

as has been before shown, (Fig. 107.) At the same time, an enlargement at one end of the furrow is observed. This is the rudiment of the head, (Fig. 118,) in which may soon be distinguished traces of the three divisions of the brain, (Fig. 119,) corresponding to the senses of sight, (*m*,) hearing, (*e*,) and smell, (*p*.)

310. Towards the thirteenth day, we see a transparent, cartilaginous cord, in the place afterwards occupied by the back-bone, composed of large cells, on which transverse



Fig. 120.



Fig. 121.



Fig. 122.

divisions are successively forming, (Figs. 120, 121, *c*.) This is the dorsal cord, a part of which, as we have before seen, is common to all embryos of vertebrated animals. It always precedes the formation of the back-bone; and in some fishes, as the sturgeon, this cartilaginous or embryonic state is permanent through life, and no true back-bone is ever formed. Soon after, the first rudiments of the eye appear in the form of a fold in the external membrane of the germ, in which the crystalline lens (Fig. 121, *x*) is afterwards formed. At the same time we see, at the posterior part of the head, an elliptical vesicle, which is the rudiment of the ear. At this period, the distinction between the upper and the lower layer of the germ is best traced; all the changes mentioned above appertaining to the upper layer.

311. After the seventeenth day, the lower layer divides into two sheets, the inferior of which becomes the intestine