

in the northern hemisphere, except possibly in the extreme north, has no marsupial arrangement such as we find in the Kerguelen *Cidaris*. There have passed through my hands during the last few years hundreds of specimens of the normal northern form, of the Mediterranean varieties *Cidaris hystrix* and *Cidaris affinis (stokesii)*, and of the American *Cidaris abyssicola*,<sup>1</sup> from widespread localities and of all ages; and I have never found the young except singly, and never in any way specially associated with breeding individuals.

"In Stanley Harbour we dredged many specimens of an irregular urchin, much resembling in general appearance *Brissopsis lyrifera*, the common 'fiddle urchin' of the boreal province of the British seas, and probably to be referred to *Hemiaster philippii*, Gray.<sup>2</sup>

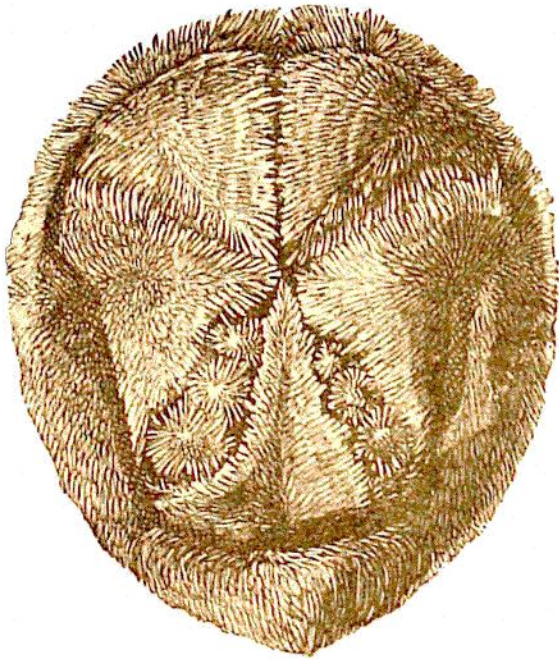


FIG. 143.—*Hemiaster cavernosus* (Phil.). Accessible Bay, Kerguelen Island. Twice the natural size.

"These urchins were not breeding when we were at the Falklands, but on the 9th of January 1874 we dredged from the pinnacle in shallow water, varying from 20 to 50 fathoms, with a muddy bottom, in Accessible Bay, Kerguelen Island, innumerable samples of apparently the same species.

"The test of a full-sized example (fig. 143) is about 45 mm. in length and 40 mm. in width; the height of the shell in the female is 25 mm., in the male it is considerably less. The apex is nearly in the centre of the dorsal surface; the genital openings are three in number, in the female very large; the bilabiate mouth is placed well forward on the ventral aspect; and the excretory opening is posterior and supramarginal. The odd

anterior ambulacrum is shallow, and the tube-feet which are projected from it are large and capitate. The anterior paired ambulacra are somewhat longer than the posterior. The whole of the surface of the test is covered with a close pile of small spines of a dark green colour; those fringing the ambulacral grooves are long and slightly curved, and they bend and interdigitate so accurately over the ambulacra that one might easily overlook the grooves at a first glance. The peripetalous fasciole is somewhat irregular; but in those examples in which it is best defined it forms a wide arch, extending backwards on each side a little beyond the lateral ambulacra of the trivium, and then, contracting a little, forms a rudely rectangular figure round the bivium. The paired ambulacral grooves in the male are shallow, not much deeper than the anterior ambulacrum (fig. 145); in the female the pore-plates of the paired ambulacra are greatly expanded and

<sup>1</sup> These are regarded by Alex. Agassiz as varieties or developmental stages of *Dorocidaris papillata*; see Zool. Chall. Exp. part ix. p. 44, &c., 1881.

<sup>2</sup> Described by Alex. Agassiz as *Hemiaster cavernosus* (Philippi), *loc. cit.*, p. 177.