

Order UROPYGI.

At once recognizable from the Scorpions, to which the larger species present considerable superficial resemblance, by the presence of a deep constriction between the cephalothorax and abdomen, by the absence of pectines or combs on the sternal area and of poison-glands in the postanal skeletal piece.

Cephalothorax longer than wide, the carapace sometimes segmented posteriorly: the ventral surface narrow and furnished with two or three sternal plates (fig. 31, p. 103)—an anterior or *prosternum*, broad in front and narrowed behind, lying behind the coxæ of the chelæ and separating the bases of the anterior legs; a posterior or *metasternum* which lies between the coxæ of the 4th pair of legs; and sometimes a minute *mesosternum* between the coxæ of the 3rd legs. *Mandibles* chelate, consisting of two segments. *Chelæ* large and prehensile; the segments named as follows from base to tip: *coxa, trochanter, femur, tibia, hand, finger*; the coxæ united in the middle line and furnished in front with a pointed *maxillary process*. *Legs* of 1st pair long, slender, and antenniform, consisting of six segments: *coxa, trochanter, femur, patella, tibia, and tarsus*; the tarsus subdivided into 8 or 9 segments, the basal of which is very short. The rest of the legs ambulatory in function, and consisting of 7 segments named as above with the addition of a *protarsus* which precedes the three-jointed tarsus; the tarsus bearing three claws; coxæ of 2nd and 3rd legs not widely separated in the middle line of the sternal area. *Abdomen* consisting of 12 somites, represented by tergal and sternal plates, but the sternum of the 1st wholly or partially obliterated, at most forming a strengthening skeletal piece on the underside of the waist, and in systematic descriptions not taken into account, the sternum of the 2nd somite being termed the 1st abdominal sternum. *Generative organs* opening in the middle line behind the sternum of the 2nd somite, which is often much modified. Last three somites annuliform or cylindrical, forming a movable stalk for the postanal skeletal piece, which consists of a single segment or has the form of a many-jointed caudal flagellum or filament. The unmodified terga and sterna impressed with a pair of muscular scars or *sigilla*.

The two suborders into which the genera of this Order are classified may be briefly diagnosed as follows:—

- a. Carapace unsegmented; last segment of abdomen bearing a long jointed flagellum UROTRICHA.
- b. Carapace segmented; last segment of abdomen bearing a short unjointed skeletal piece TARTARIDES.

Suborder *UROTRICHA*.*

Carapace unsegmented, furnished at its fore extremity with a pair of median eyes set close together and with a cluster of 3 lateral eyes on each side, some distance behind the medians. *Chela* folding in a horizontal plane; the coxa short, the tibia armed with a long inwardly directed spine or *apophysis*, against which the hand closes; hand with a corresponding apophysis, the *immovable*

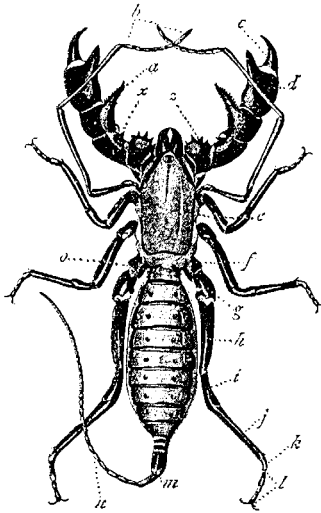


Fig. 39.—*Thelyphonus indicus*, ♂.

c, carapace; *o*, first tergum of abdomen; *m*, ommatoid or last segment of abdomen; *n*, caudal flagellum; *z*, trochanter; *x*, femur; *a*, tibial apophysis; *d*, hand; *c*, movable finger of chela; *b*, tarsal segments of 1st leg; *f*, coxa; *g*, trochanter; *h*, femur; *i*, patella; *j*, tibia; *k*, protarsus; *l*, tarsus of 4th leg.

finger, which forms with the movable finger a complete pincer; claw fused with extremity of movable finger. 1st leg with tarsus consisting of 9 segments; 2nd leg with coxa unarmed; 2nd, 3rd, and 4th legs with tibia long and protarsus very short, the extremity of the tibia often armed on the underside with a slender spine, the *tibial spine*. Postanal skeletal piece consisting

* I here restore for this group the very appropriate name which was given to it by C. Koch. Thorell applied to it the term *Oxopoci*, or "acid-makers," in allusion to the defensive pungent secretion the animals emit when handled. In ordinary phraseology these animals are known as "Whip-Scorpions."

of a long, hairy, many-jointed feeler or *flagellum*. Last abdominal segment in all the Indian species bearing at the base of the flagellum a pair of yellow spots, the *ommatoids*. *Respiratory organs* in the form of two pairs of pulmonary sacs, the first pair opening behind the 1st abdominal sternum in a line with the generative orifice, the second pair behind the 2nd sternum.

Sexual characters.—Adult males differ from the females and young males in having the chelæ longer and thicker, or otherwise modified, and the 1st abdominal sternum considerably inflated.

Habits. Whip-Scorpions are found in damp places beneath stones or pieces of wood, in the crannies of rocks or of termites' nests, or other crevices where shelter from light and protection from the rays of the sun are obtainable. Some of the species excavate burrows for the protection of themselves and their young. The young are hatched from eggs, which the female previously carries about enswathed in a glutinous membrane and attached to the lower side of the abdomen.

Distribution. Oriental Region from India and Ceylon to the Fiji Islands and New Hebrides, and extending northwards into China and Southern Japan; Neotropical Region from Brazil northwards into the Southern States of North America. Absent from Africa, Madagascar, Australia, and New Zealand.

In the following descriptions the chelæ are regarded as extending forwards in a direction parallel to the long axis of the body. The total measurement is taken from the front end of the head to the base of the caudal filament.

Family THELYPHONIDÆ.

Characters of the suborder.

Synopsis of Indian Genera.

- | | | |
|------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------|
| a. | Carapace with a sharp keel running forwards on each side of the head in front of the lateral eyes; ocular tubercle high. | |
| a ¹ . | Maxillary process of coxa of chela armed on its inner edge with a strong sharp spiniform tooth | UROPROCTUS, p. 106. |
| b ¹ . | Maxillary process of coxa of chela not armed with a tooth on the inner side . . | THELYPHONUS, p. 103. |
| b. | Carapace without a keel running forward from the lateral eye on each side of the head; ocular tubercle low. | |
| a ² . | Maxillary process of coxa of chela with a strong sharp tooth on its inner margin. | LABOCHIRUS, p. 107. |
| b ² . | Maxillary process of coxa of chela unarmed internally | HYPOTONUS, p. 111. |

Genus THELYPHONUS, Latr.

Thelyphonus, *Latreille, Hist. Nat. Crust. Ins.* iii, p. 47, 1802, in part; also of *Lucas, Koch, Butler, Stoliczka, etc.* (in part).
Thelyphonus (emend.), *Pocock, A. M. N. H.* (6) xiv, p. 121, 1894;
Kruepelin, Abh. Ver. Hamb. xv, p. 19, 1897; *id. Terr., Scorp.*
etc. p. 212, 1899.

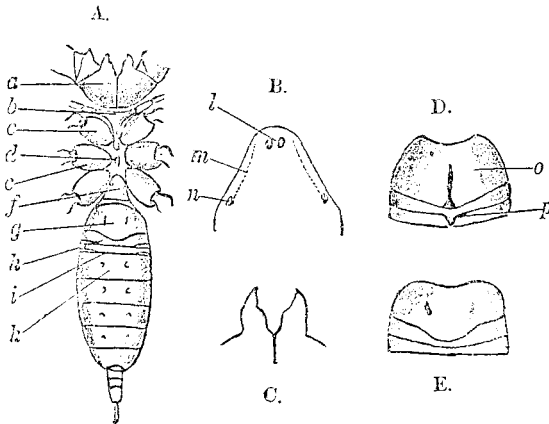


Fig. 31.—*Thelyphonus indicus*.

- A. Lower side of cephalothorax and abdomen, ♀. *a*, coxa of chela; *b*, prosternal plate; *c*, coxa of 2nd leg; *d*, mesosternal plate; *e*, coxa of 3rd leg; *f*, metasternal plate; *g*, first sternum, *h*, second sternum, *i*, third sternum, *k*, fourth sternum, showing muscular sigilla, of abdomen.
 B. Anterior extremity of carapace: *l*, median, *n*, lateral eyes; *m*, crest.
 C. Maxillary processes of chela.
 D. Lower side of anterior end of abdomen of ♂: *o*, first sternum; *p*, tooth on second sternum.
 E. Lower side of anterior end of abdomen of ♀.

Carapace with granular crest, running forwards from the lateral eyes on each side; median eyes situated one on each side of a high distinct ocular tubercle; maxillary process of chelæ not toothed internally. *Chelæ* in ♂ thicker but not much longer than in ♀; the tibial apophysis of the same form in both sexes, with toothed edges and terminating in a sharp point. First abdominal sternal plate in ♂ with deep median groove; 2nd with median tooth-like spine.

Type, *T. caudatus* (Linn.). Java.

Distribution. Ceylon and S. India; Burma, thence eastwards to the Philippine Islands, and over the whole of the Indo- and Austro-Malayan area as far as the Solomon Islands.

*Synopsis of Indian Species and Subspecies.**Females.*

- a.* First abdominal sternum with posterior border truncate: maxillary process of chela not shouldered *T. schuchagenii*, [p. 105.]
- b.* First abdominal sternum with posterior border mesially produced and convexly rounded; maxillary process shouldered.
- a*¹. Abdominal sterna with distinct raised median line *T. cristatus*, p. 105.
- b*¹. Abdominal sterna without raised median line.
- a*². Legs dark, as dark as body, pale reddish only at extremities *T. sepiaris*, typical [form, p. 104.]
- b*². Legs uniformly red, much paler than body. Subspecies *indicus* [& *muricola*, p. 105.]

Males.

- a.* Abdominal sterna smooth and polished, only minutely punctulate and obsoletely striate *sepiaris*, subspecies
- b.* Abdominal sterna (except the anterior) coarsely rugose and subgranular throughout. [*muricola*, p. 105.]
- a*¹. Legs dark brown, pale at the extremities. *sepiaris*, typical [form, p. 104.]
- b*¹. Legs uniformly red *sepiaris*, subspecies [*indicus*, p. 105.]

86. *Thelyphonus sepiaris*, *Butler, Cist. Ent. i*, p. 131, ♂ (May 1, 1873); *Pocock, A. M. N. H.* (6) xiv, p. 122, 1894; *Kraep. Abh. Ver. Hamb.* xv, p. 35, 1897; *id. Tierr., Scorp. etc.* p. 223, 1899: *nigrescens*, *Butler, Cist. Ent. i*, p. 131, 1873 (♀).

Colour black or blackish brown above and on chelæ, reddish brown below; legs black, with the tibiæ and tarsi deep red-brown. *Carapace* and *terga* coarsely rugose, with close-set punctures and granules, a smooth paler median line present on 2nd and 3rd and just traceable on posterior terga. First *sternum* shining, sparsely punctured and striate, granular marginally; the rest coarsely rugose, without traceable median line. *Chelæ*: maxillary process of *coxa* internally shouldered; femur and tibia granular below, polished and punctured above; trochanter granular above, armed below with 2 teeth (rarely 1), and with 5-6 above; femur with 1-2 small tubercles above and 1 below; tibial apophysis armed in front with 6 or more teeth and behind with about 3; hand thicker than tibia, its inner edge denticulate, granular internally; movable finger with anguliform subapical tooth. *Legs* of 2nd, 3rd, and 4th pairs with tibial spine. *Caudal flagellum* hairy.

♀. Differing from ♂ in having the *sterna* smooth, punctured, and scratched with transverse lines. Teeth on trochanter and femur of *chela* larger; hand narrower than tibia; movable finger without subapical tooth. Tarsal segments of 1st *leg* unmodified. First abdominal *sternum* with its posterior border strongly and convexly produced.

Length of body up to about 40 mm.

Loc. S. India: Madras (*Sale, Jerdon, Boileau*); Ceylon (*Holds-worth*), Jaffna (*Sarasin*); Trincomali (*Yerbury, Green, Barrett, Basset-Smith*); Tenasserim (*Packman*)*.

Subspecies *indicus*, *Stoliczka, J. A. S. B.* xlii, p. 138, t. 12, fig. 5, May 28, 1873 (♂); *Oates, J. A. S. B.* lviii, pt. 2, p. 9, t. ii, figs. 1-6, 1889; *beddomei*, *Stoliczka, J. A. S. B.* xlii, p. 142, t. 12, fig. 6, 1873 (♀).

Both sexes distinguished from the typical form by having the legs entirely red, and contrasting strongly with the black colour of the upper side of the trunk †.

Loc. Southern India: Anaimalai Hills (*Beddome*); Nilgiri Hills (*Daly*); Yercaud in the Shevaroy Hills (*Henderson*); French Rocks, Madras (*Hamilton*).

Subspecies *muricola*, *Pocock, Jour. Bomb. N. H. Soc.* xii, p. 745, 1899.

♀. Like that of *T. sepiaris* subsp. *indicus* in colour of legs and structural characters.

♂. At once recognizable from that of the typical *T. sepiaris* and of *T. sepiaris* subsp. *indicus* by the much greater smoothness of the abdominal sterna, these plates being polished, minutely punctulated, and irregularly transversely striated, the sides only being densely punctured as in the females of *T. sepiaris*.

Loc. S. India: Trivandrum in Travancore (*Ferguson & Sullivan*).

87. *Thelyphonus cristatus*, sp. n.

♀. Colour and general characters, such as spine-armature of tibiae, granulation of terga, etc., as in *T. sepiaris*; considerably smaller than that species; the 4th, 5th, and 6th sterna with distinct elevated median line, and all the sterna more distinctly punctured, the posterior more so than the anterior, the 7th especially being very distinctly punctured throughout. In the chelæ the anterior edge of the upper side of the trochanter is armed with only one strong tooth, the second being quite small.

Total length 26 mm.

Loc. Bengal (*Hardwicke*).

88. *Thelyphonus schnehagenii*, *Kraepelin, Abh. Ver. Hamb.* xv, p. 33, 1897; *id. Terr., Scorp. etc.* p. 222, 1899.

♀. Colour of trunk and limbs reddish brown. *Carapace* and terga rugose, granular; median line showing only on the anterior three terga. Posterior border of 1st abdominal *sternum* transversely truncate, finely and closely punctured, especially at the sides, and furnished also with scattered larger punctures; the

* This locality for the type of *T. nigrescens* is probably erroneous.

† In the case of both subspecies, specimens that have recently moulted have the integument of both body and legs reddish brown.

rest of the sterna also finely and closely punctured, without trace of middle line. *Chela* with coxa smooth, very sparsely punctured; maxillary process not shouldered on its inner edge; trochanter armed as in *T. sepiaris*; femur moderately thickly rugose, with conspicuous spine on the upper edge in front; tibia very sparsely and coarsely punctured, the apophysis with two strong teeth on the outer border towards the tip; hand tolerably thickly and coarsely punctured, with shortly toothed inner edge. Tibia of 4th leg with apical spine. *Caudal filament* nearly naked.

Length 32 mm.

Loc. Burma: Rangoon (*Schmiedgen*).

Genus UROPROCTUS, Pocock.

Uroproctus, Pocock, *A. M. N. H.* (6) xiv, p. 129, 1894; *Kraep. Abh. Ver. Hamb.* xv, p. 40, 1897; *id. Tierr., Scorp. etc.* p. 225, 1899.

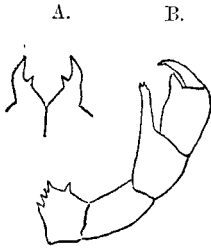


Fig. 32.—*Uroproctus assamensis*.
A. Maxillary processes of chela.
B. Chela of ♂.

Carapace with sharp ridge running forward on each side from the lateral eyes; median ocular tubercle high. *Maxillary process* of coxa of chela armed internally with a strong tooth. 1st abdominal *sternum* in ♂ without median groove; 2nd scarcely toothed in the middle of its hinder border. *Chela* in male larger than in female; tibial apophysis different in the two sexes.

Type, *U. assamensis* (Stoliczka).

Distribution. Hilly region of Assam and North-eastern Bengal.

89. *Uroproctus assamensis*, *Stoliczka, J. A. S. B.* xxxviii, pt. 2, p. 205, t. 19, fig. 1, 1869; *id. op. cit.* xlii, pt. 2, p. 133, t. 12, fig. 2, 1873; *Oates, op. cit.* lviii, pt. 2, p. 8, pl. ii, fig. 13, 1889 (*Thelyphonus*); *Pocock, A. M. N. H.* (6) xiv, p. 129, 1894; *Kraep. Abh. Ver. Hamb.* xv, p. 40, 1897; *id. Tierr., Scorp. etc.* p. 226, 1899 (*Uroproctus*): *scabrinus*, *Stoliczka, op. cit.* xlii, pt. 2, p. 130, t. 12, fig. 1, 1873; *angustus*, *Stoliczka, op. cit.* p. 134, t. 12, fig. 3 (in part; not *angustus*, Lucas): *rufimanus*, *Butler, A. M. N. H.* (4) x, p. 202, 1872 (nec *rufimanus*, Lucas), ♀: *proscorpio, id. ibid.* (nec *proscorpio*, Latreille), ♀: *psittacinus, id. Cist. Ent.* i, p. 129, 1873, ♂ (*Thelyphonus*).

♂. *Colour* black, especially on carapace and chela, extremities of legs reddish brown, underside of cephalothorax and abdomen rich mahogany-brown; in recently moulted specimens the whole colour is much redder. Upper side of *body* roughened with sculpturing of close-set punctures and studded with granules. First abdominal *sternum* coarsely punctured and transversely grooved, with posterior border widely rounded in the middle,

depressed posteriorly, and bearing a pair of marginal impressions; middle of 2nd sternum pale, transversely grooved, with small median tubercle; the rest of the sterna polished, punctured. *Chelæ* with coxa coarsely punctured; trochanter granular, armed below with a bifid tooth and above with 4 internal and 1 anterior tooth; femur and tibia coarsely granular above, below and externally, each armed below on the inner side with a tooth; tibia considerably thicker than femur; the apophysis long and slender, its hinder border straight, unarmed, its anterior border also nearly straight, depressed towards the extremity, which is acute and armed here and at the base with close-set teeth; hand smoother than tibia, toothed below; immovable finger short; movable finger longer, curved.

♀ with *chelæ* shorter and not distally incrassate, the hand narrower than the tibia and not wider than the femur; tibial apophysis of normal form, its anterior edge lightly convex and serrate throughout its length, posterior edge also armed with three teeth, the two edges tapering gradually to a sharp point. First abdominal *sternum* coarsely punctured in the middle and furnished with a pair of shallow impressions; 2nd not mesially grooved and not furnished with a small tubercle.

Total length up to 55 mm.

Loc. North-eastern India: Assam, Sylhet (*Stainsforth, Bowring, Austen, Cambridge*); Khási Hills, Sadiya (*Godwin-Austen*); Caehar.

Genus LABOCHIRUS, Pocock.

Labochirus, Pocock, *A. M. N. II.* (6) xiv, p. 132, 1894; *Kraep. Abh. Ver. Hamb.* xv, p. 42, 1897; *id. Tierr., Scorp. etc.* p. 227, 1899.

Carapace with area between median and lateral eyes not crested, rounded and sloped to the inferior edge; median ocular tubercle low. *Maxillary process* armed with a strong spiniform tooth on its inner edge. *Female* with carapace weakly beaked in front; first abdominal sternum not inflated; *chelæ* short, normal, the maxillary process short; tibial apophysis short, subtriangular, and strongly denticulated on both edges. *Male* with carapace strongly beaked in front; first abdominal sternum swollen; *chelæ* very long, maxillary process slender and long, but very variable in length; tibial apophysis modified, not subtriangular, and at most denticulated at the tip.

Type, *L. proboscideus*, Butler.

Distribution. Ceylon and the Malabar coast of South India.

Synopsis of Indian Species.

Females.

- a. First abdominal sternum with broad median longitudinal depression, and a low ridge on each side in front. *L. proboscideus*, p. 108.

- b.* First abdominal sternum with a narrow median depression and without ridges.
- a*¹. Lateral pits on first abdominal sternum deep and nearer the border *L. cervinus*, p. 110.
- b*¹. Lateral pits on first abdominal sternum shallow and further from the border *L. tauricornis*, p. 109.

Males.

- a.* Upper side of hand with wide depression; tibia of chela with inferior anguliform prominence *L. proboscideus*, p. 108.
- b.* Upper side of hand not depressed; tibia of chela without inferior prominence.
- a*². Anterior edge of tibial apophysis concave at base; inner edge of hand with scarce a trace of prominence *L. cervinus*, p. 110.
- b*². Anterior edge of tibial apophysis straight at base; inner edge of hand with distinct anguliform prominence *L. tauricornis*, p. 109.

90. *Labochirus proboscideus*, *Butler, A. M. N. H.* (4) x, p. 203, pl. xiii, fig. 3, 1872 (♂); *Karsch, Berl. ent. Zeits.* xxxvi, p. 305 (Thelyphonus); *Turnani, Horæ Soc. Ent. Ross.* xxiv, p. 533, pl. iii, fig. 9 b, 1890 (Hypoctonus); *Pocock, A. M. N. H.* (6), xiv, p. 132, 1894; *Kraep. Abh. Ver. Hamb.* xv, p. 42, pl. ii, fig. 43, 1897; *id. Tierr., Scorp. etc.* p. 227, 1899 (*Labochirus*): *parvimanus*, *Butler, Cist. Ent.* i, p. 130, fig. 3, 1873, ♀ (Thelyphonus).

♂. *Colour* black or deep brown above, shining mahogany-red

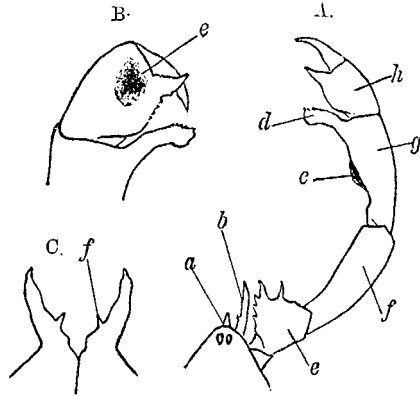


Fig. 33.—*Labochirus proboscideus*. ♂.

- A. Anterior end of carapace and chela: *a*, rostrum; *b*, maxillary process; *e*, trochanter; *f*, femur; *g*, tibia; *h*, hand; *d*, tibial apophysis; *c*, prominence on lower side of tibia.
- B. Extremity of tibia and hand: *e*, depression on upper side of hand.
- C. Maxillary processes: *f*, spiniform tooth.

below; legs with femora and at least patellæ black or dark brown, distal segments paler, tarsi yellow. *Carapace* and terga coarsely rugose, carapace smoother in front of the eyes. First abdominal sternum almost smooth, sparsely punctured in the middle and

posteriorly, thickly at the sides, lightly biimpressed, its posterior border produced and widely convex in the middle; 2nd with spiniform tooth; most of the sterna nearly smooth in the middle, finely punctured; punctures becoming more numerous and close-set at the sides. *Chelæ* with coxa almost smooth, weakly punctured and striate anteriorly; *trochanter* granular, armed below with two teeth in front, and above with four internal teeth, whereof the apical is the longest, and one long anterior tooth; *femur* long, subcylindrical, more than twice as long as wide, granular below and internally, smooth and very faintly punctulate above, with a single inferior tooth; *tibia* thicker than femur, coarsely granular within, rugulose elsewhere, with a distinct anguliform prominence near the base of its lower edge in front; the apophysis not smooth, posterior border lightly concave, apex rounded and armed above with a long spike; anterior edge sinuous, convex distally and proximally, concave in the middle, and armed distally with a row of about six small close-set teeth; *hand* smooth above, with the inner edge strongly angled at base, lightly concave and toothed distally; upper side with wide subgranular depression; movable finger strongly curved, with a long, nearly straight tip. 2nd and 3rd *legs* without tibial spine.

♀. First abdominal *sternum* with wide, central depression which is bordered on each side by a low tuberculiform prominence, coarsely punctured and black behind these prominences. *Chelæ* with femur less granular, not much longer than wide; hand and tibia normal, smoother; inner edge of hand with a single tooth; two teeth on the posterior edge of the tibial apophysis behind the tip; anterior edge lightly convex and toothed throughout; movable finger evenly curved from base to tip.

Length up to about 32 mm.

Loc. Ceylon (*Templeton, Barnes, Layard, Jameson*); Malale (*Braine*), Kandy (*Green*).

91. *Labochirus tauricornis*, *Pocock, A. M. N. H.* (7) v, p. 295, 1900 = *L. cervinus (errore)*, *Pocock, Jour. Bom. N. H. Soc.* xii, p. 745, 1899.

♂. Resembling the preceding species in *colour* and most structural features, but with the abdominal *sterna* closely and finely, but very distinctly granular around the impressions and between them and the border. Easily recognizable also by the different form of the *chela*: tibia without any basal anguliform prominence below the apophysis; the latter much less strongly curved downwards, its posterior edge straight, smooth, and continued without curvature to the apex, which is acutely angular and furnished with one long tooth, and sometimes two smaller ones as well, anterior edge straight and finely serrate at the base, then strongly convex and obliquely cut away down to the apex; hand without impression at base of immovable finger, inner edge with basal constriction much shallower, and anguliform prominence much smaller than in *L. proboscideus*; movable finger evenly curved throughout its length as in *L. proboscideus* ♀, not with the apex slightly bent forwards as in the ♂ of that species.

♀. Differing from that of *L. proboscideus* in having the first abdominal *sternum* marked with a very shallow median impression in its hinder half and a pair of still shallower impressions, one on each side anteriorly, the two ridges or prominences being absent; also much less black in the posterior half; the rest of the sterna

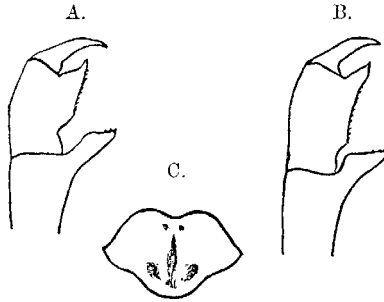


Fig. 34.

- A. *Labochirus tauricornis*. Extremity of chela of ♂.
 B. *Labochirus cervinus*. Extremity of chela of ♂.
 C. " " First sternum of abdomen.

punctulate as in the ♂, but the punctulation spreading more inwards, so that on the 4th, 5th, and 6th sterna there is only a very narrow median smooth area, while the 7th and 8th are entirely covered with very visible punctulation.

Total length about 30 mm.

Loc. Kanara, on the Malabar coast (*Bell*).

92. *Labochirus cervinus*, *Pocock, Jour. Bom. N. H. Soc.* xii, p. 745, 1899.

♂. Allied to *L. tauricornis*, but differing in the form of the *chela*. The tibial apophysis is strongly curved downwards in its distal half, much more strongly so than in *L. proboscideus*, being bent nearly at right angles; viewed from above its posterior border appears to be straight, while its anterior border is concave at the base, strongly convex in the middle; from the median convexity the border slopes straight away down to the apex, which is armed with three teeth and is in the same straight line as the posterior border; inner edge of hand evenly concave but scarcely serrate, with shallower basal constriction than in *L. tauricornis*, armed with one or two small basal teeth, but with scarcely a trace of any anguliform prominences. First abdominal *sternum* more swollen than in *L. tauricornis*. In ♀ the 1st abdominal sternum is much larger than in either of the other species, being more tumid and marked with a pair of deeper impressions, one on each side, near its posterior border, but showing scarcely a trace of median impression.

Length up to about 30 mm.

Loc. Mangalore on the Malabar coast (*Battie*).

Genus **HYPOCTONUS**, Thorell.

Hypoctonus, Thorell, *Ann. Mus. Genova*, xxvi, p. 360, 1888; *id.* *Ann. Mus. Genova*, xxvii, p. 542, 1889; Pocock, *A. M. N. II.* (6) xiv, p. 120, 1894; Kraepelin, *Abh. Ver. Hamb.* xv, p. 43, 1897; *id.* *Tierr., Scorp. etc.* p. 228, 1899.

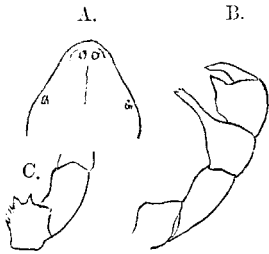


Fig. 35.—A. *Hypoctonus formosus*, anterior end of carapace. B. Ditto, chela of ♂. C. *H. outrosii*, trochanter and femur of chela of ♂.

Resembling *Labochirus* in the absence of crests between the median and lateral eyes on the carapace, but differing in the absence of a spiniform tooth on the inner border of the maxillary processes and in the male sexual characters. *Female* with first abdominal sternum not inflated; chelæ normal, short, not incrassate, the trochanter armed above on its inner side with 5 strong spiniform teeth, the tibial apophysis subtriangular and strongly serrate along both edges. *Male* with first abdominal sternum inflated, without median groove; chelæ long or incrassate; trochanter less strongly, often obsolete toothed; tibial apophysis modified, variable in form, furnished with inferior apical lobe, its edges not evenly serrate.

Type, *H. formosus*, Butler.

Distribution. Assam, Burma, Yunnan, Borneo.

*Synopsis of Indian Species.**Females.*

- | | |
|--------------------------------------------------------------------------------------------------------|-------------------------------|
| a. First abdominal sternum with its posterior border widely rounded, not mesially produced. | <i>H. binghami</i> , p. 113. |
| b. First abdominal sternum with its posterior border mesially produced. | |
| a ¹ . First abdominal sternum with a single median pit or a pair of small adjacent pits. | <i>H. formosus</i> , p. 116. |
| b ¹ . First abdominal sternum marked with a pair of large pits. | |
| a ² . Pits on first abdominal sternum sub-circular; all the legs red | <i>H. woodnasoni</i> , |
| b ² . Pits on first abdominal sternum sub-crescentic; at least the first pair of legs dark. | [p. 113. |
| a ³ . Legs of 2nd, 3rd, and 4th pairs entirely red | <i>H. saxatilis</i> , p. 115. |
| b ³ . Legs of 2nd, 3rd, and 4th pairs with femora and patellæ deep brown. | <i>H. rangunensis</i> , |
| | [p. 116. |

Males.

- a.* Inner edge of hand with deep semicircular excavation (also as under *b*¹) *H. woodmasoni*,
[p. 113.]
- b.* Inner edge of hand without deep semicircular excavation.
- a*¹. Chelæ long, but little incrassate; trochanter armed with five strong teeth.
- a*². Hand with some granules above; legs entirely red *H. binghami*, p. 113.
- b*². Hand quite smooth above; legs not entirely red *H. oatesii*, p. 112.
- b*¹. Chelæ shorter, strongly incrassate; trochanter not or only weakly toothed above.
- a*¹. Tibial apophysis with an abrupt distal expansion which fits into an excavation behind the base of the immovable finger.
- a*¹. Apical fourth of apophysis suddenly and quadrately expanded *H. andersoni*, p. 117.
- b*¹. Extremity of apophysis gradually expanded, the expansion with rounded anterior edge.
- a*¹. Legs of 2nd, 3rd, and 4th pairs with femora and patellæ dark *H. sylvaticus*, p. 115.
- b*¹. Legs of 2nd, 3rd, and 4th pairs wholly red *H. saratilis*, p. 115.
- b*³. Tibial apophysis without or with only a small expansion; inner edge of hand scarcely concave at base of finger.
- a*¹. 1st leg and femora and patellæ of 2nd, 3rd, and 4th legs dark *H. rangunensis*,
[p. 116.]
- b*⁶. 2nd, 3rd, and 4th legs wholly red, 1st leg only slightly darker *H. formosus*, p. 116.

93. *Hypoctonus oatesii*, sp. n.

♂. *Colour.* Chelæ and upper side of body black; coxæ, middle of lower side of abdomen, 1st leg, tibiæ, tarsi, and lower side of trochanter of 2nd, 3rd, and 4th legs a rich mahogany-red; femora, patellæ, and upper side of trochanter of 2nd, 3rd, and 4th legs blackish brown. Upper side of *body* densely rugose and granular, anterior end of the carapace smoother. First abdominal *sternum* almost entirely smooth, weakly punctured and striolate in the middle, depressed posteriorly; 1st, 2nd, and 3rd sterna coarsely sculptured at sides; rest of the sterna nearly smooth. *Chelæ* with coxa nearly smooth; *trochanter* weakly granular above and below, armed above with 5 strong teeth; *femur* longish, the middle of its upper surface exceeding the width of the anterior edge of the trochanter, coarsely pitted and granular above and below, and armed with a strong anterior tooth below; *tibia* smooth and sparsely punctured externally, more coarsely pitted and sparsely granular below and above, with a few denticuliform granules on its inner edge; *apophysis* much shorter than tibia, its posterior edge straight and

smooth, its anterior edge also smooth, concave in its basal, convex in its distal half, forming an \sim -like curvature, the apex truncated and armed with one inferior and one median tooth; *hand* considerably longer than wide, smooth and sparsely punctured above and externally, granular internally, the inner edge with a sharp constriction in its basal half, the margin from the tip of the finger down to the constriction lightly concave and denticulate throughout its length; movable finger evenly curved. *Legs* of 3rd and 4th pairs with spine at apex of tibia. *Ommatoids* separated by a space which about equals their diameter.

Total length 27 mm.

Loc. Sylhet.

94. *Hypoctonus binghami*, *Oates, J. A. S. B.* lviii, p. 15, 1889 (*Thelyphonus*); *Kraep. Abh. Verh. Hamb.* xv, p. 47, fig. 50, 1897; *id. Tierr., Scorp. etc.* p. 230, 1899 (*Hypoctonus*); *formosus*, *Simon, J. A. S. B.* lvi, p. 111, 1887; *Pocock, Journ. Linn. Soc., Zool.* xxiv, p. 316, 1892 (nec *formosus*, Butler).

♂. *Colour* of upper side of body black; chela black or deep brown, redder at the extremity; lower surface yellowish red or reddish brown; legs entirely pale red; caudal flagellum red. Sculpturing of upper side of *body* much as in *H. oatesii*. Abdominal *sterna* finely punctulate. *Chela* with trochanter armed as in *H. oatesii*, but the spines not so strong; femur granular, long, nearly twice as long above as the anterior edge of the trochanter; tibia granular, its inner edge and basal half of apophysis granularly denticulate; apophysis much shorter than tibia, its posterior border practically straight, its anterior border shallowly and evenly concave, the extremity a little thickened, convex anteriorly and bidentate; *hand* dull, punctulate, with some large granules at the base of the immovable finger, its inner edge denticulated, convex, base of immovable finger shallowly concave. *Ommatoids* large, less than their diameter apart.

♀. First *sternal plate* of abdomen swollen in the middle, marked with three shallow impressions, its posterior border widely rounded and not mesially produced (fig. 36 F, p. 114). *Chelae* short; upper side of humerus more weakly granular than in male, of tibia and hand not granular, sparsely punctured; tibial apophysis triangularly spiniform, evenly narrowed to a point, its posterior side armed with two subapical spinules, and one spinule followed by shorter denticuliform granules at its base on the tibia; its anterior edge denticulate throughout; inner edge of hand much straighter than in ♂.

Total length about 30 mm.

Loc. Tenasserim: Tavoy (*Moti Ram*); Reef Island, at the mouth of the Tavoy River (*Oates*); Owen Island in the Mergui Archipelago (*Anderson*).

95. *Hypoctonus woodmasoni*, *Oates, J. A. S. B.* lviii, pt. 2, p. 12, pl. ii, fig. 10, 1889; *Kraep. Abh. Verh. Hamb.* xv, p. 46, fig. 45, 1897; *id. Tierr., Scorp. etc.* p. 230, fig. 80, 1899 (*Hypoctonus*).

♂. *Colour* black above and on chela; legs and sterna red.

Sculpturing of upper side practically as in *H. oatesii*. *Sterna* also as in that species, but with the punctures a little more numerous. *Chelæ* with the spines on the lower side of the trochanter and femur much smaller; upper side of trochanter smooth, at most obsolete spined, its anterior border straight; femur about as long above as anterior edge of trochanter, rather coarsely granular and punctured below, a few spines also on its upper inner edge, otherwise smooth, sparingly punctured; tibia with a few granules below and internally, smooth and punctured elsewhere; apophysis long and slender, almost as long as upper side of tibia, and reaching almost to tip of fingers, its posterior edge

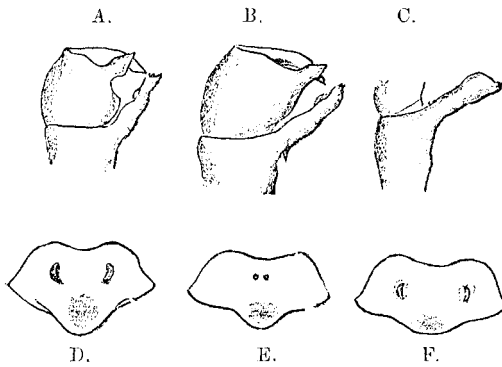


Fig. 36.

- A. *Hypoconus woodmasoni*, extremity of chela of ♂. B. *H. savatilis*, ditto.
 C. *H. andersoni*, tibial apophysis. D. *H. ranguncensis*, first abdominal sternum of ♀. E. *H. formosus*, ditto. F. *H. binghami*, ditto.

straight and unarmed, its apex truncate and bidentate, the anterior border lightly concave in its basal and distal portions, lightly convex submesially, and armed with four denticles; hand wide, as wide as long, strongly convex and smooth above; a deep semicircular excision on its inner edge and on the base of the finger, the area behind the excision produced into a weakly denticulate rectangular prominence: immovable finger much narrower at base than in the middle. *Ommatoids* small, more than their diameter apart.

♀. Very like the female of *H. binghami*, but with the ommatoids small, more than a diameter apart; the lower side of the femur of the chela more numerous granular and punctured as well, the upper side of the trochanter without granules; the 1st abdominal sternum not widely rounded behind, but with its posterior border strongly produced into a large subquadrate lobe; the anterior half of the plate marked with a pair of subcircular pits, separated from each other by a space which distinctly exceeds their diameter.

Length up to about 27 mm.

Loc. Tenasserim, near Mount Mooleyit.

96. *Hypoctonus saxatilis*, *Oates, J. A. S. B.* lviii, p. 17, 1889 (Thelyphonus); *Kraep. Abh. Ver. Hamb.* xv, p. 49, 1897; *id. Tierr., Scorp. etc.* p. 232, 1899 (Hypoctonus).

♂. Resembling *H. woodmasoni* in colour, except that the legs of the first pair are dark, the tarsi alone being yellowish red, and the last abdominal sternum and the underside of the three caudal segments are also deep blackish brown in the adult. Granulation of upper side as in preceding species; *sterna* much more distinctly punctured: the 1st with the two shallow impressions deeper than in *H. woodmasoni* and transversely striate. Trochanter of *chela* weakly granular above as in *H. binghami*, obsoletely toothed as in *H. woodmasoni*; femur, tibia, and hand sculptured, and tibial apophysis as long as in the latter; posterior edge of apophysis quite smooth and straight until reaching the extremity, where it is slightly swollen and convex; anterior edge straight in the basal two-thirds of its length, and furnished with about seven small denticles, the distal third inflated but becoming narrower again at the extremity, which is truncate and scarcely toothed; hand more strongly depressed at the base of the immovable finger than in *H. woodmasoni*, its inner edge evenly convex from base of finger backwards and armed with small denticles in its distal half; immovable finger straight or lightly concave basally, convex distally.

♀. Closely allied to that of *H. woodmasoni*, but with anterior legs black, trochanter and femur of *chela* more granular above, and the two impressions on the first abdominal sternum longer, not circular but half-moon shaped or subrescencic.

Total length up to about 31 mm., ♀: 25, ♂.

Loc. Upper Burma: Thayetmyo (*Macdonald*).

97. *Hypoctonus sylvaticus*, *Oates, J. A. S. B.* lviii, p. 18, 1889 (Thelyphonus); *rangunensis*, var. *sylvaticus*, *Kraep. Abh. Ver. Hamb.* xv, p. 49, 1897; *id. Tierr., Scorp. etc.* p. 232, 1899 (Hypoctonus).

♂. Colouring as in *H. saxatilis*, with anterior legs dark, but with the upper and outer sides of the femora and trochanters of the 2nd, 3rd, and 4th legs brown as in *H. oatesii*. *Chelae* with upper and under side of femur scarcely granular, only punctured; tibial apophysis shaped somewhat as in *H. saxatilis*, but with the anterior edge of the basal half with only about two small denticles, and the apical expansion much larger and involving more than the distal third of the apophysis, its thickness equal to twice the thickness of the portion immediately behind it; inner edge of hand with a much more strongly and less widely-rounded prominence in the middle of its length, and a much stronger concavity at and behind the base of the immovable finger, the external edge of which has a more strongly pronounced sigmoid curvature. In the form of the inner edge of the hand, *H. sylvaticus* lies nearly midway between

H. saxatilis and *H. woodmasoni*; but differs entirely from the latter in possessing the large expansion at the distal end of the tibial apophysis. Total length 23 mm.

Loc. Burma: Zigon and Minbla in the Tharrawaddy district (*Oates*).

98. *Hypoctonus rangunensis*. *Oates, J. A. S. B.* lviii, p. 18, 1889 (*Thelyphonus*); *Kraep. Abh. Ver. Hamb.* xv, p. 46, 1897; *id. Tierr., Scorp. etc.* p. 232, 1899 (*Hypoctonus*).

♂. *Colour* as in *H. sylvaticus*, but in other respects more nearly approaching *H. saxatilis*, the femur of the chela being granular above and below, practically as in that species. *Tibial apophysis* long as in the two species named, but different in shape, the posterior border almost entirely straight, only very slightly sinuous and unarmed; anterior border also very nearly straight, only very slightly sinuous, but armed with about half a dozen small denticles, the apex obliquely truncate, tridentate, a slight swelling on the anterior edge of the apophysis just before the apex. Inner edge of *hand* widely but not strongly convex, forming almost a straight line with the outer side of the immovable finger, which is itself almost straight, with scarcely a trace of the sigmoid curvature observable in *H. saxatilis* and *H. sylvaticus*.

♀. Very like that of *H. saxatilis*, but differing in the colour of legs; first abdominal sternum with very nearly the same shaped semilunar impressions.

Total length up to 28 mm.

Loc. Burma: Rangoon and the neighbourhood (*Oates*).

99. *Hypoctonus formosus*. *Butler, A. M. N. II.* (4) x, p. 203, pl. xiii, fig. 4, 1872; *Stoliczka, J. A. S. B.* xlii, p. 137, pl. xii, fig. 4, 1873; *Oates, op. cit.* lviii, p. 14, 1889 (*Thelyphonus*); *Kraep. Abh. Ver. Hamb.* xv, p. 48, 1897; *id. Tierr., Scorp. etc.* p. 231, 1899 (*Hypoctonus*): *angustus*, *Stoliczka, J. A. S. B.* xlii, pt. 2, p. 134, 1873 (in part) (*Thelyphonus*).

♂. *Colour* of legs as in *H. saxatilis*, except that those of the first pair, instead of having the femur, patella, and tibia black, have the patella and tibia a dark brownish red and only slightly darker than the rest of the segments. *Chela* most resembling those of *H. rangunensis*, but the femur very much more thickly and coarsely granular below, even more so than in *H. saxatilis*; spine on lower side of femur noticeably stronger than in *H. rangunensis*, very much stronger than in *H. saxatilis*. *Tibial apophysis* long and slender, straight and parallel-sided, without trace of apical enlargement, with three apical teeth. Inner edge of *hand* much more prominent than in *H. rangunensis*, more like that of *H. saxatilis*, but the prominence more distinctly angular, and not so rounded; immovable finger much broader at the base, almost as broad as long.

♀. First abdominal sternum very different from that of *H. woodmasoni*, *rangunensis*, and *saxatilis*, without any large circular or crescentic pits, but furnished in its anterior half with a pair of small round holes, sometimes sunk in a common depression,

occasionally separated by a very narrow partition which is less broad than the diameter of either hole (fig. 36 E. p. 114).

Length up to about 30 mm., ♀; 25-27, ♂.

Loc. Moulmein (*Oates*): also females of the same or of a closely allied form from Taoo, 4000 feet (*Oates*).

Subspecies *insularis*, *Oates*: *Thelyphonus insularis*, *Oates, J. A. S. B.* lviii, pt. 2, p. 13, pl. ii, figs. 7-8, 1889: *Hypoctonus formosus*, var. *insularis*, *Kraep. Abh. Ver. Hamb.* xv, p. 48, 1897: *id. Terr., Scorp. etc.* p. 231, 1899.

Total length of adult ♂ and ♀, 33-36 mm.

Loc. Double Island in the mouth of the Moulmein River (*Oates*).

Representatives of this form, which was regarded by Mr. Oates as a valid species, were collected in immense numbers in Double Island. Apart from its greater average size, however, there appears to be no constant structural character by which *insularis* may be distinguished from the mainland form *formosus*.

The following species is known to me only from the description given by Mr. Oates, which is here reproduced:—

100. *Hypoctonus andersoni*, *Oates, J. A. S. B.* lviii, pt. 2, p. 11, pl. ii, fig. 12, 1889 (*Thelyphonus*); *Kraep. Abh. Ver. Hamb.* xv, p. 49, 1897; *formosus*, var. *andersoni*, *id. Terr., Scorp. etc.* p. 231, 1899 (*Hypoctonus*).

♂. *Colour* dark red, legs paler red. *Chelæ* smooth, with a very few minute punctures; *coxæ* normal, trochanter with a few obsolete teeth on the anterior and lateral edge, and two strong spines below; femur with a sharp tooth on its lower surface; tibia with an indistinct spine on the lower edge. *Tibial apophysis* (fig. 36 C, p. 114) about the same length as tibia, perfectly cylindrical for three-quarters of its length, suddenly widened out on its terminal quarter to half as wide again as the cylindrical portion and terminating in a single recurved spine. *Hand* feeble, narrower than tibia, interior edge toothed and hairy, exterior edge of the fixed finger serrated; movable finger curved, sharply pointed. *Carapace* densely granular except on the portion between the lateral and central eyes, which is smooth. First abdominal *sternum* in female longer than in male and pointed posteriorly.

Total length about 25 mm.

Loc. Upper Burma: Pudeepyoo Mountain, and the second defile of the Irawadi River (*Anderson*).

Judging from the description and figure of the tibial apophysis, this undoubtedly valid species is allied both to *H. savatilis* and *H. sylvaticus*, but cannot be confounded with either on account of the red colour of the first leg and the quadrate shape of the expansion of the tibial apophysis. It has been provisionally inserted under heading *a*³ in the table on p. 112 with *H. sylvaticus* and *H. savatilis*.

Suborder *TARTARIDES*.*

Tartarides, *O. P. Cambridge, A. M. N. H.* (4) x, p. 410, 1872.

Cephalothorax covered above by two plates—a posterior, smaller, wider than long, representing the dorsal elements of the 5th and 6th somites, which bear the 3rd and 4th pairs of legs; and an anterior, much longer than wide, representing the dorsal elements of the anterior four somites. *Eyes* sometimes absent, at most represented by a single pale spot or ocellus on each side. *Chelæ* or *palpi* sub-prehensile, sub-pediform, not chelate, folding in a vertical plane; 4th segment (*tibia*) without spiniform apophysis, 5th segment long, cylindrical; 6th segment (*tarsus*) shorter, conical, armed

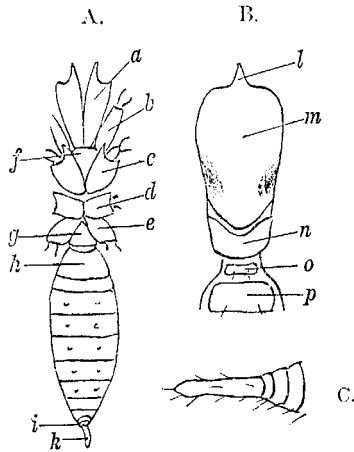


Fig. 37.—*Schizomus crassicaudatus*.

- A. Lower side of cephalothorax and abdomen. *a*, coxa of chela; *b*, of first leg; *c*, of second leg; *d*, of third leg; *e*, of fourth leg; *f*, prosternum; *g*, metasternum; *h*, first sternum, *i*, last sternum of abdomen; *k*, caudal sclerite.
- B. Carapace and anterior end of abdomen. *m*, anterior plate of carapace; *n*, posterior plate; *l*, rostrum; *o*, first, *p*, second tergum of abdomen.
- C. Posterior end of abdomen.

with a pair of spiniform processes; claw long, not fused to tarsus. *Legs*: 2nd with its tarsus 8-segmented, 2nd segment very long, more than half the length of the succeeding six; coxa of 2nd leg armed in front with a long spiniform process; femur of 4th leg very thick; 6th segment (*protarsus*) of 2nd, 3rd, and 4th legs subequal to the 5th (*tibia*) or at all events not much shorter. *Abdomen* with its postanal sclerite short and unsegmented. No distinct pulmonary apertures behind the 1st and 2nd sterna.

* Proposed as a family-name by Cambridge, and elevated to the rank of a tribe by Thorell (*Ann. Mus. Genova*, xxvi, p. 358).

Sexual characters. Males, where known, differing from females in having the postanal sclerite expanded and spatulate in its distal half, this organ in the females being unexpanded and subcylindrical; chelæ in male also frequently larger than in the female and armed with spines.

Habits. Occur beneath stones, the debris of leaves, &c.

Distribution. Tropical West Africa; Ceylon, Burma, and the Bismarck Archipelago (New Britain); California; Venezuela. Also introduced with exotic plants into conservatories in Europe.

Further collecting will no doubt fill up the apparent gaps in the distribution, and greatly increase our knowledge of the range of this interesting little group.

Family HUBBARDIIDÆ.

Hubbardiidæ, *Cook, Proc. Ent. Soc. Wash.* iv, p. 249, 1899.
Schizonotidæ, *Thorell, Ann. Mus. Genova*, xxvi, p. 358, 1888.

Characters of the suborder.

The Indian genera may be tabulated as follows:—

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| a. Posterior plate of carapace undivided or at most with a narrow sutural line | SCHIZOMUS, p. 119. |
| b. Posterior plate of carapace consisting of a distinct right and left half, or divided by a narrow pellucid longitudinal area | TRITHYREUS, p. 121. |

Genus SCHIZOMUS, Cook.

Nyctalops, O. P. Cambridge, *A. M. N. H.* (4) x, p. 410, 1872 (nom. præocc.).

Schizonotus, *Thorell, Ann. Mus. Genova*, xxvi, p. 358, 1888; *id. op. cit.* xxvii, p. 554, 1889; *Pocock, A. M. N. H.* (6) xi, p. 4, 1893; *Kraep. Abh. Ver. Hamb.* xv, p. 51, 1897; *id. Tierr. Scorp. etc.* p. 233, 1899 (nom. præocc.).

Schizomus, *Cook, Proc. Ent. Soc. Wash.* iv, p. 249, 1899.

Anterior dorsal plate of *cephalothorax* elongate, broad in front, narrowed behind, its anterior border armed with a long sharp beak-like process the length of which is greater than its basal width; posterior plate not divided into a distinct right and left half separated by a definite pale membranous area, but uniformly pigmented throughout and at most only marked with a very fine median sutural line; no additional sclerites intercalated between this plate and the anterior portion of the carapace. No *eyes*. *Chelæ* of ♂ dentate beneath; caudal sclerite cylindrical at base, its distal half expanded into a heart-shaped plate; *chelæ* of ♀ unarmed beneath; caudal sclerite irregularly cylindrical throughout.

Type. *S. crassicaudatus*, O. P. Cambr.

Distribution. Ceylon.

101. *Schizomus crassicaudatus*, O. P. *Camb. A. M. N. II.* (4) x, p. 411, t. xxii, fig. 1, 1872 (Nycetalops); *Thorell, Ann. Mus. Genova*, xxvi, p. 358, 1888; *Kraep. Abh. Ver. Hamb.* xv, p. 52, figs. 1b & 56a, 1897; *id. Tierr., Scorp. etc.* p. 234, figs. 82-83, 1897 (Schizonotus), ♂.
- S. *tenuicaudatus*, O. P. *Camb. A. M. N. II.* (4) x, p. 412, t. xxii, fig. 2, 1872 (Nycetalops); *Thorell, Ann. Mus. Genova*, xxvi, p. 358, 1888; *Kraep. Abh. Ver. Hamb.* xv, p. 52, 1897; *id. Tierr., Scorp. etc.* p. 234, 1899 (Schizonotus); *Pocock, A. M. N. II.* (6) xi, p. 4, 1893 (Tripeltis), ♀.

♂. *Colour* yellowish brown; carapace darker and duller in hue than the rest of the body. *Carapace* and tergal plates rugulose, covered with squamiform markings; each tergum furnished on its posterior edge with a pair of bristles, one on each side of the posterior margin, the bristles becoming more numerous on the posterior plates. *Sterna* also furnished with symmetrically disposed bristles. *Chela*

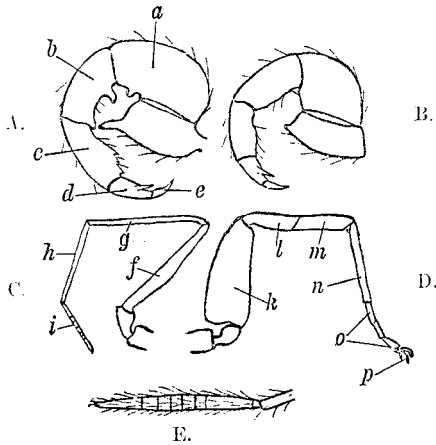


Fig. 38.—*Schizomus crassicaudatus*.

- A. Chela of ♂. a, femur (3rd segment); b, 4th segment; c, tibia (5th segment); d, hand (6th segment); e, claw.
- B. Chela of ♀.
- C. First leg. f, femur; g, patella; h, tibia; i, tarsus.
- D. Fourth leg. k, femur; l, patella; m, tibia; n, protarsus; o, tarsus; p, claws.
- E. Tarsus of 1st leg.

massive, the trochanter long, armed on its inferior distal angle with a strong spiniform process; femur very thick, strongly convex above, armed below with two tubercles; tibia (4th segment) much less massive than the femur, armed at the base below with a large long tooth-like tubercle; 5th segment (= hand of *Thelyphonus*) also elongate, lightly convex above, its lower surface armed with small setiferous tubercles; 6th segment (tarsus = movable finger of *Thelyphonus*) armed with a pair of spiniform processes. 1st leg (not including coxa) not longer than body, its tibia reaching to end of

chela when extended; 2nd tarsal segment long, longer than the three succeeding segments, 3rd segment wider than long, 4th about twice as long as 3rd; 5th, 6th, and 7th of approximately the same length as the 4th, and about as long as wide; 8th long, considerably longer than the preceding two, acuminate. Femur of 1st leg a little thickened; femur of 4th enormously thickened, especially at the base, of 3rd less thickened than 4th, of 2nd less thickened than 3rd. *Caudal sclerite* with posterior heart-shaped expansion, the narrow portion of the expanded portion directed posteriorly.

♀. Resembling ♂ in general features, but with the apex of the trochanter of the chela rectangular, not produced into a long spine, and no spines or tubercles on the underside of the femur, tibia, or protarsus; caudal process cylindrical, without cordate expansion. Total length up to about 6 mm.

Loc. Ceylon: in the Botanical Garden at Peradeniya (*Thwaites*).

Genus TRITHYREUS, Kraepelin.

Tripeltis, Thorell, *Ann. Mus. Genova*, xxvii, p. 554, 1889; *Kraep.*

Abh. Ver. Hamb. xv, p. 52, 1897 (nom. provoc.).

Trithyreus, *Kraep. Terr., Scorp. etc.* p. 234, 1899 (March).

Triplonus, Cook, *Proc. Ent. Soc. Wash.* iv, pp. 250 & 255, 1899 (April).

Differs from *Schizomus* in that the posterior dorsal plate of the cephalothorax is not uniformly chitinized and pigmented throughout, but is either completely divided into a right and left quadrate portion (according to Thorell and Kraepelin), or is, at all events, marked with a narrow, pellucid, unpigmented submembranous median area, impressed with the sutural line observable in *Schizomus*. In all the known specimens, which are perhaps females, the chelæ are unarmed, and the caudal sclerite is cylindrical as in the female of *Schizomus crassicaudatus*.

Distribution. Ceylon; Burma; also Bismarek Archipelago.

Synopsis of Indian Species.

- a. Posterior dorsal plate of cephalothorax marked with a narrow median suture; apex of trochanter of chela rectangular, scarcely produced *T. suboculatus*, p. 121.
- b. Posterior dorsal plate of cephalothorax with a broad median divisional line; trochanter of chela apically produced and upturned (according to Kraepelin and Thorell).
- a'. Without eyes; chelæ one and a half times the length of the cephalothorax *T. grassii*, p. 122.
- b'. With a pair of eye-spots; chelæ a little longer than the cephalothorax *T. cambridgii*, p. 122.

102. *Trithyreus suboculatus*, sp. n.

Resembling the female of *Schizomus crassicaudatus* in general features. *Colour* a yellowish olive-green on the carapace and abdomen, legs and chelæ paler, nearly flavous. Anterior end of

carapace armed with a short rostrum, the basal width of which is greater than its length. On each side of its anterior portion there is

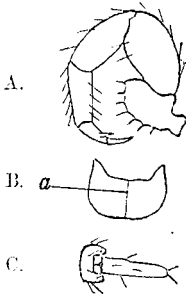


Fig. 39.

Trithyreus suboculatus.

- A. Chela.
 B. Posterior plate of carapace: *a*, sutural line.
 C. Caudal skeletal plate.

of *S. crassicaudatus*.
 1st leg about 6.5 mm.

Loc. Ceylon: Punduloya (*Green*).

103. *Trithyreus grassii*, *Thorell, Ann. Mus. Genova*, xxvii, p. 554, t. 5, fig. 1, 1889; *Kraep. Abh. Ver. Hamb.* xv, p. 53, t. ii, fig. 58 b, 1897 (Tripeltis); *id. Tierr., Scorp. etc.* p. 235, 1899 (Trithyreus).

Colour of body brown above; legs paler. No trace of *eyes* on carapace; *chela* one and a half times as long as carapace; trochanter with strongly convex inferior border, produced anteriorly into an acutely angular process, of which the inferior border is convex and the superior concave. First *leg* nearly twice as long as body. Other characters apparently much as in the preceding species. Length of body about 7 mm., of 1st leg 13.

Loc. Burma: Teinzo (*Foa*).

104. *Trithyreus cambridgii*, *Thorell, Ann. Mus. Genova*, xxvii, p. 559, 1889; *Kraep. Abh. Ver. Hamb.* xv, p. 53, 1897 (Tripeltis); *id. Tierr., Scorp. etc.* p. 234, 1899 (Trithyreus).

Closely resembling *T. grassii*, of which this is perhaps the young. *Colour* paler, more yellowish green; *carapace* furnished on each side with a round eye-spot; *chela* only a little longer than carapace. First *leg* (according to figure) shorter than body. Length about 3.5 mm.

Loc. Burma: Prome (*Foa*).

a pale irregular-shaped patch representing an eye, but showing no traces of a distinct lens. *Terga*, like the carapace, coriaceous, each furnished with a pair of symmetrically disposed bristles, one on each side of the middle, the 8th and 9th also with a bristle on the posterior lateral angle, the median bristles on the 9th much farther apart than those of the 7th. *Sterna* with symmetrically disposed bristles; bristles on the posterior abdominal somites very long. *Chela* of the same general form as in the female of *S. crassicaudatus*, but weaker, being relatively both shorter and thinner, the femur especially being not nearly so thick; trochanter not strongly produced distally, its distal angle rectangular. First *leg* much longer than in *S. crassicaudatus*, longer than body, when the appendage is extended the tip of its femur almost reaches the tip of the extended chela; tarsal segments not very different from those