

The limits of their extension mark the boundaries of that area of the spherosome, which I have called the actinal area, and the complication of their ramifications characterizes the different zones of this area, and the various fields of each zone. In *Synapta*, for instance, there arise a number of digitate appendages from the ring encircling the mouth, which are quite characteristic of that family, while the radiating tubes, upon the sides of the tubular body, are simple, and destitute of ambulacral suckers. In *Pentacta* and *Cuvieria*, the appendages around the mouth assume the character of complicated and highly ramified tentacles, while the radiating tubes are provided with ambulacral suckers, varying even in different rows. In *Echinoids*, the differences in the structure of the ambulacra are much greater, in different families, than among the *Holothurians*: in *Echinus* and *Cidaris*, the five zones have identical ambulacra, though in each zone the ambulacral suckers, and the other appendages of that system, differ with their distance from the centre of radiation; in *Echinolampas*, and still more in different genera of *Spatangoids*, the zones of ambulacra differ among themselves, and each zone within itself; but in all they extend, as in the *Holothurians*, nearly over the whole surface of the body, with the exception of a small abactinal area opposite the mouth.

Not so in the *Starfishes*. Here the ambulacra occupy only a narrow space on the lower surface of the body, while the abactinal area occupies the whole upper surface and the sides of the arms. The ambulacral or actinal area is, indeed, very similar in all the *Asteroidæ*. It is uniformly composed of a broad, double series of ambulacral plates, between which project the ambulacral suckers, and a narrow series of interambulacral plates on each side of the former, both kinds of which are larger about the mouth, and gradually smaller towards the extremity of the rays. The abactinal area varies much more; and while in some it is occupied by very similar plates, forming a more or less open net-work, in others it presents the most diversified combinations of heterogeneous plates, regularly linked together in distinct rows or well defined and distinct fields. And yet nothing is easier than to transform an *Asterias* into an *Echinus*. It is only necessary to contract the abactinal area of any *Starfish*, to such an extent, that the ambulacral area may be curved upwards, and the interambulacral plates, on opposite sides of adjoining furrows, meet; or to stretch the abactinal area of a *Sea-urchin* to such an extent, that the extremity of the ambulacra, with the ocellar plate, are brought to a level with the plane of the mouth. In this position, the abactinal area of an *Echinus* may directly be compared to that of an *Asterias*, and the latter with a *Discophorous Acaleph*. Whether the circular tube, connecting the ramifications of the chymiferous tubes, be at the peripheric extremity of the system, as in *Aurelia*, or around the mouth, as in *Idyia*, or half way between the mouth and the abactinal area, as in the *Scutellidæ*, does not alter their homologies.