

pereion, and it would therefore appear that there must be five somites (A to E) only belonging to the first division or cephalon, nine (F to O) to the second or pereion, and seven (P to Z) to the third or pleon.

In the mature forms the encroachment of one part on the other is so marked and conspicuous that several of the more crowded appendages lose their simple character and adapt themselves to the functions of those with which they are brought into closer affinity; thus the anterior pairs of pereiopoda, which are true feet in the simple forms, become hands, and then in still closer resemblance to the oral appendages, until in the more highly developed forms the second pair of gnathopoda loses its pediform character and becomes in the *Brachyura* little more than opercula, covering the mouth. Another fact brought out in the study of these and other immature forms during the progress of their development is that the carapace is structurally independent of the pereion, in which the somites are complete in the young condition, as may be seen in the series figured in Pls. XIIA., XII B., XII C., XII D., but that as the animal increases in size the carapace of the cephalon encroaches upon and covers over the surface of the pereion, the dorsal arc of which ceases to be formed; and thus the carapace appears as part of the pereion which it covers. But this is not always the case, for in the genus *Eucopia* nearly, if not all, the somites of the pereion are perfect, while the carapace overlies them all. In this case, however, the pereion is of a soft and membranous structure, and has therefore little protective value, whereas in the stronger forms, the carapace forming an efficient protection, the inner calcified structure of the somite is not wanted.

The carapace is also capable of fulfilling offices that simple somites could not carry out. It forms a great shield that is capable of protecting a greater or less portion of the animal, varying from the entire body in some of the *Brachyura* to but little beyond the cephalon in *Lucifer*.

This protective character is further exemplified in the *Macrura*, particularly in the fast swimming forms, by the development of a long rostrum at the anterior extremity, which is evidently intended to break the force of any body with which it may come into contact, and so protect the eyes and sensory organs from injury. The rostrum may also in some cases be used as a weapon of offence, the teeth that adorn it increasing its value in this respect; in some cases the latter have a retaining power, when, as in *Nothocaris spiniserratus* and *Odontolophus serratus*, the teeth are supplemented by numerous small reversed teeth attached to the others.

The rostrum is generally firmly fixed and rigid, but in one or two genera, such as *Pantomus* and *Rhynchocinetes* of A. Milne-Edwards, the rostrum has an articulation with the frontal margin of the carapace, and seems to have the power of movement to a slight extent in any direction at the will of the animal; this modification can be due only to one purpose, that of receiving the shock of an approaching enemy directly on its point rather than obliquely.