

completely but leaves the diffused substance and the periphery of the nucleolus unaffected.

Stage 5. Adult cell. Differs from stage 4 only in the distribution of the chromatin which has diffused into the cytoplasm.

III.—ON THE STRUCTURE OF THE NERVE CELLS IN OTHER CLASSES OF ANIMALS.

When such a remarkable change as that described in the development of the Nissl granules occurs in mammals and birds, one would expect to find some trace of it in the nerve cells of other animals. With this in view the nerve cells of adult animals of the different classes were examined. Before giving the results it would be advisable to make as complete a list as possible of those forms in whose nerve cells a substance analogous to that of the Nissl granules has been found. The following authors have dealt with the structure of the nerve cells of different mammals:—Flemming,⁵⁴ Nissl, Vas Mann, Dogiel,⁵⁵ Held, Eve, v. Lenhossek,⁵⁷ Lugaro,⁵⁸ Cajal, van Gehuchten, Cox, Bühler, Heimann, Rohde,⁶⁰ Ruzicka and many others. In all cases recorded for mammals the nerve cell contained the granules. The only exception to this statement is that of Reinke who, in the discussion of v. Lenhossek's paper before the Anatomische Gesellschaft, stated that he had found large nerve cells in the ganglion of a cat free from granules. In all ganglion cells of the cat examined Nissl granules were present, and it is probable the cells found by Reinke were in a diseased or otherwise altered ganglion.

The nerve cells of the animals below mammals have been studied with methods that would show the Nissl granules as follows:—

From Aves: in the pigeon,^{61, 62, 63} raven,⁶² and fowl.⁶³

⁵⁴ Flemming, I. C., and *Archiv f. Psychiatrie*, XXIX, p. 969, 1897.

⁵⁵ Mann, Gustav., *Journal of Anatomy and Physiology*, XXIX, p. 100, 1894.

⁵⁶ Dogiel, A. S., *Archiv f. Mik. Anatomie*, XLI, p. 62, 1893.

⁵⁷ v. Lenhossek, M., I. C., also *Verhand. der Anat. Gesellschaft*, 1896, p. 9.

⁵⁸ Lugaro, *Rivista di patologia nerv. e. ment.*, 1896, p. 12.

⁵⁹ Cox, W. H., I. C., and *Anat. Hefte*, X, Heft 31, p. 73, 1898.

⁶⁰ Rohde, E., "Die Ganglienzelle," *Zeit. f. Wiss. Zool.*, LXIV, p. 697, 1898.

⁶¹ Held, I. C.

⁶² Bühler, I. C.

⁶³ Timofeev, I. C.