

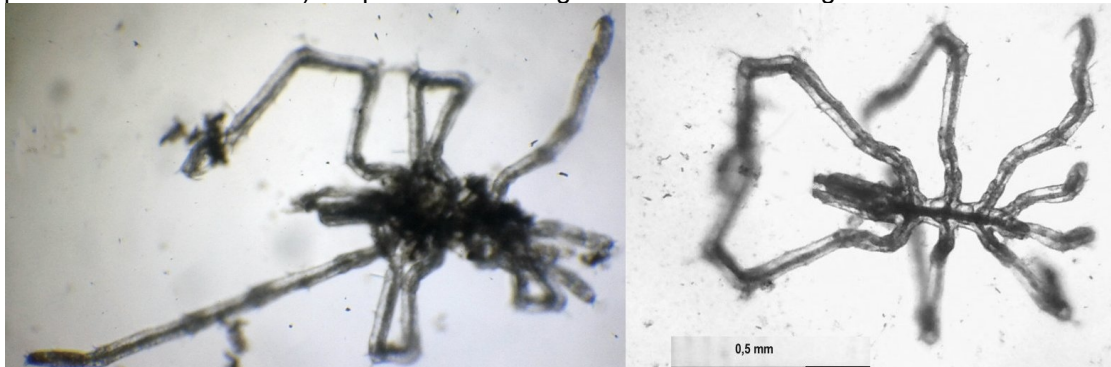
**Pycnogonida - « sea spider »**  
**JM Cavanilhac - France**

In this magazine I have often described microscopic animals without head or tail... Here is another strangeness: a species almost without a body!

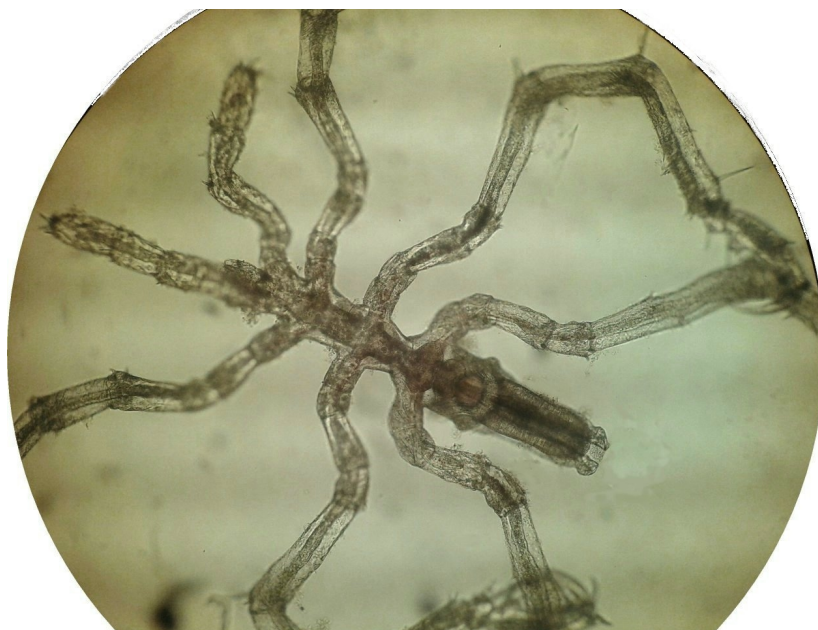
These are the Pycnogonida, marine species of which there are more than 1300 varieties which range from specimens of the size of one millimeter to those of great depths which can reach a wingspan of 70 centimeters. Their name comes from the Greek: pyknos = crowded and gony = knees which means "knobby knees" and indeed their 8 (sometimes 10) legs have many joints over at least 8 segments. They occupy a branch of the chelicerata related to the arachnids but more primitive and present since Silurian era. (420 million years)

Their identification is difficult because few species are captured (they are often attached to their support and escape the plankton net) and morphological differences are not always sufficient to identify them. Here it could be: *Anoplodactylus*.

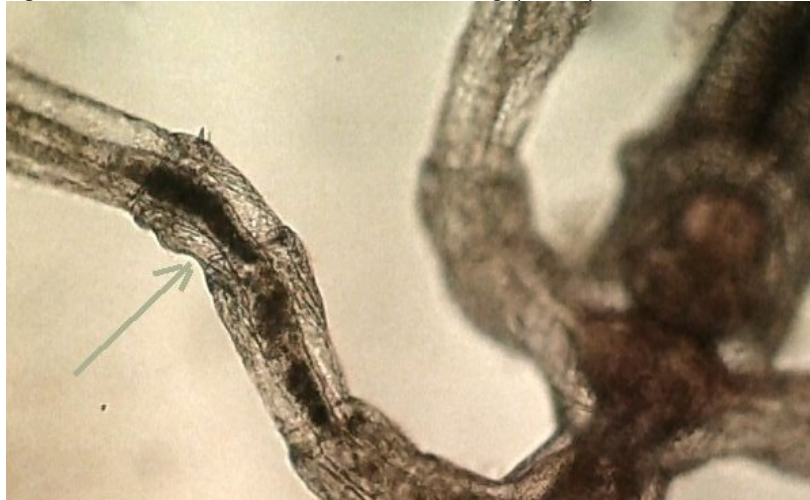
I underlined the difficulty of capturing them because they crawl on algae or bryozoans, sponges, corals...on which they feed. Here the specimen is collected by scraping a submerged rope; at first glance this gives a sort of tangle of legs which looks like this: (right picture cleaned of debris) the position of the legs shows that it is lifting itself on the slide.



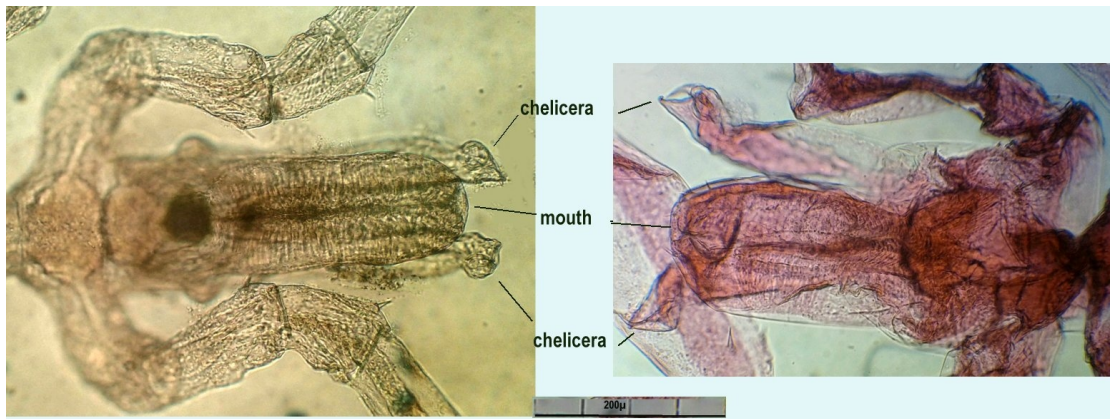
We see that the body itself is very small so that the organs must be located in the legs: in particular the digestive system whose peristaltic movements were seen to advance the digested matter. The front part of the cephalon has a fairly large proboscis ending in a mouth that sucks in (they are often compared to grazers) the soft tissues of bryozoans, for example. Here is an image of an individual slightly compressed by the coverslip: 6.3x objective image



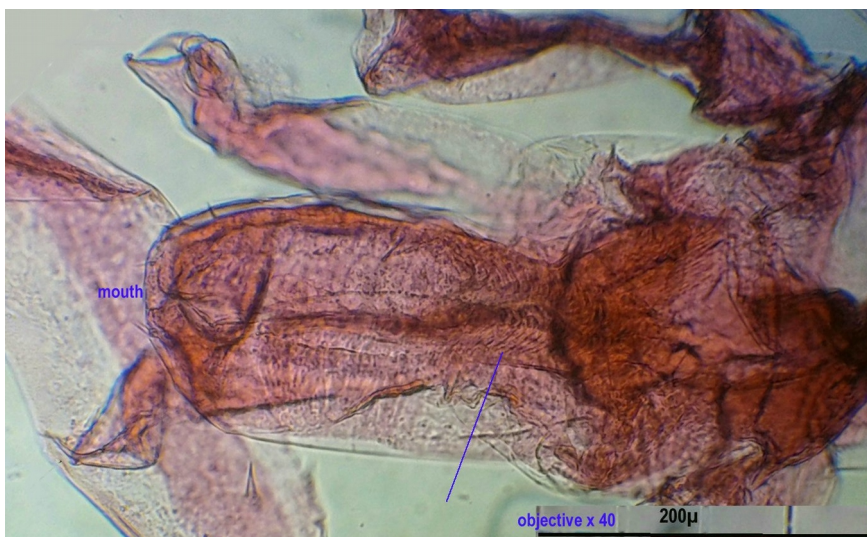
A detail of a leg where the food bolus was seen moving (arrow):



Let's see some details: the proboscis: we note the pair of chelicerae used to bring food to the mouth, whose claws we can better see on an individual preserved on the right



A close view of the proboscis: the coloring (eosin) shows musculature used in aspiration:



For more explanations, see this interesting link :  
<https://lanwebs.lander.edu/faculty/rsfox/invertebrates/anoplodactylus.html>



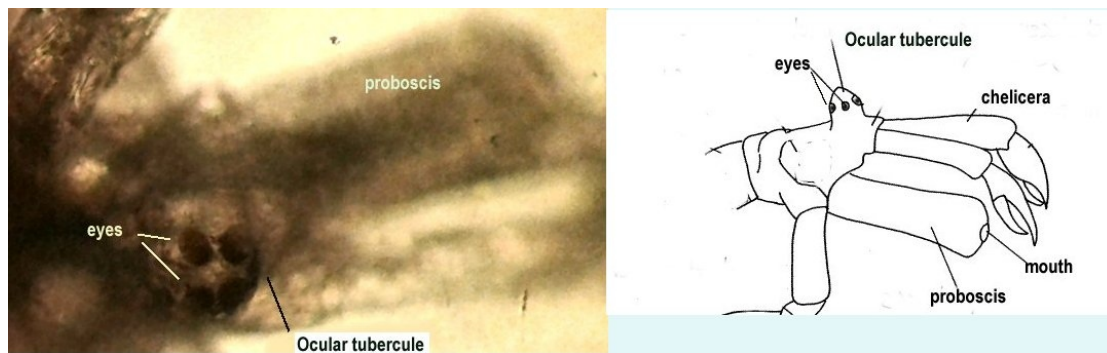
Respiration takes place by gas exchange through the shell. The heart pumps hemolymph and the internal digestive movements of the legs help with circulation.

Also because of the lack of space (!), the females develop the eggs in part of the legs, from where they are ejected through a pore; the male collects them by means of specialized appendages (ovigerous) and gathers them in balls between his legs until hatching. These appendages are absent in the specimen present here, perhaps because it is not yet adult or it is a female specimen. It is very strange to see this behavior of eggs protection in an animal that seems to be little evolved.

Detail of leg ends (claw) : coloring shows muscle fibers



But one thing had puzzled me during the observation, it was that I could not see any organs of vision: the explanation is simple the eyes are located on an ocular tubercle carried on the dorsal side (and out of the focus field!) much like a periscope. Using a drawing (right side picture) from the link above to find your bearings, and observing all the taken images, we find the 4 eye spots on the tubercle. (sorry for the poor quality picture)



To learn more about vision and the nervous system with in Fig2 a section of the tubercle, in the link below :

<https://bmcbiol.biomedcentral.com/articles/10.1186/s12915-021-01212-z>

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