

system. It has been suggested by v. Lenhossek<sup>21</sup> that this substance is the same as the lanthanin of Heidenhain<sup>22</sup> or the oedematin of Reinke.<sup>23</sup> This substance is undoubtedly a nuclein compound and is oxyphile, yet it will be seen later that it has very peculiar properties which distinguish it from all chromatin or other substances heretofore described, and I shall therefore call it for the present the oxyphile substance of the nucleus.

Staining sections in gentian violet or safranin and differentiating, gives figures almost similar to those obtained with toluidin blue alone, but if one fixes in Flemming's fluid and stains with his orange method, one finds the granules are a deep violet on a reddish ground, the nucleolus is red with an outer colouring of violet, while the oxyphile substance is also a deep violet. This method has given me some of my most instructive preparations, especially of spinal ganglion cells, the unattached sections of which may be left in the stains.

The iron-alum stain of Heidenhain has been extensively used by Flemming, v. Lenhossek and others to show the structure of the cell. As this stain colours the cytoplasm as well as the chromatin, it ought, in my opinion, to be used on nerve cells with care, for the granules are often fibrillar in character and with the iron-alum hæmatoxylin stain alone it is often impossible to distinguish the fine fibrillar processes of the granules from the intergranular substance. An after stain of rubin removes a great deal of the difficulty, as then the fine processes of the granules are stained like the granules themselves.

The granules in different classes of cells exhibit a variable affinity for the methyl green in the Ehrlich-Biondi combination, but such affinities are not constant. In this stain the nucleolus is generally greenish, but the green is unlike that in the nuclei of the neuroglia cells, a circumstance that v. Lenhossek has also noticed. There is usually no other green-staining substance except the nucleolus in the nucleus, but Levi,<sup>24</sup> Heilmann<sup>25</sup> and Bühler have found such a substance. This of all staining mixtures is hard to manipulate, and one cannot lay any great stress on differences obtained with it.

<sup>21</sup> V. Lenhossek, M., Arch. f. Psychiatrie, XXIX., p. 375.

<sup>22</sup> Heidenhain, M., "Kern und Protoplasma," Festsch. f. Koelliker, p. 128, 1892, and Arch. f. Mik. Anat. XLIII.

<sup>23</sup> Reinke, Friedrich, "Zellstudien," Arch. f. Mik. Anat., XLIII, p. 402, 1894.

<sup>24</sup> Levi, G., "Su alcune particolarità di struttura del nucleo delle cellule nervose," Rivista di path. nervosa e mentale, 1896. (Quoted from v. Lenhossek, Arch. f. Psych., XXIX, p. 376).

<sup>25</sup> Heilmann, E., "Beitrage zur Kenntniss der feineren Struktur der Spinalganglien," Virchow's Archiv, CLII, p. 293, 1898.

<sup>26</sup> Bühler, C., p. 46.