

THE GENUS *PROCTOTYDAEUS* BERL. (ACARI : IOLINIDAE)  
 WITH DESCRIPTIONS OF TWO NEW SPECIES.

By A. FAIN\* and G. OWEN EVANS.†

THE genus *Proctotydaeus* was proposed by Berlese (1911) to accommodate *P. viator* Berl. a mite found attached to the wings of a locust (*Acridias parvulus*) in Java. According to the original diagnosis, *Proctotydaeus* resembles *Tydeus* in lacking shields and in having relatively few short idiosomal setæ but differs in having no ambulacrum on leg I, no empodium on the membranous two-clawed ambulacra of legs II-IV, a rounded protractile sucker-like papilla enveloping the anus and unstriated cuticle.

Recently, one of us (G.O.E.) received a series of mites collected from the thorax and wings of *Schistocerca melanocera* on Indefatigable Is., Galapagos which presented a number of the characters of *Proctotydaeus* including the absence of ambulacra on legs I and the presence of an anal papilla. However, since our specimens had striated cuticle and an empodium on each of legs II-IV they could not be assigned, according to the original definition, to the genus *Proctotydaeus*. At the end of November 1965 the senior author had the opportunity of examining the typical material of *P. viator* in the Berlese Collection at Florence and found that contrary to the original description, this species had striated cuticle and empodia on legs II-IV. There is no doubt that the material from Galapagos is congeneric with *P. viator*.

Pritchard (1956) described a new genus and species of prostigmatic mite, *Iolina nana*, from a cockroach (*Blaberus craniifer*) in the U.S.A. The mites were attached in the region of the wing bases of the host. *I. nana* was made the type of a new family (Iolinidae) and a new superfamily. According to the original description and figures, this species is closely related to *P. viator* and appears to differ from it only in the form of the gnathosoma and anal region. Through the kindness of Dr. E. W. Baker we have been able to examine typical material of *I. nana* (two slides containing 3 females, 1 male and 5 nymphs). As the result of the study of this material we consider *Iolina* to be distinct from *Proctotydaeus* and to have the following diagnostic characters:

1. Anus sub-terminal-ventral in the female and nymphs.
2. Perianal sucker absent or (?) rudimentary.
3. Palpi very small, unarticulate and bearing only 2 setæ.
4. Chelicerae short, ill-defined and the movable digit very slender and considerably longer than the shaft.

Baker and Wharton (1952) considered *Proctotydaeus* a subgenus of *Pronematus* Can., 1886 and classified it in the family Tydeidae. Recently, Baker (1965) has given *Proctotydaeus* generic status within the Iolinidae. *Proctotydaeus* is undoubtedly closely related to members of the Tydeidae,

\* Instituut voor Tropische Geneeskunde Prins Leopold, Antwerpen.

† British Museum (Natural History), London.

especially to *Pronematus* which appears to provide a link between the Tydeidae and Iolinidae, the latter containing the specialized species of the group.

The material from Galapagos contained two species of *Proctotydaeus* and these are described below.

### Iolinidae Pritchard, 1956.

#### Genus PROCTOTYDAEUS Berlese, 1911.

*Proctotydaeus* Berlese, 1911: 430; Thor, 1933: 47; Baker, 1965: 98.

*Pronematus (Proctotydaeus)* Baker and Wharton, 1952: 192.

*Definition of the genus* (based mainly on the typical series of *Proctotydaeus viator* for the female and on our specimens for the male): small mites (body, including gnathosoma, not exceeding 500  $\mu$ ) with an elongate body and a striate-punctured cuticle. A weak sejugal-furrow is present. Anus terminal surrounded by a sucker-like papilla acting probably as an attaching organ. This sucker is distinctly less developed in the male than in the female. Vulva in the form of a transversal slit, situated ventrally close to the posterior extremity of the body. Male distinctly smaller than the female with a conical opisthosoma. Legs well developed, relatively thicker in the male than in female. Legs I a little smaller (shorter and thinner) than legs II-IV. Tarsi I with truncate extremity without claws and pulvillus (=empodium) but terminating in 4 stout subcylindrical setæ. Other tarsi strongly narrowed apically and ending in a pair of claws (larger in the male) and a setose pulvillus (=empodium) well developed in the male, very small in the female. A small transparent membrane is visible at the base of the claws, ventrally. Gnathosoma rather short. Palpus four-segmented, the femur-genu being the longest segment; the trochanter is very short and poorly demarcated from the femur-genu. Chelicerae well-developed, with a movable digit rather thick and shorter than the chelicera.

*Chaetotaxy: Idiosoma.* Dorsally the propodosoma bears a pair of very thin sensillæ set in distinctive pseudostigmata and 3 pairs of simple setæ: one (paramedian) situated a little behind the sensillæ and two situated more laterally and in front or at the same level as the sensillæ. The hysterosoma bears 5 pairs of internal setæ (*d* 1 to *d* 5) and 5 pairs of lateral setæ (*l* 1 to *l* 5), the *l* 5 being sometimes more or less ventral. Ventrally and in both sexes there are 3 pairs of intercoxal setæ (one anterior and two posterior), 4 pairs of genital setæ and one pair of anal setæ. Coxæ with 2-1-3-1 setæ.

*Legs.* (I to IV): tarsi 8-7-7-7; tibiæ 3-2-2-2; genua 3-3-2-1; femora 3-3-2-2; trochantera 1-1-1-0. *Gnathosoma:* with 4 pairs of simple setæ, the two anterior setæ being very fine and difficult to see.

*Palpi.* Trochanter without setæ, femur-genu with 2 dorso-lateral setæ; tibia with one dorso-lateral seta; tarsus with 4 setæ, the apical being strong and cylindrical, the three others are thin.

*Solenidiotaxy.* Tarsi 1-1-0-0; tibiæ 1-0-0-0. In addition, close to the solenidion of tibia I there is a very small, apparently sensory seta.

*Type species: Proctotydaeus viator* Berlese, 1911.

*Hosts:* on the body and the wings of Orthoptera.

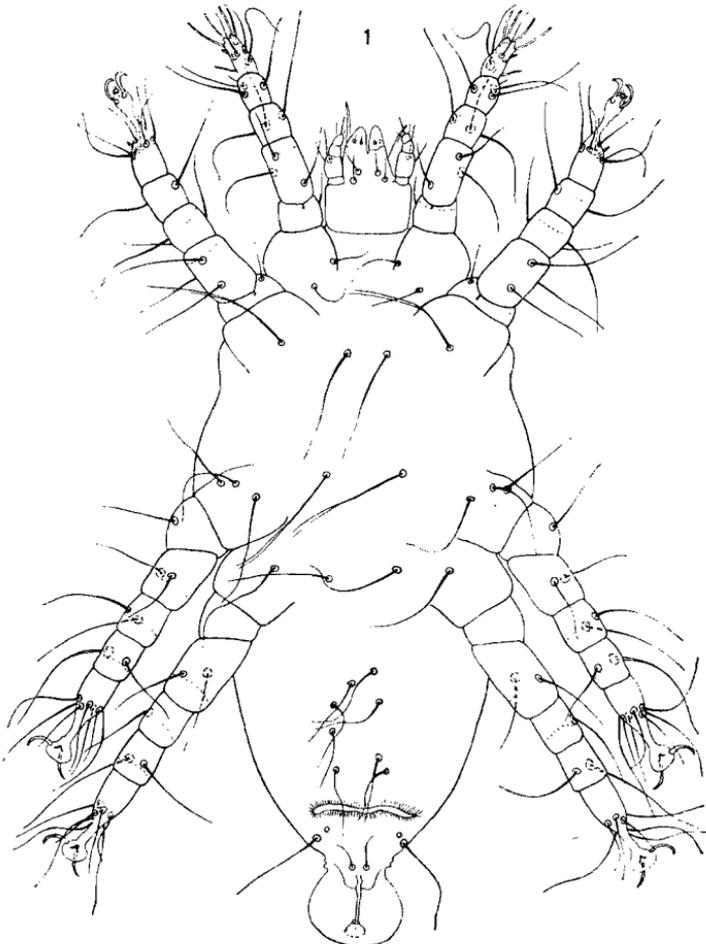
*Proctotydaeus viator* Berlese, 1911.

*Proctotydaeus viator* Berlese, 1911: 430; Thor, 1933: 47.

*Pronematus (Proctotydaeus) viator*, Baker and Wharton, 1952: 192.

The Berlese collection in Florence contains five slides of this species. Two of them are labelled "tipici", they are numbered 133/32 and 133/33, the locality is: Giava: Jacobson. These specimens are in poor condition, rather opaque and the different organs and the setae are difficult to see. The mite on slide no. 133/32 is  $300\ \mu$  long and  $140\ \mu$  wide. The three other slides are in much better condition, they are numbered: 134/9; 134/10; 134/11. The locality is Buitenzorg, Giava. Coll. Lammerman.

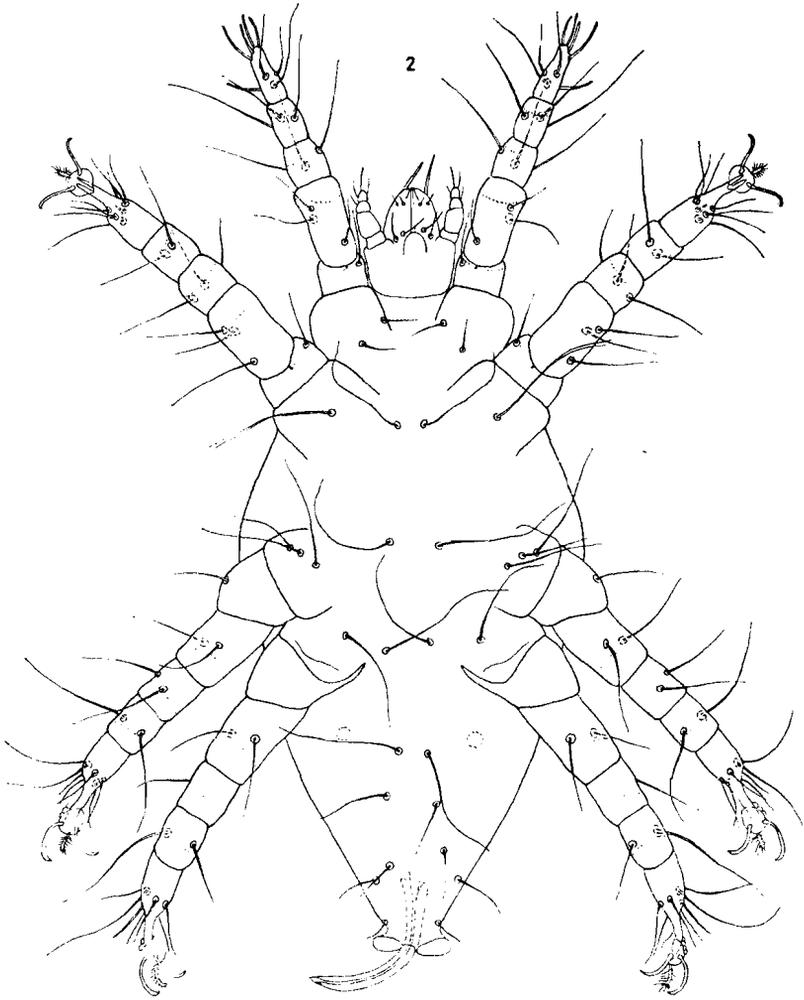
Fig. 1.



*Proctotydaeus schistocerae* sp. n. female in ventral view.

The slide no. 134/9 contains a good female specimen. This specimen is close to the female of our *P. schistocerae* n. sp. (see below).

Fig. 2.



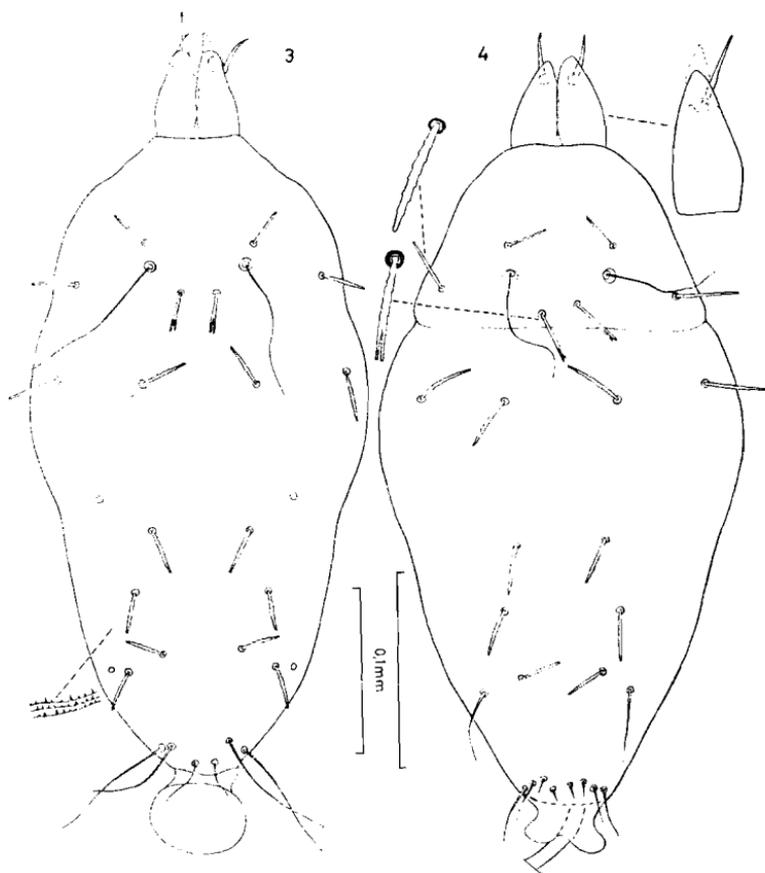
*Proctotydaeus schistocerae* sp. n. male in ventral view.

*Proctotydaeus schistocerae* sp. n.

*P. schistocerae* is distinguished from *P. viator* by the following characters: (1) greater size of the body. Berlese gives the following measurements for *P. viator*: 280  $\mu$  long and 150  $\mu$  wide. The specimen no. 133/32 that we have measured is 300  $\mu$  long and 140  $\mu$  wide. (2) the dorsal

setæ are shorter (e. g. *d* 1 setæ are  $35\ \mu$  long in *P. viator* and  $25\ \mu$  in *P. schistocercae*); the setæ *d* 1 to *d* 3 and *l* 1 to *l* 3 are differently arranged: in *P. schistocercae* they are distributed in five transverse rows: 4-2-2-2-2, while in *P. viator* there are only four rows: 4-2-2-4. Further, the setæ *l* 2 and *l* 3 are situated more laterally in *P. viator* than in *P. schistocercae*.

Figs. 3-4.

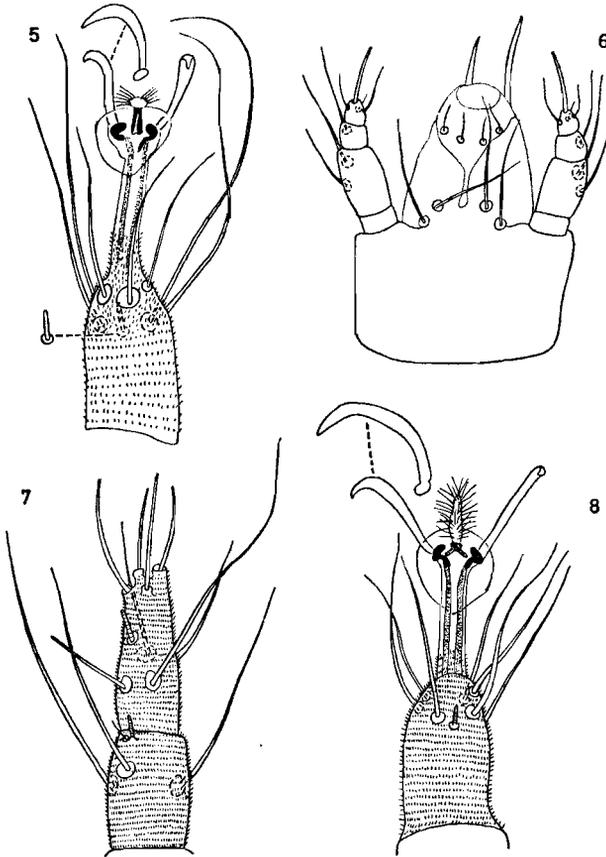


*Proctotydaeus schistocercae* sp. n. female (3) and male (4) in dorsal view.

*Female* (holotype) (figs. 1, 3, 5, 6). Body elongate, idiosoma  $435\ \mu$  long (including the perianal sucker) and  $210\ \mu$  in maximum width. In two paratypes:  $450 \times 225\ \mu$  and  $405 \times 225\ \mu$ . Total length in the holotype (gnathosoma included)  $495\ \mu$ . Sejugal furrow very poorly developed. Cuticle of the body, the gnathosoma and the legs finely striate-punctate, the punctation is in the form of very small and unequal dots or triangular spinules. Vulva in the shape of a transversal ventral slit, close to the posterior extremity of the body. Anus terminal, surrounded by a very transparent, rather large, sucker. In the holotype this sucker is  $55\ \mu$

wide and  $43\ \mu$  long. Coxæ with very inconspicuous limits, forming two anterior and two posterior groups. Spiracle opening between the bases of

Figs. 5-8.



*Proctoiydaeus schistocercae* sp. n. female, leg II (ventral) (5) and gnathosoma (6)  
male: legs I (7) and II (8) (dorsal).

the chelicerae. Gnathosoma short, with palps as long as the length of the gnathosomal base. Palpi comprising four poorly defined segments. Chelicerae well developed with a strong, recurved movable digit. Legs well developed, fairly thick. Legs I a little thinner and shorter than legs II. Tarsi I more or less truncate apically without ambulacrum but bearing four strong apical setae. Other tarsi strongly narrowed near apex and ending in two pedunculate and well-formed claws, a very small hairy pulvillus (=empodium) and a small, transparent ventral membrane (?sucker).

*Chaetotaxy of the idiosoma.* Dorsum: there is a pair of very long and thin sensillæ approximately  $75\ \mu$  long. All are propodosomal setæ and the hysterosomal setæ  $d\ 1$  to  $d\ 3$  and  $l\ 1$  to  $l\ 3$  are thick and serrate; they are subcylindrical or slightly fusiform, and have a truncate apex except the paramedian setæ which are bifid. These setæ are 23 to  $30\ \mu$  long. Other characters: see generic definition.

*Male* (allotype) (figs. 2, 4, 7, 8). Idiosoma  $360\ \mu$  long,  $180\ \mu$  maximum width (anal sucker included). Another specimen is  $350\ \mu$  long and  $190\ \mu$  wide. Body more attenuate posteriorly than in the female and with a conical opisthosoma. Sejugal furrow well developed. Cuticular striation as in the female except that the striations of the greater part of the dorsal surface of the propodosoma lack puncturations. Anus terminal, enveloped by a transparent sucker-like membrane smaller than in the female. Genital organ recurved dorsally. Gnathosoma as in the female. Legs relatively thicker than in the female with stronger claws and a larger pulvillus.

*Chaetotaxy of the idiosoma.* Structure of the dorsal setæ as in the female but setæ  $l\ 3$  are simple and finely attenuate apically and setæ  $d\ 4$ ,  $d\ 5$ ,  $l\ 4$  and  $l\ 5$  are much smaller. Ventral chaetotaxy: number and general distribution as in the female.

*Tritonymph.* In one specimen the idiosoma is  $330\ \mu$  in length (anal sucker included) and  $185\ \mu$  in maximum width. It differs from the female mainly by the absence of the genital slit and the smaller size of the setæ. The number of setæ on the idiosoma, gnathosoma and legs is the same as in the female. Setæ  $l\ 1$  and  $d\ 1$  respectively  $29$  and  $26\ \mu$  long; dorsal setæ of the same shape as in the female. Anus terminal surrounded by a large membranous sucker.

*Protonymph.* Idiosoma  $280\ \mu$  long and  $140\ \mu$  wide. It differs from the tritonymph by the reduction of the chaetotaxy: there are only 2 pairs of ventral opisthosomal setæ (instead of four pairs), tarsi III and IV bear only five setæ, tarsus II six setæ, and there are no setæ on trochanters I and II.

*Larva.* The single larva of the collection is  $190\ \mu$  long and  $129\ \mu$  wide (idiosoma). The anus is ventral. Chaetotaxy much more reduced than in the protonymph.

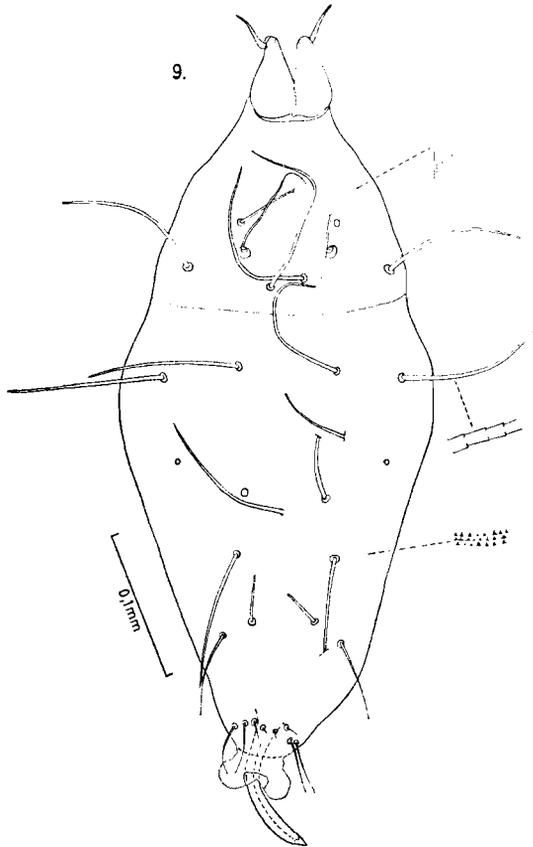
*Host and locality.* From thoracic region and wings of *Schistocerca melanocera*, Indefatigable Island, Galapagos. August 1965.

*Types.* Holotype female, allotype male and paratypes (8 ♀♀, 1 ♂, 4 tritonymphs, 3 protonymphs, 1 larva) in the British Museum. Paratypes female and male in the U.S. National, Washington, (1 ♀, 1 ♂, 2 nymphs) and in the collection of A. Fain, Antwerp (4 ♀♀, 1 ♂, 2 nymphs).

*Proctotydaeus galapagosensis* sp. nov.

This new species is represented only by the holotype male and a tritonymph.

Fig. 9.



*Proctotydaeus galapagosensis* sp. n. male (holotype) in dorsal view.

The male differs from that of *P. schistocercae* sp. n. by the much greater size and shape of the body and the greater length of the dorsal setæ.

*Male* (holotype) (fig. 9). Idiosoma 448  $\mu$  long (anal sucker included) and 205  $\mu$  wide. Except for *d* 3, *d* 4 and *l* 3, *l* 4, all the dorsal setæ are much longer than in the male of *P. schistocercae* and progressively attenuated apically. The pair of paramedian setæ situated behind the sensillæ are simple and 120  $\mu$  long (in *P. schistocercae* these setæ are bifid and only 27  $\mu$  long). Setæ *d* 1 and *l* 1 are approximately 100  $\mu$  long (30  $\mu$  in *P. schistocercae*). Ventral setæ and gnathosomal setæ as in *schistocercae*. Leg setæ as in *schistocercae* but generally longer. Other characters as in that species.

*Tritonymph*. Idiosoma 375  $\mu$  long and 216  $\mu$  wide. General characters as in the tritonymph of *P. schistocercae* sp. n. but the dorsal setæ are

distinctly longer and more attenuated apically. The *l* 1 setæ is 45  $\mu$  long; *d* 1 is 40  $\mu$  long.

*Host and locality.* On the same host as for *P. schistocercae* sp. n.

*Type.* Holotype ♂ and tritonymph paratype in the British Museum.

#### ACKNOWLEDGMENTS.

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