

The abactinal system of *Melonites*, on the contrary, from the drawings of Rømer and of Meek and Worthen, and of *Palæechinus* from those of Bailey, resembled far more that of the Cidaridæ proper than of the recent Echinothuridæ. The ocular and genital plates are comparatively large, in striking contrast to the adjoining minute ambulacral and interambulacral plates of the abactinal region of the test, forming a most distinct line of division between the so-called coronal plates and the plates of the abactinal system. This is somewhat remarkable, as the plates of the abactinal system are evidently, from what we know of their appearance in young Echinids, developed comparatively later than the coronal plates.

In *Lepidocentrus* and in *Archæocidaris*, on the contrary, the plates of the abactinal system resemble far more in their size and arrangement those of the abactinal system of the recent Echinothuridæ. In *Lepidocentrus*, for instance, the genital plates bear about the same proportion to the plates of the anal system which we find in some of the recent Echinothuridæ, and there exists at the apical extremity of the coronal plates the same difficulty in defining where the interambulacral plates terminate and the plates of the apical system begin.

The existence of double pores in the apical system does not seem to indicate in the Palæechinidæ an abnormal structure among Echinoidea. Lovén has already shown how in the Arbaciadæ the ocular pore is divided into two, and we must remember that in the Spatangoids it is the contrary process which takes place, in the passage of double pores to simple pores and then to double pores again between the actinostome and the abactinal system. It seems to me to be merely the first indication of the subsequent subdivision of the ambulacral pores to be traced among the Echinoidea which becomes so universal among the regular Echinids, though it is transferred to a different part of the poriferous zone, while in many Spatangoids it is limited to special portions of the poriferous zone. In the Palæechinidæ we may consider this the first indication probably of the specialisation of any one of the ambulacral tentacles.

In a specimen of *Archæocidaris* from the Keokuk Limestone showing the actinal side of the test, the actinal plates immediately adjoining the actinostome are small imbricating plates, forming a somewhat indistinct line of demarcation with the true coronal plates quite as clearly defined as in the recent Echinothuridæ when compared to the primary coronal plates surmounted by a single large primary tubercle as in *Phormosoma*. The ambulacral areas expand at the line of junction with the actinal membrane, and the rows of pores are more distinct than in the poriferous zones of the corona. The interambulacral plates are quite small; but both the ambulacral and interambulacral plates extend to the very centre of the actinostome, where the actinal membrane is attached to the outer edge of the teeth. There appear at the line of junction between the actinal plates and the primary interambulacral plates interstices corresponding in position to those which give passage to the gills in the recent Echinothuridæ on each side of the poriferous