

Finally, in the gray substance of the cerebellar cortex there are fibers which come from the white center and penetrate the cortex. The cell-origin of these fibers is unknown, though it is believed that it is probably in the gray substance of the medulla spinalis. Some of these fibers end in the nuclear layer by dividing into numerous branches, on which are to be seen peculiar moss-like appendages; hence they have been termed by Ramón y Cajal the **moss fibers**; they form an arborescence around the cells of the nuclear layer and are said to come from fibers in the inferior peduncle. Other fibers, the **clinging** or **tendrils fibers**, derived from the medullary center can be traced into the molecular layer, where their branches cling around the dendrites of Purkinje's cells. They are said to come from fibers of the middle peduncle.

(2) The **independent centers of gray substance** in the cerebellum are four in number on either side: one is of large size, and is known as the **nucleus dentatus**; the other three, much smaller, are situated near the middle of the cerebellum, and are known as the **nucleus emboliformis**, **nucleus globosus**, and **nucleus fastigii**.

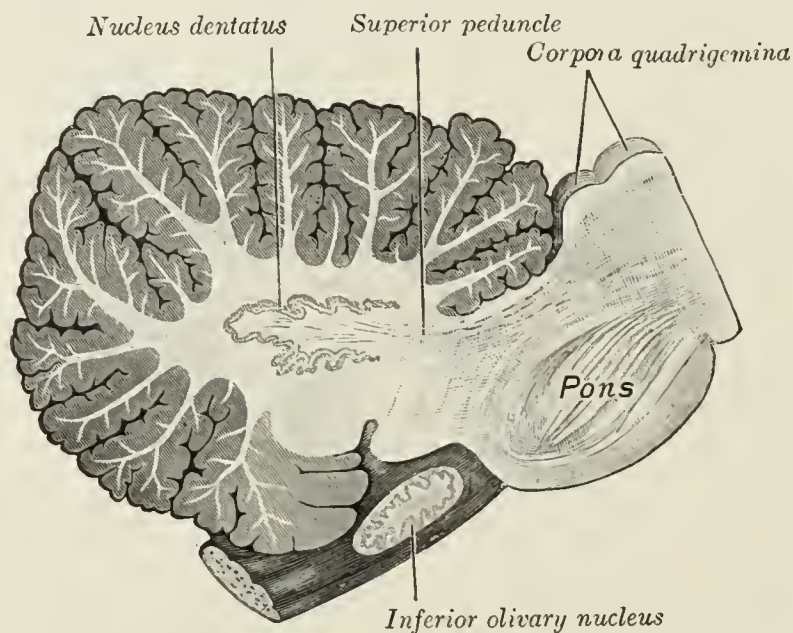


FIG. 707.—Sagittal section through right cerebellar hemisphere. The right olive has also been cut sagittally.

The **nucleus dentatus** (Fig. 707) is situated a little to the medial side of the center of the stem of the white substance of the hemisphere. It consists of an irregularly folded lamina, of a grayish-yellow color, containing white fibers, and presenting on its antero-medial aspect an opening, the **hilus**, from which most of the fibers of the superior peduncle emerge (page 792).

The **nucleus emboliformis** lies immediately to the medial side of the nucleus dentatus, and partly covering its hilus. The **nucleus globosus** is an elongated mass, directed antero-posteriorly, and placed medial to preceding. The **nucleus fastigii** is somewhat larger than the other two, and is situated close to the middle line at the anterior end of the superior vermis, and immediately over the roof of the fourth ventricle, from which it is separated by a thin layer of white substance.

The cerebellum is concerned with the coordination of movements necessary in equilibration, locomotion and prehension. In it terminate pathways conducting impulses of muscle sense, tendon sense, joint sense and equilibratory disturbances. With the exception of the ventral spinocerebellar fasciculus these impulses enter through the inferior peduncle. The reflex arc is completed by fibers in the superior peduncle which pass to the red nucleus and the thalamus and thence by additional neurons (rubrospinal tract) to the motor centers. The exact functions of its different parts are still quite uncertain, owing to the contradictory nature of the evidence furnished by (1) ablation experiments upon animals, and (2) clinical observations in man of the effects produced by abscesses or tumors affecting different portions of the organ.