches (Fig. 3); there are 10 to 13 main branches on either side of the main stem and these may subdivide towards their periphery. A well defined, branching, uterus is present from the 32nd segment backwards; the oldest segment is 2.28 m. long

by 1.85 m.m. broad, but contains no fully developed eggs, so that it would appear that the segments are shed before they are completely ripe.

Affinities.—The above described species resembles *C. lobata* Baer, 1925, *C. symmetrica* Baylis, 1927, and *C. geosciuri* Ortlepp, 1938, in that the excretory system forms a network of anastomosing canals; in this respect it differs from *C. pusilla* (Goeze, 1782) and *C. dendritica* (Goeze, 1872). The central position of the yolk gland behind the ovary, and the presence of testes behind the ovary distinguishes Baylis' species from the writer's. *C. geosciuri* differs from the above described species in the elongate nature of its segments, the massive development of its vagina, the position of its testes all posterior of the female glands, and the sacculated nature of its uterus. Its closest relative appears to be *C. lobata*, with which species it agrees in the number of testes and large fan-like ovary. Baer's species differs, however, in that the testes meet posterior of the ovary and the poral portion of the ovary passes between the yolk gland and the anterior margin of the segment, and not between the yolk gland and posterior margin of the segment as in the species described above.

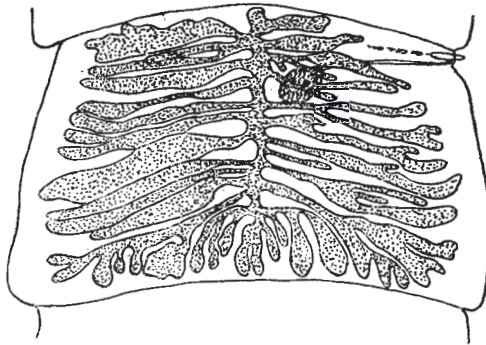


Fig. 3.—*Catenotaenia capensis* sp. nov. Ripe segment.

Specific Diagnosis.—Dipylidinae reaching a length of at least 23 m.m. by 2.0 m.m. broad. Segments, except for the posteriormost, broader than long. Neck much broader than scolex. Excretory system a network of anastomosing canals. Genital pore near anterior margin of segment. 200 to 250 testes in an aporal and poral group, no testes joining these groups behind ovary. Ovary large and fan-shaped filling central portion of segment; poral portion of ovary passes between yolk gland and posterior margin of segment. Receptaculum seminis large. Yolk gland massive, anterior of poral portion of ovary. Uterus with thin median longitudinal stem and 10 to 13 long lateral main branches on either side. Eggs not observed.

Host: *Rhabdomys pumilio vittatus* (Wagn).

Habitat: Small intestine.

Locality: Stilbaastrand, C.P.

Type (mounted) in Onderstepoort Helminthological Collection.

DILEPIS SPHAEROCEPHALA (Rud., 1819), Meggitt, 1924.

Numerous specimens were collected from several Golden Moles. These specimens are tentatively referred to the above species, the data given in brackets being those given by Janicki (1906). The complete strobilae measure 21 to 22 m.m. in length with a maximum thickness of 1.8 m.m. (1.36 m.m.); according to Dujardin's (1845) interpretation of Rudolphi's data fragments may reach a length of 54 m.m. by 2.25 m.m. broad. All the segments are much broader than long; ripe segments have the greatest length and these are 0.27 to 0.3 m.m. long by 1.8 m.m. broad. The scolex (Fig. 4A) is large (very large) measuring 0.72 m.m. (0.578 m.m.) across by 0.36 m.m. in length. The prominent suckers are unarmed and are directed obliquely forwards; they have a diameter of 0.264 to 0.288 m.m. The rostellum is 0.12 to 0.132 m.m. long by 0.22 to 0.23 m.m. across (strongly developed); and carries 44 to 48 hooks; these are arranged in two circles, and all the hooks are practically the same size and have the same shape (Fig. 4B and C); the anterior hooks are, however, slightly shorter; the anterior hooks measure 0.06 to 0.075 m.m. in length, and the posterior hooks 0.068 to 0.077 m.m. A neck is practically absent (absent), segmentation commencing almost immediately posterior of the scolex; here the strobila has a width of 0.6 to 0.67 m.m.

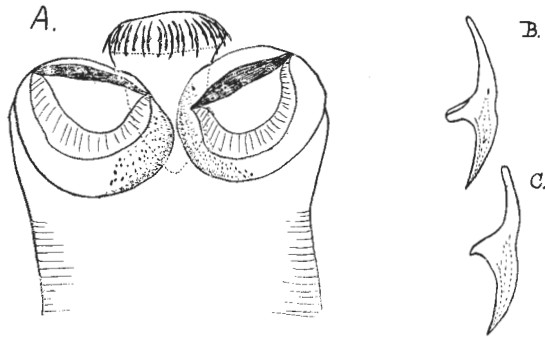


Fig. 4.—*Dilepis sphaerocephala* (Rud). A=Scolex; B=Posterior hook; C=Anterior hook.

The longitudinal musculature is well developed and consists of two layers of bundles of which the bundles of the outer layer are smaller and more numerous; each bundle consists of about 15 to 20 fibres.

The unilateral genital pores are situated in the anterior half of the segment. The genitalia consist of a transversely elongate and centrally placed lobulate ovary with about 20 testes arranged laterally, dorsal, ventral and behind it. The cirrus sac is sausage-shaped, 0.12 to 0.132 m.m. long (0.132 m.m.) and 0.036 m.m. thick; it extends beyond the excretory canals (in Janicki's Figures 32 and 33 the cirrus sac is shown extending over the ventral excretory canal in one and not reaching it in the other). The cirrus is spined and convoluted in the cirrus sac; the vas deferens forms voluminous

coils after emerging from the cirrus sac and is enlarged to act as a vesicula seminalis. The vagina lies dorsal (*vor*) of the cirrus sac and opens into the genital sinus dorsal of this organ; this is an exceptional state of affairs but this arrangement was shown in all the serial sections and toto mounts examined; the vagina is slightly wavy, has a diameter of 0.017 m.m. and is surrounded by prostatic cells; its inner portion is terminated by a median elongate receptaculum seminis. The uterus is a transverse lobulated sac, which in ripe segments practically fills the whole segment, extending laterally over the excretory canals especially on the poral side. The eggs have two coats, an outer which is very thin and has a diameter of 0.072 to 0.075 m.m. (0.05 m.m.) and an inner thicker chitinous coat, 0.03 to 0.033 m.m. in diameter; the onchosphere practically fills this inner shell and its hexacanth hooks are 0.017 m.m. long.

Affinities.—Notwithstanding the fact that the writer's material appears to differ in some respects from Janicki's redescription of this species, the writer nevertheless feels that the two materials are conspecific; the points in which these two materials differ are the differences in the size of the scolices, apparently different position of the vagina (anterior to the cirrus sac in Janicki's and dorsal of this organ in the writer's materials) and the difference in size of the eggs; they agree, however, in that the scolex is large, the rostellum well developed, a neck is practically absent, the segments are all much broader than long, the musculature is of the same type and equally well developed, the genital glands are similar, the cirrus sacs are of the same size, the vas deferens is much coiled and enlarged, the uterus fills practically the whole segment and the materials originate from the same host.

We are in agreement with Magitt that this species belongs to the genus *Dilepis* and not the genus *Hymenolepis* as suggested by Blanchard (1891) or *Raillietina* as listed by Baer (1927).

Host: *Chrysochloris asiatica* (Linn).

Location: Small intestine.

Locality: Newlands and Wynberg, Cape Province.

DILEPIS MEGACIRROSA SP. NOV.

This species was recovered from two golden moles, once (four specimens) in association with the previous species, and once (fair number of specimens) by itself. The largest specimens, reaching a length of 10 m.m., were those found in association with *D. sphaerocephala*; the specimens of the pure infection were considerably contracted.

Complete specimens varied in length from five to 10 m.m. according to the state of contraction, and the maximum width of the strobila varied from 0.96 to 1.14 m.m. All the segments are much broader than long, but the ripe segments tend to become proportionately much longer than those anterior of them; ripe segments vary in length from 0.144 to 0.24 m.m.

The scolex is very similar to that of *D. sphaerocephala*; it has a transverse diameter of 0·5 to 0·54 m.m.; the suckers measure 0·18 to 0·21 m.m. across and the thickness of the rostellum varies from 0·21 to 0·26 m.m. There are 44 to 50 rostellar hooks arranged in two rows; they have the same shape as those of *D. sphaerocephala* but are slightly larger; the anterior hooks are from 0·072 to 0·084 m.m. in length and the posterior hooks vary in length from 0·085 to 0·092 m.m. A neck is practically absent, only 0·12 m.m. of the strobila behind the scolex showing no signs of segmentation; this portion has a breadth of 0·42 to 0·48 m.m.

The muscular system is very poorly developed, and consequently the strobilae are semitransparent and can thus easily be separated from those of *D. sphaerocephala*; the longitudinal muscles are represented by a few isolated fibres scattered through the inner portion of the cortex; the transverse muscles also consist of a few isolated fibres. The usual two longitudinal excretory canals are present and these show no special peculiarities; in section of mature segments the average diameter of the dorsal canals is 0·006 m.m. and that of the ventral canals 0·012 m.m.

The genital pores are unilateral and not prominent and are lodged in the anterior half of the segment, just anterior of its middle. The cirrus sac is a long and weakly muscular organ extending about one third of the distance across the segment; it is from 0·25 to 0·3 m.m. long by about 0·045 m.m. in thickness; it and the vagina pass dorsal of the central excretory canal and nerve; the cirrus sac lodges a relatively large cirrus which when extruded may reach a length of 0·3 m.m.; the cirrus is covered by minute spines and has a basal thickness of about 0·03 m.m. and tapers off to a thickness of about 0·016 m.m.; a very striking feature of practically all the strobilae is that the cirri are extruded and under a low magnification give the strobilae a frilled appearance along one edge. The vas deferens, after emerging from the cirrus sac, is very much coiled in a manner similar to that found in *D. sphaerocephala*; it is also much enlarged and serves as a vesicula seminalis. There are about 15 testes to each segment, two to three layers deep; of these four to six are poral in position, five to seven aporal and the rest dorsal of the ovary; in mature segments they have a diameter of about 0·06 m.m. The vagina is slightly convoluted with an enlarged lumen which is provided with a cuticular lining for its whole length; its inner terminal portion is enlarged to form a fusiform receptaculum seminis; the vagina lies dorsal of the cirrus sac but its opening into the genital sinus may be either dorsal or posterior of this organ. The ovary is a multilobate centrally placed organ, occupying about one third of the width of the segment. The sac-like uterus, when fully formed, fills practically the whole segment and may extend lateral of the excretory canals. The contained eggs lie closely packed in its lumen and the diameter of their outer covering varies from 0·066 to 0·072 m.m. and that of the thicker and firmer inner coat 0·039 to 0·042 m.m. The onchosphere has a diameter of 0·033 m.m. and the length of its hooks are 0·017 to 0·018 m.m.

Affinities.—This species possesses many characteristics which show that it is closely related to *D. sphaerocephala*; these are the

nature of the scolex, rostellum and hooks, the organisation of the genital glands and the relative position of the vagina to the cirrus sac; it differs from this species however, in that the strobila is smaller, the rostellar hooks slightly larger, the musculature is very poorly developed, the cirrus sac and cirrus are considerably larger and the uterus is not lobed.

Specific Diagnosis.—Dilepidinae reaching a length of 10 m.m.; rostellum with double row of 44 to 50 hooks, anterior hooks up to 0.084 m.m. long, posterior hooks up to 0.092 m.m. long; musculature very poorly developed and strobila semi-transparent; cirrus sac up to 0.3 m.m. long; cirrus armed, large up to 0.3 m.m. long and generally extruded; about 15 testes; vagina dorsal of cirrus sac and opens dorsal or behind it into genital sinus; uterus sac-like and filled with numerous eggs.

Host: *Chrysochloris asiatica asiatica* (Linn).

Location: Small intestine.

Locality: Vicinity of Cape Town (Newlands), Cape Province.

Types in Onderstepoort Helminthological Collection.

BIUTERINOIDES UPUPAI gen. and sp. nov.

The material available consisted of one scolex and neck, one scolex and portion of strobila, 47 m.m. long, two anterior portions of two strobilae, 36 and 45 m.m. long respectively, one central portion of a strobila, 41 m.m. long, one posterior portion of a strobila 22 m.m. long and several other smaller portions of strobilae. If the central and posterior portions of strobilae belong to the strobila with head, then the length of the worm reaches 110 m.m. The segments are all wider than long, mature segments being 0.45 to 0.5 m.m. broad by 0.18 to 0.19 m.m. long; posteriorwards the segments become gradually longer; the hindmost segment of the strobila plus head is 0.84 m.m. broad and 0.48 m.m. long; detached segments, apparently ripe are somewhat barrel-shaped, 1.15 m.m. broad and 1.0 m.m. long.

The scolex is somewhat pear-shaped 0.72 m.m. in width by 0.48 m.m. long. The suckers are rounded and unarmed, the muscular portion having a diameter of 0.24 m.m. and their external orifices being slightly oval, measuring 0.084 by 0.12 m.m. The rostellum is fully retracted in both scolices and in this position measures 0.168 m.m. in breadth by 0.12 m.m. in length. The number and nature of the hooks could not be ascertained in the cleared heads, consequently one of the heads was teased up; this head showed the presence of 77 hooks arranged in four irregular rows; the hindmost hooks (Fig. 5A) are the longest and have the typical triangular shape and measure 0.035 to 0.041 m.m. in length by 0.02 to 0.028 m.m. across their base; the hooks of the 2nd, 3rd, and 4th rows (Fig. 5B, c and d) are somewhat pear-shaped; those of the 2nd row are 0.024 to 0.03 m.m. long and 0.011 m.m. thick across their

base; those of the 3rd row are 0·017 to 0·021 m.m. long and 0·007 to 0·008 m.m. thick across their base, and the hooks of the 4th row 0·011 to 0·015 m.m. long by 0·0045 to 0·005 m.m. across their base.

A neck is present, just over 2·0 m.m. in length by 0·54 m.m. in breadth. The genital pores alternate irregularly and are situated at about the junction of the first and second thirds of the segment margin. A dorsal and a ventral longitudinal excretory canal are present on either side; the former has a slightly thickened wall and a diameter of about 0·006 m.m.; the latter is much wider and thin walled, its diameter varying from 0·03 to 0·042 m.m. The genital ducts pass between the excretory canals.

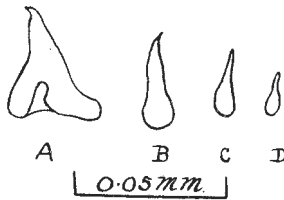


Fig. 5.—*Biuterinoides upupai* gen. et. sp. nov. Hooks from scolex. A=Hindmost hook; B=Hook from 2nd row; C=Hook from 3rd row; D=Hook from posterior row.

The cirrus sac is somewhat flask-shaped with a long neck, it is 0·12 to 0·132 m.m. long by 0·042 in diameter and reaches and sometimes passes between the longitudinal excretory canals; a *vesicular seminalis interna* and *externa* is absent. There appears to be about 10 testes to each segment, four to five poral and five or six aporal in position, lateral of the female glands; unfortunately they take up stain very lightly so that it is with difficulty that they can be made out; their diameter appears to be about 0·04 m.m. in mature segments.

The ovary is a large centrally placed two-lobed transverse organ, measuring 0·13 to 0·15 m.m. across and 0·042 to 0·05 m.m. in length; immediately behind it is a large and irregularly shaped yolk gland measuring 0·07 to 0·09 m.m. across and 0·03 to 0·04 m.m. in length. The uterus is first formed as a transverse sac in the posterior half of the segment; as the segments grow older a darker staining mass of cells appears in the anterior half of the segment, and this mass eventually forms the paruterine organ. As this organ increases in size it assumes an hour-glass shape, presses on the anterior central portion of the uterus, with the result that the uterus becomes constricted in its middle and now appears like two isolated uteri (Fig. 6A), whose cavities are, however, always in communication with each other through the narrow isthmus; further growth backwards of the paruterine organ causes the uterus to send forwards two sacculations which become surrounded by the fibrous paruterine tissues (Fig. 6B); these two sacculations become the egg capsules and remain joined to each other by the much reduced original uterus posterior to the paruterine organ. In the hindmost segments which

in the writer's material are all detached, the rounded egg capsules appear to be completely separated from each other (Fig. 6c), but careful observation show that a connection still exists between them in the form of the now entirely collapsed original uterus. The paruterine organ has also now become columnar in shape. The eggs, of which about 30 to 40 are present in each egg-capsule, have a thin loose outer covering having a diameter of 0.059 to 0.061 m.m.; the embryo has a diameter of 0.033 to 0.05 m.m. and is closely invested by a thin coat. The hexacanth hooks are relatively large, measuring 0.02 to 0.026 m.m. in length.

Numerous rounded chalk bodies are scattered in the cortical parenchyma of the whole length of the strobila; they are especially evident in the hindmost ripe segments, where they may reach a diameter of 0.025 m.m.

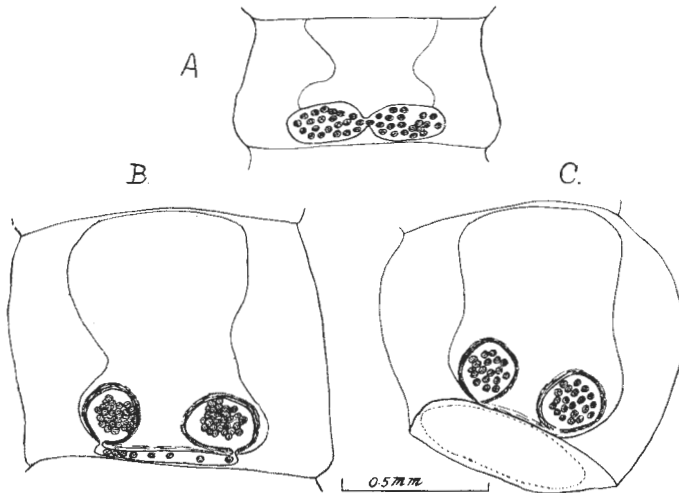


Fig. 6.—*Biuterinoides upupai* gen. et. sp. nov. Showing different stages in the formation of paruterine egg-capsules.

Affinities.—The triangular shape of the largest hooks and the nature of the uterus clearly show that this species is closely related to the members of the genus *Biuterina* Fuhrmann. It differs, however, from all the known members of this genus, except *B. intricata* (Krabbe, 1882) in that the rostellar hooks are arranged in four rows; also in the writer's species the uterus eventually forms two egg-capsules enclosed by the paruterine organ. Three species of tapeworms have so far been described from upupiform birds, namely *Hymenolepis septaria* v. Linstow, 1906 *Biuterina lobata* Fuhrmann, 1908, and *Taenia intricata* Krabbe, 1882. The first named need not be considered here as it bears no close relationship to the writer's species. Fuhrmann, whose material unfortunately possessed no scolices, expressed the view that his species might be the same as Krabbe's, both of which were collected from the same species of host *Upupa epops*; the fact that Krabbe's species was described as

carrying four rows of hooks deterred Fuhrmann from making a definite decision, especially as the typical number of rows of hooks in *Biuterina* is two and not four. Moghe and Inamdar (1934) examined material from the same host (India) and they were able to confirm Krabbe's observation as to the arrangement of the hooks and they concluded that Fuhrmann's and Krabbe's species were the same. The finding of the above described species also from an upipiform bird, is of special interest in that it also carries four rows of rostellar hooks. Another feature which these two species appear to have in common is the formation in fully ripe segments of two uterine egg-capsules enclosed by the paruterine organ; the oldest segments seen and figured by Fuhrmann and by Moghe and Inamdar show two distinct uteri, but these are still external and posterior of the paruterine organ; it is quite possible that these segments were not yet fully gravid and that older segments would have shown the formation of two egg-capsules enclosed by the paruterine organ, similar to those found in the writer's species. The writer's species can easily be separated from Krabbe's in that the latter species has fewer hooks (64) which are larger (0.0196 to 0.052 m.m.).

The disposition of the rostellar hooks in four rows and the presence of two egg capsules in the fully mature segments are to the writer of sufficient importance to warrant the creation of a separate genus for the reception of the writer's species; in order that its close affinity to *Biuterina* may be shown the writer proposes the name *Biuterinoides*. This genus would have the same characters as those of *Biuterina* except that the rostellar hooks are arranged in four rows instead of two, and the uterus gives rise to two egg capsules in the fully mature segment. The type species would be *Biuterinoides upupai* described above. To this genus the writer also assigns Krabbe's species *Taenia intricata*;

Specific Diagnosis.—Paruterinae reach a length of at least 47 m.m. and may perhaps exceed 100 m.m. Posterior rostellar hooks triangular and up to 0.041 m.m. long; hooks of second, third and fourth rows pear-shaped and smaller; total number of hooks ca. 80. Genital pores irregular alternate in anterior third of segment. Cirrus sac reaches and may extend between excretory canals. Testes about 10. Paruterine organ at first hour-glass shaped, later more or less columnar. Uterus gives rise to two apparently separate egg-capsules each containing up to about 40 eggs.

Host: *Upupa africana*.

Location: Small intestine.

Locality: Cape Province.

Types in the Onderstepoort Helminthological Collection.

RAILLIETINA (RAILLIETINA) TRAPEZOIDES (Janicki, 1904).

Specimens recovered from the Striped Mouse [*Rhabdomys pumilio vittatus* (Wagu)] and Brant's Gerbil [*Tartera brantsi*

brantsi (A. Smith)] are referred to this species. The following table will serve to bring out the resemblances between Janicki's data and that obtained by the writer from the mouse and gerbil material.

	Janicki.	Mouse.	Gerbill.
Number of hooks.....	160	160	200-220
Size of hooks.....	0.008 m.m.	0.006-0.0075 m.m.	0.007-0.009 m.m.
Number of testes.....	12-15	11-14	10-15
Length of Cirrus sac.....	0.105-0.132 m.m.	0.12 m.m.	0.12-0.162 m.m.
Thickness of Cirrus sac...	0.052-0.07 m.m.	0.06 m.m.	0.06-0.084 m.m.
Number of egg capsules per segment.....	30-50	Ca. 60	60-80
Eggs per capsule.....	4-5	5-8	5-9
Relation of Cirrus sac to Exe. Canal.....	Reaches excretory canal.	Does not reach excretory canal.	Does not reach excretory canal.

From this table it is clear that the only striking differences are the greater number of hooks in the material from the gerbill and that in Janicki's material the cirrus sac reaches the excretory canal, which it does not do in the writer's materials. Notwithstanding these differences the writer considers his and Janicki's materials to be conspecific.

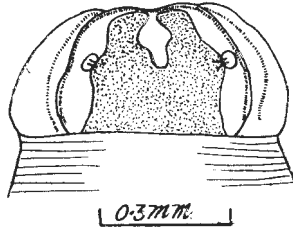


Fig. 7.—*Ascaris suricattae* sp. nov. Cephalic extremity showing structure of dorsal lip.

ASCARIS SURICATTAE SP. NOV.

Five males, three females and an immature female were available for study; all had been recovered from two surricats. The males are 50 to 54 m.m. long by 1.0 and 1.2 m.m. thick respectively; the mature females are 67, 72 and 85 m.m. long and have a maximum thickness of 1.3 to 1.56 m.m. In both sexes the body is relatively slender, and the attenuation towards both extremities is gradual and about the same degree. The cephalic extremity is straight in both sexes. The posterior extremity is straight in the female and is terminated by a conical tail 0.48 to 0.624 m.m. long; in the males this extremity is bent ventralwards and the tail is 0.26 to 0.276 m.m. long. The head is slightly constricted off from the body; in the males it is 0.19 to 0.2 m.m. broad and 0.15 to 0.17 m.m. high and in the females about 0.3 m.m. wide and 0.19 to 0.24 m.m. high. Each lip carries a conspicuous dentigerous ridge along its inner border. The three prominent lips (Fig. 7) are

slightly wider than long, and their anterior faces are somewhat flattened and indented in their middle. The pulp of the dorsal lip consists of a basal solid portion from which arises two conspicuous anterior lobes as in figure; its two papillae are large and single. The pulps of the lateral lips are very similar except that the dorsal lobe of the pulp is stouter and better developed than the ventral lobe; each lip carries a single simple papilla situated in its ventral half. Interlabia and cervical alae are absent. The oesophagus is simple and carries no appendages or bulb. In the males it is 3.6 to 3.7 m.m. long with a maximum thickness of 0.36 to 0.4 m.m.; in the female it is 3.6 to 4.2 m.m. long and increases gradually in thickness from 0.2 to 0.4 m.m. near its posterior end. The nerve ring encircles it at 0.48 m.m. from the anterior end. The vulva is a small aperture situated in the anterior body half at about the junction of the first and second body quarters or first and second body thirds. In two females which measured 67 and 72 m.m. in length its position was 14.5 and 23 m.m. from the anterior end respectively. The two uteri extend backwards and are filled with eggs; these appear to be rounded and measure 0.072 to 0.075 m.m. in diameter. From the eggs *in utero* it was not possible to determine the nature of the egg-shell, i.e. if it is smooth or rugose. The tail is 0.48 to 0.63 m.m. long and tapers in its posterior quarter to end in a bluntly rounded point.

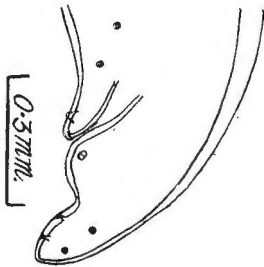


Fig. 8.

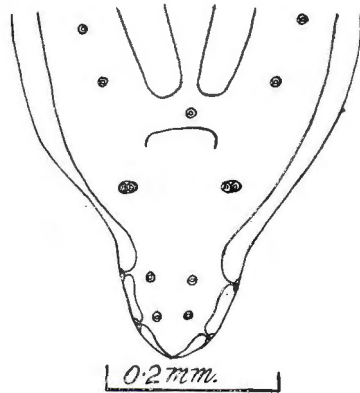


Fig. 9.

Fig. 8.—*Ascaris suricattae* sp. nov. Posterior extremity of male, lateral view.

Fig. 9.—*Ascaris suricattae* sp. nov. Ventral view of posterior extremity of male.

In the male the caudal extremity is bent ventralwards and alae are absent. The tail has a probular projection as in *Torocara canis* [Werner (Fig. 8)], which projection is best seen in a lateral view; this projection forms slightly more than half of the total length of the tail. There are five pairs of post-cloacal papillae, of which three pairs are ventral and two pairs lateral (Fig. 9). The anteriormost ventral pair is double and is situated just behind the cloaca; the two remaining pairs are situated on the probular portion of the tail; the two lateral pairs of papillae are also situated on

this portion of the tail. Anterior of the cloaca there is a single unpaired papilla and a row of 14-16 papillae extends forwards on either side. The two spicules, which were not exerted, appear to be simple; they are equal, measuring 1.14 to 1.2 m.m. long and end in bluntly rounded points.

Affinities.—If it were not for the absence of cervical alae, the above described species would be closely related to *Toxocara canis* (Werner, 1782). The nature of the pulp of the lips, the shape of the male tail and single papillae on the lips are very similar in these two species; the latter species, however, has, in addition to the cervical alae, much shorter spicules. Of the species of *Ascaris*, the species *A. lumbricoides*, *A. dasypodina* Baylis, 1922, *A. tarbagan* Schulz, 1931, and *A. hippopotami* Canavan, 1931, have double papillae on the lips. *A. columnaris* Leidy, 1856, and *A. joffi* Schulz, 1931, have single lip papillae. Only the female of the latter species is known and in it the anterior lobes of the pulp of the lips are different. According to Goodey and Cameron (1923) the male of Leidy's species also has a probular tail, but it differs from the writer's species in that the male tail is longer, the arrangement of the post colocal papillae is different, the number of precolocal papillae is greater and the spicules are much shorter.

Specific Diagnosis.—Ascarinae reaching a length of 62 m.m. in the male and 85 m.m. in the female. The three lips are anteriorly flattened and carry dentigerous ridges and single papillae; cervical alae and inter-labia absent. Vulva in anterior body half at junction of first and second body quarters or first and second body thirds. Female tail conical. Male tail bent ventralwards, probular and not provided with alae. Five pairs post-cloacal papillae, the first pair ventral and double, situated just behind cloacal aperture; the remaining four pairs on probular portion of tail, two pairs being ventral and two pairs lateral. Single, median papilla on anterior lip of cloaca; 14 to 16 pairs of lateral papilla extending forwards anterior of cloaca. Spicules simple, equal and similar, 1.14 to 1.2 m.m. long.

Host: *Suricata suricatta hamilton* (?) Thos. and Schw.

Location: Small intestine.

Locality: Carolina, Transvaal.

Types in the Onderstepoort Helminthological Collection.

SUMMARY.

In the foregoing the writer discusses five species of Cestodes and one species of Nematode; of the cestodes three species are considered as new and the species from the Hoepoe is assigned to a new genus *Biuterinoides* closely related to the genus *Biuterina* Fuhrmann, 1902. The new species are *Catenotaenia capensis* from the Striped Mouse, *Dilepis mequacirrosa* from the Golden Mole, *Biuterinoides upupai* from the Hoepoe and *Ascaris suricattae* from the Surricat. Another species of cestode from the Golden Mole is

identified as *Dilepis sphaerocephala* (Rud. 1819) and its morphology is described. Materials from the Striped Mouse and the Gerbil are referred to *Raillietina* (*Raill.*) *trapezoides* (Janicki, 1904).

REFERENCES.

- BAER, J. G. (1925). "Sur quelques Cestodes du Congo belge." *Rev. Suisse de Zool.*, Vol. 32, pp. 239-251. Geneva.
- BAYLIS, H. A. (1919). "Some new Entozoa from Birds in Uganda." *Ann. Mag. Nat. Hist.*, Ser. 9, Vol. 3, pp. 457-466. London.
- BAYLIS, H. A. (1922). "Notes on some parasitic Nematoda." *Ann. Mag. Nat. Hist.*, Ser. 9, Vol. 9, pp. 494-504. London.
- BAYLIS, H. A. (1927). "The Cestode Genus *Catenotaenia*." *Ann. Mag. Nat. Hist.*, Ser. 9, Vol. 19, pp. 433-439. London.
- CANOVON, W. P. N. (1931). "Nematode parasites of Vertebrates in the Philadelphia Zoological Garden and Vicinity II." *Parasit.*, Vol. 23, pp. 196-229. Cambridge.
- DUJARDIN, F. (1845). "Histoire Naturelle des Helminthes ou vers intestinaux," pp. 1-654. Paris.
- FUHRMANN, O. (1908). "Das Genus *Anonchotaenia* und *Biuterina* II. Das Genus *Biuterina* Fuhrmann." *Centrb. Bakt. orig. 1e abt.*, Vol. 48, pp. 412-428. Jena.
- FUHRMANN, O. (1911). "Vogelcestoden der Aru-Inseln." *Abh. Senckenberg. Naturf. Gesell.*, Vol. 34, pp. 251-266. Frankfurt.
- FUHRMANN, O. (1932). "Les Ténias des Oiseaux." *Mem. de l'Univ. Neuchatel*, Vol. 8, pp. 1-381. Neuchatel.
- GOODEY, T., AND CAMERON, T. W. M. (1923). "Observations on the morphology and Life History of *Ascaris columnaris* Leidy, a nematode parasite of the skunk." *Jl. Helm.*, Vol 1, pp. 1-8. London.
- JANICKI, C. von (1906). "Studien an Säugetiercestoden." *Inaug. Dissert.* Univ. Basel., pp. 1-97. Leipzig.
- JOYEUX, C., GENDRE, E., AND BAER, J. G. (1928). "Recherches sur les Helminthes de l'Afrique occidentale Francaise." *Monogr. II. Coll. Soc. Path. Exot.*, pp. 1-120. Paris.
- MEGGITT, F. J. (1924). "The Cestodes of Mammals," pp. 1-282. London.
- MEGGITT, F. J. (1928). "Report on a collection of Cestoda, mainly from Egypt. Part III. Cyclophyllidea (conclusion), Tetraphyllidea." *Parasit.*, Vol. 20, pp. 315-328. Cambridge.
- MOGHE, M. A., AND INAMDAR, N. B. (1934). "Some new species of Avian Cestodes from India with a description of *Biuterina intricata* (Krabbe, 1882)." *Rec. Ind. Mus.*, Vol. 36, pp. 7-16. Calcutta.
- ORTLEPP, R. J. (1938). "South African Helminths. Pt. III. Some Mammalian and Avian Cestodes." *Onderstepoort Jl. Vet. Sc. and Anim. Ind.*, Vol. 11, pp. 23-50. Pretoria.
- RIGGENBACH, E. (1895). "*Taenia dendritica* Goeze." *Centralb. Bakt. u. Parasitk.*, Abt. 1, Vol. 17, pp. 710-716. Jena.
- SCHULZ, R. ED. (1931). "*Ascaris joffi* n. sp. und *A. turbugan* n. sp. Zwei neue Askariden der Nagetiere." *Zool. Anz.*, Vol. 94, pp. 238-245. Leipzig.
- SKRJABIN, K. I. (1914). "Vogelcestoden aus Russisch Turkestan." *Zool. Jahrg. abt. syst.*, Vol. 37, pp. 411-492. Jena.