

pigment in their body. The pigment has been found to be especially common in man and monkeys. (Warrington).⁴¹ The pigment present in the cells of a thoracic sympathetic ganglion of an ox, after it had been hardened in alcohol, gave the following reactions. It was still present after a one per cent. solution of potash had acted on loose sections for three days at room-temperature. It was not removed from the free sections by the action for a week of one per cent. hydrochloric acid solution, nor did it give, after the use of acid alcohol, any reaction for iron, which confirms what Warrington found for the pigment present in the nerve cells of man. It did, however, give a positive reaction for phosphorus, using Macallum's test.

Before leaving this section I would like to discuss the structure of the nucleolus. There is always one, and there may be several, nucleoli present in the nucleus of the nerve cells of mammals and in most other classes of animals; but there is rarely a nucleolus in the nerve cells of the Urodela and if present it cannot be distinguished with certainty from the remainder of the nuclear chromatin.

The nucleolus is considered by most observers to consist of a single substance which may be vacuolated. Several observers, however, have described the nucleolus as consisting of fine grains embedded in a ground mass. This view is supported by v. Lenhossek,⁴² Held,⁴³ Ruzicka,⁴⁴ Obersteiner,⁴⁵ but more particularly by Timofeev⁴⁶ who says the nucleolus consists of basophile grains embedded in an oxyphile ground substance.

The nucleolus consists of two substances, but the relation of these two is different from that usually described. I find the nucleolus is a vesicle with an oxy-centre and a basophile covering.⁴⁷ This relation is often seen in sections stained with eosin and toluidin blue, or in material fixed in Flemming's fluid and stained with his orange method. A somewhat similar structure has lately been described by Heimann⁴⁸, who noticed the periphery of the nucleolus had a great affinity for stains.

This structure is best seen in the nerve cells of rodents but occurs in

⁴¹ Warrington, W. B. "On the Structural Alterations observed in Nerve Cells," *Journal of Physiology*, XXIII, 1898.

⁴² v. Lenhossek, l. c.

⁴³ Held, *Archiv f. Anat. u. Physiol.*, p. 207, 1897.

⁴⁴ Ruzicka, *Zeit. f. Wiss. Mikroskopie*, p. 452, 1897.

⁴⁵ Obersteiner, *Zeit. f. Wiss. Mikroskopie*, p. 60, 1898.

⁴⁶ Timofeev, l. c.

⁴⁷ Mackenzie also observed this relation in the nucleolus. *Ora Communication, British Association Toronto Meeting, 1897.*

⁴⁸ Heimann, l. c.