

specimens the most prominent primary spines are cylindrical, slightly curved, some of them more than twice the diameter of the test in length (Pl. I. fig. 12), tapering so little that at the extremity, which is probably broken or worn, they are nearly of the same diameter as at base. These long spines recall the spines of *Salenia hastigera*, and remind us among the fossil Cidaridæ very strongly of the cylindrical spiny radioles of some species of *Rhabdocidaris*. These largest radioles are smooth, covered irregularly by sharp spines, equalling its diameter in length near the base of the radioles (Pl. I. fig. 18). These spines are large and few in number near the base, becoming more numerous and smaller towards the extremity of the radiole. Near the ambitus the radioles are shorter and more slender; the serrations, closely crowded, sometimes form an irregular fluting (Pl. I. fig. 19), or they resemble the long curved cylindrical primary radioles. Immediately around the abactinal area the primary spines, while similar in structure at the base to the more prominent spines, are remarkable for the immense dilatations of the tip (Pl. I. fig. 12), the points of which frequently ramify, forming a flattened cup equalling in diameter one-third the diameter of the test (Pl. I. figs. 15, 16).

In *Goniocidaris tubaria* and *Goniocidaris geranioides* we find similar cupuliform spines near the abactinal region, but the spreading of the tip of the radioles is not so great in proportion to the diameter of the test. The papillæ covering the abactinal area are small, with the exception of a few immediately surrounding the anal opening (Pl. I. fig. 12a); those at the base of the primary spines in the interambulacral areas are short and broad, in striking contrast to the remarkably slender and delicate papillæ of the ambulacral area. There is a marked contrast in the curve of the actinal and abactinal portions of the test; the former is much more convex than is usual among Cidaridæ, the outline of the test when seen in profile resembling somewhat the shape of the test of *Echinostrephus*. In another specimen (Pl. I. fig. 7) there are on the actinal side only a few of the cylindrical spines such as were characteristic of the first specimen (Pl. I. fig. 12), the other primary interambulacral radioles being very uniform in character, slightly swollen above the collar, gradually tapering to a point, with large spines scattered over the whole surface of the shaft (Pl. I. figs. 8, 9). There are no cupuliform spines near the abactinal system. The radioles are somewhat longer than the diameter of the test. The ornamentation of the test is limited in this species to small deep pits at the angles of the plates in the median interambulacral lines (Pl. I. figs. 13, 14). The greater part of the coronal vertical sutures are edged by irregular minute ridges, showing in the interval left between them the deep narrow sutural line near the ambitus. Near the abactinal pole the vertical suture is reduced to a sharp line. The secondary tubercles of the scrobicular area are in contact along the horizontal lines of sutures (Pl. I. figs. 13, 14). Coronal plates high, mammary boss small, scrobicular area deep.

Along the horizontal suture, at the junction of the coronal plates with the poriferous