

## 4. On some new Trap-door Spiders from China.

By R. I. Pocock, F.Z.S.

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(Plate XXI.<sup>1</sup>)

The most interesting species described in this paper are the two discovered by Mr. J. La Touche and Mr. C. B. Rickett at Kuantun in North-west Fokien.

One of these, *Halonoproctus ricketti*, is the representative of a new genus belonging to a specialized group of Ctenizidæ, hitherto known only from the Sonoran area of North America; the other, *Latouchia fossoria*, is a more typical Ctenizoid apparently belonging to the same genus as the spider that Simon erroneously identified as *Acatyima roretzi* of L. Koch. The genus *Latouchia* is related to the Mediterranean genus *Cyrtocarenum*. The third genus, *Nemesia*, has hitherto been regarded as confined to the Mediterranean Region. The record of *Macrothele* from the Chinese area fills a gap in our knowledge of the distribution of the genus, the representatives of which were previously known from the Mediterranean Region, from Burma, Java, and New Zealand. Hence, assuming that it had a northern origin, it is admissible to suppose that *Macrothele* made its way into the Oriental Region and New Zealand by way of China. Further collecting will, in all probability, show that both this genus and *Nemesia* have a continuous distribution across Central Asia from China to the Mediterranean area.

## Subfamily HALONOPROCTINÆ, nov.

In Mexico and the Southern States of North America there are two peculiar genera of Spiders, referred to the family Ctenizidæ, and characterized by the remarkable modification in the shape and other structural points of the abdomen. In the typical Ctenizidæ, as in most other Trap-door Spiders, the abdomen is tolerably evenly oval, with the integument soft, smooth, and covered with silky grey pubescence, the sigilla, or muscular impressions, on the dorsal side being small and relatively inconspicuous.

But in the genera above mentioned, namely *Cyclocosmia* and *Chorizops*, the integument is of a leathery consistency, and is folded into a number of narrow ridges separated by corresponding grooves, which, except in the ventral area behind the epigastric fold where they are transverse, run in a longitudinal direction<sup>2</sup>.

<sup>1</sup> For the explanation of the Plate, see p. 215.

<sup>2</sup> A possible exception to this character is met with in *Cyclocosmia theveneti* of Simon, which is said to have the integument ungrooved. The abdomen of the only known example, however, is described as "*valde detritum*." Hence the absence of folds is perhaps attributable to badness of preservation. It is possible, too, that the integument is sufficiently elastic to admit of considerable stretching, in which case the folds might disappear under the influence of distension of the abdomen.

Furthermore, the posterior end of the abdomen is abruptly and obliquely truncate, the truncated area being perfectly circular, nearly flat, and separated from the rest of the abdomen by a rounded or somewhat sharply defined edge. From this edge to the centre of the disk radiate a number of grooves, corresponding to and continuous with those of the rest of the integument. In the lower half of the disk there are three pairs of conspicuous sigilla, which decrease in size from above downwards and indicate the presence of powerful dorso-ventral muscles, which have apparently migrated backwards from the fore part of the abdomen; the edge of the disk is festooned, each festoon being tufted with hairs, which form a continuous rim or crown round the disk. Lastly, the spinners and the anal tubercle lie in a depression on the underside of the abdomen.

In other respects these Spiders closely resemble the normal *Ctenizidæ*, and Simon classified them with the genus *Pachylomerus* on the strength of the presence of a depression on the upperside of the tibia of the 3rd leg. This depression, however, cannot be regarded as a certain sign of affinity between genera of this family, since it is also developed in *Heligmomerus*, one of the Idiopinæ, and in *Myrtale* and *Thyropceus*, which belong to the Miginæ. In the present instance it no doubt misled Simon into associating with *Pachylomerus* two genera which are probably not more nearly related to the latter than they are to *Bothriocyrtum*, or any other genus of the section Ctenizeæ, though no doubt they are a specialized offshoot from the latter. Since, however, the specialization has been carried to such an extreme and is shared by three well-marked genera, the latter, in the absence of intermediate types connecting them with the typical Ctenizidæ, may be regarded as constituting a special subfamily, which I propose to call Halonoproctinæ, from the new genus *Halonoproctus*.

#### HALONOPROCTUS, gen. nov.

(ἄλων, a disk, and πρωκτός, hind-quarters.)

*Carapace* smooth; cephalic area high; fovea deep, strongly procurved; ocular area remote from the anterior margin; the clypeus about as long as the ocular area, the latter three times as wide as long. *Eyes* of anterior line almost straight, subequal, the laterals a little in advance of the medians; the medians less than a diameter apart and rather more than a diameter from the laterals; but space between median and lateral on each side not twice as great as that between the medians; eyes of posterior line almost straight, the medians less than two diameters of the anterior medians from the latter; the two laterals on each side about a diameter apart.

*Rastellum* consisting of a conical process studded with spiniform teeth. *Labium* armed with a few (8) teeth. *Maxilla* studded throughout its length with spiniform teeth. *Sternum* as broad as long; marked with the normal three pairs of sigilla, those of the

first pair marginal, of the second pair their own diameter from the margin; of the third pair large, remote from the margin, their anterior ends narrowly separated.

*Legs* as in *Oteniza* &c.; the anterior pairs and palpi strongly and thickly spined on the sides of the tibiae, protarsi, and tarsi; tibia of 3rd leg without trace of superior basal excavation; *claws* with a single or double large tooth.

Integument of *abdomen* stiff, leathery, and naked, thrown into numerous narrow folds forming shallow grooves and ridges, which, except on the ventral area behind the epigastric fold, run in a longitudinal direction; posterior end of abdomen truncate, and forming a perfectly circular, slightly hollowed area marked with radiating grooves and impressed in its lower half with three pairs of deep oval sigilla, which become smaller from above downwards; beneath the inferior pair there is a single median sigillum. Marginal festoons of this area, about 71 in number, transversely oblong and tufted with long hairs. Spinners set almost in a transverse line, the external pair widely separated at the base and obliquely converging posteriorly, their 1st and 2nd segments subequal.

This new genus and the two related Sonoran genera may be briefly diagnosed as follows:—

- |   |                       |
|---|-----------------------|
| a. Eyes of the anterior line very widely separated, the medians about three diameters from the laterals; (tibia of 3rd leg excavated and clypeus very long) ..... | <i>Chorizops.</i>     |
| b. Eyes of anterior line less widely separated; the anterior medians less than two diameters from the laterals.   |                       |
| a <sup>1</sup> . Tibia of 3rd leg excavated above at the base, and clypeus short as in <i>Pachylomerus</i> (sec. Simon) .....                                     | <i>Cyclocosmia.</i>   |
| b <sup>1</sup> . Tibia of 3rd leg not excavated above at the base, and clypeus long as in <i>Bothriocyrtum</i> .....  | <i>Halonoproctus.</i> |

HALONOPROCTUS RICKETTI, sp. n. (Plate XXI. figs. 1-1 d.)

*Colour*: carapace, legs, and sternum mahogany-brown; abdomen deep purplish brown, blacker on the surface of the disk. *Carapace* almost as long as the patella, tibia, and protarsus of 1st leg, as patella, tibia, protarsus, and tarsus of 2nd, as patella, tibia, and tarsus of palp, very slightly longer than patella, tibia, protarsus, and tarsus of 3rd, and as long as patella, tibia, and protarsus of 4th leg; width of carapace equal to the length between the posterior border and the front edge of the ocular tubercle. *Legs*: 1st a little longer than 4th, 2nd and 3rd about equal and shorter than the palpus, which is shorter than the 1st leg by its tarsus. Palpus and 1st and 2nd pairs of legs normally spined; tibia and protarsus of 2nd armed externally with about 15 spines each, the tarsus with 6; patella and tibia of 3rd leg armed above and in front with small, close-set spines, which increase in number towards the distal end of the segments; protarsus with similar spines and some much larger ones intermixed, armed below with a pair of apical spines; 4th leg with patella and tibia thickly spined,

the spines increasing in number on the proximal end of the patella and on the distal end of the tibia.

*Measurements in millimetres.*—Total length 28; length of carapace 11.5, of abdomen 15; diameter of disk 16.5; length of palp 19; 1st leg 21, 2nd leg 18, 3rd leg 18, 4th leg 21.

*Hab.* Kuantun, N.W. Fokien, China (*J. de La Touche & C. B. Rickett*).

The following is a list of the previously described species of the subfamily:—

Genus CHORIZOPS Ausserer.

CHORIZOPS LORICATUS C. Koch, *Die Arach.* ix. p. 99, fig. 752, 1842 (*Actinopus*); Ausserer, *Verh. zool.-bot. Ges. Wien*, xxi. p. 144 (1871); Simon, *Hist. Nat. Araign.* i. p. 89 (1892); id. *Bull. Soc. Zool. Fr.* 1897, p. 172.

*Loc.* Mexico, Vera Cruz.

Genus CYCLOCOSMIA Auss.

CYCLOCOSMIA TRUNCATA Hentz, *Journ. Bost. Soc. Nat. Hist.* iv. p. 55, pl. vii. fig. 1 (1843) (*Mygale*); Ausserer, *Verh. zool.-bot. Ges. Wien*, xxi. p. 145 (1871); Simon, *Hist. Nat. Araign.* i. p. 88 (1892) (*Cyclocosmia*).

*Loc.* Alabama.

CYCLOCOSMIA THEVENETI Simon, *Act. Soc. L. Bord.* xlv. p. 313 (1892).

*Loc.* California.

Subfamily CTENIZINÆ.

LATOUCHIA, gen. nov.

(? = *Acattyma* Simon, *Hist. Nat. Araign.* i. p. 96 (1892); nec L. Koch.)

*Carapace* typically ctenizoid, smooth, with head elevated, and fovea very strong and procurved, the impressions well marked especially the anterior pair, which are deep. *Ocular tubercle* close to edge of clypeus, high, the median eyes standing considerably above the level of the laterals, ocular area about twice as wide as long, parallel-sided; eyes of anterior line lightly procurved, the anterior edge of the medians on a level with the centres of the laterals, the eyes subequally spaced and subequal in size, the medians less than a diameter apart; posterior eyes on a level by their posterior ends, the laterals much larger, separated from the anterior laterals by a space which is distinctly less than the diameter of either.

*Rastellum* as in *Cyrtocarenum*, but the process bearing the teeth less prominent and the teeth numbering about 9. *Labium* wider than long, narrowed distally, unarmed. *Maxillæ* armed anteriorly at base with about 9–12 cusps. *Sternum* a little longer than wide; its sigilla fusing to form a shallow A-shaped groove in the middle. Posterior *spinners* very short, the 1st and 2nd

segments much wider than long. Tibiæ, protarsi, and tarsi of *palpi* and anterior *legs* thickly banded laterally with short spines, but almost entirely without inferior spines; tibia of 4th not spined externally; claws with a large basal tooth and one or more smaller.

Type, *L. fossoria*.

Most nearly related to *Cyrtocarenum* of the Mediterranean basin, but differing in the more compact setting of its eyes, the high tubercle, unarmed labium, different development of sternal sigilla, and thicker spine-armature of palpi and anterior legs.

This new genus is in all probability identical with *Acattyma* of Simon, which is totally distinct from *Acattyma* of L. Koch. The latter, as Koch's diagnosis clearly shows, is closely related to *Brachybothrium*, and belongs to a different family from the species referred by Simon to the genus *Acattyma*.

The true *Acattyma* from Japan has the fovea not transverse but forming a longitudinal impression; the posterior spinners as long as the protarsus of the 4th leg, with the third segment equalling the length of the first and second taken together; the sternum with 3 marginal impressions on each side, the maxillæ untoothed and the mandibles "hoch emporgewölbt" at the base, and armed with rastellum—characters which show its affinity with the two North-American genera *Brachybothrium* and *Atypoides* (see L. Koch, Verh. z.-b. Wien, 1876, p. 760).

LATOUCHIA FOSSORIA, sp. n. (Plate XXI. figs. 2, 2 a.)

*Colour*: carapace and mandibles nearly black; legs and sternum deep blackish brown; abdomen blackish grey. *Carapace* as long as patella; tibia and protarsus of 1st leg almost as long as tibia, protarsus, and tarsus of 4th. 2nd leg with 1 median inferior apical spine; patella, tibia, protarsus, and tarsus of 3rd spined externally (in front) and internally, the internal spines on the patella reduced to 2 near the top of the segment, protarsus with 3 inferior spines whereof 2 are at the base; patella of 4th with a short band of spines in its basal half externally, its tibia armed with setiform spines below, its protarsus with a pair of inferior apical spines, as well as others.

*Measurements in millimetres*.—Total length 20; carapace 8; 1st leg 15, 4th leg 19.

*Hab.* China: Kuantun in N.W. Fokien (*J. de La Touche & C. B. Rickett*).

LATOUCHIA SWINHOEI, sp. n. (Plate XXI. figs. 3, 3 a.)

♂. Paler than the female of *L. fossoria*; carapace and legs reddish brown, femora of palp and of 1st and 2nd legs blacker.

*Carapace* coriaceous, lower than in the ♀ of *L. fossoria*, a shallow horseshoe-shaped depression behind the fovea and following its curvature. *Ocular tubercle* lower; anterior median eyes about a diameter apart, smaller than the laterals, their centres about on a level with the hinder edge of the laterals, hence the anterior line is very distinctly procurved.

*Rastellum* composed of about 5 strong teeth. *Maxillæ* unarmed. *Palpi* and legs bristly, the bristles on the upperside of the trochanters and coxæ spiniform. *Palpi* about one and a half times as long as the carapace, the femur strongly spined at the apex especially above; the rest of the segments unspined; the tibia more than twice as long as the patella, fusiform, narrowed apically; tarsus short and truncate, some of the bristles on its upperside short and clavate; bulb of palpal organ large, deeply cleft, the spine relatively short, slender, lightly curved, blunt-pointed. *Legs* 4, 1, 2, 3; 1st with femur above and at apex, patella externally, internally, and especially below, tibia externally and internally at the apex strongly spined; protarsus and tarsus practically unspined (protarsus of right leg nearly straight, with one basal and one apical spine, of left leg bowed and unspined); 2nd leg spined like the 1st, except that there are more spines on the protarsus and the anterior side of the tibia is spined throughout its length, and the posterior side most strongly spined at its base; 3rd leg strongly spined, especially on patella and tibia; 4th leg much more weakly spined than 3rd: tarsi of legs practically unspined, two or three spines only being on the tarsus of the 4th. *Claws* of legs with 4-5 teeth. *Abdomen* bristly above.

*Measurements in millimetres*.—Total length 12; carapace 7; palpus 10; 1st leg 20, 4th leg 23; patella and tibia of 1st and 4th about 8.

*Hab.* Great Loo-Choo (*P. A. Holst*).

#### Genus NEMESIA Aud.

##### NEMESIA SINENSIS, sp. n.

♀. *Colour*: carapace deep brown, scantily haired; legs yellowish brown; abdomen imperfect, but apparently testaceous and pigmented above much as in *N. cementaria*.

*Carapace* with cephalic region but little elevated; ocular area more than twice as wide as long; eyes of anterior line not very unequal in area, the laterals not exceeding the medians, strongly procurved, the anterior edge of the medians on a level with the posterior edge of the laterals. *Rastellum* consisting of about 12 strong teeth overhanging the base of the fang and extending up the inner edge of the mandible. *Maxillæ* armed with a single row of 6 cusps. *Palp*: tibia armed with 11 spines, 8 or 7 of which are arranged in pairs on its lower side, tarsus armed with 1 external and 1 internal spine (the latter sometimes absent) and two rows of spines near the middle line of the distal half; scopulate at sides. 1st leg: tibia with 4 external spines beneath and 1 apical internal, also 2 on the inner side, protarsus with 3 external, 2 internal beneath, and 1 on inner side, tarsus spined at apex beneath, both tarsi and protarsi scarcely scopulate in the middle; 2nd leg: tibia armed with 4 inferior external spines, 1 inferior apical and 2-3 internal, protarsus with 3 inferior external, 2-1 inferior internal, and 2 internal; tarsus spined at apex beneath; 3rd leg: tibia armed with 2 spines in front and 3 spiniform

setæ below; protarsus with many strong spines, tarsus with a few apical spines; 4th leg with tibia scarcely spined, protarsus with a few setiform spines; tarsus also only armed beneath with setiform spines.

*Measurements in millimetres.*—Total length 15; carapace 6; 1st leg 12, 4th leg 16.

*Hab.* China; Da Lan San, 60 miles uphill from Ningpo (*P. W. Bassett-Smith, Surgeon R.N.*).

This species apparently falls into section D of the species of the genus as divided by Simon. It is remarkable for its low head, strongly procurved anterior line of eyes, and strongly spined legs.

The genus *Nemesia* has hitherto not been obtained outside the limits of the Mediterranean Region. Its occurrence in China, therefore, is peculiarly interesting.

### Family DIPLURIDÆ.

#### Genus MACROTHELE Ausserer.

##### MACROTHELE PALPATOR, sp. n. (Plate XXI. fig. 4.)

♀. Uniformly coloured like *M. fuliginea*. *Eyes* not very different from those of *M. fuliginea*. *Carapace* a little longer than patella and tibia of 1st leg, equal to those of 4th and to protarsus and half the tarsus of the 4th. *Palp* with tarsus about as long as the patella and tibia, lightly expanded at the base, armed with 3 external, 1 inferior distal, and 3 or more internal and distal spines. *Legs* 4, 1, 2 and 3 in length: 1st with 3 inferior apical tibial spines, 4—4—3 inferior protarsal and about 7—7 lateral tarsal spines; 2nd leg spined much like the 1st; 3rd and 4th with tibiæ, protarsi, and tarsi more numerous and less regularly spined, and also with few spines on the patellæ.

♂. Smaller than ♀. *Carapace* jet-black, as long as patella and tibia of 1st leg. *Tibia* of 1st leg armed beneath with 3 long spines in addition to an apical pair; *tibia* of 2nd leg armed with 5 long spines below; *protarsus* of 2nd lightly bowed at base and only armed with about 4 inferior spines, *protarsus* of 1st armed with three rows of long strong spines. *Palp* with tibia armed above with a band of about 12 short spines, this segment long, lightly convex above, swollen below at the base; *tarsus* short, truncate, about one-fourth as long as the tibia; *palpal organ* enormously long, about as long as the patella and tibia of the palp and as the width of the carapace, the spine broad at the base, gradually narrowing and very fine and filiform at the apex, with a lightly sinuous curvature.

*Measurements in millimetres.*—♀. Total length 18; carapace 8; 1st leg 21, 2nd leg 20, 3rd leg 20, 4th leg 25. ♂ (*type*). Total length 12; carapace 6; 1st leg 16, 2nd leg 16, 3rd leg 15, 4th leg 20.

*Loc.* China: Hong Kong (*J. C. Bowring*); Da Lan San, 60 miles  
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uphill from Ningpo (*P. W. Bassett-Smith, Esq., Surgeon R.N.*; ♂ (type), ♀).

Distinguishable from the Javan *M. fuliginea* Simon (Ann. Soc. Ent. France, 1891, p. 306), which it resembles in colour, in having 3 rows of spines instead of 2 rows on the under-side of the protarsi of 1st and 2nd legs, as well as in the greater length of the tarsus of the palp. The British Museum has specimens of *M. fuliginea* from Ijigombong in Java (*E. W. Andrews*) and from Singapore (*H. N. Ridley*).

*MACROTHELE HOLSTI*, sp. n. (Plate XXI. fig. 5.)

♂. Coloured like the Burmese and Javan *M. maculata* Thorell (Ann. Mus. Genova, xxviii. p. 409, 1890) and the Penang *M. segmentata* Simon (Ann. Soc. Ent. Fr. lxi. p. 284); that is to say, with the abdomen ornamented above with about 5 pairs of oblique transverse pale bands and some pale spots on a darker ground. *Eyes* practically as in *M. fuliginea* and *M. palpator*. *Carapace* as long as patella and tibia of 1st leg, the fovea having the form rather of a median transverse pit than of a transverse sulcus. *Legs*: femur of 1st spined internally, patella with about 4 spines; tibia armed internally and below with about 28 strong spines arranged in irregular series, protarsus with 10 spines in two rows, tarsus with 5 small spines in two rows; tibia of 2nd leg with 2 internal and 5 inferior, of which 3 are apical, protarsus with 4—2 spines; tibia of 3rd and 4th with 2 apical spines below. *Palp* shorter than in *M. palpator*, the tibia about three times as long as the tarsus, armed above with two bands of spines and 1 long inferior external spine; palpal organ about as long as the tibia and half the width of the carapace, the spine with its basal third thick, its apical two-thirds filiform, lightly sinuous.

In two sub-adult females the tarsus of the palp is only as long as the tibia, and the tibiae and protarsi of the anterior legs are spined as in *M. fuliginea*.

*Measurements in millimetres*.—♂. Total length 14; carapace 7; 1st leg 19, 4th leg 22.

*Hab.* Laki-ku-li, Central Formosa (*P. A. Holst*).

The males of the two species of *Macrothele* here described may be compared as follows:—

- a. Palpal organ at least as long as tibia and patella of palp and as width of carapace; tibia of palp about four times as long as the tarsus, armed above with a single band of close-set spines; tibia of 1st leg armed with about 7 spines below and internally, patella and tibia scarcely spined; tibia of 2nd leg with 5 long and strong close-set spines, protarsus slightly curved at base; tibia of 3rd and 4th armed with many strong spines below ... *M. palpator*.
- b. Palpal organ only as long as tibia of palp and as half the width of the carapace; tibia of palp with two bands of spines above, only about three times as long as the tarsus; tibia of 1st leg armed with about 28 spines, patella and femur spined internally; tibia of 2nd armed with scattered spines below; protarsus unmodified; tibia of 3rd and 4th with a pair of apical spines below ..... *M. holsti*.



## EXPLANATION OF PLATE XXI

- Fig. 1. *Halonoproctus ricketti* (p. 209). Lateral view.  
 1 a. " " Dorsal view of cephalothorax and abdomen.  
 1 b. " " Ventral view of ditto.  
 1 c. " " Posterior view of abdomen.  
 1 d. " " Eyes.  
 2. *Latouchia fossoria* (p. 211). Sternum.  
 2 a. " " Eyes.  
 3. " *swinhoi* (p. 211). Palp of ♂.  
 3 a. " " Anterior view of tarsus and palpal organ.  
 4. *Macrothelæ palpator* (p. 213). Palp of ♂.  
 5. " *holsti* (p. 214). Palp of ♂.

5. On the Clitellum and Spermatophores of an Annelid of the Genus *Alma*. By FRANK E. BEDDARD, M.A., F.R.S.

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(Text-figures 59 & 60.)

Although the genus *Alma* is now fairly well known owing to the investigations of Levinsen (1), Michaelsen (2, 3, 4), and myself (5, 6, 7), no one has up to the present been able to detect the clitellum. That the spermatophores have not been found is less surprising, since these organs are known in but a small number of extra-European earthworms. I am now able, through the kindness of Mr. J. S. Budgett, F.Z.S., to fill in these two lacunæ in our knowledge of *Alma*. This gentleman has kindly placed in my hands a number of examples of a species of *Alma* which he collected during his recent expedition to the Gambia. They were gathered on McCarthy Island in that river, and consist of two fully mature specimens and of a few immature worms. The genus itself is purely African, and for the most part "Ethiopian" in range; the only species which reaches the Palæarctic portion of that continent is Levinsen's "*Siphonogaster ægyptius*," which appears to be identical with Grube's (8) *Alma nilotica*. It is, as I first pointed out, undoubtedly a member of the family Geoscolicidæ. It had been formerly regarded, though perhaps with some doubt, as an Eudrilid, to which latter family so many of the Ethiopian earthworms belong. My observations upon the clitellum confirm the justice of the former view, which is, indeed, definitely accepted by Dr. Michaelsen in his recently issued "Oligochæten" in the 'Tierreich' (9). He associates it with the genera *Criodrilus* and *Sparganophilus* in a subfamily Criodrilinæ, mainly distinguished from other Geoscoleids by the absence or rudimentary condition of the gizzard. In the generic definition of *Alma* occurs the sentence "Gürtel fehlt (?)," an almost necessary query in view of the fact that so many individuals of the genus had been submitted to careful examination, and that in not a single one was there any trace of this characteristic clitellum of the Oligochæta. It is possibly the case here, as in the aquatic lower Oligochæta, that the clitellum is only periodically developed, and that it is not so continuous a structure as appears