

its general form so constant, that when fully developed it is a good and invariable test of specific character.

In *Lucifer* I have been able to follow the development of this organ throughout its various changes, from the very early form to the adult stage, with more completeness than in any other genus. Thus, when the animal is but 5 mm. in length, the petasma is present in the form of a bud; when the animal is 10 mm. long it has increased to a considerable degree, and when it has reached the adult stage it is about 12 mm. or half an inch long, the petasma is fully developed (Pl. LXXX. fig. 1, and *p.t.m.*). This organ may be seen varying (Pl. LXXXII.) from the simplest condition to that of the more perfect form through various genera; and is universally present in the adult as a pair of large veils which become linked together in the median line and form a curtain that stretches across the pleon between the limbs from one side to the other.

Whether this veil is constantly present in the adult male, or only at certain periods when required, I am not prepared to assert, but I am inclined to believe that the latter is the more likely case, if we may judge from certain specimens of *Aristeus* in the collection. For instance, on Pl. XLV. figs. 1, 2, and *p* are shown to exist in different degrees of immaturity, although the animals from which they were taken are all fully grown and well-developed males.

When displayed to the full extent they form a curtain, as may be seen in *Gennadas parvus* (Pl. LVII. fig. *p.p.*), in which they extend from the pleopod on one side to that on the other, being connected in the median line by a series of small cincinnuli (fig. *p.*"), and attached on each side by a small pedicle to near the middle of the basal joint of the pleopoda. It may be also seen in a similar condition, but more irregular in form, in *Sergestes atlanticus* (Pl. LXIX. fig. *p.p.*). On Pl. XXXIX. fig. 2" it is also shown in a folded condition, in *Pleoticus mülleri*; but perhaps its true value and importance may best be understood from an examination of the structure as it is shown in *Pleoticus pectinatus* (Pl. XXXVIII. fig. *p.p.*). Here the petasma is extended and united in the median line. The curtain is seen to be attached by a small pedicle to near the middle of the inner side of the basal joint of the pleopod, its margins are extended vertically to the central body of the curtain, which forms a groove in the middle; near the middle of the lateral margins are two excavated spaces, into which the fifth pair of pereopoda fall when required, and beyond them are two enlarged lobes with hollow apices, the object of which is not clear, unless it be to assist in clutching the fifth pair of pereopoda when pressed down; beyond the lobes the margins are fringed with a series of long, curved, comb-like teeth, that are capable of securing a hold on the female when the animals are brought into contact.

From what we know of the means of fertilization in *Lucifer*, and from what Sars has shown in his Report on the Schizopoda of the Challenger collection,¹ I think we may

¹ Zool. Chall. Exp., part xxxvii. p. 74.