

ANOPLURA AND MALLOPHAGA FROM AFRICAN HOSTS.

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(PLATES IV and V).

The descriptions of new, and determinations of old, species of Anoplura and Mallophaga presented in this paper are based on a small collection of these ecto-parasitic insects taken from mammals and birds of the Egyptian Sudan and other North and West African localities. The collection was made by various collectors, as indicated for each species, and was submitted to us by Mr. Guy A. K. Marshall, Scientific Secretary of the Entomological Research Committee (Tropical Africa) of the British Colonial Office.

ANOPLURA.

Pediculis capitis, De Geer.

Specimens from the head of a man (Dinka), near Bor, Egyptian Sudan (*H. H. King*); also specimens from the loin-cloth of a woman (Dinka), Azzar, near Bor, Egyptian Sudan (*H. H. King*).

Hæmatopinus asini (Linn.) Stephens.

From horse, Khar Altar, Angelo, Egyptian Sudan (*H. H. King*).

Hæmatopinus peristictus, sp. n. (Pl. IV, figs. 3 and 6).

Males and females from several wart-hogs (*Phacochoerus æthiopicus*), Akamanga, North Nyasa (*Dr. J. B. Davey*), and from a bush-pig (*Potamochoerus choeropotamus*) Fort Hill, North Nyasa (*Dr. J. B. Davey*).

This striking new *Hæmatopinus* shows similarities with *H. suis* (Linn.) Leach, the common louse of swine, but differs markedly in its short head, the reduced character of its ocular projections, and the arrangement of its markings.

FEMALE.—Length, 5 mm.; width, 3 mm. General colour yellowish brown, with distinct darker (brown to blackish brown) markings on head, thorax, legs and abdomen. *Head* short, as wide as long (in this character differing much from *H. suis*, which has a narrow head, twice as long as wide). Ocular projections slight and blunt. A blackish brown transverse band across the front of the head, and small blackish brown blotches bordering the front of the ocular projections. *Thorax* sub-pentangular, with curving lateral margins and straight anterior and posterior margins. Strongly patterned with blackish brown bars irregularly radiating from a central spot (Pl. IV, fig. 3). Legs very heavy and strong, the tibiæ larger than the femora; with strong blackish brown bands and blotches, as shown in the figure. *Abdomen* three-fourths as wide as long and with the swollen, rounded margins of the segments projecting laterally, although there is only one inter-segmental suture which is distinct (on dorsal surface)

entirely across the abdomen; this is the suture between segments 5 and 6. Last segment angularly emarginate behind, forming two tooth-like pieces; when these pieces are brought together their tips meet behind a small open space. All segments with distinct brownish black lateral blotches just inward from the spiracles, each of which is set in a small brown circular spot; on the middle of the segments are pairs of short lateral brown bars, thicker and shorter on the posterior segments (Pl. IV, fig. 3).

MALE.—Length, 4 mm.; width, 2.24 mm. Posterior segment not emarginate (or toothed) but entire and with a conspicuous tuft of several short hairs in each postero-lateral angle (Pl. IV, fig. 6).

Linognathus vituli (Linn.) Dalla Torre.

Specimens from calf, Songwe River, N. Nyasa (*Dr. J. B. Davey*).

Linognathus africanus, sp. n. (Pl. IV, figs. 1, 5).

Males and females from sheep, Abeokuta, Southern Nigeria, W. Africa (*J. J. Simpson*).

This new *Linognathus* is rather near *L. vituli*, the common long-nosed louse of the ox, but has a shorter and broader head, a larger, broader body and the antennæ with the basal two segments curiously large.

FEMALE.—Length, 2.5 mm.; width, 1 mm.; the body of the female is thus only about $2\frac{1}{2}$ times as long as the width of the abdomen, and the head is hardly twice as long as broad. *Head* with the antennæ inserted in front of the middle, the two basal segments being conspicuously larger than the following segments. *Thorax* at its anterior end only slightly wider than widest part of head, but gradually widening posteriorly. The lateral margins are straight, slightly diverging lines, showing some brown coloration and chitinous thickening, with short tapering brown chitinized lines projecting diagonally towards the middle of the segments. Pro-, meso-, and meta-segments all so fused as to be hardly distinguishable. One pair of longish, strong, almost spine-like hairs on dorsal surface of the meso-segment, the whole thorax otherwise without hairs. *Abdomen* broader in relation to its length than in *L. vituli*, and with entire, flatly convex margins. The segments are so fused that they are distinguishable only by the position of the spiracles and transverse dorsal rows of short hairs, there being five of these rows, one of which is shorter than the others, on each segment (Pl. IV, fig. 1). There are two or three hairs in the postero-lateral angle of each segment, one, then two, of these hairs getting progressively longer from the anterior to the posterior end of the abdomen. Last segment of female with entire posterior margin and few hairs.

MALE.—Length, 1.54 mm.; width, .54 mm. Last segment of abdomen with a small rounded projection at middle of posterior margin, and with numerous short spiny hairs on each side of this swelling; one specially strong, spine-like, but short hair on each lateral margin of the swelling. Ground colour of whole abdomen pale translucent yellowish brown; the male genitalia usually showing through, dark brown in colour (Pl. IV, fig. 5).

Linognathus forficula, sp. n. (Pl. IV, figs. 2, 4).

Many females from a reed-buck (*Cervicapra arundinum*), George's, Marimba District, Nyasaland (*Dr. E. H. Allon Pask*).

This curious new *Linognathus* is readily distinguished from any other species, so far included in the genus, by the conspicuous forceps-like pair of curved, pointed, posteriorly projecting, abdominal processes of the female. It is most nearly resembled by *L. brevicomis* and *L. tibialis* from antelopes, each of which has an emarginated posterior abdominal border, producing two short obtuse projecting processes, but these processes are not of the forceps-like character which is so pronounced in the new species.

FEMALE.—Length, 2.34 mm.; width, .74 mm. A striking species with plump whitish long abdomen and pale brown short thorax and head. *Head* with large thick-jointed brown antennæ inserted in front of the middle, and with anterior end of head strongly chitinized. But few short hairs on dorsal surface of head and one pair of soft longish ones arising near the postero-lateral margins, which margins are bordered with a strongly chitinized dark brown band. *Thorax* short, broad, with diverging lateral margins and bearing one pair of strong longish hairs and several minute hairs on the dorsal surface. Entire thorax brownish, because of strong broad diagonal bands that practically cover the dorsal surface. Legs brown, except at sutures which are whitish. *Abdomen* a little more than twice as long as wide, whitish, except last segment which is brown, with numerous rather longish hairs arranged segmentally in short transverse series on the dorsal surface, each series only extending across the median half of the segment. Two long conspicuous hairs in each postero-lateral angle of the two penultimate segments, and many shorter hairs on the lateral margins of the last forcipated segment. The forceps is made by a deep emargination of the posterior border of the last segment, which emargination, *i.e.*, the inner margin of the forceps, is also lined with short hairs. On the ventral aspect of the posterior end of the abdomen there is a curious, bluntly two-pointed process (Pl. IV, fig. 4).

MALLOPHAGA.

Trichochetes climax, Nitzsch.

Numerous specimens from goats, Ilesha, Southern Nigeria, W. Africa (*J. J. Simpson*).

Nirmus fuscus, Nitzsch.

Several specimens from an unknown species of owl, Malachal, Egyptian Sudan (*H. H. King*).

Nirmus varius, Nitzsch (Plate V, figs. 5, 5a).

One female from a white-necked raven (*Corvultur albicollis*), Oshogbo, Southern Nigeria (*J. J. Simpson*), and an immature specimen from a starling Malachal, Egyptian Sudan (*H. H. King*). As Piaget has figured only the head of this striking form we have given an illustration of the whole insect, showing the genital blotch (Pl. V, fig. 5a).

Nirmus vulgatus, Kellogg.

Numerous specimens from the starling and one from an owl, Malachal, Egyptian Sudan (*H. H. King*). This is the first record of this American species, which is found widely distributed on American passerine birds, from a host in the Old World.

Coniocotes gigas, Taschenberg.

Two males and a female from a guinea fowl (*Numida mitrata* ?), Azzar, near Bor, Egyptian Sudan (*H. H. King*).

Goniocotes aegypticus, sp. n. (Pl. V, figs. 2, 2*a*).

One female from a blue pigeon, Malachal, Egyptian Sudan (*H. H. King*). Resembles Piaget's *G. major*, but differs in the hairs of the abdomen, last segment of the abdomen in the female, &c. It also resembles Taschenberg's *G. procerus*, but differs from it in about the same particulars and also in the shape of the abdomen, which is broader than in *G. procerus*.

FEMALE.—Length, 2.3 mm.; width, 1.8 mm.; light yellowish brown, with dark red-brown markings. *Head*: length, .6 mm.; width, .8 mm.; broad, conical, front rounded, with five short prickles on either side. Marginal frontal band yellowish brown, a little darker than ground-colour of head, turning inward just before the antennæ and ending in a red-brown blotch. Antennæ short; length of segments diminishing towards the end; a hair on the dorsal surface near the base of the antennæ. Eye with a short prickle. A marginal band extending around the temples and occiput, with colour little different from the ground-colour of head, except around the eye, where there is a red-brown blotch, and on the sinuous occiput which is also red-brown. Angles of temples acute, protruding, with two long hairs and one shorter one arising from a large curious projecting pustule (Pl. V, fig. 2*a*); also a minute prickle between the two long hairs. *Thorax*: length, .5 mm.; width, .7 mm.; with red-brown marginal bands. Prothorax trapezoidal; sides straight, diverging; a long hair in the posterior angles; posterior margin straight. Metathorax with lateral margin convex; two long hairs set close together arising from the central lateral angle. Posterior margin angled on abdomen, angle rounded, obtuse. A hair on each side of posterior marginal angle and another on the surface about midway between the meson and the lateral margin. The coxal bands distinct. *Abdomen* elliptical; last segment divided. Long hairs in the posterior lateral angles and two hairs on each side of all the segments, except the last, arising midway between the meson and lateral margins; median hairs apparently lacking on all but sixth and seventh segments.

Akidoproctus stenopygus, Nitzsch (Pl. V, figs. 6, 6*a*, 6*b*).

Three female specimens of this pale form from the spurwing goose (*Plectropterus gambensis*), Khor Felos, Egyptian Sudan (*H. H. King*). We figure this form owing to the fact that the only female heretofore known was headless. Taschenberg is of the opinion that this species is identical with *A. maximus*,

Piaget. This is owing to the fact that he considered his specimens as immature and that they had not as yet developed abdominal blotches. Our specimens, however, which are without question mature, show this to be a distinct species.

Liperus baculus, Nitzsch.

Two specimens from a blue pigeon, Malachal, Egyptian Sudan (*H. H. King*).

Liperus gambensis, Piaget.

A number of specimens, male and female, of this striking form from the spurwing goose (*Plectropterus gambensis*), Khor Felos, Egyptian Sudan (*H. H. King*).

Colpocephalum flavescens, Nitzsch.

Several specimens of this well marked species from a vulture, Oshogbo, Southern Nigeria (*J. J. Simpson*).

Colpocephalum semicinctum, Rudow.

A number of specimens, both sexes, from a white-necked raven (*Corvus albicollis*), Oshogbo, Southern Nigeria (*J. J. Simpson*).

Colpocephalum sjoestedti, Kellogg.

One female from a spotted rat, Kyetume, by Kampala, Uganda (*Dr. R. van Someren*). This host of course is not normal and shows straggling. Also another *Colpocephalum*, species not determined, was recorded from the spotted rat. This is also, probably, a straggler.

Menopon mesoleucum, Nitzsch (?).

One specimen from an owl and one from a starling, Malachal, Egyptian Sudan (*H. H. King*).

Menopon pallidum, Nitzsch.

Several specimens from a chicken, Meko, Southern Nigeria (*J. J. Simpson*).

Menopon spinosum, Piaget.

A male and a female from a starling, Malachal, Egyptian Sudan (*H. H. King*).

Menopon africanum, sp. n. (Pl. V, fig. 3).

Three adult female specimens and one immature, from the spurwing goose (*Plectropterus gambensis*), Khor Felos, Egyptian Sudan (*H. H. King*). This species is unlike any of the few *Menopons* so far found on geese or raptorial birds.

FEMALE.—Length, 1·8 mm.; width, ·8 mm.; light yellowish brown, with chestnut markings on head. *Head*: length, ·38 mm.; margin entire, with very shallow lateral depressions. Front rounded, with nine hairs on each side in front of the slight lateral depressions, one pair of which, arising just before the depression, is quite long. Mandibles prominent. Small chestnut ocular blotches, and two rather long hairs arising on the surface near these blotches. Other shorter hairs occur on the surface of the head, one arising from each of the prominent black ocular flecks. Temples rounded, bearing numerous hairs, three of which are particularly long. Occiput concave with two rounded chestnut blotches; occipital bands faintly discernible in one specimen. *Thorax*: length, ·36 mm.; width, ·52 mm.; pro- and meta-thorax about equal. Lateral and posterior margins of prothorax rounded, with but slight lateral posterior angles; a series of 18 stout spiny hairs on the lateral posterior margin, there being alternately a short one and then a long one. Metathorax with sides broadly diverging; a series of hairs, alternating in size, across the posterior margin; narrow lateral marginal bands. Legs with marginal bands on femur and tibia. *Abdomen*, elliptical; last segment as wide as the metathorax, rounded; series of hairs across each segment, alternating in size as on the thorax; longer hairs in the posterior angles of the segments; narrow marginal band on all except last segment with transverse blotches faint or lacking, at least on the dorsal surface.

Menopon antennatum, sp. n. (Pl. V, figs. 1, 1*a*, 1*b*).

Numerous specimens, both male and female, from the Guinea fowl (*Numida mitrata*), Azzar, near Bor, Egyptian Sudan (*H. H. King*). A small compact species with long slender antennæ. Entire insect of a dark golden brown colour, with no special markings and well clothed with hairs.

FEMALE.—The sexes differ in size and shape of abdomen, that of the female being somewhat elongate and elliptical; length, 1·3 mm.; width, ·68 mm. *Head*: length, ·3 mm.; width, ·42 mm.; uniform dark golden brown in colour, almost hemispherical in shape. Front rounded, with numerous long hairs as shown in the figure; temples narrow, protruding, with angles rounded; occiput concave with a narrow, darker marginal band; many long hairs on the temples and on the surface of the head. Antennæ long and slender (fig. 1*b*); fourth segment as long as the other three; third segment tapering; second segment about as long as the third but broader; first segment shortest. *Thorax*: length, ·22 mm.; width, ·44 mm. Prothorax with the colour slightly lighter in the centre; sides rounded, continuous with the convexly rounded posterior margin, bearing a series of about 36 long hairs arising from small pustules. Metathorax appearing like the first segment of the abdomen; three short stout spines on the broadly diverging sides; a series of long hairs on the posterior margin. Legs small, lighter in colour than rest of body. *Abdomen*: length, ·8 mm.; width, ·68 mm.; elliptical, almost uniform in colour, which is dark golden yellow; long hairs on the lateral margins of each segment near the middle; a series of from 20 to over 40 long hairs across the middle of each segment; eighth segment much wider than the others, with two rows of hairs; last segment ending in an angle.

MALE.—Length, 1.1 mm.; width, .64 mm.; abdomen, length, .6 mm., width, .64 mm., appearing almost circular; last segment with arrangement of hairs and genitalia shown in fig. 1*a*; genitalia not strongly chitinized.

Menopon nigrum, sp. n. (Pl. V, figs. 4, 4*a*, 4*b*).

Four specimens, two male and two female, of this strongly marked species, from a white-necked raven (*Corvultur albicollis*), Oshogbo, Southern Nigeria (*J. J. Simpson*). This form is closely related to others of the genus found on crows, especially to *M. mesoleucum*, Nitzsch, and to *M. picæ*, Denny. It differs, however, from the former in its abdominal markings, pustulated abdominal hairs, form of head, &c., and from the latter in the arrangement of its hairs and in other details.

FEMALE (Pl. V, fig. 4).—Length, 1.92 mm.; width, .76 mm. *Head*: length, .46 mm.; width, .64 mm.; front rounded, with rounded angles on the sides; ten hairs on each side, some of which are minute, and one very long one arising on the margin at the angle near the base of the antennæ. Eye prominent, emarginate, with a distinct black fleck. Antennal band broad, pitchy, extending to meet the lighter coloured occipital bands which are united at their anterior ends, and also extending forward and ending in a pitchy blotch on the margin. Temples broad, squarish, with a pitchy marginal band extending around the concave occiput; four very long hairs on the temples arising from large clear pustules; also several shorter hairs. *Thorax*: length, .46 mm.; width, .64 mm. Prothorax lenticular, rounded behind, with no marginal bands; series of hairs across posterior margin. Mesothorax distinct, with pitchy marginal band extending around to anterior margin. Metathorax also with pitchy marginal bands; posterior margin convex, rounded; sides of meso- and meta-thorax diverging. Legs with broad femora, with pitchy marginal bands on femora and tibiae. *Abdomen* elliptical; posterior margin of first segment convex, much enlarging that segment as is often the case in species of this group of the genus. Ground-colour rather dark, with a narrow pitchy lateral band and a dark chestnut transverse blotch extending across each segment. A series of hairs across each segment, arising from small clear pustules; very long hairs arising from the angles of the segments. On the under side of the first segment occurs a structure found in other members of this crow-infesting group, namely, two groups of short, stout spines as shown in fig. 4*b*.

MALE.—Length, 1.76 mm.; width, .62 mm.; the genitalia are strongly chitinized (fig. 4*a*); there is no fringe of hairs on the last segment, which is chitinized on its posterior margin.

Trinoton luridum, Nitzsch.

Two specimens of this common parasite of ducks and geese from the spurwing goose (*Plectropterus gambensis*), Khor Felos, Egyptian Sudan (*H. H. King*).

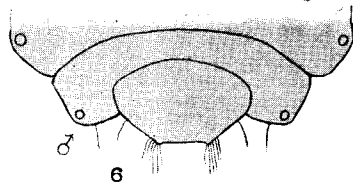
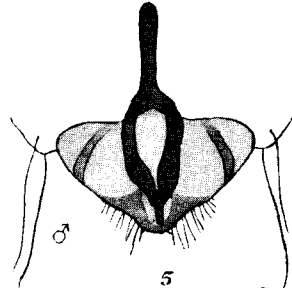
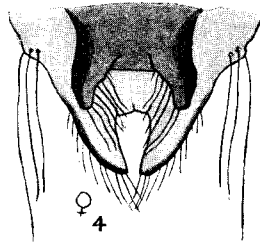
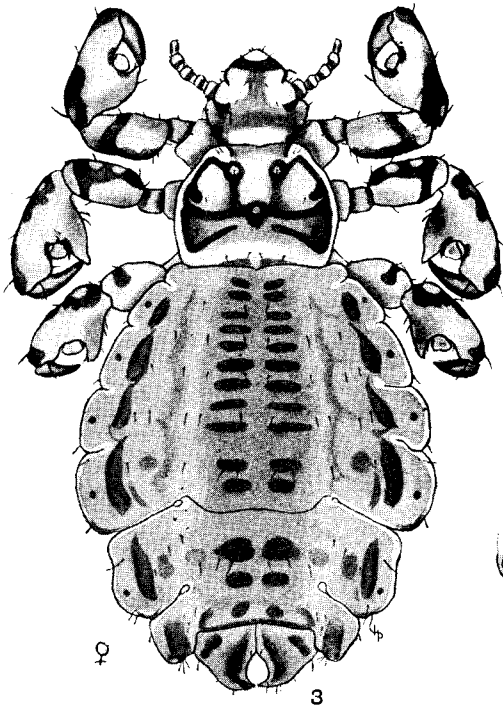
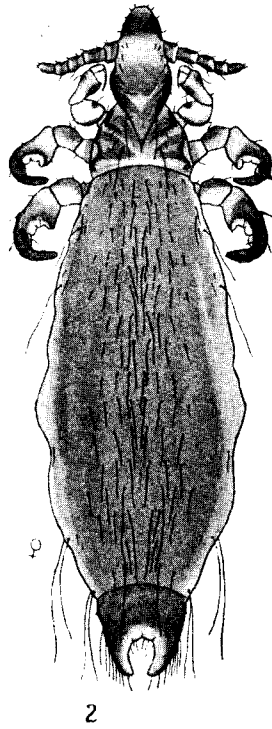
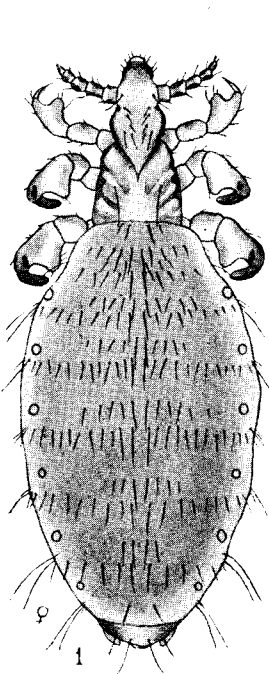
RHYNCHOTA.

Eoetenes eknomicus, Kellogg and Paine.

In addition to the Anoplura and Mallophaga this collection contained also two males and one female specimen of a new species of POLYCTENIDÆ (sub-order Hemiptera) taken from an unidentified bat from Khartoum, in the Egyptian Sudan (*H. H. King*). We have already described and figured this interesting parasite in the *Entomological News* (Philadelphia), vol. 21, pp. 401-403, pl. XIII.

EXPLANATION OF PLATE IV.

- Fig. 1. *Linognathus africanus*, n. sp. ♀.
2. *Linognathus forficula*, n. sp. ♀.
3. *Hæmatopinus peristictus*, n. sp. ♀.
4. *Linognathus forficula*; ventral surface of last segments, ♀.
5. *Linognathus africanus*; last segments of ♂.
6. *Hæmatopinus peristictus*; last segments of ♂.

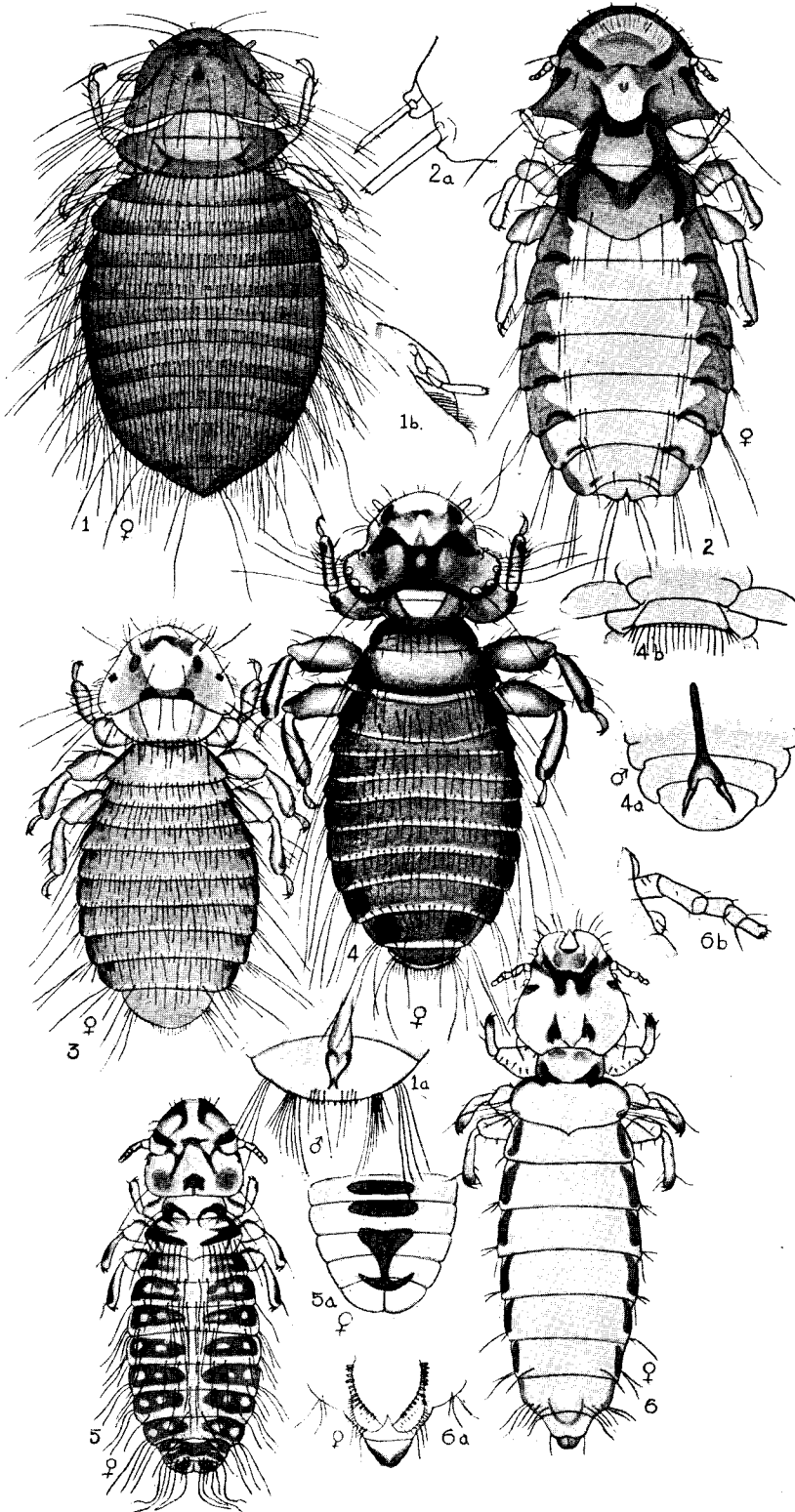


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AFRICAN ANOPLURA.

EXPLANATION OF PLATE V.

- Fig. 1. *Menopon antennatum*, sp. n. ♀.
- 1a. " " genitalia of ♂.
 - 1b. " " antenna, ventral side.
 - 2. *Goniocotes ægypticus*, sp. n. ♀.
 - 2a. " " temple showing pustule and hairs.
 - 3. *Menopon africanum*, sp. n. ♀.
 - 4. *Menopon nigrum*, sp. n. ♀.
 - 4a. " " genitalia of ♂.
 - 4b. " " first ventral segment.
 - 5. *Nirmus varius*, Nitzsch, ♀.
 - 5a. " " genital blotch of ♀.
 - 6. *Akidoproctus stenopygus*, Nitzsch, ♀.
 - 6a. " " last ventral segments.
 - 6b. " " antenna of ♀ enlarged.



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AFRICAN MALLOPHAGA.

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