

will show at once; the verticillation also of *Salenia hastigera* is not produced as in the Diadematidæ, but by the regular arrangement of the processes of the outer sheath as in the Cidaridæ.

There still remains also the other important feature, thus far found only among the Cidaridæ, the peculiar nature of the secondary spines forming, as in the Cidaridæ proper, the rows of papillæ regularly arranged in the intertubercular spaces of both areas, and forming also the secondary spines. The jaws and teeth of *Salenia* do not give as definite information regarding the affinities of the genus. The teeth of *Salenia hastigera* are, like those of the Echinidæ proper, keeled, though with a broad flat keel, while the compact nature of the pyramid with its small apical foramen, and the proportionally large size of the tooth, brings them into close proximity to the Cidaridæ, between them and the Arbaciadæ; nor is the presence of gills and slight gill cuts an objection to their association with the Cidaridæ.

I have already called attention, in the Revision, pp. 645 and 694, to the existence of openings for the passage of gills, and their protrusion through these openings when alive, in our Florida species, although Müller denies their existence. Mr Charles Stuart (Trans. Lin. Soc., Dec. 1877) has given excellent figures of organs which are undoubtedly gills placed within the imbricating membrane, but has not traced their extension outwards. Whether it is these organs (gills) which find their way through the cuts or not in our Florida species I am unable to state, and a renewed examination of living specimens will be necessary before we can settle this interesting question.

I am not the only writer on Echinids who has associated more closely than has usually hitherto been done the Salenidæ and Cidaridæ. De Loriol had previously, in the Echinol. helv., taken very much the same ground, though he subsequently modified his view, and now inclines to unite the Salenidæ to the Glyphostomes as a tribe, and not to the Cidaridæ, which he contrasts to the other regular Echinids as Holostomes. I do not feel that this character taken by De Loriol can be employed to denote primary subdivisions among the Echinoidea, for among the Diadematidæ and Echinothuridæ we at once find forms, otherwise closely allied, which differ radically in this one point considered so essential by De Loriol, and as fast as new material accumulates both among living and fossil Cidaridæ it little by little shows the insufficiency of characters on which we have been accustomed to contrast so strongly the Cidaridæ with the other families of the regular Echinids. I need only mention here the enormous difference made in our estimate of the value of the family character of the Cidaridæ by the discovery of such genera as *Diplocidaris* and *Tetracidaris*.