

their object merely to aid the perception of sound with more precision and accuracy. Hence we may conclude that the sense of hearing is dull in animals where the organ is reduced to its most simple form; and that animals which have merely a simple membranous sac, without tympanum and auditory passage, as the fishes, or without semicircular canals, as the crabs, perceive sounds in but a very imperfect manner.

3. Of Smell.

105. SMELL is the faculty of perceiving odors, and is

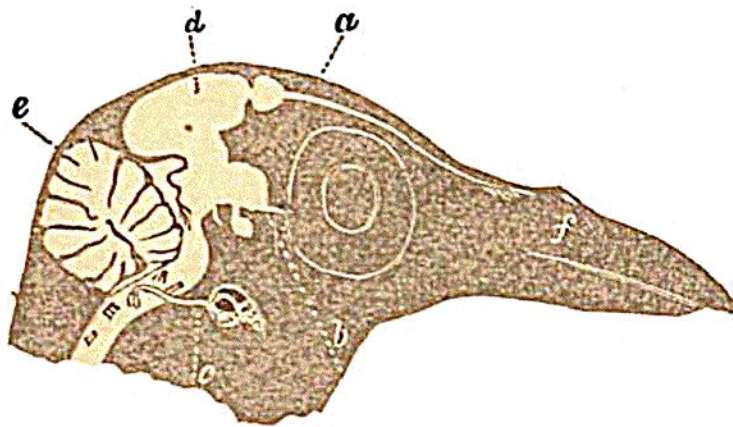


Fig. 21.

a, olfactory nerve; *b*, optic nerve; *c*, auditory nerve; *d*, cerebrum; *e*, cerebellum; *f*, nostril.

a highly important sense to many animals. Like sight and hearing, smell depends upon special nerves, the *olfactory*, (*a*,) which are the first pair of cerebral nerves, and which, in the embryo, are direct prolongations of the brain.

106. The organ of smell is the Nose. Throughout the series of vertebrates, it makes a part of the face, and in man, by reason of its prominent form, it becomes one of the dominant traits of his countenance; in other mammals, the nose loses this prominence by degrees, and the nostrils no longer open downwards, but forwards. In birds, the position of the nostrils is a little different; they open farther back and higher, at the origin of the beak, (*f*.)

107. The nostrils are usually two in number. Some fishes have four. They are similar openings, separated by a partition upon the middle line of the body. In man and the