

instances, collateral branches of the projection fibers, but others are the axons of independent cells.

1 The **projection fibers** consist of efferent and afferent fibers uniting the cortex with the lower parts of the brain and with the medulla spinalis. The principal efferent strands are: (1) the *motor tract*, occupying the genu and anterior two-thirds of the occipital part of the internal capsule, and consisting of (a) the geniculate fibers, which decussate and end in the motor nuclei of the cranial nerves of the opposite side; and (b) the cerebrospinal fibers, which are prolonged through the pyramid of the medulla oblongata into the medulla spinalis: (2) the *corticopontine fibers*, ending in the nuclei pontis. The chief afferent fibers are: (1) those of the lemniscus which are not interrupted in the thalamus; (2) those of the superior cerebellar peduncle which are not interrupted in the red nucleus and thalamus; (3) numerous fibers arising within the thalamus, and passing through its stalks to the different parts of the cortex (page 810); (4) optic and acoustic fibers, the former passing to the occipital, the latter to the temporal lobe.

2. The **transverse or commissural fibers** connect the two hemispheres. They include: (a) the *transverse fibers* of the corpus callosum, (b) the anterior commissure, (c) the posterior commissure, and (d) the lyra or hippocampal commissure; they have already been described.

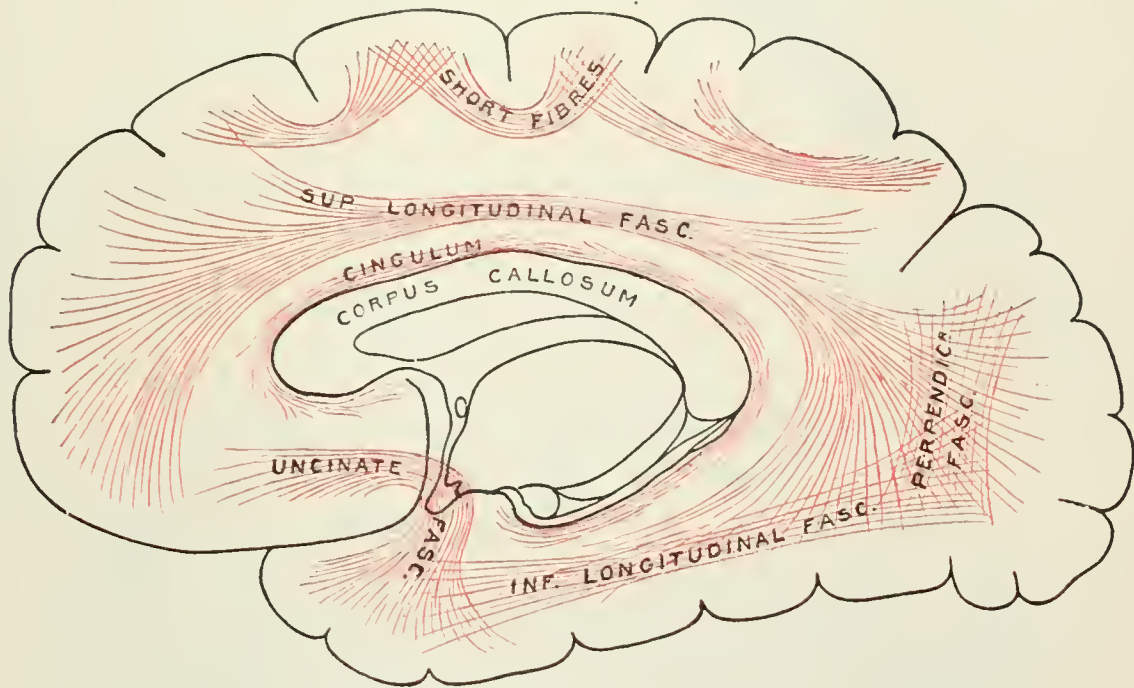


FIG. 751.—Diagram showing principal systems of association fibers in the cerebrum.

3. The **association fibers** (Fig. 751) unite different parts of the same hemisphere, and are of two kinds: (1) those connecting adjacent gyri, **short association fibers**; (2) those passing between more distant parts, **long association fibers**.

The *short association fibers* lie immediately beneath the gray substance of the cortex of the hemispheres, and connect together adjacent gyri.

The *long association fibers* include the following: (a) the uncinat fasciculus; (b) the cingulum; (c) the superior longitudinal fasciculus; (d) the inferior longitudinal fasciculus; (e) the perpendicular fasciculus; (f) the occipitofrontal fasciculus; and (g) the fornix.

(a) The *uncinate fasciculus* passes across the bottom of the lateral fissure, and unites the gyri of the frontal lobe with the anterior end of the temporal lobe.

(b) The *cingulum* is a band of white matter contained within the cingulate gyrus. Beginning in front at the anterior perforated substance, it passes forward and upward parallel with the rostrum, winds around the genu, runs backward above the corpus callosum, turns around the splenium, and ends in the hippocampal gyrus.