

## The Genus *Heteromenopon* (Mallophaga: Menoponidae), with Description of a New Subgenus and Six New Species<sup>1</sup>

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### ABSTRACT

The genus *Heteromenopon* Carriker is divided into 2 subgenera, *Heteromenopon* with 10 species from Neotropical parrots, and **KEAMENOPON**, new subgenus, with 2 species from Australian and New Zealand parrots. New species and their type-hosts are: *H. (H.) militaris* from *Ara militaris*, *H. (H.) jugularis* from *Brotogeris jugularis*, *H. (H.) viridicatae* from *Pyrrhura viridicata*,

*H. (H.) pictae* from *Pyrrhura picta subandina*, *H. (H.) aurifrons* from *Psilopsiagon aurifrons*, and *H. (H.) pionopsittae* from *Pionopsitta haematotis pulchra*. *Heteromenopon (H.) macrurum* (Eichler), *H. (K.) kea* (Kellogg), and *H. (K.) psittacum* (Le Souëf and Bullen) represent new combinations. Descriptions and a key are given for the known species.

The genus *Heteromenopon* Carriker, 1954, which contains lice that are members of the large *Colpocephalum*-complex, has been separated elsewhere (Price and Beer 1966) from the other genera of Menoponidae occurring on parrots (Psittaciformes). There are at present only 3 recognized species of this genus, all described by Carriker (1954, 1963). It is our purpose here to redefine the genus, to describe a new subgenus, and to treat at the specific level not only the described species but also those represented by other material available to us now.

The known distribution of *Heteromenopon* is restricted to Neotropical parrots, to *Strigops* and *Nesotor* of New Zealand, and to *Platycercus* of Australia. Carriker (1963) stated that species of *Heteromenopon* are "... parasitic only on Neotropical Parrots (Fam. Psittacidae)." Even though the lice from New Zealand and Australia are morphologically closer to each other than to the Neotropical *Heteromenopon*, and are thereby included within a new subgenus, their overall similarities indicate a sufficiently close phylogenetic relationship to justify their inclusion within *Heteromenopon*, thus broadening the *Heteromenopon* concept somewhat beyond what Carriker envisioned.

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Arlington, Virginia; and the late Mr. M. A. Carriker, Jr., whose extensive collection of *Heteromenopon* has been made available to us through the courtesy of the United States National Museum.

In the following descriptions, the value in parentheses following a statement of range represents the mean. All measurements are in millimeters. Unless it is stated to the contrary, reference to tergites, pleura, and sternites refers to the abdomen, and the illustrations are prepared from specimens from the type-host. The postspiracular setae, even though they are often recessed from the margin, are included in the marginal tergal setal counts. The nomenclature of the psittaciform hosts follows that of Peters (1937).

### Genus *Heteromenopon* Carriker, 1954

*Heteromenopon* Carriker, 1954, Rev. Brasil. Entomol. 2: 170. Type-species: *Heteromenopon sincipitalis* Carriker.

The individuals in the genus are characterized as follows. Head wider than long; without ventral spinous processes; with narrow deep preocular slit; usually 2-3 longer setae preceding subocular comb row; characteristic sitophore sclerite of hypopharynx (Fig. 12-14); terminal antennal segment undivided; deep antennary fossa completely enclosing antennae beneath head; inner pair of middorsal setae short to minute, outer pair minute to absent; 4 + 4 long gular setae. Prosternal plate moderately developed, typically with 1-6 longer setae in addition to the anterior minute pair. Venter of femur III with several comb

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rows of short spiniform setae. Postspiracular setae very long on I–VIII. Sternite III with at least 2 well developed comb rows on each side; sternite IV with 0–2 short comb rows on each side. Lacking marked sexual dimorphism. Abdomen of ♀ with tergites I–VIII of essentially same length, all undivided; vulva without lateral auxiliary row of hooked setae. Abdomen of ♂ very close to that of ♀, except for usual differences associated with terminalia; genitalia close to Fig. 22–29; generally with slight asymmetry of endomeral plate; with or without conspicuously developed genital sclerite and without evident penis.

#### Subgenus *Heteromenopon* Carriker

The members of this subgenus form a compact group of closely related lice that are known to occur only on Neotropical parrots. They may be separated from members of the other subgenus by the following characteristics:

(1) Anus of ♀ ventrally with fringe of short, fine setae and typically 8 longer stouter inner setae immediately adjacent to this row (Fig. 4).

(2) ♂ genitalia with slightly to distinctly asymmetrical endomeral plate; parameres not extending to end of endomeral plate, and each with 2–4 minute apical setae (Fig. 22–24).

(3) At least tergites III–VI with marginal seta posterior to or lateroposterior to very long postspiracular seta.

(4) Usually with small internal structure of ♀ genital chamber, shaped as in Fig. 7–11.

(5) Outer occipital setae distinctly shorter than inner.

(6) Dorsum of head with scattered minute alveoli.

#### *Heteromenopon (Heteromenopon) sincipitalis* Carriker

(Fig. 1–5, 10, 14, 19, 22, 26, 30)

*Heteromenopon sincipitalis* Carriker, 1954, Rev. Brasil. Entomol. 2: 171. Type-host: *Ara ararauna* (L.).

**FEMALE.**—As in Fig. 1. Dorsal setae anterior to preocular nodus as in Fig. 19, with single seta medio-anterior to setal complex; temple seta “a” (Fig. 5) relatively heavy, 0.17–0.24 (0.20) long, up to  $\frac{1}{3}$  to  $\frac{1}{2}$  as long as adjacent very long marginal temple seta; ocular seta “b” (Fig. 5) relatively long, 0.034–0.045 (0.040); inner occipital seta long, outer minute or absent (Fig. 30), not more than 0.016 long. Pronotum marginally with 13–14 long, 3–5 short setae; prosternal plate with 2–3 longer setae. Metanotal margin with 15–17 long setae, medioanteriorly with only 1–2 pairs of short setae; mesosternal plate elongate, with 7–10 longer setae; metasternal plate with 13–14 setae. Marginal tergal setae: I, 26–27; II, 29–36 (32.8); III–IV, 33–36 (34.7); V, 30–37 (34.3); VI, 30–34 (32.0); VII, 26–31 (28.3); VIII, 16–19; total on III–VIII, 171–187 (182.5). Last tergite with 3 very long setae on each side, preceded by a fine, medium to long lateral seta and with 3–5 short to minute inner posterior setae. No tergites with anterior setae. Ster-

nal setae (aside from those in comb rows): I, 10–12; II, 52–61 (56.0); III, 39–43 (40.7); IV–V, 51–65 (55.1); VI, 44–49 (46.3); VII, 37–41 (38.3). Sternite III with 3 well-developed comb rows on each side; IV with 1 row of 6–8 close-set, spiniform setae on each side, setae arranged as compactly as those on III. Sternites VII–VIII fused laterally. Vulva marginally and submarginally with 50–60 short to medium setae (28–32 of these marginal between long lateroposterior setae, area “x” of Fig. 3), anteriorly 41–45 short to very long setae. Anal fringe ventrally with 47–56 (51.0) short, fine setae (36–40 of these in area delimited by the 8 long inner setae); dorsally with 35–40 fine, medium to longer setae in irregular row (Fig. 4). Inner structure of genital chamber as in Fig. 10, longer than wide, with well-defined, thick margin, and slight indication of tapering at 1 or both ends. Dimensions: preocular width, 0.49–0.53; temple width, 0.62–0.68; head length, 0.38–0.40; prothorax width, 0.47–0.53; metathorax width, 0.59–0.65; total length, 2.46–2.65.

**MALE.**—Chaetotaxy much as for ♀. Marginal tergal setae on I–VIII, respectively, 26, 29, 34, 35, 34, 32, 28, and 16; total on III–VIII, 179. Sternal setae on I–VII, respectively, 13, 57, 37, 57, 51, 47, and 39. Terminalia as in Fig. 2; sternite VIII with 35 setae. genital plate with 29 marginal and 6 long, 13 medium anterior setae; sternites VIII–IX apparently not fused. Genitalia as in Fig. 22; parameres with 1–2 minute setae further up shaft, in addition to minute apical ones; endomeral plate with pronounced distal expansion to 1 side; basal plate slender, narrowed anteriorly; prominent, slender, deep V-shaped sclerite (Fig. 26) associated with genital sac. Dimensions: as for ♀, except prothorax width, 0.46; metathorax width, 0.56; total length, 2.26; genitalia length, 0.77.

**Material Examined.**—4 ♀ (including 3 ♀ paratypes of *H. sincipitalis*), 1 ♂, *Ara ararauna*, Bolivia, Trinidad.

#### *Heteromenopon (Heteromenopon) militaris*, new species

(Fig. 11, 16)

Type-host: *Ara militaris* (L.).

**FEMALE.**—Very close to *H. sincipitalis*, differing only as follows. Slightly shorter temple seta “a”, 0.12–0.22 (0.17) long, intermediate between Fig. 5–6. Outer occipital seta minute, 0.008–0.016 (0.012) long. Total marginal setae on III–VIII, 159–191 (172.6). Sternite IV without well-defined, compact comb row on each side, but with up to 6 short, spiniform setae in irregularly spaced row (Fig. 16). Vulva with only 22–26 marginal setae between long lateroposterior setae, and only 30–37 (34.0) anterior setae. Anal fringe ventrally of fewer setae, with 28–34 short fine setae in area delimited by 8 long inner setae. Inner structure of genital chamber (Fig. 11) essentially the same, but with tendency for evenly rounded ends.

**MALE.**—Likewise close to *H. sincipitalis*, but dif-

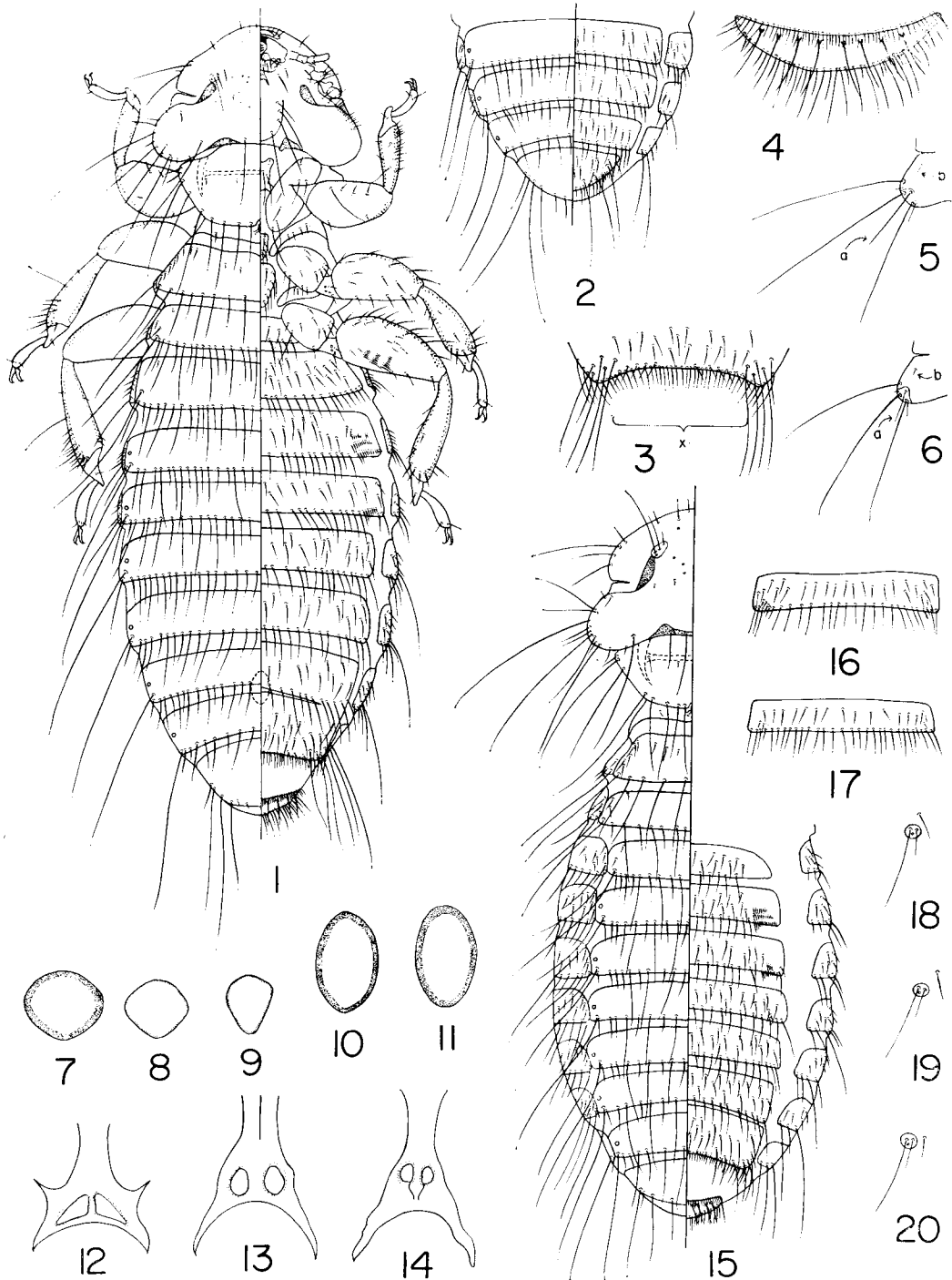


FIG. 1-4.—*Heteromenopon sincipitalis* Carriker. 1, female; 2, male terminalia; 3, vulval margin; 4, female anus. FIG. 5-6.—Temple margin. 5, *H. sincipitalis*; 6, *H. laticapitis* Carriker. FIG. 7-11.—Internal structure of female genital chamber. 7, *H. viridicatae*, n. sp.; 8, *H. laticapitis*; 9, *H. clayae* Carriker; 10, *H. sincipitalis*; 11, *H. militaris*, n. sp. FIG. 12-14.—Sitophore sclerite of hypopharynx. 12, *H. kea* (Kellogg); 13, *H. psittacum* (Le Souëf and Bullen); 14, *H. sincipitalis*. FIG. 15.—*H. pionopsittae*, n. sp., female. FIG. 16-17.—Abdominal sternite IV. 16, *H. militaris*; 17, *H. laticapitis*. FIG. 18-20.—Dorsal setae anterior to preocular nodus. 18, *H. laticapitis*; 19, *H. sincipitalis*; 20, *H. viridicatae*.

fering as follows. Somewhat fewer marginal tergal setae: I, 22-25; II-V, 27-32 (29.5); VI, 26-31 (27.8); VII, 22-24; VIII, 13-16; total on III-VIII, 149-164 (154.7). Spiniform setae on sternite IV as for ♀. Sternite VIII with only 22-28 (26.0) setae; genital plate with only 5-9 medium anterior setae, in addition to 6 long setae.

The less developed comb row on sternite IV, as well as quantitative details of ♀ and ♂ terminalia chaetotaxy, best separates *H. militaris* from *H. sincipitalis*. We have series also from 3 other species of *Ara* which we consider to be conspecific with *H. militaris*. Some specimens tend to be slightly smaller and to have quantitative features slightly beyond the ranges given for *H. militaris*, but we attach no significance to this now, pending availability of more and better material enabling a more detailed comparison.

*Material Examined*.—Holotype ♀, *Ara militaris*, Cincinnati, Magdalena, Colombia, Nov. 24, 1942, M. A. Carriker, Jr., at U.S. National Museum. 5 ♀, 5 ♂ paratypes, same data as holotype; 1 ♀, 1 ♂ paratypes, *A. militaris*, El Bosque, La Guajira, Colombia, June 19, 1941, M. A. Carriker, Jr.; 5 ♀, 4 ♂, *A. ambigua* (Bechstein), Colombia; 5 ♀, 3 ♂, *A. chloroptera* G. R. Gray, Colombia, Bolivia; 2 ♀, 1 ♂, *A. severa* (L.), Bolivia.

***Heteromenopon (Heteromenopon) laticapitis***  
Carriker

(Fig. 6, 8, 17, 18, 23, 27)

*Heteromenopon laticapitis* Carriker, 1963, Ann. Mag. Nat. Hist. (Ser. 13) 5: 456. Type-host: *Ara nobilis nobilis* (L.).

**FEMALE**.—Grossly as for *H. sincipitalis* (Fig. 1). Dorsal setae anterior to preocular nodus as in Fig. 18, with single seta almost directly anterior to complex; temple seta "a" (Fig. 6) shorter, finer, 0.08-0.12 (0.10) long; ocular seta "b" (Fig. 6) much shorter, 0.010-0.018 (0.014) long. Outer occipital seta minute, not over 0.018 long. Pronotum marginally with 14-15 long, 3-5 short setae; prosternal plate with 2-3 medium setae. Metanotal margin with 15-17 long setae; mesosternal plate with 7-8 longer setae; metasternal plate with 10-13 setae. Somewhat fewer marginal tergal setae: I, 20-25 (22.7); II, 25-27 (26.3); III-IV, 27-31 (28.7); V, 29-32 (30.3); VI, 27-28; VII, 23-25 (24.0); VIII, 13-15 (14.3); total on III-VIII, 152-155 (153.3). Last segment with 2-3 short, but not minute, inner posterior setae. Fewer sternal setae: I, 10-11; II, 44-48 (44.3); III, 29-36 (33.3); IV, 49-54 (51.3); V, 41-45 (43.3); VI, 35-41 (37.7); VII, 31-34 (32.3). Sternite IV (Fig. 17) without indication of comb row. Vulva marginally and submarginally with 49-50 setae (21-26 of these marginal between long lateroposterior setae), anteriorly with only 25-28 setae. Anal fringe ventrally with 36-37 short, fine setae (24-26 of these within portion delimited by 8 long inner setae), dorsally with 31-38 setae. Inner structure of genital chamber as in Fig. 8, irregularly circular, with weakly developed margin. Dimensions: preocular

width, 0.49-0.50; temple width, 0.60-0.62; head length, 0.34-0.35; prothorax width, 0.48-0.49; metathorax width, 0.60-0.63; total length, 2.46-2.52.

**MALE**.—Essentially as for ♀. Prosternal plate with 3-6 medium setae. Marginal tergal setae: I, 22-24 (22.8); II, 26-28 (26.8); III-V, 26-30 (27.9); VI, 24-27 (26.0); VII, 23-25 (24.0); VIII, 12-15 (14.3); total on III-VIII, 144-151 (148.0). Sternite VIII with 22-26 setae; genital plate with 20-30 marginal, 4-6 long, 4-7 medium anterior setae. Genitalia as in Fig. 23; smaller than for *H. sincipitalis*; endomerteral plate almost symmetrical, with both distal corners evenly rounded; weakly developed sclerite (Fig. 27) associated with genital sac, only sclerotized along narrow V-shaped portion; minute setae only at or near apical end of parameres. Dimensions: preocular width, 0.47-0.49; temple width, 0.57-0.59; head length, 0.33-0.34; prothorax width, 0.42-0.47; metathorax width, 0.54-0.57; total length, 2.11-2.16; genitalia length, 0.77-0.85.

This species is best separated from *H. sincipitalis* and *H. militaris* on the basis of features of the dorsal head chaetotaxy, the shape of the inner structure of the ♀ genital chamber, and the shape of the endomerteral plate and genital sclerite of the ♂ genitalia.

*Material Examined*.—3 ♀, 4 ♂ (including 1 ♀, 3 ♂ paratypes of *H. laticapitis*), *Ara n. nobilis*, Brit. Guiana; 9 ♀, 9 ♂, *Aratinga acuticaudata* (Vieillot), Bolivia.

***Heteromenopon (Heteromenopon) jugularis***,  
new species

(Fig. 29)

Type-host: *Brotogeris jugularis* (P. L. S. Müller).

**FEMALE**.—Much as in Fig. 1. Dorsal setae anterior to preocular nodus and temple seta "a" as for *H. laticapitis* (Fig. 6, 18). Ocular seta "b" rather variable, but close to that of *H. sincipitalis*, 0.020-0.041 (0.031) long. Outer occipital seta short (Fig. 31), but longer than for any of foregoing species, 0.016-0.038 (0.023) long. Thoracic chaetotaxy as for *H. sincipitalis*. Marginal tergal setae: I, 27-32 (28.6); II-V, 29-36 (32.2); VI, 28-30 (29.0); VII, 24-26 (25.3); VIII, 16-19 (18.3); total on III-VIII, 162-176 (168.7). Sternal combs as for *H. militaris*. Sternal setae: I, 11-16 (13.0); II, 43-49 (45.9); III, 35-41 (38.7); IV, 54-61 (57.7); V, 40-49 (45.6); VI, 40-47 (41.6); VII, 31-35 (33.4). Terminalia and inner structure of genital chamber as for *H. laticapitis*. Smaller than any of foregoing species: preocular width, 0.41-0.44; temple width, 0.52-0.56; head length, 0.32-0.33; prothorax width, 0.41-0.45; metathorax width, 0.53-0.58; total length, 1.93-2.03.

**MALE**.—Head and thorax as for ♀. Marginal tergal setae: I, 23-28 (26.8); II-IV, 27-33 (30.4); V, 27-31 (29.0); VI, 26-27; VII, 21-24 (22.8); VIII, 16-18 (16.6); total on III-VIII, 151-160 (155.5). Sternal setae, terminalia, and size and structure of genitalia much as for *H. laticapitis*; endomerteral plate often with I side slightly more protruding (Fig. 29).

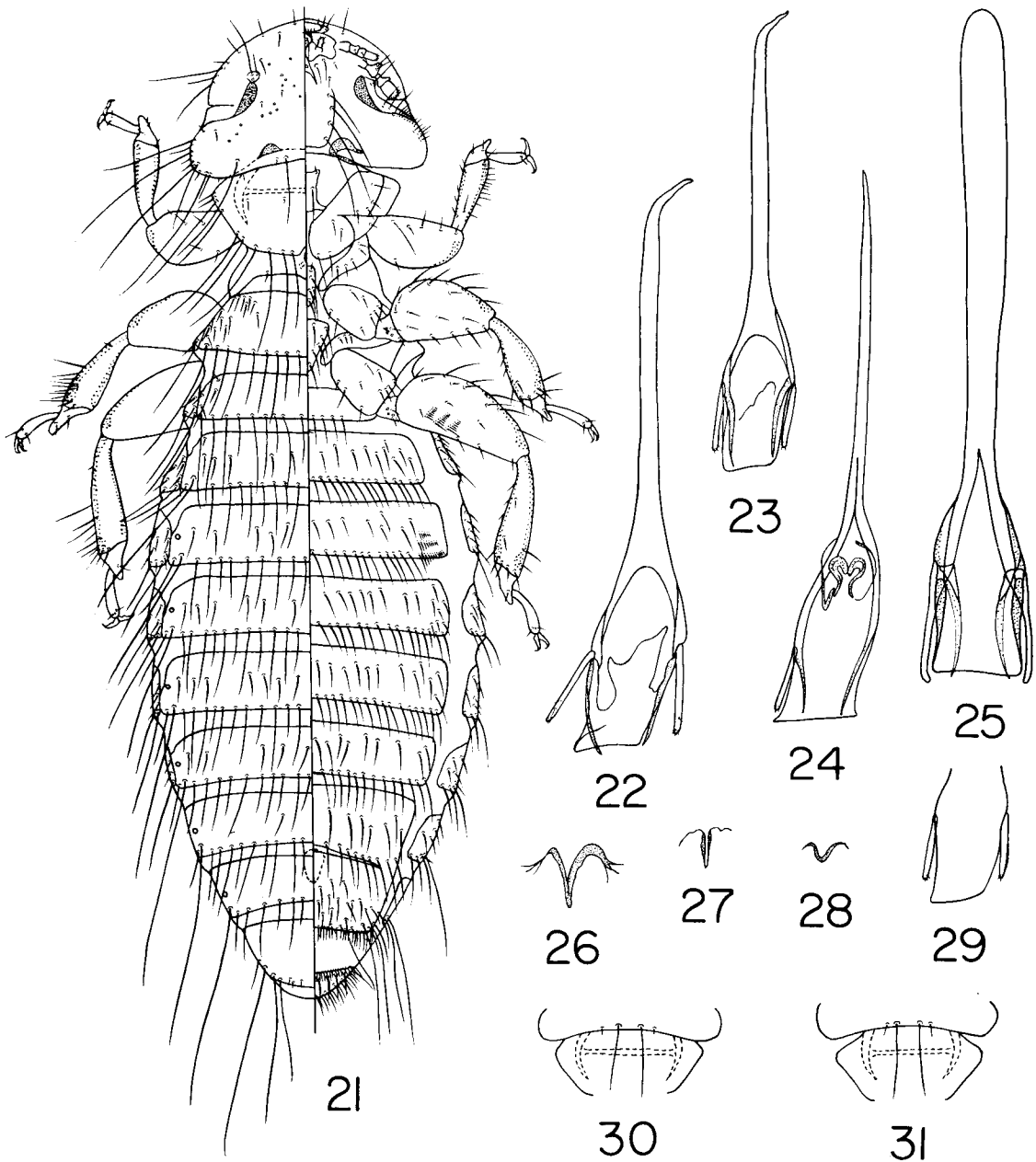


FIG. 21.—*Heteromenopon clayae* Carriker, female. FIG. 22–25.—Male genitalia. 22, *H. sincipitalis* Carriker; 23, *H. laticapitis* Carriker; 24, *H. macrurum* (Eichler); 25, *H. kea* (Kellogg). FIG. 26–28.—Male genital sclerite. 26, *H. sincipitalis*; 27, *H. laticapitis*; 28, *H. clayae*. FIG. 29.—*H. jugularis*, n. sp., outline of distal portion of male genitalia. FIG. 30–31.—Occipital setae. 30, *H. sincipitalis*; 31, *H. viridicatae*, n. sp.

Smaller than any of foregoing species: preocular width, 0.39–0.41; temple width, 0.49–0.52; head length, 0.29–0.31; prothorax width, 0.37–0.41; metathorax width, 0.48–0.50; total length, 1.66–1.77.

This species is close to *H. laticapitis*, having similar terminalia and genitalic features, as well as many aspects of chaetotaxy. It is separable by the longer ocular seta "b" and outer occipital setae, the somewhat larger number of tergal and sternal setae, and the consistently smaller dimensions.

*Material Examined.*—Holotype ♀, *Brotogeris jugularis*, El Bosque, La Guajira, Colombia, June 20, 1941, M. A. Carriker, Jr. (1338–41); at U.S. National Museum. 7♀, 10♂ paratypes, same data as holotype; 1♀, *Bolborhynchus ferrugineifrons* (Lawrence), Colombia; 3♀, 1♂, *Pyrrhura molinae* (Mason and Souancé), Bolivia.

***Heteromenopon (Heteromenopon) macrurum***  
(Eichler), new combination

(Fig. 24)

*Kurodaia macrura* Eichler, 1952, Zool. Anz. 149: 257.

Type-host: *Falco sparverius cinnamominus* Swainson—error. Some Neotropical member of the Psittacidae.

FEMALE.—Chaetotaxy of head and thorax as for *H. jugularis*. Marginal tergal setae: I, 18–24 (21.7); II, 25–27 (26.3); III–VI, 26–29 (27.8); VII, 22–25 (23.5); VIII, 15–16; total on III–VIII, 144–151. Last segment with 4–6 short, but not minute, inner posterior setae. Sternal combs as for *H. laticapitis*. Sternal setae: I, 14–15; II, 51–55; III, 41–47; IV, 61–64; V, 47–50; VI, 42–46; VII, 36. Vulva marginally and submarginally with 72–74 setae (28 of these marginal between long, lateroposterior setae), anteriorly with 41–46 setae. Anal fringe ventrally with 41–46 short, fine setae (23–28 of these within portion delimited by 8 long inner setae), dorsally with 34–38 setae. Inner structure of genital chamber as in Fig. 8, with weakly developed margin. Dimensions: preocular width, 0.52–0.53; temple width, 0.66; head length, 0.38–0.41; prothorax width, 0.54–0.55; metathorax width, 0.71; total length, 2.47–2.51.

MALE.—Known to us only by a specimen from *Sterna*. In close general agreement with ♀. Slightly fewer marginal tergal setae on I–VIII, respectively, 18, 22, 22, 25, 26, 22, 21, and 15, with total of 131 on III–VIII. Genitalia (Fig. 24) possibly unique, with distally expanded endomeral plate and genital sclerite as illustrated; right paramere, although not shown, is undoubtedly present. Dimensions somewhat smaller than for ♀.

Eichler (1952) described *K. macrura* from 10 specimens (WEC Slide 1252) supposedly from *Falco sparverius* and 2 specimens (WEC Slide 1182) supposedly from *Sterna paradisaea* Pontoppidan (= *S. macrura*). Since both slides bore identical collection data and since the specimens were similar, he assumed the *Sterna* lice to be contaminants from the *Falco*, thereby establishing *F. sparverius* as the type-host. Yet the louse was named after *Sterna macrura* and the only illustration, that of the head outline, was

from a *Sterna* louse of WEC Slide 1182! Eichler himself expressed doubt whether his louse species could remain in *Kurodaia*. We shared this uncertainty, but could take no action without seeing type-material, since the description was totally inadequate for proper placement.

Through the courtesy of Dr. H. Weidner, Zoologisches Museum, Hamburg, we have been able to borrow the WEC Slide 1182 and 2♀ from WEC Slide 1252. These specimens are obviously members of the Neotropical *Heteromenopon*; comparison has convinced us that this series is very close to those of *H. laticapitis* and *H. jugularis*. However, the ♂ genitalia, the larger dimensions, and the more numerous ♀ vulval and anal setae are sufficiently different to leave *H. macrurum* apart from other known species for the time being, even though no speculation can now be made as to the correct type-host. Only gross contamination could have resulted in ascribing a psittaciform louse to both *Falco* and *Sterna*.

*Material Examined.*—2♀ paratypes of *K. macrura* (WEC Slide 1252), *Falco sparverius*, Chile; 1♀, 1♂ paratypes of *K. macrura* (WEC Slide 1182), *Sterna macrura*, Chile—both hosts in error.

***Heteromenopon (Heteromenopon) viridicatae***,  
new species

(Fig. 7, 20, 31)

Type-host: *Pyrrhura viridicata* Todd.

FEMALE.—Close to Fig. 1. Dorsal setae anterior to preocular nodus as in Fig. 20, with single seta usually more mediad than anterior to complex; temple seta "a", ocular seta "b", and outer occipital seta as for *H. jugularis*. Pronotal margin with 13–14 long, 2–4 short, and total of 16–17 setae; prosternal plate with 5–8 (6.3) medium setae. Marginal tergal setae: I, 23–29 (26.1); II, 27–32 (29.4); III, 30–32 (31.3); IV, 27–32 (29.3); V, 26–29 (27.7); VI, 23–28 (26.3); VII, 22–26 (23.9); VIII, 15–17 (15.9); total on III–VIII, 147–159 (153.3). Last segment with 2–6 inner posterior setae, all minute, none reaching beyond end of abdomen. Sternal setae: I, 15–18 (16.2); II, 37–50 (43.0); III, 32–44 (37.3); IV, 56–64 (59.3); V, 45–49 (47.0); VI, 40–41; VII, 31–34 (32.1). No compact comb row on sternite IV, but occasionally few scattered short spiniform setae. Vulva marginally and submarginally with 51–56 setae (26–31 of these marginal between long lateroposterior setae), anteriorly with 26–35 setae. Anal fringe ventrally with 38–42 short fine setae (24–27 of these within portion delimited by 8 long inner setae), dorsally with 33–41 setae. Inner structure of genital chamber as in Fig. 7, essentially round, with well defined thick margin. Dimensions: preocular width, 0.45–0.46; temple width, 0.58–0.61; head length, 0.34–0.35; prothorax width, 0.45–0.48; metathorax width, 0.58–0.63; total length, 2.20–2.40.

MALE.—Chaetotaxy essentially as for ♀. Dorsal setae anterior to preocular nodus somewhat variable, with 1 side often with single seta mediad (Fig. 20)

to complex, that of other side medioanterior to complex. Slightly fewer tergal setae: I, 21–27 (23.8); II–V, 24–30 (26.9); VI, 23–25 (24.0); VII, 19–23 (21.5); VIII, 12–15 (13.5); total on III–VIII, 136–145 (139.6). Sternite VIII with 21–25 (23.0) setae; genital plate marginally with 26–30 setae, anteriorly, 11–13. Genitalia close to those of *H. laticapitis* (Fig. 23), but with genital sclerite developed more as for *H. sincipitalis* (Fig. 26). Dimensions: preocular width, 0.43–0.44; temple width, 0.54–0.56; head length, 0.32–0.33; prothorax width, 0.41–0.43; metathorax width, 0.49–0.51; total length, 1.90–1.99; genitalia length, 0.82–0.85.

This species is best separated from the closely related *H. jugularis* by the distinctive inner structure of the ♀ genital chamber, the alignment of the dorsal head setae anterior to the preocular nodus, the fewer total marginal tergal setae on III–VIII, and the slightly larger size.

*Material Examined*.—Holotype ♀, *Pyrrhura viridicata*, Mt. San Lorenzo, Sta. Marta, Colombia, Sept. 9, 1945, M. A. Carriker, Jr. (6793–6); at U.S. National Museum. 4♀, 5♂ paratypes, same data as holotype; 2♀ paratypes, same data, but Sept. 13, 1945 (6845); 3♀, 2♂ (condition too poor for paratype designation), same data, but Aug. 1926; 2♀, 3♂, *Amazona mercenaria* (Tschudi), Colombia.

***Heteromenopon (Heteromenopon) pictae*,**  
new species

Type-host: *Pyrrhura picta subandina* Todd.

*FEMALE*.—Much as for *H. viridicatae*, differing only as follows. Dorsal setae anterior to preocular nodus approaching those of *H. sincipitalis* (Fig. 19), with single seta tending to be more anterior than mediad to complex. Pronotal margin with 14–16 long, 4–7 short, and total of 19–21 setae; prosternal plate with 3–5 (4.2) medium setae. Consistently more marginal tergal setae on: III–V, 33–37 (35.1); VI, 30–34 (32.0); VII, 27–29 (27.8); VIII, 19–21 (20.4); total on III–VIII, 181–191 (186.2). Last segment with 3–4 inner posterior setae, with at least 1 longer, reaching beyond tip of abdomen. Slightly smaller dimensions: preocular width, 0.45; temple width, 0.56–0.58; head length, 0.32–0.34; prothorax width, 0.45–0.46; metathorax width, 0.53–0.56; total length, 2.13–2.23.

*MALE*.—Much as for ♀. With slightly fewer marginal tergal setae, but tendency for more than for *H. viridicatae*: III, 27–32 (29.3); IV, 28–30 (28.7); V, 29–31 (29.7); VI, 27–29 (28.0); VII, 24–25; VIII, 15–9 (17.0); total on III–VIII, 154–160 (157.0). Slightly smaller dimensions than for *H. viridicatae*: preocular width, 0.41–0.42; temple width, 0.51–0.53; head length, 0.31–0.32; prothorax width, 0.41; metathorax width, 0.46–0.48; total length, 1.78–1.85; genitalia length, 0.73–0.77.

This species is close to *H. viridicatae*, but the consistently larger number of tergal setae, especially with the ♀, the longer inner posterior setae of the last ♀

segment, and the slightly smaller size of *H. pictae* will separate the 2 species.

*Material Examined*.—Holotype ♀, *Pyrrhura subandina*, Guamalito, Santander N., Colombia, June 14, 1943, M. A. Carriker, Jr. (4334–8); at U.S. National Museum. 4♀, 3♂ paratypes, same data as holotype.

***Heteromenopon (Heteromenopon) aurifrons*,**  
new species

Type-host: *Psilopsiagon aurifrons* (Lesson).

*FEMALE*.—Dorsal setae anterior to preocular nodus as in Fig. 19; temple seta "a" from 0.097 to 0.170 long; ocular seta "b" from 0.032 to 0.041 long; outer occipital seta long, 0.09 or more, reaching at least to transverse thickening of prothorax (Fig. 15). Thoracic chaetotaxy much as for *H. sincipitalis* (Fig. 1). Marginal tergal setae: I, 23–27 (24.5); II–III, 28–33 (30.4); IV–V, 29–34 (31.3); VI, 26–29 (27.8); VII, 22–26 (24.4); VIII, 14–17 (16.2); total on III–VIII, 159–167 (161.8). Last tergite with 3 very long setae on each side, preceded by a fine, medium, lateral seta, and with 4–7 short, but not minute, inner posterior setae. Sternal setae: I, 10–15 (12.3); II, 40–51 (44.0); III, 35–49 (40.5); IV, 67–83 (73.8); V, 54–66 (60.0); VI, 49–57 (52.4); VII, 40–51 (45.6). Sternite III with 2–3 well-developed comb rows on each side; IV with only few scattered spiniform setae, usually not in compact row as on III. Vulva marginally and submarginally with 52–66 short to medium setae (22–26 of these marginal between long lateroposterior setae), anteriorly 36–46 short to very long setae. Anal fringe ventrally with 52–55 short, fine setae (34–41 of these in area delimited by 8 long inner setae), dorsally with 50–56 fine, medium to long setae in irregular row. Inner structure of genital chamber as for *H. laticapitis* (Fig. 8). Dimensions: preocular width, 0.42–0.44; temple width, 0.55–0.58; head length, 0.32–0.34; prothorax width, 0.41–0.44; metathorax width, 0.56–0.61; total length, 2.12–2.33.

*MALE*.—Head and thorax as for ♀. Slightly fewer tergal setae: I, 19–22 (20.3); II, 24–25; III–V, 25–27 (25.9); VI, 23–25 (23.7); VII, 20; VIII, 12–14 (13.3); total on III–VIII, 131–138 (134.7). Fewer sternal setae: I, 10–12 (11.3); II, 38–41 (39.7); III, 31–37 (33.7); IV, 55–62 (57.7); V, 42–47 (44.7); VI, 40–43 (41.3); VII, 31–36 (34.0); VIII, 28–30 (29.0); genital plate with 22–31 marginal, 11–13 anterior setae. Genitalia close to those of *H. laticapitis* (Fig. 23, 27). Smaller than ♀: preocular width, 0.39–0.41; temple width, 0.50–0.53; head length, 0.30–0.32; prothorax width, 0.37–0.39; metathorax width, 0.45–0.49; total length, 1.71–1.82; genitalia length, 0.73–0.77.

This species is distinctive from all of the foregoing species by having long outer occipital setae. Further differences are found in quantitative features of abdominal chaetotaxy, especially the more abundant sternal setae of the ♀, and in the dimensions.

*Material Examined*.—Holotype ♀, *Psilopsiagon orbigny*, Callipampa, Bolivia, June 3, 1936, M. A. Car-

riker, Jr. (11579); at U.S. National Museum. 4 ♀, 3 ♂ paratypes, same data as holotype; 1 ♀, 1 ♂ paratypes, *P. aurifrons orbygnesi*, Desaguadero, Peru, May 4, 1931, M. A. Carriker, Jr.; 1 ♂, *Aratinga wagleri frontata* (Cabanis), Peru; 3 ♀, 1 ♂, *Amazona mercenaria* (Tschudi), Peru. Also, 9 ♀, 5 ♂, *Piculus rivolii atriceps* (Slater and Salvin) (Order Piciformes), Peru, and 1 ♀, *Cinclus leucocephalus leucnotus* Slater (Order Passeriformes), Peru, both of these probably host errors.

***Heteromenopon (Heteromenopon) pionopsittae*,  
new species**

(Fig. 15)

Type-host: *Pionopsitta haematotis pulchra* Berlepsch.

FEMALE.—As in Fig. 15. Very long temple seta "a", 0.28 long; outer occipital setae long, as for *H. aurifrons*. Margin of metanotum with 12 setae. Marginal tergal setae on I–VIII, respectively, 18, 21, 23, 23, 21, 21, 19, and 13, with total of only 120 on III–VIII. Last segment with 2 long, inner posterior setae. Sternal setae on I–VII, respectively, 7, 31, 46, 50, 55, 52, and 45. Sternite III with 3 well-developed comb rows on 1 side, 2 plus fragments of third on other; IV with 2 comb rows on each side, compact as on III, with posterior row of 10 setae each, anterior of 4 each. Sternites VII–VIII completely separated. Vulva marginally and submarginally with 58 setae, anteriorly with 44. Anal fringe ventrally of 40 setae (28 within area delimited by 8 inner long setae), dorsally of 49. Without evident inner structure of genital chamber. Dimensions: preocular width, 0.56; temple width, 0.69; head length, 0.38; prothorax width, 0.54; metathorax width, 0.62; total length, 2.24.

MALE.—Unknown.

Although known only from the ♀, *H. pionopsittae* is easily separated from other described species by the long outer occipital seta in combination with the long inner posterior setae of the last segment, the 2 comb rows on each side of sternite IV, and other features of chaetotaxy and size.

*Material Examined*.—Holotype ♀, *Eucinetus pulchra*, Nazaret, Bolivar, Colombia, Mar. 4, 1949, M. A. Carriker, Jr.; at U.S. National Museum.

***Heteromenopon (Heteromenopon) clayae*  
Carriker**

(Fig. 9, 21, 28)

*Heteromenopon clayae* Carriker, 1963, Ann. Mag. Nat. Hist. (Ser. 13) 5: 456. Type-host: *Ara manilata* (Boddaert).

FEMALE.—As in Fig. 21. Head chaetotaxy close to *H. laticapitis*. Pronotal margin with 15–17 long, 3–5 short setae; prosternal plate with 2–5 medium setae. Metanotal margin with 17–20 setae; mesosternal plate with 5–9 medium setae; metasternal plate with 12 setae. Marginal tergal setae: I, 19–22 (20.8); II–III, 21–27 (23.8); IV–V, 26–29 (27.4); VI, 22–27

(25.3); VII, 22–25 (23.0); VIII, 13–17 (15.3); total on III–VIII, 131–152 (142.0). Single row of 10–18 medium anterior tergal setae on each of II–VI, 3–7 on VII, 0–1 on VIII. No evidence of comb row on sternite IV. Inner structure of genital chamber as in Fig. 9, with thin margin. Otherwise, sternal and terminalia chaetotaxy and dimensions essentially as for *H. laticapitis*.

MALE.—Much as for ♀. Metanotum with over 20 medium medioanterior setae. Anterior tergal setae of 11–19 on each of I–V, 10–15 on VI, 7–10 on VII, 2–4 on VIII. Sternal and terminalia chaetotaxy close to *H. laticapitis*, except for only 14–17 marginal setae on genital plate. Genitalia generally as for *H. laticapitis*, but with short, U-shaped sclerite (Fig. 28) associated with genital sac. Dimensions as for *H. laticapitis*.

This species is easily separated from all other known species of *Heteromenopon* in that it is the only member that possesses a row of anterior setae on most tergites.

*Material Examined*.—4 ♀, 4 ♂ (paratypes of *H. clayae*), *Ara manilata*, Brit. Guiana.

In addition to the material used for the foregoing descriptions and material that we consider to be conspecific with it, we have available specimens from certain other hosts. This material, all of which belongs to *Heteromenopon*, is either in poor condition or not in sufficient number to enable handling it either as new species or as belonging to any of the recognized species. We are listing these specimens here only to point out that *Heteromenopon* has been collected from these additional hosts: 1 ♀, 4 ♂, *Pyr-rhura frontalis* (Vieillot), Brazil; 1 ♀, *P. melanura* (Spix), Colombia; 2 ♀, 1 ♂, *Aratinga leucophthalmus callogensis* (Salvadori), Peru; 1 ♀, 1 ♂, *A. holochlora* (Slater), Mexico; 1 ♀, *Pionus sordidus* (L.), Bolivia; 1 ♀, *Brotogeris cyanoptera* (Salvadori), Colombia.

**Subgenus *Keamenopon*, new subgenus**

Type-species: *Heteromenopon kea* (Kellogg).

The lice within this subgenus are known to occur on *Strigops* and *Nestor* of New Zealand and on *Platycercus* of Australia. They are separable from members of the subgenus *Heteromenopon* by the following characteristics:

(1) Anus of ♀ ventrally with shorter among longer setae, and without suggestion of inner setae (Fig. 32, 33).

(2) ♂ genitalia with essentially symmetrical endomerite plate; paramere length variable, but each without any minute apical setae (Fig. 25).

(3) Postspiracular seta outermost on I–VIII.

(4) Without evident internal structure of ♀ genital chamber.

(5) Outer occipital setae as long as inner.

(6) Dorsum of head apparently without scattered minute alveoli.



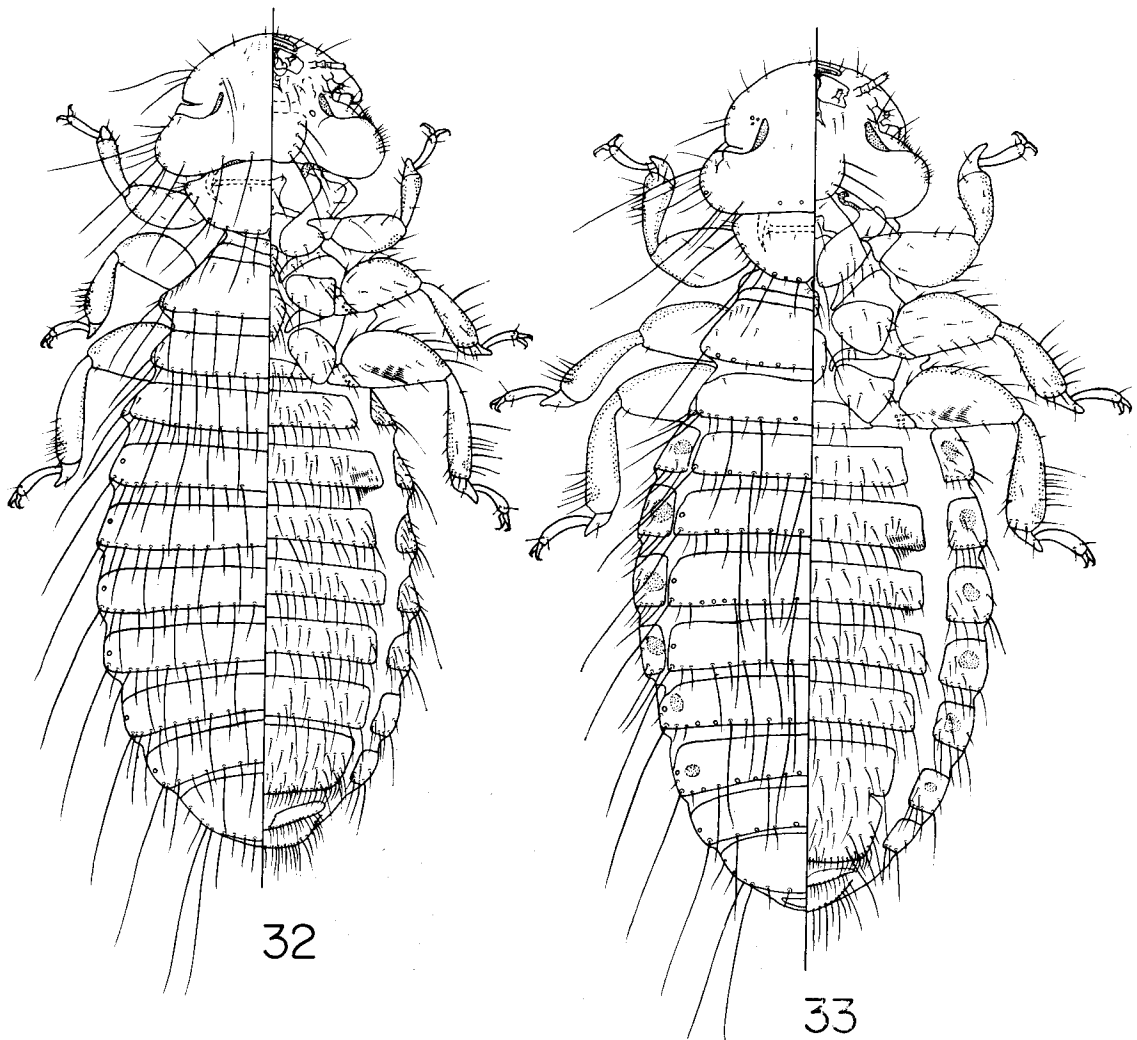


FIG. 32-33.—Female. 32, *Heteromenopon kea* (Kellogg); 33, *H. psittacum* (Le Souëf and Bullen).

***Heteromenopon (Keamenopon) kea*** (Kellogg),  
new combination  
(Fig. 12, 25, 32)

*Menopon fulvofasciatum* var. *kea* Kellogg, 1907, Psyche 14: 122. Type-host: *Nestor notabilis* Gould.

FEMALE.—As in Fig. 32. Both pairs of occipital setae long. Sitophore sclerite of hypopharynx as in Fig. 12. Margin of pronotum with 10 long, 8–10 short setae; prosternal plate with 1–2 medium setae. Metanotal margin with 10–12 setae. Marginal tergal setae: I, 19–20; II–VII, 21–27 (23.7); VIII, 13–17; total on III–VIII, 129–137 (133.3). Last tergite with 2 very long setae on each side, preceded by 2 shorter, finer setae, and with 7–9 long inner posterior setae. No anterior tergal setae. Sternal setae: I, 14; II–V, 35–49 (41.4); VI, 33–40 (37.3); VII, 31–35 (33.3). Sternite III with 2 well-developed comb rows on each side, none on IV (occasionally 1–2 short spiniform setae, but no row as such). Sternites VII–VIII not fused. Vulva marginally with 45–47 rather short

setae, anteriorly with 45–49. Ventral anal fringe of 24–27 setae; dorsal fringe of 26–31 setae of variable lengths, in irregular row. Dimensions: preocular width, 0.44–0.45; temple width, 0.56–0.58; head length, 0.32; prothorax width, 0.41; metathorax width, 0.54–0.55; total length, 2.02–2.07.

MALE.—Except for ventral terminalia, essentially as for ♀. Sternite VIII with 25–29 setae; genital plate with 19–23 marginal, 13–14 anterior setae. Genitalia as in Fig. 25, parameres extending distinctly beyond endomerale plate, without evident sclerite associated with genital sac, and with basal plate expanded toward anterior end. Somewhat smaller than ♀: preocular width, 0.42–0.44; temple width, 0.54–0.55; head length, 0.31–0.32; prothorax width, 0.38–0.41; metathorax width, 0.49–0.51; total length, 1.78–1.86; genitalia length, 0.69–0.75.

This species was described by Kellogg (1907) from 3 adults and several young. We have obtained the loan of this entire type-series and, although the speci-

mens are not in very good condition, they are similar in all discernible respects to others we have from the kea. We here designate as lectotype the ♂ on the slide bearing Kellogg's original label; the other specimens are on 4 slides carrying the same data but with labels placed on them by Dr. Emerson when he remounted the material in 1946.

Carriker (1954) stated that he had seen no specimens of this louse from the kea, and could not therefore say whether it may remain in *Psittacomenopon*, where it was placed by Hopkins and Clay (1952). Now that we have been able to study specimens, we have determined its affinities to be close to *Heteromenopon* and have designated it as the type-species of the new subgenus *Keamenopon*.

*Material Examined.*—4♀, 7♂ (including 1♀, 2♂ of type-series of *M. kea* from the Kellogg Collection, Univ. of California), *Nestor notabilis*, New Zealand; 2♂, *Strigops [habroptilus]* G. R. Gray], New Zealand.

***Heteromenopon (Keamenopon) psittacum***  
(Le Souéf and Bullen), new combination

(Fig. 13, 33)

*Menopon psittacus* Le Souéf and Bullen, 1902, Vict. Nat. 18: 158. Type-host: *Platycercus eximius* (Shaw).

*Menopon pteropsittacus* Harrison, 1916, Parasitology 9: 43. Nomen novum for *Menopon psittacus* Le Souéf and Bullen.

**FEMALE.**—As in Fig. 33. Close to *H. kea*. Occipital setae missing, but both pairs long in other series. Sitophore sclerite of hypopharynx as in Fig. 13. Margin of pronotum with 8 long, 13 short setae; prosternal plate with 1 medium seta. Metanotal margin with 13 setae, including 3 minute ones. Tendency for reduced number of marginal tergal setae, with 18, 20, 23, 21, 19, 19, 17, and 11 on I–VIII, respectively; total on III–VIII, 110. Only 4 inner posterior setae on last segment. Fewer sternal setae on I, 6; II, 30; and III, 31. Sternite IV with 2–4 short spiniform setae on each side, suggestive of very short comb row. Sternites VII–VIII fused. Vulva with 35 marginal, 38 anterior setae. Anal fringes of 23 ventral, 20 dorsal setae, the latter in single line, not giving effect of any inner setae. Pleura II–VII each with conspicuous, circular, internal thickening. Dimensions slightly larger than for *H. kea*: preocular width, 0.47; temple width, 0.59; head length, 0.39; prothorax width, 0.42; metathorax width, 0.60; total length, 2.16.

**MALE.**—Generally as for ♀, but with fewer marginal tergal setae on I–VIII, respectively, 15, 16, 18, 17, 18, 16, 15, and 7; total on III–VIII, 91. Fewer sternal setae on I–VI, respectively, 3, 28, 26, 33, 33, and 30. Genitalia much as for *H. kea*; parameres either short of or extending up to (but not beyond end of) endomerale plate; condition of basal plate not discernible. Dimensions slightly smaller than ♀ and somewhat larger than ♂ of *H. kea*: preocular width, 0.45; temple width, 0.56; head length, 0.37; prothorax width, 0.40; metathorax width, 0.53; total length, 1.90.

This species is very close to *H. kea* in both sexes,

but the ♀ is separable in having fused sternites VII–VIII, dorsal anal setae in an even, single row, only 8 long marginal pronotal setae, a distinctively different sitophore sclerite, as well as other features of chaetotaxy and size. The ♂ of *H. psittacum* also has only 8 long marginal pronotal setae, a distinctive sitophore sclerite, possibly fewer tergal and sternal setae, as well as perhaps a significant difference in length of parameres. The ♀♀ of the other series from *Platycercus* species either do not show the circular pleural thickenings, or are inconsistent in possessing them; since the series are so short and agree in other features, we have placed no significance on this for the present.

*Material Examined.*—1♀, 1♂, *Platycercus eximius*, Tasmania; 2♀, *P. zonarius* (Shaw), S. W. Australia; 2♀, 1♂, *P. elegans* (Gmelin), Australia.

KEY TO THE SPECIES OF *Heteromenopon*

1. Anterior setae present on tergites II–VI (Fig. 21) ..... *clayae* Carriker  
Anterior setae absent on tergites II–VI ..... 2
2. Outer occipital seta long, extending to or beyond transverse prothoracic thickening ..... 3  
Outer occipital seta short, minute, or absent ..... 6
3. At least tergites III–VI with marginal seta posterior to or lateroposterior to postspiracular seta. ♀: with inner ventral anal setae. ♂: parameres of genitalia with minute apical setae (♂ of *pionopsittae* unknown) ..... 4  
Tergites III–VI with postspiracular seta outermost. ♀: without inner ventral anal setae. ♂: parameres of genitalia without apical setae ..... 5
4. Sternite IV with 2 comb rows on each side. ♀: long inner posterior setae on last tergite (Fig. 15); total of fewer than 130 marginal setae on tergites III–VIII ..... *pionopsittae*, n. sp.  
Sternite IV with at most only few spiniform setae in short loose single row. ♀: very short, fine, inner posterior setae on last tergite; total of more than 150 marginal setae on tergites III–VIII ..... *aurifrons*, n. sp.
5. Margin of pronotum with 10 long setae; sitophore sclerite of hypopharynx as in Fig. 12 ..... *kea* (Kellogg)  
Margin of pronotum with only 8 long setae; sitophore sclerite of hypopharynx as in Fig. 13 ..... *psittacum* (Le Souéf and Bullen)
6. ♀: inner structure of genital chamber as in Fig. 10 or 11, longer than wide, with relatively thick margin. ♂: genitalia at least 0.90 long; endomerale plate usually having pronounced distal expansion to only 1 side (Fig. 22); with prominent V-shaped genital sclerite (Fig. 26) ..... 7  
♀: inner structure of genital chamber not as above (Fig. 7 or 8). ♂: usually smaller genitalia, less than 0.85 long; endomerale plate not as above (Fig. 23, 24, or 29) and genital sclerite variable ..... 8
7. Sternite IV with compact comb row of 6 or more setae on each side. ♀: ventral anal fringe with 35 or more setae in area delimited by 8 long inner setae. ♂: sternite VIII with more than 30 setae, genital plate with more than 17 anterior setae; total of more than 170 marginal setae on tergites III–VIII ..... *sincipitalis* Carriker  
Sternite IV without compact comb row as above, but with up to 6 loosely organized short, spiniform setae on each side. ♀: ventral anal fringe with fewer than 35 setae in area delimited by 8

- long inner setae. ♂: sternite VIII with fewer than 30 setae, genital plate with fewer than 17 anterior setae; total of fewer than 170 marginal setae on tergites III-VIII..... *militaris*, n. sp.
8. ♀: vulva marginally and submarginally with 70 or more setae, anteriorly over 40; ventral anal fringe of over 40 setae. ♂: genitalia as in Fig. 24..... *macrurum* (Eichler)
- ♀: vulva marginally and submarginally with fewer than 60 setae, anteriorly fewer than 40; ventral anal fringe usually of not over 40 setae. ♂: genitalia not as in Fig. 24..... 9
9. Ocular seta "b" short, 0.010-0.018 long (Fig. 6); both outer occipital setae minute, up to 0.018 long (Fig. 30). ♀: inner structure of genital chamber as in Fig. 8, or more rounded, with weakly developed margin; temple width 0.60-0.62. ♂: temple width 0.57-0.59..... *laticapitis* Carriker
- Ocular seta "b" longer, at least 0.020 long (Fig. 5); at least 1, usually both, outer occipital setae longer, 0.020 or more (Fig. 31). ♀: inner structure of genital chamber as in Fig. 7, with well-defined, thick margin, or, if near to Fig. 8, with thin margin, then temple width 0.52-0.56. ♂: temple width 0.49-0.56..... 10
10. At least 1 side with dorsal setae anterior to preocular nodus as in Fig. 20, with single seta more mediad than anterior to complex. ♀: total of fewer than 160 marginal setae on tergites III-VIII. ♂: total of fewer than 150 marginal setae on tergites III-VIII..... *viridicatae*, n. sp.
- Both sides with dorsal setae anterior to preocular nodus as in Fig. 18 or 19, with single seta more anteriorly placed. ♀: total of over 160 marginal setae on tergites III-VIII. ♂: total of over 150 marginal setae on tergites III-VIII..... 11
11. ♀: inner structure of genital chamber as in Fig. 8, or more rounded, with weakly developed margin; last tergite with all inner posterior setae minute, none reaching beyond end of abdomen. ♂: inseparable from below..... *jugularis*, n. sp.
- ♀: inner structure of genital chamber as in Fig. 7, with well-defined thick margin; last tergite with at least 1 longer inner posterior seta extending to or slightly beyond margin of abdomen..... *pictae*, n. sp.

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