

spheres, viz., the **corpus callosum**, the **fornix**, and **anterior commissures**, arise from the lamina terminalis. About the fourth month a small thickening appears in this lamina, immediately in front of the interventricular foramen. The lower part of this thickening is soon constricted off, and fibers appear in it to form the anterior commissure. The upper part continues to grow with the hemispheres, and is invaded by two sets of fibers. Transverse fibers, extending between the hemispheres, pass into its dorsal part, which is now differentiated as the corpus callosum (in rare cases the corpus callosum is not developed). Into the ventral part longitudinal fibers from the hippocampus pass to the lamina terminalis, and through that structure to the corpora mamillaria; these fibers constitute the fornix. A small portion, lying antero-inferiorly between the corpus callosum and fornix, is not invaded by the commissural fibers; it remains thin, and later a cavity, the cavity of the **septum pellucidum**, forms in its interior.

Fissures and Sulci.—The outer surface of the cerebral hemisphere is at first smooth, but later it exhibits a number of elevations or convolutions, separated from each other by fissures and sulci, most of which make their appearance during the sixth or seventh months of fetal life. The term *fissure* is applied to such grooves as involve the entire thickness of the cerebral wall, and thus produce corresponding eminences in the ventricular cavity, while the *sulci* affect only the superficial part of the wall, and therefore leave no impressions in the ventricle. The fissures comprise the **choroidal** and **hippocampal** already described, and two others, viz., the **calcarine** and **collateral**, which produce the swellings known respectively as the **calcar avis** and the **collateral eminence** in the ventricular cavity. Of the sulci the following may be referred to, viz., the **central sulcus** (*fissure of Rolando*), which is developed in two parts; the **intraparietal sulcus** in four parts; and the **cingulate sulcus** in two or three parts. The **lateral cerebral** or **Sylvian fissure** differs from all the other fissures in its mode of development. It appears about the third month as a depression, the **Sylvian fossa**, on the lateral surface of the hemisphere (Fig. 658); this fossa corresponds with the position of the corpus striatum, and its floor is moulded to form the insula. The intimate connection which exists between the cortex of the insula and the subjacent corpus striatum prevents this part of the hemisphere wall from expanding at the same rate as the portions which surround it. The neighboring parts of the hemisphere therefore gradually grow over and cover in the insula, and constitute the temporal, parietal, frontal, and orbital opercula of the adult brain. The frontal and orbital opercula are the last to form, but by the end of the first year after birth the insula is completely submerged by the approximation of the opercula. The fissures separating the opposed margins of the opercula constitute the composite lateral cerebral fissure.

If a section across the wall of the hemisphere about the sixth week be examined microscopically it will be found to consist of a thin marginal or reticular layer, a thick endymal layer, and a thin intervening mantle layer. Neuroblasts from the endymal and mantle layers migrate into the deep part of the marginal layer and form the cells of the cerebral cortex. The nerve fibers which form the underlying white substance of the hemispheres consist at first of outgrowths from the cells of

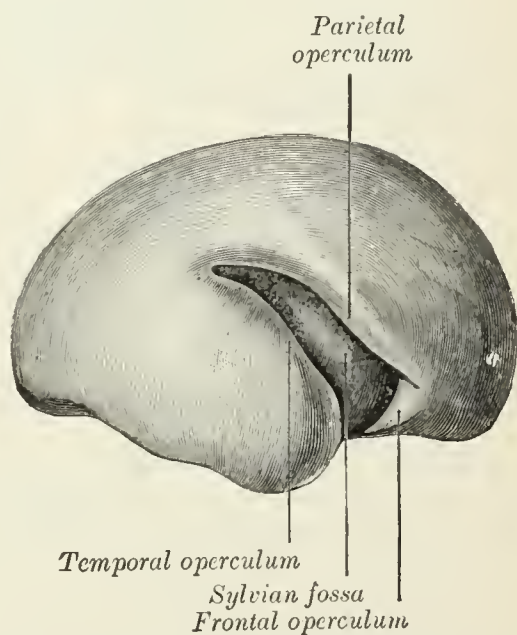


FIG. 658.—Outer surface of cerebral hemisphere of human embryo of about five months.