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Some New Taxa of the Subtribe Anisodactylina
from Asia with a key to the Asian genera
(Coleoptera, Carabidae, Harpalini)

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Abstract A new genus of the subtribe Anisodactylina, *Hiekea*, and a new subgenus of the genus *Chydaeus* CHAUDOIR, *Javanochydaeus*, are established, and a new species of the genus *Hiekea* is described from India. A redescription of *Chydaeus javanicus* SCHAUBERGER and a key to Asian genera of the subtribe Anisodactylina are given.

Key words: taxonomy, new taxa, Anisodactylina, Carabidae, Asia.

Introduction

In this paper, I establish a new genus *Hiekea* and a new subgenus *Javanochydaeus* of the genus *Chydaeus* of the subtribe Anisodactylina. *Hiekea* is monobasic on *Hiekea picipes* described here from India, and the genus is related to both the genera *Chydaeus* CHAUDOIR, 1854, and *Anisodactylus* DEJEAN, 1829. It is different from the genus *Chydaeus* in having the edentate mentum and from the genus *Anisodactylus* in the presence of the clear frontal impressions and the absence of the dorsal pore on 3rd elytral interval. The subgenus *Javanochydaeus* is based on *Chydaeus javanicus* SCHAUBERGER, 1934, and is peculiar in having the male mid tarsus ventrally without adhesive hairs.

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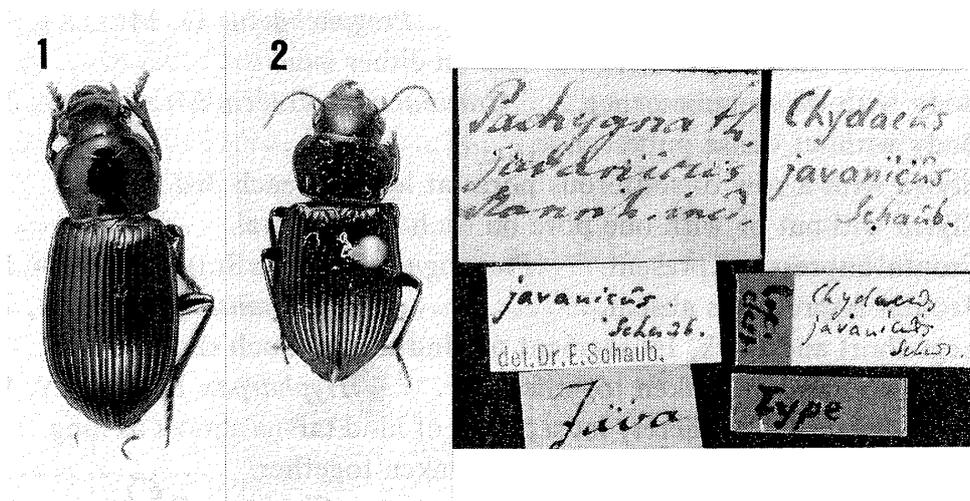
Key to Asian Genera of the Subtribe Anisodactylina

1. Pronotum with two marginal setae on either side.

-*Progonchaetus* G. MÜLLER, 1938
- 1'. Pronotum with single marginal seta on either side.2
2. Body with dense pubescence.....*Crasidactylus* Guérin-MENÉVILLE, 1847
- 2'. Body without dense pubescence.....3
3. Elytra with a row of setiferous pores at least on each 3rd interval.4
- 3'. Elytra without or with one pore on each 3rd interval.5
4. Frontal impressions present.....*Pseudognathaphanus* SCHAUBERGER, 1932
- 4'. Frontal impressions absent.....*Gnathaphanus* MACLEAY, 1825
5. Legs short and thick, 1st segment of hind tarsus much shorter than
the 2nd and 3rd taken together.*Hypharpax* MACLEAY, 1825
- 5'. Legs longer and slenderer, 1st segment of hind tarsus almost as long
as or longer than the 2nd and 3rd taken together.6
6. Mental tooth present.*Chydaeus* CHAUDOIR, 1854
- 6'. Mental tooth absent.....7
7. Ligula strongly expanded distad.8
- 7'. Ligula parallel-sided or weakly expanded distad.9
8. Frontal impressions deep.*Rhysopus* ANDREWES, 1929
- 8'. Frontal impressions absent or if any shallow.
.....*Anisodactylus* DEJEAN, 1829
9. Elytra without setiferous pores on each 3rd interval.
.....*Hiekea* N. ITO, gen. nov.
- 9'. Elytra with a setiferous pore on each 3rd interval.
.....*Harpalomimetes* SCHAUBERGER, 1933

Hiekea N. ITO, gen. nov.

Oblong and convex, more or less similar in form to the genus *Acinopus* LATREILLE. Head: Frontal impressions clear; labrum bearing six setae at apex; clypeus unisetose at each apico-lateral corner; eyes relatively large; mandibles robust and not produced forwards, left mandible rugose on dorsal side; maxillary and labial palpi slender, 2nd segment of labial palpus plurisetose along front margin; ligula slender, parallel-sided; paraglossa glabrous; mentum without median tooth, never sutured with submentum; prosternal process setose at apex. Pronotum subquadrate, without posterior marginal setae. Hind wings fully developed. Elytra quite glabrous, without any setiferous dorsal pores which are also absent in the genus *Chydaeus*; basal pores and scutellar striole present. Ventral surface glabrous; apical margin of 6th abdominal segment bisetose in ♂ and quadrisetose in ♀. Terminal spur of fore tibia not dentate, mid tibia densely setose laterally and ventrally in apical half, hind tibia sparsely pubescent on dorsal surface; 1st segments of fore and mid tarsi in ♂ not clothed ventrally with spongy adhesive hairs, hind tarsus pubescent on dorsal surface.



Figs. 1-2. Habitus—1, *Hiekea picipes* N. ITO, sp. nov., ♂; 2, *Chydaeus* (*Javanochydaeus*) *javanicus* SCHAUBERGER, holotype, ♀ and its labels.

Aedeagus (Fig. 10) slender and long. Stylus (Fig. 12) without spines at external margin; valvifer convergent at apex as in genus *Anisodactylus*, but a little produced forwards beyond base of apical segment of stylus.

Type species: *Hiekea picipes* N. ITO, sp. nov.

Gender: Masculine.

Remarks: The genus *Hiekea* is closely related to the genus *Anisodactylus*, but differs from it in having the ligula not expanded apicad, the mid tibiae densely setose on lateral and ventral sides of apical half, and the 1st segments of fore tarsi without adhesive hairs in the male. The genus is related to the genus *Chydaeus*, which has no dorsal pore on the 3rd elytral interval as in the new genus, but is distinguished from it by lack of the median tooth of mentum.

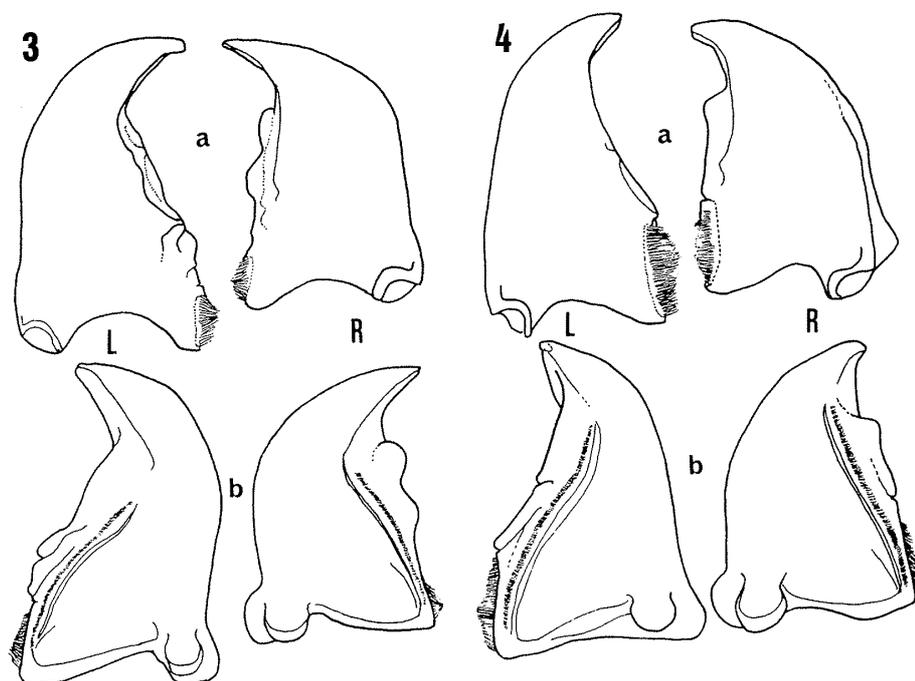
The generic name is dedicated to Dr. Fritz HIEKE.

Hiekea picipes N. ITO, sp. nov.

(Figs. 1, 3, 6-7, 10, 12)

Body oblong, rather cylindrical for *Anisodactylina* species, black, shiny, without any iridescent lustre; palpi, antennae and tarsi dark reddish brown.

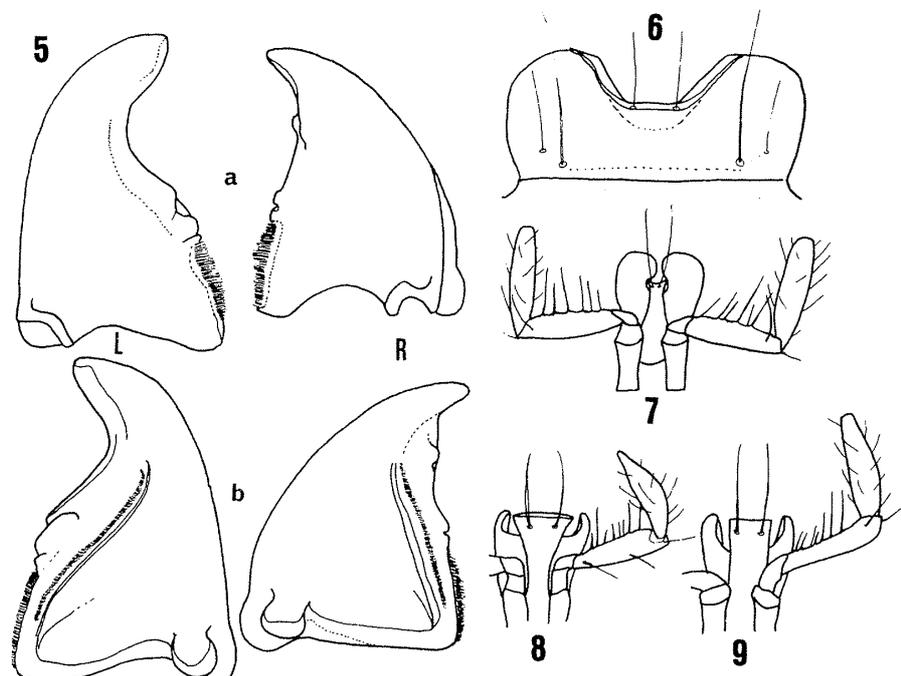
Head wide, five-sevenths as wide as pronotum, upper surface uniformly and well raised, not flattened near clypeus, very minutely and sparsely punctate throughout; labrum subsquare, shallowly emarginate at apex; clypeus smooth, obscurely and transversely depressed between a pair of lateral setae, sharply produced at apical corners; clypeal suture clearly, evenly impressed; frontal impressions arcuately divergent behind, deeper near junctions of suture, shallower backwards, but not rudimentary even near eyes; a supraorbital seta



Figs. 3-4. Mandibles—3, *Hiekea picipes* N. ITO, sp. nov.; 4, *Anisodactylus* (*Anisodactylus*) *binotatus* (FABRICIUS, 1787) from Germany; a, dorsal view; b, ventral view; L, left mandible; R, right mandible.

situated near orbital groove at the middle level of eye; eye large and prominent; temple short, one-fifth as long as longitudinal diameter of eye, somewhat contracted towards neck constriction; mandibles (Fig. 3) thick and short, curved and pointed, right mandible toothed at retinacular ridge, with a blunt terebral tooth; antenna slender and short, 3rd segment weakly dilated distad, pubescent at apical half, four-fifths as long as the 4th and less than twice as long as the 2nd; maxillary and labial palpi slender; 3rd segment of labial palpus with sparse long pubescence, as long as the 2nd; ligula (Fig. 7) narrow, weakly contracted forwards, arcuate at apex; paraglossa prolonged in front beyond ligular apex; mentum (Fig. 6) more transverse than those in genera *Anisodactylus* and *Chydaeus*, straight at bottom of apical emargination, fused with submentum, epilobe narrow and not produced beyond apex of lateral lobe; microsculpture indistinct, observable as obscure transverse meshes partly on occiput and near sockets of supraorbital setae.

Pronotum subsquare, widest at about apical third, three-tenths wider than long, disc very convex, partly and finely rugose, with each lateral furrow engraved in a line; sides rather thickly bordered, gently arcuately convergent in front and almost straightly so behind from the widest point; apex truncate, unborded medially; base a little wider than apex (1.15 in ratio), shallowly bisinuate and finely bordered throughout; basal foveae small and shallow,

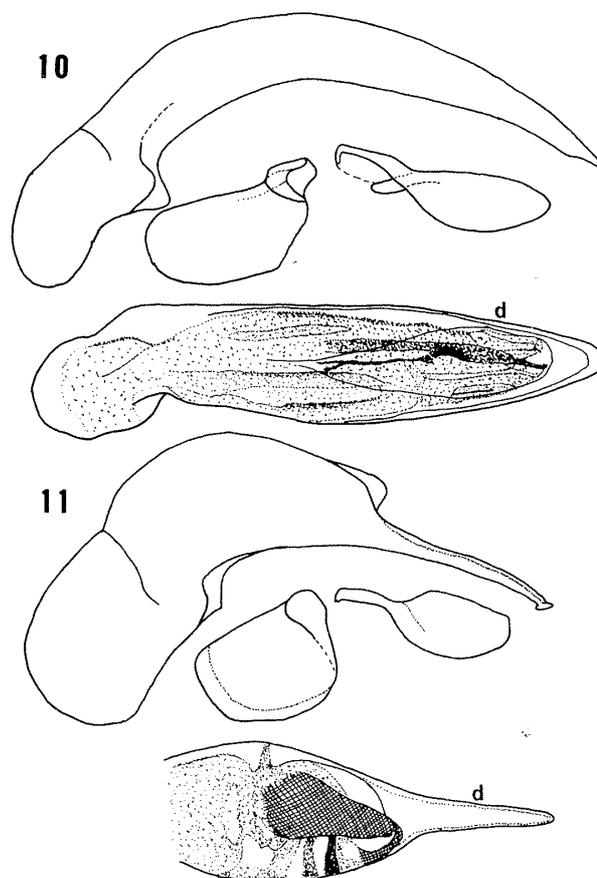


Figs. 5–9. Mandibles, mentum, labial palpi and ligulae—5 and 9, *Chydaeus* (*Javanochydaeus*) *javanicus* SCHAUBERGER; 6 and 7, *Hiekea picipes* N. ITO, sp. nov.; 8, *Anisodactylus* (*Anisodactylus*) *binotatus* (FABRICIUS); 5, mandibles; 6, mentum; 7–9, labial palpi and ligulae; a, dorsal view; b, ventral view; L, left mandible; R, right mandible.

isolated from lateral border by weak and wide swell; front and hind transverse impressions vague; median line fine and lying only between both the impressions; surface mostly smooth, scattered with a few punctures only in the furrows and basal foveae; microsculpture more distinct in ♀ than in ♂, mostly consisting of fine isodiametric and partly of fine transverse meshes.

Elytra oblong, evenly convex, abruptly declivous near sides, finely and sparsely punctate; sides subparallel, gradually strongly contracted behind from apical two-fifths and shallowly sinuate before apices; apices narrowly separated from each other, weakly produced and widely rounded at tips; base weakly curved near side, forming at shoulder an obtuse angle with lateral border, with small and sharp tooth at tip of the angle; striae somewhat wide and finely crenulate; scutellar striole moderate in length; intervals more or less convex even on disc; marginal series not interrupted, composed of 29–34 umbilicate pores; microsculpture finely and rather clearly isodiametrical (less clear than in most species of genus *Anisodactylus*).

Ventral surface almost glabrous, with very short and sparse pubescence on 3rd abdominal segment behind coxal cavities, punctate finely and densely on mesepisternum and somewhat coarsely and moderately on metepisternum and on lateral areas of metasternum; metepisternum not strongly contracted behind,



Figs. 10–11. Male genitalia—10, *Hiekea picipes* N. ITO, sp. nov.; 11, *Chydaeus* (*Javanochydaeus*) *javanicus* SCHAUBERGER, apical portion of dorsal view.

one-third longer than wide; posterior margin of 6th abdominal segment weakly arcuate in ♂, more strongly arcuate in ♀.

Fore tibia strongly expanded forwards, strongly produced at apico-external corner which is armed with two short spines, densely pubescent on apico-internal portion of dorsal surface and densely setose on apical half of ventral surface, terminal spur robust and lanceolate; fore and mid tarsi dorsally covered with dense setae in 1st segment and with several setae in the 2nd to 4th, the fore of which ventrally bear adhesive spongy hairs, mid tarsus moderately expanded, hind tarsus sparsely pubescent on dorsal surface, in ♂ one-tenth shorter than and in ♀ one-fourth shorter than width of head including eyes, the 1st segment two-fourths longer than the 2nd and seven-ninths the 2nd and 3rd combined, the 4th one-fourth shorter than the 3rd, the 5th bearing four setae along each ventral margin.

Aedeagus (Fig. 10) a little thinned, distinctly curved behind basal orifice, almost straightly produced distally; apex simple and thin; apical lobe small and triangular, narrowly rounded at tip; apical orifice narrow, opened in apical half,

without sclerotized disc; ventral surface unbordered, weakly and longitudinally swollen. Stylus (Fig. 12) slightly robust, gently arcuate outwards, with a seta at apical third; valvifer weakly rounded or truncate at apex, with a seta near apex.

Length: 13.0–13.5 mm. Width: 4.8–5.2 mm.

Holotype: ♂, Kahndalla, Bombay, India, IV. 1866, DORIA leg. (preserved in the Museum of Humboldt University). Paratypes: 1♂, 2♀♀, same data as the holotype; 1♂, 2♀♀, Bombay; 28♂♂, 29♀♀, 780 m, Talewadi Distr., Karnataka, India, 26. II. 1980, Gy. TOPAL leg.

Chydaeus (Javanochydaeus) N. ITO, subgen. nov.

Head rather distinctly rugose; frontal impressions indistinct, a supraorbital seta far apart from supraorbital ridge. Pronotum transversely quadrate, with basal angles rounded. Hind wing reduced. Elytra rounded at humeral angles, without setiferous pore on each 3rd interval. Fore tarsus clothed with adhesive hairs ventrally in basal four segments, mid tarsus without the hairs.

Type species: *Chydaeus javanicus* SCHAUBERGER, 1934

The subgenus *Javanochydaeus* may be considered as a genus distinct from the genus *Chydaeus*, because the new subgenus has no adhesive hairs on the male mid tarsi. I, however, establish it as a subgenus of the genus *Chydaeus*, as its aedeagus is structurally identical with those of most species of the genus *Chydaeus*.

Chydaeus (Javanochydaeus) javanicus SCHAUBERGER, 1934

(Figs. 2, 5, 9, 11, 14)

Chydaeus javanicus SCHAUBERGER, 1934, Ent. Anz., 14 : 71–72; NOONAN, 1973, Quaest. Ent., 9 : 346.

Body widely oblong, well convex, black, shiny; palpi light brown, antennae and tarsi dark reddish brown.

Head well convex, more or less strongly declivous in front from vertex, relatively wide, a little less than three-fourths pronotal width, sparsely and minutely punctate throughout in the holotype and mixed with coarse punctures on frons in specimens from central Java, transversely and obscurely rugose on frons in part in the holotype and more coarsely rugose in the specimens from central Java; labrum transversely subquadrate, deeply emarginate on anterior margin; clypeus smooth, indistinctly and transversely grooved behind apex, weakly and transversely swollen before and behind groove; clypeal suture moderately impressed; frontal foveae deeper than suture, short and longi-

itudinally impressed, oblique lines between foveae and eyes vague and disappearing near eyes; eye moderately small and weakly convex, less than three-tenths width of head; temple not swollen and very gently sloping towards neck constriction; genuine ventral margin of eye widely apart from buccal fissure; mandibles (Fig. 5) short and robust, outer margin gently curved, tip of left mandible blunt, one of right mandible weakly rounded; antenna short, not reaching pronotal base, 3rd segment pubescent on apical half area, a little longer than the 4th (1 : 1.12 in ratio) and one and three-fourths the 2nd; labial palpus short and slender, 2nd segment as long as the 3rd, with seven setae along anterior margin and a long seta apico-ventrally, the 3rd sparsely setose; ligula (Fig. 9) indistinctly wedge-shaped, truncate at apex, a pair of long setae situated a little apart from apex; paraglossae rather wide, gently convergent near apex, not produced in front beyond apex of ligula, free from ligula in its apical fourth; mentum weakly transverse, narrowly emarginate and subvertical at inner sides of epilobes, with large lateral lobes; median tooth well produced, truncate at tip, epilobe narrow, weakly dilated apicad, medially sutured with submentum by a very shallow transverse groove, the suture reduced at sides; submentum bisetose laterally, a pair of inner seta very long; microsculpture hardly appearing as fine isodiametric meshes near clypeus.

Pronotum strongly transverse, widest at apical two-thirds, about one and two-thirds as wide as long, bearing lateral furrows engraved in a line, well convex, the convexity drawing closely near sides; sides rather thickly bordered, gently arcuate in front and straightly convergent behind from the widest point; apex shallowly emarginate, mostly unbordered; base equal in width to apex, subtruncate, very weakly oblique laterally, with a thick border like the sides; apical angles rather narrowly rounded; basal angles very obtuse and widely rounded; basal foveae small, longitudinally short-grooved at inner sides, with rounded humps at outer sides of the grooves; front transverse impression shallow and wide, hind transverse one narrow and deeper; median line fine, weakly deepened even in disc, reaching base; punctures on disc sparse and fine, coarse and dense in front impression, near sides and on basal area, especially coarse and partly confluent with one another for basal foveae; microsculptures, if any, composed of obscure transverse lines and meshes.

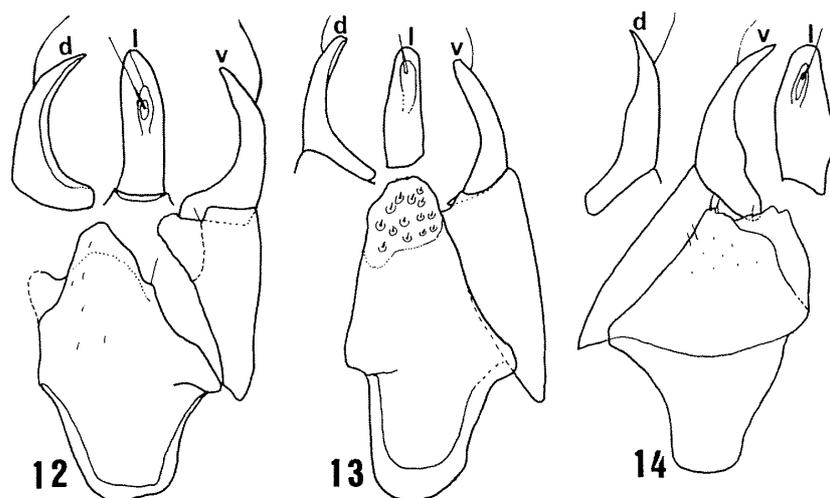
Elytra ovate and short, two-fifths longer than wide, uniformly and well convex, very sparsely and minutely punctate throughout; sides gently arcuate, shallowly sinuate behind humeri, and subapically with very shallow sinus; apices widely rounded and narrowly separated from each other, blunt at tips; base shallowly emarginate and straight in middle, with wide humeral angles fully rounded; striae deep and narrow, visible as V-shaped furrow, scutellar striole short; intervals regularly and rather well raised even on disc, 3rd interval without setiferous pore; marginal series interrupted medially, consisting of

(10–11) + (10–11) umbilicate pores; microsculptures fine and clear, discerned as mixtures with transverse and square meshes.

Ventral surface almost smooth, covered with sparse punctures on lateral areas of prepisternum and metepisternum, with very sparse and obscure punctures on lateral areas of metasternum and with very sparse and microscopic punctures on 2nd to 6th abdominal segments; metasternum with both longitudinal and transverse lines; metepisternum about as wide as long, not elongate and weakly contracted behind; 6th abdominal segment quadrisetose, its apical margin more weakly arcuate in ♂ than in ♀.

Mid coxa setose in front area; fore femur bisetose along front dorsal margin and plurisetose along hind margin, hind femur without any setae along hind margin; fore tibia not strongly dilated distad, weakly protuberant medially at apex, bispinous at apico-external margin, dorsally with several setae near apex and with uniseriate setae lengthwise, and ventrally with dense pubescence in apical half, terminal spur simple; tarsi glabrous on dorsal surfaces, mid tarsus not strongly dilated in ♂, hind tarsus distinctly short, one-third shorter in both sexes than head width, 1st segment two-fifths longer than the 2nd and one-tenth shorter than the 2nd and 3rd together, the 4th two-thirds the 3rd, the 5th dorsally with a short seta along inner margin, in addition to a pair of ordinary setae and ventrally with three setae along each side.

Aedeagus (Fig. 11) similar to that of *Chydaeus miwai* JEDLIČKA, 1946, fully tumid in basal half of apical segment, strongly thinned in apical half; apical lobe long and lance-shaped, pointed at tip; apical orifice small and ovate, with a sclerotized disc; ventral surface unbordered, longitudinally swollen. Stylus (Fig. 14) robust, weakly curved outwards and pointed at tip, with a rather short



Figs. 12–14. Female genitalia—12, *Hiekea picipes* N. ITO, sp. nov. 13, *Anisodactylus (Anisodactylus) binotatus* (FABRICIUS); 14, *Chydaeus (Javanochydaeus) javanicus* SCHAUBERGER; d, dorsal view; l, lateral view; v, ventral view.

seta situated before apex, inner margin weakly sinuate behind base; valvifer bifid at apex, bisetose at the inner tip.

Length: 11.7–12.5 mm. Width: 4.5–5.1 mm.

Specimens examined: ♀ (holotype), Java (preserved in the Oberösterreichisches Landesmuseum); 4♂♂, 1♀, Wonosovo (750 m.), Central Java, 4–5. III. 1927, Y. RENSCH leg.; 1♂, 1♀, Java, BURMEISTER leg.; 1♂, Java.

The present species is peculiar in having the male mid tarsi not wide and without any adhesive hairs and the pronotum quite rounded at basal angles.

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