

directed upward and slightly inward, are placed round this semicircular margin and form an elegant fringe or comb, which closes over, as it were, upon the series of lamellæ.

On examining this organ microscopically, it is found that each line or lamella is made up of a series of small lamellæ, which are placed end to end together, and thus form an apparently continuous line. Each component part or small integral lamella stands upright upon its own rounded scale-like base; and the lamellar plates are made up of a single series of delicate rods united by irregular dissepiments, the whole structure being covered with a membrane, which appears to have been furnished with vibratile cilia. The scale-like plate which forms the basal portion is directly superposed upon the surface of the marginal plate, the parts occupied by the cribriform organ being slightly hollowed out for its reception. The outermost lines (pseudo-lamellæ) are composed of thicker individual lamellæ than any of the others, and these integral lamellæ stand wider apart and resemble flattened spinelets, each built up of several series of rods. On the upper portion of each line transition can be traced from the delicate lamellæ, above described, to the simple rounded cylindrical spinelets of the abactinal membrane.

Judging from the position and character of this organ, as well as from its relation to the abactinal area, it is not improbable that it acts as a percolator; and in such a case it might perhaps be looked upon as the homologue of the armature of minute ciliary spines which borders the vertical furrows that run between the consecutive marginal plates in *Astropecten* and other forms. These fringes of delicate miliary spinelets in *Astropecten* were regarded by Alex. Agassiz¹ as probably the representatives in Asteroids of the specially localised bands of delicate ciliary spinelets known as "fascioles," which are present in many of the genera of irregular Echinoids.

In species which have more than one cribriform organ in each interbrachial arc (Plates XXI., XXII., XXIII., XXIV., XXV., XXVI. and XXIX.), the additional ones occur on the vertical sutures immediately succeeding on each side of the median line, and are identical with the median organ just described. No case of irregularity or intermission occurs in any of the specimens I have examined. The number of cribriform organs present in each arc appears to be always constant in a species; and species exist which possess one, three, five, seven, nine, or even fourteen of the organs respectively. The organ varies in the different species as regards its breadth, the number of vertical parallel lines or pseudo-lamellæ which compose it, and the character of the integral calcareous bodies, of which these latter are formed (Plates XXVII. and XXVIII.) In *Porcellanaster* the component parts are more or less lamellar in form, as described above, whilst in the allied genera *Hyphalaster*, *Styracaster*, *Thoracaster*, the corresponding elements are papilliform (Plates XXVIII. and XXIX.)

The Segmental Pits and Papillæ.—These are peculiar structures situated on the adambulacral plates and the mouth-plates (Plate XXVII. figs. 2, 3, 6, 7). They consist

¹ North American Starfishes, *Mem. Mus. Comp. Zool.*, Harvard, 1877, vol. v. No. 1, p. 119.