

quently (2) that the brain occupied less space. These statements, taken in connection with the studies of Hodge¹⁵, twenty years later, which demonstrated that cell volume and contents diminish after fatigue, bring us nearer a working hypothesis for the action of hypnotics.

The theory of the neuron, as advanced by Rabl-Rückhard¹⁶ in 1890, in a far too brief paper, opened up great possibilities in neurological theory and practice. These, Lépine¹⁷ and Duval¹⁸ embraced apparently independent of each other, and Azoulay¹⁹ added a short contribution. Due honour should be accorded to Ramon y Cajal²⁰, who demonstrated motility in nervous structures, and although Dercum³ traverses some of his conclusions, yet he leaves the matter in a very satisfactory condition. Whatever may be the ultimate fate of this theory, it explains far better than any previous one many physiological phenomena. For him sleep is explained in a very simple manner: "The cortical cells in the motor area have processes extending toward the surface—dendrites—and a protoplasmic process extending downward through the white matter of the brain, the internal capsule, the crus, the pons, the medulla, and into the spinal cord, where it terminates in a brush-like extremity—the end tuft. Here it has a certain relation with the motor cells in the anterior horn of the cord—probably one of contact, though that is not definitely known. If the nerve cells retract this contact is broken; if the abnormal contraction of the nerve-process is relieved for the time being, contact once more takes place." Evidently, if the neurons are functionally active, their dendritic processes must be in contact; without this, consciousness is impossible. When the nerve cells are exhausted by fatigue, there is every reason to believe that their volume shrinks, and it is, therefore, more and more difficult for them to remain in contact. When relaxation comes, the processes retract and unconsciousness, that is sleep, supervenes.

From this hasty sketch of the various theories of the sleep phenomena it seems fair to conclude that from the direct action of substances introduced into the circulation, the neurons retract their processes, and, for a shorter or longer time, sever their relations one with another, and that during this severance consciousness is abolished and sleep supervenes. In starting from this point we should not underestimate the value of the labours of those quoted in this paper, but give them due credit, because it is only through them that we have come to a working theory. The question now arises as to what drugs influence the protoplasm of nerve cells so that this retraction may take place.

As was pointed out by Leech,²¹ the alcoholic radicles (alkyls C_nH_{2n+1}),