

of the madreporiform tubercle of the Starfishes defined their posterior interambulacral space, and the opposite ray, like the opposite ambulacrum of the Echinidan, becomes the anterior one.

Divided into the orders:—1, *Crinoidea*; 2, *Blastoidea*; 3, *Ophiura*; 4, *Asteria*; 5, *Perischoechinida*; 6, *Echinida*; 7, *Holothuria*; 8, *Sipunculida*; 9, *Cystidea*. The 7th and 8th being naked and soft, are not known in the fossil state, the former in other respects resemble the *Echinida*, the latter so far resemble worms externally as to be so classed by Agassiz.

1st Ord. CRINOIDEA.

Viscera enclosed in a cup of numerous polygonal, calcareous plates; mouth surrounded by five solid, prehensile, branching rays, set on the inner side with jointed fimbriated tentacles; attached to foreign bodies either permanently or in the young state, from the middle of the back by a long flexible jointed column, perforated by an alimentary canal, and often furnished on the sides with slender pointed "auxiliary side-arms" of numerous joints, to aid occasionally in securely anchoring the stem.

To avoid the discrepancies which exist between the opinions of Miller, Phillips, Austin, &c., as to which plates of the cup should in all cases bear the distinctive terms, *Pelvis*, 1st and 2nd *costals*, &c., proposed by Miller, and used even by himself in a different sense in different genera, I would propose the following system of nomenclature for the plates, which is applicable to the most complex as well as to the most simple cups, and will enable us to particularize any individual plate for description (which cannot be done according to the methods employed by MM. Agassiz and D'Orbigny, who define their genera simply by enumerating the *number of rows of plates forming the cup*, and without giving any greater importance to the normal regular lines, than to the irregular intercalated ones). In reviewing the whole class *Echinodermata*, we must be struck with one of the most persistent characters of the group, namely, the disposition of the organs of prehension or locomotion in five rays round the mouth—this is without exception in the higher groups, as the *Echinida*; in the lower *Asteria* they are occasionally more numerous; in the lower *Ophiura* they again resume the typical number, and the prehensile arms of the Crinoids, are with very few exceptions, five in number at their origin. Taking this as a starting point, we may call the *column* and its appendages, and the first row of plates resting immediately on it, forming the *pelvis*, by the old names of Miller. The five plates usually found resting on the pelvis, I propose to call 1st *primary radial* plates, as they are the first of the vertical rows which form, or originate, the rays; on the upper edge of each of these rests the 2nd, and vertically over that, the 3rd, &c., *primary radial* plates, as far as the first cuneiform or pointed joint, the number varying with the genus without, on this system, occasioning any ambiguities, each individual plate of the series being only distinguished by a numeral. The last or cuneiform joint, originates a *double* set of plates, or branches, and these I propose calling the *secondary radials* as far as their last or cuneiform joint, distinguishing each individual, as before, by a numeral, commencing from the base. The succeeding branches are unimportant, never forming part of the cup, and do not require particular names. When (as in *Actinocrinus*) six joints rest on the pelvis, only five of them originate vertical rows going to the rays, and I propose to call the intercalated plate 1st *interradial*; the two plates resting on its pointed summit I would call 2nd *interradials*, as well as the plates at the same level in the other four spaces between the *primary radial* rows; the plates resting on the 2nd *interradials* I would call 3rd *interradials*, and so on without limit. The rows of *interradial* plates *alternate* with those below and above them, and never form vertical continuous lines like the *radials*. To give an example of the superior precision and simplicity of this notation, we may take two well-known genera—*Platycrinus* and *Actinocrinus*: the first has a very simple cup of one row of plates, the other has a very complex cup of numerous rows. In *Platycrinus* the five plates resting on the pelvis are named *scapulae* by Miller and most succeeding writers, and the five rows resting vertically on them as far as the first cuneiform joint, he terms *arms*; the two rows of plates going from each first cuneiform joint, he calls *hands*. In *Actinocrinus*, however, he calls the six plates, resting on the pelvis, 1st *costals*, although one of them is abnormal, and the other five are *precisely the same plates which in Platycrinus he called scapulae*; the next row he calls 2nd *costals*, although identical with those called *arm-joints*;