

New Genera and Species of Mallophaga from South African Hosts.

By G. A. H. BEDFORD, Research Officer, Onderstepoort.

SUPER-FAMILY AMBLYCERA KELLOGG.

FAMILY MENOPONIDAE MJÖBERG.

GENUS ALLOMENOPON NOV.

Species of medium size, pale in colour.

Head triangular, slightly more than $\frac{1}{2}$ wider than long. On each side of the forehead there is a slit above the eyes, which are situated a short distance from the temporal margins. Pharyngeal schlerite and glands absent. Antennary fossa deep. Antennae four-jointed, the third segment constricted at the base.

Prothorax large and broad, with acute wings. *Meso-* and *meta-notum* not separated by a suture, the lateral margins strongly divergent, the posterior margin nearly straight.

Legs normal, the anterior femora slightly shorter than the mid femora, the posterior pair slightly longer than the mid. with a patch of about forty short hairs on the venter.

Abdomen broad, rounded posteriorly, with the tergites, sternites, and pleural plates very weakly chitinized. Tergites with a single row of hairs on their posterior margins. Sternites with three or four irregular rows of short hairs, the hairs more numerous and forming a tuft on each side of the fourth and fifth segments, and to a lesser extent on the sixth sternite. Spiracles present on the lateral margins of the third to eighth segments. Male genitalia with the basal plate short and broad; parameres slender; endomerai plates with backward-projecting curved hooks on each side. Species found on Bucerotidae (hornbills).

Genotype: *Menopon bucerotes* Kellogg.

Menopon lophocerus Bedford (7th and 8th Rep., Dir. Vet. Res., Union of S.A., 1920 p.p. 717-718, Pl. 1, f. 1, Pl. 3, f. 1) found on *Lophoceros epirhinus*, *Tockus erythrorhynchus rufirostris*, and *Xanthorhynchus leucomelas*, must also be included in this genus. *M. bucerotis* Kellogg (Schwed. Exp. Kilimandjaro, 1910, p. 54, Pl. 7, f. 12) occurs on *Baryrhynchus cristatus* and *Bycanistes bucinator*. The male genitalia of both species have been figured by Bedford (1920, Pl. 3, f. 1, 2).

Species medium-sized, dark.

Head about $\frac{1}{2}$ wider at the temples than long. Forehead rounded; lateral margins with a slit in front of the eyes which are situated on the margins of the temples. On each side near the base of the slit there is a blotch. Mandibles large, bidentate in the female, but only one with two teeth in the male. Pharyngeal sclerite and glands well developed. Antennary fossa deep. Antennae four-jointed, the second segment with a large anterior expansion, the third constricted at the base.

Prothorax large and broad, with moderately acute wings.

Mesothorax very short, the notum separated from the metanotum by a suture.

Metathorax very large, with the lateral margins strongly divergent, the posterior margin projecting backwards on to the abdomen in the female, almost straight in the male.

Legs normal; the posterior femora with a series of three combs on the venter.

Abdomen of female elongate and slender, pointed posteriorly. The first tergite considerably longer than the others, except the apical one, projecting backwards on to the second segment, with several chitinous transverse lines on each side in front. The tergites and sternites with well-developed transverse plates; the plates on the third to eighth tergites divided longitudinally into three areas, and on the apical tergite the plate is divided in the middle. Tergites with two transverse rows of hairs. Sternites with numerous short hairs, and on the third segment there are two combs on each side. Apical sternite with two plates fringed with hairs. The abdomen of the male is shorter and narrower than that of the female, the first segment is slightly longer than the second, but does not project backwards on to the second, and there are no transverse lines. Genitalia with the basal plate long and narrow; parameres long, narrow, and slightly curved.

Species found on Psittacidae (parrots).

Genotype: Menopon poicephalum Bedford.

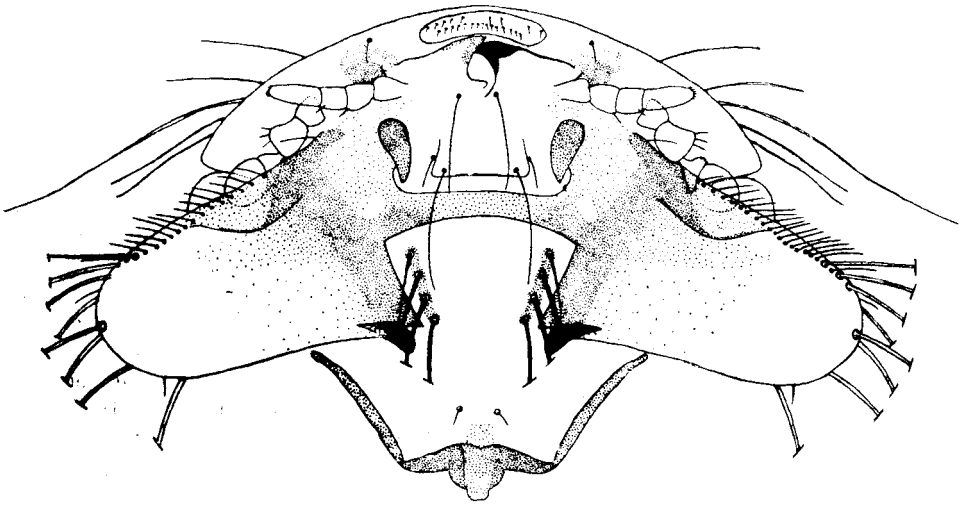
In this genus must also be included: *Menopon* sp. Piaget and *Menopon scalaris* Piaget. Unfortunately we have not been able to make either of these species the type of the genus, because we have not seen specimens and the males are still unknown. Both *scalaris* and *poicephalum* were described as varieties of *impar*, but they are quite distinct from that species. *P. poicephalum* was described from a male and female taken off a *Poicephalus meyeri* (Meyer's parrot), and we have recently received specimens from Mr. Austin Roberts taken off *Poicephalus robustus* Gm. (Cape parrot) at Haenertsburg, Transvaal, on the 11th January, 1930.

Menacanthus corvus nov. sp.

(Figs. 1, 2, and 3.)

Largish species, pale in colour with conspicuous dark brown bands and markings.

FEMALE.—*Head* (fig. 1) very slightly more than twice as wide as long. Forehead rounded with a slit on the lateral margins in front of the temporal angles. Eyes large, situated at the temporal angles; on the inner margin of each there is a hair. Antennae four-jointed; the third joint constricted at the base. Temples projecting, with eight long hairs and several short ones. On the dorsum of the forehead there are one long and two short hairs situated close together on each side between the meson and lateral margin. Occipital margin with six long hairs. On the venter there is a large backward projecting spine on each side beneath the base of the palpus, and below these spines a median transverse bar. On the gular region there is a narrow longitudinal chitinous band with four long hairs on each side.



G. A. H. B. del.

FIG. 1.

Menacanthus corvus nov. sp., venter of head and sternal plate of female.

Thorax: *Pronotum* more than twice as wide as long, with the antero-lateral angles rounded. Beneath the transverse bar there are two minute hairs, and one at each end of it. On each lateral margin there is a minute hair and a long one at the angle, and two more long ones beneath them, these being widely separated. On the posterior margin there are eight long hairs. *Mesonotum* short, with two short hairs on each side, the outer pair near the postero-lateral angles. *Metanotum* with the lateral margins strongly divergent, on the posterior margin there is a row of about twenty long hairs, and on each side four to five short hairs, one above the other, close to the

MALLOPHAGA FROM SOUTH AFRICAN HOSTS.

lateral band. *Prosternum* with plate as shown in fig. 1. On the *mesosternum* there is a small median chitinized plate bearing several short hairs and a similar plate on the *metasternum*, the latter being wider than long. On each side between the mid and hind femora there is a small chitinized area with three or four minute hairs.

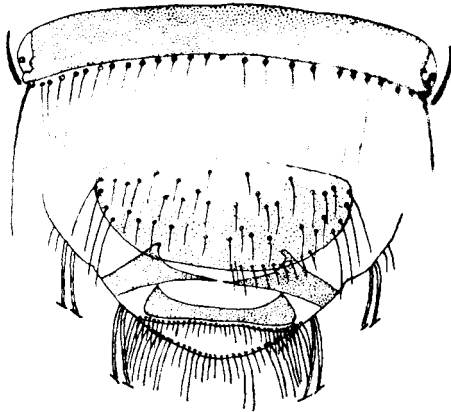


FIG. 2.

Menacanthus corvus nov. sp., seventh tergite and apical sternites.

G. A. H. B. del.

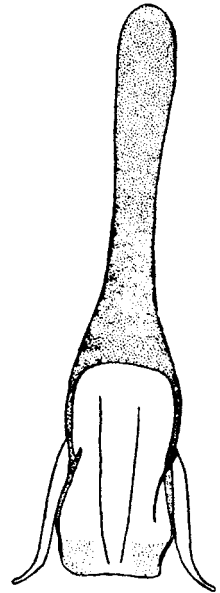


FIG. 3.

Menacanthus corvus nov. sp., male genitalia.

Legs normal, the hind femora with a patch of about twenty-four hairs on the venter.

Abdomen widest at the fourth segment. Tergites with strongly chitinized transverse bands and with a row of long hairs on the posterior margins (fig. 2A). Sternites one to seven each, with a dark transverse band and numerous short hairs, which are somewhat clustered at the lateral margins. Apical sternites as in fig. 2B. Pleurites well developed with short hairs and long ones on their posterior margins. Spiracles small, present on the third to eighth segments.

MALE very similar to the female. Genitalia as in fig. 3.

	Measurements.			
	Female.		Male.	
	Length.	Width.	Length.	Width.
Head.....	Mm.	Mm.	Mm.	Mm.
Prothorax.....	0.35	0.77	0.36	0.72
Meso-metathorax.....	0.24	0.57	0.2	0.53
Abdomen.....	0.21	0.71	0.16	0.62
	1.79	1.11	1.51	0.9
TOTAL.....	2.59		2.23	

Holotype: a female from *Corvus albus* Müll.

Described from numerous females and males taken off two specimens of *Corvus albus* Müll. (pied crow), Aliwal North, C.P., December, 1929, and January, 1930 (Coll. G. Martinaglia and P. L. le Roux); also females and males taken off *Heterocotus capensis* Licht. (black crow) at Onderstepoort, on the 26th January, 1921 (Coll. G.A.H.B.).

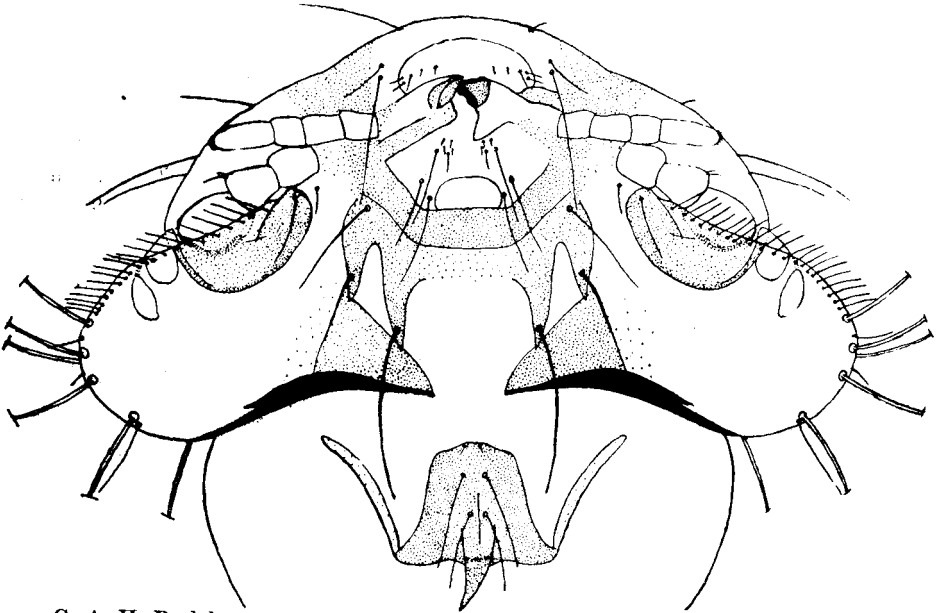
GENUS *MACHAERILAEMUS* HARRISON.

Machaerilaemus urocolius nov. sp.

(FIGURE 4.)

A robust form, pale in colour, with yellowish-brown to brown bands and markings.

FEMALE.—*Head* (fig. 4) very slightly more than twice as broad at the temples as long. Forehead rounded. Eyes well developed, hairless. Temples rounded, with six long hairs and several short ones. On the dorsum of the forehead there are a long and two short hairs on each side between the meson and lateral margin. Occiput with six long hairs on the margin. On the ventral surface there is a transverse chitinized bar behind the mandibles which projects forwards on each side to the anterior margin. Gular plate considerably wider than long with two pairs of backward-projecting spinose processes, the front pair each with two long hairs and the posterior pair each with one long hair. On each side of the gular region behind there is a triangular chitinized area. Antennae three-segmented. Palpi with the apical segment the longest, the second segment only slightly longer than either the first or third, which are sub-equal.



G. A. H. B. del.

FIG. 4.

Machaerilaemus urocolius nov. sp., venter of head and sternal plate of female.

Thorax: *Pronotum* very slightly more than twice as wide as long, lateral margins rounded, each with a long hair in front, three short ones above it and a short one below it, and beneath the latter there are two more short ones, one above the other. On the posterior margin there are ten long hairs and four short ones. Plate on sternum as shown in fig. 4. *Mesonotum* not separated from the metanotum by a suture, the former with a short hair on each side near the anterolateral margin and two more beneath it. *Metanotum* with numerous long and short hairs on the posterior margin, and three or four on each side above one another close to the lateral band. On the mesosternum there is a very small indistinct plate with two short hairs, and a larger one on the metasternum with several short hairs.

Legs: Hind femora with a patch of about thirty hairs on the venter; mid and hind tibiae each with three short, strong hairs at the apex.

Abdomen slightly broader than long; the tergites, except the last, each with a pale brown transverse band and a series of long hairs on the posterior margins, at the sides there are one or two short hairs between the long ones. Sternites also with pale brown transverse bands and with three irregular rows of hairs, the hairs being slightly more numerous at the sides on the fourth to seventh sternites. The borders of the vulva are closely beset with a row of fine hairs. Pleurites pale brown with several hairs in the middle, and a row of long and short hairs on their posterior margins.

MALE.—The male resembles the female, except that there are two transverse bands on the eighth sternite. Genitalia weakly developed, especially the basal plate, which is short and not expanded apically, articulating with a pair of very narrow parameres which curve inwards.

	Measurements.			
	Female.		Male.	
	Length.	Width.	Length.	Width.
	Mm.	Mm.	Mm.	Mm.
Head.....	0.36	0.74	0.33	0.65
Prothorax.....	0.25	0.54	0.22	0.45
Meso- and metathorax.....	0.26	0.87	0.18	0.67
Abdomen.....	1.36	1.41	1.02	1.03
Total.....	2.23		1.75	

Holotype: a female.

Described from a female and male collected by the writer off *Urocotinus indicus transvaalensis* Roberts (red-faced coly) at Ntabanana, Zululand, on the 27th November, 1922; also a female and male taken from the same host at Onderstepoort.

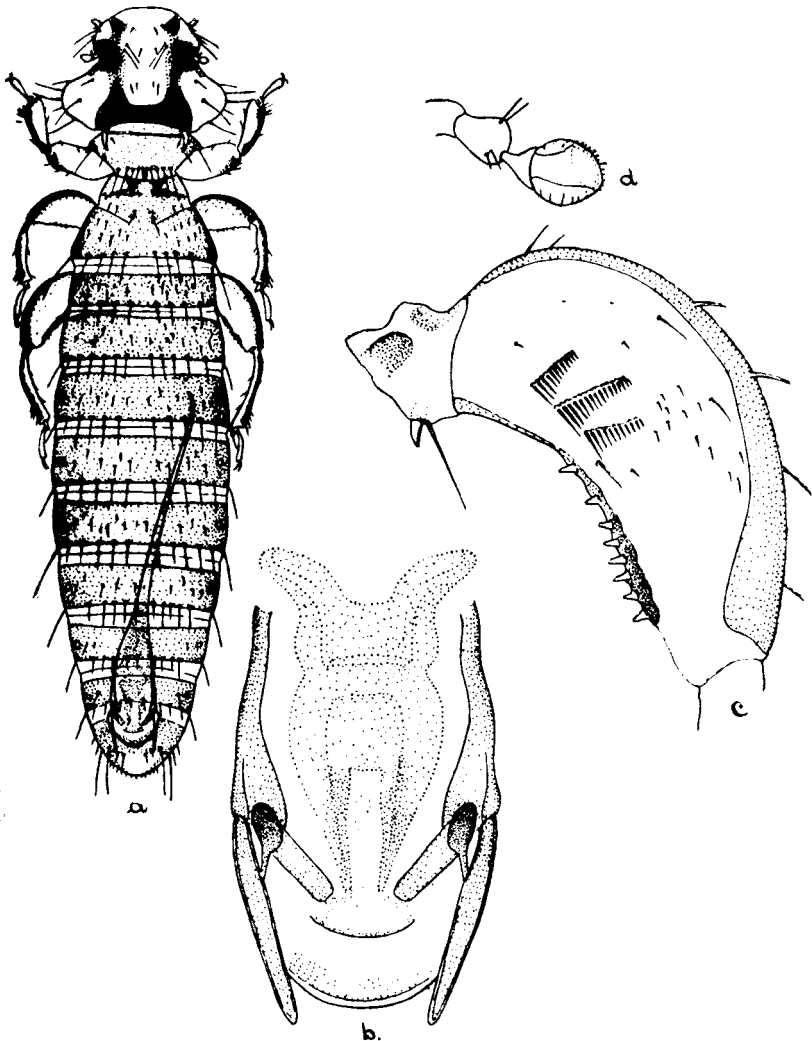
This species can easily be recognized from the other three known species by the presence of the four spines on the gular plate. Both *M. plocci* Bedford and *M. latifrons* Harrison possess only two spines on the gular plate.

GENUS COLPOCEPHALUM NITZSCH.

Colpocephalum ferrisi nov. sp.

[Figs. 5 (a)-(d).]

MALE.—*Head* wider than long, widest behind the eyes. Fore-head rounded in front; lateral margins with a deep notch just in front of the eyes, which are small. On each side of the head there are



C. G. Walker, del.

FIG. 5.

Colpocephalum ferrisi nov. sp., (a) male; (b) male genitalia; (c) venter of hind femur; (d) antenna.

three large blotches, one on the forehead, a larger one at the base of the notch, and a still larger one on the posterior margins, the median blotches being joined to both the anterior and posterior blotches by slightly paler bands, and the two on the occipital areas are connected by a dark transverse band. Similar markings also present on the venter. Labial palpi slender, extending beyond lateral margin of head. Antennae four-jointed, the third joint stalked at the base, the fourth rounded. Pharyngeal sclerite and glands present. On the venter behind the mouth-parts there is a small transverse plate, and a longitudinal row of six or seven hairs on each side of the meson.

Prothorax with acute wings; at each lateral angle there is a short and long hair, and another short hair on the lateral margin beneath these; on the posterior margin there are eight long hairs and a minute one on each side above the two outer ones; beneath the transverse bar there is a row of four minute hairs. *Mesothorax* short with a narrow transverse chitinous band on the notum. *Metathorax* with the lateral margins strongly divergent; posterior margin almost straight; notum with a few short hairs and a row of longer ones on the posterior margin. Sternal plate triangular, weakly chitinized, with a few short hairs.

Legs: Posterior trochanters with a small spine on their posterior margins. Mid femora with three to five small spines on the posterior margin; hind femora with four rows of combs on the venter, the first row consisting of only two or three minute bristles, and with a row of eight or nine small spines on the posterior margin.

Abdomen elongated and slender, the tergites more strongly chitinized than the sternites, the former sparsely covered with short hairs and a row of longer ones on the posterior margins. Sternites also sparsely covered with short hairs and with two series of combs at the latero-posterior angles of the third sternite. Apical sternite with six long hairs on the posterior margin. Spiracles very small, present on the lateral margins of the third to eighth tergites. Pleurites small, darker than the tergites, with short hairs. Genitalia with the basal plate long and slender; parameres present, with a plate between them which is rounded posteriorly.

	Measurements.	
	Length.	Width.
Head.....	Mm.	Mm.
Prothorax.....	0.35	0.54
Meso- and meta-thorax.....	0.16	0.36
Abdomen.....	0.24	0.47
	1.65	0.56
TOTAL.....	2.40	

Described from three males taken off *Melanopelargus niger* Linné (black stork) at Nongas, S.W.A., in January, 1919.

This species is allied to *C. zebra* Nitzsch, the type of the genus, which has recently been described and figured by Ferris in *Parasitology*, XVI, pp. 59-61, fig. 2, 1924. It can be distinguished from it by its more elongated form, the presence of a band connecting together the anterior and median blotches on the head, the small spines on the posterior margins of the mid and hind femora, and by the genitalia. In *zebra* the genitalia possess a flat serrated plate at the apex of the basal plate which is absent in *ferrisi*, and there are no parameres.

GENUS *EUCOLPOCEPHALUM* NOV.

Head almost twice as wide as long; forehead rounded, lateral margin with a distinct notch in front of the eye; temples rounded. Blotches absent, except for a small brown one on each side of the head at the base of each notch.

Prothorax winged. Mesonotum small, not separated from the metanotum. Plate on prosternum as shown in fig. 6; mesosternal plate triangular with short hairs; metasternal plate four-sided with numerous short hairs; wider in front than behind; anterior margin convex.

Legs: hind femora with a patch of short hairs on the venter.

Abdomen with a narrow transverse chitinous bar on each segment except the last, those on the fourth to eighth segments indistinct, especially in the middle of the abdomen. Tergites and sternites with lightly chitinous transverse bands, the former being wider than the latter and possess one row of hairs on their posterior margins. Sternites covered with short hairs; on the fourth and fifth sternites the hairs are slightly more numerous at the sides. Spiracles present on the lateral margins of the third to eighth segments. Pleurites distinct. Male genitalia with the basal plate short and broad; parameres elongated and narrow, curved inwards.

Genotype: *Eucolpocephalum robustum* nov. sp.

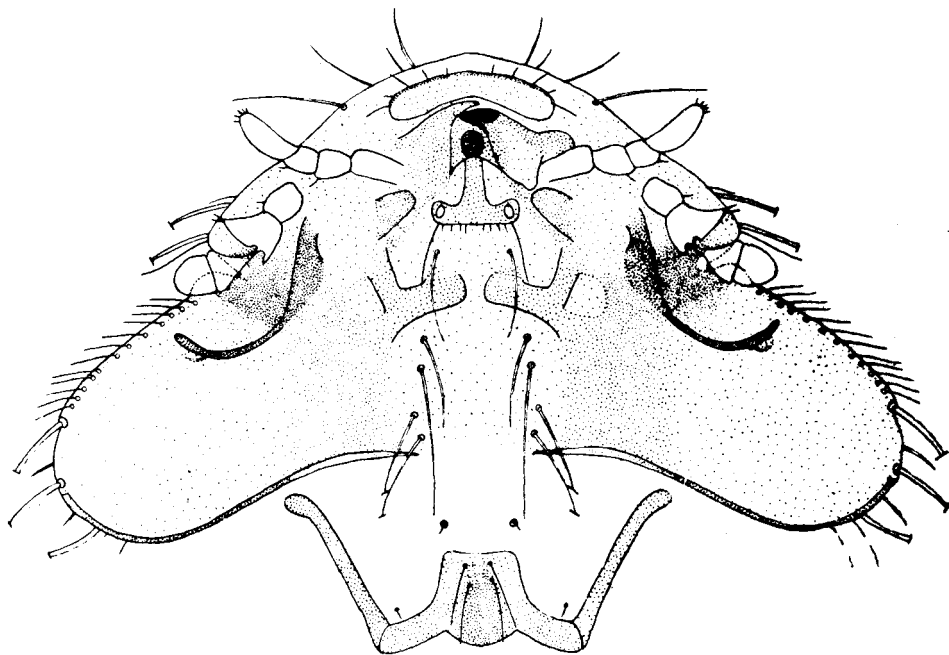
Eucolpocephalum robustum nov. sp.

(Fig. 6.)

A robust form, yellowish-brown in colour.

FEMALE.—*Head*: On the margin of the forehead there are eight hairs on each side, four being situated just above the lateral notch. On the dorsal surface there is a transverse row of four longish hairs between the notches, and above the outer ones there is a long hair and two short ones above it; behind the anterior margin there are two short admedian hairs and four longer ones below them; on the temples there are six long hairs and several short ones; a short hair close to each eye, and five or six long hairs on the posterior margin. All the long hairs arise from large pale pustules. On the venter there are five

short hairs on each side of the meson in front of the mandibles, two longitudinal rows of three short hairs behind the mandibles, and four longer ones on each side on the gular region. Palpi long, projecting beyond lateral margins of head. Antennae four-jointed, the second joint with a marked anterior expansion, the third constricted at the base.



G. A. H. B. del.

FIG. 6.

Eucolpocephalum robustum nov. sp., venter of head and sternal plate of female.

Thorax: Pronotum with one or two short hairs at the lateral angle, and two long ones on the margin beneath them; on the posterior margin there are ten long hairs and one short one on each side between the outer pair. Below the transverse bar there are four hairs, the median pair being minute. Metanotum with a transverse row of four hairs in front, beneath the outer ones a short and minute hair on each side, and a row of long and short hairs on the posterior margin.

Abdomen widest at the fourth and fifth segments. Tergites i to vii with a row of long and short hairs on the posterior margins; tergite viii with eight long hairs on the posterior margin; tergite ix with a transverse row of four hairs on each side above the posterior margin. Sternites and pleurites with numerous short hairs. The borders of the vulva are closely beset with a row of fine hairs.

MALE.—Resembles the female, except in size. Genitalia with the basal plate short and broad, widest in the middle; parameres elongated and narrow, curved inwards. Near the base of the parameres there is a pair of small plates, each with a well-developed curved hook, and above them another pair of small plates with a similar hook at their posterior extremities.

	Measurements.			
	Female.		Male.	
	Length.	Width.	Length.	Width.
Head.....	Mm. 0.44	Mm. 0.85	Mm. 0.38	Mm. 0.76
Prothorax.....	0.30	0.65	0.28	0.59
Meso- and meta-thorax.....	0.28	0.82	0.27	0.72
Abdomen.....	2.04	1.44	1.70	1.05
TOTAL.....	3.06		2.63	

Holotype: a female.

Described from three females and two males taken off *Platalea alba* Scop. (African spoonbill), at Capetown, Cape Province, in July, 1923.

SUPER-FAMILY *ISCHNOCERA* KELLOGG.

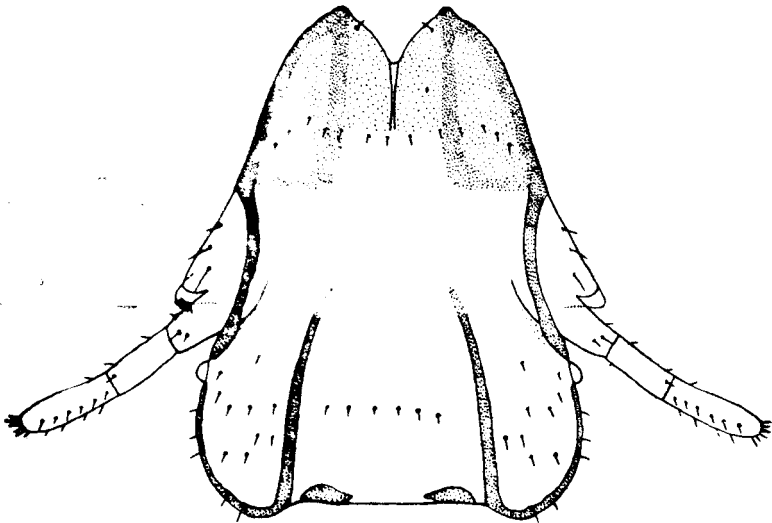
FAMILY *TRICHOPEURIDAE* KELLOGG.

GENUS *Tricholipeurus* Kellogg

Tricholipeurus lerouxii nov. sp.

(Fig. 7.)

FEMALE.—*Head* (fig. 7) light brown, median area pale, with reddish-brown bands and mandibles. Forehead with about ten hairs on each lateral margin and a transverse row of about thirteen minute



G. A. H. B. del.

FIG. 7.

Tricholipeurus lerouxii nov. sp. dorsum of head of female.

MALLOPHAGA FROM SOUTH AFRICAN HOSTS.

pustulated hairs on the dorsum. On the venter there are several similar hairs on each side and a row of four in front of the mandibles; behind, close to the base of each antenna there is a longer hair. Temples with a narrow marginal band and with several minute pustulated hairs on their dorsum and lateral margins. On the dorsum of the hind head there is a transverse row of six minute hairs in the middle. Occipital bands long and narrow, sub-parallel; similar bands present on venter. Signature on gular region triangular. Antennae with the apical segment the longest. Trabeculae triangular.

Thorax same colour as head with narrow, lateral, dark bands.

Pronotum with a minute pustulated hair on each side of the meson and four or five on each side on the posterior margin.

Metanotum with about fourteen similar hairs on the posterior margin. The acetabular bars extend backwards between the mid coxae. Between the hind coxae there are two small pustulated hairs.

Legs with the mid tibiae slightly longer and narrower than the fore and hind tibiae.

Abdomen elongated and narrow, pale in colour, with a brown transverse band and a row of minute pustulated hairs on the dorsum and venter of each segment, the bands on the tergites being wider than those on the sternites. Apical sternites similar to those of *T. trabeculae* Bedford and *T. reduncae* Bedford. Pleurites well developed with several minute pustulated hairs on the posterior margins. Between each of the pleurites i to vi there is a small chitinized spot. Spiracles large, present on segments ii to vii.

	Measurements.	
	Female.	
	Length.	Width.
Head.....	Mm.	Mm.
Prothorax.....	0.44	0.33
Metathorax.....	0.08	0.25
Abdomen.....	0.4	0.31
	1.05	0.45
TOTAL.....	1.67	

Described from two females taken off a *Sylvicapra grimmii* (duiker) near the Umfolozi River, Zululand, August, 1929 (Coll. P. L. le Roux). This new species resembles *T. aepycerus* Bedford in the shape of the head, and the apical sternite is similar to those of *T. reduncae* Bedford and *T. trabeculae* Bedford (15th Rep., Dir. Vet. Services, Union of S.A., fig. 19, 1929). The apical sternite of the female of *T. aepycerus* is very distinct (same report, fig. 18).

GENUS LIPEURUS NITZSCH.

Lipeurus waterstoni nov. sp.

(Fig. 8, a-d.)

FEMALE.—*Head* (fig. 8) pale brown in colour with brown to dark brown marginal bands and markings; longer than wide; forehead rounded in front. On the venter there is a row of four hairs situated a short distance behind the anterior margin, and two more, one on each side below the outer pair; between each antenna and mandible there is also a hair. Occipital bands long and narrow. Signature on gular region about twice as long as broad.

Thorax pale with dark brown lateral margins.

Prothorax narrower than the head, lateral margins slightly rounded; on the pronotum at each latero-posterior margin there is a long hair. Sternal plate as in fig. 8c.

Metathorax gradually widening from base to apex; on the dorsum there is a short and minute hair at each latero-posterior angle, and on the posterior margin there are two pairs of long hairs on each side, each pair situated in a small pale area.

Legs with the femora short and broad; tibiae short.

Abdomen with markings and hairs on the dorsum as shown in fig. 8b. Sternites i to v each with a hair on each side of the meson. Sternite vi with a pair of anterior hairs on each side and two pairs behind. Sternite vii with one pair of median hairs. Sternite viii with a semi-circular row of short hairs.

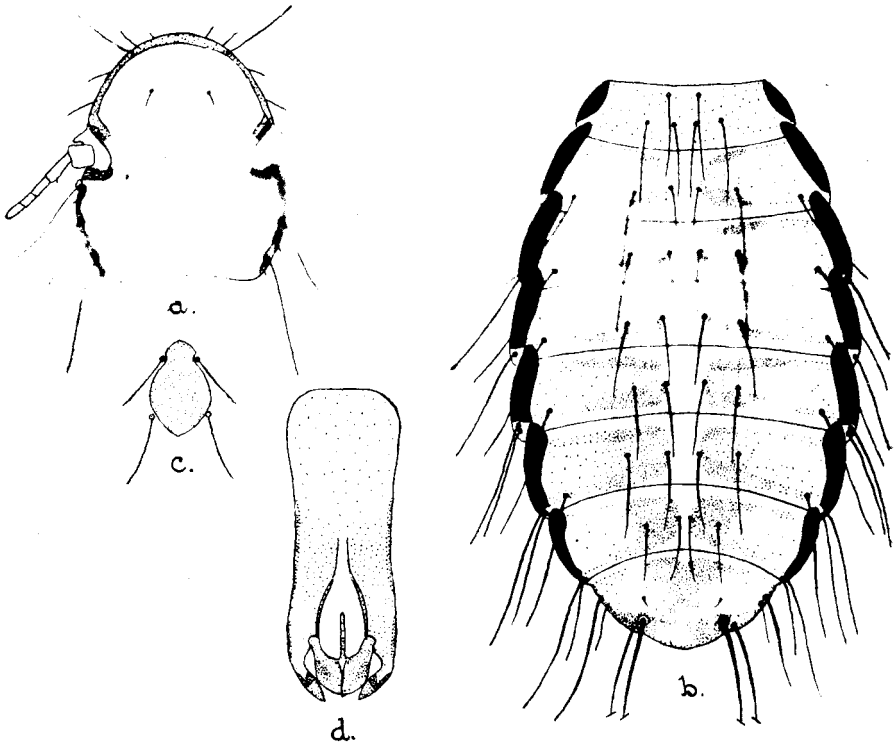
MALE.—*Head* and *thorax* as in the female, except that there are five to six hairs on each side on the posterior margin of the metanotum instead of only four.

Abdomen with hairs and bands on tergites i to vii as in the female, except that the latter are more uniform in colour. Tergite viii with transverse bands similar to those on tergite vii, except that they are more curved. Tergite ix pale at the base, brown at the apex, with two hairs on each side and four on the posterior margin. Male genitalia as in fig. 8d.

	Measurements.			
	Female.		Male.	
	Length.	Width.	Length.	Width.
Head.....	Mm.	Mm.	Mm.	Mm.
Prothorax.....	0.57	0.49	0.53	0.43
Metathorax.....	0.14	0.34	0.14	0.31
Abdomen.....	0.2	0.52	0.18	0.43
	1.32	0.81	0.98	0.64
TOTAL.....	2.23		1.83	

Halotapeia female.

Description from two females and two males taken off *Scleroptila gutticeps pallidior* Neumann (Ovambo partridge) on the Kunene River, South-West Africa, in March, 1923 (Coll. Dr. R. F. Lawrence).



G. A. H. B. det.

FIG. 8.

Lipcurus waterstoni nov. sp. (a) head of female; (b) dorsum of body of female; (c) sternal plate; (d) male genitalia.

At first we were inclined to place this species in a new genus owing to the absence of appendages on the antennae of the male, and also to the general structure of the male copulatory apparatus, but after considering the matter over carefully finally decided that it should, at any rate for the present, be retained in the genus *Lipcurus*.

The presence or absence of an appendage on the male antennae is certainly not by itself of any generic importance. For instance, the genus *Rothlischildia* includes species that possess an appendage on the antennae of the male and also species which have no appendages on the male antennae. The male genitalia of *waterstoni* are certainly very distinct from other known species of *Lipcurus*, but in other respects, namely, the general shape of the head, thorax, and abdomen, chaetotaxy, shape of the sternal plate, and markings on the abdomen of the female, it very closely resembles certain species, especially *L. thomasi* Bedford. The abdominal markings are usually very dimorphic in *Lipcurus*, but in *waterstoni* they are very similar in both sexes.

L. waterstoni is more closely allied to *L. pternistis* than are a number of other species included in this genus.

Degeeriella nigromarginata (Piaget) found on an Asiatic pheasant, *Euplocamus horsheldi*, is closely related to *waterstoni* and must be included in the same genus.

GENUS COLLIPEURUS NOV.

Species elongated. *Head* similar in both sexes, longer than wide, widest at the temples. Forehead rounded in front, chitinous bands absent, except for a narrow dark band on each side. Eyes well developed. Temporal bands present. Mandibles situated between antennae. Pharyngeal plate small, glands well developed. Antennae 5-jointed, first segment considerably larger in the male than in the female; third segment of male with an appendage.

Prothorax wider than long. *Metanotum* with the lateral margins divergent, posterior margin almost straight with several hairs arranged in pairs, the two admedian pairs being very long.

Abdomen pale, with dark lateral bands and markings, the markings differing in both sexes. Male genitalia with the basal plate short, parameres large and curved, projecting outwards. Species found on Coliidae and Ploceidae.

Genotype: *Esthiopterum colius* Bedford found on *Urocotilus indicus transvaalensis* Roberts.

Both *Esthiopterum radiatum* (Neumann) described from specimens taken off an unknown host and *E. nua* (Neumann) found on *Ploceus abyssinicus* should be included in this genus. The latter was described as a variety of the former.

The three species conform to the same type, except that in *colius* (7th and 8th Report, Dir. Vet. Res., Union of S.A., p. 731, pl. 7, f. 1, 2) the mesonotum appears to be distinct from the metanotum owing to a dark transverse band on each side, whereas in *radiatus* they appear from Neumann's figure to be indistinguishable. The transverse abdominal markings shown in the figure of *colius* are ventral, not dorsal.

GENUS NAUBATES NOV.

Esthiopterine form of medium size (about 3.5 to 4 mm.), highly chitinized and brown to dark brown in colour. *Head* shaped as in figs. 9 and 10. Clypeus hyaline. Clypeal signature brown, almost as long as broad, rounded in front, with transverse striae along anterior margin. On the lateral margins of the forehead there is a chitinized band which is interrupted by a narrow clear space; at the interruption the basal portion turns inwards and then backwards, either for a short distance, or continues backwards and inwards, finally joining the band on the opposite side. On the venter of the forehead there is a longitudinal chitinized band on each side. Trabeculae present. Eyes well developed. Temporal bands present. Above the mandibles there is a narrow transverse plate. Pharyngeal sclerite and glands present. On the venter of the hind head there is a longitudinal band on each side extending to the base of the mandibles.

Prothorax wider than long, prosternal plate small, elongated. *Metanotum* with lateral margins slightly divergent, the posterior margin projecting backwards in the middle; on each side near the latero-posterior angle there are four longish hairs arising from a clear space, and in addition to these one or two shorter ones. Sternal plate large.

Abdomen with a dark transverse chitinized band and darker lateral bands on each segment; on the venter the bands are narrower. Spiracles present on the second to seventh segments. Last segment of female bilobed at the apex. Male genitalia with the basal plate of medium length, sides sub-parallel; parameres asymmetrical, the one being longer and sometimes broader than the other.

Species found on sea-birds belonging to the families Hydrobatidae and Diomedidae.

Genotype: *Esthiopterum fuliginosum* (Taschenberg).

In this genus must also be included *N. harrisoni* nov. sp. and *N. pachodroma* nov. sp.

This genus is quite distinct from *Pseudonirmus* Mjöberg, which includes *charcoti* (Neumann) and *gurlti* (Taschenberg), both found on species of *Hydrobatidae*. It is difficult to understand why Harrison sunk *Pseudonirmus* as a synonym of *Esthiopterum*, as the former has priority over the latter.

Naubates harrisoni nov. sp.

(Figs. 12, 14, and 16b.)

Three males and one female taken off *Ardenna gravis* O'Reil (great shearwater) at Capetown, C.P., 1929 (Coll. Dr. R. F. Lawrence). This new species is very closely allied to *N. fuliginosus*, from which it can be distinguished by the shape of the plate on the apical sternites of the female (compare figs. 12 and 11) and the male genitalia (compare figs. 16A and 16b). The longitudinal band on the venter of the forehead is slightly less curved in *harrisoni* than in *fuliginosus*, and the clypeal signature is slightly narrower in the male than in the female, whereas in *fuliginosus* the signature is similar in both sexes.

	Measurements.			
	Female.		Male.	
	Length.	Width.	Length.	Width.
Head.....	Mm. 0.98	Mm. 0.69	Mm. 1.05	Mm. 0.67
Prothorax.....	0.29	0.5	0.29	0.48
Metathorax.....	0.48	0.71	0.44	0.71
Abdomen.....	2.39	1.0	2.53	0.87
TOTAL.....	4.14		4.31	

Holotype: a male.

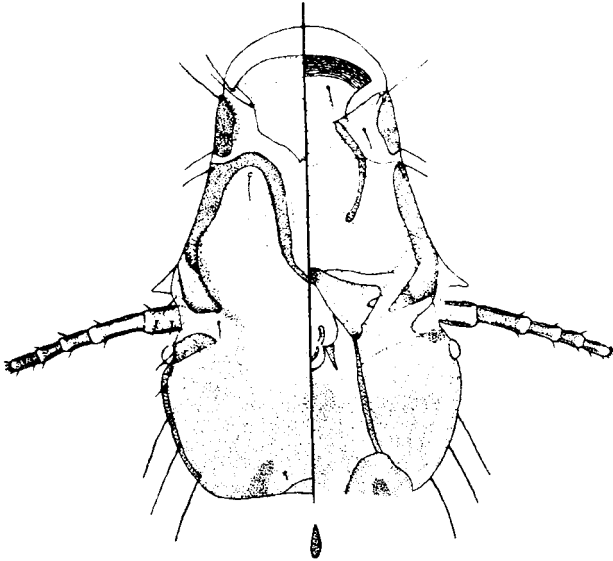


FIG. 9.

Naubates fuliginosus Tasch., dorsum and venter of head and pro-sternal plate of female.

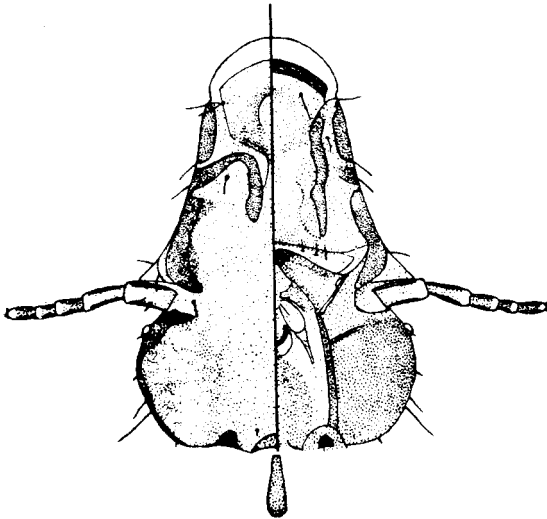


FIG. 10.

Naubates pterodromi nov. sp., dorsum and venter of head and pro-sternal plate of female.

G. A. H. B. del.

Naubates pterodromi nov. sp.

(Figs. 10 and 13.)

FEMALE.—The head is slightly narrower in front of the trabeculae and the temples more rounded than in either *fuliginosus* or *harrisoni* (compare figs. 10 and 9). Other differences to be noted are the shape of the clypeal signature, the chitinized bands on the dorsum and venter of the forehead, and the hairs on the margins of the temples.

Prothorax with the latero-posterior angles acute.

Abdomen dark brown, without hairs on the dorsum, except for one or two near the latero-posterior margins of each segment; tergites ii to vi each with a narrow, indistinct, pale, transverse line extending between the spiracles. On the venter there are two or three hairs on each side of the meson on the posterior margins of the sternal plates, except on the apical plates, which are shown in fig. 13.

Measurements.		
Female.		
	Length.	Width.
	Mm.	Mm.
Head.....	0.89	0.61
Prothorax.....	0.20	0.42
Metathorax.....	0.40	0.67
Abdomen.....	2.10	0.89
		(4th segment)
Total.....	3.59	

Described from three females taken off *Pterodroma macroptera* Gm. (Cape parson), at Capetown, C.P., 1929 (Coll. Dr. R. F. Lawrence).

Received for publication: 31/3/1930.

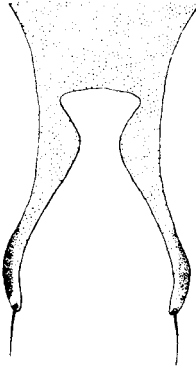


FIG. 11.
Naubates fuliginosus Tisch,
apex of apical sternal plate of female.

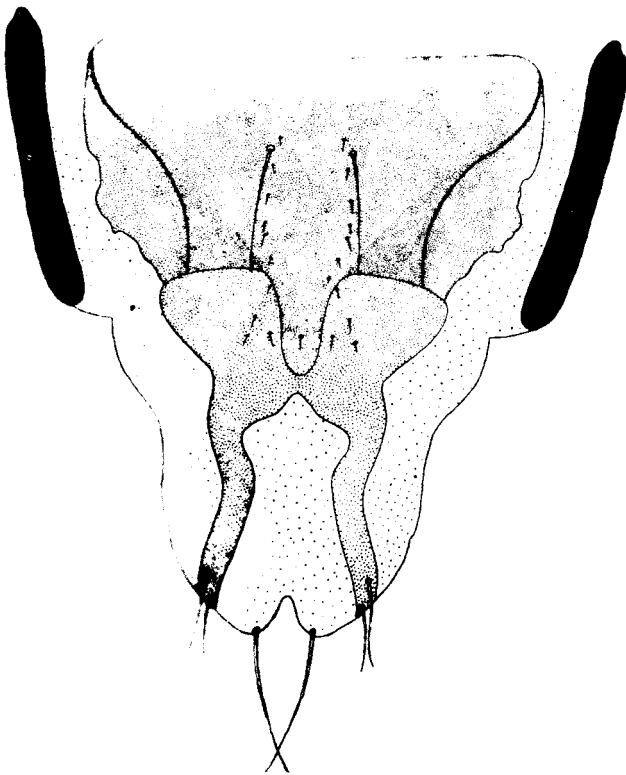


FIG. 12.

Naubates harrisoni nov. sp., apical sternites of female.

G. A. H. B. del.

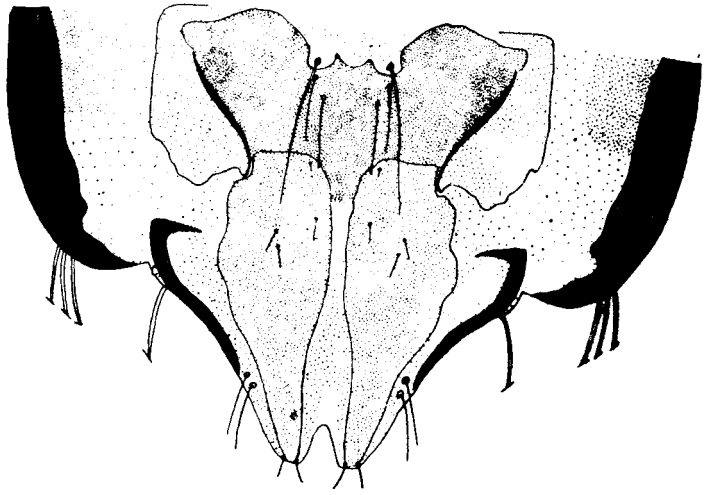


FIG. 13.
Naubates pterodromi nov. sp., apical sternites of female.

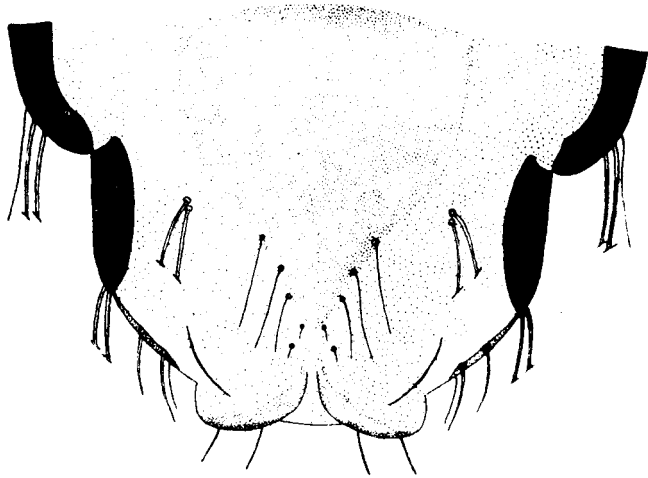


FIG. 14.
Naubates harrisoni nov. sp., apical sternites of male.

G. A. H. B. del.

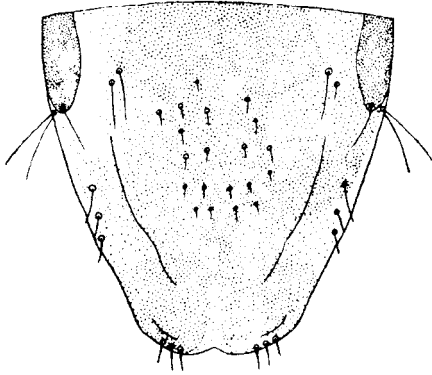


FIG. 15.
Naubates fuliginosus Tasch., apical sternites of male.

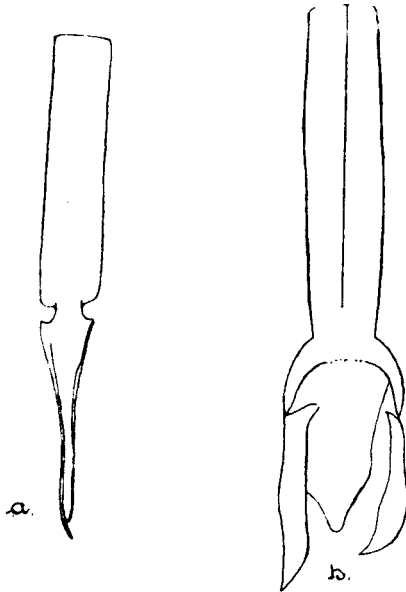


FIG. 16.
Male genitalia of (a) *Naubates fuliginosus* Tasch., (b) *N. harrisoni* nov. sp.
G. A. H. B. del.