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New Records and Nymphal Stages of the Anoplura
from Central and East Africa, with description
of a new *Hoplopleura* species⁽¹⁾

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JOHNSON (1960) published a comprehensive account of the Anoplura from African rodents and insectivores. Subsequently, papers pertaining to the Anoplura fauna of Africa have been published by BENOIT (1959a, b; 1961a, b; 1962a, b, c; 1965), JOHNSON (1962a, b; 1963) and KUHN and LUDWIG (1965).

This project on the Anoplura of the African continent and Madagascar, is based for the most part on collections made by personnel of Division of Mammals, U. S. National Museum (Drs. H. W. SETZER, H. J. HERBERT, A. R. HARDY, C. G. COETZER, R. M. DAVIS, J. C. LINGERBACH, A. L. MOORE and R. C. COLE), Dr. U. RAHM of the Institut pour la Recherche Scientifique en Afrique Centrale, Bukavu, République

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Most of the material on which this paper is based was collected by Dr. U. RAHM, Institut pour la Recherche Scientifique en Afrique Centrale, Bukavu, République Démocratique du Congo, and Dr. HENRY W. SETZER, Division of Mammals, U. S. National Museum. These collections were made possible by support from the U. S. Army Medical R & D Command.

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Démocratique du Congo, and by Dr. HARRY HOOGSTRAAL and his associates of the U. S. Naval Medical Research Unit Number 3, based in Cairo, Egypt. This is the first paper of this project.

The identification of mammals from the Congo were provided by Dr. RAHM, and all others by Dr. SETZER. Zoological nomenclature of the host animals is followed of ANDERSON and JONES (1967) and ANSELL (1960), except as modified by Drs. SETZER and RAHM. Morphological terminologies of the Anoplura are those previously published by KIR (1965, 1966a and 1966b).

This paper deals with the Anoplura of the République Démocratique du Congo (the former Belgian Congo, and hereafter referred to as Congo), Kenya and Tanganyika. All records, except those from the Congo, refer to the name of the country at the time the record was published. Discussed are 11 species of *Hoplopleura*, 12 species of *Polyplax*, and 1 species for each of *Schizophthirus*, *Scipio*, *Neohaematopinus*, *Proenderleinellus*, and *Pediculus*. Nymphal stages of 10 species of Hoplopleuridae and *Hoplopleura nasvikae* n. sp. are described and illustrated, and adult stages of 4 species of *Hoplopleura* are redescribed. Most of the material used in this study is deposited in the collections of the U.S. National Museum and the University of Minnesota Entomology Museum, but a paratype of the new species and specimens of others are deposited in the collections of the Musée Royal de l'Afrique Centrale, Tervuren.

We thank Dr. H. W. SETZER, Division of Mammals, U. S. National Museum, and Dr. U. RAHM, Institut pour la Recherche Scientifique en Afrique Centrale, Bukavu, République Démocratique du Congo for making the Anoplura specimens available for this study.

FAMILY HOPLOPLEURIDAE FERRIS

Subfamily HOPLOPLEURINAE FERRIS

Genus **HOPLOPLEURA** ENDERLEIN

Hoplopleura dendromuris JOHNSON - (Figs. 1-6).

Hoplopleura dendromuris JOHNSON, 1962: 155-58, fig. 1-3.

Hoplopleura intermedia (partim), FERRIS, 1921: 91 (records from *Dendromus*); HOPKINS, 1949: 484 (records from *Dendromus*); FERRIS, 1951: 137 (records from *Dendromus*).

The original description was solely based on females (holotype and 2 paratypes) collected off *Dendromus mesomelius insignis* in Kenya. In this study 3 male and 3 female specimens were examined. Male of this species is herewith described and illustrated. Female is also redescribed and illustrated in detail, particularly of the genitalia. No nymphs were available for study.

Diagnosis. - This species is closely related to *H. patersoni* JOHNSON and *H. laticeps* FERRIS. This species is separable from other members of the *hesperomydis-affinis* group, *patersoni* JOHNSON and *laticeps* FERRIS by having very short DPTS, paratergites of abdominal segments 3-7 with apical lobes entire and more or less truncate, and 3-5 setae laterally off the abdominal sternites.

Description. - MALE. Total body length about 1.04 mm. *Head* (Fig. 1) slightly longer than wide; antennae 5-segmented; post-antennal angle prominent; posterolateral angle slightly produced; PAS, AS and PCHS present; 4 SHS, 3 MHS present on each side; DPHS long; ADHS and ACHS short; VPHS short, barely reaching the base of antennal segment 1. *Thorax.* Sternal plate elliptic with posterior one-half narrowly elongate, posterior apex rounded, and anterior apex elongate (Fig. 2); DPTS short; 1 ADTS minute; DPtS and DMtS minute. *Legs* as other members of *Hoplopleura*. *Abdomen.* Tergal and sternal plates developed; segments 1-7 each with 1 tergite; tergites of segments 1 and 2 each with 4 setae; tergites of segments 3 and 4 each with 11 setae; segment 5 with 10 tergal setae; segment 6 with 9 tergal setae; segment 7 with 6 tergal setae; no setae laterally present off the tergal plates; segments 2 and 7 each with 1 sternite; segments 3, 5 and 6 each with 2 sternites; sternite of segment 2 and first sternal plate of segment 3 extended laterally and articulated with the corresponding paratergites; segment 4 with 3 sternites; sternites of segments 3-6 each with 7 or 8 setae; first sternal plate of segment 3 with 2 pairs of 2 spiniform setae; about 3 setae present laterally off the sternal plates; segments 1-8 each with 1 paratergite on each side; paratergal lobes of segments 3-7 entire and more or less truncate; paratergites of segments 2-8 each with 2 apical setae; ventral paratergal seta of segment 3 much longer than dorsal seta and paratergal lobe; paratergal setae of segments 4-6 subequal and its dorsal seta minute; segment 8 with 2 long apical setae but no apical lobe (Fig. 3); anal segment not pointed (Fig. 4). *Genitalia* (Fig. 5). Basal apodeme tapering anteriorly; parameres pointed at

posterior apex; pseudopenis articulated anteriorly to mesal mid-point of paramere. FEMALE. Total body length about 1.32 mm. Head, thorax, legs, and abdomen as in male except for normal sexual differences, unless mentioned otherwise. *Abdomen*. Tergal and sternal plates much more numerous than those of male; segments 1, 2 and 8 each with 1 tergite; segment 3 with 2 tergites; segments 4-7 each with 3 tergites; tergite of segment 1 with 4 setae; tergites of segments 2-8 each with 6-8 setae; segment 2 with 3 sternites; segment 7 with 2 sternites of segments 3-6 each with 7 to 9 setae; 4-5 setae present laterally off the sternal plates; segment 8 with dorsal lobe produced and pointed. *Genitalia* (Fig. 6). Genital plate small; genital lobe with setae; genital setae small but spinous; vulvar fimbriae distinct; anal segment not prolonged.

Specimens examined. - Ex *Dendromus insignis kivu*, CONGO: Ihusi, July 7, 1963, U. RAHM, 3 males and 3 females (L-12063).

Hoplopleura inexpectans JOHNSON - (Fig. 15).

Hoplopleura inexpectans JOHNSON, 1960: 20-21, fig. 21-23B, 24B, 21, 34A and B.

H. inexpectans JOHNSON was described from specimens collected off *Rattus (Praomys) taitae* in Kenya. This species is very closely related to *H. intermedia* KELLOG and FERRIS. Nymph 2 of this species is separable from that of *intermedia* K. and F. by having mesothoracic spiracle with tridentate macrotubercle, PDPHS and DPTS long, and paratergites of abdominal segments sickle-shaped and its posterior margin bearing about 7 denticles.

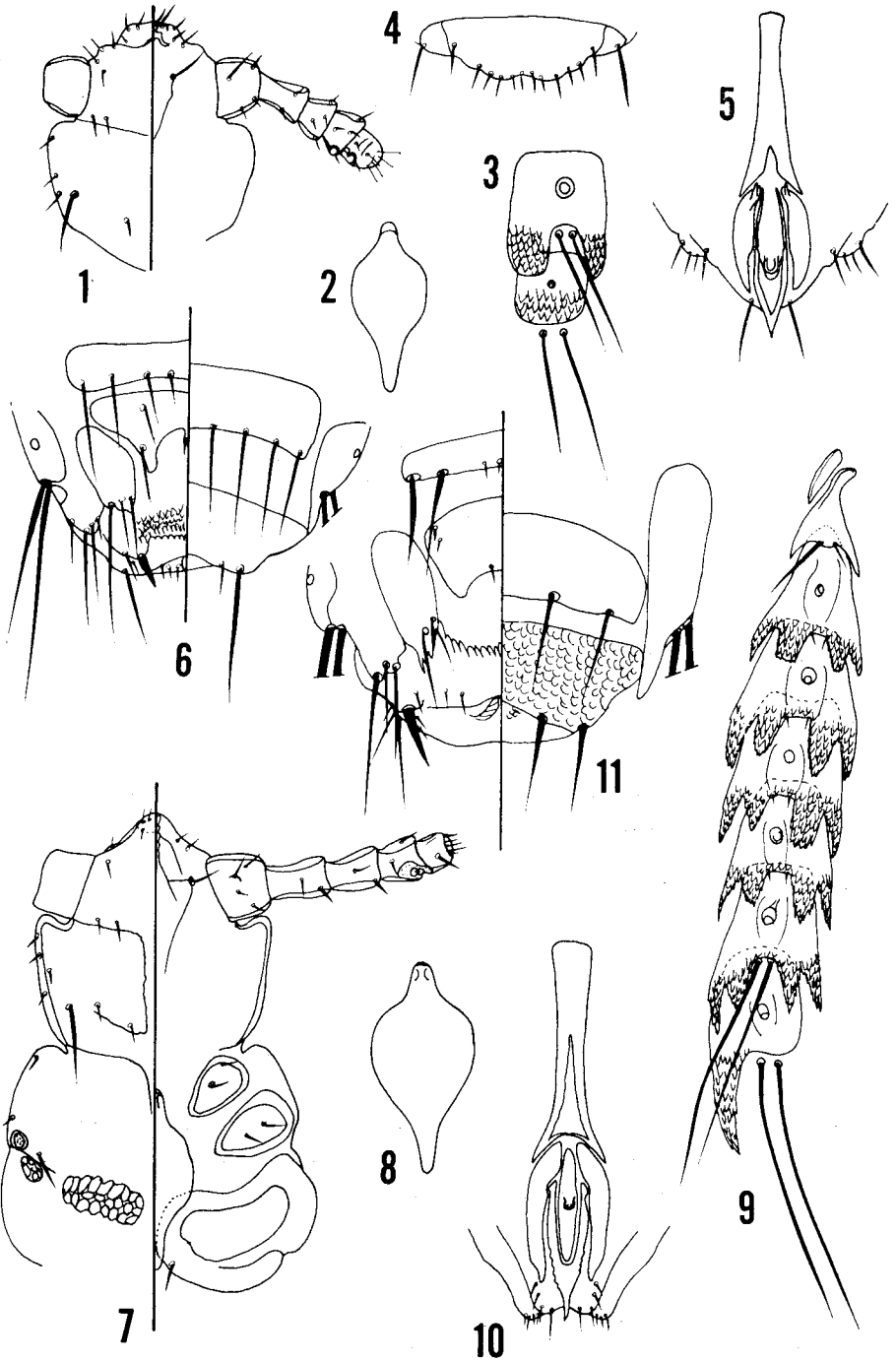
Description. - NYMPH 1. Unknown.

NYMPH 2 (Fig. 15). Total body length 0.53-0.60 mm.

Head. Wider than long; dorsal cuticle scaly; Antennae 5-segmented; OS and AS minute; 2 SHS present; 3 MHS present; DPDHS small and spiniform; ADHS minute; PCHS present; VPHS small; tubercles scattered on ventral surface and first four antennal seg-

Figs. 1-6. — *Hoplopleura dendromuris* JOHNSON. - 1. Head, male; - 2. Thoracic sternal plate, male; - 3. Paratergites of abdominal segments 7 & 8, male; - 4. Dorsal view of the apex of abdomen, male; - 5. Male genitalia; - 6. Female genitalia.

Figs. 7-11. — *Hoplopleura laticeps* FERRIS. - 7. Head and thorax, male; - 8. Thoracic sternal plate, male; - 9. Paratergites of abdominal segments 1-8, male; - 10. Male genitalia; - 11. Female genitalia.



ments. *Thorax*. Dorsal cuticle scaly and with microtrichia; posterior end of mesothoracic spiracle with a tridentate macrotubercle; DPTS short; DPtS indistinct or absent; DMtS and ADTS absent; coxae covered with tubercles. *Legs*. As in other members of *Hoplopleura*. *Abdomen*. Comparatively short; cuticle dorsally scaly and ventrally with microtrichia; 6 paratergal processes present, each sickle-shaped and with scaly sculpture; posterior margin of the paratergal process with about 7 denticles; a single MAS present on the tubercle; no CAS, AnS and AcS present; anal segment prolonged.

NYPH 3. Unknown.

Specimens examined. - Ex *Praomys taitae*, KENYA: Kikuyu, Muguga North, 7,200 ft., June 25, 1956, H. HOOGSTRAAL, 2 nymph 2 (HH 10741); ex *Lophuromys aquilus laticeps*, CONGO: Kalenge, Feb. 16, 1964, 1 female (L-14318); ex *Malacomys* sp., KENYA: Londioni Camp, Molo, June 2, 1965, 3 females and 1 male (MEK-221); ex *Praomys jacksoni montis*, CONGO: Niakalonge, February 1964, 7 collections; Tshirizi, 1963-1965, 7 collections; Irangi, January 1963, 8 collections; Niamiringi, January 1963, 1 collection; Lemera, October 1963, 9 collections; Kahusi, December 1963, 2 collections; Irsac-Lwiro, 1962-1964, 6 collections; Bukarabwa, September 1963, 1 collection; Kahungu, June 1963, 1 collection; Kahuzi, January 1965, 5 collections; Ihusi, February 1965, 3 collections; Tshibati, 1964-1965, 3 collections; ex *Lophuromys aquilus laticeps*, CONGO: Kalenge, Feb. 16, 1964, 1 female (L-14318); ex *Malacomys* sp., KENYA: Londioni Camp, Molo, June 2, 1965, 3 females and 1 male (MEK-221).

***Hoplopleura intermedia* KELLOGG and FERRIS - (Figs. 12, 13).**

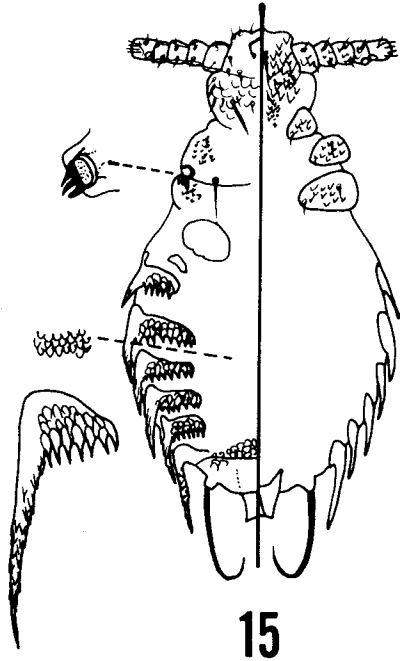
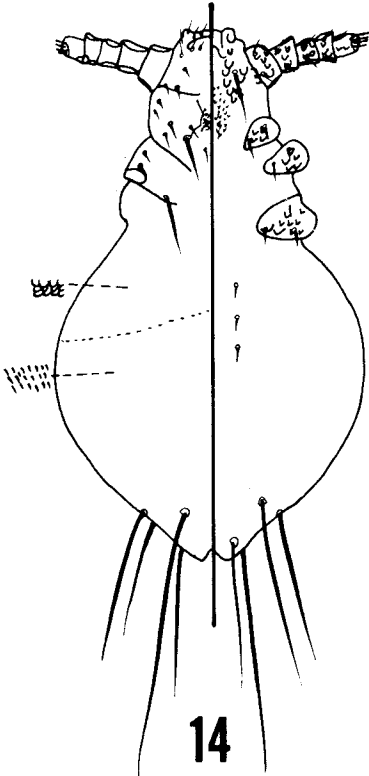
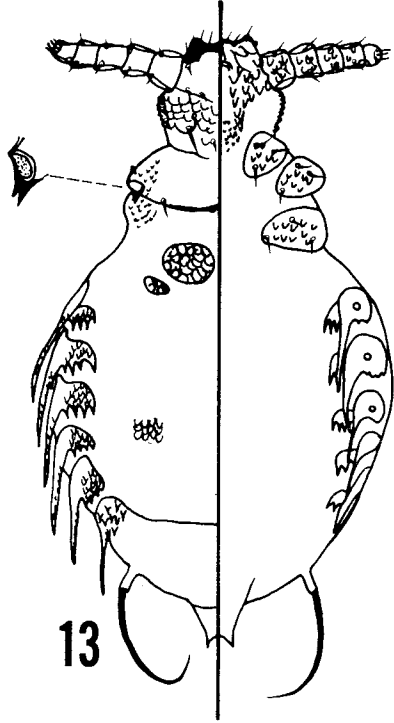
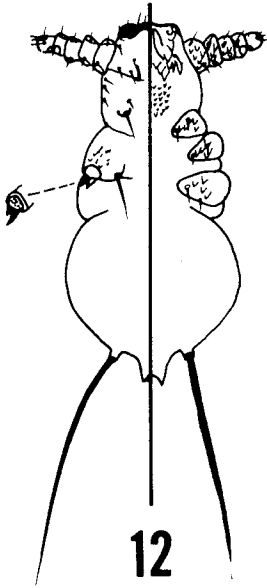
Hoplopleura intermedia KELLOGG and FERRIS, 1915: 153, pl. 16, fig. 5, 5a, b, d; FERRIS, 1916a: 156, 194; FERRIS, 1916b: 243, 247, fig. 27; WATERSTON, 1923: 101, fig. 1e, 2e; FERRIS, 1951: 137; COOREMAN, 1952: 6; 1955: 188; BENOIT, 1959b: 263; JOHNSON, 1960: 17-20, fig. 19, 20, 23A, 24A, 25A, 30, 36A, B; BENOIT, 1961: 187; KUHN and LUDWIG, 1965: 237.

Hoplopleura intermedia (partim), FERRIS, 1921: 90, fig. 54, 55B, C, 56B (not records from *Zelotomys*); HOPKINS, 1949: 482, 484 (not the records from *Zelotomys*).

Figs. 12, 13. — *Hoplopleura intermedia* KELLOGG and FERRIS. - 12. Nymph 1; - 13. Nymph 2.

Fig. 14. — *Hoplopleura setzeri* JOHNSON. - Nymph 2.

Fig. 15. — *Hoplopleura inexpectans* JOHNSON. - Nymph 2.



This species was previously known from *Mastomys natalensis*, *Praomys jacksoni* (= *P. tullbergi*), *Praomys* sp., *Cricetomys* sp., and *Mastomys* sp. JOHNSON (1960) suggested that the *Cricetomys* and *Praomys* records were erroneous. However, this species has been encountered on a wide range of hosts in this study; some of which may be contaminations. The complete host range of *intermedia* K. and F. remains unknown. Male and female of this species have been well described by FERRIS (1921) and JOHNSON (1960), but no nymphal stage has ever been described. For this reason, two nymphal stages are described herewith.

Description. - NYMPH 1 (Fig. 12). Total body length 0.43-0.51 mm. *Head* large, and slightly longer than wide; anterior margin heavily sclerotized; antennae 5-segmented; 4 SHS present; 3 MHS present on each side; PDPHS spiniform; 1 ADHS placed anterior to PDPHS; VPHS minute; tubercles scattered on the ventral surface and first four antennal segments. *Thorax* slightly wider than head; mesothoracic spiracle with a bidentate macrotubercle; DPTS long, spiniform; microtrichia scattered anterior to mesothoracic spiracle; no DPtS, DMtS and ADTS present. *Abdomen.* Small, and with 1 MAS borne on tubercle on each side; cuticle scaly; no CAS; no paratergal plate and spiracle present; anal segment prolonged.

NYMPH 2 (Fig. 13). Total body length 0.43-0.68 mm. *Head.* About as long as wide; cuticle dorsally scaly; anterior margin heavily sclerotized; 1 AS and 1 PCHS distinct but minute; 2 SHS and 3 MHS present; PDPHS short spiniform; 1 ADHS distinct, placed anterior to PDPHS; tubercles scattered on the ventral surface and first four antennal segments. *Thorax.* Much wider than head and short; PDTS very short, spiniform; mesothoracic spiracle with bidentate macrotubercle; microtrichia scattered anterior and posterior to mesothoracic spiracle; DMtS minute; DPtS absent; coxal plates with tubercles. *Abdomen.* Cuticle dorsally scaly and ventrally with microtrichia; 6 paratergal processes sickle-shaped and with scaly sculpturing; posterior margin of paratergites with 3-4 denticles; last paratergal processes connected by tergal plate; 1 MAS thick, borne on tubercle; anal segment prolonged.

Specimens examined. - Ex *Mastomys natalensis*, TANGANYIKA: Messeroni Dam, Masailand, Aug. 5, 1956, 3,000 ft., H. HOOGSTRAAL and G. KOHLS, 2 nymph 2 (HH-11313; NAMRU-3); Arusha, Tengeru, 4,100 ft., July 20-27, 1956, H. HOOGSTRAAL and G. KOHLS, 8 nymph 2

(HH-10971; NAMRU-3); CONGO: ex *Mastomys coucha*, Bogamanda, April 1963, U. RAHM, 2 collections; Buhengere, 1963-1965, U. RAHM, 3 collections; Uvira, May 12-June 6, 1963, U. RAHM, collections; ex *Mastomys natalensis ugandae*, CONGO: Astrida, Aug. 8, 1964, U. RAHM, 1 male (L-13637); Kahungu, March 5, 1965, 1 collection (L-14219), U. RAHM; ex *Pelomys fallax concolor*, CONGO: Uvira, May 26, 1963, U. RAHM, 1 female (L-12041) (contamination?); ex *Praomys* sp., KENYA: Rougai, May 22, 1965, 2 females and 1 male (MEK-112) (contamination?); ex *Otomys* sp., KENYA: Rougai, May 22, 1965, 3 females (MEK-110) (contamination?).

Hoplopleura laticeps FERRIS - (Figs. 7-11).

Hoplopleura laticeps FERRIS, 1921: 92, fig. 55A, 56A; HOPKINS, 1949: 480; FERRIS, 1951: 137; JOHNSON, 1960: 31.

The original description was based solely on two females collected from a museum skin of *Hybomys univittatus* (= *Arvicanthis univittatus*). This species has never been collected subsequently. Furthermore, the male was never been described. Two males and 2 females were available to us for this study. Male of this species is herewith described for the first time and female is redescribed. No nymphs were examined.

Description. - MALE. Total body length about 1.27 mm. *Head.* (Fig. 7). Longer than wide, and anteriorly tapered; postantennal angle strongly produced; posterolateral angle suppressed; CS and PAS minute; 2 SHS and 4 MHS present; ACHS and PCHS distinct; DPHS thin but long; ADHS minute and placed mesal to DPHS; VPHS short, barely reaching the base of antennal segment 1; antennae 5-segmented. *Thorax* (Fig. 7). Wider than head; sternal plate elliptic, posteriorly prolonged, rounded, and anteriorly little prolonged and rounded (Fig. 8); DPTS short and adjacent to mesothoracic spiracle; DPtS present; DMtS placed anterolateral to mesothoracic spiracle. *Legs.* As in other members of *Hoplopleura*. *Abdomen.* Segments 3-7 each with 1 tergite; tergites of segments 3-6 each with 6-7 setae; tergite of segment 7 with 4 setae; no setae present laterally off the tergal plates. Segments 3 and 4 each with 3 sternal plates; segments 5 and 6 each with 2 sternal plates; segment 7 with 1 sternal plate; sternite of segment 2 and first sternite of segment 3 extended laterally and articulated with the corresponding paratergites; first sternal plate of segment 3 with 2 pairs of 2 spiniform setae; sternal

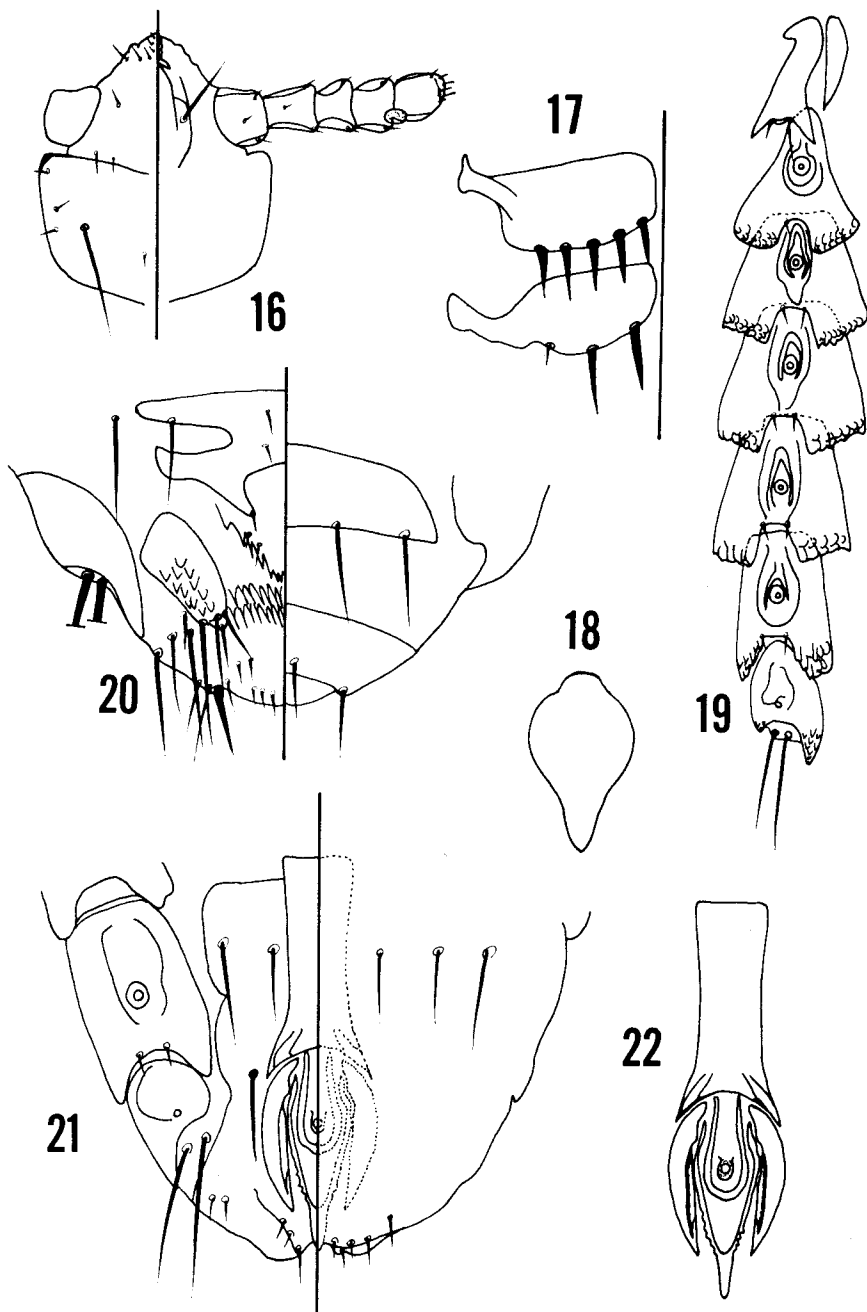
plates usually with 6 to 8 setae; segment 7 occasionally with 1 seta laterally off the sternal plate in addition to 4 sternal setae. Segments 1-8 each with 1 paratergite on each side; (Fig. 9); paratergal lobes of segments 3-7 each deeply subdivided, forming 4 lobules; paratergal lobules scaly; spiracles present on paratergites of segments 3-8; paratergal setae of segments 3-6 minute, subequal and placed on the corner of median emargination; segment 8 with 1 dorsal paratergal lobe and with 2 long apical setae; segment 7 with 2 long apical setae; segment 2 with dorsal seta about twice as long as apical lobe and minute ventral seta. *Genitalia* (Fig. 10). Basal apodeme slender; parameres gradually tapering at posterior two-third; pseudopenis long and pointed at apex; anal segment not prolonged.

FEMALE. Total body length about 1.55 mm. Head, thorax, legs and abdomen similar to those of male except for usual sexual dimorphism, unless mentioned otherwise. *Abdomen*. Segments 4-7 each with 3 tergites; segment 3 with 2 tergites; segment 8 with 1 tergite; tergites of segments 3-8 each with 4 or occasionally 5 setae. Segments 3-6 each with 3 sternal plates; segment 2 with 1 sternite; segment 7 with 2 sternites; sternites of segments 3-7 each with 7 or 8 rarely 6 setae; segment 7 with 1 seta laterally off the sternal plate. *Genitalia* (Fig. 11). Genital plate short, and with 2 setae on anterolateral corner and 2 setae on posterior margin; gonopods elongate and with 2 short and 1 long setae; genital seta spiniform; vulvar fimbriae distinct; no spermatheca present.

Specimens examined. - Ex *Hybomys univittatus*, CONGO: Irangi, Jan. 21, 1963, U. RAHM, 1 male and 1 female (L-11377); Niakalongi, U. RAHM, Feb. 2, 1963, 1 male and 1 female (L-12844).

***Hoplopleura nasvika* sp. nov.** - (Figs. 16-22).

Type data. - Holotype female and 3 female paratypes, ex *Malacomys longipes centralis* DE WINTON, Bugamando, CONGO, July 31, 1963, collected by U. RAHM (L-12142 and L-12147). Allotype male, ex *Malacomys longipes centralis*, Lemera, CONGO, Oct. 22, 1963, U. RAHM (L-12429) and 1 female paratype, data same as allotype except for date, Oct. 17, 1963 (L-12364). Three males and 2 females paratypes, data as of holotype, April 5, 1963 (L-11850). One female paratype, ex *Malacomys longipes centralis*, Irangi CONGO, Jan. 13, 1963, U. RAHM (L-11287); 1 female paratype, ex *Malacomys longipes centralis*, Niakalonge, CONGO, Feb. 1, 1964, U. RAHM (L-12835). Holotype, allotype will



Figs. 16-22. — *Hoplopleura nasvikae* n. sp. - 16. Head, holotype, female; - 17. Sternite of abdominal segment 2 and the first sternite of abdominal segment 3, holotype, female; - 18. Thoracic sternal plate, holotype, female; - 19. Paratergites of abdominal segments 1-8, holotype female; - 20. Female genitalia, holotype; - 21. Apex of the male abdomen, allotype; - 22. Male genitalia, allotype.

be deposited in the collection of the U. S. National Museum. No nymphs were available for study.

Diagnosis. - This species is closely related to *H. patersoni* JOHNSON and *H. affinis* BURMEISTER. *H. nasvika* n. sp. is separable from *patersoni* JOHNSON and *affinis* (BURM.) by having paratergites of abdominal segment 3 with apical lobes truncate, and with 1 minute apical seta, paratergites of abdominal segment 7 with 2 apical lobes, paratergites of abdominal segment 8 with only dorsal lobe and head without APHS.

Description. - FEMALE. Total body length 1.20-1.38 mm. *Head* (Fig. 16). Slightly longer than wide; postantennal angle produced; posterolateral angle present; antennae 5-segmented; AS, OS and CS distinct; PAS obscure; 2 SHS and 3 MHS present; DPHS long, PCHS minute; ACHS and ADHS absent; VPHS barely reaching beyond the base of antennal segment 1. *Thorax.* Wider than head; sternal plate (Fig. 18) elliptic, posterior apex prolonged, and bluntly pointed; anterior end of sternal plate prolonged but shorter than posterior process; length 0.099 mm and width 0.063 mm. DPTS minute and shorter than DMtS; ADTS absent; DPtS minute; DMtS distinct. *Legs.* As in other members of *Hoplopleura*. *Abdomen.* Segments 4-7 each with 3 tergites; segments 3 and 8 each with 1 tergite; tergites each with or occasionally 5 setae. Segments 3-7 each with 3 sternites; segment 2 with 1 sternite which bears 2 groups of 2 spiniform setae; sternite of segment 2 and the first sternite of segment 3 extended laterally to articulate with the corresponding paratergites (Fig. 17); sternites of segments 4-7 each with 6 setae; second sternite of segment 3 with 4 and its third sternite with 7 setae. Segments 1-8 each with 1 paratergite on each side (Fig. 19); paratergite of segment 2 with pointed apical lobes and 2 apical setae, dorsal seta being much longer than dorsal lobe and ventral seta minute; paratergites of segments 3-7 each with 2 apical lobes and 2 minute apical setae; paratergal lobes of segments 3-6 truncate; dorsal paratergal seta of segment 3 missing; ventral paratergal seta of segment 3 minute; ventral paratergal lobe of segment 7 pointed; segment 8 with a pointed dorsal lobe only and 2 long apical setae; anal segment not prolonged. *Genitalia* (Fig. 20). Genital plate irregularly shaped; gonopods with 1 long and 3 shorter setae; genital setae spiniform; vulvar fimbriae distinct; spermatheca not visible.

MALE. Total body length 1.02-1.04 mm. Head, thorax, legs and abdomen as in female except for normal sexual dimorphism, unless mentioned otherwise. *Thorax*. Sternal plate length 0.11 mm and width 0.063 mm. *Abdomen*. No tergites developed; dorsally with 7 rows of setae, first two rows each with 4 setae and other rows each with 6 setae; segments 4-6 each with 2 sternites; segment 2 with 1 sternite; segment 3 with 3 sternites; paratergites of segment 3 with 2 minute apical setae; anal segment not produced (Fig. 21). *Genitalia* (Fig. 22). Basal apodeme thick; parameres pointed at apex; basal arms of pseudopenis very long.

Remark. This species named for Mrs. STEPHEN C. WHITE (maiden name HEIDI S. NASVIK, formerly a technician to K. C. KIM), whose assistance has been appreciated.

Hoplopleura oenomydis FERRIS

Hoplopleura oenomydis FERRIS, 1921: 82, fig. 47, 48; BENOIT, 1956: 264; JOHNSON, 1960: 14, fig. 11, 13, 16, 18; KUHN and LUDWIG, 1965: 237-38.

Hoplopleura oenomydis (*partim*), FERRIS, 1921: 82 (not all records); HOPKINS, 1949: 479 (only records from *Oenomys*); FERRIS, 1951: 139, fig. 59, 60 (not all records).

This species has been known from *Oenomys hypoxanthus bacchante* and *O. h. ornatus* (Liberia). No nymphs were available for study.

Specimens examined. - Ex *Oenomys hypoxanthus editus*, CONGO: Niamiringi, Jan. 1963, 5 collections; Ihusi, July 1963 to June 1965, U. RAHM, 35 collections; Buhengere, Sept. 1963-July 1964, U. RAHM, 4 coll.; Tshisiri, May 1963-Dec. 1964, 13 coll.; Lwiro-Irsac, Feb. 1963-May 1965, 6 coll.; Lemera, Oct. 1963-June 1965, 8 coll.; Kahusi, Dec. 1963-June 1965, 3 coll.; Kahungu, Oct. 1963-Mar. 1965, U. RAHM, 8 coll.; Kahuzi, Jan. 28, 1965, 1 coll. (L-14132); Mimuli, Aug. 23, 1965, 1 coll. (L-14757); Tshibati, May 1964, 4 colls.; Lushoshu, May 30, 1964, 1 coll. (L-13285); Astrida, July-Aug. 1964, 3 colls.; ex *Thamnomys dolichurus dryas*, CONGO: Bogamendo, Apr. 7, 1963, U. RAHM, 5 females (L-11860); Tshiziri, Sept. 28, 1963, U. RAHM, 4 females and 1 male (L-12253); Uvira, May, 31, 1963, U. RAHM, 1 female (L-12138); Buhengere, Feb. 1, 1964, U. RAHM, 3 males and 2 females (L-13505); Dec. 22, 1964, U. RAHM, 2 males (L-14043); Tshiziri, Jan. 10, 1964, U. RAHM, 3 males and 2 females (L-13376); Lemera, Jan. 26, 1965,

U. RAHM, 2 females (L-14680); Khuzi, Sept. 18, 1964, 1 female (L-13775); ex *Lophuromys aquilus laticeps*, CONGO: Kalenga, Feb. 16, 1964, 3 females (L-14318); ex *Leggada minutoides*, CONGO: Buhengere, Mar. 27, 1963, U. RAHM, 3 males (L-11801); host unknown, KENYA: Londioni Camp, Molo, June 3, 1965, 3 males and 4 females (MEK-236); June 4, 1965, 1 female (MEK-247). Specimens from *Lophuromys* and *Leggada* may be stragglers.

Hoplopleura pelomydis FERRIS - (Figs. 23-31).

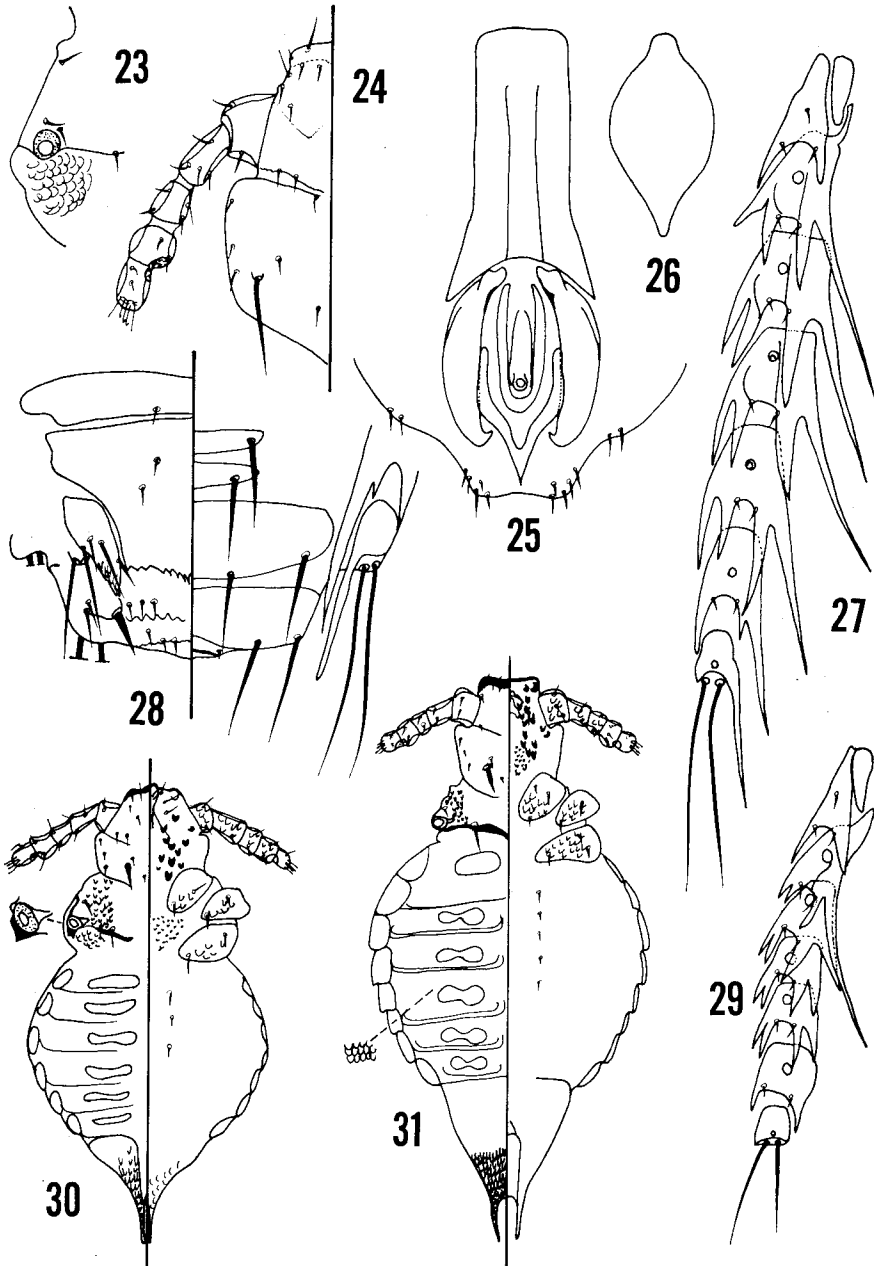
Hoplopleura enormis pelomydis FERRIS, 1921: 96, fig. 58A, 59A; HOPKINS, 1949: 480.

Hoplopleura pelomydis, FERRIS, 1951: 142; BENOIT, 1959b: 264; JOHNSON, 1960: 34; BENOIT, 1961: 187, BENOIT, 1962b: 50; KUHN and LUDWIG, 1965: 238.

This species has been recorded from *Pelomys fallax iridescens*, *Lemniscomys striatus ardens*, *L. s. striatus*, and *L. s. massaicus* from several countries in Africa. *Lemniscomys striatus* is considered to be a true host of *pelomydis* FERRIS. Although *H. pelomydis* FERRIS and *H. enormis* KELLOGG and FERRIS are distinctly different from each other, these two species have frequently misidentified due to poor diagnostic characters used in various taxonomic keys. No nymphs were previously available for study. Therefore, adult and two nymphal stages are herewith described.

Diagnosis. *H. pelomydis* FERRIS is easily separable from *H. enormis* K. and F. by having paratergites of abdominal segment 7 with 2 long apical lobes and abdominal segment 8 with a dorsal paratergal lobe. In *enormis* K. and F. both paratergal setae of abdominal segments 7 and 8 are very long, but in *pelomydis* paratergal setae of abdominal segment 8 are minute. *H. enormis* K. and F. is found on *Lemniscomys striatus* and *Pelomys fallax*.

Description. - FEMALE. Total body length 1.37-1.48 mm. *Head* (Fig. 24). Longer than wide; postantennal and posterolateral angles developed but not pronounced; AS, PAS, CS and OS present; 2 SHS present; 3 MHS present; ACHS and PCHS present; DPHS long and thick; ADHS placed anteromesad of DPHS; VPHS moderate; antennae 5-segmented. *Thorax* (Fig. 23). Wider than head; DPTS very short; 2 DMtS and 1 DPTs present; sternal plate obovate, posteriorly prolonged, and anterior process short (Fig. 26). *Legs.* As in other



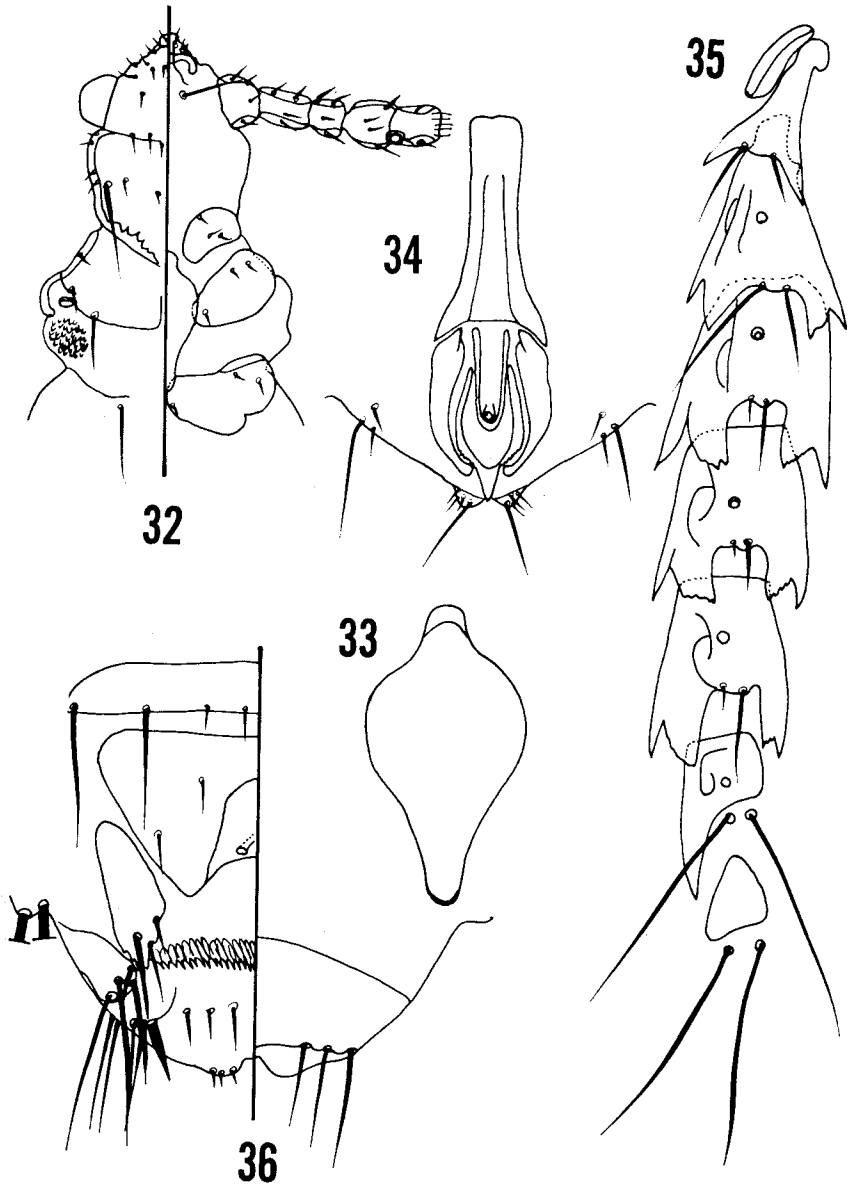
Figs. 23-31. — *Hoplopleura pelomydis* FERRIS, paratypes. - 23. Lateral part of the thorax, female; - 24. Dorsal view of the head, female; - 25. Male genitalia; - 26. Thoracic sternal plate, female; - 27. Paratergites of abdominal segment 1-8, female; - 28. Female genitalia; - 29. Paratergites of abdominal segments 1-8, male; - 30. Nymph 2; - 31. Nymph 3.

members of *Hoplopleura*. *Abdomen*. Tergal and sternal plates developed; sternite of segment 2 and first sternal plate of segment 3 extended laterally to articulate with the corresponding paratergites; the first sternal plate of segment 3 with 2 set of 2 spiniform setae in addition to 2 or more minute setae; segments 1-8 each with 1 paratergite on each side (Fig. 27); paratergal setae of segments 2-8 minute; paratergal lobes of segments 3-7 deeply subdivided into four long lobules; dorsal lobules of paratergites of segments 3-7 much longer than other lobules; segment 7 with 2 long apical lobes, dorsal paratergal lobe having another slight process arising mesally near base; segment 8 with long dorsal lobe but no ventral lobe, and with 2 long apical paratergal setae; anal segment not produced. *Genitalia* (Fig. 28). Genital plate big, posteriorly connected to vulvar fimbriae; gonopods with 1 long and 3 short setae; genital seta spiniform; no visible spermatheca.

MALE. Total body length about 1.01 mm. Head, thorax, legs, and abdomen as in female except for usual sexual dimorphism, unless mentioned otherwise. *Thorax*. Only 1 DMtS present. *Abdomen* (Fig. 29). Paratergites of segment 3 each with dorsal lobule longest of all paratergal lobules; dorsal lobule of segment 4 shorter than that of segment 3 but longer than other lobules; segment 7 with only 2 paratergal lobes and 2 minute paratergal setae; segment 8 with no paratergal lobe, and with 2 long paratergal setae; anal segment not produced. *Genitalia* (Fig. 25). Basal apodeme thick; parameres evenly thickened and with curved point at posterior apex; pseudopenis relatively short.

NYMPH 1. Unknown.

NYMPH 2 (Fig. 30). Total body length 0.61 mm. *Head*. Anterior margin heavily sclerotized; much wider than long; postantennal angle produced, antennae 5 segmented; OS, CS, PAS and AS present; 2 SHS and 3 MHS present; 1 ADHS and PCHS present; PDPHS thick, spiniform; VPHS short; tubercles scattered on ventral surface and basal four antennal segments. *Thorax*. Dorsally covered with microtrichia and small tubercles; mesothoracic spiracle with posterior macrotubercle (Fig. 30); DPtS minute; DMts distinct; coxal plates and part of sternal area with tubercles. *Abdomen*. Segmented; dorsally leathery, strongly scaly and with 6 leathery patches; ventrally covered with microtrichia; 6 paratergal plates present; no DCAS and MAS present; 3 minute VCAS present; anal segment prolonged and bifurcate.



Figs. 32-36. — *Hoplopleura somereni* WATERSTON. - 32. Head and thorax, female; - 33. Thoracic sternal plate, female; 34. Male genitalia; - 35. Paratergites of abdominal segments 1-8, female; - 36. Female genitalia.

NYPH 3 (Fig. 31). Total body length 0.81-0.99 mm. Similar to nymph 2, unless mentioned otherwise. *Head* about as long as wide; ventrally with more numerous tubercles. *Thorax* with DPTS distinct and mesothoracic spiracular macrotubercle indistinct; tubercles more numerous on coxal plates. *Abdomen*. Segmentation clearly defined; 8 paratergal plates present; 5 VCAS present but minute; anal segment enlarged, covered with scales, and anal processes widely separated.

Specimens examined. - Ex *Lemniscomys striatus massaicus*, CONGO: Buhengere, Oct. 1962-July 1965, U. RAHM, 34 collections; Buhengere, Sept. 1964, 2 collections; Kahuzi, June 1964, 3 collections; Uvira-Irsac, May 1963, U. RAHM, 7 collections; Tshiziri, June 1963-Nov. 1965, U. RAHM, 19 collections; Ihusi, Dec. 1962-Mar. 1964, U. RAHM, 5 collections; Kahungu, Oct. 1963-April 1964, U. RAHM, 3 collections; Muganzo, Sept. 13, 1962, U. RAHM, 1 female (L-10950); Sept. 20, 1962, 2 females and 1 male (L-10978); Iramgi, Jan. 1963, U. RAHM, 3 collections; Lwiro, Sept. 1962-April 1964, U. RAHM, 2 collections; Bukarabwa, May 5, 1965, U. RAHM, 1 male and 1 female (L-14428); Katana, Jan. 14, 1964, U. RAHM, 1 male and 1 female (L-12720); Irsac-Lwiro, May 10, 1963, U. RAHM, 1 female (L-11946); April 6, 1964, U. RAHM, 1 female (L-13337); Mimuli, Aug. 28-31, 1966, U. RAHM, 2 males and 1 female (L-14826); Banarinaire, Mar. 7, 1965, U. RAHM, 1 male, 1 female (L-14775); KENYA: Kikuyu, Muguga North, June 28, 1956, 7,200 ft., H. HOOGSTRAAL, 3 males and 4 females (HH-10806); TANGANYIKA: Tengeru, Arusha, 4,100 ft., H. HOOGSTRAAL G. M. KOHLS, 1 male (HH-11031); (as *Arvicanthus pulchellus arvens*), Wanbugu, 1 male, 1 female (paratypes), (USNM 163646) (FERRIS 706). Ex *Lemniscomys striatus*, KENYA: Kerogoya, Sept. 26, 1960, G. B. CORBET, 1 male and 1 female. Ex *Pelomys fallax concolor*, CONGO: Lwiro, Dec. 1962-Dec. 1963, U. RAHM, 2 collections; Tshiziri, Dec. 10, 1964, 1 coll. (L-13342); Mimuli, Sept.-Aug. 1965, 3 coll.; Irsac, Dec. 17, 1963, U. RAHM, 1 male, 1 nymph 2 (L-11349); Buhengere, July 1963-June 1964, U. RAHM, 9 collections; Niakalonge, Feb. 14, 1964, U. RAHM, 1 male (L-12896). Ex *Pelomys fallax iridescens*, TANGANYIKA: Mt. Sagalla, 1 male, 1 female, 5 nymph 3 (USNM 183667); same place, 1 male and 2 females (paratypes) (FERRIS 382). Ex *Pelomys fallax fallax*, TANGANYIKA: Bagilu, Vluguru Mts., Oct. 15, 1926, A. LOVERIDGE, 3 females; Arusha, Tengeru, July 28, 1956, H. HOOGSTRAAL G. M. KOHLS, 1 female (HH-11173). Ex *Leggada minutoides*, CONGO: Buhengere, July

18, 1963, 3 males, 2 females (L-12113). Ex *Lophuromys aquilus laticeps*, CONGO: Buhengere, Mar. 23, 1963, 3 females (L-11778). Specimens found on *Leggada* and *Lophuromys* may be stragglers.

Hoplopleura rukenyae FERRIS - (Figs. 37, 38).

Hoplopleura sukenyae FERRIS, 1921: 86, fig. 51 (misspelling).

Hoplopleura rukenyae, FERRIS, 1951: 143 (emendation); JOHNSON, 1960: 17; JOHNSON, 1963: 226, fig. 5.

JOHNSON (1963) recorded this species and described the male. This is the first published record, since FERRIS (1921) described the holotype female from *Mus triton*, Mt. Rukenya, British East Africa (Kenya). Description of female is found in FERRIS (1921) and of male in JOHNSON (1963). Two nymphal stages are herewith described.

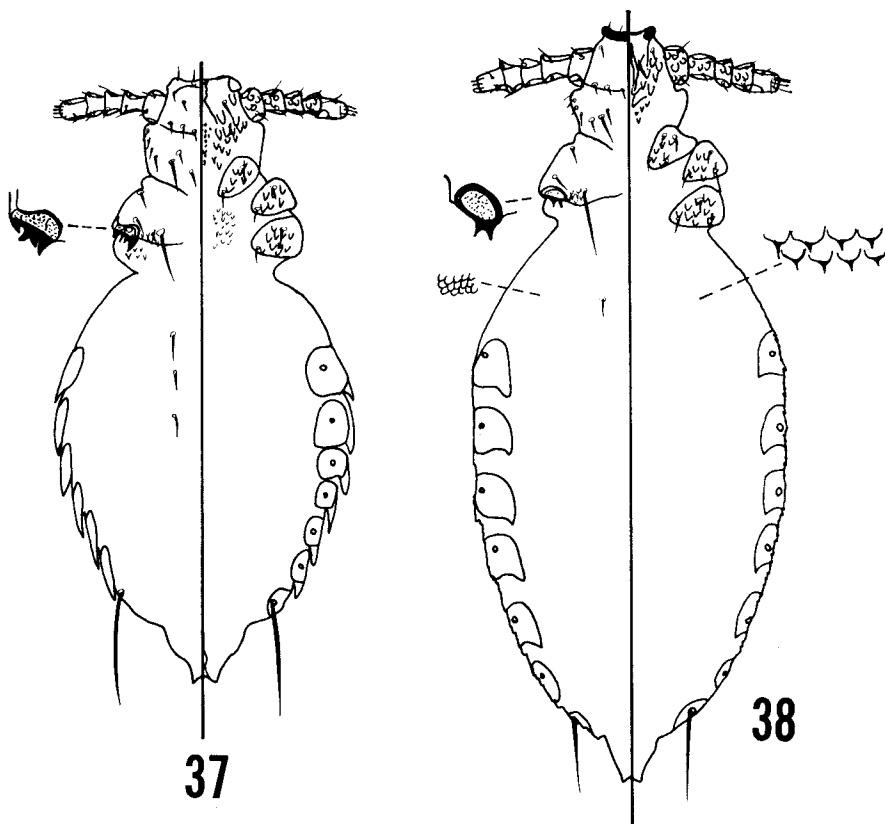
Description. - NYMPH 1. Unknown.

NYMPH 2 (Fig. 37), Total body length 0.67-0.79 mm. *Head.* About as wide as long; anterior margin heavily sclerotized; postantennal angle developed; PAS, AS, 2 SHS distinct; 3 MHS distinct; 1 accessory seta present between PDPHS and PMHS; ACHS and PCHS present; PDPHS distinct, with 1 ADHS; VPHS distinct; tubercles scattered on ventral surface and first four antennal segments. *Thorax.* Wider than head; mesothoracic spiracle with posterior tetradentate macrotubercle; small tubercles (Fig. 37) scattered around mesothoracic spiracle; DPtS long; DPtS and DMtS present; no ADTS present; coxal plates with tubercles; sternal area with microtrichia and small tubercles. *Legs.* As in other members of the genus. *Abdomen.* Dorsally scaly, and ventrally scaly with microtrichia; 7 paratergal plates present; each paratergite with posterior process; 6 spiracles present; 3 pairs of DCAS; 1 MAS; no VCAS present; anal segment prolonged.

NYMPH 3 (Fig. 38). Total body length 0.79-0.89 mm. Similar to nymph 2 except for size, unless mentioned otherwise. *Head.* AS and PCHS indistinct. *Thorax.* Mesothoracic spiracular macrotubercle bidentate. *Abdomen.* Only 1 pair of DCAS present.

Specimens examined. - Ex *Leggada minutoides*, CONGO: Buhengere, Jan. 3, 1962, U. RAHM, 14 females (L-11242), Jan. 1962-Mar. 1965, 21 collections; Kahungu, Oct. 1963-Sept. 1965, U. RAHM, 49 collections; Lwiro, Sept.-Nov. 1962, U. RAHM, 4 collections; Kahuzi, Dec. 1963-June 1965, 9 collections; Ihusi, Jan. 1964-Mar. 1965, U. RAHM, 7 col-

lections; Irsac-Uvira, May-Nov. 1963, U. RAHM, 5 collections; Niakalonge, Feb. 1964, U. RAHM, 3 collections; Lemera, Oct. 27-30, 1963, U. RAHM, 3 collections; Bukarabwa, Apr.-Nov. 1963, 4 collections; Tshiziri, June 1963-Mar. 1965, U. RAHM, 2 collections Astrida, July 18, 1964, 1 collection; Lushala, Nov. 27, 1963, U. RAHM, 1 nymph 3 (L-12459); KENYA: Liondoni Forest, Molo, June 1, 1965, 1 collection (MEK-213). Ex *Pelomys fallax concolor*, CONGO: Kahungu, Dec. 24, 1963, U. RAHM, 1 female (L-12644) (contamination?).



Figs. 37, 38. — *Hoplopleura rukenyae* FERRIS. - 37. Nymph 2; - 38. Nymph 3.

Hoplopleura setzeri JOHNSON - (Fig. 14).

Hoplopleura setzeri JOHNSON, 1960: 15-17, fig. 9, 10, 12, 14, 15, 17;
BENOIT, 1961a: 236.

This species was described from 5 males and 8 females found on *Grammonys dolichurus oblitus*, Tanganyika and unstated number of specimens from *Grammomys surdaster* in Central Africa. No nymphal stage has ever been described. Nymph 2 is herewith described. No nymphs 1 and 3 were available for study.

Description. - NYMPH 2 (Fig. 14). Total body length 0.60 mm. *Head.* Slightly longer than wide; anterior margin heavily sclerotized; AS, PAS, 2 SHS and PCHS present; 3 MHS irregularly placed; 1 accessory seta placed anterolatered to PDPHS long and ADHS present; VPHS present; tubercles scattered on ventral surface and first four antennal segments. *Thorax.* Much wider than head; DPTS long; DPtS and DMtS present; coxal plates with tubercles. *Legs,* as in other member of the genus. *Abdomen* anterior half of dorsal surface scaly and posterior half with more microtrichia; no DCAS; ventral surface with microtrichia and 3 VCAS; 4 MAS on each side; no anal segment developed.

Specimens examined. - Ex *Grammomys dolichurus*, TANGANYIKA: Arusha, Tengeru, 4,100 ft., July 22, 1956 H. HOOGSTRAAL G. M. KOHLS, 1 nymph 2 (HH-11036; NAMRU - 3).

Hoplopleura somereni WATERSTON - (Figs. 32-36).

Hoplopleura somereni WATERSTON, 1923: 99-101, fig. 1b-d, 2 c-d;
HOPKINS, 1949: 479; FERRIS, 1951: 143; JOHNSON, 1960: 29; KUHN
and LUDWIG, 1965: 238.

This species was originally described from specimens collected off *Dasymys incommutus helukus* (as *D. helukus*) in Kenya. WATERSTON's original description is inadequate, and thus male and female are herewith redescribed. No nymphs were available for study.

Description. - FEMALE. Total body length 1.66-1.67 mm. *Head* (Fig. 32). Longer than wide and anteriorly pointed; postantennal and postlateral angles distinct; AS, PAS, CS, and OS present; 2 SHS present on each side; ACHS and PCHS distinct; DPHS long; ADHS distinct; 4 minute MHS present; VPHS long, reaching the base of antennal segment 2. *Thorax* (Fig. 32). Wider than head, and much wider at the side of mesothoracic spiracle; DPTS long; 1 DPtS

and 1 DMtS present; sternal plate (Fig. 33), obovate, posteriorly prolonged, and anterior process short. *Legs*, as in other member of the genus. *Abdomen*. Tergal and sternal plates developed; abdominal segments 2, 3, and 6-8 each with 2 tergal plates; abdominal segments 4 and 5 each with 3 tergal plates; 2 to 3 DLAS present on each segment; abdominal segments 4-6 each with 3 sternal plates; abdominal segment 2 with 1 sternal plate which is extended laterally to articulate with paratergites; abdominal segment 3 with 4 sternal plates, the first sternite extended laterally to articulate with paratergites, with a set of 2 spiniform setae on each side; about 9 VLAS on each side; 5 spiracles present on paratergites of abdominal segments 3-7; paratergal lobes of abdominal segments 3-6 slightly subdivided (Fig. 35); dorsal paratergal seta of abdominal segments 4-6 minute; ventral seta of abdominal segments 4-6 as long as or slightly longer than paratergal lobe; paratergal setae of segment 3 much longer than paratergal lobe; paratergite of segment 7 with only dorsal lobe and 2 long setae; paratergite of segment 8 triangular, without any triangular lobe, with 2 long setae, but no paratergal lobe present; anal segment not produced. *Genitalia* (Fig. 36). Genital plate widely trapezoidal and posteriorly concave; vulvae fimbriae short; gonopods with 2 thin, short and 1 long setae; genital seta spiniform; anal segment with 6 moderately long setae and 6 minute setae at apex; spermatheca tubular, faintly evident.

MALE. Total body length 1.34-1.38 mm. Head, thorax, legs and abdomen as in female except for usual sexual dimorphism, unless mentioned otherwise. *Abdomen*. Tergal and sternal plates developed; segments 3-7 each with 1 tergal plate; segment 2 with 2 tergal plates; about 5 DLAS present; segments 2 and 7 each with 1 sternal plate; segments 3 and 4 each with 3 sternal plates; segments 5 and 6 each with 2 sternal plates. *Genitalia* (Fig. 34). Basal apodeme posteriorly enlarged and concave at posterior end; parameres posteriorly tapering; posterior process of pseudopenis short; anal lobe bifurcate, with 1 long and 3 minute setae on each side.

Specimens examined. - Ex *Dasymys incomptus medius*, CONGO: Lemera, Oct. 30, 1963, U. RAHM, 1 collection (L-12396); Tshiziri, December 1963-May 1964, U. RAHM, 3 collections; Astrida, July 20, 1964, U. RAHM, 6 males and 6 females (L-13547); Tshibati, May 15, 1964, U. RAHM, 1 female (L-13212).

Hoplopleura zelotomydis JOHNSON

Hoplopleura zelotomydis JOHNSON, 1960: 28-29, fig. 23E, 24E, 25E, 28, 29, 35, 39A, B.

This species has been considered as *H. intermedia* before JOHNSON (1960) separated the two forms. JOHNSON (1960) described this species on the basis of 2 females (holotype and paratype) and 1 male (allotype) collected from *Zelotomys hildegardae*, Mt. Rukenya, British East African (Kenya).

Specimens examined. - Ex *Leggada minutoides*, CONGO: Tshisisi, June 25, 1963, U. RAHM, 1 female (L-11898) (contamination?).

Genus **SCHIZOPHTHIRUS** FERRIS

Schizophtirus graphiuri FERRIS

Schizophtirus graphiuri FERRIS, 1922: 147, fig. 93A, 96, 97; HOPKINS, 1949: 485; FERRIS, 1951: 148; JOHNSON, 1960: 39.

This species was originally described from specimens collected off *Graphiurus murinus* in Kenya, and subsequently recorded from *Graphiurus nanus*, *G. alticola* and *Graphiurus* sp.

Specimens examined. - Ex *Claviglis vulcanicus*, CONGO: Kahungu, Dec. 9, 1963, U. RAHM, 1 collection (L-12592).

Subfamily **HYBOPHTHIRINAE**

Genus **SCIPIO** CUMMINGS

Scipio aulacodi (NEUMANN)

Haematopinus aulacodi NEUMANN, 1911: 403, fig. 5-7.

Scipio aulacodi, CUMMINGS, 1912: 393; FERRIS, 1916: 233, fig. 16, 17B; BEDFORD, 1919: 715; FERRIS, 1922: 170, figs. 113 114; FERRIS, 1951: 152, fig. 67; JOHNSON, 1958: 48; JOHNSON, 1960: 40-31; BENOIT, 1962b: 49.

Scipio longiceps EWING, 1937: 81, fig. 29; FERRIS, 1951: 154.

Scipio aulacodi longiceps, HOPKINS, 1949: 495.

Scipio aulacodi aulacodi, HOPKINS, 1949: 495.

This species was originally described from *Thryonomys swinderianus*, and has subsequently recorded from *T. gregorianus*, *T. swinderianus*, and *Choeromys harrisoni* in Kenya, Angola, Northern Rhodesia, Mauritania, and Mali.

Specimens examined. - Ex *Choeromys harrisi rutshuricus*, CONGO: Ihusi, March 26, 1964, U. RAHM, 1 collection (L-13035); Tchibati, Oct. 9, 1962, U. RAHM, 2 males and 2 females (L-11067).

Scipio breviceps FERRIS

Scipio breviceps FERRIS, 1916b: 234, fig. 17A, 18-22; BEDORD, 1919: 715; FERRIS, 1922: 173, fig. 114-116; HOPKINS, 1949: 495; FERRIS, 1951: 154; JOHNSON, 1960: 41.

This species has been recorded previously from *Thryomomys swinderianus* collected in Union of South Africa.

Specimens examined. - Ex *Choeromys harrisoni rutshuricus*, CONGO: Ihusi, March 25, 1964, U. RAHM, 1 collection (L-13035).

Subfamily POLYPLACINAE

Genus **NEOHAEMATOPINUS** MjöBERG

Neohaematopinus heliosciuri CUMMINGS

Neohaematopinus heliosciuri CUMMINGS, 1912: 393, fig. 1; FERRIS, 1923: 255, fig. 164, 165A, C, E, H; HOPKINS, 1949: 458, 459; FERRIS, 1951: 192; JOHNSON, 1960: 44-46, figs. 49, 52, 57A, B, 63; BENOIT, 1961A: 238.

This species has been recorded previously from *Paraxerus palliatus*, *P. ochraceus*, and *P. cepapi* in Kenya, South West Africa, Tanganyika, and Union of South Africa.

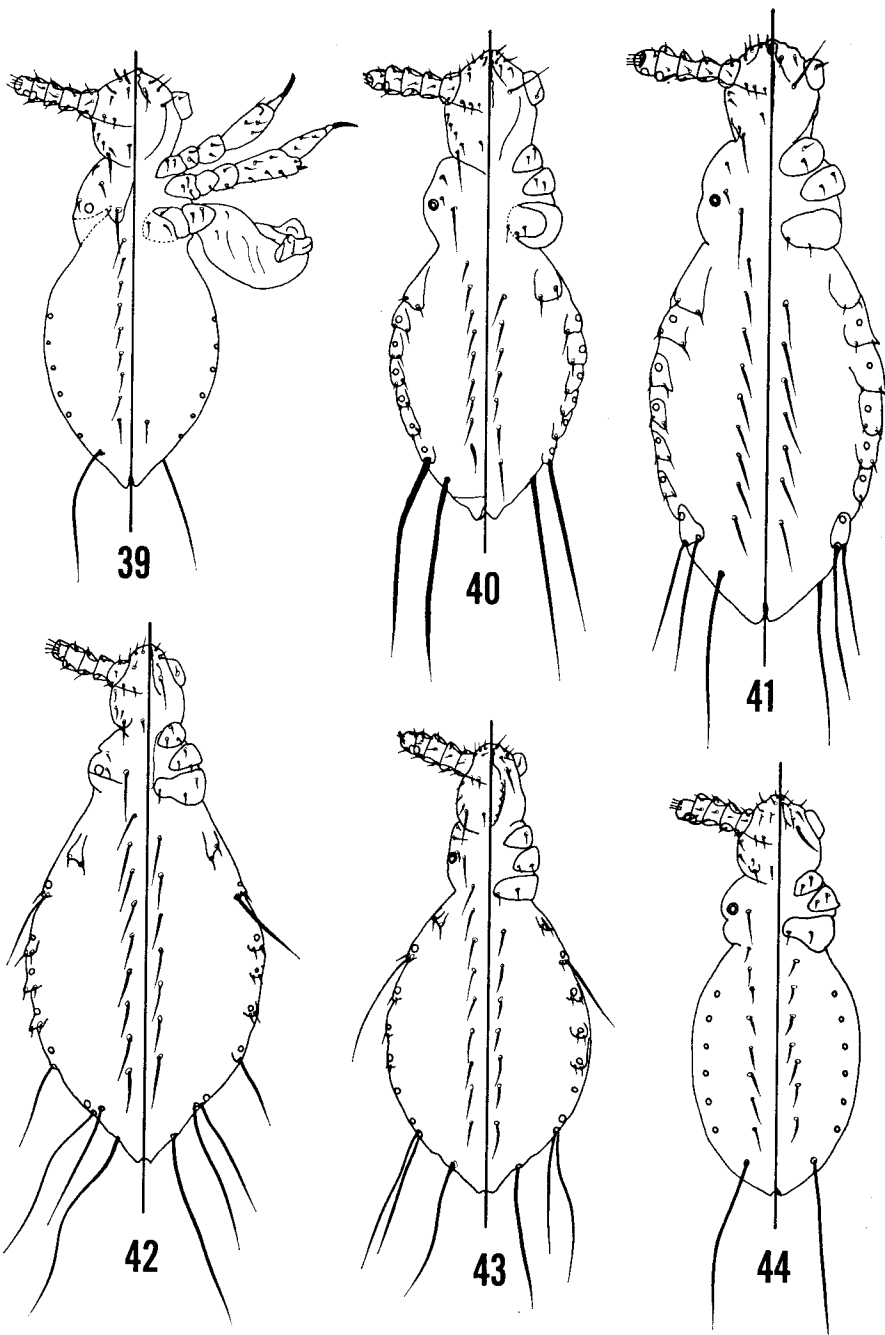
Specimens examined. - Ex *Funisciurus carruthersi*, CONGO: Lemera, June 2, 1965, U. RAHM, 1 female (L-14484) (contamination?).

Genus **POLYPLAX** ENDERLEIN

Polyplax abyssinica FERRIS - (Figs. 29-41).

Polyplax abyssinica FERRIS, 1923: 230, fig. 150; WERNECK, 1940: 722, fig. 1, 2; HOPKINS, 1949: 479, 481; FERRIS, 1951: 205; BRISCOE, 1956: 403; JOHNSON, 1960: 59-60, fig. 67.

This species was originally described from females only which were collected from *Arvicanthis abyssinicus nubilans* in Uganda. It has subsequently been recorded from *Otomys tropicalis*, *Oenomys*



Figs. 39-41. — *Polyplax abyssinica* FERRIS. - 39. Nymph 1; - 40. Nymph 2; - 41. Nymph 3.
 Figs. 42-44. — *Polyplax cummingsi* FERRIS. - 42. Nymph 3; - 43. Nymph 2; - 44. Nymph 1.

hypoxanthus, *Arvicanthis niloticus*, *Mastomys*, *Gerbillus*, and *Jaculus* in Uganda, Egypt, and Kenya. JOHNSON (1960) considered the records of *P. abyssinica* from *Mastomys*, *Gerbillus*, *Jacullus*, *Oenomys* and *Otomys* to be erroneous.

This species is closely related to *P. arvicanthis* BEDFORD, but distinguishable by genitalic structures. Nymphal stage of this species has never been described. Three nymphal stages are herewith described. Nymphs of this species are distinguishable from those of *P. arvicanthis* by having short anal segment; nymphs of *arvicanthis* with distinctly prolonged anal segment; nymph 1 of *abyssinica* has no evidence of paratergal plates and only 1 VCAS.

Description. - NYMPH 1 (Fig. 39). Total body length 0.62-0.69 mm. *Head.* As wide as long; postantennal and posterolateral angles not developed; OS, CS, AS, PAS present; 2 SHS on each side minute; 3 MHS present; PDPHS distinct, but not very long; ADHS minute, placed anterior to PDPHS; ACHS absent; PCHS present; VPHS long, reaching beyond the base of antennal segment 2; antennae 5-segmented. *Thorax.* Mesothoracic spiracle distinct; sternal plate absent; DPtS minute; DMtS absent; no ADTS present; DPTS long. *Legs.* Fore legs smaller than other legs; middle legs similar to but longer than fore legs; fore and middle legs each with acuminate claw; hind legs thick, unlike fore and middle legs; femur, tibia and tarsus of hind legs fused, modified for grasping hairs, with blunt large claw. *Abdomen.* No paratergal plate developed; 6 spiracles present on each side; 2 rows of 9 DCAS present; only 2 last VCAS present; 1 long MAS present on each side; anal segment not prolonged but bifurcate; cuticle scaly.

NYMPH 2 (Fig. 40). Total body length 0.67-0.75 mm. *Head, thorax, legs* and *abdomen* as in Nymph 1, except mentioned otherwise. *Head* with 6 SHS. *Thorax* with distinct DPtS. *Abdomen* with 7 paratergal plates and 6 spiracles; each paratergite with 1 or 2 minute posterior setae; 2 rows of 9 DCAS present; 2 rows of 7 VCAS present on each side.

NYMPH 3. (Fig. 41). Total body length 0.90-0.93 mm. Similar to nymph 2 except for the following characters: larger body; CAS longer; each paratergal plate with a pair of setae; last paratergites with 2 very long setae and 1 long setae posterior to it (3 MAS on each side).

Specimens examined. - Ex *Arvicanthis* sp., KENYA: Rougai, May 24, 1965, 6 males, 10 females, 16 nymph 1, 13 nymph 2, and 11 nymph 3 (MEK-124); ex *Otomys* sp., KENYA: Rougai, May 26, 1965, 4 females and 3 nymph 2 (MEK-152); ex *Pelomys fallax concolor*, CONGO: Ihusi, July 8, 1963, U. RAHM, 1 male and 3 females (L-12075).

Polyplax arvicanthis BEDFORD

Polyplax arvicanthis BEDFORD, 1919: 716, pl. 1; FERRIS, 1923: 227, fig. 148, 149; HOPKINS, 1949: 480; FERRIS, 1951: 206; JOHNSON, 1960: 60-61.

This species was originally described from *Rhabdomys pumilio* and has subsequently been recorded from same host in Kenya, Union of South Africa, and South West Africa. Nymphal stages of this species will be described in a subsequent publication (« The Sucking Lice of Mozambique (Anoplura, Insecta) »).

Specimens examined. - Ex *Rhabdomys* sp., KENYA: Londioni Forest, Molo, June 6, 1965, 1 female (MEK-302); ex *Lemniscomys striatus*, KENYA: Londioni Forest, Molo, May 29, 1965, 2 females, 3 males, and 1 nymph (MEK-167).

Polyplax cummingsi FERRIS - (Figs. 42-44).

Polyplax cummingsi FERRIS, 1916b: 240, fig. 25, 26A; FERRIS, 1923: 213, fig. 136, 137; BEDFORD, 1929, 504; PATERSON and THOMPSON, 1953: 199, 204; JOHNSON, 1960: 75-76; BENOIT, 1959b: 266; BENOIT, 1961a: 233; KUHN and LUDWIG, 1965a: 242-3.

Polyplax gracilis, FERRIS, 1916: 240, fig. 23C, 24 (*err. det.*).

Polyplax otomydis (partim), FERRIS, 1951: 208 (*sinks cummingsi*).

P. cummingsi was originally described from 5 females and 3 nymphs collected off *Dasymys incomptus* in Zululand, and has been recorded from *Aethomys chrysophilus*, *Dasymys nudipes*, *Dasymys incomptus*, and *Praomys morio jacksoni* in Kenya, Angola, Union of South Africa, Liberia, Belgian Congo, and other parts of Central Africa. This species is closely related to *P. otomydis* CUMMINGS, but distinguishable from it by having short VPHS, not extending beyond the base of antennal segment 3, and reduced abdominal plates. Nymphs of this species have been collected, but never been described. Three nymphal stages are herewith described.

Description. - NYMPH 1 (Fig. 44). Total body length 0.51-0.63 mm. *Head* about as wide as long; postantennal and posterolateral angles not developed; OS, CS, PAS, AS present, 2 SHS, and 2 MHS present on each side; ACHS absent; PCHS distinct; PDPHS present; ADHS minute, placed anterior to PDPHS; VPHS long, extending to or slightly beyond the base of antennal segment 2; antennae 5-segmented. *Thorax* wider than head; mesothoracic spiracle distinct; no evidence of sternal plate present; DPTS long; DPtS and DMtS indistinct or absent; coxal plates normal. *Legs* as in other species of the genus. *Abdomen.* Cuticle scaly; no paratergal plate developed; 6 spiracles present on each side; 2 rows of 8 DCAS and 7 VCAS present; 1 long MAS present on each side; anal segment not prolonged.

NYMPH 2 (Fig. 43). Total body length 0.65-0.80 mm. Similar to nymph 1 except for the following characters. *Head* longer than wide. *Thorax* with distinct long DPtS and long DPTS; DMtS distinct, placed between DPTS and mesothoracic spiracle. *Abdomen* with 5 small paratergites, 6 spiracles and 3 MAS on each side; all paratergites, except for second paratergite which has 1 very long and 1 minute setae, with a pair of minute setae; 2 rows of 9 DCAS present; 2 rows of 7 VCAS present; posterior MAS single.

NYMPH 3 (Fig. 42). Total body length 0.72-0.81 mm. Similar to nymph 2 except for the following characters. *Abdomen* with first paratergite more or less triangular and 4 MAS; first MAS placed lateral to fifth spiracle.

Specimens examined. - Ex *Dasymys incomptus medius*, CONGO: Buhengere, Mar. 1963-Sept. 1964, U. RAHM, 4 collection; Lemera, Oct. 29, 1963, 1 coll. (L-12391); Kahuzi, Dec. 12, 1963, 1 coll. (L-12575), Kahungu, Mar.-June 1965, 2 collections; Muganzo, Mar. 1964-June 1965, 3 collections; Tshibati, May 15, 1964, 1 collection (L-13212); Ihusi, Sept. 16, 1964, 1 collection (L-13766); Bukarabwa, Apr. 9, 1964, 2 collections; ex *Mastomys natalensis ugandae*, CONGO: Kuhungu, Sept. 1, 1964, 2 females (L-13688); Buhengere, July, 30, 1965, 1 female (L-14704); Astrida, Aug. 8, 1964, 1 female (L-13637).

Polyplax myotomydis JOHNSON

Polyplax myotomydis JOHNSON, 1960: 79-81, fig. 103, 112, 115, 116, 126, 128.

This species was described on the basis of specimens collected from *Myotomys unisulcatus* and *Paratomys brantis* in Union of South Africa. This species is a member of the *otomydis* group and related to *vacillata* JOHNSON and *paradoxa* JOHNSON.

Specimens examined. - Ex *Arvicanthis* sp., KENYA: Molo, May 27, 1965, 3 males and 3 females (MEK-116); ex ?, KENYA: Londioni Forest, Molo, June 8, 1965, 1 female (MEK-310); ex *Thamnomys dolichurus dryas*, CONGO: Tshiziri, Sept. 28, 1963, U. RAHM, 2 females (L-12255).

Polyplax otomydis CUMMINGS

Polyplax otomydis CUMMINGS, 1912: 395, fig. 2; WATERSTON, 1914: 275; KELLOGG and FERRIS, 1915: 150; FERRIS, 1916b: 240, fig. 23A; BEDFORD, 1919: 715; FERRIS, 1923: 211, fig. 134, 135; BENOIT, 1959b: 266; JOHNSON, 1960: 70-72, fig. 99, 100, 107, 108, 122, 124, 125, 127.

Polyplax otomydis (partim), FERRIS, 1951: 208 (sinks *cummingsi* FERRIS).

This species has been recorded from *Otomys irroratus*, *O. brantis*, *O. angoniensis*, and *O. tropicalis* (type host) in Kenya, Zululand and Union of South Africa.

Specimens examined. - Ex *Otomys denti*, CONGO: Lemera, October 17-29, 1963, U. RAHM, 5 collections (L-12362 to L-12390); Ihusi, July 6, 1963 1 collection (L-12062); Jan. 9, 1964, 1 coll. (L-12762); Mar. 26-28, 1964, 2 collections (L-13037, L-13044); Bogamanda, Apr. 9, 1963, 1 collection (L-11872); ex *Otomys tropicalis*, CONGO: Lemera, Oct. 17-30, 1963, 10 collections (L-12365 to L-12441); Thusi, July 6, 1963, 1 coll. (L-12062); Jan. 9, 1964, 1 coll. (L-12762); Mar. 26-28, 1964, 2 coll. (L-13037, L-13044); Kahusi, Dec. 5-13, 1963, 9 collections (L-12486 to L-12555); Tshisi, June 26, 1963, 1 coll. (L-12015); Buhengere, July 16-17, 1963, 2 coll. (L-12101, L-12112); Bogamanda, Apr. 9, 1963, 1 coll. (L-11872); July 31, 1964, 1 coll. (L-12143); Niakalonge, Feb. 4-12, 1964, 3 coll. (L-12855 to L-12897).

Polyplax phthisica FERRIS - (Figs. 45-47).

Polyplax phthisica FERRIS (*partim*), 1923: 223, fig. 144, 145 (not fig. 145C and some of the records); HOPKINS, 1949: 483; FERRIS, 1951: 209; PATERSON and THOMPSON, 1953: 201; JOHNSON, 1960: 87-88, fig. 146, 149, 151, 152, 154; BENOIT, 1961a: 234; BENOIT, 1962b: 52.

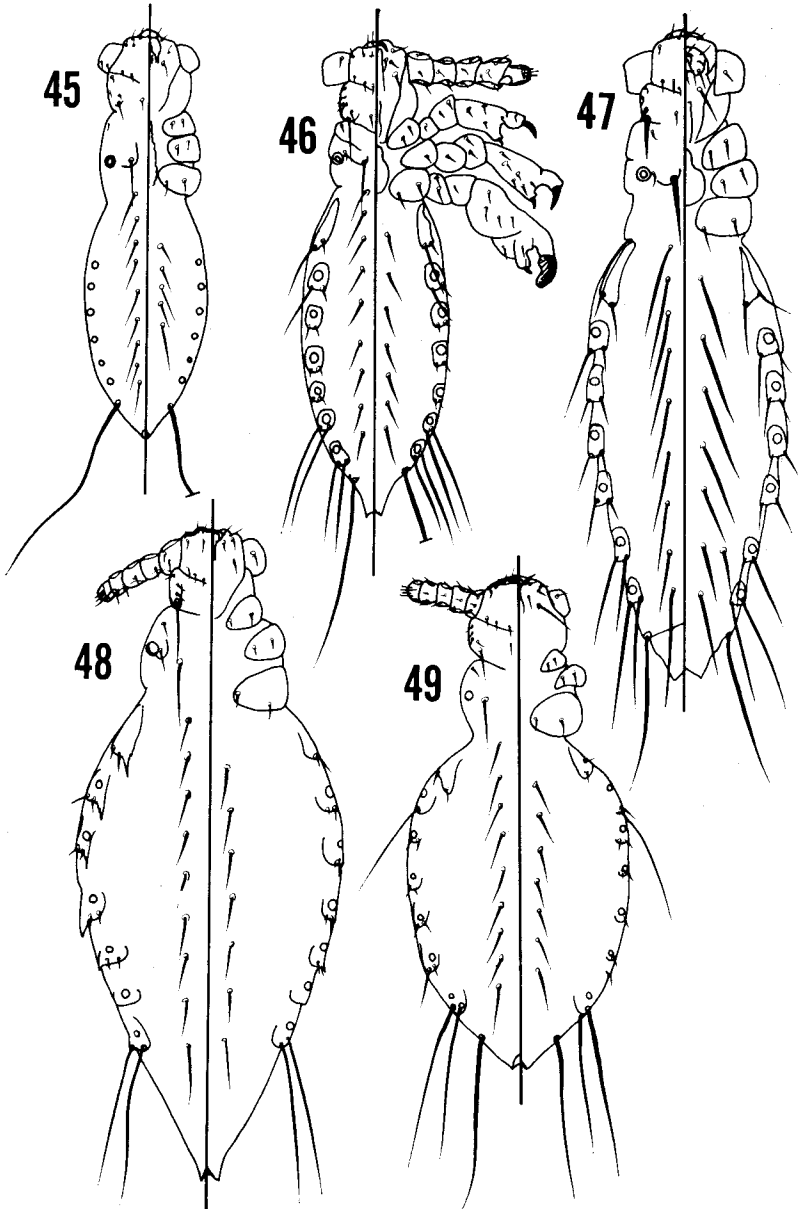
This species was originally described from specimens collected off *Lophuromys aquilus*, in Kenya, and has subsequently recorded from *Lophuromys sikapusi* and *L. aquilus* in Kenya, Tanganyika and Uganda. Nymphal stages of this species are herewith described and illustrated.

Description. - NYMPH 1 (Fig. 45). Total body length 0.57-0.64 mm. *Head.* About as wide as long; broadly rounded anteriorly; postantennal and posterolateral angles not developed; OS, CS, and PAS present; AS indistinct; 2 SHS present on each side; 3 MHS present; ADHS minute, placed anterior to PDPHS; PDPHS distinct; PCHS present; ACHS absent; VPHS present, not reaching the base of antennal segment 2; antennae 5-segmented. *Thorax.* Slightly wider than head; mesothoracic spiracle large; DPtS distinct; DMtS indistinct; irregular outline of sternal plate evident; ADTS absent. *Legs* as in other species of the genus. *Abdomen.* Slender with 6 distinct spiracles and 1 long MAS on each side; 2 rows of 9 DCAS present; 2 rows of 5 VCAS present; anal segment not prolonged.

NYMPH 2 (Fig. 46). Total body length 0.59-0.83 mm. *Head* slightly longer than wide; 6 SHS present; ADHS distinct, slightly spiniform; other characters same as in nymph 1. *Thorax* same as nymph 1 except those mentioned otherwise; DMtS distinct, placed medial to mesothoracic spiracle; sternal plate better defined; each coxal plate with 2-3 distinct setae. *Legs* same as in nymph 1. *Abdomen* slender, with 7 paratergal plates and 6 large spiracles, each placed on the paratergal plate; paratergite 1 slender, with 1 long and 1 minute setae; paratergites 2-7 more or less rectangular; paratergite 2 with 1 long dorsal and 1 minute ventral setae; paratergites 3-5 each with a pair of short setae; 2 long MHS placed on each of paratergites 6 and 7 and 1 MHS placed posterior to paratergite 7, that is, 5 MHS on each side; 2 rows of 9 DCAS present; 2 rows of 7 VCAS present; anal segment slightly prolonged.

NYMPH 3 (Fig. 47). Total body length 0.72-1.18 mm. *Head, thorax, legs* and *abdomen* same as in nymph 2 except those characters mentioned otherwise. *Abdomen* with paratergal setae and CAS much longer; 1 VLAS placed next to sixth VCAS on each side.

Specimens examined. - Ex *Lophuromys aquilus laticeps*, CONGO: Kahungu, Sept. 7, 1962-Mar. 13, 1964, U. RAHM, 37 coll. (L-10932 to L-12966); Ihusi, Sept. 24, 1962-July 16, 1964, U. RAHM, 86 coll. (L-10990 to L-12769); Lemera, Oct. 24-30, 1963, 17 coll. (L-11196 to L-



Figs. 45-47. — *Polyplax phthisica* FERRIS. - 45. Nymph 1; - 46. Nymph 2; - 47. Nymph 3.

Fig. 48. — *Polyplax waterstoni* BEDFORD, Nymph 3.

Fig. 49. — *Polyplax vacillata* JOHNSON, Nymph 2.

12436); Bukarabwa, Aug. 10-Sept. 4, 1963, 3 coll. (L-12163, L. 12175, L-12182); Kahusi, Dec. 3-20, 1963, 13 coll. (L-12475 to L-12568); Irangi, Jan. 10-31, 1963, 9 coll. (L-11316 to L-11456); Tshiziri, Sept. 1962-Dec. 31, 1963, 28 coll. (L-10973 to L-12685); Mondo, Nov.-Dec. 1962, 15 collections (L-11246-L-11322); Buhengere, Jan. 2-Oct. 11, 1963, 35 coll. (L-11238 to L-12352); Niakalonge, Feb. 3-13, 1963, 9 coll. (L-12851 to L-12895); Niamiringi, Jan. 17, 1963, 2 coll. (No. 4 and 5); Lwiro-Irsac, Apr. 30-Nov. 20, 1963, 12 coll. (L-11902 to L-12473); Bogamanda, April 8-July 30, 1963, 4 coll. (L-11866 to L-12140); ex *Lophuromys woosnami*, Lemera, Oct. 18-21, 1963, 2 coll. (L-12368, L-12372); Kahuzi, June 6-Dec. 4, 1963, 2 coll. (L-12489, L-12478); ex *Lophuromys rahmi*, Lemera, Oct. 17, 1963, 1 coll. (L-12367); ex *Lophuromys aquilus laticeps*, Ihusi, Mar. 24, 1963, 1 male and 1 female and 2 nymph 2 (L-11772); Tahibafi, Sept. 25, 1962, 132 females, 146 males, 9 nymph 1, 20 nymph 2 and 50 nymph 3 (L-10997); KENYA: Londioni Camp, Urola, May 29, 1965, 1 female (MEK-169); ex *Thamnomys dolichurus dryas*, CONGO: Tshiziri, Sept. 28, 1963, U. RAHM, 4 females (L-12253); ex *Pelomys fallax concolor*, CONGO: Buhengere, Mar. 25, 1963, 1 coll. (L-11782); Ihusi, Mar. 23-24, 1963, 2 coll. (L-11770, L-11771). Ex *Leggada minutoides*, CONGO: Bukarabwa, Nov. 15, 1963, U. RAHM, 3 males, 1 female, 1 nymph 3 (L-12450); Thusi, Mar. 20, 1963, U. RAHM, 1 female, 1 nymph 2 and 1 nymph 3; Jan. 8, 1964, 1 male and 1 female (L-12743); Kahungu, June 20, 1963, 2 females, 1 male and 2 nymph 3 (L-11986); Oct. 1, 1963, 1 female (L-12266); Oct. 3, 1963, 1 nymph 2 (L-12303); Dec. 17, 1963, 1 male (L-125900); Buhengere, Mar. 28, 1963, 1 female (L-11818); Mar. 26, 1963, 2 males and 1 nymph 3 (L-11790).

Remarks. - We could find no visible morphological differences between specimens collected from *Pelomys* and *Leggada* and those from *Lophuromys*.

Polyplax praomydis BEDFORD

Polyplax praomydis BEDFORD, 1929; 503, fig. 2-5; HOPKINS, 1949: 481; JOHNSON, 1960: 58, fig. 64, 65. PATERSON and THOMPSON 1953: 201, 203; WERNECK, 1953, 60, fig. 12, 13, 14; JOHNSON, 1960: 58, fig. 64, 65. *Polyplax spinulosa* (partim), FERRIS, 1951: 211 (sinks *praomydis*).

This species has been recorded from *Aethomys namaquensis*, *A. chrysophilus* in South West Africa, and Union of South Africa.

Specimens examined. - Ex *Praomys jacksoni montis*, Oct. 22, 1963, U. RAHM, 1 coll. (L-12384).

Polyplax reclinata (NITZSCH)

Pediculus reclinata NITZSCH, 1864: 23.

Polyplax reclinata, ENDERLEIN, 1904: 142; FAHRENHOLZ, 1912a: 55; FAHRENHOLZ, 1912: 37, fig. 11, 12; pl. 1, fig. 12, 13; pl. 2, fig. 2, 4; pl. 3, fig. 7; FERRIS, 1923: 192, fig. 120C, G; FERRIS, 1951: 210 (*sinks leucodontis*); WERNECK, 1953: 53, fig. 1-3; COOREMAN, 1952: 4; COOREMAN, 1955: 187; BENOIT, 1959b: 267; JOHNSON, 1960: 55-57; BENOIT, 1962b: 52.

Haematopinus reclinatus, GIEBEL, 1874: 37.

Haematopinus (Polyplax) reclinatus, NEUMANN, 1910: 524, fig. 24.

Polyplax reclinata leucodontis JANCKE, 1932: 525, fig. 2; FAHRENHOLZ, 1938: 256.

Polyplax reclinata reclinata, FAHRENHOLZ, 1938: 254, fig. 9-11.

Polyplax deltoides FAHRENHOLZ, 1938: 256, fig. 12, 23d; FERRIS, 1951: 207; JOHNSON, 1960: 55.

Polyplax shimizui KANEKO, 1957: 271, fig. 2, 1-4; JOHNSON, 1960: 56.

This species has been recorded from *Sorex araneus*, *Crocidura* spp. and *Suncus* spp. in many parts of the Old world.

Specimens examined. - Ex *Crocidura* sp., CONGO: Niakalonge, Feb 3-14, 1964, U. RAHM, 6 coll. (L-12872 to L-12899); Bugamanda, July 31, 1963, 1 coll. (L-12147); Kahungu, June 19-21, 1963, 2 coll. (L-11960, L-11987); Dec. 16, 1963, 1 coll. (L-12585); Mar. 13, 1964, 1 coll. (L-12965); Astrida, Aug. 2, 1964, 4 males and 4 females (L-13639, L-13640); Irsac-Uvira, Apr. 30, 1963, 1 coll. (L-11903); May 16-30, 1963, 11 coll. (L-11954 to L-12130); Buhengere, Jan. 4, 1963, 1 coll. (L-11252); Mar. 26, 1963, 2 coll. (L-11787, L-11798); July 16, 1963, 1 coll. (L-12092); Lemera, Oct. 18, 1963, 1 coll. (L-12370); Ihusi, Mar. 20, 1963, 1 coll. (L-11746); Jan. 8, 1964, 1 coll. (L-12746); Bukarabwa, Sept. 7, 1963, 1 coll. (L-12184); Nov. 18, 1963, 1 coll. (L-12446); ex *Sylvisorex* sp., CONGO: Buhengere, July 10, 1965, 2 females (L-14746); ex *Scutisorex somereni*, CONGO: Lemera, Aug. 2, 1963, U. RAHM, 1 nymph 3 (L-12157).

Polyplax smallwoodae JOHNSON

Polyplax smallwoodae JOHNSON, 1960: 88-89, fig. 144, 145, 147, 148, 150, 153, 155; KUHN and LUDWIG, 1965a: 242.

Polyplax phthisica FERRIS (*partim*), 1923: 223, fig. 145C (figure of male genitalia and record from *L. sikapusi pyrrihus*); HOPKINS, 1949: 483 (records from *L. sikapusi*); FERRIS, 1951: 209 (records from *L. sikapusi*).

This species has been recorded from *Lophuromys sikapusi* in Uganda and Liberia.

Specimens examined. - Ex *Lophuromys aquilus laticeps*, CONGO: Boyaniando, July 30, 1963, U. RAHM, 1 male and 1 female (L-12136).

***Polyplax spinulosa* (BURMEISTER)**

Pediculus spinulosus BURMEISTER, 1839: no. 8.

Polyplax spinulosa, ENDERLEIN, 1905: 142; FERRIS, 1923: 187, fig. 119, 120A, D, F, H; FAHRENHOLZ, 1938: 249, fig. 1-8, 23C; FERRIS, 1951: 211, fig. 90, 91; COOREMAN, 1952: 5; COOREMAN, 1955: 187; BENOIT, 1959b: 267; JOHNSON, 1960: 54; BENOIT, 1961b: 234; KUHN and LUDWIG, 1965a: 242.

Haematopinus spinulosus, DENNY, 1842: 26, pl. 24, fig. 5.

Pediculus denticulatus NITZSCH, 1864: 24.

Polyplax campylopteri ZAVALETA, 1945: 431, fig.

This species has been recorded commonly from *Rattus norvegicus* (type host), *R. rattus* and numerous other species of the genus *Rattus*. Many records on numerous species of *Rattus* and other rodents are mostly unreliable, and require further verification.

Specimens examined. - Ex *Rattus rattus alexandrinus*, CONGO: Kanungu, Nov. 8, 1962, 1 coll. (L-11179); Niakalonge, Feb. 13-14, 1964, 3 coll. (L-12892, L-12890, L-12893); ex *Rattus* sp. CONGO: Tchibati, May 11, 1964, 10 females and 2 males (L-13208); ex *Malacomys* sp. CONGO: Lemera, June 26, 1965, 8 females and 4 males (L-14684); ex *Steatomys* sp. CONGO: Niamerigi, Jan. 19, 1963, U. RAHM, 1 male and 4 females (No. 19).

Remarks. - There is no morphological difference found on specimens collected off *Steatomys* and *Malacomys* from typical *P. spinulosa*.

Polyplax vacillata JOHNSON - (Fig. 49).

Polyplax vacillata JOHNSON, 1960: 76-79, fig. 102, 105, 111, 113, 114, 117.

This species was described on the basis of 21 males and 27 females collected from *Psammomys obesus obesus* in Egypt. This species was also recorded from *Meriones* sp. Two specimens of nymph 2 were available for study. Nymph 2 is herewith described.

Description. - Nymphal stages 1 and 3 unknown. NYMPH 2 (Fig. 49). Total body length 0.69-0.73 mm. *Head* slightly wider than long; evenly rounded anteriorly; postantennal and posterolateral angles not developed; CS, OS and PAS present; AS indistinct; 6 SHS present; 3 MHS, 1 long PDPHS, 1 minute ADHS present; ACHS present; no PCHS present; antennae 5-segmented. *Thorax* wider than head; DPtS present; DMtS indistinct; DPTS long; sternal plate not developed. *Legs* as in other species of *Polyplax*. *Abdomen* evenly rounded laterally; 7 paratergal plates and 6 spiracles present on each side; paratergites 1-5 except for paratergite 2 each with a pair of minute setae; paratergite 2 with 1 very long dorsal and 1 minute setae; paratergite 6 with 1 long and 1 minute setae; paratergite 7 with a pair of long setae; 1 MAS placed posterior to paratergite 7; 2 rows of 9 DCAS present; 2 rows of 7 VCAS present; anal segment not prolonged.

Specimens examined. - Ex unknown, KENYA: Rougai, May 24, 1965, 2 males, 4 females and 2 nymph 2 (MEK-123).

Polyplax waterstoni BEDFORD - (Fig. 48).

Polyplax waterstoni BEDFORD, 1919: 715, fig. 1, 2, 4, 5; BEDFORD, 1929: 504; FERRIS, 1923: 193, fig. 121, 122; HOPKINS, 1949: 482; FERRIS 1951: 214; PATERSON and THOMPSON, 1953: 200; COOREMAN, 1955: 188; BENOIT, 1959b: 267; JOHNSON, 1960: 57-58; BENOIT, 1961a: 232; BENOIT, 1962: 52.

Polyplax eminatatus FAHRENHOLZ, 1938: 265, fig. 16, 17; HOPKINS, 1949: 478; FERRIS, 1951: 214 (sinks *eminatus*).

This species has been recorded from *Praomys tullbergi*, *Tachyoryctes*, and *Mastomys natalensis* in Kenya, Tanganyika, and Union of South Africa. No nymphal stage has been described. Second nymphal stage is herewith described and illustrated.

Description. - Nymphs 1 and 3 are not known. NYMPH 2 (Fig. 48). Total body length 0.91 mm. *Head* about as wide as long; rounded anteriorly; postantennal angle distinct; posterolateral angle indistinct; OS, CS and PAS present; AS indistinct; 6 SHS; 3 MHS placed anterior to PDPHS; PDPHS long, placed on the hump; VPHS short, antennae 5-segmented. *Thorax* much wider than long; mesothoracic spiracle distinct; DPtS distinct; DMtS borne on the hump; DPTS long; no trace of sternal plate. *Legs* as in other species of *Polyplax*. *Abdomen* long and gradually tapering; 7 paratergites and 6 spiracles present on each side; paratergites 1-5 each with dorsal lobe long and pointed and a pair of minute setae; paratergite 7 with 2 long setae; 2 rows of 9 DCAS present; 2 rows of 7 VCAS present; anal segment prolonged and bifurcate at apex.

Specimens examined. - Ex *Mastomys natalensis*, CONGO: Bogamanda, Apr. 5-7, 1963, 2 coll. (L-11848, L-11863); ex *Praomys jacksoni montis*, CONGO: Lemera, Oct. 17, 1963, 3 males (L-12361); Oct. 26, 1963, 6 females (L-12411); June 26, 1964, 1 female (L-13467); June 26, 1964, 1 female (L-14678); Dec. 15, 1964, 1 female (L-13973); Kahungu, June 26, 1963, 2 males (L-12005); Lushoshu, Feb. 13, 1965, 1 male (D-4300); Bukarabwa, Sept. 11, 1963, 2 males and 2 females (L-12189); Mar. 16, 1963, 1 female (L-11950); Apr. 28, 1965, 1 female (L-14418); Irsac-Lwiro, Sept. 13, 1963, 1 male (L-12190); May 15, 1963, 1 female (L-11935); Tshiziri, June 11, 1964, 2 females (L-13378); June 27, 1963, 2 males and 2 females (L-12025); Ihusi, Feb. 26, 1965, 2 females (L-14163); Tchiziri, Muganzo, Mar. 9, 1965, 3 females (L-14243, L-14244); ex *Leggada minutoides* CONGO: Kahusi, Jan. 13, 1965, 5 males and 5 females (L-14082); unknown locality, July 18, 1964, 2 females (L-13538); ex *Malacomys* sp., KENYA: Londioni Forest, Molo, June 6, 1965, 3 females (MEK-295); May 31, 1965, 1 nymph 3 (MEK-186).

Genus **PROENDERLEINELLUS** EWING

Proenderleinellus calva (WATERSTON)

Polyplax calva WATERSTON, 1917: 199, fig. 1, 2A-H; FERRIS, 1923: 234, fig. 153, 154.

Proenderleinellus calva, FERRIS, 1951: 216, fig. 92, 93; JOHNSON, 1960: 98, BENOIT, 1961a: 232.

Proenderleinellus africanus EWING, 1923: 147; FERRIS, 1951: 216.

Waterstonia calva FAHRENHOLZ, 1938: 244.

Waterstonia calva zanzibariensis FAHRENHOLZ, 1938: 244.

Symysadus calva, FAHRENHOLZ, 1939: 44.

This species has been recorded from *Cricetomys gambianus*, *C. ansongei viator*, and *Thryonomys gregorianus* in Belgian Congo, Kenya, Tanganyika, Union of South Africa, and French West Africa.

Specimens examined. - Ex *Cricetomys gambianus emini*, CONGO: Tchibati (captured at Irangi) Nov. 3, 1962, 1 male, 3 females (L-11110) and May 8, 1964 (no number).

FAMILY PEDICULIDAE

Genus **PEDICULUS** LINNAEUS

Pediculus schäffi FAHRENHOLZ

Pediculus schaffi FAHRENHOLZ, 1910a: 57, Pl. 1, fig. 1-3; pl. 3, fig. 1, 2, 4, 5; Pl. 4, fig. 2, 6; FAHRENHOLZ, 1910b: 714; FAHRENHOLZ, 1912b: 1-12; FAHRENHOLZ, 1913: 371-74; FERRIS, 1935: 599, fig. 322H, 333, 334; FERRIS, 1951: 277-78, fig. 121; BENOIT, 1961b: 231.

Pediculus humanus race *schaffi*, NUTTALL, 1919: 336.

Pediculus (Paenipediculus) simiae EWING, 1932: 117; EWING, 1933: 168, fig. 2C.

This species was originally described from chimpanzee, *Pan, troglodytes* and *P. paniscus*.

Specimens examined. - Ex *Pan troglodytes schweinfurthii*, CONGO: Kabunga, December 7, 1962.

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ABSTRACT

This paper deals with the Anoplura fauna of Belgian Congo Kenya, and Tanganyika, and includes 11 species of *Hoplopleura*, 12 species of *Polyplax*, and 1 species for each of *Schizophthirus*, *Scipio*, *Neohaematopinus*, *Proenderleinius*, and *Pediculus*. In this paper nymphal stages of 10 species of Hoplopleuridae and *Hoplopleura nasvikae* new species are described and illustrated, and adult stages of 4 species of *Hoplopleura* are redescribed.

New Records and Nymphal Stages of the Anophura
from Central and East Africa, with description
of a new *Hoplopleura* species

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