

# The blood-brain barrier in infectious diseases - Its permeability to toxins in relation to their electrical charges

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In the pathogenesis of infectious diseases the brain is generally considered to be of outstanding importance. Symptoms characteristic of fevers, such as apathy, insomnia, delirium, raised temperature, vasomotor collapse, and eventually death, are ascribed to disturbances of the brain centres directly caused by bacterial toxins (H. H. Meyer and Gottlieb,<sup>1</sup> Wolff-Eisner<sup>2</sup>). This opinion appeared to be fairly reasonable as long as, according to Ehrlich, chemical affinities alone were supposed to control the relations between toxins and brain. Within the last few years, however, investigators have become aware of the existence of a selective mechanism regulating the exchange of substances between blood and brain.

This mechanism has been described as "barriere hemato-encephalique" or "Bluthirnschranke". We propose to use the English equivalent and therefore shall speak of the blood-brain barrier or B.B.B. From all that is known about this barrier, and especially from our previous work, it has become very doubtful whether this barrier is passed by toxins. The investigation of this problem has been the main object of the researches dealt with in the first part of this paper. It should be emphasised that this problem does not exactly coincide with the question as to whether toxins act on the brain, however closely both questions may be connected with one another.\*

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