

FIG. 11. Cells from the nuclei of the oculomotorius nerves of the cat thirteen days after section of the root fibres of the nerve on one side (after E. Flatau). a, cell from the nucleus of side not operated on showing normal arrangement of Nissl bodies; b, cell from the nucleus of the side operated on. The eccentric position of the nucleus and the disappearance and dust-like destruction of Nissl bodies are evident, illustrating "primary degeneration."

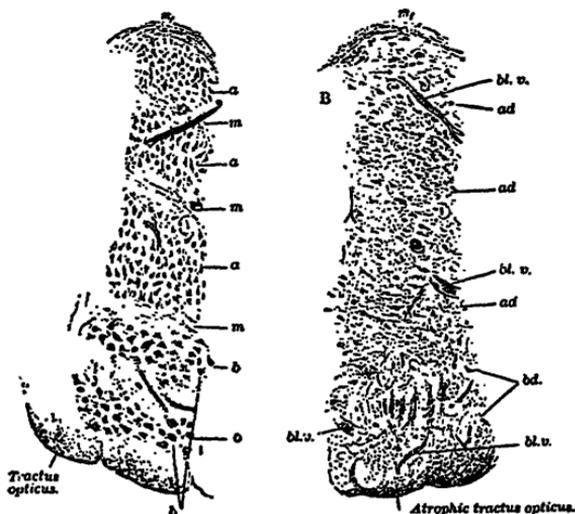


FIG. 12. Corpus geniculatum laterale; normal on the left, degenerated on the right after an extensive lesion in the temporal and occipital lobe of the corresponding side. a, mass of small ganglion cells arranged in layers, shown atrophic in B; m, Medullated layers, atrophic in B; b, masses of large cells; to., optic tract; m., dorsal white capsule; at a d, in Fig. B, loss of ganglion cells is represented; at b d, total degeneration of the large cells. The optic tract is atrophic in B. (after C. von Monakow).

Burdach. Hence after section of the posterior roots or pathological changes in the cell-bodies of the spinal ganglia, one would expect ascending degeneration in the posterior spinal tracts of Goll and Burdach and descending degeneration in the "comma" tract. The afferent impulses after reaching the upper dorsal nuclei pass on to the neurones which begin in these nuclei through arborisations of the first neurone around the dendrites of the neurones of the nuclei of Goll and Burdach and so proceed to the optic thalamus, and by a third neurone to the cerebral cortex; or possibly, as represented in the figure, by a second neurone only, and thus reach the cortex of the cerebrum. It must follow that sensory impulses reach the cortex of the cerebrum by a series of relays of neurones, and in all likelihood at least three are in most cases required. On the other hand, as may be seen, a motor impulse commencing in the cortex is carried down and out to the muscle by two neurones; and the first, which begins in the grey matter of the cortex, arborises around the dendrites of the second neurone, which is located in the anterior horn of the spinal