

Spinnen (Araneae)

VON

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Apart from the new genera and species that it contains, this collection of spiders is of considerable interest as throwing light upon the hitherto almost unknown fauna of the principal island of the Moluccan Archipelago, namely Halmahera or Gilolo. Of some of the other islands, especially Ternate and Amboina, the spider fauna is comparatively well known thanks mainly to the labours of Dr. Thorell upon the material obtained by Sig. Beccari and others under the auspices of the Marquis G. Doria of Genoa. But a glance over the tables illustrating the distribution of spiders in the Austro-Malayan islands prepared by Thorell and published on pp. 684—710 of vol. XVII of the Ann. Mus. Genova, will show that up to 1881 only four species of spiders all belonging to the family Argioidae had been obtained in Halmahera. A few were subsequently added to the list by M. Simon; but the number of known forms was small previous to the visit of Dr. Kükenthal to the island. Now, however, the total amounts to over thirty. So far as is at present known a few of the species here described as new are peculiar to the island of Halmahera. Nevertheless there is not the slightest doubt that the spider fauna is in all essential respects similar to that of the Austro-Malayan area. The same is also true of the island of Batjan at which a few species were obtained.

Suborder: **Mygalomorphae.**

Family **Theraphosidae** Thorell.

Subfam.: **Ornithoctoninae** Pocock.

Ornithoctonidae Pocock, Ann. Mag. Nat. Hist. (6), XV, p. 179 (1895).

Genus *Phormingochilus* Pocock.

Ann. Mag. Nat. Hist. (6), XV, p. 179.

Phormingochilus sp. ?

A single young and unidentifiable example from Batjan. The genus was previously known from two species, both of which occur, so far as is at present known, only in Borneo.

Subfam.: **Selenocosmiinae** Pocock.

Selenocosmiidae Pocock, loc. cit.

Genus *Selenocosmia* Ausserer.

Verh. Zool.-Bot. Ges. Wien 1871, p. 204.

Selenocosmia javanensis (Walck.)

Mygale javanensis Walckenaer, Ins. Apt. I, p. 216 (1837).

A number of young specimens obtained at Buitenzorg are referred to this species. In a specimen 18 mm in length all the tarsal scopulae are completely divided by bands of setae and the inferior claw is distinct upon the 4th leg.

Selenocosmia lanipes Ausserer.

Verh. Zool.-Bot. Ges. Wien XXV, p. 187, pl. VII, fig. 32, 33 (1876).

Three specimens obtained in Halmahera, a male and female at Soah Konorah and a female at Tobelo. The species was recorded by Ausserer from New-Guinea.

The female is easily distinguishable from that of *S. javanensis* by having the carapace broader in proportion to its length and the legs longer and thinner. For example, in a specimen of *javanensis* from the Salak in Java (R. Kirkpatrick), the length of the carapace exceeds the length of the patella and tibia of the 4th leg (20 : 18), whereas in *lanipes* the corresponding measurements are 18 : 18; again the carapace as compared to the tibia and protarsus of the 1st leg is 20 : 20 in *javanensis* and 18 : 21½ in *lanipes*.

The carapace, moreover, in *lanipes* is wide and less elevated in the cephalic area and is broader as compared to its length (18 : 15), whereas in *javanensis* the width is 15,5 as compared to 20. The sternal sigilla too are further removed from the margin in *lanipes* than they are in *javanensis* and lastly the lyra is differently constructed in the two. In *javanensis* it consists of a thick more or less oval cluster of short stout spiniform notes, the cluster itself being about one third longer than broad and broader at the proximal than at the distal end with the notes gradually increasing in size towards the oral fringe. In *lanipes*, on the other hand, the cluster is about twice as long as broad, narrowed at each end, the notes themselves being long and slender and the marginal notes at the proximal end adjacent to the oral fringe noticeably longer than the rest.

The male as is well known from Ausserer's figure has the spine of the palpal organ tipped with a knob like the button of a foil. The legs are much longer than in the female, an example having the carapace 16,5 mm in length has the 1st and 4th leg 61 mm. measured from base of femur: whereas the above mentioned ♀ with the carapace 18 mm, has the legs only 52,5.

Selenocosmia sp. ?

A single immature specimen obtained at the Baram River. Possibly this may be the young of *Selenocosmia doriae* Thor. described from Sarawak, which Simon has subsequently made the type of the genus *Haplopetma*.

The specimen is 14 mm in length and has all the tarsal pads divided by setae, the 1st less noticeably than the others, while on the 4th tarsus the scopular hairs are only just appearing. The lyra nevertheless, is distinct and consists of a short row of seven longish notes.

Phlogiellus gen. nov.

Syn. *Ischnocolus* Ausserer, Simon etc. (in part).

Resembling the typical members of the *Selenocosmiinae* in possessing the characteristic stridulating organ between the mandible and maxilla, and approaching *Selenocosmia* and *Phlogius* in having the mandibular portion of the organ consisting of long spiniform setae placed upon the lower edge of this gnathite, the 4th leg slender and the thoracic fovea procurved, but differing from them in that none of the scopulae are thick, the divisional line of setae persisting in the adult on all the tarsi, though only just traceable on those of the 1st leg. Tarsus of 4th leg with distinct inferior claw.

This genus seems to correspond to the section C of the genus *Ischnocolus* as described by Simon (Hist. Nat. Araignées 1, p. 136), though whether all the species referred by Simon to this section belong to the Selenocosmiinae cannot be settled without an examination of the mouth parts.

It is perhaps needless to add that *Phlogiellus* affords strong support to the view that the classification of the Theraphosidae according to the division of the scopulae is purely artificial and valueless for bringing allied genera into proximity and for keeping apart those that are not nearly related (See Ann. Mag. Nat. Hist. (6), XVI, pp. 228—230).

Phlogiellus atriceps sp. n.

Pl. XXV, figg. 1, 1 a, 1 b.

? Syn. *Ischnocolus inermis* Ausserer, Verh. Zool.-Bot. Ges. Wien, 1871, p. 188.

♂. Body and limbs covered with greyish mouse brown hair, the carapace black beneath.

Carapace broadly oval, about one fifth broader than long, moderately elevated in the cephalic region, its length just exceeding the length of the patella and tibia of the 2nd leg and less than those of the 4th, its width equal to the length of the 4th protarsus. Ocular tubercle large, transverse, close to the margin, moderately elevated; eyes of the anterior line very nearly straight, subequal, the distance between the median less than a radius and nearly twice as great as the distance between the medians and the laterals; eyes of posterior line smaller than those of anterior and also nearly straight.

Mandible normally hairy; the external surface inferiorly striate, the fang groove armed with an inner series of 9 subequal strong teeth and granular posteriorly.

Labium and adjacent maxillary process thickly spinulose.

Sternum a little longer than wide; the sigilla as in *Selenocosmia*, those of the 1st leg marginal, concealed; those of the 2nd a little removed from the margin, those of the 3rd considerably removed and separated by a space about equal to the width of the ocular tubercle.

Palp with lyra consisting of a small oblong cluster of slender close-set setiform apically pointed notes, which increase in size towards the oral fringe, some scattered bristles between the cluster and the suture; no spines intermixed amongst the hairs of the palp; the tarsus short, apically expanded, bilobed and truncate, the bulb with a spiral groove running round it, which shows on the inner side as a deep notch; spine with a slight spiral twist, tapering to a point, thick at the base owing largely to the presence of a strong keel-like crest which follows its outer curvature.

Legs long and slender, tapering to the tarsi 4, 1, 2, 3, the 4th, measured from the base of the femur is distinctly longer than the 1st, the 1st apparently without spines, but the 2nd, 3rd and 4th with a pair of spines at the tip of the protarsi inferiorly, the protarsi of the 3rd and 4th also spined above at the tip, protarsal scopulae scanty but extending over the segment as in *Selenocosmia*, claws armed with about two minute denticles; the inferior claw absent on the 1st, 2nd and 3rd pairs of legs, but of considerable size on the 4th.

Measurements in millimetres. — ♂. Total length 17, length of carapace 8, width 6.5, length of 1st leg 23.5, of 2nd 20, of 3rd 17.5, of 4th 25.5. — ♀. Total length 19, length of carapace 7.5, width 6, length of 1st leg 21, of 2nd 17.5, of 3rd 15.5, of 4th 23.

Loc. Buitenzorg, Java.

These examples were contained in the same bottle as the young of *Selenocosmia javanensis*, the female being by no means easy to distinguish from them. In *S. javanensis* however, the carapace is considerably longer as compared to its width, this plate for example measuring in one specimen 8 mm long and 6.6 mm in width; the anterior legs, moreover, are more robust and the tarsal and protarsal scopulae thicker.

This genus *Phlogiellus* is little else than a *Selenocosmia* that has retained certain primitive features such as the inferior claw on the 4th leg and the divisional line of setae on the tarsal scopulae, resembling in these respects the young of *S. javanensis*. The genus thus affords a good illustration of the biological law that with two closely allied species, the one in which the individuals are of much smaller size than are the individuals of the other, retains certain features in the adult which are characteristic of the young of the second. A parallel case is furnished by the two existing species of *Hippopotamus*, namely *amphibius* and *liberiensis*.

Suborder: **Arachnomorphae.**

Family **Scytodidae.**

Genus *Scytodes* Latreille.

Scytodes marmorata C. Koch.

Die Arachniden Austral. p. 292, pl. XXIV, fig. 4, 1872.

Loc. Java (Buitenzorg).

Widely distributed in the Oriental Region.

Family **Argiopidae** Simon.

Genus *Nephila* Leach.

Nephila maculata (Fabr.)

Ent. Syst. II, p. 425, 1793; and all authors.

Specimens of this species which is ubiquitous in the Oriental Region, were obtained at the following localities. Borneo; Celebes, Minahassa; Halmahera, Oba, Soah Konorah, Galela, Tobelo, Kau; Ternate; Batjan; Koetei.

Nephila malabarensis (Walck.)

Ins. Apt. II, p. 102, 1841.

Loc. Java, Buitenzorg; Halmahera, Oba and Patani.

This species is abundant throughout tropical parts of the old world.

Nephila laurinae Thorell.

Ann. Mus. Genova XVII, p. 142 (1881).

Loc. Halmahera, Patani and Batjan.

Described by Thorell from Ternate.

Genus *Herennia* Thorell.

Herennia ornatissima (Dol.)

Epeira ornatissima Doleschall, Acta Soc. Sci. Indo-Neerland. V, No. 5, p. 32, pl. I, fig. 3 (1858—1859).

Epeira multipuncta, id. ibid., p. 32, pl. XI, fig. 1 (see also the works of Thorell, Simon etc.)

Two specimens obtained at Minahassa in Celebes.

Generally distributed throughout the Oriental Region from Ceylon to Amboina.

Genus *Argiope* Aud.

Argiope succincta L. Koch.

Pl. XXV, fig. 7.

Die Arachniden Australiens I, p. 35, 1871 (see also Thorell, Ann. Mus. Genova XVII, p. 74, 1881).

Of this species, which was originally described from Borneo and has subsequently been recorded from Sarawak by Thorell, two examples were obtained upon the Baram River in Borneo.

Argiope aemula (Walck.)

Ins. Apt. II, p. 118, 1841 (see Thorell, Ann. Mus. Genova XVII, p. 63, 1881).

Loc. Soah Konorah (Halmahera).

This species is widely distributed throughout the Oriental Region.

Argiope crenulata Dol.

Nat. Tijdschr. Neerland. Indië XIII, p. 414 (1857); id. Acta Soc. Sci. Indo-Neerland. V, pl. III, fig. 7 (1859).

Loc. Ternate.

Previously recorded from Ternate and Amboina.

Argiope verecunda Thorell.

Pl. XXV, fig. 6.

Ann. Mus. Genova XIII, p. 35, 1878.

This species was described by Thorell from a mutilated female obtained in Amboina. Dr. Kükenthal obtained many specimens at Soah Konorah in Halmahera and one at Batjan.

Genus *Araneus* Linn. (= *Epeira* auct.)

Araneus moluccensis (Dol.)

Pl. XXV, fig. 9.

Epeira moluccensis Doleschall, Nat. Tijdschr. Nederl. Indië XIII, p. 418 (1857); Acta Soc. Sci. Indo-Neerland. V (1859), pl. I, fig. 6.

Many examples obtained in Halmahera at Soah Konorah, Patani, Galela, Oba, Tobelo, and also a large consignment from Batjan and Ternate.

This species with its geographical races, ranges from India as far eastwards as the Loyalty Islands.

Araneus caput-lupi (Doleschall).

Pl. XXV, fig. 8.

Epeira caput-lupi Doleschall, Acta Soc. Sci. Indo-Neerland. V, p. 35, pl. VIII, fig. 6, 1859; Thorell, Ann. Mus. Genova XVII, p. 85, 1881.

Several specimens which are referred to this species were taken at Galela, Tobelo and Soah Konorah in Halmahera.

These present great differences in the colour of the dorsal surface of the abdomen, but seem to be alike in all other respects, including the form of the vulva. One

example closely resembles what Thorell calls the *forma principalis*, having the shoulder spikes red with a fine yellow line passing from one to the other and defining posteriorly the black area lying in front of the shoulders; the apex of the abdomen, moreover, has a large black patch on each side of it and these two are defined on their inner margins by a fine yellow line. In a second specimen the upper side of the abdomen is a uniform blackish-brown ornamented with four yellow spots, one larger on each side behind the shoulder spike and one on each side in front of the apex. In other examples, on the contrary, the whole of the upper surface between the shoulder-points and the apex is reddish or yellowish and variegated with black, the black forming a median longitudinal stripe between and in front of the shoulders, and, in one example, traceable as such, far back towards the tail; whereas in the second specimen, in which the black is more diffused posteriorly, it is defined on each side by a thin sinuous yellow line which passes backwards from the shoulder-points to the caudal prolongation.

The variability in pattern of the abdomen in species allied to *caput-lupi* seems very great, and bearing it in mind one would be inclined to doubt the specific distinction of such forms as *A. radja* (Dol.), *dehaani* (Dol.), which seem to differ only in pattern. Again out of four examples that I identify as *A. kandarensis* in the British Museum, two only exhibit in completeness the conspicuous dark dorsal band described by Thorell, the band being entirely absent in one of the others, and much reduced in the fourth.

Araneus unicolor (Doleschall).

Pl. XXV, fig. 10.

Epeira unicolor Doleschall, Nat. Tijdschr. Nederl. Indië XIII, p. 419 (1857); id. Acta Soc. Sci. Indo-Neerland. V, pl. II, fig. 1 (1859); Thorell, Ann. Mus. Genova XIII, p. 54 (1878).

A partially mutilated, though adult, female example measuring about 13 mm in length obtained by Dr. Kükenthal at Patani in Halmahera and two adult females measuring 23 mm, at Soa Konorra in the same island, are referred to this species.

Araneus exanthematicus (Doleschall).

Acta Soc. Sci. Indo-Neerland. V, p. 38, pl. III, fig. 3 and pl. XI, fig. 4 (1859); see also Thorell, Ann. Mus. Genova XIII, p. 55 etc., 1878.

A single female example from Minahassa in Celebes. Previously recorded from Buitenzorg in Java and Amboina.

Araneus punctiger (Dol.)

Epeira punctigera Doleschall, Nat. Tijdschr. Neerland. Indië XIII, p. 420 (1857).

Loc. Soah Konorah (Halmahera).

According to Thorell's works this species ranges from Burma to Cape York.

The single adult female example that was obtained does not appear to me to be specifically distinguishable from specimens identified as this species from Tharrawaddy in Burma.

Araneus triangulifer (Thor.)

Epeira theisii Walck.; Thorell, Ann. Mus. Genova X, p. 390 etc. (1877),

Epeira triangulifer id. Ann. Mus. Genova XIII, p. 65 (1878).

Previously recorded from Amboina and Celebes, Aru Islands and Cape York (see Thorell, Ann. Mus. Genova XVII, p. 116, 1881).

Specimens that I refer to this species were obtained by Dr. Kükenthal in Ternate and at Patani and Galela in Halmahera. These specimens present considerable diversity of colours, though the pattern in the main remains the same and the scape of the vulva exhibits that basal expansion mentioned by Thorell.

Araneus mangareva (Walck.)

Pl. XXV, figg. 11—11 a.

Epeira mangareva Walckenaer, Ins. Apt. IV, p. 469 (1847); L. Koch, Die Arachniden Austral., p. 85, pl. VII, fig. 4—5 (1871); Thorell, Ann. Mus. Genova X, p. 394, 1871; id. op. cit. XVII, p. 114 etc. 1881.

One example from Minahassa in Celebes seems referable to this form judging from the shape of the vulva, which lacks the conspicuous basal expansion observable in *triangulifer* and seems to resemble this organ as figured by L. Koch. According to Thorell *A. mangareva* has been previously recorded in Austro-Malaysia from Ternate and New Guinea.

Both this form and the preceding are regarded by Thorell as varieties [? sub-species] of *Araneus theis* Walckenaer, Ins. Apt. II, p. 53, pl. 18, fig. 4 (1841), obtained originally in Guam.

Genus *Argyropeira* Emerton.

Argyropeira nigrotrivittata (Dol.)

Epeira nigrotrivittata Doleschall, Acta Soc. Sci. Indo-Neerland. V, No. 5, p. 39, pl. XI, fig. 5 (1858—1859).

Meta nigrotrivittata Thorell, Ann. Mus. Genova XVII, p. 126 (1881).

Loc. Celebes, Minahassa.

This species has previously been recorded only from Sumatra and Java.

Argyropeira granulata (Walck.)

Ins. Apt. II, p. 222 (see Thorell, Ann. Mus. Genova XVII, p. 127, 1881).

Loc. Halmahera, Soah Konorah, Galela and Todahe.

According to Thorell this species has been previously found in Celebes, Amboina, Ternate and New Guinea.

Argyropeira grata (Guérin).

Epeira grata Guérin, Voyage sur la Coquille, Zool. II, 2, p. 51.

Epeira coccinea Doleschall, Nat. Tijdschr. Neerland. Indië, XIII, p. 421 (1857); id. Acta Soc. Sci. Indo-Neerland. V, pl. I, fig. 2 (1859) (see Thorell, Ann. Mus. Genova XIII, p. 89, (1878).

Loc. Halmahera, Oba, Gani, Tobelo, Soah Konorah, Patani; Batjan and Salak. (Java).

This species has been obtained in Amboina, Ceram, New Guinea etc.

Argyropeira celebesiana (Walck.)

Tetragnatha celebesiana Walckenaer, Ins. Apt. II, p. 222 (1841).

[For characters and synonymy of this species see Thorell, Ann. Mus. Genova X, p. 422 (1877) and XXV, p. 138 (1887)].

Loc. Celebes, Minahassa.

Widely distributed throughout the Oriental Region from Burma to Papua.

Genus *Poltys* C. Koch.

Poltys moluccum (Dol.)

Pleuromma moluccum Doleschall, Acta Soc. Sci. Indo-Neerl. V, p. 45, pl. VII, fig. 1—1 b (1858—1859).

Poltys moluccum Thorell, Ann. Mus. Genova XIII, p. 28 (1878).

Loc. Halmahera, Galela.

This species was previously known from Amboina.

Genus *Gasteracantha* Sundevall.

Gasteracantha arcuata (Fabr.)

Ent. Syst. III, p. 425, No. 65; and subsequent authors.

Loc. Borneo, Baram River.

Common in Java, Sumatra, Borneo, Malacca etc.

Gasteracantha clavatrix (Walck.)

Pl. XXV, fig. 5.

Walckenaer, Ins. Apt. II, p. 186 (1841); Thorell, Ann. Mus. Genova X, p. 349 (1877); see also O. P. Cambridge, Proc. Zool. Soc. 1879, p. 289.

Loc. Celebes, Minahassa.

Gasteracantha pseudoflava Simon.

Ann. Soc. Ent. France, 1877, p. 228, pl. III, fig. 4.

This species was originally described from Halmahera (Gilolo). Dr. Kükenthal obtained examples at the following localities in the island: Soah Konorah, Galela, Patani.

Gasteracantha circumnotata Simon.

Pl. XXV, fig. 2.

Ann. Soc. Ent. France, 1877, p. 227 and 229.

Previously recorded from Halmahera. Many examples were collected at the following localities: Oba, Todahe, Soah Konorah, Tobelo and Patani.

The species was based upon a mutilated specimen consisting only of the abdomen. It may consequently be added that the femora of the legs are brownish-red in colour and contrast somewhat forcibly with the black of the cephalothorax. There is frequently a yellow spot on the sternum and the pale spot on the lower side of the abdomen surrounding the tubercle is usually a deep brownish red tint.

In colouring and many other features *G. circumnotata* closely resembles two examples of the genus from Sorong in New Guinea, which were identified by Thorell as *G. variegata* Walck. It differs, however, in having all the abdominal spines longer and thinner.

Gasteracantha ternatensis Thor.

Ann. Mus. Genova XVII, p. 18 (1881).

Loc. Ternate and Galela in Halmahera.

Recorded by Thorell from Ternate.

Gasteracantha bruijnii Thorell.

Pl. XXV, fig. 4.

Ann. Mus. Genova XVII, p. 21 (1881).

Of this species, recorded originally from Ternate, Dr. Kükenthal obtained specimens from Ternate and Batjan.

Gasteracantha tondanae sp. n.

Pl. XXV, fig. 3.

COLOUR: Carapace and mandibles black; legs black, with yellow rings at the base of the tibia, protarsus and tarsus, on the lower side of the legs there is also a yellow spot on the coxa and on the base of the femur; palpi annulate like the legs; maxillae distally flavous; sternum with a large anterior flavous spot; lower side of abdomen black with small yellow spots; upper side yellow, with black spines and sigilla and a narrow black rim.

ABDOMEN transversely oblong, more than twice as wide as long; the anterior border nearly transverse, a little advanced in the middle, sinuous, lateral border between the spines nearly straight, directed obliquely backwards; posterior border external to the posterior spines transversely convex: spines short, the anterior lateral a little smaller than the posterior lateral and directed obliquely outwards and forwards, the posterior lateral directed obliquely outwards and backwards; the posterior spines a good deal longer than the posterior laterals.

Measurements in millimetres. Length of abdomen 5.5, width 13.3.

Loc. Tondano in Celebes (C. Hose); Minahassa (W. Kükenthal).

This species is very nearly allied to *G. butleri* Thorell from Kandari (Ann. Mus. Genova X, p. 350, 1877); but according to one of Thorell's examples in the British Museum, may be recognised by its wider abdomen and much shorter spines. Perhaps it may prove to be a sub-species of that form. It is also without doubt nearly related to *G. eurygaster* Thorell from Gorontalo in Celebes (Ann. Mus. Genova XXVIII, p. 25, 1890; see also van Hasselt, Tijdschr. Ent. XXII, p. 217, 1879); but according to the description of the latter may be recognised by having the abdomen distinctly less than three times as wide as long instead of more, van Hasselt's words being „abdominis scuto . . . parallelogrammum transversum fere regulare, plus quam triplo latius quam longius formante.“

Genus *Tetragnatha* Latreille.

Tetragnatha rubriventris Dol.

Doleschall, Nat. Tijdschr. Nederland.-Indië XIII, p. 410 (1857); see also Thorell, Ann. Mus. Genova XVII, p. 131 (1881).

Loc. Soah Konorah in Halmahera.

Previously known from Amboina, Aru Island, Neu Guinea, etc.

Family **Trechaleidae** Simon.

Genus *Hygropoda* Thorell.

Bull. Soc. Ent. Ital. VI, p. 4, 1894.

Hygropoda macropus n. sp.

Pl. XXV, figg. 12, 12 a, 12 b.

Colour: Carapace palely infusate in the middle, with a broad whitish band on each side; upper side of abdomen infusate laterally, the dark area bounded externally by a sinuous white stripe, the middle of the dorsal surface marked with two pale stripes which running from the anterior border slightly diverge at first then gradually converge toward the posterior extremity; these white lines define externally a fuscous stripe, single behind, dividing in front such as is seen in Doleschall's figure of *H. dolomedes*; mandibles infusate, clothed like the lower surface with whitish hairs; palpi pale, infusate apically; legs testaceous with the extremities of the tibiae and protarsi infusate.

Carapace shorter than patella and tibia of the 3rd leg, and than the protarsus of the 4th, a little longer than broad; ocular region sloped, clypeus vertical its height perhaps a little excelling twice the diameter of the anterior median eyes which are much larger than the anterior laterals; the anterior line of eyes slightly procurved and a little wider than the area of the posterior medians, so that the quadrangle of the median eyes is much wider behind than in front.

Legs very long and slender, the 1st more than 3½ times the length of the carapace (cf. measurements).

Abdomen long, narrow, posteriorly tapering, its width less than half its length.

Vulva consisting of a conspicuous dark coloured horny plate, nearly as broad as long, overgrown with hairs posteriorly and marked near the middle with a single somewhat

heart-shaped depression, broad behind and pointed in front, the sides of the narrow anterior extremity limited by a pair of black shining, posteriorly diverging sclerites.

Measurement in millimetres. Total length 10, length of carapace 4.5, width 3.5, length of abdomen 6, width 2.3, length of 1st leg 39.5, of 2nd 30, of 3rd 16, of 4th (all measured from base of femur) 21.

Loc. Halmahera. A single female example.

From *H. longitarsis* Thorell, from Celebes (Ann. Mus. Genova X, p. 525), *H. dolomedes* Doleschall, from Amboina (Acta Soc. Sci. Indo-Neerland. V, p. 50, pl. VIII, fig. 10) and *H. albolimbata* Thorell (Ann. Mus. Genova XIII, p. 201), also from Amboina, which on geographical grounds it might be expected to resemble, this species from Halmahera differs in the greater length of its limbs, the first leg in these forms being less than 8 times the length of the carapace, as Thorell's measurements clearly show. In this respect *H. macropus* approaches the Burmese species *H. procerata* Thorell (Spiders of Burma, p. 222); but the two are certainly distinct as shown by the form of the vulva and by the fact that in *H. procerata* the carapace is longer than the patella and tibia of the 3rd leg, while in *magropus* it is shorter.

Family **Oxyopidae.**

Genus *Oxyopes* Latreille.

Oxyopes striatus (Dol.)

Sphasus striatus Doleschall, Nät. Tijdschr. Nederland.-Indië, XIII, p. 430 (1857); id. Acta Soc. Sci. Indo-Neerland. V, No. 5, pl. V, fig. 9 (1858—1859).

Oxyopes striatus Thorell, Ann. Mus. Genova XIII, pp. 211 and 308 (1878).

Loc. Gani and Patani in Halmahera.

Originally recorded from Amboina.

Oxyopes lineatipes (C. Koch).

Sphasus lineatipes C. Koch, Die Arachniden XV, p. 55, fig. 1455.

Oxyopes lineatipes Thorell, Ann. Mus. Genova XXXI, p. 190 (1891—1892).

Three female examples obtained by Dr. Kikenthal on the Baram River, Borneo, are referred to this species, which has been recorded by Thorell from Sumatra, Java and Sara-

wak in Borneo. The vulva in the Baram specimen seems to agree in structure with Thorell's description of this organ.

Genus *Tapponia* Simon.

CR. Ent. Belg. 29, p. XXXVI, 1885.

Tapponia heterosticta sp. n.

Pl. XXV, fig. 13, 13 a.

Colour (in alcohol): Carapace yellowish red, obscurely mottled, with an irregular semicircular fuscous band passing round the posterior portion from a point on a level with the 1st leg; ocular cluster black; mandibles brownish red, with a basal external fuscous band; sternum, coxae, maxillae and labium; palpi reddish, infuscate at apex of femur and at the base of tibia and tarsus; legs reddish yellow, the femora strongly infuscate below, the base of the tibia black; a black spot at the base of the spines giving a spotted look to the legs; abdomen purplish red above, broken up at the sides, and in front by yellowish or greyish white patches continuous with the greyish white of the sides of the abdomen, lower surface with a broad purplish red band, darker at the edges passing from the vulva to the spinners, sides of the lower surface yellow in parts.

When dry the carapace, mandible and legs, though much rubbed, show patches here and there of yellow hairs; the lower surface of the abdomen has a coating of ruddy red hairs and its lateral portions of yellow.

Carapace distinctly shorter than the patella and tibia of the 4th leg, clypeus a little more than half the height of the head; the height of the head a little less than the length of the mandibles; the distance between the anterior eyes equal to about twice their diameter, between the eyes of the 2nd row a little exceeding their diameter; carapace a little less than one quarter the length of the 1st leg.

Abdomen broad in front, somewhat abruptly narrowed in its posterior third, this portion subcylindrical with truncate extremity.

Vulva consisting of an oblong plate, with convex posterior half, the depression semielliptical in form.

Measurements in millimetres. Total length 15 mm, length of carapace 4.5, width 3.3; length of 1st leg 19, of 2nd 17.5, of 3rd 16, of 4th 14.8.

Loc. Batjan. A single adult female example.

Family **Lycosidae**.

Genus *Trochosa* C. Koch.

Trochosa inops Thorell.

Ann. Mus. Genova XXXVI, p. 151 (1891—1892).

Two female examples agreeing closely with the description of *T. inops* were obtained, one in Borneo at the Baram River, the other in the island of Batjan. The types were from Ajer Mantjur and Sungei Bulu in Sumatra.

Family **Ctenidae**¹⁾.

Genus *Ctenus* Walck.

Ctenus hosei sp. n.

Pl. XXV, figg. 14, 14 a, 14 b.

♂. Colour: Carapace mahogany brown with broad central posteriorly narrowing band of silvery grey pubescence, and a pair of obscure dark spots behind the eyes; with a broad grey marginal band. Abdomen with double dorsal series of obscure dark spots, or with broad pale dentated band, the marginal interstices picked out with black; dark brown beneath with two more or less distinct white lines and two shorter ones immediately behind the vulva. Legs paler mahogany brown, very indistinctly annulated beneath femora; distal half of tibia clothed with silvery pubescence; coxae clothed above with silvery grey pubescence. In ♀ the colour is similar to that of the ♂, but there is no silvery white pubescence on the tibiae or carapace; pubescence rufous-grey.

Carapace in ♂ gibbous behind, abruptly inclined to the base; in ♀ horizontal above; otherwise similar to that of *C. thorelli* F. Cambr.

Pedipalp of ♂; tibia one third longer than broad, with a short broad convex dark apophysis on outside, squarely but irregularly truncate at apex; tarsus short and very broad, produced above at base into a stout pointed cone terminating in a thin aculeate spur, strongly curved, directed outwards; palpal organ broad, simple, central lobe small, produced

¹⁾ I am indebted to my friend Mr. F. Cambridge, who has been recently studying the Cteniform spiders, for the determination and description of the species of this group here enumerated. Mr. Cambridge has also afforded me much kind help in sorting and naming the species of Arctiopidae.

on inner side at base; beyond its apex are two short spurs lying close together, their points directed outwards.

Vulva as broad as long, convex; a black corneous margin encloses a transverse oval pale space, including a low convex tubercle on each side, and converges behind forming a narrow transverse plate, curving downwards. On each side of this plate is a corneous dentiform process, its point directed outwards.

Measurements in millimetres. ♂. Total length 17; length of carapace 9.5, width of its anterior margin 3.75; length of 1st leg 34, of 2nd 30, of 3rd 25; (4th absent); patella and tibia of 1st 12, of 3rd 8.

♀. Total length 22, of carapace 10, width of its anterior margin 5, length of 1st leg 29, of 2nd 27, of 3rd 23.5, of 4th 33.5; patella and tibia of 1st 10, of 3rd 8, of 4th 9.75.

Loc. Sarawak (C. Hose. *Type*); Baram River (W. Kükenthal).

The figure of the vulva and pedipalp of this large and handsome species will render the identification of either sex comparatively easy.

Ctenus celebensis sp. n.

Pl. XXV, fig. 16.

This form is similar in every respect to *kuekenthalii* save in the form of the vulva.

♀. Total length 12.5 mm. Carapace 6 mm. Legs 4, 1, 2, 3.

Proportion of leg segments the same as *kuekenthalii*.

Vulva. Longer than broad, basal lateral margins uniformly rounded, not projecting, narrowed posteriorly with a pair of minute pits at the apex; the vulva presents anteriorly a low convex protuberance on each side.

Loc. Minahassa (Celebes). A single ♀ example.

Whether this form is merely a variety of *kuekenthalii* or not I cannot say, but in view of the different form of the vulva one would not be justified in describing it as identical. Possibly a long series would confirm my suspicions that there may be intermediate forms.

Ctenus kuekenthalii sp. n.

Pl. XXV, figg. 15.

Colour similar to the above, legs slightly annulate.

Abdomen with indistinct pale lines below.

♀. Carapace convex above, not horizontal, nor gibbous. Legs 4, 1, 2, 3. Other characters similar to those of *C. thorelli* F. ch.

Vulva. Similar in general character to those of other eastern forms, but differing in certain important points. Broader than long, margin presenting on each side near the base a projecting piece. Central disc flat, smooth, narrowed behind, its posterior apex with a pair of small oval divergent pits.

In the last character it differs from all the other forms that I have seen except *C. celebensis*.

Measurements in millimetres. Total length 12.5, of carapace 6; patella and tibia of 1st leg 5.5, of 3rd 4, of 4th 5.5.

Loc. Minahassa in Celebes. A single ♀ example.

Its small size will furnish a clue to the identity of this species, while the broader vulva and the presence of lateral projections at the base on each side will enable it to be distinguished from *celebensis*, assuming the latter to be something more than a mere variety.

Clenus javanus sp. n.

Pl. XXV, fig. 16.

♀. Carapace horizontal, not convex, nor gibbous behind.

Legs annulate, especially tibiae and protarsi III and IV; mottled with grey pubescence. Carapace with broad central band and narrower marginal band of grey pubescence. Abdomen brown with short pale central line at base, followed by four of five pale black tipped chevrons. Ventral area with two pale lines and two indistinct central pale lines.

Vulva. Much broader than long with a narrow basal neck or pedicle. Margins in some examples slightly sinuous, in others more rounded. On each side towards the posterior margin lies a short rather slender denticle curving upwards and slightly inwards.

Measurements in millimetres. Total length 15, of carapace 6; 1st leg 17.5, 2nd 17, 3rd 14.5, 4th 21; patella and tibia of 1st 6, of 3rd 4.5, of 4th 6.25.

Loc. Buitenzorg (Java).

This form must be very closely allied to *fungifer* of Thorell, but I am unable from Thorell's description to come to any satisfactory conclusion on the point. It is evidently,

judging from Van Hasselt's figure, not identical with *valularis*, but doubtless there are several forms, with the same character of vulva, very closely allied.

Genus *Acanthis* Thor.

Acanthis tridens sp. n.

♂. Colour. Carapace and abdomen dull yellow, thickly clothed with crimson and orange pubescence. Legs similarly clothed. Under surface pale straw-yellow.

Carapace a little broader than long, strongly gibbous and abruptly inclined behind. Central and thoracic striae deeply marked. Eyes closely grouped (always more so in ♂ sex in Cteninae); ocular quadrangle longer than broad, scarcely narrower in front, eyes sub-equal, posteriors half a diameter apart, anteriors scarcely half a diameter. Second row pro-curved, laterals very small, less than half centrals, half their diameter from the latter and the same from posterior laterals; posterior laterals slightly smaller than central posteriors. Clypeus equal to 1½ diameters of central anteriors.

Sternum as long as broad, circular, emarginate opposite coxae, pointed behind. Labium one half longer than broad, more than half but less than two thirds the length of maxillae; the latter long, straight, attenuate at base, dilate at apex, obliquely truncate on inner apical margin.

Mandibles. Lower margin of fang-groove with 5 teeth, upper with 3. Legs 4, 1, 2, 3; femora with numerous spines; patellae I, II, III, IV with one spine on each side.

Tibiae I and II with 2-2-2-2-2-2-2-2 long spines beneath (the last pair small, apical); 1-1-1-1 small lateral spines on each side, no dorsal spines. Protarsus I and II with 2-2-2-2-2 long spines beneath (last pair not strictly apical); 1-1 spines on each side in basal third, no dorsal spines.

Scopula present on tarsi of all four pairs; none visible on protarsi. Tarsal claws 2 with 4 denticles towards base. Claw tuft present.

Pedipalp. Tibia four times as long as broad, external apical process short, small, parallel-sided, slightly curved, trifid at apex, forming three distinct, short, equal teeth.

Measurements in millimetres. Total length 12, length of carapace 5.25, width 4.5, length of 1st leg 32.5, of 2nd 30, of 3rd 26, of 4th 38.5.

Loc. Baram River, Borneo. A single male example.

This beautiful species seems to be nearly related to *lactus* and *dimidiatus* of Thorell, but of the tibial spur of the former is said „ejus apex in duos dentes acuminatos est fissus“, whereas of „*tridens*“ one would say „in tres dentes, &c.“ This spur in *dimidiatus* is spoken of as „dentem conicum acuminatum“; so that there is no question of the distinctness of the species, although the crimson pubescence is mentioned also by Thorell as distinctive of *lactus*.

One could have wished that fortune had thrown some adult females in the way for examination. The general character is so strikingly suggestive of the New World forms of *Acanthoctenus* that one would be surprised not to find a cribellum and calamistrum in the adult ♀. It may not be so, of course, but Thorell has apparently never seen an adult of this sex and I am not quite clear as to the authority on which the absence of these organs has been assumed.

The following table will serve to show how the males of this genus may be distinguished:

- a) Tibial spur simple at apex, conical. (See Thorell) *A. dimidiatus* Thor.
- b) Tibial spur not simple at apex, bifid or trifid.
 - a) Tibial spur bifid at apex. (See Thor.) *A. lactus* Thor.
 - b) „ „ trifid at apex „ „ *A. tridens* n. sp.

Family *Heteropodidae* Thor.

Genus *Clastes* Walck.

Clastes freicineli Walck.

Ins. Apt. I, p. 577, 1837.

Loc. Halmahera, Soah Konorah and Todahe.

Known previously from Amboina and New Guinea.

Genus *Sparassus* Walck.

Sparassus mygalinus (Dol.)

Olios mygalinus Doleschall, Acta Soc. Sci. Indo-Neerland. V, p. 425 (1859); see also Thorell, Ann. Mus. Genova XIII, p. 188, 1878.

Loc. Halmahera, Soah Konorah, Galela; also Ternate.

Recorded by Thorell, Koch and Doleschall from Amboina and Buru.

Genus *Pandercetes* L. Koch.

Pandercetes isopus Thor.

Ann. Mus. Genova, XVII, p. 309, 1881.

Loc. Halmahera, Soah Konorah.

A specimen obtained at the above locality seems identical with Thorell's species which was recorded from the Fly River, New Guinea.

Heteropoda Latreille.

Heteropoda venatoria (Linn.)

Pl. XXV, figg. 18, a, b, c.

Syst. Nat. ed. 12, p. 1035, and all authors.

Examples of this ubiquitous species were obtained at the following localities: Java, Buitenzorg; Borneo, Baram River; Celebes, Makassar; Halmahera, Soah Konorah, Patani; Ternate and Batjan.

Note on the identity of *Araneus venatorius* Linn.

Since the days of Latreille the name *venatoria* has been applied by almost universal consent to the spider identified above as *Heteropoda venatoria* Linn. But recently M. Simon (Hist. Nat. Araignées, II, p. 52, 1897) has advanced the opinion that such an identification is inadmissible and that the correct specific title for the spider is *regia* of Fabricius. Unfortunately no reasons are assigned for this change in nomenclature. After personally looking into the matter, however, I can find none that I consider adequate to justify the alteration that has been proposed.

On p. 1035 of the 12th edition of the „Systema“ Linnaeus based the species *venatoria* upon: 1) a description given by Gronovius (Zoophylac. p. 217); 2) a figure and description published by Merian (Ins. Surinam. pl. XVIII, upper figure); 3) a figure and description given by Sloane (Nat. Hist. of Jamaica, pl. 235, fig. 1—2) and 4) upon a figure and description published by Browne (Hist. of Jamaica, p. 420, pl. 44, fig. 2). Now a glance at the figures and descriptions given by Merian and Sloane show that the spider represented

is the species here identified as *Heteropoda venatoria*, though Merian falls into the error of placing the spider in an orb-web, while holding its cocoon in characteristic fashion. Gronovius also established his description upon the same basis as did Linnaeus, with the addition of a further reference to Marcgrav's Brazil, VII, p. 249, where the same species is depicted. It is true, however, that Gronovius gives an eye-formula which does not fit that of our *venatoria*. It is also true that the spider figured and described by Browne to which Linnaeus refers, is clearly one of the Theraphosidae (probably *Eurypelma alticeps* Keyserling, which is common in Antigua). But though there were two species involved under the *Araneus venatorius* of Linnaeus — as is the case with many of the so-called species of this author — Latreille was, in my opinion, quite within his rights in assigning the name *venatoria* to the species figured by Merian, Sloane and Marcgrav. For this reason I cannot follow M. Simon in calling this species *H. regia*.

? *Heteropoda thoracica* (C. Koch).

Die Arachniden, XII, p. 42, pl. CCCVII, fig. 982 (1845). See Thorell, Ann. Mus. Genova, XXXI, p. 24 (1892).

With some hesitation I refer to this species a single immature female from Buitenzorg in Java and one adult but partially mutilated example from the island of Batjan.

According to Thorell the species occurs in Sumatra, Java and Amboina.

Heteropoda sumatrana Thorell.

Ann. Mus. Genova, XXXI, p. 26.

Two female examples apparently referable to this species were obtained, one at Buitenzorg in Java, and the other at Oba in Halmahera. The specimens are a little smaller than Thorell's types taken at Ajer Mantjur in Sumatra, measuring barely 10 mm in total length.

Heteropoda hosei sp. n.

Pl. XXVI, figg. 21, 21 a.

Colour. Integument of carapace deep reddish brown, hairs removed from the upper surface, but those at the sides greyish-brown in colour; a conspicuous yellow stripe on its posterior slope; the middle of the clypeus slightly paler than the sides; mandibles shining

black, and covered with dark hairs; legs, palpi and sternal surface reddish brown, the hairs greyish-black; abdomen covered with blackish grey hairs, speckled with yellow at the sides.

Carapace longer than broad, its length a little exceeding the length of the tibia of the first leg; rather higher than in *venatoria* and broader in front, the width above the base of the mandibles greater than half the length, and a little excelling the length of the patella of the 2nd leg.

Legs 2, 1, 4, 3, the 1st and 4th nearly equal; shorter than in *venatoria*; the second leg less than four times the length of the carapace; spine-armature as in *venatoria*, but the spine on the posterior side of the four patellae is smaller and there is a distinct spine on the upper side of the 4th tibia; protarsus of 3rd leg scopulate to the proximal pair of spines; tarsus and distal end of protarsus of 4th also weakly scopulate.

Vulva built on same plan as in the rest of the genus; the lateral striate sclerites widely separated from each other by the median piece, the apex of which, however, does not project so far posteriorly as the apices of the lateral pieces.

Measurements in millimetres. Total length 22, length of carapace 10.5, width 9.5, width at base of mandibles 5.8, length of abdomen 11.5, length of 1st leg 38, of 2nd 41, of 3rd 33.5, of 4th 47.

Locality. Baram River in Borneo (Kükenthal); Sarawak (C. Hose).

The above description is taken from an adult ♀ obtained at Sarawak by Mr. C. Hose. The Baram specimen is a little smaller, but except for the absence of the superior spine on the 4th tibia, appears to be almost identical.

This species might be expected to be identical with *H. obtusa* Thorell (Ann. Mus. Genova, XXXI, p. 34, 1892) from Sarawak; but judging from Thorell's description the differences between the two are many and important. Firstly the adult female of *obtusa* is only 14½ mm in length; secondly, the first leg is only 3 times the length of the carapace, and the patellae are without spines, the protarsus of the 3rd leg is scopulate only at the apex and the tarsus and protarsus of the 4th leg are not scopulate; lastly, the colour seems to be different, there being no mention of the posterior yellow band on the carapace etc.

Heteropoda kuekenthali sp. n.

Pl. XXV, fig. 19.

Colour. Carapace clothed with greyish-brown hairs; clypeus black; posterior sloped portion marked with a bright yellow transverse band emphasised above and below by a black stripe

Abdomen greyish-brown, spotted above and at the sides with yellow; the sigilla black; the lower surface from the epigastric fold to the spinners occupied by a posteriorly narrowing fuscous stripe a little darker in tint than the area external to it and defined by a thin whitish line; sternum, mouth-parts and lower surface of legs, with the exception of the dark grey scopulae, rufous; mandibles metallic bluish black; palpi black; legs reddish brown, indistinctly mottled on the femora, white spots at the base of the spines; upper sides of coxae and trochanters yellow with a pair of fuscous spots.

Carapace longer than broad, its length equal to that of the tibia of the 2nd leg, much excelling that of the 3rd, considerably higher than in *H. venatoria*, its sides and back somewhat abruptly sloped, anterior central eyes rather smaller than in *venatoria*.

Mandibles very prominent, strongly geniculate at the base, much more so than in *venatoria*.

Legs shorter than in *venatoria*, the 2nd not four times as long as the carapace (in *venatoria* it is about 5 times as long).

Spine armature the same as in *H. venatoria* except that there is no spine on the posterior side of the patella.

Vulva presenting anteriorly an arched ridge, the concavity of which looks backwards: the ends of this ridge pass into a pair of thick, elevated, striate skeletal pieces, which approach each other and touch in the middle line in front, their posterior inner angles, however, diverge and are not in contact; from the middle of the concavity formed by the ridge a process runs directly backwards and passes beneath the lateral pieces, where they are in contact, extending half-way towards their posterior extremity.

Measurements in millimetres. Total length 30, length of carapace 12.5, width 11, width at base of mandibles 6.8, length of abdomen 15.5, width 10, length of 1st leg 46, of 2nd 48, of 3rd 41, of 4th 43 (all measured from base of femur).

Loc. Soah Konorah (Halmahera). A single female example.

This large and handsome species, equalling, if not excelling, *H. venatoria* in size, approaches *H. cervina* of L. Koch (Die Arachniden Austral., p. 673, pl. IV, fig. 4) from Queensland in having the legs shortish, the carapace high and a dark band on the lower side of the abdomen. In *cervina* however, the colour is different, the mandibles not prominent, the vulva differently formed and the carapace is longer than the tibia of the 2nd leg.

Heteropoda nigriventer sp. n.

Pl. XXVI, fig. 20

In size, appearance, length of leg, etc. much like *H. venatoria*.

Carapace castaneous, covered with yellowish pubescence, with a posterior yellow stripe; ocular region infuscate, clypeus mesially pale; legs also covered with yellow pubescence, finely mottled with spots, not banded, white at the base of the spines; abdomen covered with yellow pubescence above, ornamented below with a broad fuscous band, extending from the epigastric fold to the spinners.

Carapace as long as the 3rd tibia, shorter than the 4th tibia.

Legs with spine-armature as in *H. venatoria*; there is a spine on the anterior surface of the patella as well as on the posterior.

Vulva with its lateral sclerites widely separated by the median process which passes between them nearly to their posterior border.

Measurements in millimetres. Total length 26, length of carapace 10.5, width 9.5, length of 1st leg 47, of 2nd 50, of 3rd 38, of 4th 43.

Loc. Donggala in Celebes; a single female example.

At once recognisable from *venatoria* by the presence of the fuscous ventral band of the abdomen — a feature in which it approaches *cervina* L. Koch. Easily distinguishable from the latter by its longer legs, larger size, etc.

Oliophthalmus gen. nov.

Pl. XXVI, figg. 22, a, b.

Carapace about as wide as long, about as high as in *Heteropoda*, but flatter above, head not elevated; posterior line of eyes as wide as the head, distinctly recurved, convexity forward, the lateral much larger than the median and prominent, separated by a space that is less than its diameter from the subjacent edge of the carapace; eyes of anterior line procurved, the medians much smaller than the laterals, their upper edges almost or quite at the same level as those of the laterals; the laterals separated from the edge of the clypeus by a space that nearly equals half their diameter, the medians separated from the edge by a space excelling their diameter, the quadrangle of the median eyes longer than broad, the anterior medians larger than the posterior medians.

Legs moderately long and robust, 2, 1, 3, 4 or 2, 1 and 3, 4, the 3rd and 1st being nearly or quite equal; protarsi and tarsi scopulate, though weakly on the 4th.

Mouthparts as in *Heteropoda*, mandible with 4 posterior teeth and 3 anterior.

Abdomen depressed, expanded posteriorly.

Type *O. spinipes* sp. n.

According to Simon's latest classification of the Sparassinae, this genus falls into the section *Heteropodeae*, approaching the genera *Heteropoda* and *Panderctes*. From *Panderctes*, however, *Oliophthalmus* may be recognised by the flatness of the head and the weakness of the cephalic sulci, by having the upper edges of the eyes of the front row on the same level as in *Heteropoda*, whereas in *Panderctes* the centres of the eyes are in the same straight line. In the latter again the posterior lateral eyes are much higher above the subjacent edge of the carapace.

From *Heteropoda*, *Oliophthalmus* differs in having the eyes of the posterior line as wide as the head, the clypeus very low, the 4th leg shorter than the third, the posterior median eyes smaller than the anterior median, etc.

Oliophthalmus murinus sp. n.

Pl. XXVI, fig. 23.

Colour of carapace and legs deep reddish black, the latter blacker than the head; mandibles black polished, sternum and coxae reddish black; the hairy clothing mostly rubbed from the dorsal side of the carapace and legs, but apparently yellowish grey in tint; abdomen blackish-grey without a definite pattern except for a transverse greyish patch with a sinuous anterior border above the apex; the legs very indistinctly annulate.

Carapace about as long as broad, the length about equal to that of the tibia of the 1st leg and less than one quarter of the length of the 2nd leg.

Palpi: Femur armed apically above with some 4 spines; patella with one external and one internal; tibia with 3 internal, 1 superior and 2 external long spines; tarsus with three internal and three external spines.

Legs: Femora of 1st, 2nd and 3rd armed above with 3, 3, 3 spines, the arrangement less regular on that of the 1st than of the others; two of the spines missing on the posterior surface of the femur of the 4th; patellae with a single posterior basal spine; tibia of 1st, and 2nd with 4 pairs of inferior spines, and one anterior and one posterior spine; tibia of 3rd and 4th with 2 anterior and 2 posterior spines and 3 pairs of inferior spines — the total for each tibia being 10 spines; protarsi armed below with two pairs of long spines, protarsus of 4th also with a pair at the apex, a little higher than the others. Protarsus

of the 1st and 2nd legs also with an anterior and posterior basal spine; of the 3rd with 2 anterior and 1 posterior spine, of the 4th with 3 anterior and 3 posterior spines; tarsi unspined; tarsi and protarsi of 1st and 2nd scopulate to the base, with a small scopula also on the posterior side of the base of the tibia; tibiae of 3rd and 4th scarcely scopulate, tarsi and protarsi less thickly scopulate than the others, on the 4th the scopular hairs are practically absent from the middle of the segments though persisting at the sides.

Abdomen considerably wider than long, wider behind than in front.

Vulva consisting of a horny plate which posteriorly rises into three elevations, the median of which is broad in front and narrow behind where it passes in between the other two.

Measurements in millimetres. Total length 13.5, length of carapace 6, width 5.9, length of abdomen 7.5, width 5.2, length of 1st leg 23, of 2nd 26, of 3rd 20.5, of 4th 20.

Loc. Baram River (Borneo). A single female example.

Otiophthalmus planiceps sp. n.

Pl. XXVI, fig. 24.

Closely allied to the preceding species.

Colour paler, more chestnut, the legs more distinctly annulate.

Carapace flatter, its length distinctly excelling that of the tibia of the 1st leg and rather more than one quarter of the length of the 2nd leg.

Legs distinctly shorter than in *murinus* (Compare measurements); the spine-armature the same except that the median basal spine of the upper side of the femur is absent.

Vulva different from that of *murinus*, consisting of a right and left semicircular plate in contact in the middle line along their convex edges.

Measurements in millimetres. Total length 12.5, length of carapace 5.5, width 5.5, length of 1st leg 19, of 2nd 20, of 3rd 17.5, of 4th 17.2.

Loc. Batjan. A single female example.

Otiophthalmus spinipes sp. n.

Pl. XXVI, figg. 22, a, b, c

♂. Colour of integument as in *planiceps*. Carapace clothed laterally and mesially on the cephalic area with yellowish white hairs, a band of brown hairs running posteriorly and inwardly from the posterior lateral eye and meeting its fellow of the opposite side on each

side of the thoracic fovea; mandibles clothed with whitish hair; hairs on tarsi of palp greyish black; lower side of femora with longitudinal band of fuscous hairs; tibiae similarly clothed below, but the dark band mesially interrupted by paler hairs; upper side of femora pale, with a basal fuscous spot and mottled with black spines; hair on abdomen pale above, greyish black at the sides; the greyish black spreading on to the posterior lateral portion of the carapace.

Carapace about as broad as long, a little shorter than tibia of 1st leg, just equal to that of 3rd, less than one quarter of the length of the 2nd leg.

Legs 2, 1, 3, 4; spine-armature of femora as in *planiceps*; patellae of 1st and 2nd with a distinct anterior spine, which is not observable in the two preceding species; tibiae with the same spines as in the others, but those of the 1st and 2nd armed above in addition with 3 spines, the 3rd with 2 spines and the 4th with 1 spine; protarsi of 1st and 2nd legs with 2 anterior and 2 posterior spines, the rest of the spine-armature as in the other species.

Palpi: Tibia armed externally with 2 processes, one long slender curved with a hooked extremity, the other short triangular rising from the base of the longer one, near these on the lower side of the segment close to the joint there is a tuberculiform process; the filiform extremity of the palpal organ rising at the posterior end of the bulbous portion, passing up the inner side of the alveolus and terminating near the tip of the tarsus, its point protected by short sheath-like process from the bulbous portion.

Measurements in millimetres. Total length 11, length of carapace 5.3, width 5.3, length of 1st leg 22, of 2nd 25.5, of 3rd 21, of 4th 20.

Loc. Oba in Halmahera. A single male example.

The three species of this genus may be recognised by the following key:

- a) Patellae of 1st and 2nd leg with an anterior spine; tibiae of 1st and 2nd leg with 3 superior spines, of 3rd with 2, 4th with 1 in addition to the remaining 10 spines; protarsi of 1st and 2nd with 2 anterior and 2 posterior spines (♂) . . . *spinipes*.
- b) Patellae of legs without anterior spine; tibiae without superior spines (being armed only with 10 spines); protarsi of 1st and 2nd armed with 1 anterior and 1 posterior spine (♀).

- a') Legs shorter, length of carapace excelling length of tibia of 1st leg, and more than one fourth the length of the 2nd leg; femora armed above with only 2 basal spines *murinus*.
- b') Legs longer, length of carapace equal to that of tibia of 1st leg and less than one fourth of the length of the 2nd leg; femora armed above with 3 basal spines *planiceps*.

Genus *Theleticopsis* Karsch (= *Themeropsis* L. Koch).

Theleticopsis flavipes sp. n.

Pl. XXVI, fig. 25.

COLOUR: Carapace castaneous, with metallic lustre; clothed with ashy-grey pubescence; mandibles black, shining, with black hairs; maxillae and labium piceo-ferruginous; legs and palpi ochraceous, the hairs greyish-white, scopulae ashy-grey; abdomen covered with ashy-grey pubescence, with an indistinct flavous dorsal band, divided by a median fuscous laterally digitate stripe; lower surface mottled, with two indistinct fuscous bands passing backwards from the epigastric fold to the spinners.

Carapace about as long as the patella and tibia of the 4th leg, shorter than those of the 2nd leg. Mandibles strongly geniculate. Palp: Femur with some 5 spines at its apex, patella with external spine; tibia with 2 external, 1 upper and 3 internal spines; tarsus with 3 external and 3 internal.

Legs 1 and 4, 2, 3, in length (measured from base of femur) the 1st less than three times the length of the carapace, no scopula on tibia, tarsi and protarsi scopulate, the protarsus of the 3rd weakly so in its proximal half, of the 4th only so at the tip; spine-armature of femur normal without a median basal spine above; patellae unspined, tibiae of 1st and 2nd with six pairs of inferior spines, of 3rd and 4th with three pairs: tibia of 2nd also with one anterior spine, of 3rd with 2 anterior and 1 posterior; of 4th with two anterior and 2 posterior; protarsus of 1st, 2nd and 3rd with 1 pair of inferior spines, of 4th with 2 pairs; of 3rd with 2 anterior spines, of 4th with 3 anterior and 3 posterior spines.

Vulva (as in figure).

Measurements in millimetres. Total length 14; length of carapace 6.3, width 5; length of abdomen 8, width 5; length of 1st leg 18, of 2nd 17.2, of 3rd 14, of 4th 18.

Loc. Batjan. A single female example.

An immature male, closely resembling the female in all its characters and probably co-specific with it, was taken at Patani in Halmahera.

From its distribution this species might be expected to resemble *T. goramensis* Thorell (Ann. Mus. Genova XVII, p. 269, 1892) from Goram in the Molucca group, but certainly differs from it in the following features.

T. goramensis is considerably larger (20 mm), has the carapace, sternum, and legs black, the legs of the 1st pair three times as long as the carapace, and 5 pairs of spines on the lower surface of the first tibia and 4 on the 2nd, etc.

Of the species known to me in nature, namely *T. birmanica*, Thorell, *T. modesta* Thorell, *T. orichalcea* Sim., and *T. severa* L. Koch, it most nearly approaches the first-named in size, but differs from it as from the others, in the shape of the vulva and the presence of 6 pairs of spines on the tibia of the 1st and 2nd legs. It is true that *modesta*, from Penang, has 6 on the 1st tibia and 5 as a rule on the 2nd tibia; but it further differs from *flavipes* in its larger size (20—23 mm), the presence of the scopula on the apex of the 1st and 2nd tibia, etc.

Family **Attidae.**

Genus *Plexippus* C. L. Koch.

The term *Plexippus* is here applied in the sense in which it was used by Thorell in Ann. Mus. Genova, XXXI, p. 369 (1891—1892).

Plexippus beccarii Thorell.

Ann. Mus. Genova, XVII, p. 582, etc. (1881).

Four adult male examples, one from Ternate, one from Batjan and one from Tobelo, and another from Soah Konorah in Halmahera seem to be referable to this species, which has been recorded by Thorell from Ternate, Ceram, New Guinea, Aru und Cape York.

These specimens differ considerably in size, length of palp, etc. as the following measurements show:

Specimen from Batjan. Total length 9, length of carapace 5.5, of palp 5, of 1st leg (to apex of tibia) 8.5.

Specimen from Ternate. Total length 10, length of carapace 5, of palp 6.5, of 1st leg (to tip of tibia) 9.

Specimen from Tobelo. Total length 13, length of carapace 6, of palp 10, of 1st leg (to distal end of tibia) 13.

Specimen from Soah Konorah. Total length 10, length of carapace 4.5, of palp 6, of 1st leg (to end of tibia) 8.

Thorell has already pointed out the variability of this species with respect to the length of the palpi and first legs.

Plexippus sinuatus (Dol.)

Salticus (Attus) sinuatus Doleschall, Acta Soc. Sci. Indo-Neerland., V, No. 5, p. 18, pl. III, fig. 2, 1859.

Plexippus sinuatus Thorell, Ann. Mus. Genova, XIII, p. 240, 1878; id. op. cit. XVII, p. 603 (1881).

Loc. Batjan and Oba in Halmahera. Several female examples.

From Thorell's table of distribution of *Plexippus* in the Austro-Malayan area (Ann. Mus. Genova XVII, pp. 708—709) it may be seen that the species under discussion has been recorded from the following localities: Ternate, Amboina, Sorong, Fly River (in Papua) and Cape York.

The determination of Dr. Kükenthal's examples is based principally upon what Thorell has said in 1877 respecting the form of the vulva of *sinuatus*. The description given of this organ in 1881 does not apply equally forcibly to the structure.

Plexippus kuekenthali sp. n.

Pl. XXVI, figg. 26 a, b.

Colour: Carapace castaneous, black around the eyes and two broad fuscous bands running backwards from the eyes to the posterior margin, leaving a pale broad stripe between them; the pale parts of the carapace clothed with white hairs, red hairs around the eyes; mandibles fuscous with bronze metallic tint, labium and maxillae infuscate; palpi flavous with tarsus infuscate; legs ochre yellow, tibiae and protarsi of the 2nd and 3rd biannulate.

1st and 2nd legs, especially the 1st, largely infusate with strong bluish metallic glitter; abdomen with a median dorsal flavous band, narrower in the posterior than the anterior half, fuscous at the sides above, paler below at the sides, with a median fuscous ventral band.

Closely resembling structurally the specimens identified above as *P. beccarii*, but with the carapace higher, the thoracic portion more suddenly sloped backwards, and the cephalic forwards to the anterior line of eyes. The mandibles too are much larger, nearly vertical, but widely diverging externally from the base, about two-thirds the length of the carapace, narrowed distally, striate, with an anterior longitudinal carina; armed with 4 teeth, 2 small and slender close to the base and 2 at the distal end, 1 anterior tubercular close to the base of the fang and 1 below and a little behind it; a larger posterior subbifid tooth; fang nearly as long at the basal segment, bent almost at a right angle at the base and with its tip lightly curved; its basal half striate.

Palp slender, a little longer than the carapace, femur strongly curved, not straight as in *beccarii*. Patella and tarsus subequal, the latter only a little longer; tibia longer than either, slender, more than four times as long as broad, with an external spical spine; tarsus flask-shaped, globular at base, cylindrical in its distal half, with truncate apex, the basal half a little wider than the tibia of palp but narrower than tibia of 1st leg, scopulate at apex, with an internal brush-like tuft of hairs; palpal organ as in figure.

Legs 1, 3, 4, 2, the first more than three times the length of the carapace.

Measurements in millimetres. Total length 11, length of carapace 5, width 3.7, length of basal segment of mandible 4, length of palp 5.5, of 1st leg 17, of 2nd leg 11.7, of 3rd 14, of 4th 12.2, length of abdomen 6, width 2.5.

Loc. Gani in Halmahera (type); also a smaller example of apparently the same species from Soah Konorah.

Although strikingly different in the structure and size of the mandibles, this species is undoubtedly closely allied to *P. beccarii*, for in spite of the greater length of the jaws, the number and relative position of the teeth on them is substantially the same in the two species. The curvature of the femur of the palp and the slightly greater height of the carapace are doubtless correlated with the development of the mandible.

Genus *Bathippus* Thorell.

Ann. Mus. Genova, XXXI, p. 401, 1891—1892.

Bathippus morsitans sp. n.

Pl. XXVI, figg. 27, a. b.

Colour (in alcohol): Carapace with a pale reddish median band running from the anterior row of eyes to the posterior margin; the spaces between and about the eyes on each side black; the rest of the carapace reddish-brown; mandibles reddish-black; labium and maxillae brownish, the latter apically paler; palp testaceous, femur infusate basally and tarsus infusate throughout. Legs mostly ochraceous or testaceous, the basal half of the femur and tibia paler, anterior and posterior surfaces of femora of 1st and 2nd as well as the patellae darker with purple metallic lustre, upper side of abdomen also with green metallic lustre. Reddish hairs around and between the side eyes, white hairs below them and between the anterior eyes.

Cephalic region of the carapace nearly flat, but little sloped downwards anteriorly; the posterior eyes only a little higher than the anterior laterals, their centres about on a level with the upper edge of the anteriors; the intermediate eyes distinctly nearer to the posterior than to the anterior; the centres of the anterior laterals on a level with the upper edge of the anterior medians; clypeus about half the radius of the anterior medians.

Mandibles with basal segment nearly as long as the carapace with a slight sigmoid flexure, distally thickened, armed with 4 teeth, 2 small and basal, 2 larger and distal, the inferior distal tooth much shorter than the upper, which is very long, pointed, simple, and slightly curved; fang nearly as long as the basal segment, sinuate with a small anterior basal tooth.

Palp long and slender, longer than carapace (palpal organ as in figure).

Legs long and rather slender, 3, 1, 2, and 4 (or 1, 3, 2, 4), the 3rd longer on the left side than on the right; the tibia of the 1st a little less than the length of the carapace.

Measurements in millimetres. Total length 9; length of carapace 4, width 2.8; length of abdomen 5, width 2; length of basal segment of mandible 3.8, of palp 6, of 1st leg 15, of 2nd leg 11, of 3rd 16 on one side, 14 on the other, of 4th leg 11; patella and tibia of 4th 3.7, tarsus and protarsus 4.8.

Locality. Baram River in Borneo. A single ♂ example.

Apparently resembling *B. macilentus* Thor. from Sumatra, but certainly differs in having the upper distal tooth on the basal segment of the mandible simple and not double; from *B. birmanicus* it also differs in having much longer and differently armed mandibles, etc.

Genus *Hyllus* C. Koch.

Die Arachniden XIII, p. 161, 1846.

Hyllus walckenaeri (White).

Deineresus walckenaerii White, Ann. Nat. Hist. XVIII, p. 179, pl. II, fig. 4 (1864).

Deineresus (Hyllus) walckenaerii Van Hasselt. Tijdschr. Ent. XXII, p. 223, pl. XII, fig. 4 and 5 (1879).

Hyllus walckenaerii Thorell. Ann. Mus. Genova XXXI, p. 380 etc. 1892.

Loc. Borneo (Baram River).

A single adult male example, agreeing sufficiently closely with the type, which is preserved in the British Museum, as to leave but little doubt as to its identity, was obtained.

The species has hitherto been known only from Celebes.

Hyllus lacertosus C. Koch.

Pterippus lacertosus C. Koch, Die Arachniden XIII, p. 94, pl. 348, fig. 1157 and 1158 (1846).

Hyllus lacertosus C. K. var. *borneensis* Thorell. Ann. Mus. Genova XXXI, pp. 384, etc. 1892.

Loc. Baram River in Borneo. A single adult male.

Thorell's description of *lacertosus* var. *borneensis* applies closely to this example, except that no mention is made of a spot of white hair at the tip of the protarsi, and of three white spots on each side of the abdomen, one on each side at the base and two farther back in its posterior half, which are plainly visible in this specimen.

C. Koch's figure of the immature form clearly shows the spots on the base of the abdomen; and the posterior side-spots occupy the same position as the corresponding stripes shown in Koch's figure of *H. ianthinus*, though the latter extend considerably further over the summit of the back.

Genus *Chalrolecta* Simon.

C. R. Soc. ent. Belg. XXVIII, p. CCXXXI, 1884.

Chalcolecta bitaeniata Simon.

Pl. XXVI, fig. 28.

C. R. Soc. ent. Belgique XXVIII, p. CCXXXI (1884).

Loc. Todahe 1000 ft. alt. (Halmabera).

Recorded by Simon from Ekkor, north-east of the island of Halmahera.

Genus *Diolenius* Thor.

On European Spiders, p. 203.

Diolenius armatissimus Thorell.

Ann. Mus. Genova XVII, p. 417 (1881); see also Simon, C.R. Soc. ent. Belgique, XXVIII, p. CCXXVIII (1884).

Loc. Soah Konorah (Halmahera).

This species has been recorded from Ternate by Thorell and Simon, and also from Batjan and Gilolo (Halmahera) by the last-named author.

Cocatodes gen. nov.

♀. Carapace high, cephalic portion horizontal, thoracic sloped downwards at an angle of 45° from the posterior eyes to the hinder margin; anterior line of eyes straight (i. e. a straight line would pass through their centres); these eyes subcontiguous, the diameter of the laterals almost equal to the radius of the medians. Ocular quadrangle longer than broad, broadest in front where its anterior angles are formed by the anterior lateral eyes; eyes of the median and posterior rows on a level but distinctly higher than anterior lateral; those of the median pair nearer the anterior than the posterior, of largish size, their diameter nearly or quite equal to the radius of the posterior eyes. Clypeus equal to about the radius of the anterior median eyes.

Mandibles projecting obliquely forwards and downwards, about twice as long as broad, armed with 5 teeth, 3 anterior proximal, 2 posterior distal, fang long, subsinuate.

Labium oblong, nearly twice as long as broad.

Maxillae more than twice as long as the labium, a little longer than the first coxae, diverging distally, and slender, with rounded apices and long ciliated inner border. Palpi elongate, slender. Sternum oval, longer than broad.

Legs very long, 1st and 4th pairs about equal and longer than 2nd and 3rd, which are also subequal.

Abdomen more than three times as long as broad, posteriorly narrowed.

Type *C. leptopus*.

The chief differential characters of this genus appear to me to be; firstly, the straightness of the anterior line of eyes, i. e. their centres being joinable by a straight line, and secondly, the length and slenderness of the maxillae and labium.

Cocalodes leptopus sp. n.

Pl. XXVI, figg. 29, a, b.

♀. COLOUR: Carapace, mouthparts, sternum, and legs testaceous yellow, the rims of the eyes black; the sides of the ocular quadrangle infuscate with in addition a couple of fuscous patches, one on each side of the middle line; a narrow fuscous band running from the posterior eye to the hinder border of the carapace. Protarsus of 1st leg mesially infuscate, femur of 4th with four black spots, patella with one, tibia infuscate apically, protarsus infuscate mesially and apically. The hairs around the ocular area and on the sides of the carapace yellowish-white, a band of reddish-brown hairs lying between the posterior eye and the eye of the 2nd row; clypeus clothed with snow-white hairs; upper side of abdomen covered with yellow hairs with a rather irregular red band on each side; sides and lower surface yellowish-white.

Carapace about one-quarter longer than wide, and about equal to the length of the tibia of the 2nd leg. Mandibular fang much more than half the length of the basal segment. Palp with its femur bowed, spined above, patella about half the length of the tibia which is about six times as long as broad; tarsus incrassate, almost as long as the tibia, thickly hairy.

Legs: 1st more than four times as long as the carapace; femora of all the legs spiny above, patellae with an anterior and a posterior spine; tibiae with two superior spines and about 6 pairs of inferior and lateral spines; protarsi also armed with long and strong spines, especially on the 1st leg. Protarsus of first lightly arcuate, about as long as the carapace, that of the 4th long and slender, longer by one-half than the carapace.

Vulva presenting the appearance of a low rounded tubercle without definite processes or grooves.

Measurements in millimetres. Total length 10, length of carapace 3.5, width 2.8; length of abdomen 6.5, width 2; length of palp 5.5, of 1st leg 16, of 2nd 13.5, of 3rd 12.5, of 4th 17.

Loc. Patani in Halmahera. A single female example.

Cocalodes melanognathus sp. n.

Pl. XXVI, figg. 30, a, b.

♂. Carapace and mandibles rufo-fuscous, the former with a paler median band on its thoracic portion, the latter with metallic glitter; maxillae and labium also infuscate; tibia of 1st and of 2nd marked faintly with two fuscous bands; femur of last without distinct black spots except one at the apex and the small ones, noticeable on all the legs, at the base of the spines.

Hairs mostly rubbed off, clypeus with a median patch of long white hairs, shorter ones at the side, hairs showing between the eyes, and a big patch of white hairs on each side outside the line of eyes; the posterior sloping part of the carapace clothed with white and red hairs.

Cephalic region of the carapace more obliquely sloped upwards and backwards from its anterior edges and a little longer as compared with its width than in *C. leptopus*.

Mandibles considerably longer, the basal segment nearly as long as the carapace ($3\frac{1}{2} : 4$); maxillae also much longer, longer than the sternum, about three times as long as the labium and one-third longer than the coxa of the 1st leg.

Legs 1, 4, 2, 3; the 4th about four times the length of the carapace, the 1st more; the tibia of the 2nd a little longer than the carapace; the spine-armature as in *C. leptopus*.

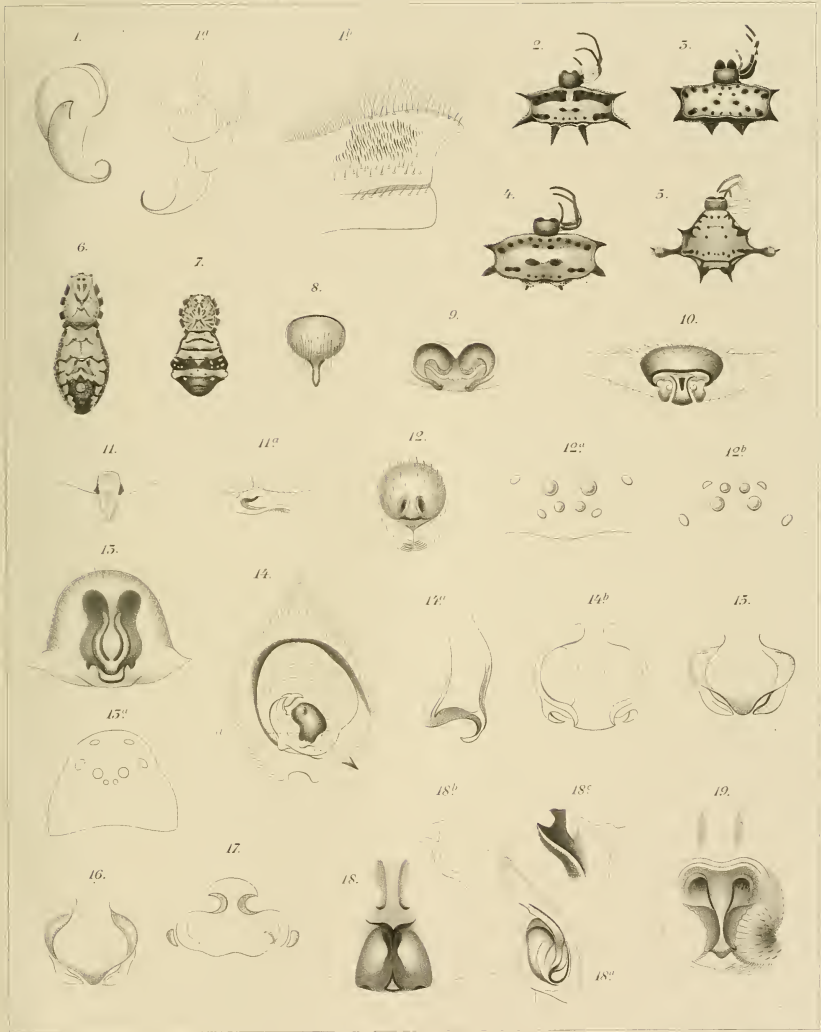
Palpal organ as in figure.

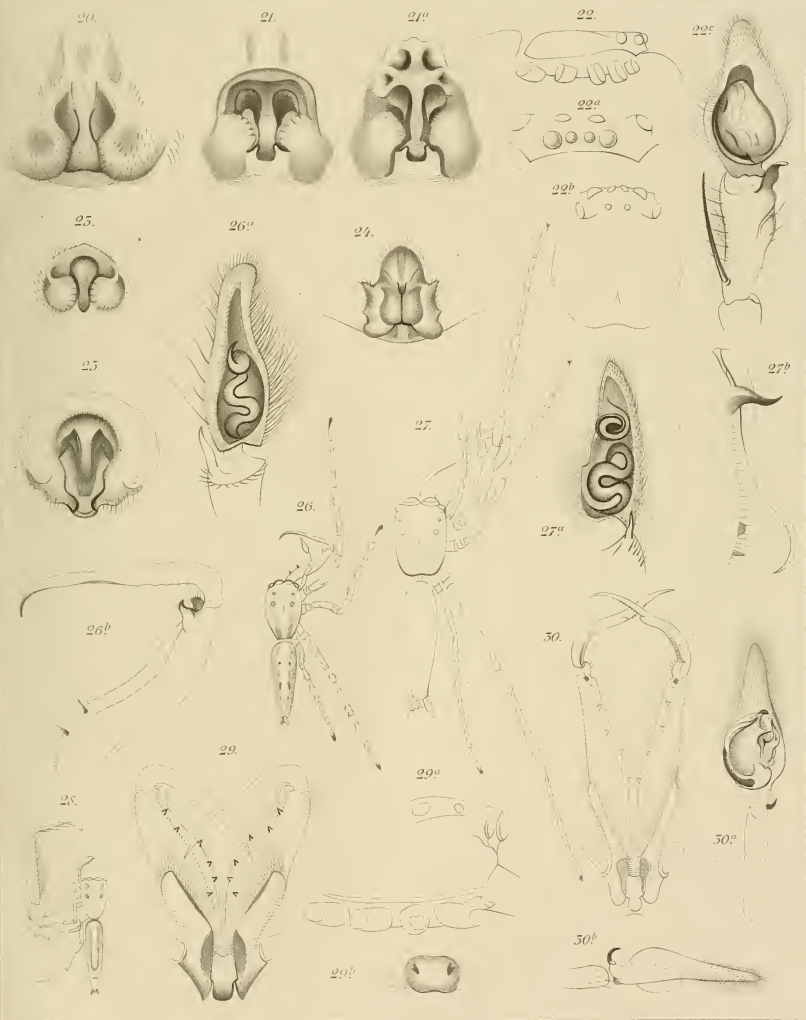
Measurements in millimetres. Total length 9; length of carapace 4, width 2.5; length of abdomen 5.3, width 1.5; length of palp 5, of 1st leg 18, of 2nd 14, of 3rd 13, of 4th 16.

Locality. Soah Konorah in Halmahera. A single male example.

This male may prove of course to be nothing but the male of the preceding species. But there is no evidence that it is so.







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