

pressure, the plates are long in the longitudinal direction of the ray, the ambulacral tube-feet are in regular biserial arrangement, and the mouth is defined by adambulacral plates; it is not until a later stage that the plates become crowded by growth-pressure, that the ambulacral tube-feet are crushed into zigzag or alternating series, forming a quadriserial arrangement, and the mouth-ring is defined by the prominence of the ambulacral plates. It will thus be seen that the members of the more highly developed group (the Leptostroteria) pass in the course of their development through a stage which represents the character of the adult condition of the more primitive group (the Eurystroteria). It is of interest to note that this occurrence and action of growth-pressure in the ambulacral region of Asterids strikingly recalls the growth-pressure shown by Lovén<sup>1</sup> and by Duncan<sup>2</sup> to occur in the ambulacra of the polygeminate forms of regular Echini.

3. The ambital skeleton is formed by the marginal plates and their supplementaries when present. I consider them to be one of the most important systems of plates in the body as determining form and superficial character. Two distinct modes of growth may be defined in the marginal plates of the Euasteroidea, by which the sub-class may be divided into two groups. In the first the marginal plates develop rapidly, and continue to increase in size throughout the life of the starfish, being usually in the adult state the most conspicuous series of plates present, and forming a prominent and massive marginal border. In the second group the marginal plates do not increase in size, or only to an insignificant extent; in fact, their relative size in relation to the body is conspicuously diminished in the adult stage as compared with their proportions in the young stage. They are in consequence often quite inconspicuous in the adult starfish, and can only be discovered by means of dissection, and even then frequently with difficulty. The first of these modes of growth is characterised by the increscent or accelerated development of the marginal plates, and the second by the decrescent or retarded growth of the marginal plates. The former group I call Phanerozonia, in consequence of the prominent and conspicuous character of the marginal plates; the latter group Cryptozonia, in consequence of the insignificant and often hidden character of the marginal plates. I consider that the Phanerozonate group is older than the Cryptozonate, and that the latter indicates a divergence in character and a modification in form correlated with the development of other organic systems. Embryology supports this view of the relative age of the two groups, as in the early stages of the life history of a Cryptozonate Asterid, the marginal plates are large and conspicuous, forming a prominent phanerozonoid margin; it is not until a later stage that the growth of the marginal plates is retarded, and that with the increase in size in the other plates of the test they then appear to be relatively decrescent,

<sup>1</sup> Etudes sur les Echinoidées. *K. Svensk. Vet.-Akad. Handl.*, Bd. xi. No. 7, pp. 23 et seq., 1874.

<sup>2</sup> On the Anatomy of the Ambulacra of Recent Diadematidæ, *Journ. Linn. Soc. Lond. (Zool.)*, vol. xix. p. 95; On the Structure of the Ambulacra of some Fossil Genera and Species of Regular Echinoidea, *Quart. Journ. Geol. Soc. Lond.*, 1885, vol. xli, p. 419.