

that we find the greatest divergence from the normal structure of the Sea-urchin spine, while it is remarkable that among more recent genera such as the Spatangoids, and especially the Clypeastroids, we find the simplest types of spines more nearly approaching the spines characteristic of all the young Echinids of the present day. So that we may be said to find at one extremity of the series spines with a complicated structure such as that of the spines of the Cidaridæ, and at the other the simple spines of the Clypeastroids and Spatangoids.

Among the Cidaridæ we do not find either in the new species of *Goniocidaris* or in *Porocidaris* any important points of structure not previously noticed. *Goniocidaris florigera* (Pl. XXXVIII. fig. 11) presents the characteristic *Cidaris* features of an outer crust with a reticulation becoming gradually finer towards the central portion of the shaft occupied by the "pith" (Pl. XXXVIII. fig. 11a). Such is also the general structure of the spines of *Porocidaris* (*P. elegans*) (Pl. XXXVIII. figs. 12-16); the reticulation extending from the crust towards the centre is somewhat coarser than in *Goniocidaris*, and the central space occupied by the irregular reticulation of the pith is comparatively greater. In the sections of one of the large elliptical spines the crust is comparatively thin, and four or five of the outer lines of reticulation occupy the space next to the crust, the rest of the central space being filled with the pith (Pl. XXXVIII. fig. 15). In *Salenia* (*Salenia hastigera*) (Pl. XXXVIII. fig. 10) we find an outer crust as in the Cidaridæ, and the same coarse reticulation of the shaft towards the centre which we find in *Porocidaris*; the central pith is quite limited in extent.

In *Cælopleurus* we have, as in the Cidaridæ, a great development of the close inner reticulation of the shaft (Pl. XXXVIII. fig. 7) with a ring of large foramina round the central pith (see also section of spine of *Cælopleurus floridanus*, Revis. Ech., pl. ii.° fig. 15) with an outer crust much as in the Cidaridæ and Salenidæ; this is the structure of the large curved primary spines. In smaller spines the central part of the shaft is composed of larger reticulations and a more irregular reticulation (Pl. XXXVIII. fig. 8); while in the smaller spines we find a very open central reticulation passing directly into the ill-defined outer crust (Pl. XXXVIII. fig. 9). This structure of the spines closely resembles that of the flattened spines of *Podocidaris* (Revis. Ech., pl. iv. fig. 15), in which the outer crust is reduced to a very thin layer except where it forms the projections on the extremities of the lines of well separated reticulating spokes. In Plate XXXVIII. fig. 9, the line of demarcation between the outer crust and the coarse reticulation of the shaft is indistinct, and it is only occasionally that in spines like these the outer crust can be recognised and seen to have the essential characteristics we find in the sections of Plate XXXVIII. figs. 7, 8; so that the Arbaciadæ, as far as the structure of the spine is concerned, may be considered to form the passage between the Cidaridæ and the Echinidæ, that is, they have an outer crust as in the Cidaridæ and an inner pith, but the spokes show a tendency to assume a rudimentary monocyclic arrangement, pointing to