"Platinum method for the central nervous system"

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Microscopical

Platinum Method for the Central Nervous System. By W. Ford Robertson, M.D.

(Note summarising points illustrated in Microscopical demonstration given at the meeting of the Society held on)

The platinum method, a full description of which will be found elsewhere*, consists essentially in placing small pieces of formalin-hardened tissues in a mixture of platinum bichloride (½ per cent.) and formalin (5 to 20 per cent.) for several weeks or months. Sections are cut by the dextrine freezing method and mounted in balsam in the usual way.

A deposit of platinum black occurs in the tissues, tending specially to take place in certain elements. The histological picture produced is one entirely different from that obtained by the silver and sublimate methods of Golgi. The preparations have served to furnish conclusive evidence upon certain questions that were previously in dispute, and also to demonstrate at least two facts that are new. The following is a summary of the more important of these points.

* Text-book of Pathology in relation to Mental Diseases, 1900, p. 28.

Intra-cerebral Vessels.— The connective tissue fibres of the vessel-walls are clearly depicted. Such fibres are shown to be present not only in the walls of the larger vessels, but also in those of the capillaries, which are thus proved, as had previously been supposed upon other grounds, to have a special adventitial coat. Fibres may very commonly be observed to pass from one vessel to another. Such connecting fibres are as numerous as capillaries. They correspond to the very minute capillaries described some years ago by certain German authors, whose observation therefore appears to have been a fallacious one.

Inter-vascular Non-nervous Tissues.— The preparations have served to demonstrate that the tissues previously referred to as "the neuroglia" ~~consist~~ are composed really of at least two totally different kinds of tissue. One of these conforms to the classical description of the neuroglia, whilst the other consists of very characteristic branched or branchless cells, which, under certain conditions, tend to be picked out by this method, and which

also differ from neuroglia cells in structure, form, relation to other tissue-elements, and in behaviour in pathological states. There is, further, the strongest evidence to show that while the true neuroglia is of epiblastic origin, the other elements are mesoblastic in character. For this reason I have proposed that the latter should be termed "mesoglia cells".

Nerve-cells. — In some instances the primitive fibrils and endocellular reticulum are demonstrated with considerable clearness. The granules and reticulum of the nucleus are frequently very distinctly brought out, and strong evidence in support of the view that they are acidophile in character is furnished by this fact. The whole of the chromatin of the more highly developed nerve-cells would appear to be concentrated in three or four minute particles adherent to the nucleolus (Giuseppe Levi). Lastly, the recently described lymph-canaliculi of the protoplasm are often very clearly discernible.

Description of Figures, Plate .

Fig. 1. Arterioles in spinal cord of cat, showing fibrils in walls, and fibrils passing from one vessel to another. Obj: ~~Leitz~~ Zeiss 4 mm.; Oc. Leitz No. 1.

Fig. 2. Mesoglia cells in brain of dog. Note dichotomous branching of processes. Obj. ~~Leitz~~ Zeiss 4 mm.; Oc Leitz No. 1.

Fig 3. Nerve-cell in cerebral cortex of sheep, showing fibrils in axis-cylinder process. Obj. Leitz 1/12 in oil immersion; oc. No. 1.

Fig. 4. Nuclei of nerve-cells in cerebral cortex of dog, showing acidophile granules. Obj. Leitz 1/12 in oil immersion; oc. No. 1.

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