

12. Notes on some *Arachnida* collected by Cuthbert Collingwood, Esq., M.D., during rambles in the China Sea, &c.
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(Plate XLIX.)

A small collection of *Arachnida*, kindly placed in my hands by Dr. Collingwood after the termination of his rambles in the China Sea, contained the following species, some of which are of considerable interest, and two appear to be undescribed:—

Order ARANEIDEA.

Gasteracantha roseolimbata, Doleschall, "Tweede Bijdrage tot de Kennis der Arachniden van der Indischen Archipel," Acta Societat. Scient. Indo-neerlandicæ vel Verhandelingen der Natuurkundige-Vereeniging voor Nederlandsch Indie, vol. v. 1858-59, p. 43, pl. xiii. fig. 1.—Pratos Reef.

Argiope striata, Doleschall, *loc. cit.* p. 30, pl. ix. fig. 2.—Labuan.

Nephila rivulata, Cambr., n. sp.—Labuan.

Nephila moluccensis, Dol. *loc. cit.* pl. i. fig. 6.—Labuan.

Nephila chrysogaster, Walck. Ins. Apt. tom. ii. p. 92.—Labuan and Manilla. The male of this species is new to science.

Tetragnatha nepæformis, Dol. *loc. cit.* p. 46, pl. xvi. fig. 1.—Kelung, near Formosa.

Uloborus (Orithyia) williamsii, Blackw. Ann. & Mag. Nat. Hist. for Nov. 1858.—Labuan.

Thomisus diana, Savign. Egypte, Arachnides, pl. 7. no. 1, figs. 1, 2.—Aden.

Heteropoda (Olios) leucosia, Walck. Ins. Apt. tom. ii. p. 566.—Labuan.

Salticus citus, Cambr. Zoologist for 1863, p. 8561.—Labuan and Manilla.

Salticus collingwoodii, Cambr., n. sp.—Labuan.

Salticus viridifasciatus, Dol. *loc. cit.* p. 19, pl. iii. fig. 8.—Labuan.

Order SCORPIONIDEA.

Ischnurus complanatus, Koch, Die Arachn. Bd. iv. p. 73, pl. 128. fig. 295.—Labuan.

Lychas maculatus, Koch, Die Arachn. Bd. xii. p. 1, pl. 397. fig. 960.—Pratos Island. 'Rambles of a Naturalist in the China Sea,' by C. Collingwood, Esq., M.D., p. 27.

Also, at Labuan, a fine example of the order Phalangidea, but whose specific identity I have not yet been able to determine.

Descriptions of new Species.

Family EPEIRIDES

Genus NEPHILA, Leach.

NEPHILA RIVULATA, n. sp. (Plate XLIX. figs. 1, 2.)

Female adult, length 12 lines. *Male adult*, $2\frac{1}{2}$ lines.

The *cephalothorax* is elevated before, depressed behind, and prominent at the eyes; it is furnished with short strongish black spine-like bristles, and is of a deep red-brown colour, approaching to black in many examples, especially on the fore part of the caput. The height of the clypeus is equal to one half of the facial space.

The *eyes* are small and vary but little in their relative size; they are situated in four pairs or two slightly curved transverse rows, the curves being directed from each other, and the front row being the least curved of the two; the four central eyes form nearly a square whose foremost side is rather the shortest; the two central eyes of the front row are nearer to each other than each is to the lateral, of the same row, on its side, but the distance between them is, as nearly as possible, the same as that between those of each lateral pair; those of the hinder row are very nearly equidistant from each other.

The *legs* are moderately long, strong, and furnished with hairs and spines; they are alternately and broadly banded with bright yellow and deep reddish brown, except the tarsi and metatarsi, which are yellowish near to the tibiæ, and gradually deepen to a reddish black-brown.

The *palpi* have the humeral joints yellowish and the rest of a deep rich reddish black-brown colour.

The *falces* are long and massive, very prominent towards their base in front, and of a deep rich black-brown, almost black.

The *maxillæ* are similar in colour to the falces, but are edged on their inner sides towards the extremities with yellow.

The *labium* is oblong, rather rounded at the apex; it is about one half the length of the maxillæ; its sides are similar in colour to the falces, the central portion being yellow and somewhat in the form of a double united lozenge or dumb bell.

The *sternum* is of a subtriangular form indented on the margins; it is of a bright yellow colour, irregularly but broadly margined with deep rich black-brown.

The *abdomen* is of a longish oval shape; when looked at in profile it is more elevated before than behind; it is large and projects over the base of the cephalothorax; the upperside is almost entirely occupied by a long, somewhat oval, dull whitish-yellow marking, more or less obscured with brown; this marking is dentated on its edges, and from each outer prominent point (as well as from each side of its foremost extremity) a somewhat sinuous yellowish-white

line or band issues and traverses the side of the Spider (which is of a dull brown colour) quite to the underside; these lines have rather a backward direction, and are connected by some short parallel horizontal irregular lines of the same colour; in many examples, especially immature ones, the large long oval marking mentioned above contains within it a much narrower one defined sometimes by a dark black-brown dentated line on either side, sometimes by a light yellowish-white one. In some instances the space within this interior marking is darker than that outside it; in other instances it is of the same hue. The underside is dull brown, with six large spots or blotches of yellow or orange (and in one or two examples almost red); these blotches are arranged in two parallel longitudinal rows of three each, the four anterior ones being very conspicuous, the other two (near the spinners) not so conspicuous; of the four anterior ones the two nearest to the spiracles are much the largest. The epigyne is corneous and of a deep rich brown-black colour; it consists of a long narrow transverse opening much constricted in the middle.

The *male* is very small in comparison with the female; the legs are long and strongish, except the tarsi and metatarsi, which are slender; they are armed with longish black spines, and are of a deep brown-black colour, except near the base of the femoral joints, which (together with the exinguinal joints) are of a reddish yellow. The cephalothorax is of a bright reddish-yellow colour; and the *abdomen*, which is somewhat similar but of a yellower hue, is of a flattish oval form, and has on the upperside a shining corneous case- or shield-like appearance, but little marking is visible, except a largish sort of brown cloud towards the hinder part.

The *palpi* are of a dull orange-yellow colour, not very long, but strong; the cubital and radial joints are short; the latter are rather the stoutest, they have no marked projections at their extremities, but are furnished with a few black bristles; the digital joints are large, and the palpal organs are also large and prominent and of a very peculiar form, consisting of a nearly globular shining reddish corneous lobe, on the surface of which are some darker sinuous lines; from the extremity of this lobe there projects a long, strong, somewhat corkscrew-shaped, nearly black, sharp-pointed corneous spine, with a strongish prominence near its sharp point; the length of this corkscrew-spine almost equals (if it does not exceed) the length of the whole palpus, and presents a very formidable appearance; it is probably intended for use in adhering to the female in the act of copulation. In *Neriëne nigra* (Bl.), the male of which has a smaller but somewhat similar spine connected with its palpal organs, I once found this portion so firmly fixed in the vulva (or epigyne) of the female as to be incapable of extrication without fracture; in several instances the male of *Nephila rivulata* had lost the whole digital joint and palpal organs attached; and I have but little doubt that the loss was occasioned by the impossibility of extrication without fracture, from the female, owing to the firm fixing of this corkscrew-appendage in the epigyne.

This Spider, which is nearly allied to *Epeïra malabarensis*

(Walck.), has a wide range; I have received the female from Natal, and the same sex in abundance also from Minas Geraes, Brazil, where they were captured by Mr. Henry Rogers. Messrs. J. Nietner and G. H. K. Thwaites have also sent me many examples from Ceylon; and among those received from Mr. Thwaites were the only males I have yet seen. Dr. Collingwood's collection contained numerous individuals captured at Labuan, but all females. It is evidently a *Nephila*, although the abdomen has not the long cylindric form of the typical species; the great dissimilarity in the size of the male and female also connects it with all the *Nephilæ* whose males are yet known.

NEPHILA CHRYSOGASTER (♀), Walck. (Plate XLIX. figs. 3, 4.)

Female adult, length 20 to 24 lines. *Male adult* (n. sp.), length 2 to 2½ lines.

This species belongs to Walckenaër's group *Tuberculatæ*, characterized by two small pointed tubercles on the cephalothorax. The male has never (as far as I am aware) been yet described; its cephalothorax, legs, falces, maxillæ, labium, and sternum are of a brightish orange-yellow colour, the tibiæ, tarsi, and metatarsi of the legs deepening into a dark brownish yellow, and the normal indentations of the cephalothorax are marked with dusky yellow-brown. The *abdomen* is of a very cylindric-oval form, slightly tapering towards its posterior extremity; the upperside, where it is slightly paler in colour than the cephalothorax, has a glossy corneous appearance, and is marked with a longitudinal median tapering line or narrow band of a brownish-yellow hue, on either side of which, towards the fore part, are two dots of the same colour; the sides are marked above with a pale yellowish longitudinal band followed by a parallel brown line, below which are some indications of oblique brown lines on a pale yellowish ground; the underside is pale yellowish irregularly marked with brownish lines; the hinder extremity of the abdomen is strongly suffused with blackish. The *legs* are long, especially those of the first pair, the extra length being in the metatarsi, which, with the tarsi, are slender; they are furnished with hairs and (chiefly on the femora and tibiæ) with longish but slender black spines. The *palpi* are paler in colour than the legs, except the digital points and palpal organs, which deepen into blackish brown; they are short, especially the radial and cubital joints, the former of which is a little produced on the upper fore side; the digital joint is large and comprises the palpal organs, which are large and prominent; they are corneous and of a nearly globular form, with a prominence beneath near their hinder extremity; and a long, rather slender, sharp-pointed, tapering black spine issues from their fore extremity, pointing downwards and slightly backwards; this spine equals, if it does not exceed, the whole length of the palpus, and gives the palpal organs somewhat the look of a Snipe's skull and beak.

Adults of both sexes of this Spider were received in 1868 from Dr. Collingwood, who found them in abundance both at Labuan and Manilla. Some time after, I also received both sexes from Mr.

Thwaites from Ceylon. Dr. Collingwood, in his most interesting 'Rambles in the China Sea,' p. 189, remarks upon a small Spider which he commonly found in the webs of the large *Nephilæ*, and which, from its small size, he naturally concluded to be of some other species, whose food appeared to be the remains of the larger one's prey. On perusing this account it seemed to me almost certain that the small Spider must be the male of the larger one; and this opinion was afterwards confirmed by the reception of examples of both the large and small Spiders from Dr. Collingwood, as well as from Mr. Thwaites, who also found them inhabiting the same web, and concluded from this and other circumstances that, in spite of the great difference in size, they were the two sexes of the same species.

Perhaps few points of sexual dissimilarity are more curious than this extreme difference in size between the males and females of this genus, the male being scarcely (in the present instance) more than one-tenth of the length of the female; it seems to me fairly accounted for by an application of a branch of the principle of "sexual selection." It is the known habit of the female in some Epeirids to endeavour to destroy or devour the male, and M. Vinson, in his work on the Spiders of the Mauritius, speaks of this habit in reference to a species of this genus. M. Vinson gives a very graphic account of the agile way in which the diminutive male escapes from the ferocity of the female, by gliding about and playing hide and seek over her body and along her gigantic limbs: in such a pursuit it is evident the chances of escape would be in favour of the smallest males, while the larger ones would fall early victims; thus gradually a diminutive race of males would be "selected," until at last they would dwindle to the smallest possible size compatible with the exercise of their generative functions—in fact probably to the size we now see them, *i. e.* so small as to be a sort of parasite upon the female, and either beneath her notice, or too agile and too small for her to catch without great difficulty.

Family SALTICIDES.

Genus SALTICUS (Bl.).

SALTICUS COLLINGWOODII, n. sp. (Plate XLIX. fig. 5.)

Female adult, length $2\frac{1}{2}$ lines.

The *cephalothorax* (which is of ordinary form) is of a bright reddish yellow-brown colour margined by a narrow band of bright shining silvery hairs; the upper part of the caput is darker than the rest, and is clothed with short yellowish-grey hairs, and a patch or short transverse band of bright scarlet ones between the two posterior eyes.

The *eyes* are in the ordinary position—those of the third row (the two smallest of the eight) being *within* the straight line of those of the second and fourth rows, and nearer to those of the latter respectively than to the former.

The *falces* are moderate in length and strength, a little projecting

and slightly divergent at their extremities; they are of a dull yellow-brown colour.

The *legs* are rather short, moderately strong, and their relative length appears to be 4, 1, 2, 3, there being very little, if any, difference between those of the second and third pairs; they are of a brownish-yellow colour striped with longitudinal lines of black, and silvery shining white hairs, and are armed with a few inconspicuous spines.

The *abdomen* is of a short oval form; two-thirds of the upper-side forwards are of a bright scarlet, marked conspicuously in front and on the sides by a broad irregular margin of dove-coloured grey tinged with olive-green; two large somewhat oval patches of the same colour occupy the centre of the scarlet portion, and are connected with the front border by a narrow line or neck of a similar hue; this pattern is edged narrowly with black; the hinder extremity of the abdomen is black, divided from the scarlet fore part by a broad, shining, silvery-white transverse band, which is also divided from the scarlet by a slender black line. The spinners are prominent, of a dull white colour, with a broad black transverse band in the middle of the superior pair; the underside of the abdomen is of a silvery shining white colour, reflecting rich metallic tints in a strong light, and margined behind with black; all the above colours on the abdomen are formed by a short close-set covering of hairs or pubescence.

A single adult female of this beautiful *Salticus* was contained in the collection under consideration, and was found at Labuan; it is, I believe, new to science; and it gives me great pleasure to connect with it the name of Dr. Collingwood, who has enabled me to give the above report on the Spiders collected by him.

DESCRIPTION OF PLATE XLIX.

- Fig. 1. *Nephila rivulata* (Cambr.), p. 618.
a. Female, natural size.
b. Spider in profile, without legs.
c. Underside.
2. *Nephila rivulata*, p. 618.
a. Male, natural size.
b. Palpus of male, magnified.
3. *Nephila chrysogaster* (Walck.), p. 620.
a. Male, natural size.
b. Palpus of male, magnified.
4. *Nephila chrysogaster*, p. 620.
Female, natural size.
5. *Salticus collingwoodii* (Cambr.), p. 621.
a. Female, magnified.
b. Profile, without legs.
c. Cephalothorax, from above.
d. Natural size.



Pickard-Cambridge, Octavius. 1871. "Notes on some Arachnida collected by Cuthbert Collingwood, Esq., M. D., during rambles in the China Sea, etc." *Proceedings of the Zoological Society of London* 1871, 617–622.

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