

acquainted with an animal, the difficulties arising from this discrepancy between natural attitudes and normal positions grow less and less. No one could be misled by a description of a Turbot or a Flounder, representing their structure according to their normal position, even though, in their natural attitude, they lie upon one side; nor would any philosophical observer describe the back of these fishes as lateral on account of their natural attitude. And yet it seems hardly to have occurred to some naturalists, that they make frequently a similar mistake when they describe the lower animals, in almost every group, in a different way; taking everywhere the natural attitude, and not the normal position, as their guide.

It is fitting, that, after alluding to the different attitudes in which the Radiates are found in their natural element, we should attempt to determine what is their normal position. Considering the plan of their structure, we have already seen that there exists in all of them an axis and centre of radiation, around which all their parts are symmetrically arranged in a radiating and concentric order, even though that axis or centre of structure be not the centre of figure or form. At one end of this axis we invariably find the so-called mouth or *actinostome*, while the opposite end of the alimentary canal may have an excentric position. We find, moreover, that in their natural attitude, the actinostome is in all of them turned either upward or downward, with the sole exception of the *Holothuriæ*, in which it is directed forward. This exception is, moreover, of little importance, since the structural relations of the *Holothuriæ* to the other Echinoderms leave no doubt as to what is their normal position; and whatever rule we recognize as binding for the other Echinoderms must be followed for the *Holothuriæ* also.

Once agreed upon this point, there can be no farther doubt, that, in the Radiates, the normal position of the main axis of the body is the vertical, since all, with the single exception of the *Holothuriæ*, stand in their natural element with that axis in a vertical position. We shall, therefore, not hesitate hereafter to describe the *Holothuriæ* as if they also were in the habit of standing upright.

It is not quite so easy to determine what should be considered as the upper, and what as the lower, end of the axis. If we look to the Polyps as a guide, we should certainly take the region of the actinostome as the upper end; but if we allow the relations of the higher Radiates to influence us, we should naturally consider the same region as the lower end of the body. It would be incorrect, unquestionably, to assume that the natural attitude of the *Holothuriæ* is to decide the question, and to describe all the radiated animals with the actinostome forward, as it is evident that the similarity in the natural attitude of the *Holothuriæ* and Worms is only an analogy, and not a leading feature applicable to the whole type of Radiates. The main axis of the body of these animals is truly vertical; and in this essential relation of their whole structure to the surrounding medium, we