

and the like through *Aërope*, *Aceste*, and *Cionobrissus*, we can as readily trace the affinities of the family to the Spatangina proper through such genera as *Palæotropus*, *Genicopatagus*, and *Homolampas*, and again to the Galeritidæ and Echinolampadæ through such genera as *Urechinus* and *Cystechinus*, while the many-sided affinities of the Pourtalesia to the Ananchytidæ, Dysasteridæ, and such genera as *Cardiaster*, *Holaster*, *Toxaster*, and the like have been more or less insisted upon in the comparative description of the several genera of the family.

The fact that this group of Pourtalesia has existed undisturbed since the Chalk, and has been modified in so many different directions, makes this family one of the most interesting studies among the Echinids as far as relates to the affinities of the different groups of Spatangoids; and their examination has done much to bring out the close relationship existing between apparently most distant forms in the study of the fossil genera thus far discovered ranging from the Chalk to the present time.

The Ananchytid and at the same time the Galeritid affinities of the family are best shown in the structure of *Cystechinus*, in which we have a slightly sunken actinostome, no fascioles, a disconnected apical system, the plates of the test of nearly equal size in the ambulacra and interambulacra, a flat actinal region, a high conical test, and in some species a tendency in the plates surrounding the actinostome to develop into bourrelets or into an indistinct posterior labium. Such a genus as *Urechinus*, on the other hand, although most closely allied to *Cystechinus*, strikingly shows much more normal Spatangoid affinities; and such a genus as *Calymne*, while retaining structural features of *Cystechinus*, such as the uniform size of the coronal plates in all the areas, has an elliptical test, a strongly-marked actinal keel, again a most Ananchytid apical system, simple ambulacral pores, a circular actinostome, and on the other side, the rudiments of a peripetalous fasciole across the anterior extremity, a feature only found in those Spatangoids differing most widely from such genera as recall the Echinolampadæ or Clypeastroids.

Through *Homolampas* and *Argopatagus*, which at first glance so greatly resemble *Spatangus* proper, we can readily trace the relation of the Pourtalesia to the Spatangina. The simple ambulacral pores, the rudimentary petals, and the comparatively large ambulacral plates are Pourtalesian features, while the structure of the actinal surface, the presence of a subanal and peripetalous fasciole (in *Homolampas fulva*), the great development of some of the primary tubercles, and the prominently labiate actinostome, place this genus in close proximity to such genera as *Lovenia*, *Maretia*, *Eupatagus*, and *Metalia*.

*Genicopatagus*, on the contrary, shows most markedly the affinities of the family to Spatangoids with a prominent labiate actinostome; to such genera as *Holaster*, *Cardiaster*, and *Toxaster* the group becomes allied from the structure of the ambulacral areas above the ambitus; while the remarkable affinities of this genus to *Paleopneustes* and *Palæotropus*, from the structure of the ambulacral petals, as well as the total absence of fas-