

openings of the olfactory sacs are four in number on the dorsal surface of the head, but there are no external apertures for the ears. On the ventral surface in front of the anal fin is the posterior aperture of the intestine, and immediately behind it that of the urinary and reproductive organs. On the sides of the head behind the mouth are certain large apertures—the **gill-slits**, five in number, opening into the cavity of the mouth, but these are ordinarily concealed by the gill-cover or **operculum**, a flap which projects backward over them, and by a membrane attached to the inner surface of the flap, the **branchiostegal** membrane. In this way the gill or **branchial** chamber is formed, opening by the **branchial aperture** along the hinder and lower border of the said flap. Both the branchiostegal membrane and the gill-cover have a supporting framework of bones, the branchiostegal rays in the one case, the opercular bones in the other.

In addition to the olfactory organs referred to above, the following sense organs are to be noted: the eyes; certain holes and slits along the lateral line and on the head leading into canals and pits in which sense organs are situated; and the **barbels**, sensitive processes of the skin of the head, eight in number in the catfish, but frequently absent in other forms.

5. In most fishes the skin is strengthened by bony scales, either round in outline—**cycloid**—or with the hinder margin toothed—**ctenoid**—(Fig. 2), but the catfish is destitute of such, except for certain very minute ones which are in the walls of the lateral canal. The skin is therefore soft and slippery, and variously coloured according to the distribution of pigment in it. It is tightly bound down to the underlying flesh by slips of fibrous tissue, but in certain parts some loose **subcutaneous** tissue is accumulated between them. When a sharp cut is made through the skin it is possible to recognize two layers, an outer, the **epidermis** and an inner, the **corium**,