

germinating cells and neuroblasts with diffused chromatin, shows all stages in the process of transformation and diffusion of the chromatin. This circumstance enables one to be sure that the gradual loss of affinity of the nucleus for basic dyes is not due to overstaining in eosin, for after the chromatin begins to change, an overstaining with eosin will make it red, but a shorter time in the eosin will colour it purplish. If one examines a section in which all stages of the diffusion of the chromatin are seen, one can easily see the great affinity the nuclei of the nerve cells next the medullary canal have for toluidin blue. The nuclei of cells lying farther from the canal have less and less affinity for basic dyes, but one can observe that with this loss of affinity on the part of the nucleus for these dyes, a substance with marked affinity for them appears in the cytoplasm. This substance is first seen as a thickened nuclear membrane, but as more of it diffuses from the nucleus it takes the form of a distinct cone in the cytoplasm forming a cap on the nucleus.

These observations have been confirmed on the cells of the cortex, cerebellum and spinal ganglia of mammals and also on the cells of the chicken. The chick embryos are not as suitable as mammalian embryos for following this process, on account of the general distribution of yolk nucleo-proteids, but the stages can be distinctly observed.

The chromatic material appears in the cytoplasm of the cells of the medulla before it appears in those lower down in the cord, but my observations on the rate of the development of the material in the different centres are incomplete.

The action of dilute alkalis on the cell varies with the degree of its development. At a stage such as is represented in Figure 21 the action of alkalis is similar to their action on adult cells. After treatment with alkalis the cell body would not stain with toluidin blue or did not contain iron, but the body of the cell still remained. If the view of Held and Bühler regarding the nature of the Nissl granules is correct, then the whole cytoplasm should have disappeared.

Alkalis are very slow in altering the staining powers of the chromatin in mitosis. The nuclei of germinating cells and of the nerve cells in which the kinetic chromatin was only slightly altered, contained a large quantity of material that stained with toluidin blue and proved to be iron-holding, after small pieces of tissue, that had been fixed in alcohol, had been treated with potash (0.2%) for six days. In this same solution the Nissl granules had been altered so that they would not give their