ventral perisome of a recent Crinoid and the upper surface of the body beneath the vault of an *Actinocrinus*. Both had plated ambulacra and anambulacral plates. The admitted resemblance of the interpalmar anambulacral plates of the Actinocrinite to "vault pieces" is another point in favour of the view which I take of the so-called vault in the Ichthyocrinidæ. I believe this to be a true "ventral disk" similar to that of *Pentacrinus*, and not in any way homologous to the solid vault of the Actinocrinidæ.

In describing the Palæocrinoids, Wachsmuth uses "vault," "summit," and "ventral disk" as synonymous terms.[1] This is somewhat unfortunate, as tending to lead to confusion.

The expression "oral disk" or "ventral disk" is universally used to denote the upper surface of the visceral mass of a Crinoid, *i.e.*, that in which the mouth is placed, with the food-grooves radiating outwards from the peristomial area around it. Wachsmuth speaks of this surface as the "soft or ventral peristome" (perisome ?), and says that it cannot in the remotest degree be homologised with the solid vault of the Palæocrinoids. Hence his occasional reference to this vault as a ventral disk is a little confusing; and his use of the word "interpalmar" is equally so.

He sometimes employs it[2] to denote the interradial spaces between the ambulacral ridges on the upper surface of the casts of *Actinocrinus*. This surface corresponds to the ventral disk of *Pentacrinus*; and "interpalmar" is here used by Wachsmuth in the same sense as it was by Müller, *i.e.*, for the "interradialen Felder zwischen den Tentakelrinnen." When therefore he employs "interpalmar" to denote the interradial plates of the vault,[3] its meaning is entirely different; for the vault was a dome of solid plates, completely concealing the mouth, food-grooves, and interpalmar areas on the ventral disk.

The vault and ventral disk are, to my mind, entirely distinct structures. The former is necessarily formed of closely-fitting solid plates; while the latter, lying beneath it, may be bare as in many Comatulæ, or more or less completely plated as in *Actinocrinus* and the Pentacrinidæ. But no recent Crinoid, not even *Thaumatocrinus*, has anything like a dome or vault rising above a ventral disk. Numerous specimens are known with the covering plates at the sides of the food-grooves closed over them so as to convert them into tunnels (Pl. XVII. fig. 6; Pl. LV. figs. 3–7). But this was also the case beneath the vault of *Actinocrinus*. Sometimes, indeed, the plates of the disk may be so closely set that the opening of the mouth, which may be large in other specimens, is nearly or quite concealed, as in the so-called recent Cystidean *Hyponome* (Pl. LIV. fig. 10; Pl. LV. figs. 4, 5, 7). But this is in no way comparable to the embryonic closure of the mouth before the separation of the valves of the oral pyramid. It is only in this and similar cases that I admit the presence of a vault, dome, or tegmen calycis. This structure reaches its fullest development in the Actinocrinidæ and Platycrinidæ; though *Haplo-*

[1] *Amer. Journ. Sci. and Arts*, vol. xiv. pp. 181, 185. Revision, part i. pp. 5, 32, 54; part ii. p. 53.
[2] Revision, part ii. pp. 26, 27, 31.
[3] Revision, part ii. pp. 64, 107.