

15. CORRODENTIA.

4. Mallophaga

by

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With 1 plate.

A collection of Mallophaga (biting lice of birds and mammals) taken from East African hosts was sent me in March, 1907, by Dr. YNGVE SJÖSTEDT. These specimens are part of the zoological collections made by his expedition to the region of Mts. Kilimandjaro and Meru, and constitute the first collection of Mallophaga made in this region. Twentyfour species of bird hosts and two species of mammal hosts are represented in the collection, which includes altogether 34 species of Mallophaga of which 13 are described herewith as new species. The most interesting forms in the collection are *Trichodectes colobi* n. sp., from *Colobus caudatus*, the first Mallophagan parasite to be recorded from a monkey, and *Colpocephalum sjøstedti* n. sp. from *Corvus scapulatus*, an aberrant *Colpocephalum* of the type of CARRIKER'S *Colpocephalum extraneum*, from a Costa Rican night-jar. The finding of these two similarly aberrant parasitic species on such widely distinct host and from such widely separated regions is of curious interest. For the two species a new genus should probably be established, but as this would only be the beginning in a much needed revision of one of the largest and most overloaded of Mallophagan genera which I cannot undertake at present, I simply follow CARRIKER in assigning the strange new type to *Colpocephalum*.

Until more hosts from this East African region are investigated and the number of Mallophagan species from this region largely augmented by assiduous collection, it is not worth while to attempt any general remarks concerning the host or geographic relationships of the East African Mallophaga. Nor is it hardly worth while to formulate synoptic tables of the few species so far known. From the descriptions and illustrations, coupled with the accurate host determinations (determ. SJÖSTEDT), students who may come into possession of Mallophaga from this region should have no difficulty in knowing what species have been already found and recorded. A complete list, with descriptions of all the new forms of the species in the collection, follows: —

Suborder *Ischnocera*.

Trichodectidæ.

Trichodectes colobi n. sp.

(Pl. 7, fig. 1.)

Many specimens, males, females, and young from the monkey *Colobus caudatus*. The first Mallophagan species to be recorded from the Quadrumana.

Male. Body, length 1.8 mm., width 0.66 mm.; pale, abdominal markings few and weak, head as long as broad and with emarginate clypeus. Head, length 5.3 mm., width 0.57 mm.; rather markedly hexagonal with anterior (clypeal) margin distinctly emarginate though not deeply; antennæ with first segment very large and strong; no well-defined markings, the light brown mandibles showing through, and the antero-lateral margins chitinized although not colored. Prothorax narrow and short; quadrangular with posterior margin straight. Metathorax wider than prothorax with well marked projecting medio-lateral angles reaching laterally nearly as far as postero-lateral angles of first abdominal segment; posterior margin flatly rounded. No thoracic blotches or other distinct markings. Abdomen elongate elliptical to ovate, with crenulated lateral margins, and narrow uncolored, translucent borders, but without blotches or other distinct markings; posterior segment narrowly rounded; a sparse covering of short spinous hairs over body but no long hairs; a row of very small stiff spines along the posterior margin of each of segments 2—6.

Female. Slightly larger than male, with the abdomen broadly truncate behind, and the crenulation of the lateral margins more pronounced. The antennæ are slender with the first segment no larger than 2nd or 3rd. No distinct markings.

Kilimandjaro: Kibonoto, rain-forest, 2000 m.

Trichodectes inæqualis PIAGET.

Numerous specimens, males, females and young, from *Mungos (Herpestes) caffer* GM. PIAGET'S specimens were taken from *Herpestes ichneumon*, Zool. Garden of Rotterdam.

Kilimandjaro: Kibonoto.

Phlopteridæ.

Docophorus episcopi n. sp.

(Pl. 7, fig. 2.)

One female from *Herodias alba*, five females from *Ephippiorhynchus* and numerous males and females from *Dissoura episcopus* or *microscelis*. A well marked form of the group *setosi*, characteristic of storks, distinguished by the curious fused double signature with its strongly chitinized protuberant posterior tips, and the very distinct straight clypeal suture. Much like, and evidently closely allied to PIAGET'S *D. indicus* from *Tantalus lacteus* (Java) and *D. unifasciatus* collected from *Polyborus vulgaris* but considered by PIAGET as undoubtedly a straggler from some species of stork or egret. The African specimens differ from *unifasciatus* in being of smaller size, having the abdominal blotches markedly larger, and the vulvar appendages not apparent.

Female. Body, length 3 mm., width 1.2 mm., strangely marked, the lateral abdominal blotches projecting well inward, and the whole head and thorax dark brown. Head, length 0.87 mm., width 0.94 mm.; thus being a little wider at the temples than long, but forming nearly an equilateral triangle with rounded angles; clypeus rounded and filled, except for very narrow clear anterior margin, by the large signature with two strongly chitinized processes projecting from the postero-lateral angles; six or seven prominent hairs arranged at regular intervals on temporal margins. All head dark brown, the occipital bands distinct. Prothorax, short quadrangular, with straight posterior margin, all colored brown with narrow clear median longitudinal line; a long and short hair in each postero-lateral angle. Metathorax but little wider than prothorax, with posterior margin nearly straight; a group of three long hairs rising from an uncolored space in each postero-lateral angle; whole segment dark brown except an uncolored median longitudinal line. Abdomen elliptical with broad ends; first segment all brown; 2nd to 6th each with strong large lateral blotches, blackish at margins, and bearing rather indistinct pustulations along posterior margin; 7th segment with complete transverse band narrower in middle than at ends; posterior segment slightly emarginate; a double transverse series of hairs on dorsum of each abdominal segment, the ones rising from the colored regions with more or less distinct pustulations.

Male, smaller but otherwise similar except as regards the posterior end of abdomen, which is slightly narrowly protuberant and rounded; the lateral abdominal blotches project farther toward the center.

Kilimandjaro-Meru: Natron Lakes.

***Docophorus icterodes* NITZSCH.**

Males and females from *Nyroca (Fuligula) capensis*. The specimens are all markedly paler than typical *icterodes*, and with the temples less flatly rounded, thus giving the head a noticeably different shape. They might well be regarded as a new variety of the species.

Kilimandjaro-Meru: Natron Lakes.

***Docophorus platystomus* NITZSCH.**

Males and females from *Buteo augur*. The marked difference in the genital blotch of the male from that of typical *platystomus* with other slight differences might well constitute a varietal distinction for the African specimens.

Kilimandjaro: Kibonoto.

***Docophorus sphenophorus* NITZSCH.**

Typical males and females of this *Docophorus* of the spoon bill recorded from *Platalea alba* and also from an owl, *Asio nisuella*. The specimens from the owl are almost certainly stragglers.

Kilimandjaro-Meru: Natron Lakes.

Nirmus kilimandjarensis n. sp.

(Pl. 7, fig. 3.)

One female recorded from *Buteo augur* but is more likely a straggler from *Colymbus capensis* which the collector notes as lying near the skin of *Buteo*. The parasite obviously belongs to the group *obsucrosuturati* of Nirmi characteristic of water birds.

Female. Body, length 2.1 mm.; width 0.4 mm.; a handsome, slender, well marked form. Head, length 0.5 mm., width 0.34 mm., long, narrow, flatly-rounded front, three longish hairs on each temporal margin behind the eye; signature with anterior part distinctly colored, but fading out posteriorly; antennal and clypeal bands strongly colored, and also temporal margins. Prothorax quadrangular with posterior margin straight; well-marked blackish-brown sub-marginal bands. Metathorax angulated on abdomen with five or six pustulated hairs along each postero-lateral margin. Abdomen long, slender, sub-parallel sided; blackish, segmental sub-marginal bands and dorsum of segments pale brown due to fusing, or nearly fusing, along median line of brownish, quadrangular lateral transversal abdominal blotches; indications of a median, longitudinal, uncolored line especially on segments 2—4; pair of small but distinct pustulations in middle of posterior margin of each segment; posterior segment narrow and with entire, narrowly-rounded margin; longish single hairs in postero-lateral angle of each segment except first and second.

Kilimandjaro-Meru: Natron Lakes.

Nirmus opisthotomus n. sp.

(Pl. 7, fig. 4.)

Males and females from *Himantopus himantopus* (two individuals). A new form well marked and distinguished by the character of the abdominal blotches and the truncate male abdomen but otherwise much resembling typical *furvus* and others of the group *obsucrosuturati* characteristic of wading birds.

Male. Body 1.44 mm., width 0.4 mm.; with well defined lateral transverse abdominal blotches and head and thorax brown with darker lateral margins. Head length 0.4 mm., width 0.33 mm., rather broad truncate clypeal front, suture behind clypeus fairly distinct, one very long and one long hair in temporal angles, trabeculae rather prominent; whole head brown, with well-marked, blackish-brown marginal bands. Prothorax nearly quadrangular with one longish hair in each postero-lateral angle; clear brown with sharply marked, blackish-brown lateral marginal bands. Metathorax with flatly rounded posterior margin; two long hairs in each postero-lateral angle, and three hairs successively smaller from outer one to inner one on posterior margin each side of the middle; segment clear brown with sharp blackish brown lateral margins. Abdomen, narrow elliptical with blackish-brown segmental lateral margins and well defined paler brown large lateral transverse blotches covering most of surface but not meeting at middle and hence leaving distinct rather broad uncolored median longitudinal line; uncolored lateral spaces at the sutures; the lateral blotches on segments 6—8 narrower and hence leaving wider uncolored

sutural spaces, but nearly or quite meeting on middle and hence obliterating median longitudinal line; posterior segment distinctly broadly truncate, even a little concave.

Female, length 1.7 mm., width 0.43 mm., like the male except larger and with dorsal transverse abdominal blotches not narrower on segments 6—8 but covering nearly the whole surface of each segment; posterior segment rather broadly rounded, with very slight emargination.

Kilimandjaro-Meru: Natron Lakes.

Nirmus signatus PIAGET.

Numerous males and females from *Recurvirostra avocetta*, *Himantopus himantopus*, *Herodias alba* and *Phalacrocorax africanus*. These specimens all agree in differing from PIAGET'S typical *signatus* (taken from *Recurvirostra avocetta*), by having the genital blotches of the female curved instead of approximately straight.

Kilimandjaro-Meru: Natron Lakes.

Nirmus pileus NITZSCH.

Numerous males and females (in company with *N. signatus*) from *Recurvirostra avocetta*.

Kilimandjaro-Meru: Natron Lakes.

Lipeurus afer n. sp.

(Pl. 7, fig. 5.)

Males and females from *Phalacrocorax africanus* and *Aplopelia larvata*, a dove. The specimens from *Aplopelia* may be stragglers as the *Lipeurus* belongs to the group *clypeati* peculiar to maritime birds, and especially well represented on cormorants. The new species is quite distinct from any form heretofore recorded, especially in the characters of the male.

Male, length 2.25 mm., width 0.38 mm., narrow-bodied with crenulate margins and strongly marked kidney-shaped segmental lateral blotches. Head, length 0.47 mm., width, 0.34 mm., clypeus rounded in front with distinct signature and distinct suture; antennae with first and second segments enlarged but much less than usual in male *Lipeuri* and with no projecting process on any segment; third segment very small; head brown with well marked antennal bands and eye spots; temporal margins without long hairs. Prothorax square, brown with darker well-marked lateral borders; no long hairs in postero-lateral angles. Metathorax a little longer and wider, also quadrangular, but with slightly projecting antero-lateral and postero-lateral angles; four or five long hairs in circular uncolored space in postero-lateral angles; posterior margin flatly concave on the abdomen; whole segment brown with well-marked darker lateral borders. Abdomen long and slender, sides sub-parallel as far back as segment 6, then tapering to tip; first segment narrower and larger than second, single longish hair in postero-lateral angle of each segment; all segments brown, with paler sutures especially laterally and on segments 3 to 7 and in less degree on 8, distinct lateral shining blotches of curious auricular or reniform outline, each blotch some distance mesad from the margin but connected with it by more

or less distinct stem or pedicel; last segment with narrow truncate posterior margin, bearing several short, separated spiny hairs.

Female, length 2.4 mm., width 0.67 mm., thus a little longer, and with body twice as wide as male; head also wider and heavier; abdomen not sub-parallel-sided but elongate elliptical and with broad terminal segment with flatly rounded posterior margin; whole body strongly colored, the abdomen with large lateral transverse blotches, and only slight indications near the margins and just behind the anterior edge of each segment of the curious shining blotches characteristic of the male.

Kilimandjaro-Meru: Natron Lakes.

Lipeurus secretarius GIEBEL.

One female from *Pseudogyps africanus*. This specimen I refer to *secretarius* with some doubt, but in the face of the lack of other specimens, especially males, I do not care to establish a new species for it. The species *secretarius* is recorded only from *Serpentarius serpentarius*.

Kilimandjaro-Meru: Steppe.

Lipeurus platalearum GIEBEL.

One male and one female from *Platalea alba*. Originally described from *Platalea leucorodia*.

Kilimandjaro-Meru: Natron Lakes.

Lipeurus hebraeus NITZSCH.

One male and two females from *Balearica regulorum gibbericeps*.

Kilimandjaro-Meru: Natron Lakes.

Lipeurus bifasciatus PIAGET.

Males and females from *Pelecanus roseus*. These specimens differ from typical *bifasciatus* in having the female provided with only very slight abdominal markings.

Kilimandjaro-Meru: Natron Lakes.

Lipeurus versicolor NITZSCH.

Males and females from *Ephippiorhynchus senegalensis*.

Kilimandjaro-Meru: Natron Lakes.

Liotheidæ.

Trinoton luridum NITZSCH.

Specimens from *Anas erythrorhyncha* and one young individual from *Hydrochelidon leucoptera*.

Kilimandjaro-Meru: Natron Lakes.

Læmbothrium titan PIAGET.

Specimens from *Circus ranivorus*, *Buteo augur* and *Colymbus capensis*. One of the largest Mallophaga yet recorded, exceeded in size only by *L. gypsis* (10.5 mm.) from a Griffon Vulture (Transvaal). This form differs from the Transvaal species by having the whole head a little broader (across the temporal angles) than long,

and by having the clypeal front short and broad; also by not having the dorsal abdominal blotches divided in the middle by uncolored spaces. Size of a Kilimandjaro specimen: length 10 mm., width 2.65 mm., head length 1.65 mm., width 1.7 mm.

Kilimandjaro-Meru: Steppe and the Natron Lakes.

Læmobothrium africanum n. sp.

(Pl. 7, fig. 6.)

A single individual male from *Ardea purpurea* and two males from *Pseudogyps africanus*. A well marked small *Læmobothrium* distinctly differing from any other species so far described. Characterized by the short, broad, blunt head with straight occipital margin, by the numerous unusually long hairs of the body, and by the sharply-marked black bands and blotches.

Male. Length 5 mm., width 1.25 mm., robust-bodied, long-haired and sharply-patterned. Head, length 1 mm., width 1 mm., clypeal front short, broad and squarely truncate, with numerous spiny hairs; anterior lateral protuberances strong and temporal angles not projecting and pointed but blunt and obliquely truncate, occipital margin straight, the head being thus square-locking with a short broad anterior projection; numerous long hairs rising from antero-lateral protuberances and from temples; eyes small but distinct; strong, sharply delimited, narrow, black, lateral blotches and occipital border. Prothorax square in front but narrower behind with angular margins; no marked lateral concavities; three long hairs on each side; strong narrow black blotch, narrowly divided in center, on middle of each lateral margin; narrow mesial longitudinal uncolored line. Metathorax also with narrow mesial uncolored longitudinal line and with narrow, sharply marked black lateral borders expanding into a pair of small angular blotches in antero-lateral angles; long hairs rising from lateral margins, but none along posterior margin. Legs all sharply marked with black, most conspicuous as a black margin on outer side of femur and a black ring around distal end of femur. Abdomen, with central brownish blotches, traversed on segments 2—4 and on part of segment 5 by narrow mesial longitudinal uncolored line; segments 2—4 with series of long hairs, rising from pustulations, along posterior margins; on other segments hairs but not pustulated; in postero-lateral angle of each of segments 2—8 a very distinct circular pustulation bearing a long hair; along each side a narrow clear sub-marginal longitudinal line; small short hairs rising from lateral margins; posterior margin segment flatly rounded with short hairs.

The description has been made from the specimen found on *Ardea purpurea*. The two individuals taken from *Pseudogyps* do not show the pustulations so distinctly nor the sub-marginal longitudinal uncolored line, and are a little larger, each being about 6 mm. long instead of 5 mm.

Kilimandjaro-Meru: Steppe and the Natron Lakes.

Læmobothrium setigerum PIAGET.

Notes from the Leyden Museum, vol. XI, p. 35, pl. 2, fig. 2, from *Ibis cayennensis*. A male, a female and a young specimen from *Theristicus hagedash*.

Kilimandjaro-Meru: Natron Lakes.

Colpocephalum grandiceps PIAGET.

A male and a female from *Himantopus himantopus*. The type specimens were taken by PIAGET from *Hæmatopus ostralegus*.

Kilimandjaro-Meru: Natron Lakes.

Colpocephalum eucarenum NITZSCH.

Two females from *Pelecanus roseus*. NITZSCH's type was taken from *Pelecanus onocrotalus*.

Kilimandjaro-Meru: Natron Lakes.

Colpocephalum gracile PIAGET.

Male and female from *Platalea alba*. Type specimen taken from *P. leucorodia*.

Kilimandjaro-Meru: Natron Lakes.

Colpocephalum semicinctum RUDOW.

Numerous males and females from *Corvus scapulatus*.

Kilimandjaro: Useri.

Colpocephalum subæquale NITZSCH.

Males and females from *Corvultur albicollis*. Type specimens are from *Corvus corax* and *C. frugilegus*.

Kilimandjaro: Kibonoto.

Colpocephalum sjøstedti n. sp.

(Pl. 7, fig. 7.)

Several females from *Corvus scapulatus* and *Corvultur albicollis*. An extraordinary form of *Colpocephalum* of the general type of CARRIKER's curious and aberrant *C. extraneum*, taken from a night-jar, *Nyctidromus albicollis*, Costa Rica. These two species are strangely widely separated both in host relation and geographically and yet they agree so closely in the characteristic, namely, the extraordinary extension of the metathoracic dorsum and its curious shape, that separates them from all other species of the genus that they should probably be set apart in a distinct genus. For the present, however, we may let them stand in *Colpocephalum*. The African specimens from the crows differ from the single Costa Rican female from the night-jar in the presence of pustulations on the temples, an all brown metathorax, and the median abdominal blotches; the metathorax is also truncate or even emarginate on the abdomen.

Female, length 2.25 m.m., width 0.8 m.m., large for, *Colpocephalum*, strongly marked and characterized by the great posterior extension of the dorsum of the metathorax, with its deep angular median emargination. Head, length 0.53 mm., width 0.78 m.m; temples strongly projecting and rounded with four long pustulated hairs and other shorter ones; well marked fringe of short curved hairs on lateral margin behind eye; head pale translucent brown with strong large triangular ocular blotches and narrow black temporal and occipital border. Prothorax hexagonal with produced lateral angles furnished with single spine. Mesothorax distinct from meta-

thorax with flatly convex sides without hairs except two long ones in each postero-lateral angle; other hairs along the nearly straight posterior margin; entire segment black brown. Metathorax with dorsum extending as a sort of flap or lobe posteriorly over the first part of second abdominal segment; this lobe deeply angularly emarginated at middle of posterior margin; postero-lateral angles each with group of four or five short spines and two or three long hairs, a single long hair rising from each of the two postero-median angles made by the emargination; entire segment blackish-brown. Abdomen with nearly parallel sides from first to eight segments; segments 2 to 6 with many short strong spines along lateral margins and in postero-lateral angles; segments 7 to last with very long hairs rising from postero-lateral angles; all segments except last two with lateral and separate median transverse brown blotches last two segments almost wholly brown.

Kilimandjaro: Kibonoto and Useri.

Colpocephalum oreas n. sp.

(Pl. 7, fig. 8.)

Numerous males and females from *Herodias alba*, *Ephippiorhynchus senegalensis* and the dove *Aplopelia larvata* (straggler?). In shape and general markings much like PIAGET'S *zebra* from *Ciconia alba*, but male with posterior end of abdomen quite different and female with noticeable differences in the markings.

Male, length 2.1 m.m., width 0.66 m.m.; rather long head, body very narrow at suture between pro- and mesothorax, posterior margin of abdomen broadly truncate, even a little concave, and body nearly wholly covered and colored by the dark-brown transverse abdominal bands. Head, length 0.5 mm., width 0.66 mm.; clypeal front flatly rounded, ocular emarginations deep, temples broad and angular, occipital margin concave; strong black ocular blotches connected by broad black-brown longitudinal bands with larger black occipital blotches. Prothorax with strongly produced lateral angles bearing three spines; two strong hairs on each postero-lateral angle; whole segment pale brown; suture between pro- and mesothorax very narrow. Metathorax with sides rapidly diverging posteriorly, and bearing a series of about 8 short spines; one strong spiny hair in each postero-lateral angle; whole segment brown, paler anteriorly. Abdomen tapering a little posteriorly, with last segment broadly truncate, even a little concave behind; numerous spiny hairs along lateral and posterior margins of segments, and single very long hairs arising from postero-lateral angles; all segments broadly banded transversely with brown, leaving only the sutural spaces uncolored.

Female, with head and thorax like male, but abdomen tapering more sharply from before back; widest at segment 3; posterior segments very narrow, the whole abdomen giving the impression of great slenderness and of being pointed posteriorly; transverse abdominal bands entirely crossing segments 1 and 2, but broken in two in the middle on segments 3—8 leaving an uncolored space in the center of which appears a small quadrangular blotch, paler than the lateral blotches; last segment with narrowly rounded posterior margin thickly set with spines and short hairs.

Kilimandjaro-Meru: Natron Lakes.

Colpocephalum veratrum n. sp.

(Pl. 7, fig. 9.)

A male, a female and two young from *Ardea (Herodias) alba*. In markings and general appearance this species approaches *C. trochioxum* NITZSCH from *Ardea (Botaurus) stellaris*, but the dimensions and shape of head are markedly different.

Male, length 1.56 mm., width 0.63 mm., abdomen nearly wholly colored by the broad transversal bands darkest at ends as in *trochioxum* but head much longer in proportion to width than in this species; the body one-fourth smaller than *trochioxum*. Head, length 0.34 mm., width 0.53 mm.; wider than broad but with full rounded clypeal portion flatly rounded anteriorly; temples rather thin and narrowly rounded; hairs with rather weak pustulations in temporal angles and along occipital margin; distinct brown ocular blotches and narrow blackish occipital border fading out on temples; in front of strong antennal blotches a paler brown rather indistinct band extending anteriorly to a pair of small clypeal blotches. Prothorax with prominent lateral angles each bearing a short spine and a longish hair; two longish hairs in postero-lateral angles; whole segment translucent brown. Metathorax with rapidly diverging sides, all brown with clearer sutural space at junction of meso- and metasegments; longish non-pustulated hairs in postero-lateral angles and on posterior margin. Abdomen ovate, with longish non-pustulated hairs along posterior margins of segments, and single long hairs in postero-lateral angles; all segments crossed by broad brown transverse bands leaving only narrow sutural lines uncolored; lateral ends of the transverse bands darker; posterior margin of last segment rounded.

Female, length 2 mm., width 0.8 mm.; head length 0.37 mm., width 0.53 mm.

Kilimandjaro-Meru: Natron Lakes.

Colpocephalum xenicum n. sp.

Males and females from *Ardea (Ardetta) sturmi*. A curious form of *Colpocephalum* quite distinct from any described species. Characterized by the long, slender, sub-parallel side crenulate body, almost unpatterned, and the elongate head with odd-shaped swollen backward projecting temporal lobes.

Male, length 1.9 mm., width 0.5 mm.; slender, abdomen hardly wider than head, body with sub-parallel sides and all pale. Head, length 0.4 mm., width 0.47 mm.; head thus nearly as long as wide across temples; palpi and especially antennæ projecting conspicuously; ocular margin deep and long, the swollen heavy temporal regions with long sloping anterior face, and projecting well behind occipital margin; the temples with several long, non-pustulated hairs, and many very small spines on antero-lateral angles; small blackish ocular blotches and pale brown antennal bands, but otherwise uncolored. Prothorax small, much narrower than head; lateral angles small but conspicuous with long hair and spine; also several hairs along posterior margin; pale color. Metathorax with numerous longish hairs in postero-lateral angles and along posterior margin; color pale translucent brown like head and prothorax. Abdomen slender, sides sub-parallel tapering gradually posteriorly; lateral margins somewhat crenulate; strong spinous hairs, and longer weaker hairs in postero-lateral angles and scattered over surface of segments; whole abdomen nearly uniformly pale translucent brownish.

Female, like male and only barely longer; length 1.9 mm.
Kilimandjaro-Meru: Natron Lakes.

Colpocephalum miandrium n. sp.

(Pl. 7, fig. 10.)

Many males and females from *Balearica regulorum gibbericeps*. A remarkable species with the males distinctly larger than the females, in this corresponding to *C. macilentum* of NITZCH which GIEBEL described as having the male larger than the female much to PIAGET's astonishment and unbelief. There is no doubt whatever of the matter in this present African species. The extremely slender *Lipeurus*-like legs, the long narrow *Lipeuriform* body, and the *Lipeurus*-like markings make the species a very interesting case of parallelism or convergence. There is an unusual amount of variation in the intensity and character of the markings, especially on the males.

Male, length 3.34, width 0.9 mm; long, slender, long legs, strong abdominal markings, larger than female. Head, length 0.55 mm., width 0.8 mm., narrow forehead with a shallow rounding emargination just where palpi project beyond the margin; front parabolic; ocular emarginations pronounced with eye distinctly emarginated; temples quadrangular and noticeably projecting and with strong brown spinous hairs, 3 longish, 2 shorter, rising, non-pustulated, from just within the lateral margins; occipital margin strongly concave; head translucent brown with fuliginous tinge, and well-marked black occipital and antennal blotches not connected by bands. Prothorax as long as broad, with conspicuous, sharp-pointed lateral angles bearing four or five short spinous hairs along postero-lateral margins; color more smoky brown than head with narrow blackish bands, one near each side. Metathorax with the fused short mesothoracic segment indicated by darker color and slight lateral emarginations; lateral margins and postero-lateral angles with spinous hairs; segment concolorous with head and prothorax with darker lateral angles and posterior border. Legs unusually long and slender, hindmost pair very long. Abdomen elongate, slender, but little wider than head, and tapering posteriorly, two transverse rows of short brown spinous hairs across each segment; shorter spinous hairs along lateral margins and longer ones in postero-lateral angles; each segment with a narrow submarginal brown line all around thus forming a quadrilateral figure; rest of segment pale fuliginous brown like thorax and head. In many specimens the chitinized genitalia with two distinct strong posterior hooks show plainly. Posterior margin of last segment is narrowly but flatly rounded with many short and fine, and several longer hairs.

Female, body, length 2.6 mm., width 0.53 mm., head, length 0.44 mm., width 0.53 mm.; thus being markedly smaller than the male; body all over strong opaque brown except transverse pale sutural lines on the abdomen, and a narrow uncolored median longitudinal line extending from abdominal segment 3 along the thoracic segments and to middle of head where it forks, the two branches going as straight diagonal lines to the anterior angle of each ocular emargination. Posterior margin of last abdominal segment evenly rounded.


Kilimandjaro-Meru: Natron Lakes.

Menopon erocatum NITZSCH.

One specimen from *Himantopus himantopus*.
Kilimandjaro-Meru: Natron Lakes.

Menopon titan PLAGET.

Many specimens from *Pelecanus roseus*. Some of these specimens, males, females and young, were taken from the inside of the host's pouch, where they sat very strongly fixed at the skin. This African form should really be described as a variety of *titan*, differing noticeably by lack of complete transverse black-brown bars on the abdominal segments, these bars being broken into lateral and median portions.

 *Kilimandjaro-Meru*: Natron Lakes.

Menopon eulasius n. sp.

(Pl. 7, fig. 11.)

One specimen from *Phalacrocorax africanus*.

Male, body length 1.65 mm., width 0.75 mm., robust, hairy, abdomen mostly covered by the small transversal brown bands. Head, length 0.4 mm., width 0.66 mm.; half again as wide as long; front flatly rounded, temples with several conspicuous long hairs; six long hairs along occipital margin; no strong head markings. Prothorax large with conspicuous long hairs in produced lateral angles and all along rounding posterior margin. Metathorax with numerous strong hairs along straight posterior margin; no strong markings any where on thorax. Abdomen short and broadly elliptical, with very long hairs from postero-lateral angles of segments and a transverse row of closely set shorter hairs along posterior margin of each segment; also numerous still shorter hairs scattered irregularly over dorsum of segments 4 to 8 more abundant on the more posterior segments; broad pale-brown transverse bands on all segments covering all of the dorsum except narrow uncolored sutural spaces.

Kilimandjaro-Meru: Natron Lakes.

Menopon bucerotis n. sp.

(Pl. 7, fig. 12.)

Many specimens, males and females, from the hornbill *Bycanistes cristatus*. Only one *Menopon* has been heretofore recorded from the hornbills, viz., *M. forcipatum*, figured but not described by GIEBEL. This african species is quite distinct from the figures given by GIEBEL of male and female *forcipatum*. Is a *Menopon* of unusual form and general appearance.

Male, length 2 mm., width 0.8 mm.; abdomen with crenulated lateral margins, last two abdominal segments much narrower than preceding ones, head short and wide with narrow angulated laterally projecting temples. Head, length 0.33 mm., width 0.65 mm., thus being twice as wide as long; front with longish, spinous hairs and temples and occipital margin with numerous very long conspicuous hairs giving the whole head an unusual spiny and hairy appearance; the ocular emarginations are fairly distinct thus making it difficult to refer this species with certainly to *Menopon*; it might perhaps with equal right have been referred to *Colpocephalum*; the temples

are strongly produced laterally and are narrow and so narrowly rounded as to be almost pointed; a pair of distinct black ocular spots, but no distinct bands. Prothorax with the lateral angles prominent and projecting distinctly beyond the anterior part of the segment; a spine and longish hair in each lateral angle and several longish hairs along posterior margin. Metathorax with straight posterior margin beset with strong long hairs; postero-lateral angles with three or four short, strong spines and a longish hair. Abdomen widening to segment 7, segment 8 very little narrower and then segment 9 suddenly strongly constricted; segment 10 (last segment) still narrower and with a parabolic posterior margin; all the segments projecting laterally beyond the sutural spaces, thus producing a distinctly crenulate appearance of the lateral margins; all the dorsum of the abdomen very hairy and spiny, the hairs arising from the postero-lateral angles being very long, indeed the strongly-chitinized and unusually formed genitalia show through indistinctly.

Female, length 2.8 mm., width 1.1 mm.; head, length 0.4 mm., width 0.72 mm.; general shape and appearance of the male though larger; lateral margins of the abdomen more conspicuously crenulate and posterior margin of last abdominal segment flatly rounded; whole last segment appearing like a protuberance.

Host list, with parasites.

Mammals.

Colobus caudatus.

Trichodectes colobi KELLOGG.

Mungos caffer.

Trichodectes inæqualis PIAGET.

Birds.

Colymbus capensis.

Nirmus kilimandjarensis KELLOGG.

Læmobothrium titan PIAGET.

Hydrochelidon leucoptera.

Trinoton luridum NITZSCH.

Phalacrocorax africanus.

Menopon eulasius KELLOGG.

Lipeurus afer KELLOGG.

Nirmus signatus PIAGET.

Pelecanus roseus.

Lipeurus bifasciatus PIAGET.

Colpocephalum eucarenum NITZSCH.

Menopon titan PIAGET.

Anas erythrorhyncha.

Trinoton luridum NITZSCH.

Nyroca capensis.

Docophorus icterodes NITZSCH.

Platalea alba.

Docophorus sphenophorus NITZSCH.

Lipeurus platalearum GIEBEL.

Colpocephalum gracile PIAGET.

Balearica regulorum gibbericeps.

Lipeurus hebraeus NITZSCH.

Colpocephalum miandrium KELLOGG.

Dissoura microscelis.

Docophorus episcopi KELLOGG.

Ephippiorhynchus senegalensis.

Docophorus episcopi KELLOGG.

Lipeurus versicolor NITZSCH.

Colpocephalum oreas KELLOGG.

Theristicus hagedash.

Læmobothrium setigerum PIAGET.

Herodias alba.

Nirmus signatus PIAGET.

Colpocephalum oreas KELLOGG.

Colpocephalum veratrum KELLOGG.

Docophorus episcopi KELLOGG.

Ardetta sturmi.

Colpocephalum xenicum KELLOGG.

Ardea purpurea.

Læmobothrium africanum KELLOGG.

Recurvirostra avocetta.*Nirmus signatus* PIAGET.*Nirmus pileus* NITZSCH.**Himantopus himantopus.***Nirmus signatus* PIAGET.*Nirmus opisthotomus* KELLOGG.*Colpocephalum grandiceps* PIAGET.*Menopon crocatum* NITZSCH.**Aplopelia larvata.***Lipeurus secretarius* GIEBEL.**Pseudogyps africanus.***Lipeurus secretarius* GIEBEL.*Læmbothrium africanum* KELLOGG.**Serpentarius serpentarius.***Lipeurus secretarius* GIEBEL.**Circus ranivorus.***Læmbothrium titan* PIAGET.**Buteo augur.***Docophorus platystomus* NITZSCH.*Nirmus kilimandjarensis* KELLOGG.*Læmbothrium titan* PIAGET.**Asio nisuella.***Docophorus sphenophorus* NITZSCH.**Bycanistes cristatus.***Menopon bucerotis* KELLOGG.**Corvultur albicollis.***Colpocephalum sjoestedti* KELLOGG.*Colpocephalum subæquale* NITZSCH.**Corvus seapulatus.***Colpocephalum sjoestedti* KELLOGG.*Colpocephalum semicinatum* RUDOW.**List of Mallophaga hitherto known from the Kilimandjaro-Meru district.****Of mammals.**

- | | |
|--|--|
| 1. <i>Trichodectes colobi</i> KELLOGG n. sp. | 2. <i>Trichodectes inequalis</i> PIAGET. |
|--|--|

Of birds.

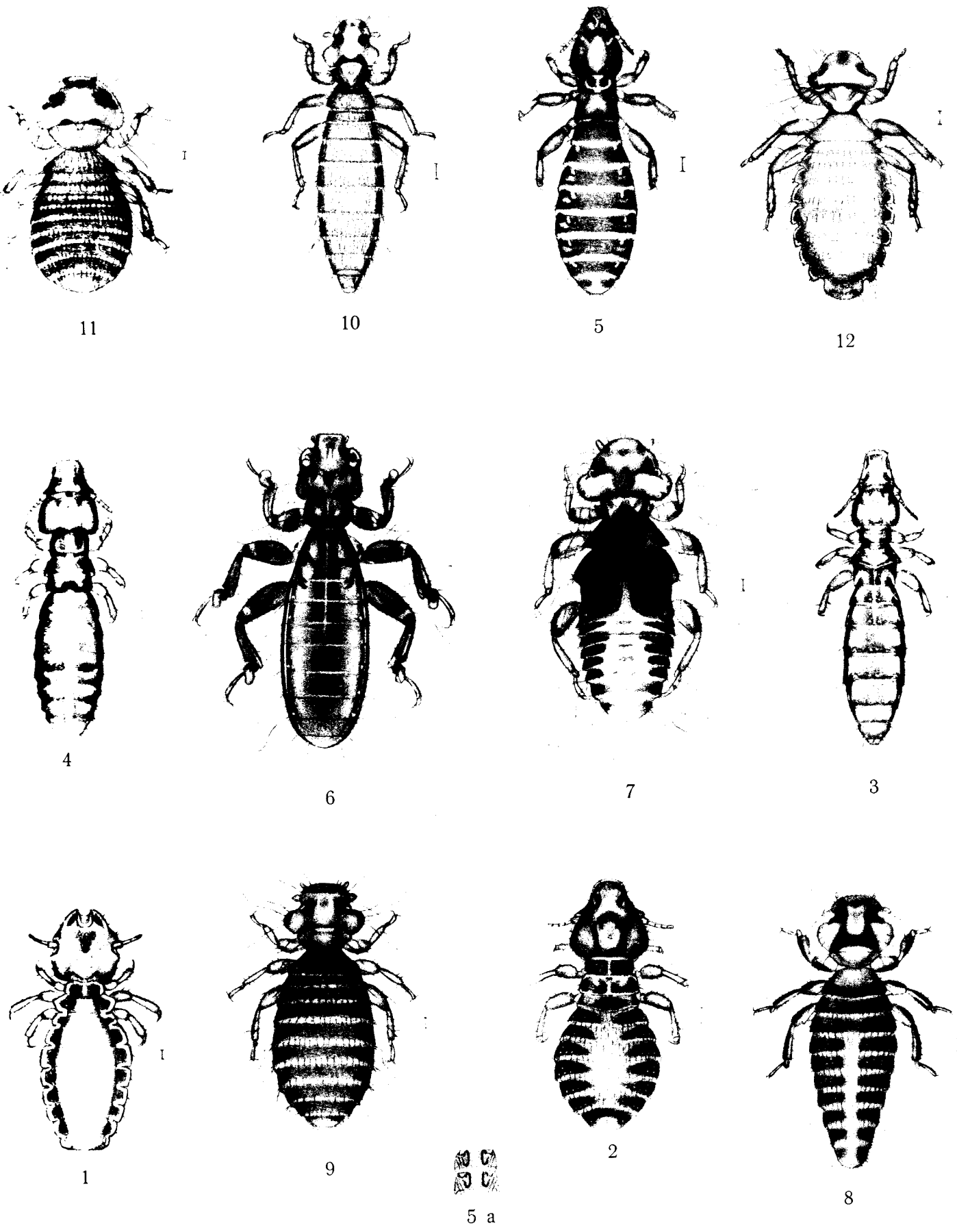
- | | |
|--|---|
| 3. <i>Docophorus episcopi</i> KELLOGG n. sp. | 19. <i>Læmbothrium africanum</i> KELLOGG n. sp. |
| 4. » <i>icterodes</i> NITZSCH. | 20. » <i>setigerum</i> PIAGET. |
| 5. » <i>platystomus</i> NITZSCH. | 21. <i>Colpocephalum grandiceps</i> PIAGET. |
| 6. » <i>sphenophorus</i> NITZSCH. | 22. » <i>encarenum</i> NITZSCH. |
| 7. <i>Nirmus kilimandjarensis</i> KELLOGG n. sp. | 23. » <i>gracile</i> PIAGET. |
| 8. » <i>opisthotomus</i> KELLOGG n. sp. | 24. » <i>semicinatum</i> RUDOW. |
| 9. » <i>signatus</i> PIAGET. | 25. » <i>subæquale</i> NITZSCH. |
| 10. » <i>pileus</i> NITZSCH. | 26. » <i>sjoestedti</i> KELLOGG n. sp. |
| 11. <i>Lipeurus afer</i> KELLOGG n. sp. | 27. » <i>oreas</i> KELLOGG n. sp. |
| 12. » <i>secretarius</i> GIEBEL. | 28. » <i>ceratrum</i> KELLOGG n. sp. |
| 13. » <i>platalearum</i> GIEBEL. | 29. » <i>xenicum</i> KELLOGG n. sp. |
| 14. » <i>hebraeus</i> NITZSCH. | 30. » <i>miandrium</i> KELLOGG n. sp. |
| 15. » <i>bifasciatus</i> PIAGET. | 31. <i>Menopon crocatum</i> NITZSCH. |
| 16. » <i>versicolor</i> NITZSCH. | 32. » <i>titan</i> PIAGET. |
| 17. <i>Trinoton luridum</i> NITZSCH. | 33. » <i>eulacius</i> KELLOGG n. sp. |
| 18. <i>Læmbothrium titan</i> PIAGET. | 34. » <i>bucerotis</i> KELLOGG n. sp. |

PLATE 7.

Plate 7.

- Fig. 1. *Trichodectes colobi* KELLOGG n. sp.
 .. 2. *Docophorus episcopi* KELLOGG n. sp.
 .. 3. *Nirmus kilimandjarensis* KELLOGG n. sp.
 .. 3a. " " " abd. segm. ♂.
 .. 4. " *opisthotomus* KELLOGG n. sp.
 .. 5. *Lipeurus afer* KELLOGG n. sp.
 .. 6. *Læmobothrium africanum* KELLOGG n. sp.
 .. 7. *Colpocephalum sjoestedti* KELLOGG n. sp.
 .. 8. " *oreas* KELLOGG n. sp.
 .. 9. " *veratrum* KELLOGG n. sp.
 .. 10. " *miandrium* KELLOGG n. sp.
 .. 11. *Menopon eulasius* KELLOGG n. sp.
 .. 12. " *bucerotis* KELLOGG n. sp.





WISSENSCHAFTLICHE ERGEBNISSE

DER SCHWEDISCHEN ZOOLOGISCHEN EXPEDITION

NACH

DEM KILIMANDJARO, DEM MERU

UND

DEN UMGEBENDEN MASSAISTEPPEN

DEUTSCH-OSTAFRIKAS

1905—1906

UNTER LEITUNG VON

PROF. DR. YNGVE SJÖSTEDT

HERAUSGEGEBEN VON DER KÖNIGL. SCHWEDISCHEN AKADEMIE DER WISSENSCHAFTEN

15.

CORRODENTIA.

4. MALLOPHAGA

BY

VERNON L. KELLOGG

WITH 1 PLATE

UPPSALA 1908

ALMQVIST & WIKSELLS BOKTRYCKERI-A. B.