

68 (478)

Artificial cyclopia in the smelt.By **J. F. McCLENDON.**

I found that about about 0.1 per cent. of the smelt embryos in the fish hatchery at Cold Spring Harbor, L. I., had abnormal eyes. There were all degrees of approximation and "fusion" of the two eyes, sometimes resulting in perfect cyclopia. Less often one eye was imperfectly developed or absent (monophthalmia asymmetrica).

Preliminary experiments show that the percentage of abnormal eyes was increased by the addition of anaesthetics or magnesium chloride to the water, or by inhibiting the gaseous exchange.

It was thought improbable that much of the magnesium entered the embryos. If sub-lethal percentages of neutral salts are added to the water in which adult fish live, very little salt enters their bodies. As the lethal dose is approached, asphyxiation commences and salt enters the fish in larger amounts.

It was not practicable with the material at hand to make accurate chemical analyses of the embryos, but microchemical tests showed no more chlorides in the embryos developed in M/5 $MgCl_2$ than in those developed in tap water. One demonstration that salts enter fish embryos is that in pure potassium chloride solutions the heart stops beating. No increased amount of potassium was found by microchemical tests, in embryos kept in M/5 KCl until the heart stopped beating, than in the controls.

If the magnesium does not enter the embryos it must act on the surface, and since its effect is similar to that of deficient aeration, I suggest that the magnesium alters the surface so as to retard the entrance of oxygen or the exit of carbon dioxide. Anaesthetics that are known to penetrate freely may nevertheless produce their characteristic effect by altering the surface.

69 (479)

Cataphoresis of proteids in the living cell.By **J. F. McCLENDON.**

In cells of the newt, the frog, the onion and the hyacinth, on the passage of an electric current, the basic-staining proteids move toward the anode and the acid-staining toward the cathode.