name of the nucleus or the location of the cell body from which the axon or fiber arises preceding that of the nucleus or location of its termination. A given topographical area seldom represents a pure tract, as in most cases fibers of different systems are mixed.

DEVELOPMENT OF THE NERVOUS SYSTEM.

The entire nervous system is of ectodermal origin, and its first rudiment is seen in the neural groove which extends along the dorsal aspect of the embryo (Fig. 17). By the elevation and ultimate fusion of the neural folds, the groove is converted into the neural tube (Fig. 19). The anterior end of the neural tube becomes expanded to form the three primary brain-vesicles; the cavity of the tube is subsequently modified to form the ventricular cavities of the brain, and the central canal of the medulla spinalis; from the wall the nervous elements and the neuroglia of the brain and medulla spinalis are developed.

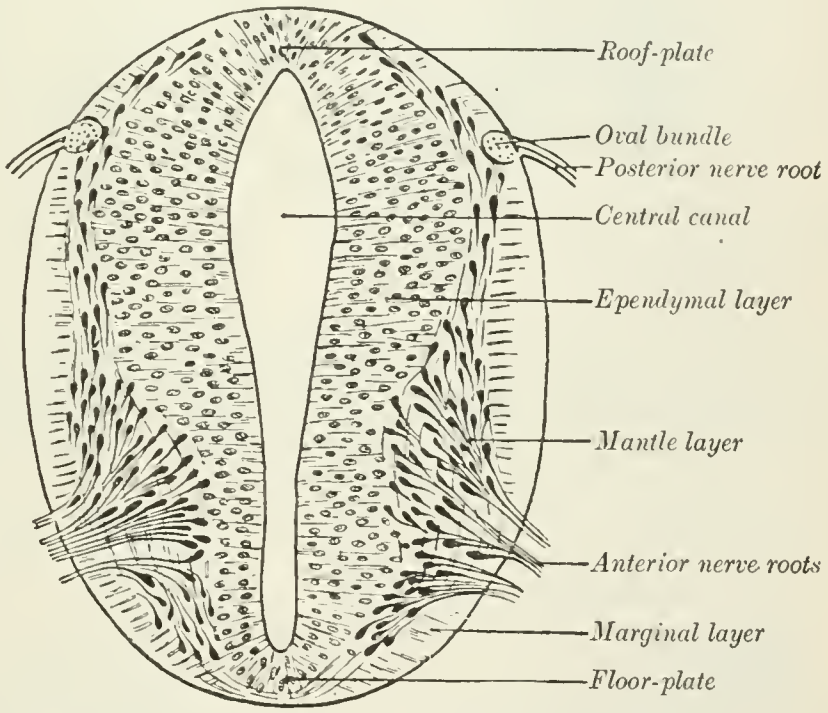

FIG. 640.—Section of medulla spinalis of a four weeks' embryo. (His.)

The Medulla Spinalis.—At first the wall of the neural tube is composed of a single layer of columnar ectodermal cells. Soon the side-walls become thickened, while the dorsal and ventral parts remain thin, and are named the **roof-** and **floor-plates** (Figs. 640, 642, 643). A transverse section of the tube at this stage presents an oval outline, while its lumen has the appearance of a slit. The cells which constitute the wall of the tube proliferate rapidly, lose their cell-boundaries and form a syncytium. This syncytium consists at first of dense protoplasm with closely packed nuclei, but later it opens out and forms a looser meshwork with the cellular strands arranged in a radiating manner from the central canal. Three layers may now be defined—an internal or ependymal, an intermediate or mantle, and an external or marginal. The **ependymal layer** is ultimately converted into the ependyma of the central canal; the processes of its cells pass outward toward the periphery of the medulla spinalis. The **marginal layer** is devoid of nuclei, and later forms the supporting framework for the white funiculi of the medulla spinalis. The **mantle layer** represents the whole of the future gray columns of the medulla spinalis; in it the cells are differentiated into two sets, viz., (*a*) **spongioblasts** or **young neuroglia cells**, and (*b*) **germinal cells**, which are the parents of the **neuroblasts**