

6. The cell nucleus does not normally contain the slightest trace of potassium nor does the head of the spermatozoon give the slightest evidence of its presence there, and, further, in the structure known as the central body of the Cyanophyceæ, which is regarded by many cytologists as a nucleus, or as a body, resembling a nucleus, no potassium reaction can be obtained.

7. Nerve cells are wholly free from potassium and this freedom extends to the dendrites and axons. External to the axons in medullated nerves potassium compounds obtain chiefly at the nodes of Ranvier and in the neurokeratin framework of the sheath, but at other points also often in minute masses of bizarre form.

8. The potassium obtaining in cytoplasm occurs in two conditions, that of physiological precipitation, and that of physiological or biochemical condensation.

9. The precipitation is not of a physical character but may perhaps be of the nature of fixation, in an inert form, of the potassium in passive colloidal material in the cytoplasm. This precipitation is the process, apparently, by which living, active cells dispose of the excess of potassium salts which may invade them, as in the case of vegetable forms, in very great excess.

10. In the condition of physiological or biochemical condensation potassium salts in solution are concentrated in some particular part or parts of the cytoplasm and excluded from the remainder. This condition of condensation is, undoubtedly, in some cases at least, a factor in the metabolic processes peculiar to the cells, or species of cells, illustrating the condition. That salts can be in solution and at the same time confined strictly to parts of the cell is shown in *Spirogyra*, in which, in the healthy normal form, the potassium is strictly localized to the immediate neighbourhood of the chromatophor, which, in the intact cell, is supposed to function, in some degree, in the synthesis of the carbohydrates.

11. In smooth muscle fibre the potassium found is scant and it is diffused throughout its cytoplasm, but in striated fibre there is a condensation of the potassium in the dim bands, the rest of the fibre being free from the element. When the fibre is in the contracted condition the potassium is most abundant in the middle third of the band, at least such is the case in the wing muscles of the scavenger beetle. It is the doubly-refractive substance of the dim bands that, apparently, constitutes the contractile material, that is, the myogen of Hermann, and its association with potassium suggests some relation of