

when the sub-class is viewed as a whole, two modes of growth; in the one the production of parts is accelerated in relation to the growth of the starfish, in the other the production of parts is retarded, or proceeds *pari passu* with the general development of the skeleton.

In the first group, the production of the ambulacral elements is so rapid and prolific in relation to the development of the starfish and the length of the ray, that the plates become crowded and crushed together, and their individual development, though not essentially reduced, is greatest in a plane at right angles to the axis of the ray, the plates being very short in the longitudinal direction of the ray, and crushed together in consequence of the action of growth-pressure. The segments may become so numerous, and the growth-pressure so great, that the normally single series of ambulacral tube-feet on each side of the median line may be crushed into a zigzag or alternating double series of tube-feet, thus producing a quadriserial arrangement of the tube-feet in each furrow. This character is secondary, however, in my opinion, and results from the degree to which the crushing is carried. I do not therefore consider the quadriserial disposition of the tube-feet to be of sufficient importance to define the primary divisions of a class as previous systematists have done. A further result of this growth-movement and crushing of parts in the ambulacral skeleton is found in the form and posture of the adambulacral plates, which assume a more or less crowded character, and their position becomes transverse. A secondary effect of this action on the adambulacral plates is the influence on the form of the mouth-plates, which is especially conspicuous in the actinostomial ring, the ambulacral elements being rendered the most prominent and define the mouth character, whilst the adambulacral elements are retarded, and have a relatively insignificant character. In consequence of the mode of its formation, I consider the form of the mouth a secondary character. I do not consider it to be of such importance as Viguiet does, for although it is true that all Asterids in which the ambulacral skeleton is of the retarded type, or with its growth concurrent with the general development, have an adambulacral mouth, the occurrence of the ambulacral mouth is simply dependent on the degree to which the growth-pressure is extended, as well as the influence of other factors which determine the form of the adambulacral plates.

In the second group, in which the production of parts in the ambulacral skeleton is retarded, or proceeds *pari passu* with the general development of the skeleton, there is little or no action of growth-pressure, the ambulacral and adambulacral plates are not diminished in the longitudinal direction of the ray by crushing, the ambulacral tube-feet are biserial in arrangement, and the adambulacral plates are most prominent in the actinostomial ring, and define the character of the mouth. These two groups may be called the Leptostroteria and the Eurystroteria respectively. I consider the last mentioned of these two groups (the Eurystroteria) to be the older. Embryology supports this view, for at an early stage of a Leptostroterate Asterid (in which when adult the ambulacral tube-feet are quadriserial and the mouth ambulacral), the ambulacral skeleton shows no effects of growth-