SUPERFICIAL THIRD EYE OF A CHANNEL CATFISH

Kenneth N. Randolph

Department of Zoology, University of Oklahoma, Norman, Oklahoma

A channel catfish with a superficial eye located posterior to the right opercular cavity was collected from Sooner Fish Farm, Norman, Oklahoma. The specimen appeared to be normal with the exception of the superficial eye (Fig. 1).

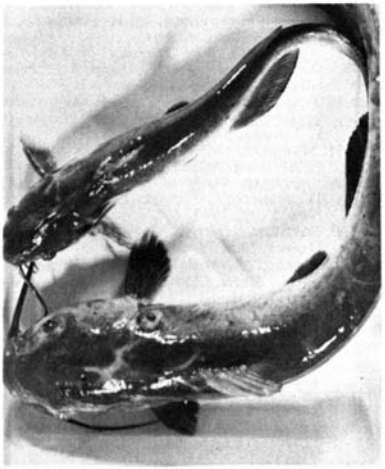

FIGURE 1. Dorsal view of channel catfish showing location of superficial eye.

Laboratory experiments with the living fish indicated that the eye-like structure was not functional. Subsequent post-mortem dissection revealed that the superficial eye lacked a connection with the central nervous system and consisted only of a cornea, which was modified to suggest the presence of a pupil.

The resemblance of the superficial eye to a normal eye was enhanced by its location on a bulge or hemorrhoid of the anterior lobe of the air bladder, which provided the superficial eye with the "body" of a normal eye (Fig. 2).

FIGURE 2. Cross section of channel catfish revealing the hemorrhoid of the air bladder.

In the development of a normal eye, certain accessory structures (i. e., the lens and cornea) are not developed from the optic vesicle, but from the epidermal epithelium, with which the optic vesicle comes in contact (1). The transformation of the epidermis into the accessory structures is induced by the optic vesicle. In amphibians the area which possesses the competence to form the accessory structures is not sharply defined at first and in some species epidermis from as far away as the sides of the trunk has some capacity to respond to the stimulus of the optic vesicle and form a lens (2). In certain vertebrates, however, induction by the optic vesicle is not necessary for the formation of the lens (3).

In poikilotherms, the competence to differentiate a cornea occurs not only during the short period of embryonic development, but for a long time after the normal differentiation of the cornea has taken place. The information at hand does not reveal the cause of the bulge in the air

bladder, and one can only suppose that a weakening of the body wall in the area of the air bladder resulted in a hemorrhoid, the pressure of which provided stimulus for a cornea to develop.

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