

SEVEN NEW SPECIES OF *LAELAPS* FROM MALAYSIA
(ACARINA, LAELAPTIDAE)

BY

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Summary.

The following seven new species of *Laelaps* are figured and described from Malaysia — *L. inaequalis* n. sp. from *Rattus canus*, Malaya; *L. duodecim* n. sp. from *Chiropodomys gliroides*, Malaya; *L. femoralis* n. sp. from *R. canus* and *R. cremoriventer*, Malaya; *L. flagellifer* n. sp. from *R. rajah* and *R. rattus argentiventer*, Malaya; *L. rex* n. sp. from *R. whiteheadi* and *Hylomys suillus*, Borneo; *L. delta* n. sp. from *C. gliroides* and *Ratufa bicolor*, Malaya; *L. traubi* n. sp. from *R. fulvescens*, *R. edwardsi*, *Rattus* sp., and *Dremomys rufigenis*, Malaya.

While I was in Washington in August, 1959, the Smithsonian Institution (U. S. National Museum) gave me on loan a collection of mesostigmatic mites from S. E. Asia, particularly Malaysia. The material comprised over 2 000 specimens on slides, being samples from the collection presented by Colonel Robert TRAUB MSC (formerly chief of the U. S. Army Medical Research Unit, Kuala Lumpur). Some of the species involved had already been recognized as new, and the slides were accompanied by several figures, virtually complete, by Mr. Thomas M. EVANS, formerly of Colonel TRAUB's office in Washington. Since then, the bulk collection in spirit (well over 2 000 vials) has also been forwarded to me.

Most of the work on which this paper is based was carried out as part of a project "Bionomics of Oriental-Australasian acarine vectors" sponsored by the George Williams Hooper Foundation (University of California Medical Center), and supported by U. S. Public Health Service Grant E-3793. One major objective in this project is to form a centre in this laboratory where ectoparasites of all kinds from the Asiatic-Pacific region can be screened and then divided among interested experts for specialist study. This includes the vast collections, still largely in spirit, detailed by AUDY (1954) and AUDY and HARRISON (1954). As

1. On half-time loan from the Queensland Institute of Medical Research, Brisbane.

regards the present collection, I plan to work rather widely within the family Laelaptidae *sensu* Vitzthum. However, taxonomists working seriously on any group of ectoparasites, mites or otherwise, are invited to let me know their wants, because I cannot hope to deal with all the material myself. For example, apart from one or two genera, I do not plan any immediate work on haemogamasid, spinturnicid, cheyletid or listrophorid mites.

Nor am I able to work full-time on these collections, and will therefore publish convenient amounts of material as often as they are ready. One paper on the Haemogamasidae in the original slide collection has already appeared (DOMROW, 1960). In the present paper, seven new species of *Laelaps* Koch will be described. Basic references are VITZTHUM (1926), TIPTON (1960) and DELFINADO (1960).

***Laelaps inaequalis* n. sp.**

Type material. — Holotype female and five paratype females from *Rattus caninus*, Pahang Road 16 miles north of Kuala Lumpur, Selangor, Malaya, R. TRAUB and B. ENSOLL, 6.ix.1948.

It is convenient here to note my proposed treatment of type and named mate-

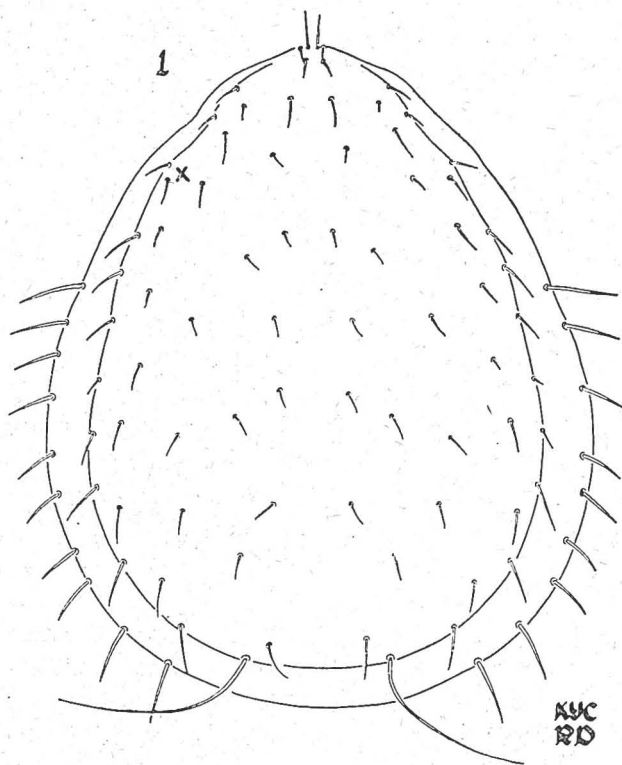


FIG. 1. — *Laelaps inaequalis* n. sp. Dorsum of female.

rial. All holotypes are to be deposited in the U. S. National Museum (Smithsonian Institution), and, where possible, paratypes will be distributed among the collections of the British Museum (Natural History), London; South African Institute for Medical Research, Johannesburg; Colonel Traub; and both my laboratories. In species based on one or two specimens, the material will be kept temporarily in the Q. I. M. R. for my future reference, but all such rareties will, on the completion of my studies, be deposited in the U. S. N. M. The same policy will be adopted with known species.

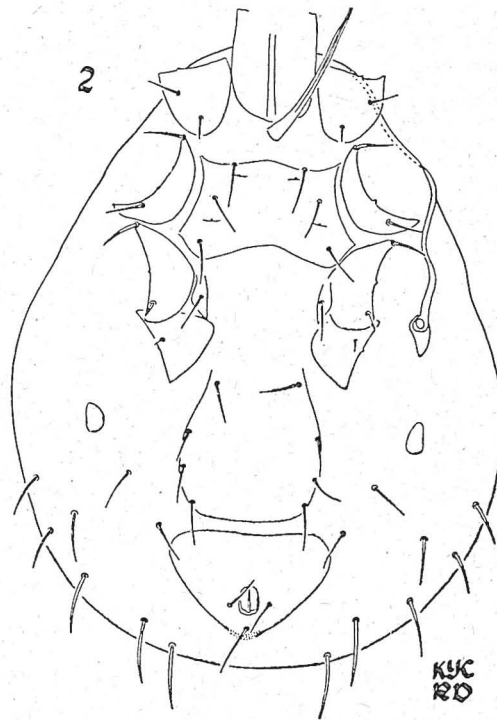


FIG. 2. — *Laelaps inaequalis* n. sp. Venter of female.

Diagnosis. — All coxal setae slenderly tapering to a point, including the posterior seta on coxa III, which is, however, slightly thicker than the others. Anal plate distinctly wider than genitoventral plate, slightly concave along anterior margin, broadly cordate. Posterior pair of setae on dorsal shield 4-5 times as long as remainder, hence the specific name *inaequalis*; one pair of humeral setae lacking.

Female. — A pale brownish, roundly oval species with idiosoma about 626 μ long. Dorsal shield with only 38 pairs of setae, rather than 39 as in all the other species described below. This is due to the presence of only three humeral setae (and not four) on each side in the area marked X in this and the following species, *L. duodecim* n. sp. Marginal cuticle with row of nine or ten setae on each side, which increase in length both anteriorly and posteriorly.

Sternal plate with posterior margin concave, and anterior margin slightly convex between sternal setae I. Genitoventral shield almost rectilinear posteriorly; all three pairs of usurped setae set wider apart than the genital pair. Adanal setae set near middle of anus, and reaching insertion of postanal seta. Ventral cuticle with about eight pairs of setae, of which the two pairs nearest the genitoventral plate are much more slender, like the setae on the ventral shields. Peritremes reaching forward to level of anterior margin of coxae I.

Femora I and II with one or two stronger setae dorsally. Tarsi II-IV with some spinose setae.

Notes. — The preceding description (which does not include points noted in in the diagnosis), may be taken as a model for subsequent species. Characters held in common with *L. inaequalis* will therefore not be repeated. Nor will I go into detail regarding the relative lengths of setae, except where specially called for. I have checked the relative positions, strengths, and lengths of all setae in Mr. KOONG's pencilled drawings before inking them myself. As regards Mr. EVANS' drawings, I have checked all the setae on the body shields, cuticle, and coxae. Characters of the gnathosoma and legs detailed in the text have also been checked personally. However, the structure and setation of the legs and gnathosoma shown in his figures beyond that detailed in the text, while certainly not misrepresenting the species, have not been checked closely.

L. inaequalis n. sp. keys out to couplet 51 in TIPTON's key (1960), being close to *L. atypicus* Turk in having the anal plate approximately four times as wide as the length of the adanal setae. The two species may, however, be immediately separated by the shape of all three ventral shields, and the setation of the dorsal shield and coxae I.

***Laelaps duodecim* n. sp.**

Type material. — Holotype female from *Chiropodomys gliroides*, Pahang Road 16 miles north of Kuala Lumpur, 9.ii.1949, B. ENSOLL.

Diagnosis. — Both setae on coxae I spinose; posterior seta on both coxae II and III spinose. An additional two spinose setae on trochanter I. Inner posterior pair of hypostomal setae and gnathosomal pair heavy, but tapering to a point. The specific name *duodecim* refers to the twelve strong setae on the gnathosoma, and coxae and trochanters I.

Female. — A rather small, elongate species with idiosoma 528 μ long. Dorsally insignificant, except for well marked insertions of dorsal setae.

Genital shield rather narrow, with third pair of usurped setae much closer together than the genital pair. Anal plate with anterior margin arched, and lateral margins straight. Adanal setae near posterior of anus, very much weaker than postanal seta. Five or six pairs of cuticular setae spinose, the remainder tapering to a point. Peritremes rather short, reaching only to anterior margin of coxae II.

Trochanters IV each with two heavy spines dorsodistally.

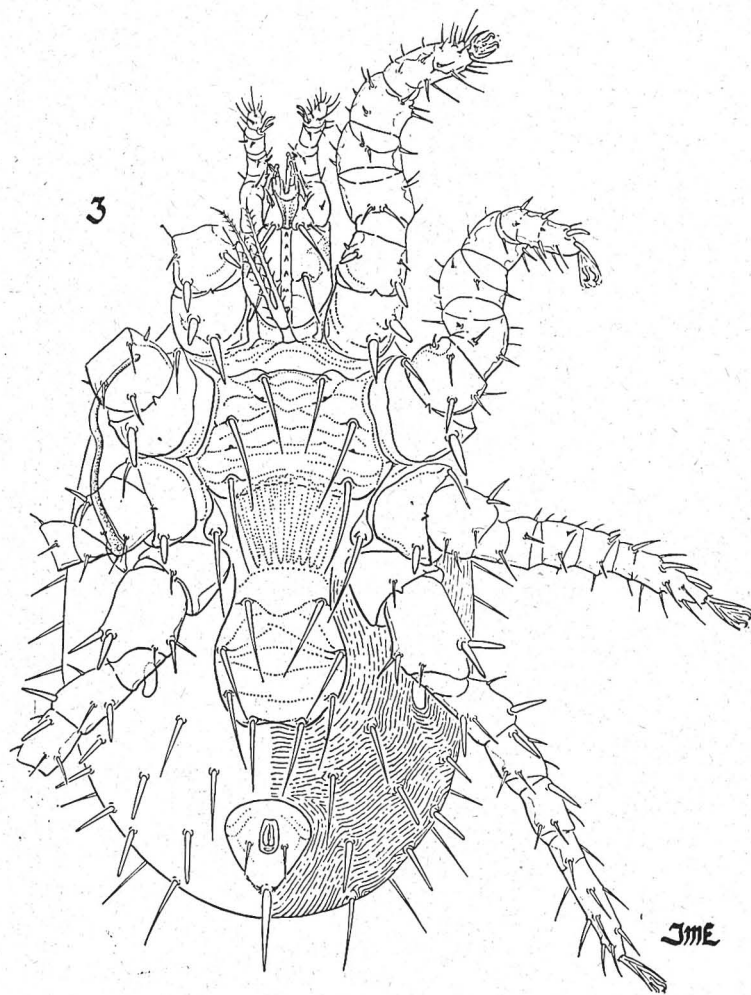


FIG. 3. — *Laelaps duodecim* n. sp. Venter of female.

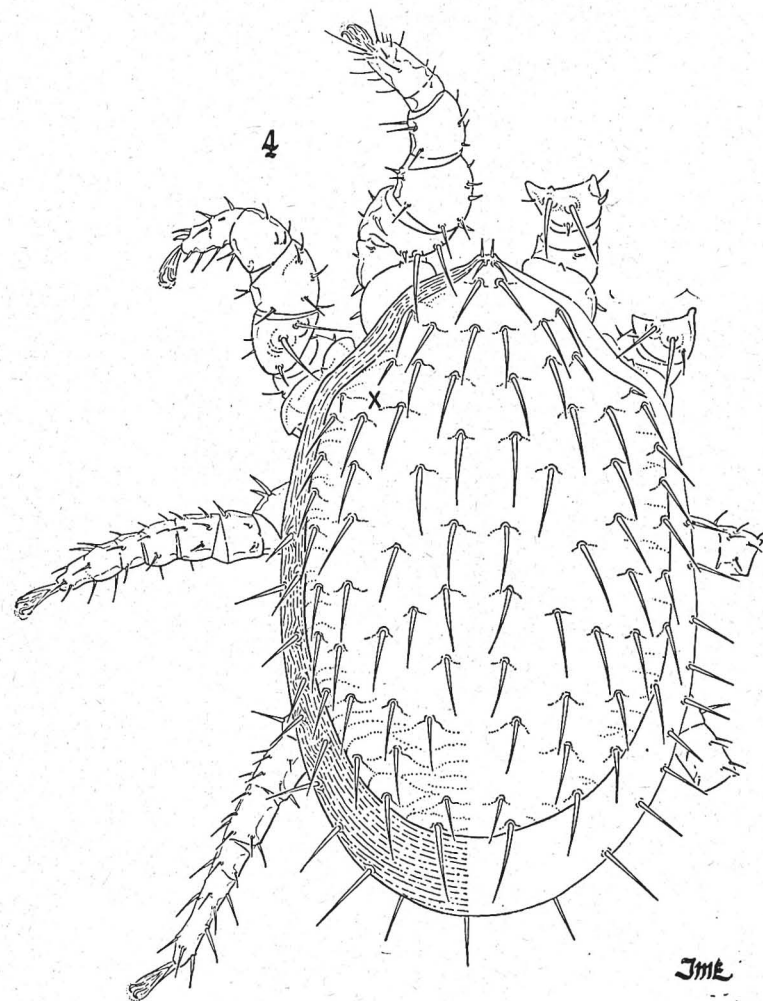


FIG. 4. — *Laelaps duodecim* n. sp. Dorsum of female.

Notes. — In TIPTON's key (1960), *L. duodecim* n. sp. keys out to couplet 30, which includes *L. oryzomydis* Pratt and Lane and *L. manguinhosi* da Fonseca, two American species TIPTON believes possibly conspecific. Neither conform to the diagnosis given above for *L. duodecim*.

***Laelaps femoralis* n. sp.**

Type material. — Holotype female and six paratype females from *Rattus canus*, Kepong, Selangor, 3.xii.1948, R. Traub and B. Ensoll, three paratype females from *R. cremoriventer*, Kepong, 19.i.1949, B. ENSOLL and L. FRICK.

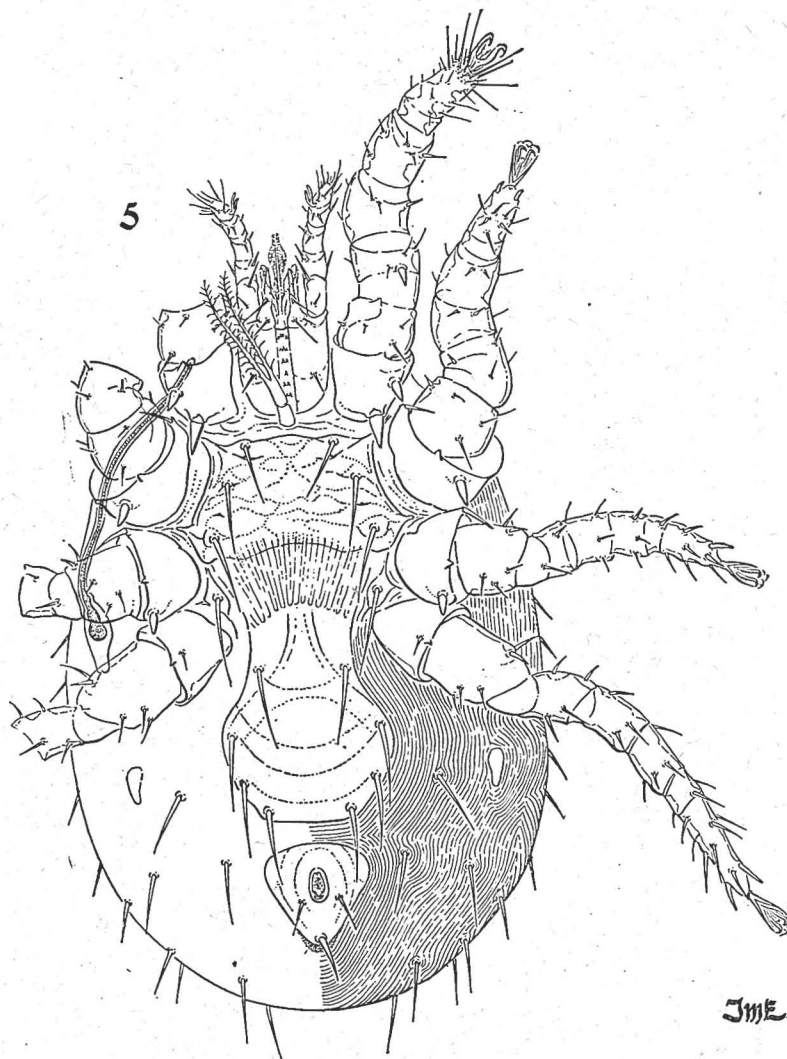
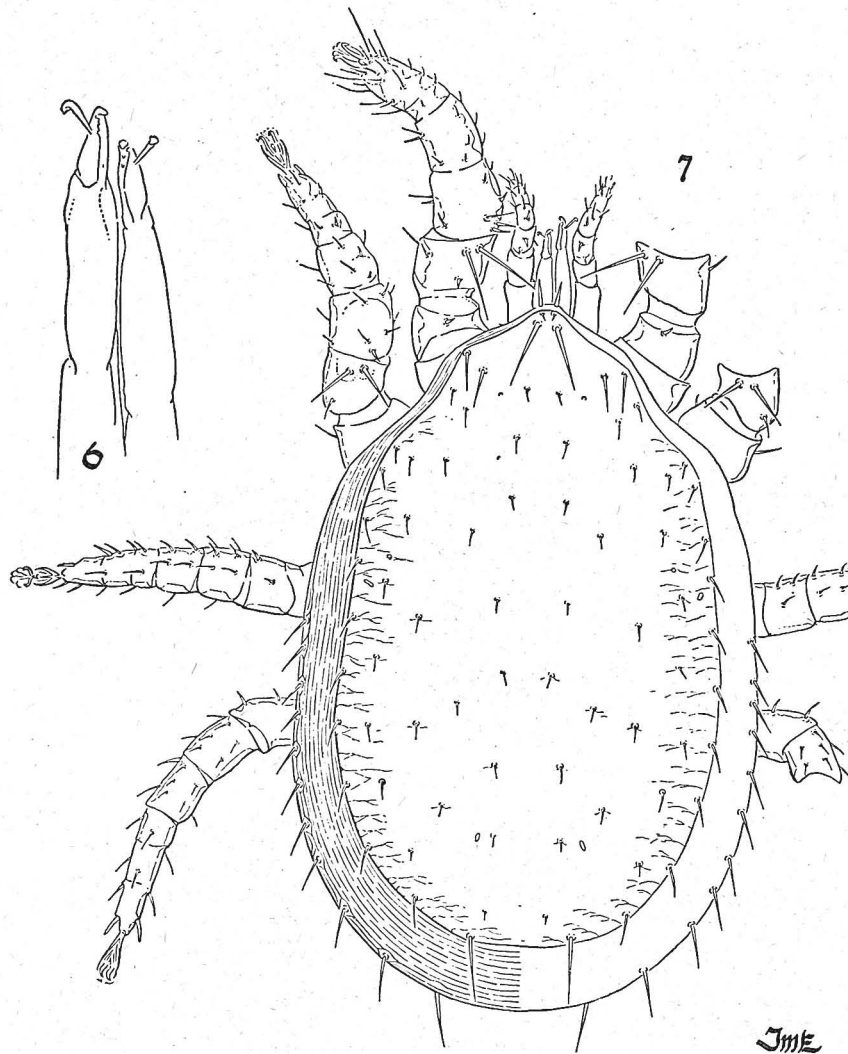


FIG. 5. — *Laelaps femoralis* n. sp. Venter of female.

Diagnosis. — All setae on dorsal shield very short, except terminal pair and one pair of verticals. Both setae on coxa I spinose. Posterior seta on both coxae II and III spinose. Additional spinose seta ventrally on femur I, whence the specific name *femoralis*.



FIGS. 6. and 7. — *Laelaps femoralis* n. sp. Female : 6. Chelicerae ; 7. Dorsum.

Female. — A medium brown species, with idiosoma $583\ \mu$ - $627\ \mu$ long ($550\ \mu$ in one specimen). Dorsal marginal setae only slightly longer than setae on shield.

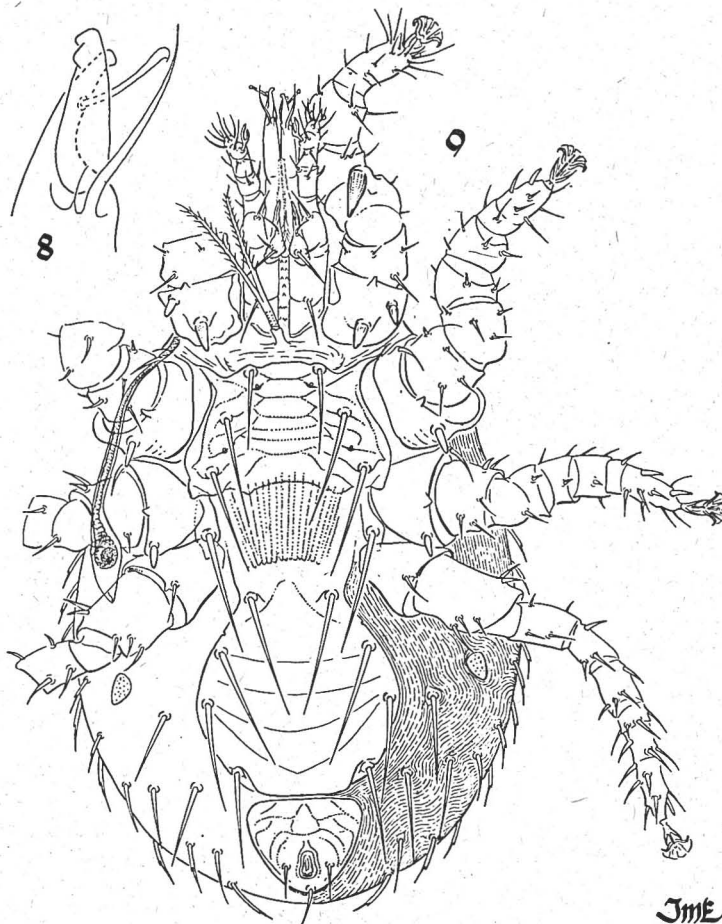
Third pair of usurped setae on genitoventral plate about as wide apart as genital pair. Anal shield subtriangular, with adanal setae near posterior of anus, and just reaching insertion of postanal seta, which, although much stronger, is

only slightly longer than the adanals. Peritremes reaching forward to level of anterior margin of coxae I.

Notes. — In TIPTON'S key (1960) *L. femoralis* n. sp. keys out to couplet 6, being near *L. turkestanicus* Lange in having the posterior part of the dorsal shield with one pair of minute submarginal setae. LANGE'S species does not, however, conform in other respects with the diagnosis given above for *L. femoralis*.

***Laelaps flagellifer* n. sp.**

Type material. — Holotype female and ten paratype females from *Rattus rajah*, Pahang Road 16 miles north of Kuala Lumpur, 2.vii.1948, R. TRAUB ; two paratype females, same data, but 7.vii.1948 ; three paratype females from *R. rajah*, same data, but 15.vii.1948 ; two paratype females, same data, but 4.i.1949, B. ENSOLL.



FIGS. 8 and 9. — *Laelaps flagellifer* n. sp. Female : 8. Chelicera ; 9. Venter.

and L. FRICK ; five paratype females, *R. rajah*, Kepong, Selangor, 7.i.1949, B. E. and L. F. ; one paratype female, *R. rajah*, Kuala Kangsar, Perak, 11.x.1959 ; three paratype females from *R. rattus argentiventer*, Seaport Estate, Selangor, 7.ix.1948, R. T. ; one paratype female, same data, but 24.xi.1948.

Diagnosis. — Dorsal setae long, generally reaching beyond insertions of adjacent and subsequent pairs. Both setae on coxae I spinose. Posterior seta on

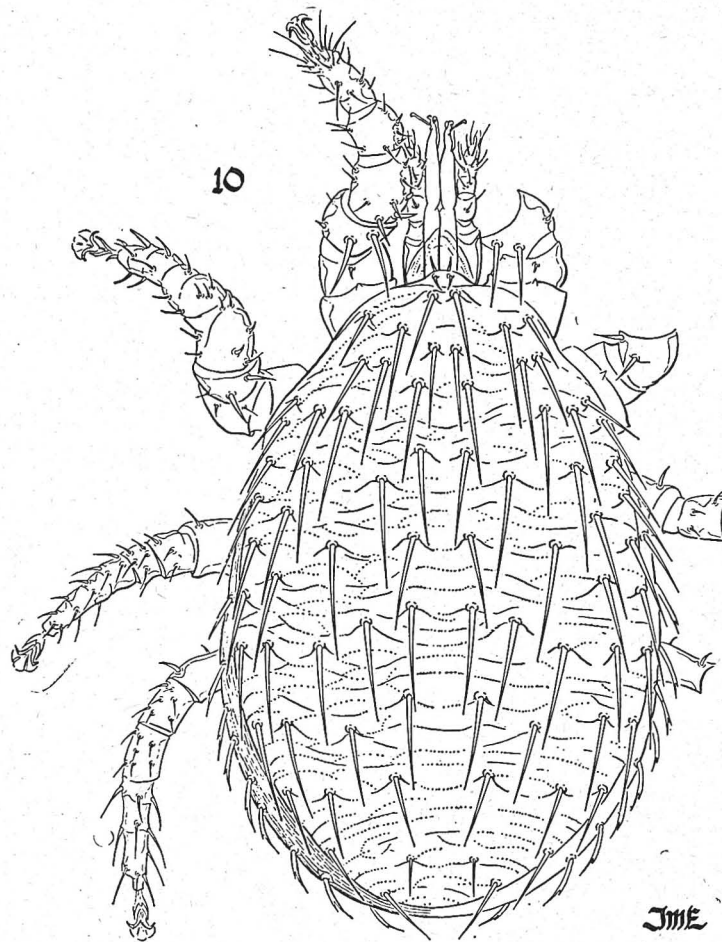


FIG. 10. — *Laelaps flagellifer* n. sp. Dorsum of female.

both coxae II and III spinose. Large spine ventrally on femur I. Corona represented by flagelliform ciliation as long as cheliceral digits, and an accessory cilium. This character is stressed by the specific name *flagellifer*.

Female. — A medium brown species with idiosoma 495-550 μ long. The relatively uncompressed specimen illustrated is 506 μ long. Marginal body setae notched near apex.

Genitoventral shield well developed, subcircular, with third pair of usurped setae much wider apart than genital pair. Anal shield with anterior margin straight. Anus and three subequal anal setae set well back in posterior half of shield. Ventral cuticle with about five pairs of simple setae in addition to distally notched marginals. Peritremes reaching forward to posterior margin of coxae I.

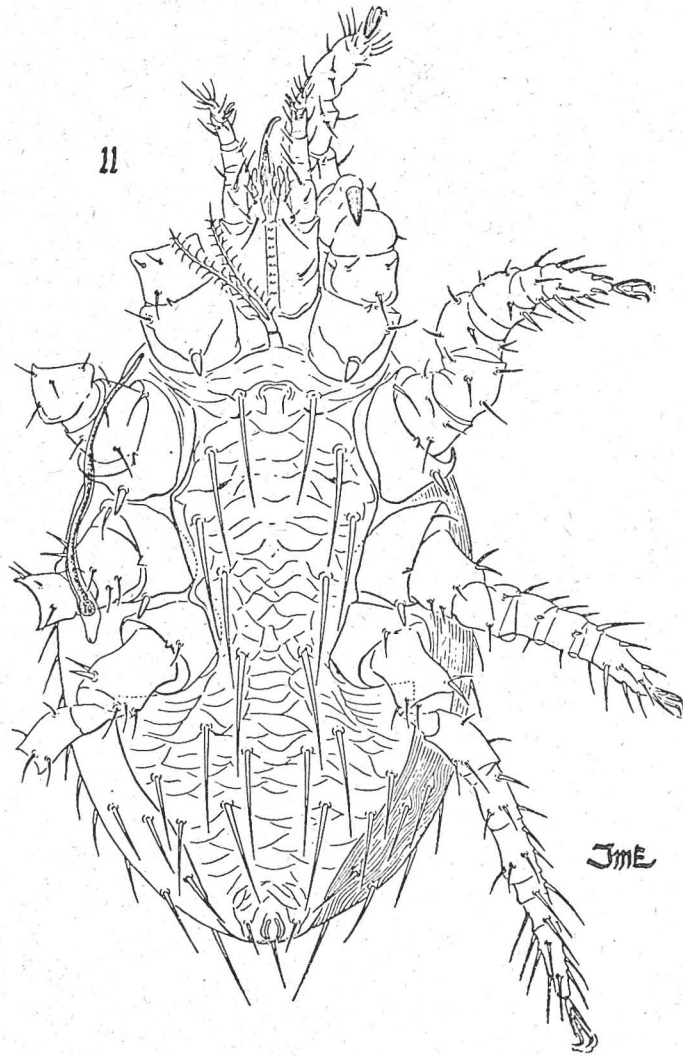


FIG. 11. — *Laelaps flagellifer* n. sp. Venter of male.

Male. — Slightly smaller than female. Holoventral plate broadly expanded behind coxae IV, with five pairs of ventral setae. Leg I with ventral spine as in female. Coxa I differing from that of female in having only the proximal seta spinose. Spermatophore carrier elongate.

Notes. — In TIPTON's key (1960), *L. flagellifer* n. sp. keys out to couplet 50, being near *L. vansomereni* Hirst in having the gnathosomal setae piliform. The two species may, however, be immediately separated by the anal plate and the armature of femur I.

Laelaps rex n. sp.

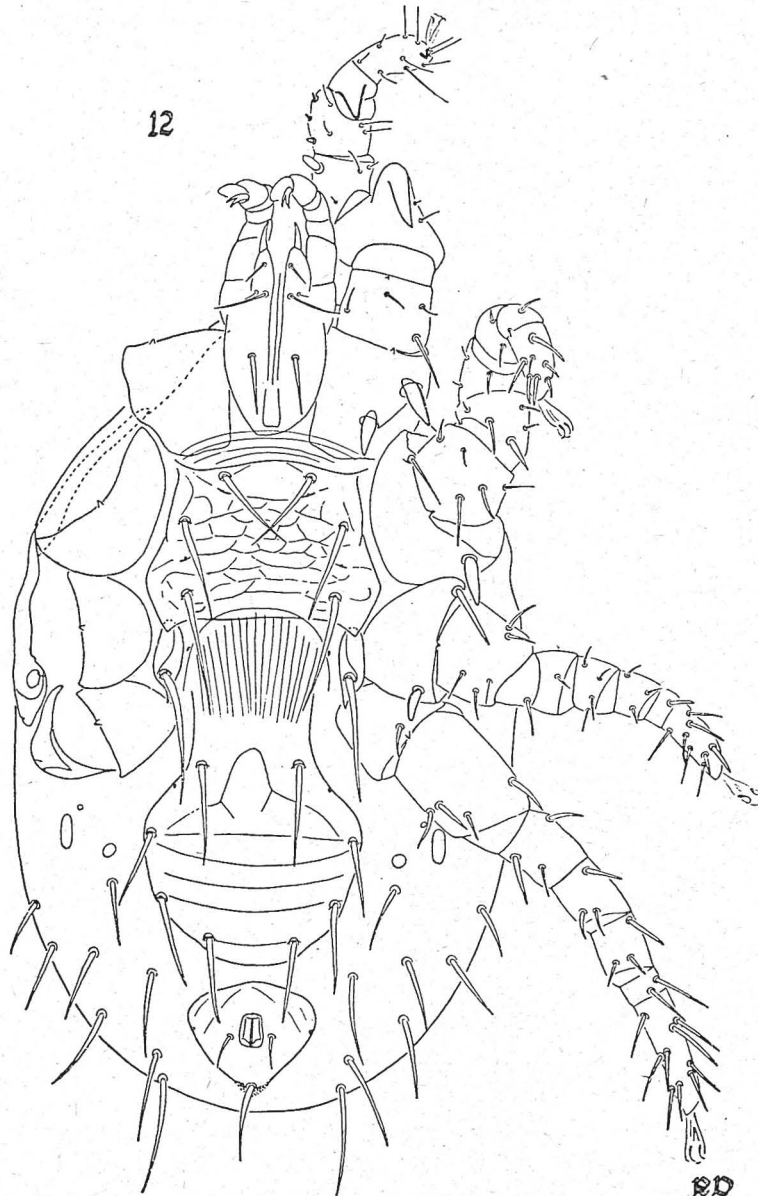
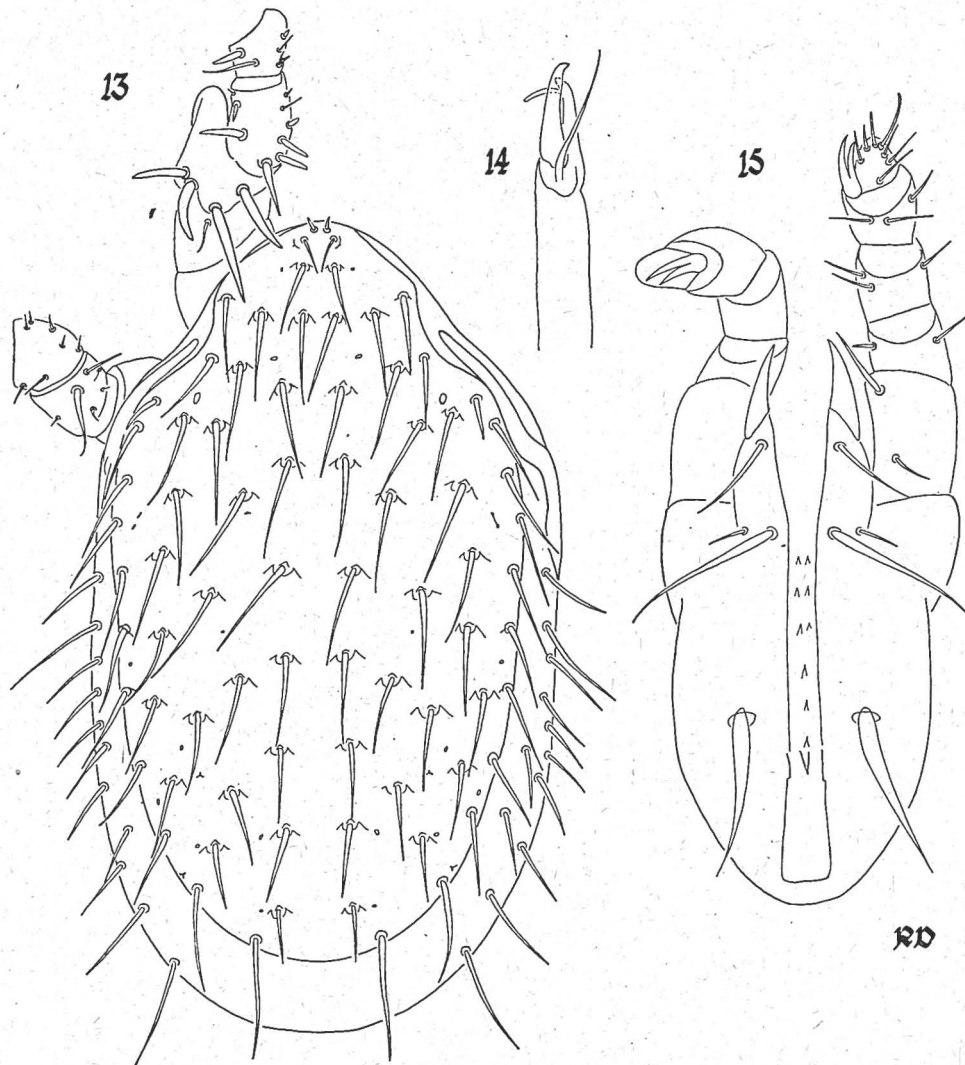


FIG. 12. — *Laelaps rex* n. sp. Venter of female.

Type material. — Holotype female and six paratype females from *Rattus whiteheadi*, Tenompak, Mount Kinabalu 5,500', British North Borneo, 19.vii.1951, R. TRAUB ; ten paratype females from *Hylomys suillus*, Tenompak 5,000', 16.vii.1951, R. T.



FIGS. 13 to 15. — *Laelaps rex* n. sp. Female : 13. Dorsum ; 14. Chelicera ; 15. Gnathosoma.

Diagnosis. — Both setae on coxae I spinose. Posterior seta of both coxae II and III spinose. Tarsus I with small spine near apex, and much larger one on basitarsus, the tibia being excavated distally to accept it. Genu I with blunt spine. Femur I with immense hook ventrolaterally, and four strong setae dorsally.

Corona represented by one long ciliation. The specific name *rex* refers to the regal armature of this mite.

Female. — A pale brown species with idiosoma 608 μ long in uncompressed specimen figured. Marginal cuticle with about ten pairs of setae dorsally, one of the anterior pairs being longer than the adjacent setae.

Sternal shield with posterior margin straight. Genitoventral shield characteristically shaped, due to sudden expansion from genital pair of setae to first pair of usurped setae, followed by a more gradual tapering towards the third pair of usurped setae. Consequently, the insertions of the usurped pairs are closer together from front to back, and the third pair are closer together than the genital pair. Anal shield doubly convex on anterior margin. Adanal setae near posterior of anus, not reaching insertion of postanal seta, which is twice as strong as adanals. Ventral cuticle with about eight pairs of setae. Metapodal plates flanked internally by two smaller platelets. Peritremes reaching forward to posterior margin of coxae I.

Notes. — In Tipton's key (1960), *L. rex* n. sp. keys out to couplet 40, being near *L. turkestanicus* Lange in having only one pair of small submarginal setae on posterior of dorsal shield. The two species are, however, immediately separable by the diagnosis given above.

***Laelaps delta* n. sp.**

Type material. — Holotype female and nine paratype females from *Chiroptomys gliroides*, Pahang Road, 16 miles north of Kuala Lumpur, 27.vii.1948, R. TRAUB; eleven paratype females, same data, but 12.vii.1948; one paratype female from *Ratufa bicolor*, Malaya, 25.vi.1948, R. T.

Diagnosis. — Both setae on coxae I spinose. Posterior seta on both coxae II and III spinose. Sternal plate with W-shaped extension on posterior margin. Genitoventral shield not grossly expanded, but ever so slightly concave posteriorly. Dorsal shield anteriorly with a Δ -shaped pale area surrounded by a dark, strongly sclerotized frame, the posterior margin of which is looped around a smaller pale area. The Greek letter *delta* is Δ .

Female. — A large brown species with idiosomal length 1,067-1,155 μ . Third pair of usurped setae slightly wider apart than genital setae. Anal shield arched anteriorly. Adanal setae near posterior of anus, reaching well beyond the insertion of the postanal seta, but still much shorter than it. Ventral cuticle with several pairs of slender setae, some even longer than the postanal seta. Peritremes reaching forward almost to level of anterior margin of coxa I.

Notes. — *L. delta* n. sp., like *L. insignis* (Delfinado) n. comb., bridges the slight gap between *Laelaps* Koch and *Echinolaelaps* Ewing quite convincingly, and I

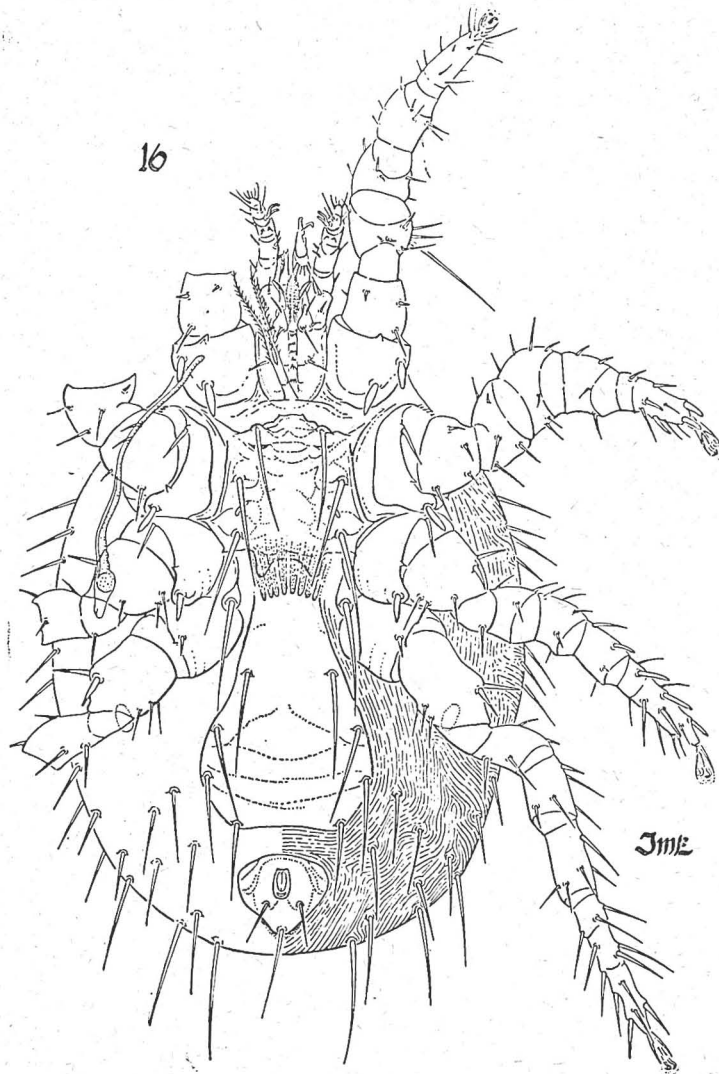


FIG. 16. — *Laelaps delta* n. sp. Venter of female.

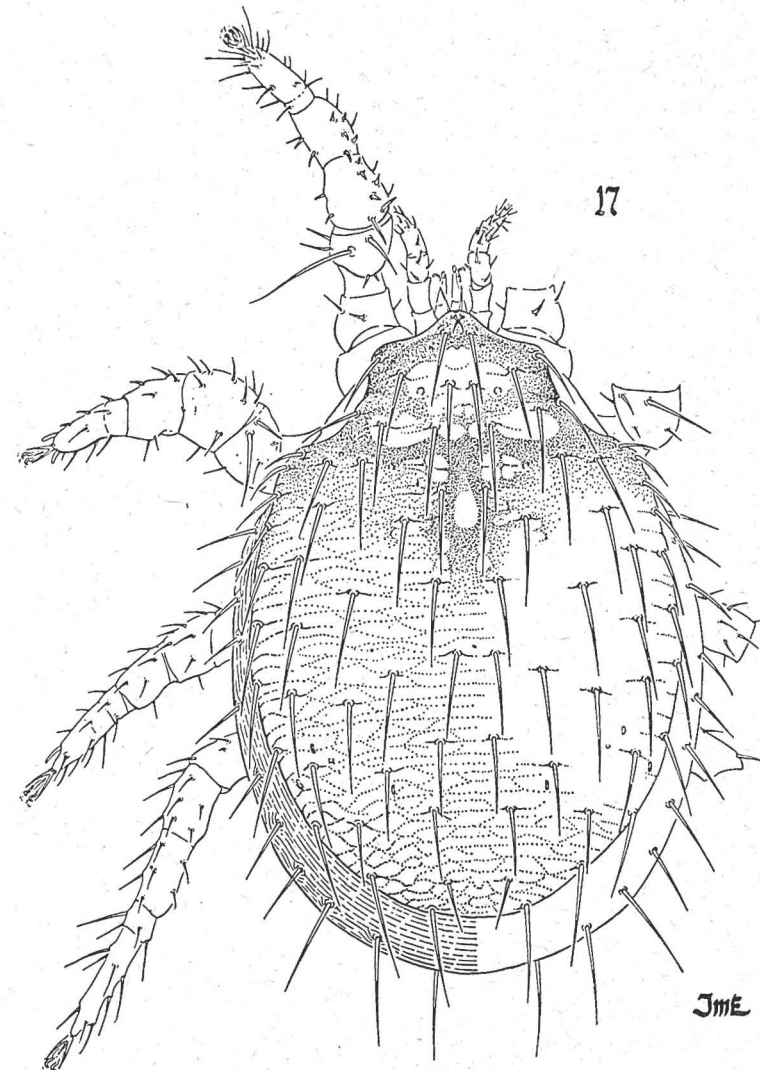


FIG. 17. — *Laelaps delta* n. sp. Dorsum of female.

am still unprepared to accept the latter genus as valid. *L. delta* may be separated from the described species of this intermediate group by its peculiar dorsal shield, and by the fact that both setae on coxae I are spinose.

***Laelaps traubi* n. sp.**

Type material. — Holotype female and six paratype females from *Rattus fulvescens*, Gunong Brinchang 4,500', Cameron Highlands, Malaya, 19.vii.1948, R. TRAUB; eighteen paratype females, same data, but another rat; five paratype females, same data, but 5,500', 18.vii.1948; seven paratype females, same data, but 20.vii.1948; one paratype female from *R. edwardsi*, same data, but 20.vii.1948;

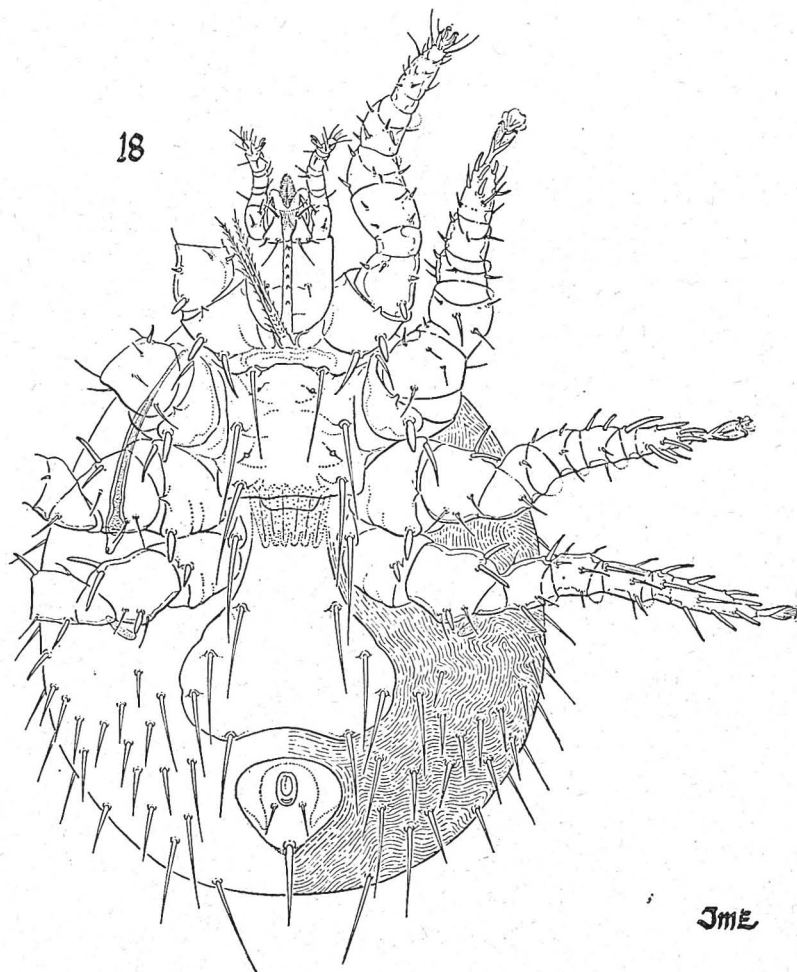


FIG. 18. — *Laelaps traubi* n. sp. Venter of female.

eleven paratype females from *Rattus* sp., same data, but 20.vii.1948 ; four paratype females from *Dremomys rufigenis*, same data, but 20.vii.1948.

Diagnosis. — Only anterior seta of coxa I spinose. Posterior seta of both coxae II and III spinose. Trochanter I with one spinose seta ventrally. Posterior sternal margin slightly expanded medially, but not clearly W-shaped. Geni-

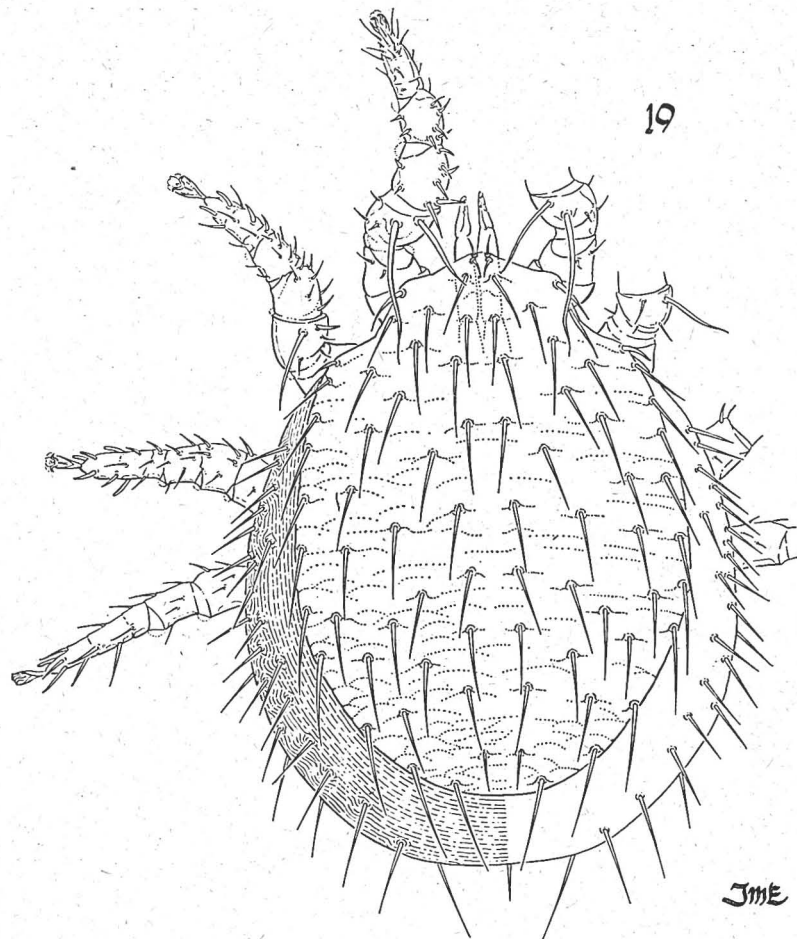


FIG. 19. — *Laelaps traubi* n. sp. Dorsum of female.

toventral plate moderately expended behind coxae IV, only shallowly excavate posteriorly, and separated from anal plate by broad band of cuticle. The species is named in honour of Colonel Robert Traub, whose fine collections will eventually provide much of our knowledge of Malaysian Mesostigmata.

Female. — A large brown species with idiosoma 979-1,023 μ long in uncompressed material. Somewhat flattened specimens measure up to 1,045 μ .

Third pair of usurped setae slightly wider apart than genital pair. Anal plate rounded anterolaterally, with adanal setae near posterior of anus, and barely reaching insertion of postanal seta, which is much stronger. Several setae on ventral cuticle thorn-like, the remainder rather longer and more slender. Peritremes reaching forward only to anterior margin of coxae II.

Trochanters IV with spinose seta posteriorly. Femora I with two and femora II with one longer seta dorsally.

REFERENCES

- AUDY (J. R.), 1954. — Malaysian parasites III. A summary review of collections of trombiculid mites in the Asiatic-Pacific area. *Stud. Inst. med. Res., Malaya*, 26 : 29-44.
- AUDY (J. R.) and HARRISON (J. L.), 1954. — Malaysian parasites I. Collections made in Malaya by the Colonial Office Scrub Typhus Research Unit. *Stud. Inst. med. Res., Malaya*, 26 : 1-22.
- DELFINADO (M. D.), 1960. — Philippine Zoological Expedition 1946-1947. On some parasitic laelaptid mites (Acarina) of the Philippines. *Fieldiana (Zool.)* 42 : 93-114.
- DOMROW (R.), 1960. — Some Acarina Haemogamasidae from Malaya. *Acarologia*, 2 : 434-441.
- TIPTON (V. J.), 1960. — The genus *Laelaps*, with a review of the Laelaptinae and a new subfamily Alphalaelaptinae (Acarina : Laelaptidae). *Univ. Calif. Pub. Ent.*, 16 : 233-356.
- VITZTHUM (H. Graf), 1926. — Malayische Acari. *Treubia*, 8 : 1-198.
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