

is not accomplished without long-continued efforts. Sometimes the legs are lacerated or torn off, in the attempt to withdraw them from the shell; and in the younger crustacea the operation is not unfrequently fatal. Even when successfully accomplished, it leaves the animal in a most languid state: the limbs, being soft and pliant, are scarcely able to drag the body along. They are not, however, left altogether without defence. For some time before the old shell was cast off, preparations had been making for forming a new one. The membrane which lined the shell had been acquiring greater density, and had already collected a quantity of liquid materials proper for the consolidation of the new shell. These materials are mixed with a large proportion of colouring matter, of a bright scarlet hue, giving it the appearance of red blood, though it differs totally from blood in all its other properties. As soon as the shell is cast off, this membrane, by the pressure from within, is suddenly expanded, and by the rapid growth of the soft parts, soon acquires a much larger size than the former shell. Then the process of hardening the calcareous ingredient commences, and is rapidly completed; while an abundant supply of fresh matter is added to increase the strength of the solid walls which are thus constructing for the support of the animal. Reaumur estimates that the lobster gains, during each change of its covering, an increase of one-fifth of its former dimensions. When the animal has attained its full size, no operation of this kind is required, and the same shell is permanently retained.

A provision appears to be made, in the interior of the animal, for the supply of the large quantity of calcareous matter required for the construction of the shell at the proper time. A magazine of carbonate of lime is collected, previous to each change of shell, in the form of two rounded masses, one on each side of the stomach. In the crab these balls have received the absurd name of crab's eyes; and during the formation of the shell they disappear.

It is well known that when an animal of this class has been deprived of one of the claws, that part is in a short