TWO WINGED MOSSMITES OF THE NILGIRI HILLS.

By ARTHUR PAUL JACOT.

(Plate IX).

In 1910 (2, p. 118) two species of Galuminae (Oribatoidea-Acarina) were so badly described that it is not possible to determine the genus, in one case not even the subfamily to which they belong. As I had the good fortune of finding the cotypes of these species I hasten to make them known to my colleagues.

Galumna tessellata (Ewing).

(Plate IX, figs. 1-3).

1910. *Oribata tessellata*, Ewing, *Trans. Acad. Sci. St. Louis* XIX, p. 118.

Diagnostic characters.—Fairly large (0·88×0·67 mm.); rostral bristles short, very fine; lamellar bristles fairly long, appressed; interlamellar bristles lacking; abdomino-cephaloprothoracic suture indefinite, internal; pseudostigmatic organs very slender, straight, head a slight widening of pedicel, distal end obtuse to pointed, finely burred (figure 1); porose areas small, anterior the largest, mesonotal very lateral; a median porose area of about twenty-five pores; cephaloprothorax and parasterna with fine, broken, crenulate, combing; pteromorphae sculptured with fine network (figure 3); bristle of parasterna I not gular but anterior; genital cover bristles 1 not marginal, genital cover bristles not in a straight line; paramesal bristles about midway between apertures; paranal bristles and pseudofissurae posteriad of center of sides of aperture.

Description.—Shape ovate, notogaster slightly truncate behind; cephaloprothorax tapering, not steep; rostrum not distinct in dorsal aspect; rostral bristles inserted on slightly raised edge; lamellae projecting from surface of cephaloprothorax, mesal edge directed laterad of interlamellar bristles; lamellar bristles surpassing middle of rostral; interlamellar bristles distant from shadow of tectopedia I, with raised chitin scale on lateral side; abdomino-cephaloprothoracic suture seen to be internal when focused on with four millimeter objective, being on a lower level than the cephaloprothoracic sculpturing which fades out beyond the rather prominent, linearly arranged, mandible retractor scars; anterior porose areas semioval; adalar very small, circular; mesonotal also very small, close together, far down on sides, mesal mesonotal distant from its mesal insertion; pteromorphae typical, pivot slender, near angle, anteroproximal edge of pteromorphae cut out around pivot to fit about bulge of pseudostigmatic area, veining anastomosing, groove distinct, ribs thin but well formed, insertion and channel distinct, not conspicuous, pseudofissura rather large, sculpturing extending over entire anterior half to ventral edge, and posteriad along ventral half. The veining is on the ventral or ental part of the pteromorphae, the sculpturing on the dorsal (lateral).

Ventral plate wings broad, anterior end obliquely truncate; tectopedia II sharply angled, extending posterolaterad of wings; tectopedia

III small; tectopedia IV elongate triangular; apodemata I rather long, with well formed posterior head; apodemata II-III longer, with fairly long anterior and much longer, strongly curved posterior ceriphs; apodemata IV parallel with II-III; no gular or sternal bristles; lacunae between apodemata I and II-III distinct, ovate; bristles of parasterna III not discernible, of parasterna IV as usual in the genus *Zetes* (figure 2); genital aperture with anterior edge flattish, posterior edge undulate; sides not strongly converging; genital cover bristles 2 and 3 sub-equally approximate, much more approximate than bristles 1, bristles 4 with long, slender channel; paramesal bristles more approximate than diameter of genital covers; anal aperture with strongly converging sides and weak anterior corners, frame distinct; subanal muscle plate oval; anal cover bristles sub-equally approximate, anterior bristles nearer median than lateral or anterior edge of covers; paranal bristles in the one specimen before me on opposite ends of pseudofissurae on each side; post-anal bristles sub-equally spaced, lateral bristles rather distant from corners; mesal pair more remote than cover bristles.

Dimensions of the one male (?) available: total length of body 884, breadth of same 672, length of pteromorphae 484, interlamellar bristle span 200, median length of ventral plate 680, camerostome to genital aperture 123, length of genital aperture 102, breadth 115, genital aperture to anal aperture 197, length of anal aperture 180, breadth 198 microns.

This species, by its sculptured cephaloprothorax, recalls the South American *Z. australis* (1). It is primitive in its small porose areas and the veining of the pteromorphae. The position of the bristle of parasterna I and the position of apodemata IV are unusual.

Type locality.—From moss in wattle grove on hillside near Springfield Post Office, elevation about 6,000 feet, Nilgiri Hills, South India, collected by R. L. Ewing.

Galumna nilgiria (Ewing).

(Plate IX, figs. 8-11).

1910. *Oribata nilgiria*, Ewing, *Trans. Acad. Sci. St. Louis* XIX, p. 118.

Diagnostic characters.—Size rather small (0·36×0·27 mm.); rostral bristles absent to invisible, lamellar bristles small, fine, peripheral; interlamellar bristles minute; anterior porose areas long, well developed; adalar porose areas bluntly short-triangular; pseudostigmatic organs not long, straight, pedicel slender, head less than half length of pedicel, spatulate, with what seems to be recurved edges, finely barbed (figure 10); mesonotal porose areas circular, the mesal twice the diameter of the lateral; a median porose area rather far posteriad; pteromorphae with very weak veining; ventral plate wings broad; tectopedia II still broader; tectopedia IV equilaterally triangular; genital cover bristles nearer lateral than median edge of covers; paranal bristles at center of aperture.

Description.—Color pale amber yellow; shape broadly ovate; cephaloprothorax broad, frons concave; rostrum not differentiated in dorsal aspect; lamellae barely projecting beyond surface of cephaloprothorax, slender, mesal edge directed laterad of interlamellar bristle insertion, cephaloprothorax projecting markedly ventrolaterad, rostral

insertions close to edge of camerostome very posteriad; mandible retractor scars minute, linearly arranged; adalar porose areas with anterior side much more oblique than posterior; a fine pseudofissura between mesal adalar insertion and mesal mesonotal insertion; pteromorphae slightly undulate, pseudofissura (on ventral face) slender, groove open anteriorly, posterior rib well formed but thin.

Ventral plate wings with anterior end undulate; tectopedia II seems to be double (figure 11), amply exposed posterolaterad of wings; tectopedia III slender, formed by projection of an acetabulum; apodemata I curved, with a short anterior and a medium long posterior ceriph; apodemata II-III longer, with a short anterior and a long posterior ceriph; apodemata IV short, diagonal, almost touching the preceidng and joined to it by a plate extending to end of ceriph; gular bristles rather approximate; genital aperture with anterior and posterior edges strongly undulate, sides not strongly converging; cover bristles 1 distant from anterior edge, bristles 4 distant from median edge, with channel; paramesal bristles slightly more remote than diameter of genital aperture, somewhat nearer genital than anal aperture; anal aperture with poorly developed anterior corners, sides strongly tapering, frame broad anteriorly, tapering out at sides; subanal muscle plate ovate, broad end posteriad; pseudofissurae short, at center of sides; paranal bristles slightly posteriad of pseudofissurae, cover bristles midway between lateral and median sides so that posterior bristles are much more remote than anterior, quite distant from each other; postanal bristles subequally spaced, lateral bristles not close to corner of aperture.

Dimensions of a rather flattened out male: total length 361, breadth 270, length of pteromorphae 197, interlamellar bristle span 49, median length of ventral plate 270, camerostome to genital aperture 61, length of genital aperture 45, breadth 53, genital aperture to anal aperture 70, length of anal aperture 79, breadth 84 microns.

This species, somewhat resembling *G. curvum ventralis* (4, p. 284, figs. 67, 68) in size and in reduction of cephaloprothoracic bristles, is very distinct in shape of pseudostigmatic organs, much larger porose areas, lack of notogastral bristles, position of genital cover bristles 1 and of paramesal bristles.

Type locality.—Found with the preceding but in much smaller numbers.

As *G. nilgiria* is a pale colored species and correspondingly translucent, the ental leg parts are quite distinct. These are illustrated in figure 9 where, in the case of each leg the coxal (proximal) trochanter is indicated by a broad solid line and the coxa by the letter c. This means that the femora of legs I and II include the femoral (distal) trochanter and that the member of legs III and IV which was formerly called coxa is the second trochanter. Thus in the two pairs of anterior legs the femoral trochanters become reduced while in legs III and IV they become highly developed. Coxae I and II resemble a spoon bowl so that when viewed in one aspect they seem somewhat oval or circular (figures 4, 6, 8 and 9) but when rotated ninety degrees they appear crescentic (figures 5 and 6). The distal end of this spoon is not an elongated handle but a wheel much resembling a railroad car wheel including the flange. Figure

4 shows this wheel to best advantage, with the chitin of the wall of the cephaloprothorax (shaded lines) above it. Figures 6 and 8 show similar arrangements in different species. This carwheel, I take to be the coxal trochanter fused to the coxa. In figure 6 only the end of the femur is shown. Figures 5 and 7 show this trochanter rotated ninety degrees. The shaded portion of the trochanter in figure 5 is in section, actually the trochanter has a rim projecting over the ends of the femoral trochanter. This is indicated in figure 5 by the straight line joining the ends of the rim of the trochanter. The trochanter of legs II has a very different appearance (figure 7) being housed in the end of the femur and articulated with the coxa by a point. This indicates that instead of being wheel-like, it is like a narrow section cut across a wheel.

Coxal trochanters I and II are held in place by two acetabulae, an anterior bearing on the trochanter, and a posterior bearing on the pedicel joining the trochanter to the coxa. In figure 5 the anterior acetabulum is illustrated by simple lines, the posterior by shaded lines. Coxal trochanters III and IV have this arrangement reversed. Figure 9 should make this clear if it be borne in mind that coxa III is almost vertical so that some of its parts are foreshortened. In figure 9 the minor acetabulum of each leg is shaded.

Other figures of these parts will be found in another paper (3). A secondary pivot of the ball and socket type is illustrated for legs II (3, pl. XIV, figs. 140 and 141) in *Galumna hawaiiensis*. In *G. lanceatum octopunctatum* (figure 7) this secondary pivot is short and does not enter the femur. In figure 141 (3) the acetabulum has the appearance of being part of the body wall.

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