

living tissues. The bloodvessels, especially the capillaries, share this property. Hence portions of the circulating fluids escape through the walls of the vessels and pass off at the surface. This superficial loss is termed *exhalation*. It is most active where the bloodvessels most abound, and accordingly is very copious from the air-tubes of the lungs and from the skin. The loss in this way is very considerable; and it has been estimated that, under certain circumstances, the body loses, by exhalation, five eighths of the whole weight of the substances received into it.

267. The skin, or outer envelop of the body, is otherwise largely concerned in the losses of the body. Its layers are constantly renewed by the tissues beneath, and the outer dead layers are thrown off. This removal is sometimes gradual and continual, as in man. In fishes and many mollusks, it comes off in the form of slime, which is, in fact, composed of cells detached from the surface of the skin. Sometimes the loss is periodical, when it is termed *moulting*. Thus, the mammals cast their hair, and the deer their horns, the birds their feathers, the serpents their skins, the crabs their test, the caterpillars their outer envelop, with all the hairs growing from it.

268. The skin presents such a variety of structure in the different groups of animals as to furnish excellent distinctive characters of species, genera, and even families, as will hereafter be shown. In the vertebrates we may recognize several distinct layers, of unequal thickness, as may be seen in figure 94, which represents a magnified section of the human skin, traversed by the sudoriferous canals. The lower and thickest layer, (*a*.) is the *cutis*, or true skin, and is the part which is tanned into leather. Its surface presents numerous papillæ, in which the nerves of general sensation terminate; they also contain a fine network of bloodvessels,