

enabled to prove that fish lived at depths of 500 and 550 fathoms—and, further, to arrive at some really important conclusions regarding the constitution of the gases contained in their swimming-bladders when subsisting under the conditions there present.

Dr. Wright has, moreover, to inform the scientific public on what basis (when referring to my starfish-sounding at 1260 fathoms) he would have us believe that the “dredge” is alone capable of affording “indications of animals higher than the Rhizopods living at those depths” (*loc. cit.*), unless when, *by accident*, that instrument happens to bring one of these “higher animals” to the surface.

Surely, if my discovery was an accident, the discovery of Dr. Wright’s shark was “*an accident of an accident.*”

I remain,

Gentlemen,

Very faithfully, yours,

G. C. WALLICH.

Kensington, December 6, 1868.

XIII.—*Descriptions and Sketches of some new Species of Araneidea, with Characters of a new Genus.* By the Rev. O. P. CAMBRIDGE, M.A.

[Plates IV., V., VI.]

Genus STORENA (Walck.).

This genus was founded in 1805 by Baron Walckenaer (*Tableau des Aranéides*, p. 83, pl. 6. figs. 55, 56) upon a single spider received from New South Wales. Five species from the same region have lately come under my own eye; and of these, descriptions and sketches of characteristic portions of structure are given below.

*Storena variegata.*

— *scintillans.*

— *Bradleyi.*

*Storena australiensis.*

— *maculata.*

The last two of these I had at first described as constituting a new genus; afterwards the first two species came under my notice, and in them I recognized at once the exact type of Walckenaer’s description; between these and the last two no generic distinction could be discovered, though each two were the types of a distinct group within the genus; lastly, *S. Bradleyi* came before me, and puzzled me much: incapable of generic separation from *S. australiensis* and *S. maculata*, except in a modified relative position of the eyes, yet by that

modification it seemed almost to come within the genus *Enyo*. Dr. Ludwig Koch appears to have included several species (also from New South Wales), generically identical with the above three species, in the genus *Enyo*\*: my impression, however, is that they will eventually be found to be quite distinct from *Enyo*. Dr. Koch includes "*Storena*" in the family Drassides, of which he fixes *two* terminal tarsal claws as the leading character, whereas "*Enyo*" has *three*, and has thence been included in the family Theridides. Now in those two of the species here described (*Storena variegata* and *S. scintillans*) which seem to be undoubtedly of Walckenaer's typical *Storena* the terminal tarsal claws are certainly *three* in number, though the third is very minute and difficult to be seen. *S. Bradleyi*, *S. australiensis*, and *S. maculata* have also three terminal tarsal claws.

In his description of a new species of *Storena* (*S. Græffei*), also an Australian species, Dr. L. Koch does not specially remark upon its tarsal claws, though, from including it in his work 'Die Arachniden-Familie der Drassiden,' p. 192, he leaves it to be inferred that he could only discover *two*.

The at present little known but closely allied genus *Lachesis* (Savigny) seems scarcely to be generically distinct from *Storena*, and is also apparently closely allied to *Enyo*. Of both *Lachesis* and *Enyo* some species in my collection, from Syria, Palestine, and India, have yet to be worked out; the comparison of these with allied species already received, and with others expected, from Australia, will perhaps facilitate a more certain and permanent arrangement of the species now included in these several genera. At present the Australian species known to me must remain provisionally as here described.

*Storena variegata*, n. sp.

♀. Adult. Length  $3\frac{1}{2}$  lines.

*Cephalothorax* oval, broader behind than in front, smooth, shining, rounded before; caput slopes forward, so that the profile line of the whole cephalothorax is a continuous curve; fore part of caput has some bristly hairs upon it; normal grooves and indentations but slightly defined; colour a uniform dark chocolate-brown.

*Eyes* eight, not very unequal in size, in three transverse rows on fore part of cephalothorax; the lower row consists of two eyes wide apart; close above this is the central row of four; this row is rather curved, the curve directed backwards;

\* *Enyo braccata*, *E. picta*, in "Beschreib. neuer Arachniden u. Myriap." aus den Verhandlungen d. k. k. zool.-bot. Gesell. in Wien, Jahrgang 1865, pp. 859-861.

*Enyo annulipes*, *ibid.*, Jahrgang 1867, p. 194.

the two middle eyes are slightly the largest of the eight, and nearer to each other than each is to the lateral one on its side: above the central row, and further removed from it than from the lower one, is the third row of two eyes, near together and smallest of the eight; height of clypeus rather greater than the space between the lower and third rows of eyes.

*Legs* not very long, strong, tapering, furnished with hairs, and a few spines on those of the two hinder pairs. Relative length 1, 4, 2, 3, but very little difference between 1 and 4; femora of first pair stronger than those of the rest. Colour brightish orange-brown; femora, outer sides of genua, and undersides of tibiæ striped and suffused with deep chestnut-brown; tarsi end with three claws, the two upper ones curved and pectinate, the under one simple, small, and inconspicuous.

*Palpi* short, strong, furnished with hairs; colour yellowish, humeral joints chestnut-coloured.

*Falces* strong, conical, inclined backwards towards sternum, about equal in length to height of facial space, rather paler in colour than cephalothorax; fang small.

*Maxillæ* rather strong, straight, oblong, rounded at extremities on outer sides, inclined to labium.

*Labium* about one-third shorter than the maxillæ, much broader at base than at apex, which is round-pointed: these parts are paler in colour than the falces.

*Sternum* somewhat heart-shaped, but little longer than broad, smooth, shining, furnished with hairs, and of a dark chestnut-brown colour.

*Abdomen* oval, very convex above, but very sparingly furnished with hairs, nearly black, marked and variegated both above and below with pale-yellow and whitish markings; these form a concurrent double longitudinal series of broken chevrons in the medial line of the upper side; the markings on the sides are irregular, but they concentrate into a largish bright-yellowish-white patch on either side near the fore extremity; on the underside the yellow markings form two broadish longitudinal converging lines, which reach halfway towards the spinners; between these and the extremities of the lines are three roundish pale-yellow spots in a triangle whose apex is directed backwards. Spinners yellowish brown, short, and not very strong; those of inferior pair strongest.

A single specimen in a small collection of spiders received from the Swan River, New South Wales.

*Storena scintillans*, n. sp.

♀. Adult. Length 3 lines.

This species is very similar in form and general appearance

to *S. variegata*, but it differs remarkably in various respects. The *cephalothorax* is more bluff and rounded before; the normal furrows and indentations are scarcely defined, the caput and thorax being imperceptibly confluent: in colour the cephalothorax is of a deep red-brown; its surface is rugulose and reflects metallic sparkling tints of a beautiful violet and dark green in different lights. The clypeus is much rounded in profile, and its height exceeds the space between the fore and hind rows of eyes; these are very similar in disposition to those of *S. variegata*, and are very nearly equal to each other in size; the middle row is slightly curved, the curve directed forwards. The *legs* are less strong than in *S. variegata*, their relative length the same, but those of the hinder pair are rather longer in proportion to those of the first pair; their colour is a dark red-brown, femora darkest; the extremities of the tibiæ of those of the first pair (extending to about one-third of their length) are of a clear yellow; the legs are furnished with hairs and some short stoutish spines on those of the third and fourth pairs; several of these spines form a sort of ring round the fore extremities of their metatarsi, and near them, on the inner side, is a tuft of hairs. Each tarsus ends with three claws; the two upper ones curved and pectinate, the lower one very small and not easy to be seen. The *palpi* are strong, similar to the legs in colour, and furnished with hairs and spines. *Falces* strong, more inclined to the sternum than in *S. variegata*; their colour is red brown, front surface rugulose. *Maxillæ* also more inclined to labium, which is likewise longer in proportion to the maxillæ than in *variegata*: colour red-brown, paler at the extremities. *Labium* similar. *Sternum* heart-shaped, of a deep red-brown; in appearance slightly rugulose or punctulose. *Abdomen* oval, rather more convex above than in *S. variegata*, furnished very sparingly with hairs, which are mostly of a short bristly nature; surface smooth, shining, of a deep black reflecting metallic tints of an invisible green; on the upperside are five pale markings mottled with yellowish-white spots; one of these markings, small and inconspicuous, is on either side near the fore extremity, another on either side just past the middle, they form two short curved lines, the curves directed backwards; the fifth marking is small, but conspicuous, and placed just above the spinners; on each side of the abdomen are two oblique lines, one short and commencing just below the curved lines above mentioned; the other (midway between that and the fore extremity of abdomen) is much longer and broader, and extends into a largish patch beneath, where it almost joins the opposite and corresponding patch: from between these patches,

at this point, runs a short narrow longitudinal line of the same colour towards the spinners, which are no more conspicuous than in *S. variegata*: the external sexual organs are rather prominent, smooth, and of a yellowish red-brown colour.

A single specimen of this very distinct and beautiful species was contained in the Swan-River collection, with the specimen of *S. variegata*.

*Storena Bradleyi*, n. sp.

♂. Adult. Length  $2\frac{1}{2}$  lines.

This species bears a near resemblance in form to *Storena maculata*; the height, however, of the clypeus is less; there is also a modification in the relative position of the eyes, which distinguishes it at once from all the other species known to me; by this modification the relative length and breadth of the space occupied by the eyes is altered.

*Cephalothorax* of a clear yellow red, reflecting metallic tints of a violet colour upon the caput and other portions in a strong light. Two or three strongish erect black bristles are in the medial line of the upper part of caput; this line is continued over the clypeus, where the bristles turn upwards: the height of clypeus is double that of the space between the anterior and posterior eyes.

*Eyes* on black spots, occupying a space broader than long (in *S. maculata* and *S. australiensis* this space is longer than broad). The chief difference in the relative position of the eyes in the present species arises from those of the third row being brought down nearer to those of the middle one, and in the two central eyes of the middle row being also brought down so as apparently to belong more properly to the *first* row; thus the eight eyes might be with propriety described as in *two* curved rows, the curves directed backwards, that of the foremost row being but slight, that of the hinder one much stronger. The four eyes of the hinder row are nearly of equal size, but much larger than those of the front row, of which last the external eyes are very small, and rather less than the two centrals; these are nearer to each other than each is to the lateral on its side; the space between the externals of the front row is near about equal to that between each and the hind central on its side.

*Legs* long, moderate in strength; relative length 4, 3, 1, 2. but little difference between those of the first, second, and third pairs, those of the fourth pair being considerably the longest, almost double the length of the spider,—those of first pair yellow-red, femora deepest in colour; those of second pair similar, but the femora still darker than those of first

pair; while the femora, genua, and tibiæ of the third and fourth pairs are of a deep blackish red-brown. All the femora reflect metallic tints of a violet colour in different lights. The legs are all furnished sparingly with hairs and spines, and each tarsus ends with three curved claws of a similar nature to those of the species already described.

*Palpi* very similar in general appearance to those of the species next to be described (*S. australiensis*), short, red-yellow in colour; digital joints red-brown, reflecting violet tints like the femora of the legs; radial joints shorter and smaller than the cubital, and prominently produced in an obtuse form on their outer sides, the produced portions having their bases furnished with a tuft of bristly black hairs; one or two longer and strongish prominent black bristles also issue from the inner side of each radial joint; a similar bristle issues from the upper sides of the *cubitals*, and several from those of the *humeral* joints: digital joints very large, as long as the whole of the rest of the palpi; they are of a circular form flattened on the outer sides, with their extremities produced into a point much bent downwards; they are furnished with hairs, and have two or three short, strong, claw-like spines at the extreme points; these spines are rather abruptly bent at their extremities.

The *palpal organs* are well developed, and consist of several yellowish and red-brown corneous processes, one of which, near their base, is prolonged into a rather prominent filiform spine, which, curving round inwards beneath the base of the digital joint, has its acute point in contact with the inner margin of the same, at about one-third of the distance from its extremity.

*Falces* strong, about equal in length to the height of clypeus, inclined backwards to sternum, and similar in colour to cephalothorax.

*Maxillæ* strongly inclined to labium, and rounded on their outer sides; a tuft or short fringe of short, black, bristly hairs at their extremities.

*Labium* broadest at its base and roundish-pointed at apex, which nearly reaches the extremities of the maxillæ; these parts are similar to the falces in colour.

*Sternum* heart-shaped, of a deep reddish black-brown, reflecting tints similar to those on the cephalothorax, &c.

*Abdomen* short, oval, very convex above, almost black, clothed sparingly with fine pale hairs; five markings of a cream-yellow are conspicuous on the upperside, two of these are on either side towards the fore part, the hinder one of each two being oblique and much the largest, the fore ones being mere dots and nearer together than the hinder ones; the fifth is a short

strong medial line, reaching for some little distance above the spinners. The upper and under sides of the abdomen are divided by a strong line (or sometimes an interrupted, narrow, oblong band) of a similar colour, on either side; these bands nearly unite in front, and terminate at about one-third the length of the abdomen from the spinners; these are prominent, those of the inferior pair being much the strongest.

Three males (two adult, one immature) of this species were received from Mr. H. Burton Bradley, of Sydney, New South Wales. Mr. Bradley has most kindly sent me these and other spiders of great interest; and I take the liberty of conferring his name upon the present species, in acknowledgment of his courtesy. *S. Bradleyi* is unmistakeably and nearly allied to *S. australiensis* and *S. maculata*. The difference above noted in the position of the eyes approaches nearly to that of the genus *Enyo*, to which genus, had the specimens of *S. Bradleyi* occurred in Europe or the adjoining countries, I should have considered it to belong, though it would have been quite an abnormal species, inasmuch as in the typical *Enyo* the two central eyes of the front row are invariably, and, in fact, disproportionately the largest of the eight.

*Storena australiensis*, n. sp.

♂. Adult. Length  $2\frac{1}{2}$  lines.

*Cephalothorax* oval (when looked at from behind and above), blunt or roundish-pointed before, broad and rounded behind. *Caput* massive; normal grooves and furrows but slightly defined. *Clypeus* broad and high, its height exceeding the length of space occupied by the eyes; behind the occiput is a slight dip in the profile line; surface smooth and shining; colour deep brown, approaching to black on caput, whence it tones down to dark red-brown on the hinder (or thoracic) portion; a few slender bristles curving upwards on fore part of caput and on clypeus.

*Eyes* very unequal in size, in three transverse rows on summit of caput; six of them form a regular but not equilateral hexagonal figure, and the remaining two are nearly in its centre. The foremost of the three rows consists of two very small eyes high above the lower margin of clypeus; the next row has four eyes, and is curved, the curve directed backwards; the lateral eyes of this row are much the largest of the eight, the two central ones the smallest and near together; the hind row consists of two eyes, not so large as the laterals of the middle row.

*Legs* tolerably long, moderate in strength; greatest length

in the metatarsi, especially those of the two hinder pairs, furnished with long and rather slender spines, particularly on tibiæ and metatarsi; femora, genua, and tibiæ of first two pairs dark black-brown; metatarsi and tarsi pale brownish; hinder half of femora of third pair, and nearly all of femora of fourth, bright reddish; the remaining joints of third and fourth pairs similar to the corresponding ones of first and second—if anything, rather darker; legs of fourth pair much the longest. Relative length 4, 2, 3, 1. Owing to the specimen from which this description was made being dry and pinned, the claws terminating its tarsi could not be satisfactorily observed; but they appeared to be (like those of the next species described) three in number,—two upper ones curved and pectinated, the inferior one very small and simple.

*Palpi* moderately long; cubital and radial joints short, the former nodiform, the latter produced *slightly* on *inner* side, and to a *considerable length* on *outer* side; this latter produced portion is strong, and curved downwards and backwards; extremity of the production bifid, one limb of the bifid part enlarged at its extremity, and stouter, though shorter, than the other: digital joint very long, and furnished with hairs; its extremity is curved, and projects considerably beyond the palpal organs; these are highly developed and complicated, consisting of several corneous pieces and lobes, with which some curved spines are connected.

*Falces* moderate in length, not very strong, much inclined backwards to maxillæ, which, with the labium and sternum, could not be examined, owing to the circumstance, before mentioned, of the specimen being dried and pinned.

*Abdomen* too much shrunk out of all shape to be accurately described: it appeared to be of an oval form, very convex above, thinly clothed with hairs, and of a dark black-brown colour, with some faint markings of a rusty yellow towards the hinder part of the upper side.

A single adult ♂ in the Hope Entomological Collection at the University Museum, Oxford.

*Hab.* Australia.

I am indebted to the kindness of the Curator of the Hope Collection (Prof. Westwood) for the opportunity of describing this very distinct spider, which, after much hesitation, I have assigned to the genus *Storena*, Walck.

*Storena maculata*, n. sp.

An immature ♂, closely allied in general appearance and structure to *S. australiensis*, was received from the Swan River, New South Wales, in a small bottle of spiders collected

there for me, through the agency of Mr. Samuel Stevens, in 1864. It is (although immature) rather larger than *S. australiensis*, being  $2\frac{3}{4}$  lines in length, and may be at once recognized by the design upon the upper side of the abdomen: this consists of sundry spots and markings of a clear bright cream-white upon a dark rich maroon-brown ground. Eight nearly round spots form two slightly curved longitudinal lines on the fore part; each alternate spot is very small: these lines are succeeded by two larger spots or patches; the foremost of these is of a semicircular, and the hindmost one of an oblong form. A belt of the same colour girds the fore half of the abdomen, dividing the upper from the lower side, and to this belt, on either side, succeeds an oblong patch, the fore end of which rather overlaps the end of the belt; the underside is dull yellowish tinged with maroon, and softening gradually into that colour on the sides. Normal grooves and furrows on cephalothorax distinctly but not very strongly marked. The legs did not differ much in length, and those of the third pair appeared to be slightly longer than those of the first and second; their colour was yellow-brown deepening into dark red-brown on the extremities of the femora, the basal portion of which, together with the coxal joints, was clear yellow; they were furnished with hairs and spines, and each tarsus terminated with three curved claws, the two upper ones pectinated, the under one simple and much the smallest. The *falces* appeared to be stronger and more inclined backwards than in *Storena australiensis*, and they were furnished with many dark, stiff, prominent, bristly hairs. The height of the clypeus, as well as also the relative sizes of the eyes, appeared to differ. The palpi presented the same general appearance as to the relative proportions of the different joints; but, being immature, the structure of the radial and digital joints, as well as of the palpal organs, was undeveloped. The colour of the radial and digital joints was yellow, that of the rest dark red-brown; colour of sternum (which was of an oval form pointed behind) yellow-brown. *Spinners* short, compactly grouped; inferior pair much the strongest and longest.

#### Family Thomisides?

Nov. gen. STEPHANOPIS.

#### *Characters of Genus.*

*Eyes* eight, unequal in size, forming a corona or circlet around the upper part of a cephalic eminence which varies in height; outer eyes of the four in front of eminence largest of the eight.

*Maxillæ* moderately long, nearly straight, inclined towards labium, which is longer than broad and rounded at its apex.

*Falces* long, strong, and inclined backwards towards labium.

*Cephalothorax* and *abdomen*, together with the legs and palpi, variously furnished with tubercles and tuberculate spines, giving the spider a very singular and hirsute appearance.

*Legs* apparently laterigrade, relative length 1, 2, 4, 3.

*Stephanopsis altifrons*, n. sp.

♀. Adult? Length 4 lines.

*Cephalothorax* broad behind and flattened, elongated and narrowed towards the fore part; *caput* elevated in a sloping direction forwards into a strong laterally rounded eminence, the summit of which has a large tubercle on either side, ending in a short bluntish spine; several bluntish tuberculate spines also in front and on sides of eminence. *Clypeus* prominent, cleft; each projection formed by the cleft is tuberculate, and furnished with short bristly prominent spines. The whole surface of cephalothorax rugulose, and more or less furnished with tuberculate spines. Colour deep brown approaching to black, mixed with bistre. *Clypeus* pale hoary yellow.

*Eyes* forming a ring round upper part of frontal eminence; they are unequal in size, and may be described as in two curved rows, of which the fore one is shortest and embraces the fore half of the eminence, while the hinder one girds the hinder half; those of hinder row are about equidistant from each other, and do not differ much in size. Lateral eyes of front row large, and largest of the eight; middle ones smallest, and very minute; the eyes of this row are also about equidistant from each other.

*Legs* moderately long; relative length 1, 2, 4, 3; those of first pair stronger than the rest; all furnished with tubercles, bristles, and short spines, and thinly clothed with short, pale, sessile hairs; tubercles most conspicuous on tibiæ, especially on those of first and second pairs, whose tibiæ and metatarsi have two parallel rows of strong spines, directed forwards, on their undersides. Colour yellowish, mottled and suffused irregularly with deep brown-black; tarsi and metatarsi more regularly banded with similar colours.

*Palpi* moderate in length and strength, similar to the legs in colour and armature.

*Falces* long and strong, similar in colour to the legs, except that their extremities are paler than the other portion; they are much inclined backwards towards the maxillæ.

*Maxillæ* moderately long, nearly straight, but much inclined

towards the labium, which is rather longer than broad, slightly rounded at its apex, near which it is rather narrower than at the base.

*Sternum* large, oval, narrowest at its fore extremity, thickly clothed with short hairs. Colour of maxillæ, labium, and sternum yellowish brown, the latter having a long-oval longitudinal patch of a darker colour in its centre.

*Abdomen*—upperside of same colour as cephalothorax; underside more mottled with yellowish; strongly rugulose, hinder part broader than the front, thickly furnished with bluntish tuberculate spines and bristles, similar to those on the legs. The length of the abdomen is about equal to that of the cephalothorax, and the broadest part is rather broader; fore margin notched.

A single specimen (♀) of this singular-looking spider is in the Hope Collection, University Museum, Oxford. Being dried and pinned, it was not possible to make a satisfactory examination of it; nor could it be ascertained whether the specimen had attained maturity. At a single glance, however, it proclaimed itself to be an undescribed species of a genus not hitherto characterized. The hasty and imperfect sketch accompanying this description may perhaps help to give some general idea of its appearance.

*Hab.* South Australia.

*Stephanopsis nigra*, n. sp.

♀. Adult? Length  $5\frac{1}{2}$  lines; relative length of legs 1, 2, 4, 3.

This species, closely allied to *Stephanopsis altifrons*, resembles it in general form and length of legs, but is longer; its cephalic eminence, however, is altogether rather less elevated, though more prominent between the eyes; the size of the two lateral eyes of the front row is also slightly smaller in proportion to those of the hinder row. The tubercular rugulosities and spines are generally stronger and more pronounced, especially upon the palpi. The colour of this species is a uniform coal-black.

A single specimen (♀), dry and pinned, in the Hope Coll. Oxford.

*Hab.* "North part of New Holland."

*Stephanopsis clavata*, n. sp.

♀. Adult. Length  $3\frac{3}{4}$  lines; relative length of legs 1, 2, 4, 3.

Nearly allied to both the foregoing species, the present

differs from them both in colour and armature. The central pair of eyes in the front row are lower down, and thus more removed out of the straight line of the two laterals. The form of the abdomen is a more regular oval. Cephalothorax yellow-brown, marked with darker lines of same colour. Some small, pale, scale-like hairs are disposed in longitudinal lines towards the fore extremity; cephalic eminence much less elevated than in *S. altifrons*. The armature of the cephalothorax consists of short, strong, tuberculate spines. The *abdomen* is of a bright brown-yellow, thickly studded with small yellowish tuberculate spines, among which are many paler ones, longer and of a larger size; some of them are clubbed at their extremities; of these some are black, and give a speckled appearance to the surface of the abdomen. Legs similarly armed, but the spines are not quite so strong. Colour of the legs like that of cephalothorax, with irregular oblique bands of a paler hue, formed by small scale-like hairs; these are most conspicuous on the tarsi and metatarsi, and the alternate spaces are red-brown. Sexual organs large and conspicuous; but in the dry specimen their exact form could not be ascertained.

A single ♀ in Hope Coll., Oxford, without label, but supposed to be from Australia.

*Stephanopis lata*, n. sp.

♀. Adult? Length  $3\frac{1}{2}$  lines; relative length of legs 1, 2, 4, 3.

Closely allied to *S. altifrons*, this species differs from it in the tuberculate rugulosities being in general less acutely spinous and bristly, also in having a good deal of red-brown in its colouring, as well as in being proportionally shorter and broader—in this last respect, and in the fore extremity of the abdomen being truncate, presenting a more marked Thomisiform appearance; the elevation of the caput is also far less high and prominent, and the clypeus less projecting; the legs are longer and stronger; and the size of the front lateral eyes is proportionally less; also the front centrals are lower down and more out of the straight line (as in *S. clavata*):—



A single ♀ of this spider (which may be easily distinguished from either of the foregoing species by the differential characters above given) is in the same collection as those species, and is labelled "Van Diemen's Land."

*Stephanopsis* (?) *camelina*, n. sp.

♀. Adult. Length  $4\frac{1}{2}$  lines; relative length of legs 1, 2, 4, 3.

*Cephalothorax* short, broad, contracted laterally, and truncate before, nearly circular behind; thoracic portion higher than caput, into which it runs gradually; caput but very slightly prominent in ocular region; colour yellow-brown, deeply suffused with dark red-brown, margins broadly yellow: it is thickly studded with small shining tubercles; some of these on the thorax are arranged in oblique lines corresponding to the normal furrows: lower margin of clypeus, looked at from the front, describes an arc of a circle; fore corners of ocular region slightly raised above the surrounding surface.

*Eyes* in two curved, transverse rows, forming a rather longer transverse oval than in the species before described, but differing less in their relative size; external eyes of front row largest, middle ones smallest of the eight: each lateral eye of hinder row very nearly in a straight line with the two outer ones on its side of the front row.

*Legs*—those of the two fore pairs long and nearly equal in length; strong: femora (especially on their undersides) furnished with small tubercles; those on the undersides largest, and forming two longitudinal rows; many of these tubercles have a small bristle issuing from their summit; possibly similar bristles may have been accidentally rubbed off from the other tubercles. The tibiæ and tarsi have their undersides armed with two longitudinal rows of semisessile spines issuing from tubercles: terminal claws strong; those of the two hinder pairs much shorter and less strong than the rest; some small tubercles beneath the femora of the two hind pairs, and bristles on the tibiæ and tarsi, take the place of the spines on the fore legs. Colour of the legs yellowish; the tibiæ, tarsi, and metatarsi of the two fore pairs suffused with brownish, and the femora with dark brown.

*Palpi* short, moderately strong, furnished with hairs and bristles.

*Maxillæ* and *labium* were obscured in great measure, owing to the specimen being dry and pinned; but, as far as visible, these parts were similar in structure to those of the species already described.

*Sternum* oval, of a yellowish colour, and furnished sparingly with small tubercles.

*Abdomen* large, much broader and deeper behind than in front, and projecting over base of cephalothorax; on the hinder portion are five elevations—a central and four corner ones;

these latter are small, and of a blunt conical form; the central one is large, projects backwards, and is enlarged at its extremity, which has a small subconical elevation at each fore corner and a slightly raised longitudinal ridge down its centre: upperside of the whole abdomen furnished thinly with small, circular, shining, red-brown tubercles; colour of upperside reddish brown, darkest down the middle, and nearly black between the two conical projections on either side; underside paler, and with a broad yellowish band down its centre.

An adult ♀ of this spider is in the Hope Collection, Oxford, labelled "Amazons; Bates, 1861." It presents a remarkable difference in general appearance from the four Australian species above described; and it is only after great hesitation that I have provisionally included it in the same genus: the disposition and relative size of the eyes, and (as far as they could be observed) the structure of the maxillæ and labium, seemed to designate a generic affinity with those species; and possibly the difference in general appearance may be some day bridged over by the discovery of intermediate forms. The specimen being dry, its *colours* can hardly be depended upon.

#### Genus ASEMONEA (Camb. MS.).

*Lyssomanes* (Hentz), Boston Journ. Nat. Hist. vol. v. p. 198, pl. 17. fig. 3.

#### *Lyssomanes tenuipes*, n. sp.

♂. Adult. Length 2 lines.

*Cephalothorax* oval, depressed, and sloping back from caput, immediately behind which is a slight dip or depression; caput slightly raised and produced forwards, forming a platform occupied by the eyes, from among which a few coarse hairs project: colour black-brown.

*Eyes* eight, in four transverse lines on front and summit of caput—two in each line; those of first line very large, contiguous, and occupying the whole breadth of the fore part of caput; those of second line very much smaller, a little on the outside of, and about their own diameter distant behind, those of first line; those of third and fourth lines small, and forming a square close behind the second line; the length of these lines little more than half that of the second: the eyes of the third line are the smallest of the eight.

*Legs* long, slender, and, as far as they could be observed, not greatly differing in length; the only armature apparent consisted of two longitudinal rows of long slender spines beneath the tibiæ of the two foremost pairs, and a few still finer ones on other parts. Colour of the legs dull pale yellowish brown.

*Palpi* moderate in length; digital joint large; palpal organs

highly developed, of great size and complicated structure. Any minute description was rendered impracticable, owing to the specimen being gummed upon a piece of card—a circumstance which also prevented any observation of the maxillæ, labium, and sternum; the falces also were almost entirely hidden: they appeared, however, to incline strongly backwards towards the maxillæ.

*Abdomen* so much shrunk as to make it difficult to describe it with any accuracy; apparently it was long, narrow, oval in form, of a blackish colour, clothed with white hairs on the sides, and some greenish-yellow, metallic-lustred, scale-like hairs on the upperside; two of the spinners were apparently much longer than the rest, and curved strongly upwards.

A single adult ♂ in the Hope Collection, Oxford, received from Ceylon, where it was captured by Mr. G. H. K. Thwaites. It is probable that, upon a revision of the Salticidæ, the genus *Lyssomanes*, established by Mr. Hentz, in his 'History of American Spiders' (*loc. cit. sup.*), will sink into a subgenus of the genus *Salticus*.

### Family Salticidæ.

#### Genus SALTICUS.

#### *Salticus coccinelloïdes*, n. sp.

♀? Adult? Length 1 line.

Excepting the legs, the whole of this curious little spider is of a jet-black colour, with a semicorneous integument, which is shining and marked thickly with minute punctures. Cephalothorax, looked at from above, nearly square, and arched on all sides; normal furrows, defining caput and thoracic segments, quite obsolete; the profile of the abdomen and cephalothorax describes almost a semicircle; the fore margin of the abdomen slightly covers or overlaps the hinder part of the cephalothorax; and from the structure of these parts it seems probable that, when alive, the spider has the power of raising its cephalothorax so as to throw it almost completely back beneath the semicorneous integument of the abdomen.

*Legs* short, pale yellowish in colour, apparently not greatly differing in length, those of third pair shortest. The specimen, however, being dry, it was impossible to be certain upon this point.

*Palpi* so concealed as to be incapable of description, and, in fact, to leave the sex of the spider doubtful.

*Eyes* in three rows, occupying the greater area of the cephalothorax; their position is similar to that of the *Saltici* in general,

viz. two large ones in front, a small one on either side, a little retreating from the line of the large ones; these four form the first row; those of second row two in number, one not far behind each outer eye of first row; those of third row (also two in number) quite on sides of caput, and thus wider apart than the outer eyes of the first row, and further from those of the second row than these are from those of the first row.

Two specimens of this minute species are in the Hope Collection, Oxford (*Hab.* Novo Friburgo). They bear no small resemblance to small beetles of the family Coccinellidæ, since, without close examination, it is difficult to see any division between the cephalothorax and abdomen; the concavity of the fore margin of the abdomen is a curious and unusual structural peculiarity. Upon any general revision of the very numerous family "Salticidæ," the present species should form the type of a new subgenus; for the present, however, I have thought it best to describe it under the generic name *Salticus* only. It is nearly allied to a well-marked group of the genus *Salticus* which C. Koch has described as a genus (*Rhanis*); this group, however, has no claim to more than subgeneric separation from the genus *Salticus*.

*Salticus bicurvatus*, n. sp.

♂. Adult. Length  $2\frac{3}{4}$  lines.

*Cephalothorax* elongate. Caput divided from thoracic portion by a strong constriction, leaving the former nearly circular. Thorax oval, narrowest behind, where it is truncate. Caput and thorax of equal length. Colour black and shining.

*Eyes* in three rows, each of the two forming the middle row nearer to the exterior one on its side of the first row than to that of the hinder row.

*Legs* rather long, slender; a few fine hairs and spines beneath tibiæ and tarsi of first and second pairs; relative length 4, 1, 3, 2, but little difference between first and fourth and third and second respectively: colour reddish brown, tarsal joints darkest.

*Palpi* short, not very strong. Being curled up beneath the dried specimen, it was impossible to observe the structure of the radial and digital joints or of the palpal organs; the same cause also precluded any observation of the maxillæ and labium.

*Falces* very prominent, long, strong, and massive, rather longer than cephalothorax; their inner face flat; extremities straight and rounded on outer side; when looked at in profile, much arched above. Fangs as long as falces, sinuous, or con-

taining a double curve; central part thinner and weaker than the portion on either side; extremities pointed and curved; behind this curved point a portion of the face of the fang is bluntly serrate. Colour of both falces and fangs (excepting the extremities of the latter and base of the former, which are rather lighter-coloured) dark black-brown and shining; inner face of the falces slightly wrinkled in a transverse direction; two rows of minute teeth *beneath* the falces, and several larger ones near the insertion of the fangs.

*Abdomen* joined to cephalothorax by a short cylindrical pedicle; oval in form, rather pointed in front, truncate behind. Colour glossy black.

A single specimen of this species in the Hope Collection, Oxford, captured in Ceylon by Mr. G. H. K. Thwaites. It is closely allied to *Salticus manducator* (Westwood) (described and figured in Guér. Mag. de Zool. 1841, Arachnides), but differs from that species in the falces and fangs: the former are rather larger in *S. bicurvatus*, and the latter have a double curve (as above described). The denticulation beneath the falces also differs in the two species.

*Salticus plataleoides*, n. sp.

♂. Adult. Length, to extremity of falces, 6 lines, to insertion of ditto  $3\frac{1}{2}$  lines.

The entire spider is of a dull brownish-yellow colour, excepting the tips of the falces, which are black on the outer sides, and the upperside of the caput, which is of a bright rufous colour. The basal half of the falces has an opaline lustre in different lights, and their extremities have a rufous hue.

The cephalothorax is similar in form to that of *S. bicurvatus*; but the caput is more of an oblong shape. Eyes of second row nearer to those of first row than in *S. bicurvatus*, i. e. about one-third of the distance between the first and third rows; and they are inside of the straight lines between the exterior eyes of these rows.

*Legs* long, slender; extremities of tibiæ and tarsi sparingly furnished with hairs; their relative length was apparently 4, 1, 3, 2. The pedicle joining the abdomen to the cephalothorax biarticulate, and as long as the thorax.

*Falces* of great length, projecting in nearly the same plane as the *cephalothorax*; basal half very slightly and transversely rugulose, and shining in some lights with an opaline hue, flat on their inner face; extremities much and abruptly enlarged on upper and outer sides for about one-third of their length, giving to the spider (when the falces are close together) much the appearance of the Spoonbill (*Platalea leucorodia*). The

enlarged extremities have a reddish hue in some lights, and their outer extremity, above the insertion of the fang, is deep black-brown. The fang, being folded back in its position of rest, was nearly hidden; but apparently it was almost straight and not quite as long as the falces.

*Abdomen* apparently rather slender-oval in form, and truncate at its hinder extremity.

*Palpi* short and slight. Owing to the specimen being dry, they could not be extended so as to expose the structure of the extreme joints and the palpal organs.

A single specimen of this singular-looking spider is in the Hope Collection at Oxford.

*Hab.* Unknown.

Since writing the above, I have received twelve specimens of this species from Mr. G. H. K. Thwaites, of Ceylon,—nine males and three females. These, being in spirit, admit of a more accurate examination than the dry specimen above described. As far as the above description goes, however, its correctness is confirmed by the examination of Mr. Thwaites's specimens; but the following additional particulars are worth noting:—

The spiders themselves, although adult, differ greatly in size, some being larger than that above described, and others at least one-third smaller. The falces also vary considerably in their relative length in different specimens, in one rather exceeding the length of cephalothorax and pedicle connecting it with the abdomen, in another only just equalling the length of the cephalothorax. The falces are armed on their inner sides with two longitudinal rows of sharp teeth; the inferior row consists of about sixteen, nearly equally dividing the whole length of the falx; the superior row consists of but five, unequally dividing the fore half of the falx, but stronger than those of the inferior row. The fang equals the falx in length, and is slightly curved at its extremity. The abdomen (which was shrunken and shapeless in the dry specimen) was of a long oval form, widest behind, and strongly constricted at about one-third of the length from its fore extremity, almost dividing it into two segments; on either side of the constricted portion is an oblique pale patch.

*Palpi* about two-thirds the length of the falces, or rather more in some specimens; radial joint long, double the length of the cubital, enlarging gradually towards its extremity, which has a small, sharp, black-pointed projection on its outer side; digital joint small, oval in form; palpal organs simple and not very prominent, consisting of a simple corneous lobe,

with a small, pointed, black, circularly curved spine towards their fore extremity.

The cephalothorax has three long fine bristles directed forwards on either side of the upper part of the caput, indicating the position of the exterior eyes of the first row, and of the eyes of the second and third rows.

The sternum is long and narrow oval in shape, with a strong curved indentation on either side towards the anterior extremity, and the hinder extremity much produced.

Maxillæ long, enlarged at their extremities, which are a little divergent. Labium oblong; sides and apex emarginate; length about two-thirds that of maxillæ.

The adult female only differed from the male in the palpi and falces; these latter are no longer than the length of the ocular region of caput, and more approaching a vertical position; the digital and radial joints of the palpi form one long, oval, flattened piece.

#### Genus ERESUS (Walck.).

##### *Eresus bicolor*, n. sp.

♂. Adult. Length  $3\frac{1}{2}$  lines.

*Cephalothorax* broad oval, rather depressed behind; caput much elevated and rounded at its summit; fore margin, when looked at from above, squarely truncate. Excepting two triangular patches in front, which enclose the four central and the two front lateral eyes, the caput is thickly clothed with pure-white hairs; these patches, as well as the thorax, are jet-black, the latter broadly margined with pure-white hairs also.

*Eyes* not very unequal in size, forming a small square within a large one; the posterior side of the large square formed by the four outer eyes is shorter than its anterior side; but of the inner square the anterior side is the shortest.

*Legs* long, those of first pair very strong, and much the longest of the eight; relative length 1, 4, 2, 3; femora of first pair black; tibiæ nearly so, and both furnished with black hairs; the rest of the joints are of a dark reddish brown, some of them being broadly annulated with a paler hue. The genual joints, extremities of femora, and fore half and extremities of tarsi thickly furnished with pure-white hairs; the two hinder pairs have all the joints more or less annulated with bands of white hairs, the alternate spaces being reddish brown varying to black.

*Palpi* short, moderately strong, of a deep reddish brown-black; cubital joints furnished with white hairs; digital joints

large; palpal organs apparently bulb-shaped at their base, with a strong corneous projection towards their outer extremities. The specimen, however, being dry and pinned, its palpi were too much concealed to admit of a satisfactory examination.

*Falces* black; a small, raised, corneous ridge of deep shining red-brown near their base on the outer side; long and strong, slightly curved from each other, vertical.

The maxillæ and labium could not be well examined, owing to the specimen being pinned.

*Abdomen* oviform, projecting considerably over the base of the cephalothorax; it is black, furnished with hairs, of which a few are fine erect ones; four longitudinally connected patches of white hairs occupy the medial line of the upperside; the first, near the cephalothorax, is of a long isosceles triangular form, rounded at its hinder extremity, which forms the base of the triangle; the next is a transverse oval patch; the third similar in form, but smaller; the fourth is quite small, and somewhat of a diamond shape; the connexion between these patches is by a narrow neck of white hairs; the last of the patches is succeeded by a small independent spot, formed also by white hairs. The underside of the abdomen is dotted with white hairs having a tinge of pale yellowish red-brown.

*Sternum* thickly furnished with coarse whitish hairs.

A single adult ♂ of this very conspicuously marked *Eresus* is in the Hope Collection, Oxford.

*Hab.* "Damara Land, South Africa."

*Eresus tibialis*, n. sp.

♂. Adult. Length  $3\frac{1}{2}$  lines.

*Cephalothorax* black, sparingly furnished with hairs, a broad band on the lateral margins furnished thickly with coarsish sessile hairs of a dull yellow colour; and a fringe of similar hairs extends from the lower margin of the clypeus over the base of the falces. In form the cephalothorax of this species nearly resembles that of *E. bicolor* and many others of the genus.

*Eyes* in the normal position of a small square within a large one; those of the hinder side of the medial square are *much* larger than those of the fore side; the fore side of the outer square is longer than the hinder side; but in respect to the inner or medial square it is just *vice versâ*, the posterior side being the longest.

*Legs* long and strong; those of the first pair have the first five joints remarkably stout, the genuals unusually long, and the tibiæ very large, tumid, shining, and thickly clothed

with long black hairs. The colour of the legs is red-brown; the femora of the second, third, and fourth pairs, together with the tibiæ of the first, are much the darkest, nearly black; the uppersides of femora, genua, and tibiæ of the three hinder pairs are furnished with longitudinal lines of coarse, yellow, sessile hairs; relative length 1, 4, 3, 2.

*Palpi* stout, but not very long, similar to the legs in colour; some coarse yellowish hairs form a ring at the extremities of the cubital and radial joints; digital joint large. But the palpal organs were too much concealed in the dry specimen for satisfactory observation.

*Falces* nearly straight, rather projecting, and a little hollowed on inner sides, strong, equal in length to the height of the facial space; fang red-brown, not very long nor strong.

*Maxillæ* and *labium* too much concealed to render their structure visible: apparently they were of a dark red-brown colour, furnished with a few coarse yellowish hairs.

*Sternum* long oval, black, with a broad longitudinal central band of yellowish hairs; this band was rather dilated in the middle.

*Abdomen* oval, broader at posterior than at anterior extremity, of a dark brown-black colour; the fore half of the upper-side, as well as a space above the spinners, and the underside were thickly clothed with coarse yellowish hairs.

An adult ♂ of this species, remarkable for the tumidity of the tibiæ of the first pair of legs, is in the Hope Collection, Oxford.

*Hab.* "Mysore, India."

## EXPLANATION OF THE PLATES.

### PLATE IV.

#### *Storena variegata.*

*Fig. 1.* Spider in profile, much enlarged, without legs.

*Fig. 2.* Fore-right view of cephalothorax and falces.

*Fig. 3.* Portion of tarsus of first pair of legs, showing the three terminal claws.

*Fig. 4.* Position of eyes, from front.

*Fig. 5.* Spider in profile, magnified.

*Fig. 6.* Natural length of spider.

#### *Storena scintillans.*

*Fig. 7.* Spider in profile, without legs, much enlarged.

*Fig. 8.* Position of eyes, from front.

*Fig. 9.* Tarsus and portion of metatarsus of leg of hinder (fourth) pair.

*Fig. 10.* Spider in profile, magnified a little.

*Fig. 11.* Natural length.

#### *Storena Bradleyi.*

*Fig. 12.* Spider in profile, much enlarged, without legs.

*Fig. 13.* Position of eyes, from front.

- Fig. 14.* Spider in profile, magnified a little.  
*Fig. 15.* Abdomen and cephalothorax (without legs), from above.  
*Figs. 16, 17, 18, 19.* Left palpus in different positions.  
*Fig. 20.* Natural length of Spider.

*Storena australiensis.*

- Fig. 21.* Fore-right view of cephalothorax and falces.  
*Fig. 21 a.* Natural length of spider.  
*Fig. 22.* Cephalothorax in profile.  
*Fig. 23.* The same, from above.  
*Figs. 24, 25, 26.* Right palpus in different positions.

*Storena maculata.*

- Fig. 27.* Fore-right view of cephalothorax and falces.  
*Fig. 28.* Abdomen, from above.  
*Fig. 29.* Cephalothorax and abdomen in profile.  
*Fig. 30.* Portion of tarsus of leg of fourth pair, showing three terminal claws.  
*Fig. 31.* Position of eyes, from front.  
*Fig. 32.* Natural length.

PLATE V.

*Stephanopsis altifrons.*

- Fig. 33.* Fore-right view of cephalothorax and falces.  
*Fig. 34.* Cephalothorax, somewhat in profile.  
*Fig. 35.* Cephalothorax and abdomen, from above and behind.  
*Fig. 36.* Cephalothorax, from above and in front.  
*Fig. 37.* Position of eyes, from front.  
*Fig. 38.* Natural length of spider.  
*Fig. 39.* Underside, showing maxillæ, labium, and sternum.

*Stephanopsis nigra.*

- Fig. 40.* Natural length of spider.

*Stephanopsis clavata.*

- Fig. 41.* Natural length of spider.

*Stephanopsis lata.*

- Fig. 42.* Cephalothorax and abdomen, from above and behind.  
*Fig. 43.* Natural length of spider.

*Stephanopsis camelina.*

- Fig. 44.* Spider in profile, without legs.  
*Fig. 45.* Fore-right view of portion of cephalothorax and falces, showing position of eyes.  
*Fig. 46.* Fore-right view of spider, without legs.  
*Fig. 47.* View of abdomen, from behind.  
*Fig. 48.* Cephalothorax and abdomen, from above and behind.  
*Fig. 49.* Natural length of spider.

*Lyssomanes tenuipes.*

- Fig. 50.* Spider, without legs, in profile.  
*Fig. 51.* Position of eyes, from front.  
*Fig. 52.* Natural length of spider.

*Salticus coccinelloides.*

- Fig. 53.* Spider in profile.

*Fig. 54.* Cephalothorax and abdomen, from above and behind, with the former elevated.

*Fig. 55.* The same, with cephalothorax depressed forwards, as in *fig. 53*, *i. e.* in natural position of rest.

*Fig. 56.* Spider of natural size.

## PLATE VI.

*Salticus bicurvatus.*

*Fig. 57.* Spider magnified.

*Fig. 58.* The same, in profile, without legs.

*Fig. 59.* Right falx, showing double row of minute teeth underneath.

*Fig. 59a.* Left falx.

*Fig. 60.* Natural length of spider.

*Salticus plataleoides.*

*Fig. 61.* Spider without legs.

*Fig. 62.* Portion of ditto, in profile.

*Fig. 63.* Spider, of natural size.

*Fig. 64.* Underside, showing maxillæ, labium, sternum, and left palpus.

*Fig. 65.* Right falx, from inner and underside.

*Fig. 65a.* Natural length of spider.

*Eresus bicolor.*

*Fig. 66.* Spider, from above, with only portion of leg of first pair.

*Fig. 67.* The same, in profile, without legs.

*Fig. 68.* Cephalothorax (caput) and falces, from front.

*Fig. 69.* Natural length of spider.

*Eresus tibialis.*

*Fig. 70.* Leg of first pair, showing enlarged tibial joint (*a*).

*Fig. 71.* Natural length of spider.

XIV.—*Note on a Fossil Lycopodiacean Fruit.*

By M. BRONGNIART\*.

THE study of the fossil plants of the older strata possesses a peculiar interest in consequence of the singularity of their forms, which most frequently separates them in a very striking manner from those which live at present on the earth. With the exception of the ferns, the resemblance of which has always been recognized, the plants of the Carboniferous formation differ so much from those which have inhabited the earth at more recent periods, and from those which now inhabit it, that very careful comparisons have been required to connect them with the families of the existing world. Nevertheless, from the commencement of my investigations upon this subject, I have indicated the relations of several arborescent plants of this period to the Horsetails or Equisetaceæ and to the Lycopodiaceæ.

\* Translated by W. S. Dallas, F.L.S., from the 'Comptes Rendus,' Aug. 17, 1868, tome lxxvii. pp. 421-426.



Pickard-Cambridge, Octavius. 1869. "Descriptions and sketches of some new species of Araneidea, with characters of a new genus." *The Annals and magazine of natural history; zoology, botany, and geology* 3, 52–74.

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