

anterior region we get forms like *Pourtalesia carinata*. With these lower anterior coronal plates, combined with a great elongation of the plates, especially of those of the posterior lateral, interambulacral, and ambulacral areas, we get such forms as *Pourtalesia phiale*, while with plates of a uniform size in the different parts of the test we get such conical forms as *Echinocrepis*, and when more or less elongate posteriorly, such forms as *Pourtalesia ceratopyga* by the elongation of the posterior plates.

In *Spatagocystis* the arched elliptical test is the result of a large number of horizontally elongated coronal plates, somewhat larger in the posterior region of the test and of uniform size anteriorly, while the more regular outline of *Urechinus* is the result of a greater uniformity in the size of the plates of the anterior and posterior extremities, which reaches its maximum of regularity in the nearly circular outline of *Cystechinus* with its ambulacral and interambulacral areas composed of plates nearly all of uniform size in corresponding parts of the test.

The genus *Echinocrepis* seems to form a passage between the Pourtalesiæ without an anal snout and such Ananchytid genera as *Cystechinus*. We readily trace also how such genera as *Nucleolites* do not differ so radically as they seem to do at first sight from genera in which the anal groove is not developed. In fact when we compare the fossil genera *Echinobrissus*, *Hyboclypus*, *Clypeopygus*, and the like, with the Pourtalesiæ, we find in the latter family a sunken actinal groove, a feature once so common among the genera of the Jurassic and Cretaceous periods. This structure has become less and less common until we find but few genera in the Tertiary formation with a sunken anal groove, and at the present time only a few species of *Nucleolites* in addition to the Pourtalesiæ still retain the sunken anal groove. This seems in the Secondary and Tertiary periods to have been a character peculiar to the Echinolampadæ and their allies. The existence of a deeply-sunken actinal groove or its representative is, however, much more prevalent among the recent Spatangoids, and its modification from the simple sunken ambulacrum of *Asterostoma* to the deeply-sunken actinal groove of *Pourtalesia* can be easily traced. It has left its trace in the greater number of recent Spatangoids in the more or less sunken anterior ambulacral groove. This, however, in most recent Spatangoid genera is limited to the abactinal side of the test, generally disappearing at the ambitus, taking its greatest development in the deeply-sunken ambulacra of some of the Schizasteridæ such as *Moiria* and *Schizaster*, and forming a gradual transition, as it were, between the existence of a single deeply sunken anterior ambulacral groove situated on the actinal side and the more or less sunken petaloid ambulacra. That is to say, the actinal groove is a modification at the actinal region of the ambulacra similiar to the sinking of the plates of the apical part of the ambulacra to form more or less deeply sunken areas; only the pores remain single, and there is no modification of the pores forming the petals, indicating a different function, as in the normal Spatangoids.