

variance from the observations of preceding writers, and the greater advantages at his disposal in the quantity of living specimens at his command.

Those in the Challenger collection, although numerous and obtained from all parts of the Atlantic and Pacific Oceans within tropical and subtropical regions, are few in comparison, especially those in which the reproductive parts in either sex are in a condition for analytical examination, and these from their long retention in an alcoholic fluid, are less transparent than those that were at the command of Professor Brooks.

In our male specimens the testes are numerous and suspended in bunches from a continuous cord apparently traversing the median line immediately beneath the alimentary canal, extending anteriorly as far as the second pair of gnathopoda, and posteriorly to the first somite of the pleon, where it appears to me to be connected with a large chamber that extends posteriorly in the form of a gradually narrowing and pointed *cul de sac*, in which the spermatophores are developed, and from the anterior extremity of this cavity an opening on each side anteriorly passes into a vas deferens that descends almost vertically, or at most but slightly forwards to the posterior ventral extremity of the pereion, one on each side of the neural cord that traverses the ventral surface of the pereion. It is probable that in the same animal only one duct is in use, inasmuch as two spermatophores are never equally developed at one time or proceed simultaneously, and when they succeed each other with rapidity, they, according to the figures given by Dana and Professor Brooks, traverse the same channel in succession. Undoubtedly in the specimens that I have studied, the vas deferens sometimes passes down on the left side, as shown on Pl. LXXX. fig. 1, while in another specimen it is on the right side; in the latter the vas deferens appears to be empty, as if a spermatophore had recently been extruded, while the nuclei of three others appear to be in a state of formation. In the former specimen a spermatophore appears to be approaching the period of extrusion, and another in an earlier condition within the chamber.

The spermatophore when ready to be discharged is quite equal to, and in some instances longer than, half the depth of the animal, the large end in advance, the sharp or pointed extremity following; when the stouter end reaches the external extremity of the passage through which it travels, it presses against a thin membrane that appears to close the orifice of the vas deferens and retain the spermatophore in position until circumstances require its extrusion; it is then in all likelihood caught by the petasma, where it is retained until it is required for the impregnation of the ovum.

That the petasma is capable of so holding it may, I think, be accepted from an examination of its structure, which I have illustrated on Pl. LXXX., *ptm*, showing it in lateral aspect, with the anterior central portion, which is considerably advanced, detached and more highly magnified to show the inner surface corrugated in the median line as if it were formed for grasping and holding the spermatophore, which it probably does, by the latter being dropped with the thick end into the grasping process of the petasma, the