

observed in many cells. Material has been left in the weak potash or soda solutions for seven days with the same result. After treatment with the alkali, staining with eosin and toluidin blue will produce the same result in the nerve cell as staining unaltered sections with eosin alone, except that the nucleolus will probably be quite blue. The nuclei of the neuroglia cells are still stained normally, as are also the nuclei of the cells of the walls of the blood vessels and of white blood corpuscles present in them, thus showing the stains are effective and would still bring out the granules if they were unaltered. Held⁴⁰ has also observed that after treatment with alkalis the nuclei of the neuroglia and connective tissue cells are unaltered.

If one treats cells altered in this way to determine the distribution of iron in the cell, one finds the nucleolus and oxyphile nuclear substance may still be quite rich in iron but the remainder of the cell is devoid of it. The neuroglia cells also contain iron, this showing that the reaction would still detect any iron if it were present in the cytoplasm of the nerve cells. After prolonged treatment with the alkali, the distribution of phosphorus is quite normal, as the granules in the cell, the nucleolus and oxyphile nuclear substance still give the phosphorus reaction.

One can obtain similar results if tissue is hardened in an alcoholic solution, containing a small percentage of alkali, such as Held employed, when the iron-holding substances of the nerve cell are extracted from the cytoplasm but the nuclei of the neuroglia cells are only slightly affected. A ten per cent. solution of lysol, which Reinke found to be a solvent of chromatin, was also used with the same result; it altered the staining properties of the nerve cell but did not affect those of the neuroglia cells.

Ruzicka used material that had been fixed in sublimate for his experiments. The mercurial compound of these granules is much less easily altered than the granules coagulated in alcohol; but if treatment with the alkali be prolonged the same result is obtained.

When the tissue is placed in the alkali it swells but shrinks again on placing it in alcohol. This swelling and shrinking causes clefts in the protoplasm of some cells. Although these clefts do not correspond in position or form with the granules in the cell, it seems probable they are the vacuoles noticed by Held and Bühler and considered by them as the spaces left by the dissolved granules. It seems highly improbable that

⁴⁰ Held, Arch. f. Anat. u. Phys., Anat. Abth., 1897, p. 207.