

differ from fishes, and which has also an obvious relation to their peculiar mode of breathing, is in the form of the tail, which, instead of being compressed laterally, and inflected from side to side, as in fishes, is flattened horizontally, and strikes the water in a vertical direction, thereby giving the body a powerful impulsion, either towards the surface, when the animal is constrained to rise, or downwards, when, by diving, it hastens to escape from danger.

All the essential and permanent parts of the skeleton of vertebrated animals, that is, the spinal column, and its immediate dependencies, the skull, the caudal prolongation, and the ribs, are found in that of the Cetacea. The thorax is carried very much forwards, especially in the whale, and the neck is so short as to be scarcely recognisable; for the object of the conformation is here, as in that of fishes, to allow free scope for the movements of the tail, and ample space for the lodgement of its muscles. For the purpose of giving greater power and more extensive attachment to these muscles, the transverse processes of the dorsal and lumbar vertebræ are expanded both in length and breadth, and, being situated horizontally, offer no impediment to the vertical flexure of the spine. For the same reason, the ribs are continued in a line with the transverse processes, and articulated with their extremities, thus giving still farther breadth to the trunk.

As there is a total absence of hinder extremities, so there is no enlargement of any of the vertebræ corresponding to a sacrum, and the caudal vertebræ are uninterrupted continuations of those of the trunk. They develope, however, parts which are met with only among fishes and reptiles, namely, arches composed of inferior leaves* and spinous processes, enclosing and giving protection to a large artery. Although the bones of the legs do not exist, yet there are found, in the hinder and lower part of the trunk, concealed in the flesh, and quite detached from the spine, two small bones, appa-

* These leaves being formed of cartilage, are generally lost when the bones are macerated for the purpose of preparing the skeleton.