

almost perfect response to early reflexes, indicates beyond a doubt that the action of the drug is not on the neuro muscular mechanism, nor in the spinal cord reflex pathways, nor in the association centers in the medulla, but rather its action is on the integrative mechanism cephalad to the medulla, which controls the swimming movements. The evidence, then, points to the action of the drug upon the basal ganglia.

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Penetration into valonia of oxidation-reduction indicators; estimation of the reduction-potential of the sap.

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The penetration of 2,6-dibromo phenol indophenol into *Valonia* was observed when the external pH was varied from 5 to 9, and when the internal pH was changed from normal (6.4) to 5.2 and to 9.0. It was found that when the pH of the sap was normal, the penetration of the dye into the sap follows the course of a bimolecular reaction curve, and the amount of dye in the sap at equilibrium is proportional to the amount of undissociated dye in the external solution. When the sap is made more acid than normal, there is more dye present; when the sap is more alkaline there is less dye present. At higher temperature and lower concentrations, the curves follow a course like that for two consecutive unimolecular reactions. 2,6-dibromo phenol indophenol was found in the sap only in a completely reduced form. Its concentration was estimated colorimetrically after it had been reoxidized *in vitro*.

Methylene blue was found to penetrate into the sap in an oxidized form. This dye is a very strong base and is completely dissociated at all pH values used in these experiments. The amount found in the sap did not vary with external nor with internal changes in pH from 5 to 9.

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K-indigo tetrasulphonate was found to penetrate into the sap in a yellow form.

K-indigo disulphonate could not be found in the sap by means of the method used.

The electrode potential or E_h of the protoplasm was tentatively found to be between .21 and .48 subject to certain assumptions. The E_h of the sap was found to be between .12 and .15, subject to certain assumptions. By further calculations, the rH or the logarithm of the reciprocal of the hydrogen pressure of the sap was found to be between 16 and 18; that of the protoplasm was less exactly defined.

In this connection it is interesting to make a comparison with the work of Needham and Needham¹ who found the rH of the cell interior of *Amoeba proteus* to be between 17 and 19 (subject also to certain assumptions). It is quite striking that the rH value for the sap of *Valonia* and that for the cell-interior of *Amoeba proteus* should be so nearly alike since they are such widely separated forms and since the methods of experimentation were so different. It may be that this value, when much more accurate methods of experimentation are used, is the same for all forms of life, or that there is a slightly lower oxidation potential in animals than in plants as seen from Needham's work.

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A method for the experimental production of lung abscess.

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(Introduced by Peyton Rous).

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The study of lung abscess in the laboratory has been handicapped by the difficulty of reproducing such a lesion in the experimental animal. It occurred to us that this might be due to the fact that almost all investigators started with the assumption that lung abscess was caused by the aspiration of infected material,

¹ Needham, J., and Needham, D. M., *Proc. Roy. Soc.*, B, xviii, 259.