

and secretion ; but we cannot hazard a conjecture as to the manner and degree in which those physiological functions may differ from those of surface fishes.

I may here also shortly refer to a subject in regard to which very few facts are known, and which therefore offers wide scope for speculation. It is the fact that the spawn of some deep-sea fishes (as for instance *Polyprion cernium*), is developed at the surface, whilst mature individuals of the species reside at more or less considerable depths. It is not probable that these fishes rise to the surface at the season of propagation ; we may rather suppose that the spawn is deposited at a depth of several hundred fathoms and gradually rises to the surface, the young fish, after a short pelagic surface existence, returning to the depths inhabited by their progenitors. This, however, is certainly not the case with all deep-sea fishes ; of many the spawn will not only be deposited at the bottom of the ocean, but also remain there throughout the period of its development. But when we consider the immense difference of the conditions under which the development of the ova of these two kinds of fishes proceeds—the one under the accelerating influences of light, warmth, and a constant supply of oxygen, the other under the retarding conditions of darkness, cold, and a minimum amount of oxygen—we cannot help thinking that the one series supplies the deep sea with the forms which retain the organisation of the surface fishes, whilst the other develops into those degraded forms, of which the families Ophidiidæ and Murænidæ offer the most striking examples.

The colours of deep-sea fishes are extremely simple, their bodies being either black, pink, or silvery ; however, some of the fishes which now are black are described as having been of a bluish colour when they were brought to the surface. In a few only are some filaments or the fin-rays of a bright scarlet colour ; black spots on the fins or dark cross-bars on the body are of very rare occurrence. An extremely common, almost general characteristic of deep-sea fishes is the black coloration of some of the body-cavities ; this is limited to the pharynx in many of the fishes which live about the 100-fathoms limit, but the colour is more intense, and spread all over the oral, branchial, and peritoneal cavities in strictly typical deep-sea forms. The highly specialised luminous organs on the head of the Stomiidæ are green or pink during life, whilst they fade into white after the immersion of the fishes in spirit. Among the black-coloured deep-sea fishes albinos are not scarce.