

Plate XXI., I figure a longitudinal section of one of the eyes of this species; and in the same figure the place occupied by the outer surface of the eye of the other side is indicated (α). This outer surface is invested by a thin chitinous cuticle, which is minutely (longitudinally) striped; round the circumference it is in connection with the chitinous skin of the animal. The inside of this wall is covered with pigment, and it is in this bed of pigment that the union of the fibres of the optic nerve with the elements of the retina takes place. I have already spoken above about the manner in which the optic nerve penetrates the eye. I sometimes got preparations, which made me believe that the optic nerve reached the outer integument of the oculiferous tubercle, at a considerable distance below the eyes, and that it ran along this wall and penetrated the eye where it is in connection with this integument; this, however, is not really the case. Numerous separate nerve fibres reach the under surface of the eye; they then penetrate its cuticle, and in one of my preparations I observed distinctly, that they are in direct connection with the rods of the retina.

In the interior of the eye there is a retina, but there is no distinct vitreous body. I observed that under the thickened cuticula which forms the lens of the eye, just as everywhere else, the epithelium (hypodermis) of the cuticula is formed of rudimentary cells represented by nuclei. Of a distinct row of vitreous body cells, like those figured and described by Grenacher (*loc. cit.*) and Graber,¹ I observed nothing. Nor do I believe that Dohrn's assertion is right, that in the eyes of the Pycnogonida the retina is derived from the epithelium cells (hypodermic cells). This retina consists of rod-forming elements and of ganglion cells. Those parts of the rods which are directed towards the fibres of the optic nerve are thicker and terminate abruptly (Pl. XXI. fig. 4), bearing at the other extremity a long and filamentary appendage; while in other preparations the retina elements which I isolated show the form figured in Plate XXI. fig. 5,—viz., rods which imperceptibly pass into thread-like appendages. In these retinal elements I failed to observe any trace of the presence of nuclei. The thread-like appendages of the rods extend till they reach the cuticular lens. A præretinal lamella, which, according to Graber, is characteristic of the stemma of the tracheate Arthropods is not visible. Between the rod-forming elements numerous ganglion cells are observed in the form of distinct rounded cells. I did not observe whether or not they were really in connection with the filamentary appendages of the rods; but having isolated from one of the preparations the rods, as figured in fig. 5, I found that the rod passes into the filamentary appendage. Probably the ganglion cells have also filamentary appendages, which pass between the filaments of the rods. In this respect therefore my opinion is intermediate to those of Grenacher and Graber. This structure is observed when the section passes vertically through about the middle of the eye

¹ Graber, V.—Ueber das unicorneale Tracheaten-und speciell das Arachnoideen-und Myriopoden-Auge. Archiv. f. Mikr. Anatomie. XVII. 1880, p. 58-93, Pl. v.-vii.