

## MEMBRANE POTENTIALS AND COLLOIDAL BEHAVIOR.

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An answer has been given by Hitchcock<sup>1</sup> to a recent criticism by myself<sup>2</sup> of an argument vigorously exploited by Loeb in favor of his theory of colloidal behavior. Hitchcock suggests that this criticism rests upon a misunderstanding, but he admits the validity of my main contentions, and I am happy to note that Loeb has taken heed of them in two recent papers. I have no quarrel with many of the arguments put forward by Loeb, and in the first paragraph of my criticism I paid a tribute to the stimulating and convincing character of his studies. I have no alternative explanation to offer of the facts, though I recognise that alternative explanations of some of them are possible. What I attacked was the continual reiteration of an argument which is incorrect; *viz.*, that "the quantitative agreement between the observed p.d. and the p.d. calculated on the basis of the Donnan theory leaves little doubt that the observed p.d." (and there-with a variety of other colloidal phenomena) "is exclusively determined by the Donnan equilibrium." There may be perfectly good proofs that the Donnan equilibrium is the basis of the whole fabric of colloidal behavior, but this is not one of them. The agreement observed proves nothing but the second law of thermodynamics and is a necessary consequence of any theory which does not offend that law. Naturally, therefore, it can be deduced from the Donnan theory. Surely it is possible and expedient to criticise an argument which is false, without necessarily disagreeing with the theory which it was intended to support and being required to produce an alternative one. If it be not, then indeed my criticism was based on a misunderstanding.

<sup>1</sup> Hitchcock, D. I., *J. Gen. Physiol.*, 1922-23, v, 661.

<sup>2</sup> Hill, A. V., *Proc. Roy. Soc. London, Series A*, 1923, cii, 705.