

*Experimental Researches on the Anatomy and Physiology of the Optic Thalamus* [*Experimentelle Untersuchungen über die Anatomie und Physiologie des Sehügels.*] (*Monats. f. Psychiat. u. Neur., B. vii, H. 5, 1900.*) Probst, M.

Dr. Probst, in this paper, gives the results of lesions of the anterior part of the thalamus. He has already given his results of lesions of the posterior part. The part of the thalamus required was destroyed by a specially constructed instrument, and in such a way that the brain cortex and the neighbouring structures were not injured with the exception of a small part of the corpus callosum. Dogs and cats were both used, and a great number were operated on to check the results. The brains were subsequently examined to see the course of the fibres and the extent of the lesion. Marchi's was the main method used, and careful serial sections were made. The median and the anterior nuclei and the neighbouring cells of the ventral and antero-lateral nuclei were destroyed, together with the bundle of Vicq d'Azyr and the stria medullaris thalami. An animal so injured immediately drew its head strongly to the injured side and also to some extent backwards. It then carried out circular movements towards the injured side for about ten minutes. These same movements were then carried out for a similar length of time towards the opposite side and then they returned to the original direction, which they maintained till they ceased. In progression, it lifted its front legs much higher than usual, as if to get over some obstacle. The neck and rump muscles of the injured side were strongly contracted, so that there was a consequent bending of the whole body. No paralysis was present. The pupils were unaffected. The animal was very restless. No spasms or signs of mental depression supervened. No loss of sensibility arose; indeed, the animal seemed slightly hyperæsthetic. These results all gradually disappeared. In other animals, different pieces of cortex cerebri were removed and the brains examined subsequently microscopically by means of Marchi's method.

The following anatomical points were made out by these different experiments. Fibres run from different cortical regions to particular regions of the thalamus, and *vice versa* from particular regions of the thalamus to particular parts of the cortex, so that certain definite cortical regions and definite parts of the thalamus functionate together.

The anterior and mesial nuclei of the thalamus send fibres to, and receive fibres from, the anterior and posterior sigmoid gyri and the coronary gyrus.

The caudal part of the thalamus, *i.e.* the pulvinar, the external geniculate body, and the posterior part of the lateral nucleus are associated with Munk's visual sphere. The middle and anterior parts of the lateral nucleus are associated with the parietal lobe. The thalamus sends fibres also to the anterior corpora quadrigemina, to the red nucleus, and to the cells of the reticular formation. No fibres go further. The fillet sends up fibres which end in the ventral nucleus, and convey to it all manner of sensory stimuli. The thalamus also gets fibres from the superior cerebellar peduncles. The optic path is seen to end in the posterior part of the lateral nucleus, the pulvinar,

the external geniculate body, and the anterior corpora quadrigemina. It is then continued by new fibres through the lateral sagittal stratum to the cortical visual centre. The fibres of the olfactory nerve are connected to the ganglion habenulæ through the stria medullaris, and this is connected again with the cortical centre for smell. The auditory fibres are connected with the internal geniculate bodies, and from here an auditory path is continued to the cortex. Based on these anatomical relationships the possible course of impulses is then described, but the particular part played by the thalamus in its dealing with sensory impressions remains in obscurity. Double-sided lesions are then briefly dealt with, but beyond slight variations in the clinical picture they teach us nothing further. W. J. PENFOLD.

*On Varicosity of the Cortical Dendrons [Sur l'état variqueux des dendrites corticales]. (Arch. de Neur., April, 1900.) Soukhanoff.*

Perhaps the most striking characteristic of the protoplasmic processes of the nerve-cell is the presence of the gemmules. A further characteristic, which is the least marked in a healthy adult brain, is the presence of varicosities of these processes. Now between these two elements there is a rough inverse relationship: the larger the number of varicosities on any given dendron, the smaller will be the number of gemmules, and *vice versa*. There are indeed some few cortical neurons, the dendrons of which have a markedly beaded aspect and are entirely devoid of gemmules, and it is probable that these neurons form quite a distinct class of elements in the nervous system.

The beaded appearance of the dendrons is most marked in the brains of new-born animals, in the brains of animals which have undergone degeneration in consequence of experimental interference, and in the brains of the insane.

Among new-born animals this varicose condition is seen at its best in those which at birth are unable to walk (mouse, kitten, jackdaw, etc.), while it is ill-marked in those animals which are able to walk or even run instantly after birth (guinea-pig, chick, etc.).

The author has observed marked swellings on the dendrons in the following pathological conditions:

- (1) Poisoning by arsenic, alcohol, sulphonal, etc.
- (2) Uræmia, cachexia strumipriva, etc.
- (3) Ligation of the carotids and experimental embolism of the cerebral arteries (Monti's experiments).

*En passant*, we observe that the drug which Soukhanoff found to produce this moniliform appearance most rapidly was trional (one and a half to two and a half days).

The assertion is, then, that marked varicosity of the dendrons is found in the brains of ill-developed new-born animals and in brains which have undergone degeneration. From these data the author concludes that varicose or moniliform atrophy is to be looked upon as an expression of the dissolution of the nervous system, the neuron having returned to a condition similar to that of one of its stages of evolution.

Varicosity of the dendrons is, as a rule, a recoverable condition.