

developed until the appearance of the Fibularinæ which lead us directly to the Echinanthidæ on the one side, and on the other to the Scutellidæ, through such genera as *Mortonia*; *Echinocyamus* being the genus in which the clypeaster-like petaloid nature of the ambulacra first appears.

From the time of the appearance of *Galeropygus*, *Hyboclypus*, and *Pyrina*, we can readily trace the systematic connection of genera which lead on the one side to the slightly modified Cassiduloids of the present day, such as *Echinoneus* and *Echinolampas*, the *Pyrina* types showing evident relationship to the Discoideæ on the one side, and the Echinolampadæ on the other, while *Hyboclypus* may well be regarded as the forerunner of the Ananchytidæ and Collyritidæ, the forms of which are still represented at the present day, and of the Echinobrissinæ which have also survived to the present epoch, while from the Toxasteridæ and the like we pass to *Hemiaster*, which may well be considered as the oldest of the Spatanginæ proper, allied through *Micraster*, to the Holasteridæ, and to which it is not difficult to trace the relationship of all the living genera of Spatangoids. Should we go back to the earliest groups of Echinoidea the Palæechinidæ, let us see how far they show affinities to Echinids now living. In the first place the whole mode of composition of the test is eminently crinoidal from the great multiplicity of plates. It certainly is interesting to find in these earliest Echinids so close a structural affinity in the arrangement of the interambulacral plates with the interradianal plates of Crinoids, showing how far-reaching has been Lovén's generalisation in which he compared the apical system of the Echinids to the six primary plates of the calyx of Crinoids. And finally, in a still more general way, we can trace in the embryo Echinoderm of the different orders, whether it be a Starfish, an Ophiuran, a Sea-urchin, a Holothurian, or a Crinoid, the typical structural features which underlie them all.

We trace the existence of the earliest crinoidal structures in the persistency of the central plate with its five radial plates in the embryo Echinoderms of all the orders. We follow in the irregular arrangement of the plates of the dorsal surface of Starfishes, in the repetition of the joints of the arm-plates of the Ophiurans, in the great number of interambulacral plates composing the test of the earliest Sea-urchins, and of many Holothurians, modifications of the branching of the arms of the early Crinoids. The somewhat indefinite distinction of the ambulacral and interambulacral plates in the embryos of Echinids, Starfishes, and Ophiurans dates back to the earliest Cystideans, in which the presence of an apical and anal system still further obscures the nature of the areas. Thus it is that structural features which have apparently disappeared reappear again suddenly, seeming to have no connection with the types immediately preceding them, from the peculiar combination of characters which have remained persistent down to that moment. Yet when we come to analyse the individual characters thus combined, we generally are able to trace them all as modifications of structural features indicated in older periods, but combined together, perhaps, in so novel a way as at first to defy