

extremity, though destined exclusively to support the wing, retain the same divisions, and are composed of the usual elements; and the general form of the body is that best calculated to glide through the air with the least resistance. As birds swallow their food entire, there is no necessity for any part of the bulky apparatus of hard and solid teeth, large muscles and heavy jaws which are required by most quadrupeds: hence the head admits of being greatly reduced in its dimensions; and the form of the beak, which is drawn to a point, and cuts the opposing air, tends to facilitate the progress of the bird in its flight.

In the conformation of the body, also, every circumstance which could contribute to give it lightness has been sedulously provided. The general size of birds is considerably smaller than quadrupeds of corresponding habits. No where has Nature attempted to endow a huge ponderous animal, like the fabled Pegasus, with the power of flight. Great condensation has been given to the osseous substance,* in order that the greatest degree of strength might be procured with the same weight of solid materials; and the mechanical advantage derived from their being disposed in the circumference rather than in central masses, has been obtained to the utmost extent. The horny material, of which the stems of the feathers are constructed, are, in like manner, formed into hollow cylinders, which, compared with their weight, are exceedingly strong. A similar shape has been given to the cylindrical bones, which are fashioned into tubes with dense but thin sides: most of the other bones have likewise been made hollow, and instead of their cavities being filled with marrow, they contain only air.† Thus, the whole skeleton is rendered remarkably light: that, for instance, of the

* Ossification not only proceeds more rapidly, but is also carried to a greater extent in this class of animals than in any other; as a proof of which, the tendons, especially those of the muscles of the legs, are frequently ossified.

† In the bat there is no provision of this kind for lightening the bones; and we find them containing marrow, as in other mammalia, and not air.