

but the respiratory and excretory functions are predominant, and also that the coelom in these forms contains a nutritive fluid.

(Schluß folgt.)

### 3. On the secondary spiracles on the legs of Opilionidae.

By J. C. C. Loman, Amsterdam.

eingeg. 15. März 1896.

We are indebted to the skilful investigations of H. J. Hansen<sup>1</sup> for the discovery of spiracles on the legs of some *Opilionidae*. They were found only in the Family of *Phalangioidea* Thor., which is however widely spread, species being known to exist in nearly all parts of the world. In this family the tibia of each leg possesses two minute spiracles, one proximal, situated on the backside of its basis quite near the patella, the second, distal one, on the fore and upper part at a little distance from the metatarsus. The external opening of the spiracle leads into a kind of respiratory cave of the form of a lens, situated immediately beneath the skin, and the trachea opens itself through the interior wall of this cave. As for the variations of position and size in different genera I may refer to the description of Hansen. On the whole the differences are slight. After many measurements I found the average diameter of the proximal spiracle of *Phalangium opilio* L. to be 0,14 mm, that of the distal being always a little smaller, only 0,11 mm.

The tracheal system of Opilionids, as hitherto known, consists of two big tracheae originating from stigmata, situated in the groove between the fourth coxa and the abdomen. Each foot receives two smaller branches from the principal one, which are to be seen running down the femur and the patella. One of these a little larger than the other, communicates with the proximal spiracle of the tibia, whereas the second passes down the tibia and reaches the distal spiracle, its branches going as far as the tarsus.

Now the tracheae of Opilionids, as far as we know or may guess, are formed in early stages of development by invagination of the ectoderm, and therefore it seemed of interest to investigate whether these secondary spiracles had a similar origin as the main trunks.

So I searched after very young harvest-men during the spring of 1894 and 1895 and succeeded in collecting some dozens, most certainly belonging to different genera, probably *Phalangium opilio* L. and *Acantholophus spinosus* Bosc, but, as young Opilionids differ from the adult ones in nearly all systematical characters (external structure, colouring, etc.) it is impossible to determine the species, they belong to, with absolute certainty.

<sup>1</sup> Dr. H. J. Hansen, Entomologiske Meddelelser, 1893. p. 198.

The youngest, newly-hatched, animals, I found, were short-legged, mite-like individuals of a size of hardly  $\frac{3}{4}$  mm, their longest, second ambulatory, leg about 5 mm. The tracheal system of the body is fully developed and easily found. It is far more difficult to find the two thin branches, which penetrate each leg between the muscles of the femur. I succeeded however to follow their running towards the tibia, where the branches became too small and escaped observation. External openings on the tibia do not exist in these young animals. Even in the much larger individuals from 3—5 mm, when the legs are greatly elongated and have nearly attained their full length, no trace of spiracles could be found, neither on the skin, nor on the tracheae within the tibia. In two or three of these larger animals, however, when seeking for the external opening, I observed in optical section of the leg, on the spot where, in the adult, the proximal stigma might be expected, a large, oblong, but thin-walled cavity beneath the skin. This cavity communicated by a very short air-tube with the tracheal trunk in the posterior part of the tibia, which is running very near.

Though many sections of the legs were prepared and carefully examined, yet they gave but negative results, owing to the difficulty of impregnating and the impossibility of maintaining the inner parts of the legs in their respective places. From the few facts, as stated above, we may, however, evidently deduce, the Opilionidae have true post-embryonic spiracles on the legs, which take their origin from the tracheae within the tibia at a time, when the feet are rapidly growing and the supply of air in those slender limbs becomes difficult. The next time the animal casts its skin, the external opening of the stigma will probably be formed by perforation of the tracheal cavity.

Though it seems therefore very clear, that want of air in the long legs is the principal causal moment, still many long legged Opilionidae of other families possess no spiracles, whereas they are always found even in the short-legged genera of the Family Phalangioidea.

## II. Mittheilungen aus Museen, Instituten etc.

### 1. Zoological Society of London.

21st April, 1896. — The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of March, and called special attention to a fine young female Gorilla (*Anthropopithecus gorilla*), from French Congoland, obtained by purchase; a young male Markhor (*Capra megaceros*), from the vicinity of Peshawar, British India, presented by Col. Paterson, March 18th; a pair of a rather scarce species of Duiker Antelope (*Cephalophus coronatus*), from West Africa, purchased; and a Silver-backed Fox (*Canis chama*), from Cape-Colony, presented by C. W.

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Autor(en)/Author(s): Loman J.C.C.

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