

most south-eastern extremity of the Pacific Ocean we have the fullest possible proof, but that it extended to the west of the Azores we know not, and we must seek other modes of connection, perhaps across the short space between South America and Cape Verde Islands, certainly not by the North Atlantic, but perhaps by the North South Atlantic. The isolation of the West Indian corals, polyps, and echinoderms dates from the time of the shutting off of the Isthmus of Panama, and probably by areas of elevation synchronous with the rise of the West Indies. These areas of elevation certainly extended far to the south on the west coast of South America, where we can trace them in the succession of the great inland basins forming the great desert of the narrow rainless belt of the coast, the old sea-bottom now flanked by nitrate beds up to a height of 3000 feet; where we also find species of corals identical with those now living, or similar at least to those of the West Indies.

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## DESCRIPTION OF THE SPECIES.

### DESMOSTICHA.

Sub-order DESMOSTICHA, Hæckel, *Entwickel. Gesch.*, 1866 (*emend.*).

### CIDARIDÆ.

Family, CIDARIDÆ Müll., *Bau d. Echinod.*, 1854 (*emend.*).

### GONIOCIDARIDÆ.

Sub-family GONIOCIDARIDA, Hæckel, *Entwickel. Gesch.*, 1866.

### *Cidaris.*

*Cidaris*, Klein, *Nat. Disp. Echin.*, 1734.

Many attempts have been made to refer some of the recent sub-genera of *Cidaris* to genera composed thus far of fossil species only. With the exception of the species of the genus *Cidaris* proper, these attempts must be considered faulty, from the usually imperfect state of preservation in fossils of some of the most important characters by which the recent sub-genera have been distinguished. Such important guides as the nature of the pedicellariæ and the structure of the abactinal system are wholly wanting for comparison, and the difficulty of deciding on the relationship from the test and radioles alone, is too well-known to require further comment. In fact, setting aside *Diplocidaris*, *Porocidaris*, and *Goniocidaris*, which are separated from *Cidaris* proper by characters apparently more prominent and permanent than those upon which the other genera among the fossil or recent species are based, we must consider *Dorocidaris* and *Phyllacanthus* as mere sub-genera of *Cidaris*, convenient subdivisions round which a large number of recent and fossil species can be arranged. *Dorocidaris* would include all