

the stem alone, making the axis chosen for description the vertical axis on the plate. A glance at figure 7 will perhaps show the absurdity of considering this a normal position, particularly so if the sigma plates bore spreading brachioles, as their structure suggests. The posterior arm is usually the shorter and less developed, the difference in environment caused by the position of the anus being the probable cause.¹

The plates of the type specimen, designated as A [pl. 1, fig. 3, 4] are arranged as follows. There are three basal plates, the anterior of which is about half the size of the others. This plate is in contact with but two plates lying above it, while each of the other two is in contact with four plates above. Numbering to the right from the posterior margin, plate 4 rests on the upper left side of plate 1, this plate and the next are tetragonal and small; no. 6 is heptagonal, large, and has a prominent and excentric umbo a little above and to the right of the center; plates 7 to 9 are nearly as large as 6, are

¹I have for some years harbored a notion that one of the many laws underlying the production of variation and new species might be expressed by the term, "the survival of the unfit," perhaps better stated as "the survival of the weak," a law related to Cope's "law of the unspecialized." Failure to divide normally at the proper time gave cell aggregates and inaugurated a new wave in what Herbert Spencer points out as the law of rhythm in evolution. No new crest of strength springs from the crest of the last wave but each crest is preceded by a trough. The invagination of a weak hollow sphere of cells gave rise to the gastrula and forced a division of labor on the "unfortunate" aggregate; and this law, if I may so call it, offers suggestions as to the origin of many things from cell conjugation to the discovery of some weak mortal that he might make the pen mightier than the sword he was unable to use. The idea suggested a possible cause for the later change in shape of *Eunema epitome*. *Lyriocrinus? beecheri*, with its invaginated base produced at first by the yielding of weak basals to the persistent attack of gravity, is an illustration in point and an extreme is found in *Blastoidocrinus carchariidens*. The failure of plates to support increased weight has initiated variation along this line in many crinoids and natural selection has found certain mechanical advantages in the new forms; out of weakness has come strength. The law suggests that ancestors of *Malocystites* were once supported by the stem alone and had their arms in a normal position, but that descendants with weak stems often found themselves let down to the ocean floor and had to make shift to live under adverse conditions. Increased growth of the posterior plates or decreased growth of the anterior plates would have brought the arms again uppermost and given rise to a form like that here shown. A stem unused for support might become of advantage as an organ of locomotion and secure slow changes in position.