

# Acarologia

A quarterly journal of acarology, since 1959  
Publishing on all aspects of the Acari

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Subscriptions: Year 2022 (Volume 61): 450 €

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Previous volumes (2010-2020): 250 € / year (4 issues)

Acarologia, CBGP, CS 30016, 34988 MONTFERRIER-sur-LEZ Cedex, France

ISSN 0044-586X (print), ISSN 2107-7207 (electronic)

The digitalization of Acarologia papers prior to 2000 was supported by Agropolis Fondation under the reference ID 1500-024 through the « Investissements d'avenir » programme (Labex Agro: ANR-10-LABX-0001-01)



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THREE NEW NASAL MITES FROM AUSTRALIAN BIRDS  
(ACARINA, LAELAPIDAE)

BY

Robert DOMROW

(Queensland Institute of Medical Research, Brisbane).

Summary.

Three new species of rhinonyssine nasal mites of Australian passeriform birds are described — *Ptilonyssus pittae* n. sp. from *Pitta versicolor* (Pittidae), *P. psophodae* n. sp. from *Psophodes olivaceus* (Falconculidae), and *P. ailuroedi* n. sp. from *Ailuroedus crassirostris* (Ptilonorhynchidae).

\* \* \*

The nasal mites of birds have been extensively studied, especially in Africa and North America by FAIN and STRANDTMANN (see STRANDTMANN and WHARTON, 1958, for documentation). As a contribution to the Australian fauna, where only one species is recorded — *Ptilonyssus trouessarti* (Hirst) — three new species of the same genus are described.

***Ptilonyssus pittae* n. sp.**

Figs. 1-2, 7.

*Diagnosis.* — The genus *Ptilonyssus* Berlese and Trouessart is characteristic of passeriform birds. FAIN and STRANDTMANN both agree (*in litt.*) that the division of the pygidial shield is variable in certain species, e.g. the type species, *P. echinatus* Berlese and Trouessart — FAIN (1957) and STRANDTMANN (1960) say this species has a divided pygidial shield; GEORGE (1961) figures the shield as entire. Nevertheless, it still seems a good starting point. Of the three dozen known species (nearly all listed by GEORGE, *loc. cit.*), only three have been described as having the pygidial shield divided — *P. aureliani*, *P. motacillae* and *P. tillae*, all taken in Africa by FAIN. Compared with *P. pittae*, neither *P. aureliani* nor *P. motacillae* has two strong posterior setae on the podosomal shield, while *P. motacillae* further lacks

the four strong setae flanking this shield posterolaterally. In addition, *P. pittae* lacks the basally expanded, thorn-like setae present on the venter and basal leg segments of *P. aureliani*. *P. pittae* is very similar to *P. tillae*, even possessing modified claws on tarsus I, but may be separated from this species both by the shape and the setation of the podosomal shield.

*P. pittae* should also be compared with the African *P. calamocichlae* Fain, which also possesses two very strong setae set close together on the posterior margin of the podosomal shield. The two species differ, however, in the shape and sculpturing of this shield, as well as in the disposition of the anal setae. *P. calamocichlae* is described as possessing an entire pygidial shield.

*P. pittae* may not be confused with the other known Australian species — *P. trouessarti*, from the southern figbird, *Sphecotheses vieillotii* (= *S. maxillaris*), Oriolidae — because of the inflated coxal and trochanteral setae of the latter.

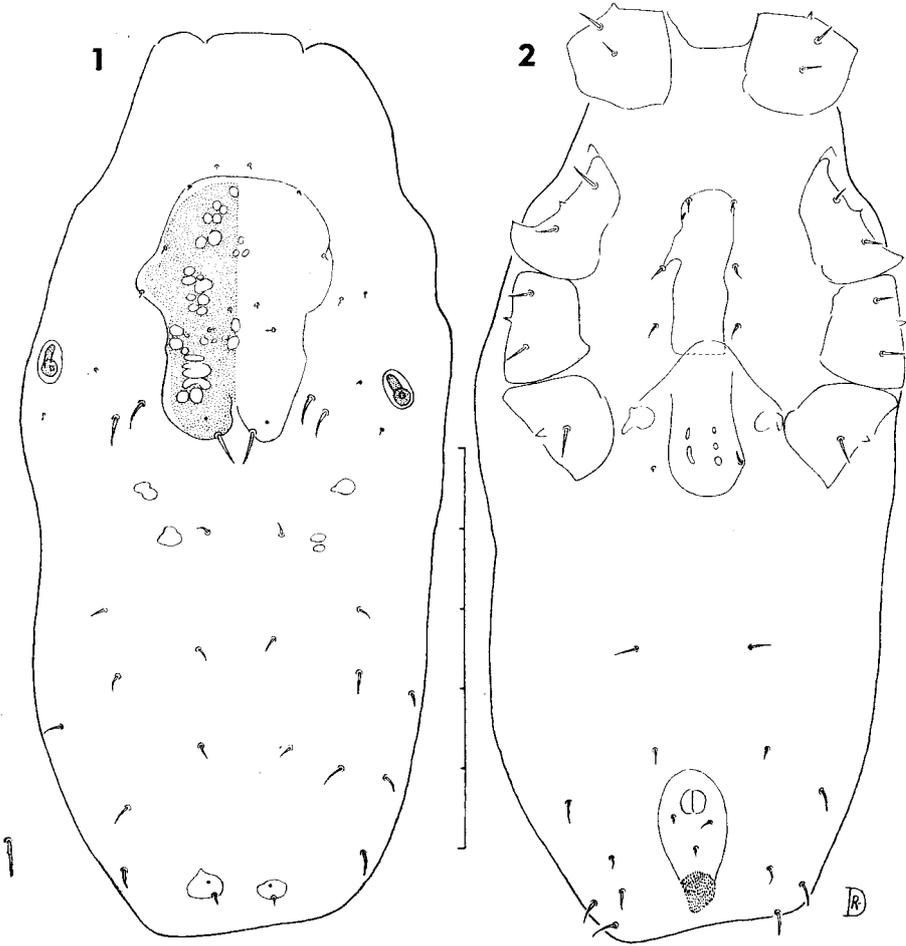
*P. echinatus*, characteristic of swallows in Europe, South Africa and North America, may perhaps be expected in Australia, but also has inflated leg setae.

*Type material.* — Holotype female, five paratype females and two morphotype nymphs from the nares of the noisy pitta, *Pitta versicolor* Swainson (Pittidae), rain forest, Upper Brookfield, S. E. Queensland, 4.iv.1963, R. D. Holotype female in National Insect Collection, CSIRO, Canberra; one paratype female each in collections of British Museum (Natural History), U. S. National Museum, A. FAIN, R. W. STRANDTMANN, and my laboratory, which also houses the morphotypes.

*Female.* — Idiosoma elongate, slightly wider in anterior half; 1120  $\mu$  long in slightly flattened specimen figured, 970 and 1005  $\mu$  in two less compressed individuals. In life, the specimens were dark reddish-brown due to ingested blood. Podosomal shield evenly arched anteriorly, with prominence on each side, and deeply cleft in midline posteriorly, leaving posterior quarter distinctly bilobed. Anterior margin with six minute setae arranged in semicircle (the vertical pair being off, rather than on shield). Disc with four minute setae also in semicircle. Posterior lobes each with pore and much stronger seta. Posterolateral angles of shield flanked by further two pairs of setae twice as strong as remainder on dorsum. Each peritreme surrounded by three or four minute setae, one of which may be incorporated into hyaline edge of podosomal shield. Remainder of shield finely pitted, and with regular pattern of muscle insertions. Set across middorsum are four minute and irregular shieldlets. Posterior half of dorsum with setae arranged approximately 4.6.6.2, and two small pygidial shields (one on left is usual shape), each bearing pore and small seta as figured. Stigmata dorsal, with short peritremes, each enclosed in oval peritremal shield.

Venter. Sternal shield elongate, with SI normally on, and SII and III normally off shield, although SII may be set on narrow projection of shield. Only first pair of sternal pores present, and even one of these occasionally lacking. Genital shield rounded and short posteriorly, not extending beyond posterior margin of coxa IV; without, or with one or two genital setae, the setae of variable size, as figured. Anal

shield elongate, strongly arched anteriorly, and with large cribrum posteriorly. Anus set in anterior third, and preceding three small, subequal anal setae. Ventral cuticle without metapodal shields, but with setae arranged approximately 2.4.8; posterior four pairs on posterolateral prominences rather more distinct in life than figured.



FIGS. 1-2. *Ptilonyssus pittae* n. sp. Female. — 1, Dorsum, with inset showing pygidial seta of deutonymph; 2, Venter. (Each division on the scales equals 100  $\mu$ .)

Legs. Coxal formula 2.2.2.I, with setae similar to other body setae, and completely unmodified. Coxa II with blunt anterodorsal spine. Other leg setae, except for following points, similar to coxal setae. Dorsal setae on femora, genua and perhaps tibiae rather smaller; those on genu III formed and arranged as figured by GEORGE (*loc. cit.*) for *P. sairae* Castro, *i.e.* with posterior two setae thickened basally, and set in much enlarged alveoli. Setae set ventrally at apices of tarsi

barely stronger than other leg setae. Tarsus I slightly expanded distally as figured for many species, and with dorsal sensory area, comprising five or six blunt setae surrounding a sclerotized islet bearing one short and four long rods. Tarsal claws II-IV uniform, expanded basally as is usual; claws I modified, expanded in distal portion.

Gnathosoma. Tritosternum absent. Deutosternum with about nine denticles in single file. All gnathosomal and hypostomal setae uniformly strong, except outer posterior pair of hypostomals, which are minute and cone-like. Chelicerae with basal segment weakly formed. Central segment swollen in basal two-fifths, tapering rapidly into distal portion barely one-third as thick. Distal segment represented by minute inwardly curved digit (reversed in specimen figured). Chelate portion about one-thirtieth of total length of chelicera. Palpi with five free segments. Tibia with two longer, curved, blunt setae distally; claw minute, but two-tined.

*Deutonymph.* — Idiosoma 970  $\mu$  long in one specimen containing fully developed female, and about to moult. Podosomal shield as in female, but probably with only two minute discal setae. All six stronger setae on and near posterior of shield, and most of setae in posterior half of body of adult present, but weaker. Pygidial shields quite absent, but with two longer, barbed setae in their position as figured by GEORGE (*loc. cit.*) for several species. Peritremes as in female. Venter as in female, but without genital shield. Gnathosoma, including palpi, as in adult, but cheliceral shafts only slightly tapering, and with weak digits only about one-twelfth of total cheliceral length.

***Ptilonyssus psophodae* n. sp.**

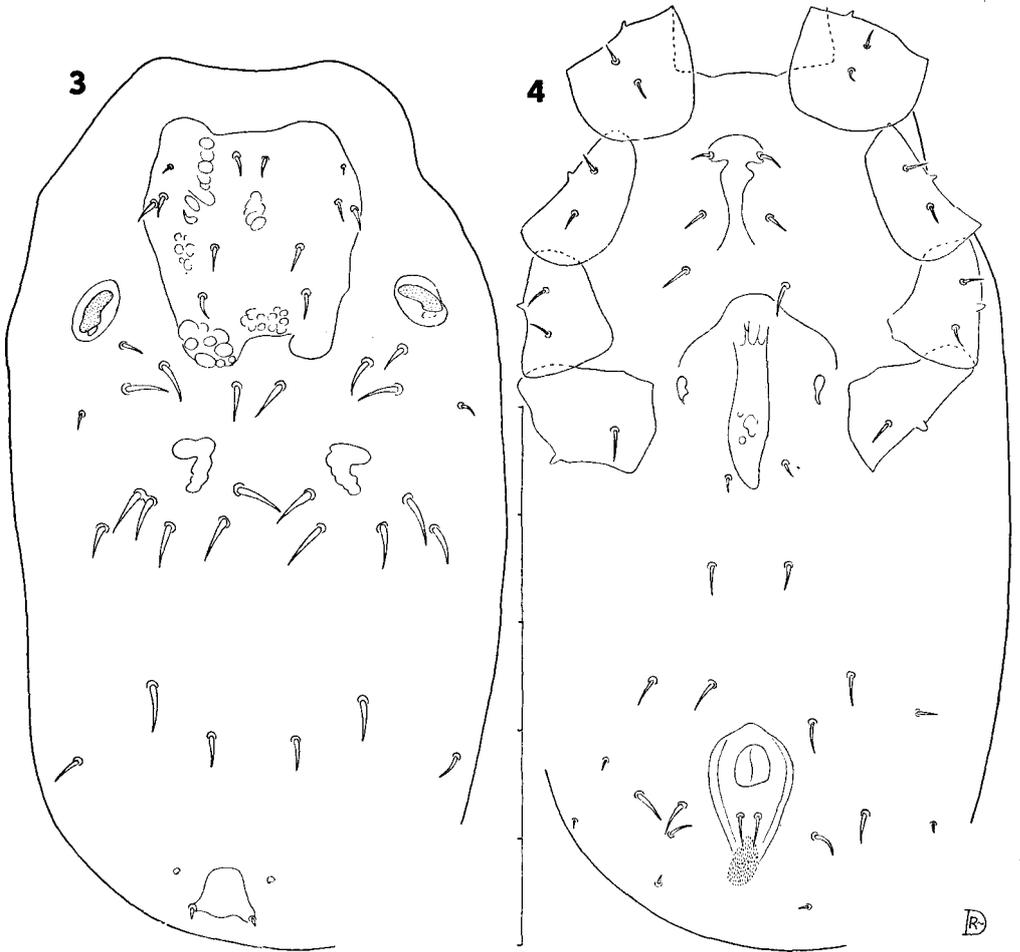
Figs. 3-4, 8.

*Diagnosis.* — Of the known species, only two have been described with the postanal seta lacking, *P. lanii* Zumpt and Till and *P. perisorei* George from South Africa and U.S.A. From these, *P. psophodae* may be immediately separated by its elongate, narrow genital shield, and the armature and setation of the entire dorsal surface. The pattern of muscle insertions on the podosomal shield is reminiscent of *P. calamocichlae* Fain from Africa, but this species has a short, broad genital shield and the postanal seta present.

*Type material.* — Holotype female, fifteen paratype females and one deutonymph from the nares of the eastern whipbird, *Psophodes olivaceus* (Latham) (Falconculidae), rain forest, Upper Brookfield, S.E. Queensland, 24.v.1963, R. D. Type series distributed as for *P. pittae*.

*Female.* — Idiosoma 810  $\mu$  long in slightly compressed specimen figured, 876-986  $\mu$  in others, and only 712  $\mu$  in one newly moulted specimen; coloured by ingested blood. Podosomal shield concave anteriorly and posteriorly, and with lateral

margins sinuous ; with six pairs of setae and six zones of muscle insertions arranged as figured. Middorsum with three rows of setae arranged 10.10.6, the central six setae of first row stronger than remaining four. Middorsal shields two in number, irregular in outline. Pygidial shield entire, strongly arched anteriorly, and sinuous posteriorly ; with short seta in each posterolateral angle, and flanked anterolaterally by two isolated pores. Peritremal complex as in *P. pittae*.



FIGS. 3-4. *Ptilonyssus psophodae* n. sp. Female. — 3, Dorsum ; 4, Venter.

Venter. Sternal shield extremely weak, even anteriorly, with only SI on shield. Genital shield elongate, with genital setae set in adjacent cuticle. Anal shield elongate, with anus well forward and in front of adanal setae. Ventral cuticle with eight or nine pairs of setae, posterior pairs rather weaker than remainder.

Legs. Coxal formula 2.2.2.1, the setae being slender, and of moderate strength. General setation of legs of strength similar to coxal setae, except distally on tarsi II-IV where setae are stronger. Dorsal setae on genu III normal. Tarsus I, including claws, as in *P. pittae*.

Gnathosoma. Tritosternum absent. Deutosternum with about nine denticles in single file. All gnathosomal setae subequal, of medium strength. Chelicerae as in *P. pittae*, chelate portion forming one-fifteenth of total length.

*Deutonymph*. — Idiosoma 650  $\mu$  long, but not good specimen. Setation much as in female; opisthosoma dorsally with two longer, distally barbed setae; postanal seta lacking. Gnathosoma, including chelicerae, as in female, but setation weaker.

***Ptilonyssus ailuroedi* n. sp.**

Figs. 5-6, 9.

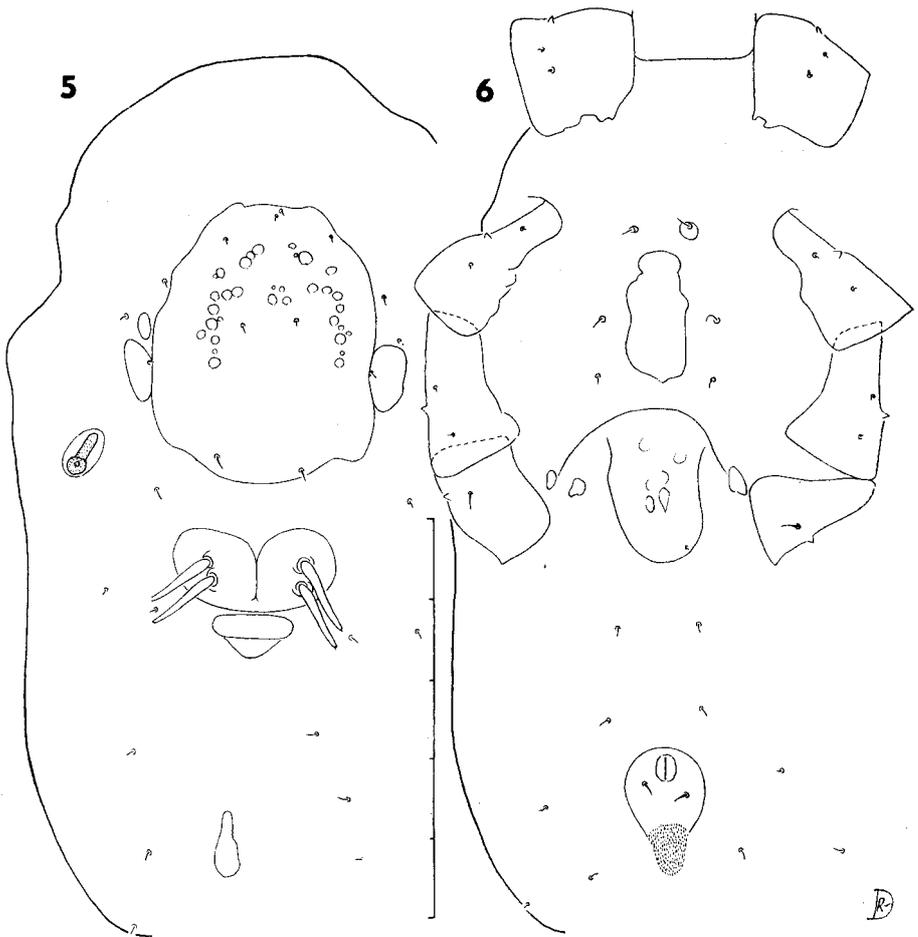
*Diagnosis*. — Both FAIN and STRANDTMANN (*in litt.*) compare this species with *Ptilonyssus* (*Flavionyssus*) *rabelloi* Castro from Brazil, which also possesses extremely strong setae on a (divided) middorsal shield. Both these authors would place the *Ptilonyssus* complex in the same section of a key on the length of the cheliceral digits relative to the shaft, but while STRANDTMANN would accept *Ptilonyssus* and at least seven other genera, FAIN would consider all these additional groups as synonyms of *Ptilonyssus*.

The new species described below does not, on the shape of the cheliceral shaft, key down to *Flavionyssus* in STRANDTMANN and WHARTON'S key (1958), nor, on the basis of the dorsal shields, to any other of the genera of the complex. In view of the uncertainty regarding the importance to be attached to the degree of fragmentation of the opisthosomal shield, especially in an endoparasitic group, I prefer at present not to add another genus group name to the literature.

*P. ailuroedi* differs from *P. rabelloi* in the degree of attenuation of the cheliceral shafts, the number of strong middorsal setae, and the absence of the postanal seta. (I am grateful to Drs. FAIN and STRANDTMANN for their comments on both these species, and to the latter for a sketch of the anal shield of the type of *P. rabelloi*. The anus almost touches the anterior margin of the shield, and is set in front of all three anal setae, the postanal being present.)

*Type material*. — Holotype female and four paratype females from the nares of the green catbird, *Ailuroedus crassirostris* (Paykull) (Ptilonorhynchidae), rain forest, Mt. Glorious 2000', S. E. Queensland, 11.xii.1962, I. D. FANNING and R. D. Type series distributed as for *P. pittae*.

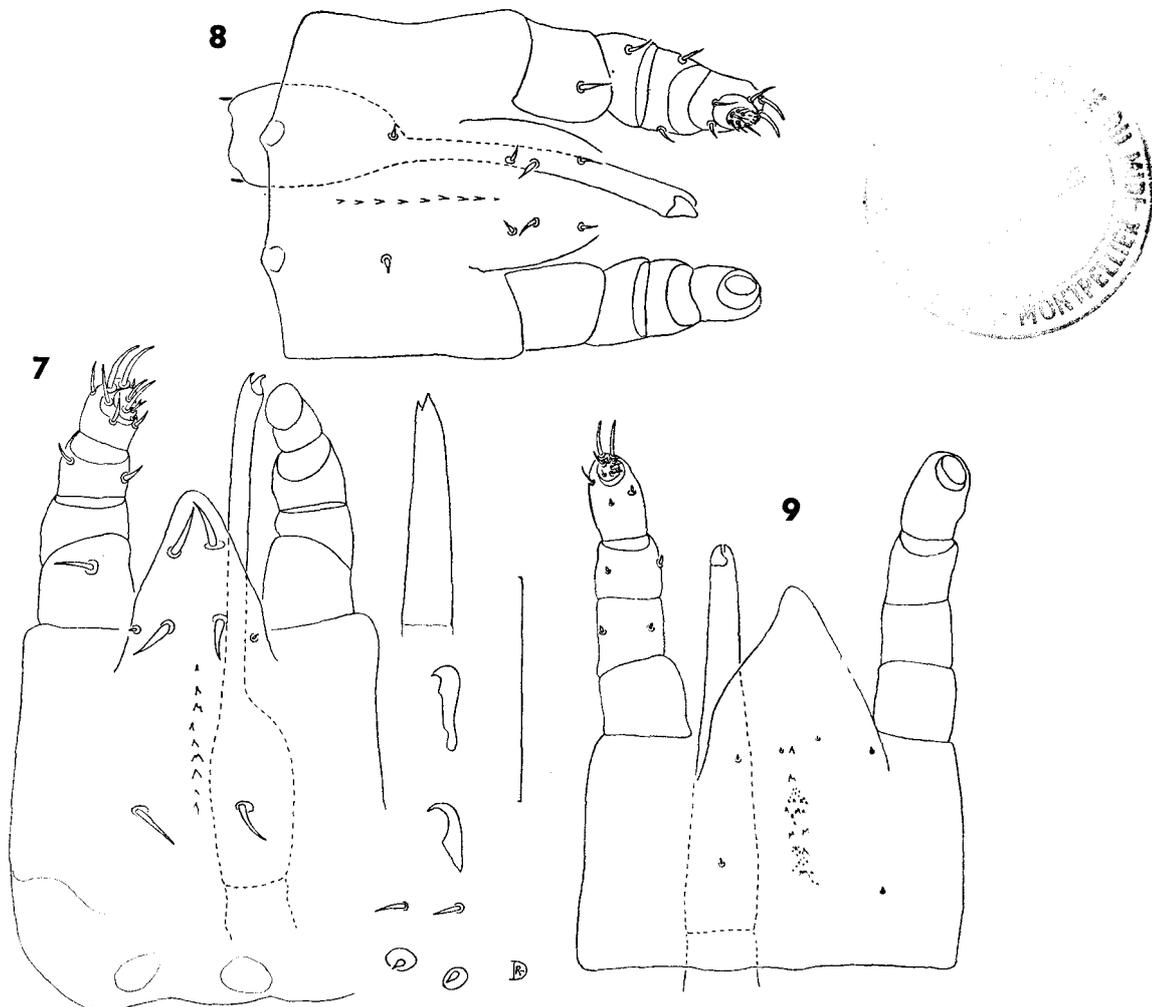
Also 23 females + three deutonymphs and sixteen females + two deutonymphs, same data, but 30.x. and 13.xii.1962 respectively. Five other green catbirds examined between October, 1962 and February, 1963 harboured no nasal mites.



FIGS. 5-6. *Ptilonyssus ailuroedi* n. sp. Female. — 5, Dorsum ; 6, Venter.

*Female*. — Most specimens at least dark brown, or even black in colour from digested blood meal. Idiosoma  $1095\mu$  long in specimen figured. Podosomal shield irregularly arched anteriorly, with fairly straight sides, and evenly convex posteriorly ; with four short setae anteriorly, two discally, and two longer setae posteriorly ; flanked on each side by three minute setae, the posterior one set on shieldlet closely applied to podosomal shield. Middorsal shield transverse, with median longitudinal weakening, each half with two extremely strong, peg-like setae in tandem ; immediately followed by weakly demarcated subtriangular shield. Pygidial shield extremely weak and irregular in outline. (These latter two shields are actually little more than isolated areas of non-striate cuticle.) Dorsal cuticle with about twelve short setae. Stigmata dorsally placed above coxae IV, and with short peritremes.

Venter. Sternal setae six in number rather than eight, the metasternals probably the missing pair ; all isolated in cuticle, but SI often on shieldlets. Sternal shield elongate, irregular. Sternal pores not detected. Genital shield rounded, short, not extending beyond level of posterior margin of coxa IV ; genital setae



FIGS. 7-9. *Ptilonyssus* spp. Female. Gnathosoma. — 7, *P. pittae* n. sp., with insets showing chelicera of deutonymph, and tarsal claws I and II and dorsal setation of genu III of female ; 8, *P. psophodae* n. sp. ; 9, *P. ailuroedi* n. sp.

very weak, occasionally absent. Anal shield rounded on all sides, with anus anteriorly placed. Adanal setae behind anus, postanal seta absent ; cribrum present. Ventral cuticle with about ten small setae.

Legs. Coxal formula 2.2.2.1, the setae being minute except for that on coxa IV. Leg setae minute and cone-like on venter of basal segments, but stronger and tape-

ring dorsally and apically. Setation of dorsum of genu III normal. All tarsi with strong claws, those on leg I apparently modified. Tarsus I with dorsodistal sensory area.

Gnathosoma not ventrally directed. Tritosternum absent. Deutosternum with numerous irregular denticles of varying size. Gnathosomal and hypostomal setae minute, the anterior hypostomals apparently absent. Chelicerae not bulbous at base, but gradually attenuate, with both digits present, chelate portion occupying one-twentieth of total length. Palpi with most setae minute, but tibia with two stronger rods distally. Tarsus small, scarcely demarcated from tibia, with about seven minute hairs. Claws not detected even under oil immersion.

*Deutonymph.* — One engorged individual has its idiosoma 860  $\mu$  long, and generally resembles female, except for its weaker setation. Four strong peg-like setae are set middorsally as in female, but accompanying shield absent.

*Larva and ovum.* — One or other of these stages have been noted in the opisthosoma of several females, but not free in nature.

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