

actinal plastron of which, perhaps, the most embryonic type is that of the Ananchytidæ, in which the plates comprising it are more or less hexagonal or pointed, extending beyond the median interambulacral line.

Very important changes also take place in the actinostomic plate of the odd interambulacral area, which becomes, as is well known, the lip terminating the more or less keeled actinal plastron, which thus becomes a kind of plough to shovel into the actinostome the sand or mud in which such forms live. It is upon this plastron also that we find developed the flat paddle-shaped spines so characteristic of the Spatangoids of the present day. This lip is but little prominent in the older Spatangoids, it has no prominence in the Collyritidæ; in fact, we might call that form of actinostome the palæostome. It is still represented at the present day in *Palæostoma*, and the young of all Spatangoids have such an actinostome of a more or less pentagonal form. In the Clypeastridæ, the Galeritidæ, and the Cassidulidæ we have modifications of the actinostome which subserve more or less the same purpose as the strongly labiate actinostome of the majority of recent Spatangoids; but in these types the actinostomic plate of the odd interambulacrum is not specialised, and we can trace its growth very satisfactorily from the Collyritidæ to the Hemiasteridæ, the Spatangidæ, and the Schizasteridæ of the present day, while we find in the Pourtalesidæ and in *Palæostoma* the persistence of the ancient actinostome, combined in the latter with many recent structural features of the Spatangina.

I have already, while speaking of the Pourtalesidæ, called attention to the mode of development of the anal snout of that group from the episternum of the Spatangoids proper.

ANAL SYSTEM.

In the structure of the plates of the anal system we have from embryological data a clear explanation of the function of the anal plate of the *Saleniæ*. This anal plate was, if we can trust the figures of Schmidt, perhaps already developed even in *Bothriocidaridæ*, and may have existed in other Palæechinidæ, though it may be difficult in the plates covering the anal system of that group so easily to recognise the original anal plate as we can do in many of the recent Triplechinidæ. The figures of Bailey, and of Meek and Worthen, and a specimen of *Lepidesthes* which I have had occasion to examine, would seem to indicate a splitting up of the central plate into a great many smaller plates, more according to the mode in which it takes place in the Arbaciadæ. The excentric position of the anal opening is also clearly shown to be due merely to the development of new plates along one edge, while where the anal opening is formed symmetrically, we have the anal system as in the Arbaciadæ covered by a few large plates.

The transition of the opening of the anal system to the area within the genital ring, and into the odd interambulacral region, as we find it in all Spatangoids, is not, however,