

and the general proportions of the parts are still preserved; the finished bone exhibiting prominences and depressions in the same relative situation as at first; and not only having similar internal cavities, but being frequently excavated in parts which had before been solid. During all these gradual alterations of shape, however, there is no stretching of elastic parts; for all the osseous fibres and laminae are rigid and unyielding, and in this respect retain an analogy with shell. The changes thus observed can have been effected in no other way than by the actual removal of such parts of the young bone as had occupied the situations where vacuities are found to exist in the old bone. We find, for instance, that in the early state of a bone there are no internal cavities, but the whole is a uniform solid mass. At a certain stage of ossification, cells are excavated by the action of the absorbent vessels, which carry away portions of bony matter lying in the axis of the cylindrical or in the middle layer of the flat bones.* Their place is supplied by an oily matter, which is the marrow, as the growth proceeds, while new layers are deposited on the outside of the bone, and at the ends of the long fibres, the internal layers near the centre are removed by the absorbent vessels, so that the cavity is farther enlarged. In this manner the outermost layer of the young bone gradually changes its relative situation, becoming more and more deeply buried by the new layers which are successively deposited, and which cover and surround it; until by the removal of all the layers situated nearer to the centre, it becomes the innermost layer; and is itself destined in its turn to disappear, leaving the new bone without a single particle which had entered into the composition of the original structure.

It has been found that by mixing certain colouring substances with the food of animals the bones will soon become deeply tinged by them. This fact was discovered accidentally by Mr. Belhier, who gives the following account of

* The bones of the lower class of vertebrated animals, as of Fishes and Reptiles, seldom reach this stage of ossification, but remain solid throughout; corresponding to the bones of the higher classes at the early periods of their development.