

Collyritidæ and the Cassidulidæ, and has shown that the separation of the apical system into a bivium and a trivium, which at first sight appears so important, is not accompanied by corresponding changes in other structural features of the test. On the contrary, these groups agree in having comparatively simple ambulacra, without great differences in the size of the plates of the interambulacra, and are thus more closely related still to the Echinoneidæ of the secondary period, of which they appear to be at the present day the representatives; and it is by the changes taking place in the odd posterior interambulacrum that this group approaches at last more closely the recent Spatangoids.

Lovén is disposed to consider the second actinal plate of the right posterior interambulacral plates as made up of the plates 2:2. I am more inclined to consider the first and second plate as the breaking up of the first actinal plate into two parts, as a similar splitting up of the actinal plates frequently occurs in the very elongate plates of the actinal plastron of other Spatangoids. From the very fact that in such closely allied genera as *Hemiaster* and *Faorina* the second plate is, according to Lovén himself, made up in the one case of 2:2, and in the other 2:3, I am the more inclined to look upon this as a mechanical result due to the irregular termination of the median interambulacral line of the posterior pair of interambulacra compared to the anterior pair, and thus far nothing has been traced in the growth of the young Spatangoids to sustain the view taken by Lovén. It seems to me, on the contrary, that it is in the modifications of the odd posterior interambulacral area that we must look for the passage between the two groups of Spatangoids which Lovén has followed. These can still be traced, but very imperfectly, in the other lateral interambulacra which are not as deeply affected by the change of form as the odd posterior interambulacral area. I am rather inclined to look upon this heteronomy of the right posterior interambulacrum, which Lovén has noticed, as the last trace of the structural affinity of the Clypeastroids to the Spatangoids, the more so from the existence of such a genus as *Palæostoma*, in which we find in all the paired ambulacra two single actinal plates in succession, the last trace of the zigzag arrangement of the actinal plates of the paired interambulacral spaces. If, on the other hand, with this explanation of the modifications of the paired lateral interambulacra, we trace the changes which the odd interambulacrum undergoes, we can trace these directly either to the more or less central position of the actinostome or to the elongation of the test which greatly modifies the composition of the plates of the actinal plastron, and this, it seems to me, is a more natural explanation of the heteronomy existing in the Spatangoids than the ingenious homologies of the successive soldering of the plates 2:2 or 2:3 advanced by Lovén.

Older writers on the Echinoidea have already insisted on the similarity of the plates composing the different ambulacral and interambulacral areas in the regular Echinids, and their difference in the so-called irregular Echinids. This division, which at first sight seems so fundamental, is most artificial; and when we carefully analyse such groups as the