

numerous observers has ever taken any specimen of the genus with ova, or procured the young animal immediately from the parent, or obtained a Nauplius, so as to establish the identity of the relationship, as has been accomplished with nearly every other group of Crustacea.

Not only is this the case, but among the large number of specimens that have passed through my hands in connection with the Challenger collection, and among all those preserved in the National Museums in London and Paris, not one specimen that I have seen carried a single ovum or even showed a trace of their attachment, yet such traces are very commonly found in the various genera in the Trichobranchiata and Phyllobranchiata of the same order.

This circumstance has led me to infer that the ova of *Penæus* and its allies are not attached to the parent or carried about as in the Phyllobranchiata, but deposited in the open waters soon after they are extruded, although Risso says<sup>1</sup> that *Aristeus* (*Penæus*) *antennatus* and *Penæus mars* carry their ova in July, and that those of the latter species are of an orange colour, "roux aurore."

This idea appears to receive support from the recent researches of Professor Brooks on the genus *Lucifer*, in which he shows that the ova are not attached to the parent by any viscous membrane, but appear to be entangled amongst the pereopoda, where they remain for a day or two only, and are then hatched in the Nauplius form.

The difficulty of artificially preserving these delicate young forms in life has not yet been overcome. Those of the commonest species, and consequently we may assume the hardest in character, have not been preserved alive beyond the second stage. It is therefore the more desirable that we should be able to determine a very close resemblance of form in order to enable us to accept the observation as conclusive.

Professor Brooks has taken the embryo from the ovum procured from *Lucifer*, and found it to be in a Nauplius condition. This fact having been established, there is no reason why the brephalos of *Penæus*, which has never been demonstrated, and which we assume to be incubated in the surface waters of the ocean, may not also be hatched in the form of a Nauplius. But Dr. v. Willemoes Suhm's observation tends to the opinion that the brephalos of *Sergestes* is hatched as *Xylaphocaris* in an eyeless condition.

These several points, namely, the variation in the nervous system, the difference in the structure of the branchiæ, the manner in which the ova are deposited, the way in which they are probably impregnated, together with the early condition of the brephalos, demonstrate clearly a broad demarcation from those families in which the gills are either trichobranchiate or phyllobranchiate. Like them they may be separated into two groups, the Normalia and the Aberrantia. The former contains the families Penæidæ and Sergestidæ, the latter, the Eucopidæ, and such Schizopoda as have the branchiæ arborescent, and hatch the brephalos in a Nauplius stage, as shown in the annexed table.

<sup>1</sup> Hist. Nat. des Crust. des Environs de Nice, pp. 96, 97.