

vient to the finer senses, namely, those of sight, of hearing, and of smell. The security which these organs derive from this protection allows of their being carried to a higher degree of improvement than could be attained in the lower orders.

There is also another advantage, of considerable moment, which results from the internal situation of the skeleton, namely, that it admits of an indefinite extension by growth, without interfering with the corresponding enlargement of the softer organs; for we have seen that in all the instances in which this arrangement is reversed, that is, whenever the enclosing surfaces become solid, and can no longer yield to the dilatation of the contained organs, no alternative remains but that of breaking up the exterior case, and wholly casting it off, to make room for the farther growth of the animal; after which operation, it has to be replaced by another covering of larger dimensions. This operation is generally required to be performed a great number of times, before the animal can acquire the size it is destined to attain. Hence the perpetual moultings of the caterpillar; hence the repeated castings of the shells of the crustacea; and hence also the successive metamorphoses of the insect. Nothing of this kind takes place among the Vertebrata; where all the organs are developed in regular and harmonious succession, without the slightest mutual interference, and without those vicissitudes of action, and of torpidity, which we witness in the chequered existence of the insect.

§ 2. *Structure and Composition of the Osseous Fabric.*

THE process employed for the formation and extension of the solid frame-work of the Vertebrata differs totally from that which we have seen exemplified in the growth of shells, or of the hard coverings of insects and of crustaceous animals. These latter structures, and the modes adopted for their increase, are suited only to animals in which the functions of the economy have not reached that perfection to which they are carried in the higher classes. In the more elabo-