

with, the outer surface of the main part of the alar lamina, and so covers in the tractus solitarius and also the spinal root of the trigeminal nerve; the nodulus and flocculus of the cerebellum are developed from the rhombic lip.

Neuroblasts accumulate in the mantle layer; those in the basal lamina correspond with the cells in the anterior gray column of the medulla spinalis, and, like them, give origin to motor nerve fibers; in the medulla oblongata they are, however, arranged in groups or nuclei, instead of forming a continuous column. From the alar lamina and its rhombic lip, neuroblasts migrate into the basal lamina, and become aggregated to form the olivary nuclei, while many send their axis-cylinders through the floor-plate to the opposite side, and thus constitute the rudiment of the raphé of the medulla oblongata. By means of this thickening of the ventral portion, the motor nuclei are buried deeply in the interior, and, in the adult, are found close to the rhomboid fossa. This is still further accentuated: (a) by the development of the pyramids, which

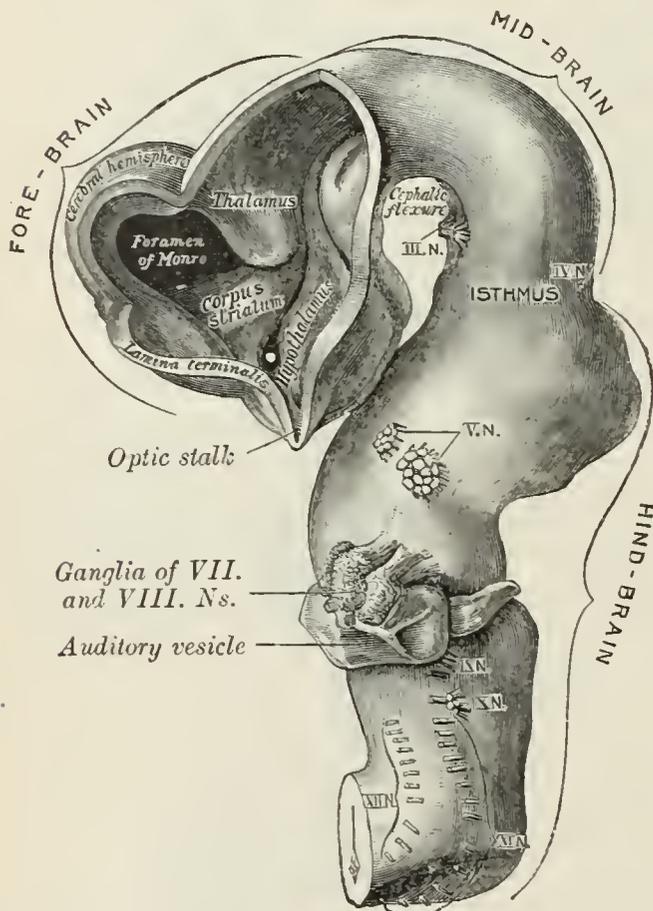


FIG. 651.—Brain of human embryo of four and a half weeks, showing interior of fore-brain. (From model by His.)

are formed about the fourth month by the downward growth of the motor fibers from the cerebral cortex; and (b) by the fibers which pass to and from the cerebellum. On the rhomboid fossa a series of six temporary furrows appears; these are termed the **rhombic grooves**. They bear a definite relationship to certain of the cranial nerves; thus, from before backward the first and second grooves overlie the nucleus of the trigeminal; the third, the nucleus of the facial; the fourth, that of the abducent; the fifth, that of the glossopharyngeal; and the sixth, that of the vagus.

The **pons** is developed from the ventro-lateral wall of the metencephalon by a process similar to that which has been described for the medulla oblongata.

The **cerebellum** is developed in the roof of the anterior part of the hind-brain (Figs. 649 to 654). The alar laminae of this region become thickened to form two

lateral plates which soon fuse in the middle line and produce a thick lamina which roofs in the upper part of the cavity of the hind-brain vesicle; this constitutes the rudiment of the cerebellum, the outer surface of which is originally smooth and convex. The fissures of the cerebellum appear first in the vermis and floccular region, and traces of them are found during the third month; the fissures on the cerebellar hemispheres do not appear until the fifth month. The primitive fissures are not developed in the order of their relative size in the adult—thus the horizontal sulcus in the fifth month is merely a shallow groove. The best marked of the early fissures are: (a) the **fissura prima** between the developing culmen and declive, and (b) the **fissura secunda** between the future pyramid and uvula. The flocculus and nodule are developed from the rhombic lip, and are therefore recognizable as separate portions before any of the other cerebellar lobules. The groove produced by the bending over of the rhombic lip is here known as the