

and most probably is, the first appearance of the larger tooth that is so conspicuous a feature in the adult male. As yet, there is no evidence, even in a rudimentary condition, of the petasma that forms so important a character in the adult male.

#### Group ABERRANTIA.

The species that are placed in this group differ from those belonging to the Normalia of this division of the Macrura, chiefly in the varying and eccentric condition of the pereiopoda.

In the Penæidea, these appendages in the highest pronounced types are well developed and constant in form, consisting anteriorly of three chelate pairs, and posteriorly of two simple pairs, but these all diminish in value and importance, as they descend in the scale of the various families.

The two posterior pairs of pereiopoda first appear to suffer degradation and become long, slender, and feeble appendages, useless as organs of locomotion either for walking or swimming. This is apparent in the genera *Benthescymus*, *Gennadas* and *Benthecætus*. In the two former they are long, slender and styliform, whereas in *Benthecætus* they are long, slender, filiform and multiarticulate. In the Sergestidæ they become still further depreciated, losing much of their power in *Sergestes*, and altogether disappearing in the genus *Acetes*.

In this latter family not only do the two posterior pairs disappear, but the others also suffer considerable degradation, the number of the joints of the first pair of pereiopoda being reduced to six, and it loses its chelate state, and the two following pairs are reduced to a feeble and exhausted condition, and although the chelæ are retained, they are microscopical in proportions.

But with this degradation of the pereiopoda we find an increased power and importance given to the gnathopoda. The first pair, especially, becomes a strong and powerful appendage, furnished with a genuflexed carpal joint, which cannot be extended straight, and indicates its usefulness as a powerful organ of prehension. The second pair also is robust, more especially at the basal joints, and is also a long and powerful organ.

In the Luciferinæ, as in the genus *Acetes*, the two posterior pairs of pereiopoda have disappeared altogether. The first pair of pereiopoda also has still further diminished in value than in the Sergestinæ, and the second pair has lost its chelate character, a feature that is only represented by the minute chela of the third pair.

In this division the branchiæ vary from a condition in which they are the most numerous and finely developed in the order, as in *Benthescymus*, to their entire disappearance, as in *Lucifer*.