

Notes on Menoponidae (Mallophaga) with Descriptions of New Genera and Species.*

By G. A. H. BEDFORD,† Section of Parasitology, Onderstepoort.

THE family Menoponidae has recently been split up into several new genera, but the characters used for separating these genera have not always been of generic significance.

For instance, as Ferris (*Bern. P. Bishop Mus.* Honolulu, Bull. 98, p. 53, 1932) has pointed out, certain genera have been created on the basis of the absence of gastric teeth. He stated that gastric teeth were present in all the species he examined, and that it was his belief that they were present in all species. With this I concur, but they may be absent in mounted specimens, especially if the specimens are pricked with a pin and the stomach contents gently pressed out before they are mounted.

Uchida separated the genus *Neumannia* (= *Uchida* Ewing) from *Menacanthus* mainly on the basis that the oesophageal sclerite is present in the former and absent in the latter. In both *numidae* and *abdominalis*, which he included in *Uchida*, the oesophageal sclerite is rudimentary as in all species of *Menacanthus* that I have examined. As the type of *Uchida* may be found to differ from *Menacanthus* in other respects, the genus should be retained.

In the species of *Menopon* parasitic on Charadriiformes the oesophageal sclerite is well developed in at least one species, whereas in other closely related species the sclerite is rudimentary (these are placed here in the new genus *Austromenopon*). Likewise, we find the oesophageal sclerite well developed in some species parasitic on Sulidae and Phalacrocoracidae, and rudimentary in other closely related species parasitic on the same birds (these are included here in the genus *Eidmanniella*). The development of the oesophageal sclerite cannot, therefore, be considered of generic importance in the family Menoponidae. Uchida in describing *Ferrisia* stated that it resembles *Colpocephalum*, but the sexes are dimorphic, but they are

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dimorphic in *C. zebra*, the type of *Colpocephalum*. In *C. ferrisi* Bedford, however, which is closely allied to *C. zebra* the sexes are similar, except that the male possesses spines on the posterior margins of the hind trochanters and femora which are absent in the female. To separate *C. turbinatum* Denny, the type of *Ferrisia*, also certain species parasitic on Falconiformes, will be by no means easy.

The chief characters for segregating the genera of Menoponidae appear to be:—

- (i) The shape of the head.
- (ii) The absence or presence of either a slit or notch on the lateral margins in front of the eyes.
- (iii) The absence or presence of either a comb of minute spines or brushes of setae on the venter of the posterior femora and certain abdominal sternal plates.
- (iv) The male genitalia. They usually differ, but may be of the same type in various genera. They are usually similar in species belonging to the same genus, and in some genera it is doubtful whether they are of specific significance.

Great care should be taken in mounting species of Menoponidae, especially species of the *Menopon* type, as their heads are only slightly chitinized and are therefore liable to lose their natural shape and become distorted if the specimens are left too long in caustic potash or pressure is applied to the cover slips when mounting.

The chaetotaxy is usually very uniform in closely related species, and some minute setae on the head may be present in species belonging to the same genus, but certain setae, especially those on the gular region of the head, the thoracic sternal plates and abdominal segments may vary slightly in number in specimens of the same species.

The thoracic sternal plates are frequently very similar in shape in species belonging to the same genus, but occasionally specimens of the same species may be found in which these plates vary in shape.

Genus AUSTROMENOPON nov.

Head about twice as broad as long; the lateral margins of the forehead without a slit or notch, gular region with a pair of longitudinal sclerites. Mandibles situated a short distance behind the anterior margin. Oesophageal sclerite usually rudimentary, but may be well developed. Antennae four-jointed.

Thorax normal; mesonotum short, separated from the metanotum.

Legs normal; hind femora with a few setae on venter, usually not sufficiently numerous to form a brush; mid and hind tibiae with three setae (two or three spine-like) on ventral apex.

Abdomen elongate oval, with the tergal, sternal and paratergal plates well developed; sternites iv-vi with the setae usually more numerous on the lateral margins. Male genitalia with the basal plate short, narrow in front and gradually broadening towards the apex where it is expanded; parameres present.

Genotype. *Menopon crocatum* Nitzsch (type-host: *Numenius arquatus*). The following species parasitic on Charadriiformes must be included in the genus: *Menopon ambiguum* Nitzsch (type-host: *Numenius phaeopus*), *M. lutescens* Nitzsch (type-host: *Totanus maculatus*), and *M. sternophilum* Ferris (type-host: *Sterna fuscata*).

The following species reported from Charadriiformes will probably have to be placed in the genus: *Menopon brevicolle* Piaget (type-host: *Thinocorus rumicivorus*), *M. cursorius* Giebel (type-host: *Cursorius gallicus*), *M. albipes* Giebel (type-host: *Lobivanellus albiceps*), *M. icterum* Nitzsch (type-host: *Scolopax rusticola*), *M. indistinctum* Kellogg (type-host: *Recurvirostra americana*), *M. meyeri* Giebel (type-host: *Tetola lapponica*), *M. nigropleurum* Denny (type-host: *Alca torda*), *M. numenii* Rudow (type-host: *Numenius linearis*), *M. micrandum* Nitzsch (type-host: *Recurvirostra avocetta*), *M. strepsilae* Denny (type-host: *Arenaria interpres*), *M. infrequens* Kellogg (type-host: *Larus glaucescens*), *M. interpolatum* Piaget (host: ?Gull), *M. lemniscatum* Enderlein (type-host: *Larus dominicanus*), *M. transversum* Denny (type-host: *Rissa tridactylus*), *M. circinatum* Piaget (type-host: *Stercorarius pomarinus*), *M. fuscofasciatum* Piaget (hosts: *Stercorarius pomarinus*, *Sterna cantiaca* = *Sterna sandvicensis*, and *S. gracilis*) and *M. pachypus* Piaget (type-host: *Sterna hirundo*).

In addition to the above the following species should also be included in the genus: *Menopon madagascariense* Mjöberg, parasitic on *Scopus umbretta* and *S. umbretta hannermani*, and *M. albofasciatum* Piaget, parasitic on various species of Antidae. *M. brevithoracium* Piaget, recorded from *Cygnus musicus* and *C. nigricollis*, will probably also have to be placed here.

This genus is very distinct from *Menopon* and other genera of Menoponidae.

In *A. ambiguum* the oesophageal sclerite and glands are well developed, whereas in *A. crocatum*, to which it is undoubtedly closely related, and all other species known to me, the oesophageal sclerite is rudimentary. In *Eidmanniella*, the next genus to be described, we also find the oesophageal sclerite either well developed or rudimentary.

The species parasitic on Charadriiformes and *Scopus umbretta* can be separated from *A. albofasciatum* in possessing a pair of flat plates, one terminating in either a hook or clawlike spines on the preputial sac of the male genitalia. *A. albofasciatum* can also be distinguished, *inter alia*, in having the prosternal plate serrated, and both sexes possess small rounded plates on the sternites between the sternal plates and paratergites of segments iii-vii. The male can also be distinguished in having the two apical tergites clothed with numerous short setae.

AUSTROMENOPON STERNOPHILUM (Ferris).

Menopon sternophilum Ferris, *Bernice P. Bishop Museum, Honolulu*, Bull. 98, t.f. 12a-f (1932).

Described from specimens taken off *Sterna fuscata*, Marquesas. Specimens have also been taken off Sooty Tern, *Sterna fuliginosa* Gmel., Eshowe, Zululand (coll. B. De Meillon), and females off Swift Tern, *Thalasseus bergii* (Lcht.), Swakopmund, South West Africa.

AUSTROMENOPON TRANSVERSUM (Denny).

Menopon transversum Denny, *Mon. Brit. Anopl.* p. 226, pl. 21, f. 7 (1842).

Menopon ribibundus Denny, *ibid.*, p. 227, pl. 20, f. 3 (1842).

Menopon optusum Giebel, *Zeit. f. ges. Naturw.*, XXVIII, p. 392 (1866).

Menopon phaeopus Giebel, *ibid.*, XXVIII, p. 392 (1866).

Menopon ridibundum Denny, Harrison, *Parasit.* IX, i.p. 44 (1916).

Harrison sank *A. transversum* as a synonym of *A. ridibundum*, but the former name should be used, not only because it has page precedence, but also because the type of *A. ridibundum* has been lost. According to Thompson (*Ann. & Mag. Nat. Hist.* Ser. 10, XIX, p. 74, 1937) the type of *A. transversum*, a female from *Rissa tridactyla* (L.) is in the British Museum collection. Denny also recorded it from *Alca torda*. *A. ridibundum* was described from specimens taken off *Larus ribibundus*.

AUSTROMENOPON LEUCOXANTHUM (Nitzsch).

Menopon leucoxanthum Nitzsch, in Burmeister *Handb. d. Ent.* II, ii, p. 440 (1838).

Menopon lunarium Rudow, *Zeit. f. ges. Naturw.*, XXXIV, p. 402 (1869).

Menopon leucoxanthum N., Giebel, *Insecta Epizoa*, p. 300 pl. 18, f. 9 (1874).

Menopon lunarium Rudow, Giebel, *ibid.*, p. 300 (1874).

Menopon leucoxanthum N., Piaget, *Les Pédiculines*, p. 498 (1880).

Menopon lunarium Rudow, Piaget, *ibid.*, p. 498 (1880).

Menopon albofasciatum Piaget, *ibid.*, p. 496, pl. 40, f. 6 (1880).

Menopon obscurum Piaget, *ibid.*, p. 497, pl. 40, f. 8 (1880).

Menopon tumidum Piaget, *ibid.*, *Suppl.* p. 151, pl. 16, f. 5 (1885).

Menopon loomisii Kellogg, *Proc. Calif. Acad. Sci.* VI, p. 162, pl. 15, f. 6 (1896).

Menopon africanum Kellogg & Paine, *Bull. Ent. Res.* II, ii, p. 149, pl. 5, f. 3 (1911).

Menopon africanum transraalensis Bedford, *Rept. Dir. Vet. Res. Union S. Afr.*, VII-VIII, p. 716 (1920).

A. leucoranthum was described from specimens taken off common Teal, *Querquedula crecca* (L.); *A. lunarium* from common Scoter, *Oidemia nigra* (L.); *A. albofasciatum* from Sheld Duck, *Tadorna tadorna* (L.); *A. obscurum* from *Tadorna radjah*; *A. tumidum* and *A. africanum* from spur-winged Goose, *Plectropterus gambensis* (L.); *A. loomisii* from *Oidemia deglandi*, and *A. africanum transraalensis* from domestic (type host) and other South African Ducks.

Bedford (1932) recorded specimens as *M. tumidum* taken off the following hosts in South Africa: *Plectropterus gambensis* (Spur-winged Goose), *Alopochen aegyptiacus* (Egyptian Goose), *Sarkidiornis melanotos africanus* (Knob-billed Duck), *Dendrocygna viduata* (White-faced Duck), *Casarca cana* (South African Sheld Duck), *Poecilornitta erythrorhyncha* (Red-billed Duck), and domestic Ducks.

I have since been able to compare the above specimens taken off *Tadorna tadorna* at Ipswich and Ince in England (received through the kindness of Colonel R. Meinertzhagen and Mr. G. B. Thompson), and find they are the same.

(Giebel's figure of *leucoranthum* is good, and I have no hesitation in sinking *tumidum* as a synonym of this species, like *obscurum* and *loomisii*.)

In specimens from some hosts a few of the setae on the thorax and abdominal tergites are slightly shorter and more spine-like than in specimens from other hosts. However, as the length and width of these setae varies, and the differences are only a matter of degree, they cannot be considered to be of any importance.

Genus EIDMANNIELLA Keler, 1938.*

Head about twice as broad as long; the lateral margins of the forehead with a slit. Mandibles situated a short distance behind the anterior margin. Oesophageal sclerite either well developed or rudimentary. Antennae four-jointed.

Thorax normal; mesonotum short, separated from the metanotum.

Legs normal; hind femora with a patch of setae on the venter. Mid and posterior tibiae with three spine-like setae on the venter at apex.

*Dr. Keler's paper had not yet been published at the time of Mr. Bedford's death and *Eidmanniella* was described in the manuscript as a new genus under a different name. The genotype was to have been *Menopon pustulosum* Nitzsch. As Mr. Bedford states that this species is congeneric with *M. brevipalpe* Piaget (the genotype of *Eidmanniella*) I have taken the liberty of suppressing the name proposed for the genus in Mr. Bedford's manuscript.

(G. H. E. Hopkins.)

Abdomen elongate oval, with tergal, sternal and paratergal plates; sternites iv-vi with small patches of setae on their lateral margins. Male genitalia with the basal plate short, narrow anteriorly and gradually broadening towards the apex where it is strongly expanded; parameres present.

Species parasitic on Sulidae, Phalacrocoracidae, Fregatidae and Phaetontidae.

Genotype: *Menopon brevivalpe* Piaget (= *pellusidum* Rudow).

The following species must also be included in the genus:—*Menopon albescens* Piaget (type-host: *Sula australis* = *S. serrator*), *M. eurum* Piaget (type-host: *Phalacrocorax javanicus*), *M. eurygaster* Nitzsch (type-host: *Phalacrocorax vigua*), *Menopon pustulosum* Nitzsch (type-host: *Sula bassana*), *M. singularis* Kellogg and *M. subrotundum* Piaget (type-host: *Phalacrocorax sulcirostris*), *M. sigmoidale* Picaglia (type-host: *Phalacrocorax lucidus* and *M. kuwani* Kellogg and Chapman (type-host: *Phalacrocorax penicillatus*) should probably also be included in the genus.

M. eulassium Kellogg, described from a male taken off *Phalacrocorax africanus* may prove to have been a straggler from a duck or goose.

Specimens from *Fregata magnificens rothschildi* Matthews. Panama (coll. L. H. Dunn), which I refer to *Menopon aurifasciatum* Kellogg, are distinct and cannot be included in this genus.

The oesophageal sclerite is rudimentary in *E. pustulosa* and *E. pellucida* and well developed in *E. singularis*.

EIDMANNIELLA PELLUCIDA (Rudow).

Menopon pellucidum Rudow, *Zeit. f. ges. Naturw.*, XXXIV, p. 400 (1869).

Menopon brevivalpe Piaget, *Les Pédiculines*, p. 498, pl. 40, f. 5 (1880).

E. pellucida was described from specimens taken off *Pseudocarbo carbo capensis* and *E. brevivalpis* from specimens taken off *Phalacrocorax carbo*.

Specimens examined: From Cape Cormorant, *Pseudocarbo capensis* (Sparrm.), Dyers Is., *Phalacrocorax c. carbo* (L.), Rye, Sussex, and *P. a. aristotelis* (L.), Scotland. Specimens from the last two hosts were received through the kindness of Colonel R. Meinertzhagen.

EIDMANNIELLA SINGULARIS (Kellogg and Kuwana).

Menopon singularis Kellogg and Kuwana, *Proc. Wash. Acad. Sci.* IV, p. 485, pl. 31, f. 1 (1902); Kellogg, *Trans. Amer. Ent. Soc.* XXXII, p. 321 (1906); Ferris, *Bern. P. Bishop Mus.*,

Honolulu, Bull. 98, p. 59, t. f. 11 a-g (1932).

Described by Kellogg and Kuwana from a female and immature form taken off *Anous stolidus*, Clipperton Island. Also recorded by Kellogg from *Sterna fuliginosa*, *Sula variegata*, *Sula nebowii* and *Phaeton aethereus*, and by Ferris from *Fregata minor*, Marquesas. The specimens recorded from *A. stolidus* and *S. fuliginosa* were probably stragglers.

There are specimens in the Hamburg Museum from *Sula variegata*, Chile and *Sula sula*, Costa Rica.

E. singularis may prove to be a synonym of *E. albescens* (Piaget).

Genus MENACANTHUS Neumann.

Uchida (1926) erected the genus *Neumannia* (nec Trouessart, 1888) = *Uchida* Ewing for *N. okadai* Uchida, and also included in the genus other species parasitic on Gallinaceous birds that were formerly placed in the genus *Menacanthus*, including *N. numidae* and *M. abdominalis* (Piaget). Uchida separated *Neumannia* from *Menacanthus* mainly owing, as he stated, to the oesophageal sclerite being well developed in the former and absent in the latter. In all the species of *Menacanthus* I have seen, including both *numidae* and *abdominalis*, the oesophageal sclerite is rudimentary, but is well developed in *U. okadai*, judging by Uchida's figures. However, the development of the oesophageal sclerite appears to be of no generic significance in the family Menoponidae, as it may be either rudimentary or well developed in closely related species of *Austromenopon* and *Sulidiphilus*. Uchida also stated that gastric teeth are absent in *Menacanthus* and present in *Uchida*, but they are probably present in all species of Menoponidae. The genus *Uchida* may, however, prove to be sufficiently distinct from *Menacanthus* to be retained, but neither *numidae* nor *abdominalis* can be included in it.

As *N. okadai* was described from three females taken off *Rollulus roulroul* and *Pavo muticus* in an aviary, it is possible the specimens may have been stragglers.

MENACANTHUS ABDOMINALIS (Piaget).

Menopon abdominale Piaget, *Les Pédiculines*, p. 473, pl. 36, f. 9 (1880).

Menopon (*Menacanthus*) *abdominale* Piaget, Neumann, *Arch. de Parasit*, XV, iii, p. 359 (1911).

Described from females taken off *Coturnix coturnix* (Quail), and Neumann recorded a female from *Perdix chukar*. Females have been received from Colonel R. Meinertzhagen taken off *Coturnix c. coturnix*, London; the bird came from Egypt. Females have also been taken off African Quail, *Coturnix c. africana* Temm. and Sehl., Pietermaritzburg, Natal (coll. L. Hill). The females can be distinguished in having the outer posterior angles of pleurites i and ii terminating in a backward-projecting process.

MENACANTHUS GONOPHAEUS (Burmeister).

For synonymy and previous records of this species see Bedford (*Onderstepoort Journ. Vet. Sci. and Anim. Ind.*, vii, i, p. 98, 1936).

Additional Records: Specimens have been received from Mr. G. H. E. Hopkins taken off the following hosts at Mbale, Uganda: White-necked Raven, *Corvultur albicollis* (Lath.) and *Rhinocorax rhipidurus* (Hart).

MENACANTHUS SPINIFERUS (Piaget).

Menopon spiniferum Piaget, *Les Pédiculines, Suppl.* p. 99, pl. 10, f. 9 (1885).

Additional Record: Females and males taken off two *Ptilostomus afer*, Gulu, Uganda (coll. G. H. E. Hopkins); also females from yellow-eyed Canary, *Serinus m. mozambicus* (L.) Kwambonambi, Zululand.

Genus MYRSIDEA Waterston.

Myrsidea Waterston, *Ent. Month. Mag.* LI, p. 12 (1915).

Myrsidea Ferris, *Canad. Ent.* p. 307, f. 10b (14 Sept., 1916).

As Ferris (*Parasitology*, XX, ii, pp. 221-224, 1928) has pointed out, in two species parasitic on Toucans, namely *M. victrix* Waterston and *M. extraneum* (Carriker), the female of the former has the first abdominal tergite much enlarged, and in the female of the latter species the metanotum is enlarged. Both these species agree in all generic characters so closely that the males of the two species are distinguishable only with difficulty. In the species parasitic on Corvidae the females also vary considerably, whereas the males are very similar and difficult to distinguish.

In the females of *M. sjoestedti* (Kellogg), *M. robsoni* Cummings and *M. ptilostomi* nov. sp. the metanotum is enlarged; in the females of *M. anathorax* (Nitzsch) and *M. subanathorax* nov. sp. the first abdominal tergite is modified; in the female of *M. anaspila* (Nitzsch) and *M. subanaspila* nov. sp. both the metanotum and first abdominal tergite are modified and in *M. insolita* (Kellogg and Paine) the metanotum and second and third abdominal tergites are enlarged. In *M. obovota* (Piaget), *M. nigra* (Kellogg and Paine) and *M. eurysterna* (Nitzsch) the females are normal and similar to the males, and in *M. subaequalis* (Lyonet) the sexes are dimorphic owing to some of the tergal plates of the female being interrupted in the middle.

The males can mainly be distinguished by the asters on the latero-posterior margins of the second sternite, and also by the chaetotaxy of sternites iii-vii. In some species the asters are similar in both sexes, whereas in others they vary in the males and females. Occasionally a specimen may be found having one more spine on one side than on the other, or having a spine on one side longer than the corresponding spine on the other side.

MYRSIDEA SJOESTEDTI (Kellogg).

(Figs. 1-3.)

Menopon sjoestedti Kellogg, *Wiss. Ergebn. schwed. zool. Exp. Kilimandjaro*, III, xv, p. 50, pl. 7, f. 7 (1910).

Described from females taken off Pied Crow, *Corvus albus* Müll. and White-necked Raven, *Corvultur albicollis* (Lath.).

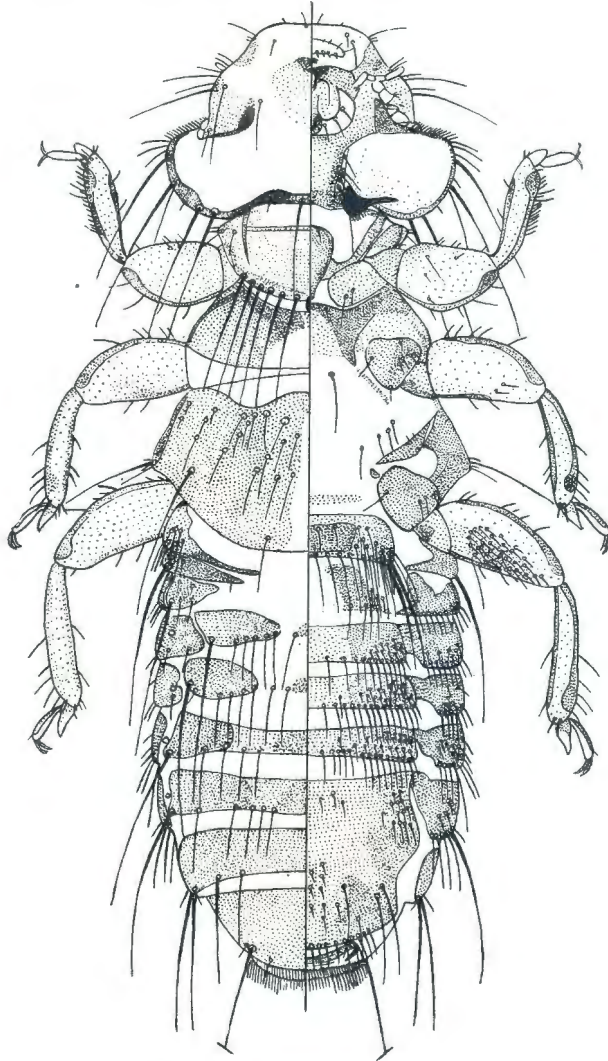


Fig. 1—*Myrsidea sjoestedti* (Kellogg). ♀.

Specimens have been received from Mr. G. H. E. Hopkins taken off the following hosts in Uganda: *Corvus albus* Müll., Kampala; *Corvultur albicollis* (Lath.), Mbale, and *Rhinocorax rhipidurus* (Hart.), Mbale.

Female: Total length 2.25-2.49 mm. Head 0.43-0.53 × 0.7-0.78.

In some specimens the metanotum extends backwards to the apex of the first tergite, in which case only the paratergites of the first segments are visible; this difference is probably due to mounting. The metasternal plate is usually absent, but may be rudimentary. Tergite iii with or without a small brown plate in the

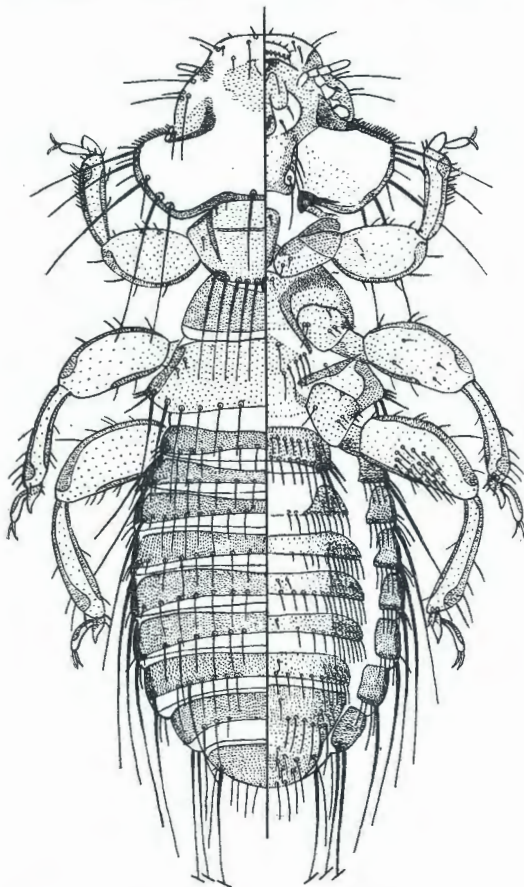


Fig. 2.—*Myrsidea sjoestedti* (Kellogg). ♂.

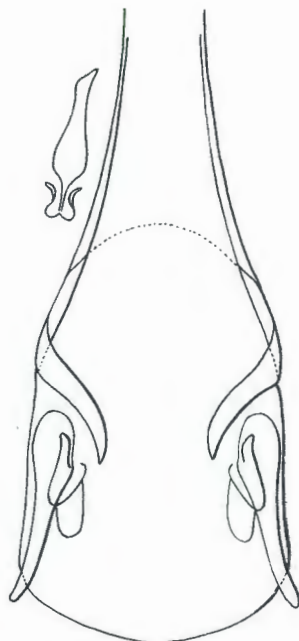


Fig. 3.—*Myrsidea sjoestedti* (Kellogg). ♂ genitalia.

middle. The transverse plates on tergites vi and vii may be either entire as shown in the figure, or interrupted on each side of the meson. First sternal plate very narrow. Plate on sternite ii of medium size, darker in the middle and with long, thick setae at the latero-posterior angles. Plate on sternite iii widely interrupted in the middle.

Male: Total length: 1.89 mm. Head 0.4 × 0.66 mm.

Sternal plate ii with two transverse rows of setae and four spines at each latero-posterior angle. Sternal plate iii widely interrupted in the middle as in the female. Sternal plates iv-vii with few if any setae in the middle, apart from those on the posterior margins.

MYRSIDEA SUBANASPILA sp. nov.

(Fig. 4.)

Female. Head 0.42×0.7 mm. Similar to other species parasitic on Corvidae, except that the forehead is narrow in front, but this difference may be due to mounting. *Pro-* and *meso-notum* normal.

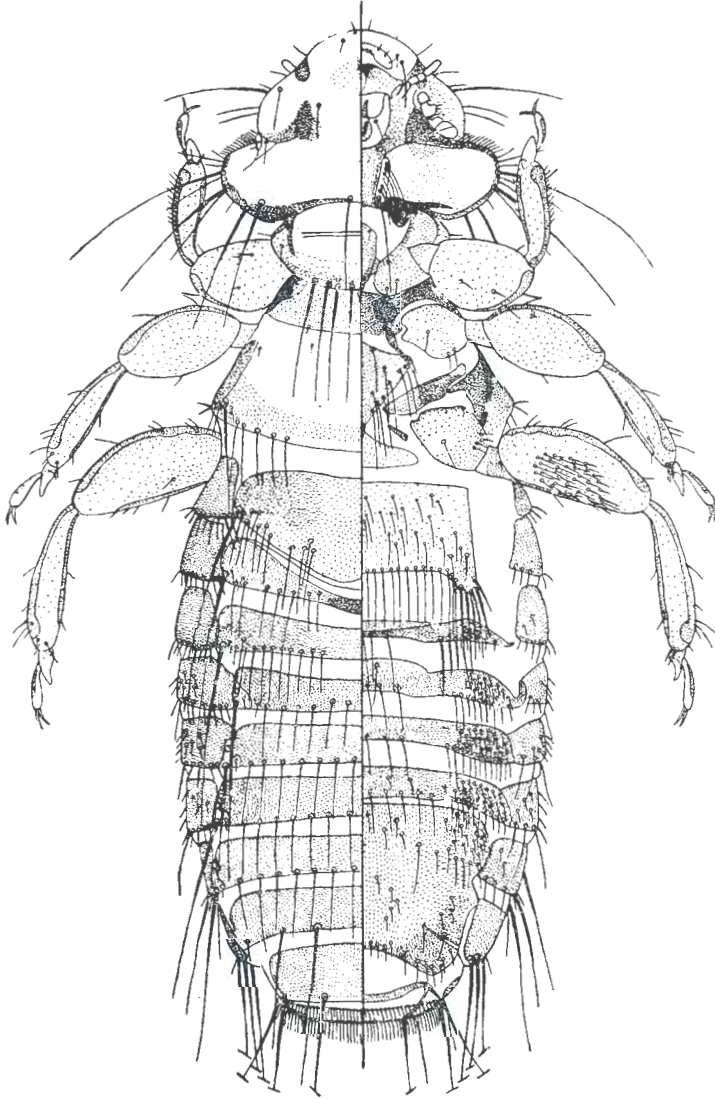


Fig. 4.—*Myrsidea subanaspila* sp. nov. ♀.

Metanotum large, the posterior margin convex with a few setae on each side with a narrow, transverse, pigmented band. *Pro-, meso-* and *meta-sternal* plates normal. *Abdomen* with well developed transverse plates and setae on the posterior margins as indicated in the

figure. Tergite i enlarged, projecting backwards in the centre and having a large plaque; tergite ii likewise projecting backwards, but to a lesser extent; the remaining tergites straight. On the ventral surface the plate on sternite i is well developed. Plate on sternite ii enlarged, with long stiff setae at the latero-posterior angles. Plates on sternites iii-vi with small patches of short setae on the lateral margins, the plates on the third and fourth sternites being double. Paratergites well developed. Total length 2.48 mm.

Male. Total length 2.13 mm. Head 0.38×0.63 mm. Plate on sternite ii with two irregular rows of setae in addition to the row on the posterior margin, and with five long and short spines at the latero-posterior angles. Plate on sternite iii complete.

Described from females and males taken off Pied Crow, *Corvus albus* Müll., Onderstepoort. *Holotype* a female.

This species is closely allied to *M. anaspila* (Nitzsch), which is parasitic on the European Raven *Corvus corax* L. In the female of *M. anaspila* the posterior margin of the metanotum is more convex, being similar to that of *M. hopkinsi* sp. nov. (Fig. 5); the plate on tergite i is smaller, of a different shape and less pigmented; the plate on tergite ii is more curved, and those on tergites iii-vi are narrower and less pigmented in the middle; also the plates on sternites iii-vi are of a slightly different shape, and the plates on the third and fourth sternites are single. The male of *M. anaspila* has only three spines (one long and two short) at the latero-posterior angles of the second sternite.

MYRSIDEA HOPKINSI sp. nov.

(Fig. 5.)

Female. Head 0.4×0.73 mm. Similar to other species parasitic on Corvidae.

Pro- and *meso-notum* normal. *Metanotum* enlarged and produced posteriorly in the centre, with a row of long setae and a pigmented line above them on the posterior margin. *Pro-*, *meso-* and *meta-sternum* with the plates well developed, normal. *Abdomen* with the tergal plates entire. Chaetotaxy as indicated in the figure. Tergite i enlarged, projecting backwards in the centre; likewise tergites ii-iv to a lesser extent. On the venter the plate on sternite i is well developed, elongated and narrow. Plate on sternite ii enlarged with a long, stiff seta and two spines at each latero-posterior angle. Plate on sternite iii not interrupted in the middle. Plates on sternites iv-vi with slight brushes of short setae on the lateral margins. Paratergites well developed, with short spine-like setae on the posterior margins. Total length 2.41 mm.

Male. Total length 1.94 mm. Head 0.4×0.66 mm. Plate on sternite ii with two irregular rows of setae in addition to the row on the posterior margin, and with four spines at the latero-posterior angles. Plate on sternite iii complete.

Described from females and males received from Mr. G. H. E. Hopkins, taken off white-necked Raven, *Corvultur albicollis* (Lath.), Mbale, Uganda. *Holotype* a female.

The female can be distinguished by the metanotum, the tergal plates (especially the plate on the first tergite), and the plate on the second sternite.

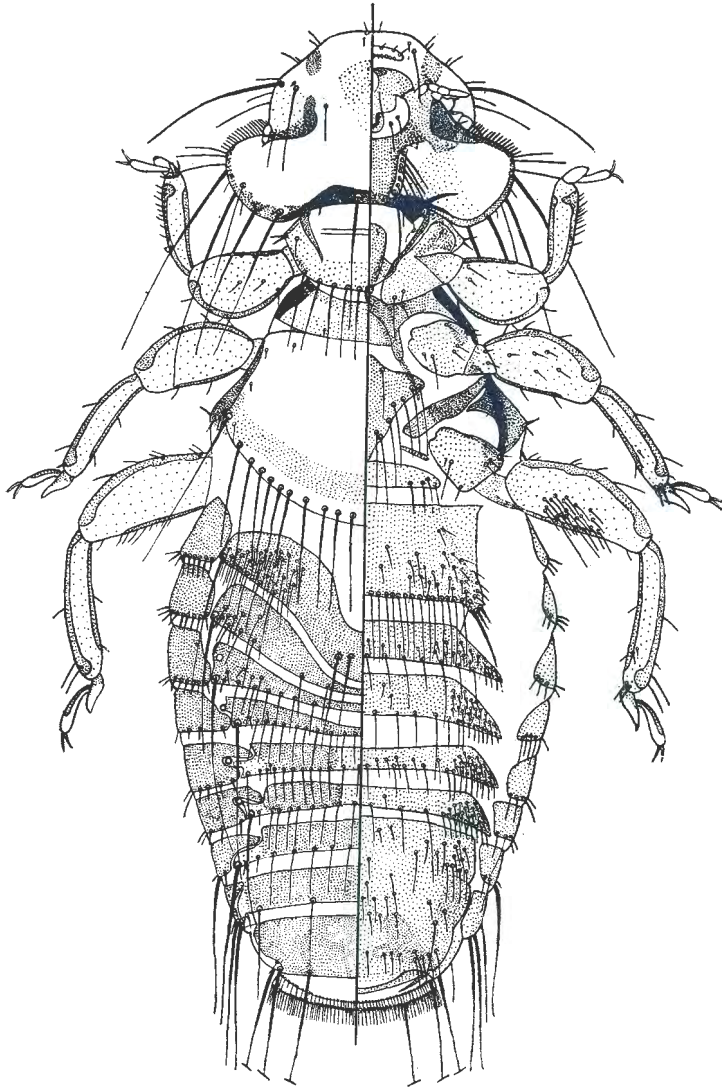


Fig. 5.—*Myrsidea hopkinsi* sp. nov. ♀.

MYRSIDEA PTILOSTOMI sp. nov.

(Fig. 6.)

Female. Head 0.42×0.61 mm. Similar to other species parasitic on Corvidae. *Pro-* and *meso-notum* normal. *Metanotum* very large and produced posteriorly in the centre, with a patch of setae on each side and a pigmented area in the middle of the posterior half. *Pro-* and *meso-sternum* with normal plates. *Metasternal* plates

variable. *Legs* normal, the posterior coxae as indicated in the figure. *Abdomen* with the tergal plates entire, except those on segments vi and vii which are interrupted on each side of the meson. Chaetotaxy as indicated in the figure. Tergites i-iii produced posteriorly in the centre. On the ventral surface the first sternal plate is small. Plate on sternite ii enlarged, with three short spines at each latero-posterior angle. Sternal plate iii not interrupted in the middle. Plates on sternites iv-vi with slight brushes of short setae on the lateral margins. Paratergites with short spine-like setae on their posterior margins. Between the plates on sternites iv-vii and the paratergites there is a small roundish plate.

Total length 2 mm.

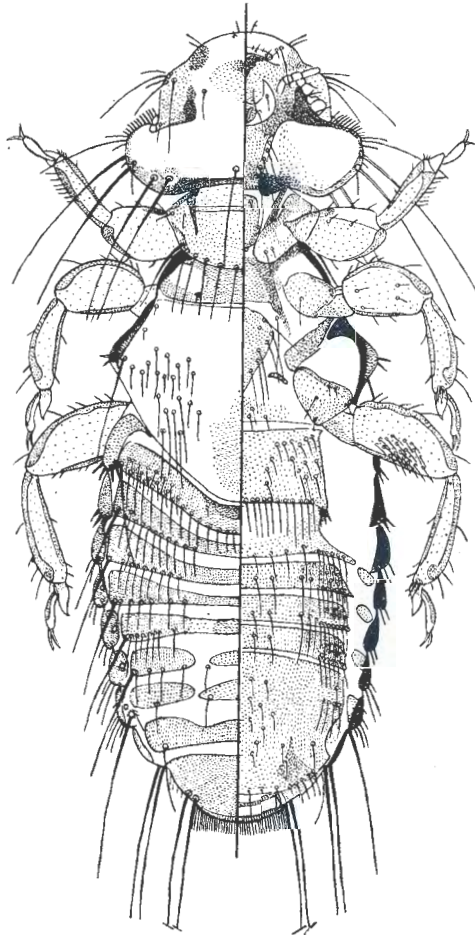


Fig. 6.—*Myrsidea ptilostomi* sp. nov. ♀.

Male with the plate on meta-sternum well developed. Abdomen with the first sternal plate either very small or absent. Plate on sternite with two irregular transverse rows of setae in addition to the row on the posterior margin, and with one long and two short spines

at the latero-posterior angles. Plate on sternite iii not interrupted in the middle. Total length 1.69 mm. Head 0.35×0.55 mm. In other respects similar to the male of *M. sjoestedti*.

Described from females and males taken off *Ptilostomus afer*, Gulu, Uganda (coll. G. H. E. Hopkins); also from *Heterocorax capensis kordifanensis*, Busia-Mumias Road, Kenya (coll. G. H. E. Hopkins), also males from Black Crow, *Heterocorax capensis* (Leht.), Kenkelbosch, Cape Province. *Holotype* a female, and allotype a male from *P. afer*.

MYRSIDEA OBOVATA (Piaget).

Menopon obovatum Piaget, *Les Pédiculines*, p. 429, pl. 34, f. 1 (1880).

Described from females and males taken off Pied Crow, *Corvus albus* Müll. in the Leyden Museum. Specimens have also been taken off the same host at Kampala, Uganda (coll. G. H. E. Hopkins) and Empangeni, Zululand.

It appears to be closely related to *M. nigra* Kellogg and Paine (*Bull. Ent. Res.* II, p. 151, pl. 5, f. 4, 4a, b, 1911), described from females and males taken off *Corrultur albicolles* in Southern Nigeria. The female of *M. obovata* has three to four longish, stiff setae and one or two short spines at the latero-posterior angles of the second sternal plate, whereas in the female of *M. nigra* there are, according to Kellogg and Paine's figure, four short spines at the angles. The male of *M. obovata* has four spines, the inner one being the longest, at the latero-posterior angles of the second sternal plate.

Genus TETROPTHALMUS Grosse.

TETROPTHALMUS CHILENSIS Grosse.

Tetrophthalmus chilensis Grosse, *Zeit. f. wiss. zool.* XLII, p. 520 (1885).

Tetrophthalmus chilensis Grosse, Ferris, *Parasitology* XX, ii, p. 224, t. f. 8 A-J (1928).

Previous Records: Described by Grosse from specimens taken off *Pelecanus* sp. Chili.; also by Ferris from *Pelecanus thagus*, Lobos de Tierra Island, Peru.

Specimens examined.—Males and females from *Pelecanus thagus*, Colosa, Chili (Hamburg Museum coll.); Pelican, locality incog. (Hamburg Museum coll.), and females from *Pelecanus occidentalis*, Panama City, Canal Zone (coll. L. H. Dunn).

Genus PSITTACOMENOPON Bedford.

Psittacomenopon Bedford, *Rept. Dir. Vet. Ser. & Ann. Ind. Un. S. Afr.*, XVI, p. 154 (1930).

This genus was erected for *Menopon poicephalum* Bedford (the type), *Menopon impar* Piaget and *Menopon scalare* Piaget (= *M. heterocephalum* Nitzsch), all parasites of Psittacidae (Parrots). The following species must also be included in the genus:

PSITTACOMENOPON ACUTICEPS (Piaget).

Menopon acuticeps Piaget, *Les Pédiculines*, p. 422, pl. 33, f. 7 (1880).

Described from females taken off the South American Blue and Yellow Macaw (*Ara ararauna*).

PSITTACOMENOPON APPENDICULATUM (Piaget).

Menopon appendiculatum Piaget, *Les Pédiculines*, p. 473, pl. 36, f. 8 (1880).

Described from a male reported to have been taken off *Perdix cinerea* (European Partridge). Harrison (*Parasit.* IX, i, p. 33, 1916) considered that it was probably a straggler from a hornbill, but it is a typical specimen of *Psittacomenopon*. The type was probably incorrectly labelled.

PSITTACOMENOPON HETEROCEPHALUM (Nitzsch).

Menopon heterocephalum Nitzsch, in Giebel, *Zeit. f. ges. Naturw.*, XVIII, p. 305 (1861). *Nomen nudum*.

Colpocephalum villosum Giebel, *ibid*, XXVIII, p. 394 (1867). *Nomen nudum*.

Colpocephalum heterocephalum (Nitzsch), Giebel, *Insecta Epizoa*, p. 267 (1874).

Menopon impar var. *scalaris* Piaget, *Les Pédiculines, Suppl.*, p. 95, pl. 10, f. 5 (1885).

Menopon scalare Piaget, Harrison, *Parasit.* IX, i, p. 44 (1916).

Colpocephalum hetercephalum (Nitzsch), Harrison *ibid*, p. 50 (1916).

Both *heterocephalum* and *scalaris* were described from specimens taken off *Psittacus erythacus* (Grey Parrot). Specimens have been taken off the same host, Stanleyville, Belgian Congo (Musée du Congo Belge coll.).

Menopon bifurcatum Piaget (*Les Pédiculines*, p. 423, pl. 35, f. 10, 1880), described from a male taken off *P. erythacus*, appears to be very distinct and cannot be included in this genus.

PSITTACOMENOPON IMPAR (Piaget).

Menopon impar Piaget, *Les Pédiculines, Suppl.* p. 94, pl. 10, f. 4 (1885).

Colpocephalum crassiceps Piaget, *ibid*, p. 129, pl. 13, f. 3 (1885).

Menopon impar Piaget, Harrison, *Parasit.*, IX, i, p. 38 (1916).

Colpocephalum crassiceps Piaget, Harrison, *ibid*, IX, i, p. 48 (1916).

P. impar was described from females and males taken off *Psittacus timneh*, and *P. crassiceps* from a male (Piaget records a female) from the same host.

Genus CUCULIPHILUS Uchida.

Cuculiphilus Uchida, *Journ. Coll. Agric. Imper. Univ. Tokyo*, IX, i, p. 47 (1926).

Combs are present on the venter of the hind femora; also on sternites iii-v in the male and sternites iii-iv in the female.

Only one species is known, namely *C. fasciatus* (Scopoli), which is parasitic on cuckoos. *Menopon semilunare* Piaget (*Les Pédiculines*, p. 424, pl. 33, f. 8, 1880), described from females and males taken off *Eudynamis (Cuculus) orientalis*, is very distinct. As it cannot be included in this genus the specimens may have been stragglers.

Uchida also included *Colpocephalum painei* McGregor from *Otus asio maccallicephalum* (Screech Owl), Texas, U.S.A. in this genus, but it is likewise very distinct and cannot remain in this genus.

CUCULIPHILUS FASCIATUS (Scopoli).

Pediculus fasciatus Scopoli *Ent. Carn.* p. 383 (1763).

Pediculus cuculi Fabricius, *Syst. Ent.* p. 807 (1775).

Menopon phaneroostigmaton Gurlt, *Arch. l. Naturgesch.*, XXII, p. 309 (1857).

Menopon phaneroostigma Nitzsch, in Giebel, *Zeit. f. ges. Naturw.*, XXVIII, p. 391 (1867); Giebel, *Insecta Epizoa* p. 290, pl. 14, f. 8 (1874).

Menopon fasciatum (Scop.) Harrison, *Parasit.* IX, i, p. 36 (1916).

Cuculiphilus fasciatus var. *hototogisu* Uchida, *Journ. Col. Agric. Imper. Univ. Tokyo*, IX, i, p. 48 (1926).

Cuculiphilus coromandus Uchida, *ibid.*, IX, i, p. 49, t.f. 17 (1926).

Cuculiphilus coromandus var. *centropi* Qadri, *Zeit. f. Parasitenk.* VIII, ii, p. 231, t.f. 4a, b (1935).

Previously described from specimens taken off European Cuckoo, *Cuculus canorus* L. Also recorded by Uchida as *C. fasciatus* from *Cuculus canorus telephonus*, Japan; as *C. fasciatus* var. *hototogisu* from *Chrysococcyx intermedius intermedius*, Japan, and as *C. coromandus* from one female, obviously a straggler, taken off *Eutamias coromanda major* (Japanese Ruddy Kingfisher). Qadri recorded specimens from *Centropus sinensis*, North India, as *C. coromandus* var. *centropi*. Bedford (*Rept. Dir. Vet. Serv. and Anim. Ind. Un. S. Afr.*, 1932, p. 388) has also recorded it from the following hosts in South Africa: Striped-breasted Cuckoo, *Oryzophanes cafer* (Licht.); Red-chested Cuckoo, *Notococcyx solitarius* (Steph.) and Bronze Cuckoo, *Tamprophaga cuprea* (Bodd.). Specimens have also been taken off Southern Emerald Cuckoo, *Chrysococcyx intermedius sharpei* van Som., Onderstepoort (coll. E. C. G. Bedford); Burchell's Coucal, *Centropus burchelli* Swains., Pietermaritzburg Natal (coll. L. Hill) and Mazabuka, Northern Rhodesia, 1933 (coll. P. L. le Roux), and stragglers on long-tailed shrike, *Urolestes melanoleucus*,

Mazabuka, Northern Rhodesia, 1936 (coll. P. L. le Roux). In the male there are on each side on sternite iii one to two combs, on sternite iv two to three combs, and on sternite v two combs. In the female there are two to three combs on each side on sternite iii, and three to four combs on sternite iv.

Uchida stated that the *var. hototogisu* differs from the type as follows: The male with two combs instead of one on sternite iii, and three combs instead of two on sternite iv. He confounds the male with the female. In a female from *U. melanoleucus* there are three combs on one side and two on the other on sternite iii, and on sternite iv there are three combs on one side and four on the other. In a male from same host there are two combs on one side and one on the other on sternite iii. In one female from *C. burchelli* there are three combs on each side of sternite iii and in another female from the same host there are only two combs on each side. The combs are composed of very minute setae, and the anterior rows, if present, usually contain only two or three setae. The presence or absence of them is therefore of no importance.

In describing *C. coromandus* Uchida stated that it differed from *C. fasciatus* in its smaller size, by the number of combs on the hind femora and remarkably shorter length of the spines that compose the combs. In a male from *C. intermedius sharpei* the left femur has three combs and the right four combs, likewise in a male of *Dicteisias tristis* (Giebel) there are four combs on the left femur and three on the right. In *C. fasciatus* the setae that compose the combs are very minute. Therefore, whether there are three or four combs on the venter of the hind femora, and whether their setae are short or not are of no importance.

Genus PLEGADIPHILUS *nov.*

Head less than twice as broad as long. Forehead sub-triangular, considerably narrower than the hindhead; lateral margins with a notch in front of the eyes, which are rudimentary. Mandibles situated a short distance behind the anterior margin. Oesophageal sclerite rudimentary. Antennae four-jointed.

Prothorax with acute wings. *Mesonotum* short, separated from the mesonotum by an indistinct suture.

Legs normal; posterior femora with a small patch of setae on the venter; mid and hind tibiae with two spine-like setae on venter at apex.

Abdomen elongate-oval, with tergal, sternal and paratergal plates; the sternal plate without distinct patches of setae on the lateral margins, but the setae are slightly more numerous on the lateral margins of sternites v-vi. Male genitalia with the basal plate elongated, rod-like; parameres present, and between them two pairs of similar-shaped plates.

Genotype: *Plegadiphilus threskiornis nov. sp.* *Menopon mamillatum* Piaget, described from a female taken off *Theristicus caudatus* must also be included in this genus.

This new genus is very distinct from *Colpocephalum*, which includes several species parasitic on Plegadidae. It is more closely related to *Eucolpocephalum* Bedford, *Heleonomus* Ferris and *Actornithophilus* Ferris. From *Eucolpocephalum* it can be distinguished by the absence of narrow transverse sclerites on the abdominal tergites and the male genitalia, and from both *Heleonomus* and *Actornithophilus* by the shape of the head, the setae on the abdominal sternal plates and male genitalia.

PLEGADIPHILUS THRESKIORNIS *sp. nov.*

(Figs. 7, 8.)

Female: Pale yellowish-brown in colour. *Head* 0.31×0.56 mm. On each side a brown blotch near the base of the lateral notch, and a smaller indistinct one above it; base of head with a narrow brown transverse band; occipital bands absent.

Thorax as in Fig. 7.

Abdomen widest at the fifth segment. Tergites with a single row of setae on the posterior margins, the setae for the most part alternately long and short. Sternites slightly darker than the tergites, with numerous irregularly disposed short setae. Paratergites ii-vi with the ventral posterior angles terminating in a backward-projecting process. Spiracles present on the third to eighth segments. Length 2 mm.

Male: In general appearance practically identical with the female, except that the abdomen is shorter and slightly more oval. The setae on the abdomen are similar to those of the female, except that the ninth sternite is sparsely clothed with short setae, and there are eight long setae on the posterior margin. Genitalia as in Fig. 8. Length 1.66 mm. Head 0.26×0.51 mm.

Described from females and males taken off Sacred Ibis, *Threskiornis aethiopica* Lath., Emakosini, Zululand (coll. G. A. H. Bedford), also from a female and male in Mr. C. D. Radford's collection taken from Australian White Ibis, *Threskiornis molucca*, Ororoo, S. Australia (coll. J. T. Gray).

Holotype a female, and *allotype* a male from *T. aethiopica*. *P. threskiornis* can be distinguished from *P. mamillatus* by the shape of the head, and according to Piaget *mamillatus* has two rows of setae on the metanotum.

The backward-projecting process on the paratergal plates are also present in *mamillatus*, and may be of generic significance.

Genus ARDEIPHILUS *nov.*

Female: *Head* almost twice as broad as long. Forehead with acute lateral angles. Ocular emarginations deep, without a notch or slit. Antennary fossa shallow. Temples rounded. Eyes well developed. Mandibles with a single tooth. Oesophageal sclerite and glands well developed.

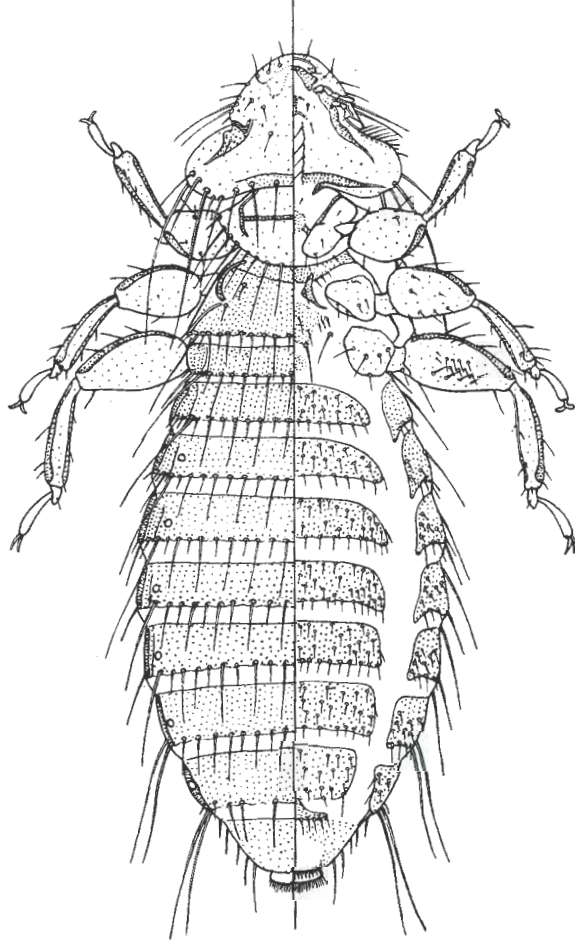


Fig. 7.—*Plegadiphilus threskiornis* sp. nov. ♀.

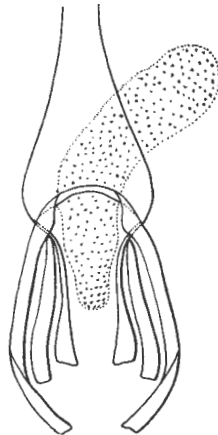


Fig. 8.—*Plegadiphilus threskiornis* sp. nov. ♂ genitalia.

Antennae four-jointed, the second segment with a large anterior expansion, the third constricted at the base.

Prothorax with acute wings. *Mesonotum* short, separated from the *metanotum* by a suture; the latter with the lateral margins divergent. Sternal plate between the mid and hind coxae well developed.

Legs normal, except that the claws have a tooth near their bases; hind femora with combs on the venter.

Abdomen elongate-oval, with well developed tergal and sternal plates, and paratergites. Both the third and fourth sternites with combs at the latero-posterior angles of the plates.

Genotype: *Colpocephalum trochiorum* Nitzsch.

ARDEIPHILUS TROCHIOXUS (Nitzsch).

(Figure 9.)

Colpocephalum trochiorum Nitzsch in Burmeister, *Handbuch. d. Ent.* II, ii, p. 438 (1938).

Colpocephalum vittatum Rudow, *Zeit. f. ges. Naturw.* XXVIII, p. 469 (1866).

Colpocephalum marginatum Macalister, *Quart. J. Micro. Sci.* n.s. XI, pp. 164-165, Fig. (1871).

Colpocephalum trochiorum Nitzsch, Giebel, *Insecta Epizoa*, p. 272, pl. 13, f. 8 (1874). Piaget *Les Pédiculines*, p. 550, pl. 45, f. 9, (1880).

Colpocephalum marginatum Macalister, Thompson, *Ann. Mag. Nat. Hist.* (x), XVI, p. 397 (1935).

Cuculiphilus mirzai Qadri, *Zeit. f. Parasitenk.* VIII, ii, p. 232, t.f. 5a, c (1935).

Described by Burmeister, Giebel and Piaget from specimens taken of the Bittern, *Botaurus stellaris* (L.). Piaget also recorded it from the Purple Heron, *Pyrhrherodia purpurea* (L.) in the Leyden Museum. Rudow described it as *C. vittatum* from the Squacco Heron, *Ardeola ralloides* (Scop.), and Bedford (1929, 1932) recorded females under the same name taken from the same host on the Kuneni River, South-West Africa. Macalister also described it from *Ardea comata* - *Ardeola ralloides*. Qadri described females taken from *Ardeola grayii*.

Genus CICONIPHILUS nov.

Head about one-third or less wider than long. Forehead and temples rounded. On each side of the forehead in front of the eyes there is a broad slit. Eyes well developed. Mandibles with a single tooth. Oesophageal sclerite and glands well developed. *Antennae* four-jointed, the second segment with a large anterior expansion, the third constricted at the base.

Prothorax with acute wings. *Mesonotum* short, separated from the *metanotum* by a suture; the latter with the lateral margins divergent.

Legs, normal, the posterior femora with combs on the venter.

NOTES ON MENOPONIDAE.

Abdomen elongate-oval, with the apical segment rounded in both sexes. Tergites and sternites with well developed plates. Third sternite only with combs at the latero-posterior angles of the plate. Male genitalia with the basal plate rod-like.

Genotype: *Colpocephalum quadripustulatum* Nitzsch.

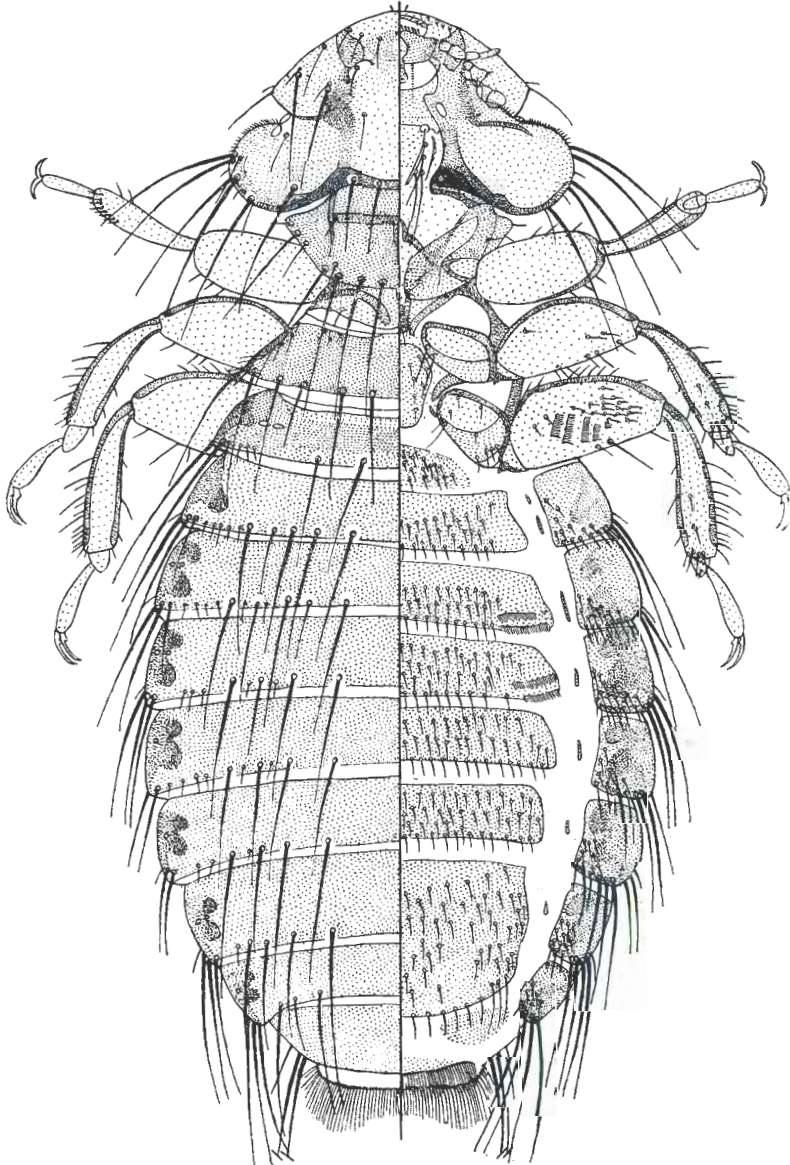


Fig. 9.—*Ardeiphilus trochioxus* (Nitzsch). ♀.

In this genus must also be included *Ciconiphilus africanus*, nov. sp., *Colpocephalum decimfasciatum* Boisd. and Lac. and *C. pectinatum* (Neumann), described from a single female taken off a domestic goose.

This genus is related to *Kurodaia* Uchida. In *Kurodaia* the slit in front of the eye is broader, there is a rudimentary comb on each side on sternite iv, and the male genitalia are of a different type. In my key to the sub-families and genera of Menoponidae in "A Synoptic Check-list and Host-list of the Ectoparasites found on South African Mammalia, Aves and Reptilia" (Second Edition), 1932, page 370, I placed *Kurodaia* under 25, but it should have been placed under 24, I had not seen specimens at the time.

CICONIPHILUS AFRICANUS sp. nov.

(Figs. 10-12.)

Male: Head 0.33 × 0.54 mm. Forehead with about nine setae on each side, and on the dorsum two setae in a large pustule on each side above the ocular blotch, which is well developed, and one slightly nearer the meson; two more in front on each side near the lateral margin. Temples with a seta on the inner margin of each eye, a long one in a large pustule on the posterior half, and three long and four short ones on the margins. Occipital bands faint; similar bands on the venter well developed. On the venter below the pharyngeal sclerite there is a transverse band with two short setae on each side, and beneath these two longer setae on the gular region.

Prothorax with a transverse bar connected at each end to a short longitudinal bar; at each end of the transverse bar there is a minute seta. On each lateral margin there is a short seta at the angle, and a long and short one beneath it. On the posterior margin there are ten long setae and a short one. Metanotum with two setae on each side in front, a longitudinal row of minute ones inside each lateral margin, and twelve long ones on the posterior margin.

Abdomen with brown plates. Tergites with a row of setae, for the most part alternately long and short, on their posterior margins, and in addition to these tergites ii-vii each has a transverse row of about three to five, usually four, setae in the middle of the plates. Plates on sternites sparsely clothed with short setae, those on the posterior margins slightly longer, and the third sternite with combs at the latero-posterior angles of the plates. Paratergites well developed.

Total length 1.9 mm.

Female: Very similar to the male, except that there is only one row of setae on the tergites. The head measures 0.38 × 0.64 mm. and the total length is 2.55 mm.

Described from males and females kindly sent by Mr. G. B. Thompson taken off Saddle-bill Stork, *Ephippiorhynchus senegalensis* (Shaw), Zoological Gardens, London, from West Africa. *Holotype* a male. This new species is very distinct from *Colpocephalum subflavescens* Piaget, which was also described from specimens taken off *E. senegalensis*. It is closely related to *A. quadripustulatus* (Nitzsch) found on *Ciconia ciconia*, and is about the same size.

From this species both sexes can be distinguished by the shape of the head. In the male of *A. quadripustulatus* the head measures 0.31×0.59 mm. and in the female 0.36×0.66 mm. The females can also be distinguished by the vulva, and the males by the genitalia and the setae on the tergites, which are more numerous in *A. quadripustulatus*, there being an anterior row of seven to eight setae on tergite i, about eighteen in the anterior row on tergite ii, eleven to eighteen on tergites iii-vii, and three to four in the anterior row on tergite viii. In *A. africanus* there is only one row of setae on tergites i and vii.

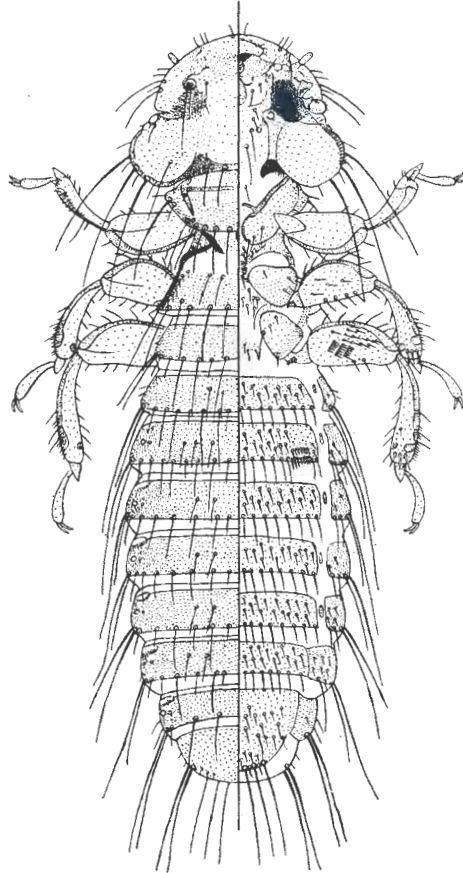


Fig. 10.—*Ciconiphilus africanus* sp. nov. ♂.

CICONIPHILUS DECIMFASCIATUS (Boisduval and Lacordaire).

Colpocephalum decimfasciatum Bois & Lac., *Faun. Ent. Env. Paris*, p. 123 (1835).

Colpocephalum importunum Nitzsch, in Denny, *Mon. Anoplur. Brit.* p. 214, pl. 18, f. 1 (1842); Nitzsch, in Giebel, *Zeit. f. ges. Naturw.*, XXVIII, p. 394 (1867); Giebel, *Insecta Epizoa*, p. 272 (1874); Piaget, *Les Pédiculines*, p. 548, pl. 45, f. 8 (1880).

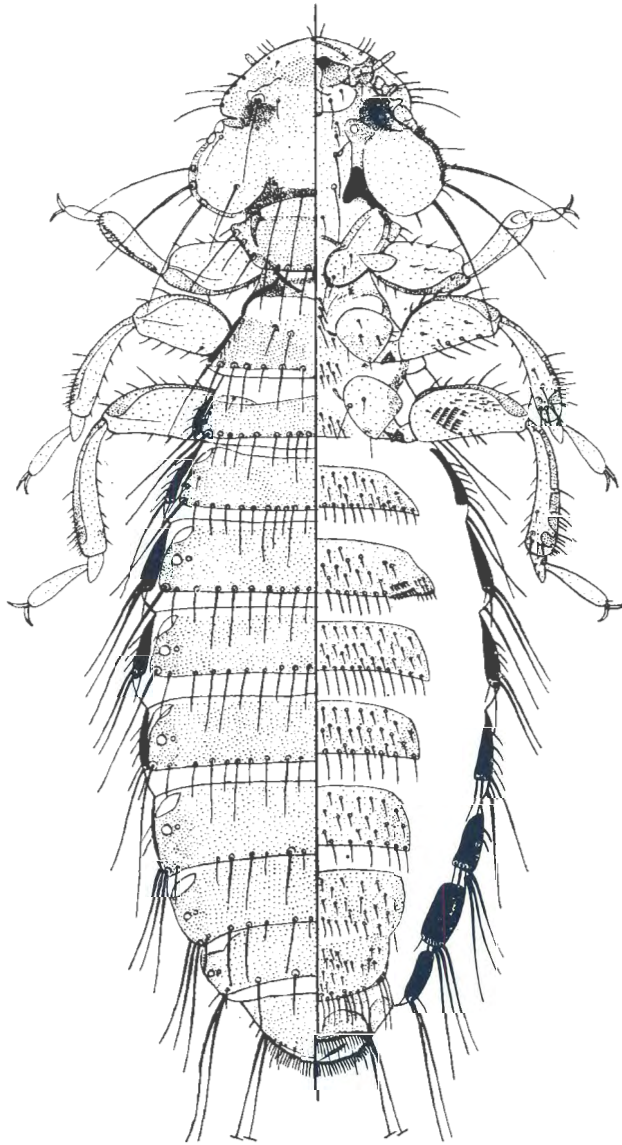


Fig. 11.—*Ciconiphilus africanus* sp. nov. ♀.

Colpocephalum nyctarde Denny, *Mon. Anoplur, Brit.* p. 215, pl. 20, f. 9 (1852).

Colpocephalum importunum var. *major* Piaget, *Les Pédiculines*, p. 549 (1880), nec. Piaget, p. 519.

Colpocephalum laticeps Kellogg, *Proc. Calif. Acad. Sci.* VI, p. 149, pl. 12, f. 8 (1896).

Colpocephalum veratrum Kellogg, *Wiss. Ergebn. Schwed. Zool. Expl. Kilimandjaro*, III, XV, p. 52, pl. 7, f. 9 (1910).

Colpocephalum tamamurensis Uchida, *Journ. Coll. Agric. Imper. Univ. Tokyo*, IX, i, p. 37, t.f. 13 (1926).

Colpocephalum boisduvali Eichler, *Sitzungsbr. d. Gesell. naturf. Freunde*, p. 96 (16 Mar. ,1937).

Both *decimfasciatum* and *C. importunum* were described from specimens taken off Grey Heron, *Ardea cinerea* L., and Giebel (1874) also recorded it from the Night Heron, *Nycticorax nycticorax* (L.). The types of *C. nyctarde* and *C. tamamurensis* were taken off *N. nycticorax*; the types of *C. laticeps* off *Ardea egretta*, Kansas, U.S.A. and *Botaurus lentiginosus*, Colorado, U.S.A., and the types of *C. veratrum* off the Great White Heron, *Casmerodius albus* (L.). Piaget described the variety *major* from Little Egret, *Egretta garzetta* (L) and European Little Bittern, *Irobrotychus minutus* (L.). Uchida (1926) also recorded this species from Japan taken off Japanese Reef Heron, *Demigretta sacra ringeri* and *Butorides striatus amurensis*; also specimens, obviously stragglers, from two species of terns under the name *C. decimfasciatum*; also from *Demigretta sacra ringeri* and Chinese Little Bittern, *Irobrotychus sinensis sinensis* under the name *C. nyctardae*.

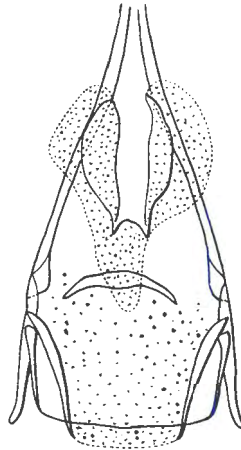


Fig. 12.—*Ciconiphilus africanus* sp. nov. ♂ genitalia.

Specimens examined: From Black-headed Heron, *Ardea melanocephala* Vig. and Child, Zoological Gardens, Durban; Buff-backed Egret, *Bubulcus ibis* (L.), Rustenburg District, Johannesburg and Sandford, Bergville District; *Nycticorax n. nycticorax* (L.), Hlululuwe, Zululand (coll. C. J. Guillardod); *Nycticorax nycticorax naevius* (Boddaert), Panama (coll. L. H. Dunn), and Great Blue Heron, *Ardea herodias herodias*, Fredericktown, Ohio (received from Mr. H. S. Peters).

This is a dark brown species. Uchida states that his types (two females) of *C. tamamurensis* are pale brownish-yellow, with a few brownish markings. They were evidently slightly immature specimens. In his figure he shows two rows of setae on each of the tergites i-iv, the first row consisting of six setae on each side of the meson, and on tergites ii-iv there are four to five setae on each side. In females at hand the number of setae in the anterior rows of tergites i-vi varies as follows:—

1st abdominal tergite	—	—	—	—
2nd ,, ,,	2/1	3/3	2/2	3/2
3rd ,, ,,	1/1	3/2	1/2	1/1
4th ,, ,,	1/2	2/2	—/1	2/2
5th ,, ,,	1/1	—/1	—	1/1
6th ,, ,,	—	—	—	1/1

On the anterior margin of the metathorax there are two to four short setae on each side. These are not shown in Uchida's figure.

Genus COLPOCEPHALUM Nitzsch.

Colpocephalum Nitzsch, *German's Magazin*, III, p. 298 (1818).

Ferrisia Uchida, *Journ. Coll. Agric. Imper. Univ. Tokyo*, IX, 1, p. 50 (1926), *nec* Fuller.

Neocolpocephalum Ewing, *Journ Parasitol.*, XX, p. 65 (1933).

Pseudocolpocephalum Qadri, *Zeit. für Parasitenk.* VIII, vi, p. 640 (1936).

Uchida in describing *Ferrisia* stated that it resembles *Colpocephalum*, but the sexes are dimorphic. In *C. zebra*, the type of *Colpocephalum*, the sexes are dimorphic. In *C. ferrisi* *nov. sp.*, however, which is very closely related to *C. zebra*, the sexes are similar, except that the male possesses spines on the posterior margins of the hind trochanters and femora, which are absent in the female. I fail to see how *C. turbinatum* Denny, the type of *Ferrisia* can be separated from *Colpocephalum*.

The genotype of *Pseudocolpocephalum* is *P. uchidi*, Qadri, described from specimens taken off *Dissoura episcopi*. Whether *uchidi* is a distinct species or not remains to be proved.

COLPOCEPHALUM SUBZEBRA *sp. nov.*

(Figs. 13-15.)

One male (the holotype) from Openbill Stork, *Anastomus lamelligerus* Temm., and males and females (including the allotype) from White-bellied Stork, *Sphenorrhynchus abdimi* Licht., Haut. Huri, Congo Belge (Musée du Congo Belge coll.).

This species is very distinct from *C. occipitale* Nitzsch, which Piaget recorded from *A. lamalligerus*. It is very closely related to *C. zebra* Nitzsch, a parasite of the White Stork, *Ciconia ciconia* (L.) and Saddle-bill Stork, *Ephippiorhynchus senegalensis* (Shaw). The male can be distinguished in having the apical abdominal segment rounded, whereas in *C. zebra* the posterior margin is almost straight; and the flat plate of the genitalia has only three serrations on each side, whereas in *C. zebra* this plate is furnished with five to seven

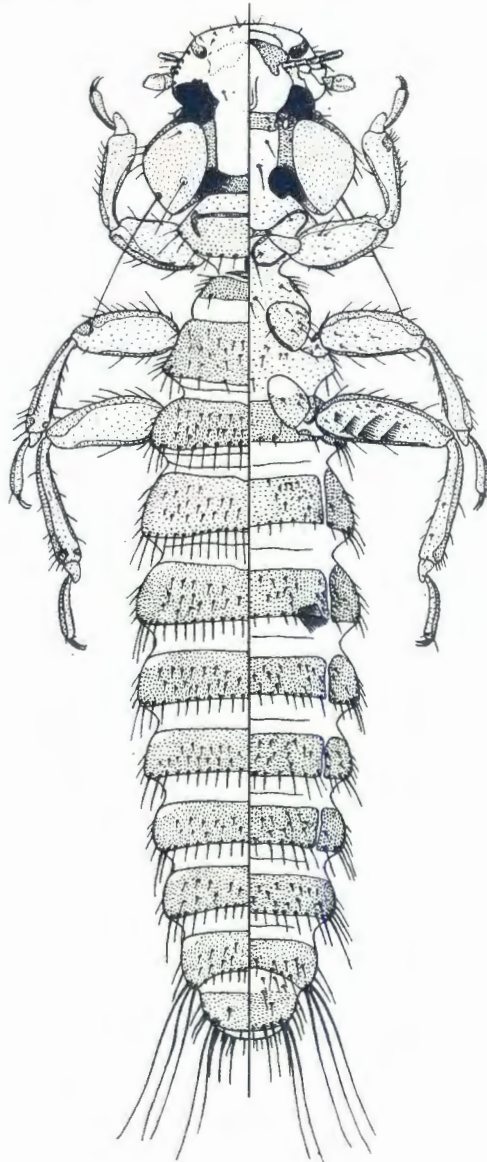


Fig. 13.—*Colpocephalum subzebra* sp. nov. ♂.

serrations on each side. Also, in *C. zebra* there is only a single transverse row of setae, usually very regular, on tergites i-viii, in addition to the row on the posterior margins. The female differs from that of *C. zebra* in the chaetotaxy of the abdomen. The setae on the abdominal tergal and sternal plates are shorter and less numerous than in *C. zebra*. In *C. zebra* there are two transverse rows of setae on tergites iii-viii in addition to the row on the posterior margins.

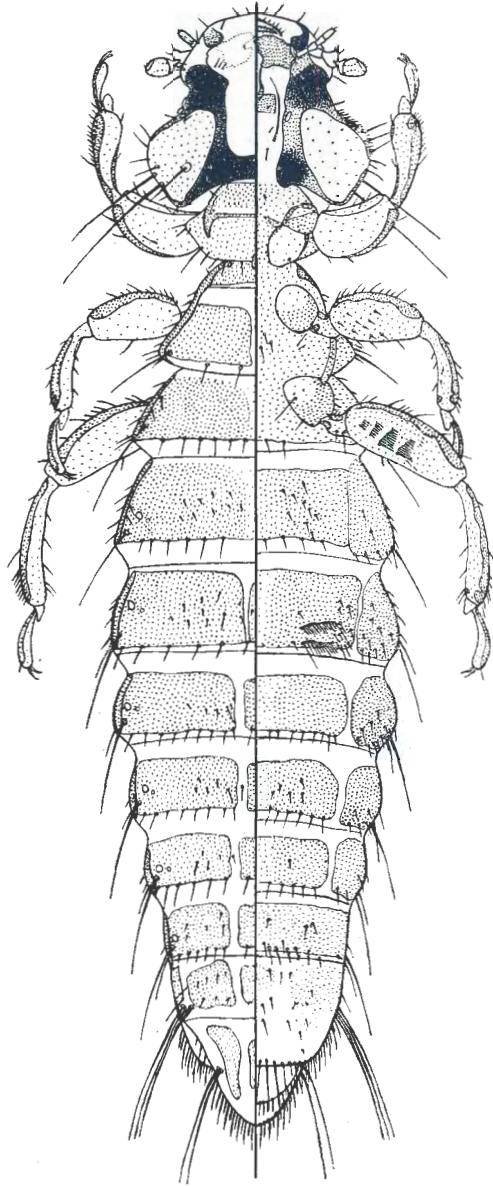


Fig. 14.—*Colpocephalum subzebra* sp. nov. ♀.

COLPOCEPHALUM FERRISI Bedford.

Colpocephalum ferrisi Bedford, *Rept. Dir. Vet. Ser. and Anim. Indust. Un. S. Afr.*, XVI, p. 159, f. 5, a-d (1930).

Additional record: Males and females taken off White-bellied Stork, *Sphenorhynchus abdimi* Leht., Haut Huri, Congo Belge (Musée du Congo Belge coll.).

This species was described from males taken off Black Stork, *Melanopelargus niger* (L.). The female differs from those of *C. zebra* and *C. subzebra* in having the tergal plates entire as in the male. There are no well developed spines on the posterior margins of the hind trochanters and femora as in the male. Tergites i-vii with a few short setae in addition to the row on the posterior margins.

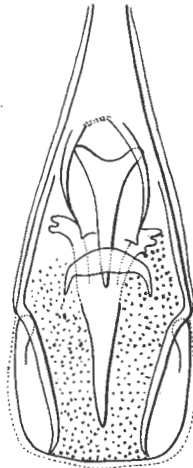


Fig. 15.—*Colpocephalum subzebra* sp. nov. ♂ genitalia.

COLPOCEPHALUM SUBAEQUALE Nitzsch.

Colpocephalum subaequale Nitzsch, in Burmeister, *Handb. der Ent.* II, ii, p. 438 (1838); Giebel, *Insecta Epizoa*, p. 265, pl. 13, f. 13, 14 (1874); Kellogg, *Proc. Calif. Acad. Sci.* VI, p. 525, pl. 72, f. 1 (1896).

Colpocephalum fragili Denny, *Mon. Anoplur. Brit.*, p. 208, pl. 20, f. 4 (1842).

Colpocephalum semicinctum Rudow, *Zeit. f. ges. Naturw.*, XXVII, p. 471 (1866); Piaget, *Les Pédiculines*, p. 528, pl. 44, f. 1 (1880); Uchida, *Journ. Coll. Agric. Imper. Univ. Tokyo*, IX, i, p. 41 (1926).

Colpocephalum deperditum Nitzsch, in Giebel (*Insecta Epizoa*, p. 265, pl. 13, f. 9, 1874) is probably a synonym of this species. Giebel gives a figure but no description of an immature specimen from *Corvus c. cornix* L. (Hooded Crow.)

The types of *C. subarquale* were taken off the Raven, *Corvus corax* L. and the Rook, *Corvus frugilegus*, in Europe and the type of *C. semicinctum* off the Pied Crow, *Corvus albus* Müll. (= *C. scapulatus* Daud.). Kellogg (1896 and 1899) recorded it from the North American Crows, *Corvus americanus* and *C. corax sinuatus* and Uchida from *Corvus coronoides japonensis* (Japanese Jungle Crow). Bedford (*Onderstepoort Journ. Vet. Sci and Anim. Indust. Un. of S. Afr.*, VII, i (p. 100, 1936) recorded it from the following hosts: *Corvus corax*, *Corvus frugilegus* and Chough, *Pyrrhocorax pyrrhocorax* (L.), in England; also from White-necked Raven, *Corvultur albicollis* (Lath.), Basutoland and Uganda, and from *Corvus albus*, South Africa and Beira, East Africa.

Specimens have also been taken off Black Crow, *Heterocorax capensis* (Leht.), Kenkelbosc, C.P.; *Heterocorax capensis kordijanicus*, Busia-Mumias Road, Kenya (coll. G. H. E. Hopkins); *Corvus corax edithae* Phillips, Lokataug, West of Lake Rudolf, Kenya (coll. G. H. E. Hopkins) *Rhinocorax rhipidurus*, Mbale, Uganda (coll. G. H. E. Hopkins), *Corvultur albicollis*, Mbale, Uganda (coll. G. H. E. Hopkins), and "Australian Common Crow", New South Wales.

Genus DICTEISIA Kéler, 1938.*

Head about one-third broader than long. Forehead much narrower than hind head, sub-triangular, with a large dark blotch on each side. On each side of the forehead in front of the eyes there is a notch. Close to the eyes on the lateral margins there is a well developed comb. Right mandible with two teeth, left with a single tooth. Pharyngeal sclerite and glands well developed. Palpi normal, four-jointed. Antennae four-jointed, second segment without a large anterior expansion, the third constricted at the base and the fourth elongated.

Prothorax large, with rounded wings. *Mesonotum* short, not separated from the metanotum by a suture; the latter with lateral margins divergent.

Legs with the tibiae short and broad, the mid and hind pairs with three spiny setae on the venter at their apices, and several similar setae on the inner margins; posterior femora with combs on the venter.

Abdomen elongate, rounded posteriorly in both sexes. Tergites and sternites with well developed plates. Sternites iii and iv each with a single comb on each side in both sexes. Male genitalia with the basal plate rod-like; parameres absent; the flat plate with minute serrations on each side.

Genotype: *Menopon triste* Giebel.

* In this instance, also, a new genus proposed by Mr. Bedford has been anticipated. The genotype was the same as that of *Dicteisia*. (G. H. E. H.)

NOTES ON MENOPONIDAE.

DICTEISIA TRISTIS (Giebel).

Menopon triste Giebel, *Insecta Epizoa*, p. 297 (1874).

Previously recorded taken off the South African Screamer, *Chauna chavaria*. Through the kindness of Mr. C. D. Radford I received a male and female taken off *Chauna cristata* (crested screamer), Buenos Aires, Argentine.