

little connective-tissue, and slightly attached to the overlying dura. The track was surrounded by a moderate gliosis in the cortical grey matter, while in the white matter there was an absence of gliosis or even a decrease in astrocytes. Round the closed tracks the astrocytes send in their large expansions concentrically—about the open tracks these expansions are tangential to the canal. Both needles cause the same amount of hæmorrhage. When a hollow needle or cannula is used it causes much less gliosis, less distortion and fewer superficial adhesions.

G. W. T. H. FLEMING.

*Acute Pathological Changes in Neuroglia and in Microglia.* (*Arch. of Neur. and Psychiat.*, July, 1928.) Cone, W.

The author describes in great detail the pathological reactions of neuroglia and microglia in acute diseases of the central nervous system. Astrocytes and oligodendroglia react by degeneration in the same way as nerve-cells. Microglia responds by forming first rod-cells and later compound granular corpuscles. It is not primarily affected by toxins and diseases which cause the acute degenerative changes in nerve-cells or neuroglia. Astrocytes and oligodendroglia change quickly after death; microglia resists *post-mortem* alterations.

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*Glia Response in Chronic Vascular Disease of the Brain.* (*Arch. of Neur. and Psychiat.*, July, 1928.) Globus, F. H.

The glial changes in cerebral arterio-sclerosis are not specific for this disease, they are simply due to a disturbed blood-supply. An even higher degree of hyperplasia is found in the macroglia in other chronic inflammatory or degenerative lesions of the brain. The transformation of the protoplasmic astrocytes into the fibrous type is not specific for cerebral arterio-sclerosis, but is found in other conditions, and is described by Cajal in general paralysis. The dense glial sclerosis round thrombosed blood-vessels or in scar-forming areas is only an expression of a general healing or reparative process, and is found wherever pronounced vessel changes occur. In partially ischæmic zones the astrocytes undergo atrophy, and in areas of softening they manifest regressive changes terminating in complete disintegration. In the process of disintegration they may assume the morphological features of the so-called amœboid cells of Alzheimer or may simulate gitter-cells. The Hortega cells, which function largely as scavengers, are, of course, increased in numbers throughout the substance of the brain. In certain circumscribed areas these cells aggregate, forming small rosette-like collections resembling senile plaques. Hortega cells mobilized near localized massive destructive processes often take the form of the giant microglia cells of Cajal. Others undergo regressive changes with final formation of compound granular cells, gitter cells. The changes in the oligodendroglia consist of a generalized hyperplasia and mild hypertrophy. Astrocytes of both types are mainly concerned in the process of repair, while the Hortega cells are essential to the metabolic activity of the brain-tissue and are phagocytic in character.

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