

Although in general form and proportion of its parts, especially of the terminal style of its abdomen, the specimen of this species in the British Museum agrees exactly with *St. Leonum*, yet the short third joint of the antennæ, and the extraordinarily enlarged size of the middle facets of the inner margin of the eyes, might indicate it to be the opposite sex of the preceding. The second segment of the abdomen is furnished on each side with a small fascicle of elongated black hairs.

This species is introduced by Mr. F. Walker into his 'List of the Dipterous Insects in the Collection of the British Museum' (part iii. p. 680), under the name of *Stylogaster stylatus*; but it appears to me that it neither accords with Macquart's generic characters of *Stylogaster*, nor with the concise Fabrician specific description of *Conops stylata* (Syst. Antl. 177), nor yet with Wiedemann's more detailed observations, especially with reference to the sexual difference in the form of the antennæ (Auss. Eur. Zw. Ins. ii. 245).

#### MISCELLANEOUS.

##### *Observations on the Circulation of the Blood in the Arachnida.*

By M. EMILE BLANCHARD.

UNTIL very lately the circulatory apparatus of the Arachnida remained nearly unknown. It was supposed, indeed, that the pulmonary Arachnida would resemble the Crustacea in their mode of circulation, whilst the tracheary Arachnida, on the other hand, would resemble insects; but observations on this subject are still almost entirely wanting, and all the peculiarities belonging to the type remained unknown. The question, however, made a great step, as far as regards the *Scorpionidæ*, in consequence of the researches of Mr. Newport; and in a memoir published three years since, I described the course of the principal arteries in the *Araneidæ*, in which they had not as yet been traced. Notwithstanding the appearance of these works, many points remained to be cleared up. A new examination of this circulatory apparatus has recently led me to ascertain its details in a tolerably complete manner. I had made my previous researches on species found in France, which are of very small size; but, during last autumn, a very lively specimen of a *Mygale* of the largest dimensions (*M. Blondii*), which inhabits South America, having been received at the museum, I have derived considerable assistance from it, in the investigation which I have long been pursuing, on the anatomy and physiology of the Arachnida. I injected this *Mygale*, introducing the injection by the heart, and succeeded by this means in following, and isolating by dissection, all the arteries distributed to every organ, even to their most delicate ramifications.

In this short abstract of my labours, I abstain from describing the course of these numerous arteries in detail, as the description will appear shortly in my work entitled 'L'Organisation du Règne Animal.' I content myself here with indicating the general result; a result which does not apply only to the species which has served me in a



special manner in my researches, but equally to all the *Araneidæ*, as I have since convinced myself.

In these Articulata, the heart, usually divided into five chambers, offers four pairs of auriculo-ventricular orifices; the aorta, which springs from the anterior chamber, penetrates into the thorax and furnishes two arteries on each side, the branches of which are distributed to the posterior *diverticula* of the stomach and to the thoracic muscles. Beyond this the aorta divides into two great trunks, which above give off the arteries of the first *diverticula* of the stomach and of all the muscles of the anterior portion of the thorax. The ophthalmic arteries spring from the inner part of each of these trunks. Below, they are prolonged to form the arteries of the mandibles (*antennes pinces*), and about their median portion they furnish a voluminous artery which divides immediately to form the arteries of the legs and of the ventral portion of the abdomen. All these vessels present a number of branches and ramifications not inferior to those which are generally seen in vertebrated animals. Besides these, each of the chambers of the heart furnishes a large artery on each side, the branches of which are distributed to the liver and intestines.

For the return of the blood the circulatory apparatus is much less perfect; in general there only exist canals, the walls of which are incapable of being isolated by dissection. Nevertheless, the legs and the mandibles (*antennes pinces*) are penetrated by a very distinctly limited venous canal; but in the thorax the principal passages are merely circumscribed by the bundles of muscles. On the other hand, in the liver, we observe, at various points and principally on the sides, vestiges of membranous walls.

All the venous blood collected from the different parts of the body is conducted into the lower region of the abdomen, where it is introduced into the respiratory organs, by means of two large pulmonary canals formed by a delicate membrane; arrived at the organs of respiration, the nutritive fluid soon passes into the pulmono-cardiac vessels, which are equal in number to the auriculo-ventricular orifices of the heart, into which they empty themselves. These vessels, of a very delicate consistency, are always adherent to the inner walls of the abdominal teguments.

Thus the circulation of the blood in the Arachnida is executed by means of an arterial system of the most complete description; and a venous system, which, although no doubt very imperfect when compared with that of the Vertebrata, offers, nevertheless, in the regularity of its course and the well-circumscribed limits of most of its passages, a degree of complication of which naturalists hitherto could have formed no idea.—*Comptes Rendus*, March 15, 1852, p. 402.

#### ON THE DISTRIBUTION OF *COLUBER NATRIX*.

Referring to Mr. Gray's article in the June Number of the 'Annals of Natural History,' on the distribution of the *Coluber natrix*, I beg to state that it is a mistake to suppose that this reptile is not found in Norfolk. I have seen specimens from two localities in East Norfolk, and I have heard of them in West Norfolk. I have also





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