

VI.—THE MINUTE ANATOMY OF THE DISK AND ARMS.

I do not propose to treat the subject of this chapter as fully as I have done the comparative morphology of the Crinoid skeleton. Much has been written about it lately, and a general resumé of this recent work, together with some independent observations of my own, was published in the Quart. Journ. Micr. Sci. for April 1881.

Since that time I have been able largely to increase the range of my observations on the anatomy of the Comatulæ, and have also extended them to *Pentacrinus*, *Bathycrinus*, and *Rhizocrinus*. The result has been that I am able to confirm in almost every respect the admirable investigations of Ludwig on the minute anatomy of *Antedon rosacea*.¹

On the other hand, there are some points, notably in the relations of the axial cords of the skeleton, which were entirely overlooked by him; while he also omitted to describe some remarkable peculiarities in the structure of the plexus of blood-vessels which is situated in the lip, and is connected with the oral blood-vascular ring.

It is only fair to state, however, that my new observations upon the nervous and vascular systems of this type owe their origin, in great measure, to my having been able to examine other species in which the peculiarities in question are much more developed than they are in *Antedon rosacea*.

A. THE GEOGRAPHY OF THE DISK.

I find that it is most convenient, on the whole, to use the terms *right* and *left* precisely as in human anatomy. When the ventral surface is upwards, with the mouth north, or pointing away from the observer, and the anus posterior, the right side of the disk would be west in a map, and the left side east (figs. 2, 3). On the other hand, when the dorsal surface of the skeleton is upwards, the anal area being, of course, posterior, the eastern rays are those of the right side, and the left rays are in the west. The same method applies to the arms, a pinnule on the right side being east in a dorsal view, and west in a ventral one.

B. THE DIGESTIVE TUBE.

Little need be said about the alimentary canal, the general course of which alters but slightly in the endocyclic Crinoids (*Antedon*, *Pentacrinus*, *Rhizocrinus*, &c.), though it varies a good deal in the complexity of its cavity. Both in *Antedon rosacea* and in *Antedon eschrichti* the gullet runs downwards and backwards, trending slightly to the

¹ *Op. cit.*, *Zeitschr. f. wiss. Zool.* 1877, Bd. xxviii. pp. 255-353, Taf. xii.-xix.