to a rudiment of the column of the Pentacrinite with its auxiliary arms. Besides the mouth, there is an anal opening on the ven­tral surface, situated on an eminence near the margin.”@@1 The exactness of the comparison here drawn between the Comatula and Pentacrinus, first detected by the acuteness of Miller and Gray, has been singularly illustrated by the discovery of Mr J. V. Thompson, that Pentacrinus is only Comatula in its first stage of existence ; the head, in the progress of development, separating from the stem, to become, instead of a fixed pedicellated floriform zoophyte, a nomade star-fish in the bosom of the ocean. In their fixed condition, the Crinoidea appear to have had a considerable range for the seizure of their prey, without possessing absolute locomotion,

Still moving, yet immoved from their sted;

for the peculiar mode of the articulation of their vertebræ proba­bly afforded them a great degree of mobility, with considerable security against dislocation.@@2 They grow erect, the stem being in general sufficiently stiff and strong to support the heavier head ; but when it is not so, as in the Umbellularia, we find that, just under what has been called the pelvis, “ a hollow bladder-like mem­brane” embraces the upper part of the stalk for about two or three inches, and, performing the office of a buoy or swimming-bladder, keeps the head in an upright position.@@3

In 1826, Mr J. E. Gray proposed to divide the Stellendes into three families. I. *Asteriadoe,* distinguished by having tentacular feet in the ambulacra of its rays, and by a calcareous wart (the *corpus spongiosum* of Spix) on the dorsal surface of the disc : II. *Ophiuridcae* with solid articulated rays, and no wart : III. *Encrinida,* co-equal with the Crinoidea of Miller, and distinguished from the two pre­ceding by possessing a double aperture to the digestive organs, a peculiarity which he was the first to discover in Comatula.@@\*

Our limits will permit us to give no more than a mere outline of Blainville’s arrangement, which rests on the same basis, but is more elaborately framed, and embraces the crinoidean genera, which the industry and sagacity of Miller had enabled him to detect and define.

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| **\*\*\*\*** | | | **Oreillers.** |
|  | **Stellated.** | | **Palmastéries.** |
|  | **Fam. i. Astérides,** |  | **Platastéries.** |
|  |  | | **Pentastéries.** |
|  |  | | **Solasteries.@@b** |
| **Body** | **Disciform.** | | **Ophiura.** |
|  | **Fam. ii. Astérophides,** | | **Euryale.** |
|  |  | **Free,** | **Comatula.** |
|  |  |  | **Encrinus.** |
|  | **Cupuliform.** |  | **Phytocrinus.** |
|  | **Fam. iii. Aste'rencrinides,** |  | **Pentacrinus.** |
|  | |  | **Apiocrinites.** |
|  | |  | **Poteriocrinites.** |
|  | | **Fixed,** | **Cyathocrinites.** |
|  | |  | **Actinocrinites.** |
|  | | | **Khodocrinites.** |
|  | | | **Platycrinites.** |
|  | | | **Caryocrinites.** |
|  | | | **Marsupites.** |
|  | | | **Pentremites.@@β** |

Agassiz has not introduced any essential novelty in the distri­bution of this family, but, to compensate the brevity of our notices of previous attempts, we find it necessary to give the definitions of such of his genera as contain recent species, at length.

FAMILY 1.—ASTERIADÆ.

The Asteriadæ answer to the limits which Lamarck has assigned to the genus Asterias. What distinguishes them is their possess­ing a single orifice of the intestinal canal, surrounded by suckers, but void of teeth ; while deep grooves, containing several series of pedicles, extend from the mouth to the extremity of the rays. On the dorsal surface we remark, between the two posterior rays, a calcareous wart, convex externally, and grooved like a madrepore, which has therefore been denominated the madreporiform tu­bercle. It covers a singular organ, named the stone-canal by Tiedemann, who believed its office to be the secretion of the earthy matter required for the growth of the calcareous skeleton. The accuracy of his description of its structure has however been called in question ; and the opinions relative to its function are various and contradictory.@@7 Blainville considers it to be in some way connected with generation ; and from its variations he asserts we may draw our most permanent characteristics of the species.@@’ It is almost certain, he also tells us, that there is a distinction of sexes among them, and consequently a sexual union ; and indeed Otho Fabricius says that in the month of May in Greenland they are to be found in pairs united face to face.@@’

Genus Asterias, *Linn.—*Body star-like ; superior surface tesse-

lated ; rays flattened, edged with two series of large laminae bear­ing small spines.

Genus Cælaster, *Ag.—“* Differs from the preceding genus in having the interior cavity circumscribed by laminae arranged like those of the Echini, and at whose summits we observe a star of ambulacra. This genus approaches therefore by its organization to the family of the Crinoidea, while its form is that of the true Asteriæ.” There is only one fossil species.

Genus Goniasteb, *Ag.—u* Body pentagonal, bordered by a double series of laminæ, bearing small spines ; upper surface nodose.”

Genus Opiπdiaster, *Ag.—*“ Body star-like, finely tesselated on its whole surface ; inferior grooves very narrow.”

Genus Cribella, *Ag.—*“ Body star-like, rays tuberculous and elongated ; epidermis porous in the intervals.”

Genus Uraster, *Ag.—*“ Body star-like, entirely covered with more or less prominent spines.’’

Genus Astebina, *Nardo.—*“ Body pentagonal, covered with

pectinated scales ; upper surface inflated ; grooves of the under surface deep.”

Genus Palmipes, *Linck.—*Body pentagonal, very flat, thin, but

membranaceous at its edges.

Genus Calcita, *Ag.—*Body pentagonal, slit at the angles ; te­guments granular.

FAMILY II.—OPHIUB1DÆ.

The Ophiuridæ are distinguished by the central part of their body forming a distinct and flattened disc, to which are annexed more or less elongated and even ramified rays, with no grooves on their surface. "They are *spinigrade* animals, and have no true suckers by which to walk, their progression being effected (and with great facility) by means of five long flexible jointed processes, placed at regular distances round the body, and furnished with spines on the sides and membranous tentacula. These processes are very different from the arms of the true star-fishes, which are lobes of the animal’s body ; whereas the arms of the Ophiuridæ are superadded to the body, and there is no excavation in them for any prolongation of the digestive organs. The stomach is a sac with one aperture, its walls externally covered with vibratile cilia. The ovaries are not branched ; they are placed near the arms, and open by orifices near the mouth, between the origin of the arms. Their investing membrane is also ciliated ; but on the rest of the body and arms no cilia exist, hence we may conclude there is no separate respiratory system.”—*Edward Forbes.*

Genus Ophiura, *Lam.—*Disc much flattened ; rays simple,

squamose, bearing very short spines adhering to the rays.

Genus Ophiocoma, *Ag.—*This genus differs from the preceding

in having very long moveable spines attached to the rays.

FAMILY III*.—*CRINOÏDEA.

The Crinoidea, notwithstanding their star-like form and their great external resemblance to the Ophiuridæ, constitute however a distinct family, characterized by the presence of two separate orifices to the intestinal canal, although very near to each other. These orifices are by no means easily distinguished among the rays which surround them, especially in the fossil species. The great­est part of the species are pediculate, *i. e.* carried on a foot-stalk adhering to the centre of the region, which, in the star-fish, we con­sidered as the middle of the dorsal surface.

Genus Comatula, *Lam.—*Disc pentagonal, arched at its upper surface, which bears several series of simple and articulated rays ; rays of the disc bifurcate, beginning however with two simple pieces. The edges of the rays are pinnate ; mouth central, sunk ; anus between the mouth and the border of the disc, obliquely pro­minent. Animal free when mature, but fixed and pedicellate when young.

Mr J. V. Thompson has discovered that “ the body of the Coma­tula, when the animal is kept in a small quantity of sea-water, is soon detached, entire and perfect, from the cavity in which it is lodged, and in this state it might be mistaken for an animal of a very different tribe.” He suspects that the genus *Mammaria* of Müller may have no better foundation. The same naturalist has

@@@\* Sharpey in *Cyclop, sup. cit.* p. 32.

@@@2 Parkinson in *lib. cit.* p. 95.

@@@3 Ellis’s *Corallines,* p. 97.

*@@@\* Annals of Philosophy,* n. s. xii. p. 394. The Rev. Mr Guilding’s arrangement so much resembles Mr Gray’s, that its quotation here is

unnecessary. See *Mag. Nat. Hist,* viii. p. 70.

@@@5 These are sub-genera or sections only of the genus Asterias.

*@@@6 Man. d'Aclinologie,* p. 235.

@@@7 The subject is ably stated by Dr Sharpey in *Cyclop, of Anat. and Physiology.*

*@@@, Man. d'Actinologie,* p. 237.

*@@@’ Man. d'Actinologie,* p. 236.