

opposite to one another, while the back of a Starfish corresponds to the posterior extremity of an Holothuria. To bring, therefore, all the Radiates into a uniform normal position, we must place them in that attitude of their main axis, which will indicate prominently their peculiarity as a primary division of the animal kingdom; and that attitude is the vertical, as it is, also, the natural attitude of a large majority of them.

To facilitate our generalizations, we may well assume that all the Radiates are spheroidal. Those that have not really that form, may readily be reduced to it, by slight changes of their different diameters, and without altering any of the primary relations of the plan of their structure.

The essential elements of the structure of these spheroidal bodies are spherical wedges, arranged symmetrically around a vertical axis. Of course, we have not to deal here with mathematical figures, but with the elements of a living sphere, loaded in every direction with those structural differentiations which determine the peculiarities of organic structures. In consequence of this unequal weight of the different diameters of the body, we find that the opposite poles of our organic sphere are provided with parts of a different nature, and perform different functions. The sides also present similar differences, in consequence of the unequal development of alternate zones, extending from pole to pole, and of similar inequalities along the same zone. The so-called mouth is always placed at one of these poles, and from it radiate the most prominent organs, in consequence of which I have called this side of the body the oral, or *actinal area*, and the opposite side the aboral, or *abactinal area*. This mode of designating these regions applies in every case, and we thus get rid of the difficulty arising from the inverse position of many of these animals. The zones, extending from pole to pole, differ chiefly in the differentiation of the substance, and the position of different systems of organs alternating with one another at the periphery of the body. Thus, in Sea-urchins, we have the ambulacral system alternating with the genital organs, while the digestive cavity occupies the centre; in Polyps, the radiating partitions to which the genital organs are attached, alternate likewise with the radiating chambers leading into the tentacles. For this reason I have adopted the names of *ambulacral* and *interambulacral zones*, to designate the alternating structural regions prominent upon the surface of all the Radiates. I have selected these names, not because they are the most appropriate, but because they recall the familiar structure of the Echinoderms, and may facilitate the comparisons between the different classes of these animals. The differences in the structure of one and the same zone, may best be determined with reference to the actinal and abactinal pole.