

believe, would not meet with general acceptance on other grounds, as the Asteroidea are by many considered to represent a more archaic type than the Echinoidea.

(3.) As to whether the pedicellariæ furnish characters by which the four "orders" indicated by Perrier may be distinguished, I consider that they are insufficient and unsatisfactory; and I would venture to say that in my opinion two of the orders in question would be more correctly described as defined by the character of their spinulation. I refer to the Spinulosæ and the Paxillosæ. In his diagnosis of the order Spinulosæ (Echinulatæ), Perrier distinctly states that the pedicellariæ are simply formed of modified spinelets (*op. cit.*, p. 206), and in that of the order Paxillosæ (*op. cit.*, p. 249) no mention whatever is made of pedicellariæ; in the abridged synopsis of the orders, however, given above, the Paxillosæ are defined as characterised by pedicellariæ, formed of an ossicle of the skeleton and the spinelets which cover it (*op. cit.*, p. 154). The statements in the case of these two "orders" would seem to negative Perrier's argument that pedicellariæ are not modified spinelets and that they have nothing to do with those appendages. Furthermore, I fail to see that the characters invoked from the modifications in the form of the pedicellariæ are of sufficient importance to indicate differences of an ordinal degree.

Apart from the above considerations, which negative the view that the pedicellariæ in the Asteroidea afford characters by which orders may be distinguished, I make bold to say that I am unable to regard either pedicellariæ, or spines, or any other mere tegumentary appendages as furnishing characters of sufficient importance to warrant their employment as taxonomic factors of ordinal rank. Though I admit that pedicellariæ do possess characters of a certain taxonomic value, I cannot regard them as characters either of primary or even of secondary importance in the great question of the division of a class.

I may remark in passing that I do not consider the plate to which Viguiier has unfortunately given the inappropriate name of "odontophore" to merit the importance which he has placed upon it. The plate in question, which is the basal plate of the interbrachial system, is pushed by development upon the first pair of adambulacral plates, or mouth-plates, and is moulded into form to a certain extent by these plates, its shape being largely dependent on the number of the rays and the character of the adambulacral plates. So far, however, as my own observations go, I am inclined to think that in not a few cases greater differences may be found to exist between the "odontophores," or, as I should prefer to call them, "basal interbrachials," of congeneric species, than between those of species of distinctly separate genera. The form of the plate appears to be extremely variable, and not to present characters of very great taxonomic value.

III. *A Classification of the Asteroidea based on Factors of Morphological Importance.*

Passing in review the various morphological features or fundamental points of structure which are common to the whole class, the following appear to me to present char-