THE INDO-AUSTRALIAN SPECIES OF THE ANT GENUS *STRUMIGENYS* FR. SMITH: GROUP OF *DORIAE* EMERY[1]

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The *Strumigenys doriae* group includes three rather large species of uniform aspect with a scattered distribution in the East Indies. The mandibles are greatly simplified, evidently through loss of structures, and are like those of the Neotropical *elongata* group in lacking entirely preapical teeth or distinct dentiform angles in the preapical position. The apical fork teeth are strong and spiniform, straight or nearly so; an intercalary denticle may be present or absent. Mandibular blades straight, slightly narrowed at insertions; vertex raised and convex; occipital lobes strongly depressed; posterior excision deep. Labrum transverse, with a narrow, apically truncate extension on each side extending laterally beyond the lateral borders of the closed mandibles. Legs and antennae long and slender; funicular segment IV elongate. Body, including legs with very long, fine outstanding hairs. In the two species actually examined (*S. bryanti* and *S. ulcerosa*), the sculpture of certain areas is modified to include coarse pits and larger, shallow, margined crateriform areas in bilaterally paired positions. These regions are ordinarily plated or encrusted with a light-colored granular substance, which, when removed by soaking, leaves uncovered impressed areas filled with short, fine dense pile. The whole apparatus appears to be secretory in function, though for what purpose, it is still not known.

These structures, which I refer to as secretory pits and lacunae, appear to be special intensive developments of a widespread general tendency among strumigenite species to produce a granular integumental covering. This covering is not an artifact, since it can be seen in living speci-

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mens in nature and in the artificial nest in a certain proportion of individuals in most colonies at any given time. Its structure is vaguely granular, and appears to be too amorphous to represent a vegetable growth. It is highly resistant to organic solvents, and even to strong acids and bases up to the point where these begin to attack the integument itself. It can sometimes be loosened in water, but does not show appreciable reduction after prolonged soaking. It appears most likely to be a direct secretion of a largely proteinaceous nature. Similar-appearing incrustations are frequent in the myrmicine tribes Basicerotini and Attini, though phylogenetic relationships between these and the Dacetini (*Strumigenys*, etc.) do not appear to be very close. Most species showing the secretion in the Basicerotini and Dacetini show other structural and behavioral convergences, and are, generally speaking, members of the *microgenton* of Silvestri. The dacetines feed chiefly upon certain collembolan families, and it is possible that this secreted crust has something to do with the predatory habit. Among undescribed *Strumigenys* from the New World tropics, I have seen other forms with secretory lacunae, though placed differently to those of the *doriae* group and probably developed convergently.

It is unfortunate that each of the three species treated below is known only from the unique type, a situation which makes taxonomic conclusions somewhat uncertain. The characters given to separate the three are, however, of a degree of distinctness equal to those seen in related *Strumigenys* species known from considerably more satisfactory samples. Emery's brief and somewhat questionable diagnosis with figure of *S. doriae* remains to be checked and amplified by some future specialist having access to the type.

The measurements and their abbreviations are those I have used in various works on the dacetine ants: TL, total length, or sum of lengths of the various tagmata, including the closed mandibles; HL, maximum measurable length of head in dorsal view, including all of clypeus and occipital lobes; ML, distance to which the closed mandibles project beyond the clypeal margin, measured while head is in same position as for HL measurement; WL, diagonal length of ali-

trunk measured from lateral view. The most useful indices are: CI, cephalic index, head width/ HL × 100; MI, mandibulo-cephalic index, ML/HL × 100.

Strumigenys ulcerosa new species

Holotype worker: TL 4.10, HL 1.09, ML 0.55, WL 1.16 mm.; CI 71, MI 50. Occipital lobes surpass indistinct anterior pronotal margin by approximately 0.1 mm.; this overlap not included in TL.

In general habitus resembling Emery's figure of *S. doriae* (see below), but the mandibles longer and much broader, and the head less broad behind, assuming that Emery's figure approaches the correct proportions for *doriae*. Sides of head in front of occipital lobes feebly concave in outline; eyes moderate in size and convexity, situated distinctly anterior to the cephalic midlength, visible in dorsal view. Clypeus triangular, the anterior border weakly depressed and very feebly concave. Seen from the side, the deepest part of the head is reached at the highest point of the convex vertex, slightly posterior to cephalic midlength; occipital lobes only about half as deep, strongly depressed. Scape L 0.68, funiculus L 0.85 (segment V 0.40, IV 0.24, III + II 0.10, I 0.11 mm.).

Mandibles approximately straight, depressed, broad (slightly less broad than in *S. bryanti* holotype), at bases slightly narrowed and feebly bent inward, broadest at about the apical quarter. Just before the apical fork, the inner border becomes very feebly concave, but there is no preapical angle marking off this concavity, and there is no preapical tooth or denticle. Dorsal tooth of apical fork stoutly spiniform, L 0.14-0.15 mm., only slightly longer than the ventral tooth, which is blunter and approximately parallel; no trace of any intercalary tooth or denticle.

Alitrunk slender, pronotum narrowly rounded anteriorly, without humeral angles, but with a low tubercle on each side; anterior pronotal border obsolete. Pronotum with the entire mesonotum forming one continuous gently arching profile as seen from the side, sloping posteriorly to the well-marked metanotal groove. Propodeal dorsum sloping down posteriorly from the groove, only very feebly convex. Mesosternal groove very broad and deep, taking up ap-

proximately the anterior half of the mesosternum, lined with an abundant erect pile, apparently related to some secretory function. Propodeal teeth reduced to small, inconspicuous, depressed blunt processes, completely involved in the broad, convex infradental lamellae.

Petiole arched-claviform, the node long, low, scarcely differentiated from its peduncle as seen from any view. Ventral spongiform strip fairly well developed, not deep; posterodorsal collar rather broad, ending on each side in well developed posterolateral flaps, each of which is in turn extended as a slender, anteriorly tapered strip forward along the sides of the node about to the level of its indefinite juncture with the peduncle. Postpetiolar node seen from above subcircular, very nearly as long as broad and slightly broader than the petiolar node, convex, closely surrounded by spongiform tissue and with large ventral spongiform lobes. Gaster with a conspicuous thick anteroventral pad of spongiform tissue and fine, short subreclinate hairs, anterodorsally with a flange-like transverse spongiform margin. Basal costulae of first gastric segment rather fine, short, extending about ¼ the length of the basal segment in the middle; remainder of gaster smooth and shining, as are the mandibles.

Head, alitrunk and both nodes densely and irregularly punctulate-granulose, opaque. The ground punctulation is relieved at intervals by larger, more irregular secretory pits, most conspicuous on head and promesonotum. The larger secretory lacunae, bordered by a low ridge and usually conspicuous by virtue of the whitish encrustation, appear to be formed of many confluent secretory pits. The largest pair are subcircular, located behind the humeral tubercles, occupying the greater part of the posterolateral pronotal surfaces. Another large linear pair, deep and groove-like, follow the humeral margins on each side; and another pair, adjacent to and surrounding the lateral openings of the mesosternal groove, are also of good size. A smaller, but very distinct groove on each side of the propodeum below the spiracle, running posteriorly onto the infradental lamella. Small lacunae are also found on the anterolateral faces of the petiolar node, dorsolaterally on the propodeum at the bases of the teeth, and on each end

of the metanotal groove. Legs densely and finely punctulate-granulose. Pilosity as described for *S. bryanti* (below), except that in *ulcerosa,* the long, fine erect hairs on the head are more numerous, while those of the gastric dorsum are not so extremely long (maximum length about 0.26 mm.), nor are those on the legs so long as in *bryanti.* In *ulcerosa,* the longest hairs on the gastric dorsum are about half as long as the maximum dorsoventral thickness of the gaster. The dense, fine pile present on alitrunk and nodes much as in *bryanti,* most conspicuous at heavily "glandular" areas, especially humeri and mesopleura.

Color rich medium ferrugineous, appendages and occipital lobes slightly lighter and more yellowish.

Holotype, in the Museum of Comparative Zoology, a unique taken at 700 meters altitude, Kananggar, Soemba, Indonesia (Dammerman, no. 242). This species does not seem to be the worker corresponding to the female of *bryanti,* since the latter has a narrower, not broader, head, and has longer mandibles, differently proportioned funicular segments, longer gastric pilosity, and a minute intercalary denticle in the apical fork. If it be assumed that Emery did not too grossly misfigure his Ambonese species, *doriae,* the latter would be distinct from *ulcerosa* in having shorter, very much more slender mandibles and a notably broader head. Emery's draftsmanship, however, was such that doubts about the distinctness of *ulcerosa* and *doriae* will remain until someone can review Emery's type.

Strumigenys bryanti Wheeler

Strumigenys bryanti Wheeler, 1919, Bull. Mus. Comp. Zool. Harvard 63: 95, female (original description).

Holotype female, alate: Differs significantly in proportions, especially of the mandibles, and also in other minor details, from *S. ulcerosa* and *S. doriae,* but for the most part very similar to at least the first of these. TL 4.63, HL 1.08, ML 0.60, WL 1.25 mm.; CI 69, MI 56; occipital-pronotal overlap 0.1 mm., subtracted from TL. Antennal scapes straight, slender, L 0.70, very feebly incrassate in the apical half; funiculus slender, L 0.88 (segment V 0.40, IV 0.31, II + III 0.08, I 0.09-0.10 mm.).

Mandibles with apical fork of two slender spiniform

teeth, the dorsal tooth virtually straight in its apical half, the ventral tooth parallel to the dorsal and about half as long, its extreme tip gently deflected ventrad; a single minute, acute intercalary denticle present. The dorsal apical tooth is about 0.17 mm. long, or slightly more. Shaft of mandible straight, broad, depressed, slightly narrowed toward base; external border feebly convex, inner border straight, except for brief weakly concave apical and basal stretches, and with dorsal and ventral subcultrate margins. The gentle preapical concavity, just at the point where it joins the straight section of the inner border, bears a very low, obtuse vestige of a translucent angle, just barely perceptible at higher magnifications and then only in certain views. This insignificant vestige is probably homologous with the preapical tooth or angle in the majority of Indo-Australian *Strumigenys* species. The reduction of the preapical tooth can be followed in the series *koningsbergeri, formosensis, bryanti,* although this series probably does not represent the actually evolved lineage.

The secretory pits and lacunae are arranged much as in the worker of *S. ulcerosa,* but those on the thoracic sclerites are somewhat restricted by the different development of these areas accompanying the presence of the wings. Scutum intricately and rather deeply rugulose-punctulate. Scutellum with similar sculpture; punctulation of mesokatepisternum partially effaced, the surface here more or less smooth and shining. Basal costulae of gaster short and fine.

Head with moderate growth of fine, subreclinate ground hairs, fewer moderately long, fine erect hairs, and fewer still very long, outstanding, fine flagellate hairs, the latter concentrated along the dorsolateral and posterior occipital borders. Scape hairs very fine, reclinate. Alitrunk with numerous long, fine erect hairs, the same, becoming longer and flagelliform on both nodes and gastric dorsum (L up to 0.55 mm.), where some are as long as or nearly as long as the maximum depth of the gaster itself. Legs with very long, fine erect hairs, becoming extremely long and tapered, but fewer, on the posterior surfaces of the metatarsi, where they are often nearly as long as the elongate metatarsus itself. Also present on legs, alitrunk, both nodes and under-

side of head is a dense pile of very fine, short reclinate hairs, inconspicuous except on humeral borders, propodeum and petiolar node; forming a large anteroventral pad at the base of the gaster. The long flagelliform hairs are considerably longer than those of *ulcerosa*.

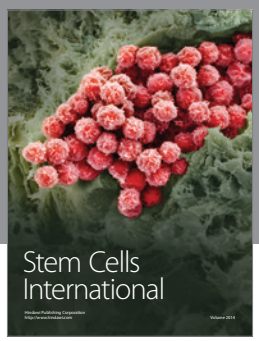
Color reddish ferrugineous, appendages lighter. Forewing (L 3.1 mm.) with R + Sc, Rsf1, stigma and 2r present and distinct, but not strongly pigmented. Other veins absent or else present only as indistinct folds or lines. The holotype, still the only known specimen, is in the Museum of Comparative Zoology; it was taken on Mt. Matang, West Sarawak, Borneo (G. E. Bryant).

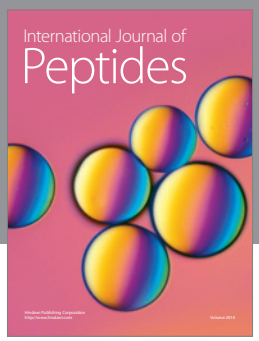
Strumigenys doriae Emery

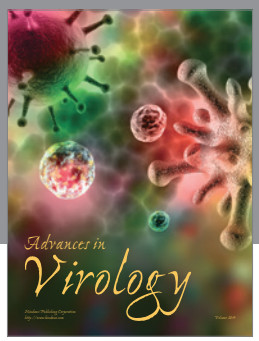
Strumigenys Doriae Emery, 1887, Ann. Mus. Civ. Stor. Nat. Genova, (2) 5: 45, pl. 2, fig. 22, worker (original description). 1897, Term. Füzetek, 20: 574, worker, in key.

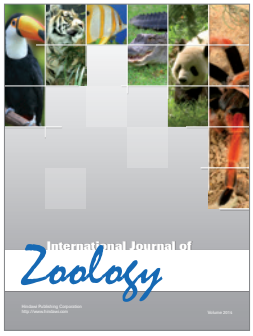
I know this form only from Emery's description and figure, which show it to be very much like *S. ulcerosa* (see discussion above). The original description is very brief, and the figure crude and questionable on several accounts. The mandibles are portrayed as unusually slender for a *Strumigenys* species; nevertheless, Emery definitely says that they are *"cylindricis"* in his description, which, if true, would make them quite different from the broadened and depressed jaws of the two closely related forms. As estimated from the figure, the CI would be about 77, and the MI near 46. Emery's figures of dacetines are known, however, to err rather strongly on occasion in showing correct proportions of head and mandibles. Emery also shows the petiolar and postpetiolar nodes without differentiating the spongiform appendages from the nodes proper. The total length is given as "3½ mm." This is probably too low a figure. Emery does not mention the secretory pits and lacunae that may well be present, but the elongate flagellate hairs characteristic of this species group are indicated in the figure. Color given as "ferruginea, capite obscurior."

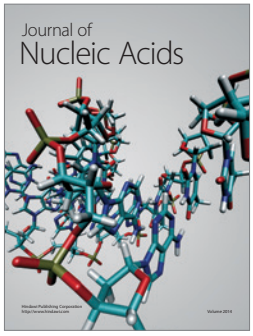
The holotype is a unique worker taken at Amboina, East Indies, by Beccari; it is presumably now in the Emery Collection, Museo Civico di Storia Naturale in Genoa, Italy.

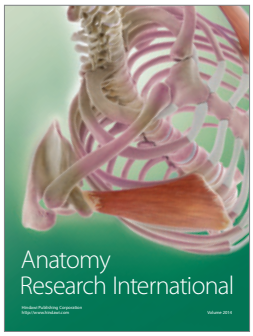


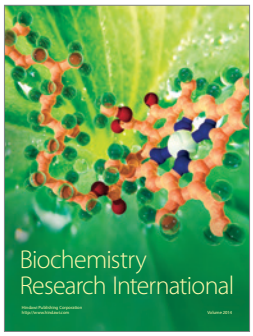


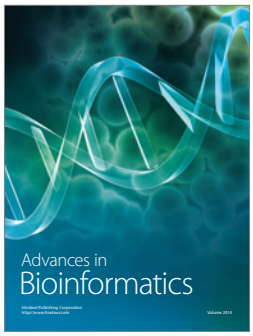


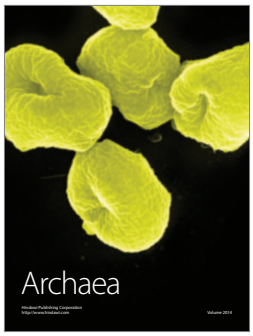


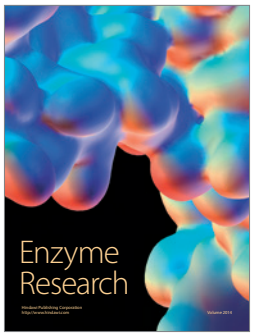


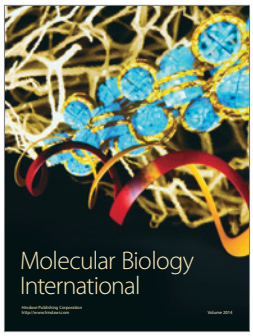












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