Order II—Polyfoda.

Fam. 1. *Vagipedes.* Feet scattered over the whole body. Genera —Holothuria, Actinopoda, Fistularia.

2. *Inferipedes.* Feet ventral only.—Phantapus, Phalloide.@@'

Blainville’s method of classifying the proper or pedaneous Holothuridæ is exhibited in this neat synoptical table :

|  |  |
| --- | --- |
| **Body** | **flattened, with suckers underneath *Cuvieria.*** |
| **subprismatic, with inferior suckers *Holothuria.*** |
| **fusiform, with scattered, suckers *Thyone.*** |
| **vermiform, with pinnate tentacula *Fistularia.*** |
| **subpentagonal, with suckers in ambulacra.*..Cucumaria.*@@*t*** |

But the host of species discovered within these few years, dur­ing the voyages undertaken for the promotion of the natural sciences, has proved the inadequacy of these systems; and al­though the researches of Joeger and Brandt, with ample mate­rials at their disposal, have brought into operation characters of a higher value on which to found a better arrangement, that good work has not yet been satisfactorily accomplished. The charac­ters on which the naturalists mentioned have proposed to proceed, are derived from the absence or presence of the tentacular suckers, their homologous structure or dissimilarity, the existence or not of the aquiferous branchial apparatus, the pattern after which the suckers are disposed, the floating character or adhesion of the respiratory organ, and, lastly, the variations in the ten­tacule which guard the mouth. Guided by these characters, whose importance is in the order stated, Brandt has worked out a genealogy of the family, perplexing from its numerous subdivi­sions ; but it is confessedly the basis of that lately offered to us by Blalnville, and which we now analyse ; for, however dry and bar­ren such tables may seem to be, it is really from their careful study that the student obtains his clearest view of the forms and general structure of the species. “ The use of synoptical tables in every branch of science,” says Mr Duncan, “is obvious. They afford great aid to memory ; but also, on frequent review, they suggest continually to the inquiring mind new traces of undisco­vered relations."@@3 Blainville’s new method of distributing the species, then, is as follows :@@\*

A. H : VERMIFOBMES.

*Body* elongate, soft, vermiform ; the *feel* small or none. No suckers; tentacula pinnate 1. Synapta, *Eschecholtz.*

No suckers; tentacula pinnatifid 2. Chirodota, *Eschscholtz.*

Suckers small, in five bands 3. Oncinolabes, *Brandt.*

These species are closely connected with the apodous Entomozoa by the Siponculus, the Priapulus, and perhaps even the Molpadia. The first species, instead of feet or suckers, have the body covered with small crotchets, by which they anchor them­selves to submarine rocks, &c. Their tentacula are continually in motion, moving towards the mouth. There is no cloacum, the anus being strictly terminal ; and there is no aquiferous respira­tory dendroidal apparatus.

B. H : ASC1D1FORMES.

*Body* short, coriaceous, convex above, flattened below, with the *orifices* superior rather than terminal.

The skin scaly 4. Cuvieria, *Perou.*

The skin rugose but soft 5. Psolus, *Oken.*

C. H : VERETILLIFOBMES.

*Body* considerably elongated, softish, subcylindrical, covered throughout with *tentacular suckers,* of which the inferior are the longest.

The anus widely patulous 6. Holothuria.

The anus plaited 7. Bohadschia, *Jager.*

The anus closed, with five teeth or scales...8. Mullebia, *Jager.*

d. h:

*Body* more or less elongated ; the inferior s*uctorial feet* longer than the superior, and disposed in a determinate number of longi­tudinal rows.

The suckers in three rows 5. Stichopus, *Brandt.*

The suckers in five rows. 10. Diplopebidebis, *Brandt.*

E. H : CUCUMIFORMES.

*Body* but little elongated, more or less fusiform, pentagonal, with the *tentacular feet* forming five ambulacra, one along each angle.

The feet small or obsolete 11. Liosoma, *Brandt.*

The feet very obvious,

and tentacula pinnate. 12. Cladodactylus, *Brandt.*

and tentacula pinnatifid 13. Dactylota, *Brandt.*

The species in this section connect the family with the Echinides.

F. H : siγonculiformes.

*Body* more or less Suddenly narrowed behind, the pentagonal figure indistinct, without *ambulacra,* and perhaps without *tenta­cular feet:* tentacula simple, short, and cylindrical, as in Actinia. Embraces only the genus 14. Molpadia, *Cuvier.*

Still more recently the order has been reviewed by Agassiz, and because of the influence which his views will probably nave with naturalists, we deem it necessary to give the names of his genera, to which we shall add their synonymes, and the number of species he enumerates as belonging to each. Agassiz rejects from the order all echinoderms which are not strictly referable to the Linnæan genus Holothuria, a genus of family rank, and divisible into,@@4

|  |  |
| --- | --- |
| **1.** | **Species.**  **Synapta, *Esch.* = Fistu­laria, *Bl.* = Tiedemannia, *Leuck.*  8** |
| **2.**  **3.** | **Chirodota, *Esch*  4**  **Thyone, *Oken. =* Mulle-**  **ria, *Fleming* 7** |
| **4.**  ***6.*** | **Trepang, *Jag*  2**  **HOLOTHURlA, Lin. = Fistularia, *Lam...................*23** |

|  |  |
| --- | --- |
| **6. Mulleria, *Joeg*** | **Species. 2** |
| **7. Bohadschia, *Jag*** | **5** |
| **8. Cuvieria, *Peron*** | **2** |
| **9. Psolus, *Oken*** | **3** |
| **10. Pentacta. *Goldf.* Cucumaria, *Cuv*** | 9 |
|
| **11. Minyas, *Cuv*** | **1** |
|  | **66@@,** |

ORDER II—ECHINIDES,@@7 Lamarck.

The Echinides are popularly known by the name of sea- urchins or sea-hedgehogs, given to them from their shells being covered with moveable prickles like the skin of those quadrupeds ; “ Horret capillis ut marinus asperis Echinus but when the prickles have fallen off, the shells are more commonly called sea-eggs, partly from a conformity in the figure between the objects compared, and more so from a similarity in their calcareous composition and texture. From their forms, certain genera have been also called turbans, diadems, mermaids’ skulls or hearts, or fairy-stones ; a nomenclature more pleasing to us than the Greek compounds of science, and not more poetical than useful, since it aptly conveys a portraiture of those varieties in which nature has, with her usual sportiveness, moulded these productions. It is from this variety that a general description of the shell becomes impossible ; and to form a correct idea of its beautiful and complicated mechanism, it is necessary to select one as a type or standard for compa­rison and further description. For this purpose we shall take the shell of the common Echinus (*E. esculentus).*

The shell is of a globular figure, with a flattened base, formed of ten conformable plates, alternately broad and nar­row, and ten annectant ones dissimilar in character. All of them proceed from the rim of the oral aperture in the base, and rise upwards, bellying in the middle, whence they again converge, and are united in a circle opposite the mouth by a series of small pieces to be afterwards de­scribed. The first series of plates is called *arece* by Lin­næus ; and those by which they are joined together, and which are all narrow and of the same size, he named the

@@@1 Fam. *Nat. du Eigne Anim.* p. 529. Pari«, 1825.

@@@*3 Anal, of Organized Bringt,* p. 19.

@@@*4 Ann. da Sc. Nat.* n. s. vii. p. 272.

@@@*a Man. d'Actinologie,* p. 191.

@@@*4 Man. d'Actinol.* Supp. p. 650,

@@@β For the specific characters of all the species hitherto described, we refer the student to the 2d edit, of Lamarck's *Anim. sans Vert. tom.* iii. ; and the British species will be figured and described in Mr Forbes’s work on our native Echinodermata.

@@@7 Synonymes : Echinida ; Echinina ; Echinidans.