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⁴ Adolph, *Am. J. Physiol.*, 1925, lxxiv, 93.

⁵ Blakeman, *Biometrika*, 1906, iv, 332.

⁶ Austin, Stillman, and Van Slyke, *J. Biol. Chem.*, 1921, xli, 91.

⁷ Rabinowitch, *J. Biol. Chem.*, 1925, lxxv, 617.

⁸ Crawford and McKintosh, *Arch. Int. Med.*, 1925, xxxvi, 530.

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Galvanotropism and "Reversal of Inhibition" by Strychnine.

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Definite neuromuscular effects are produced in a variety of organisms by the passage of a constant electric current. The character of the induced galvanotropic curvatures and movements has played a certain part in the development of the tropism doctrine (*cf.* Loeb, 1918), but these reactions still await quantitation, which is difficult, as well as fuller utilization for the analysis of animal movements. The interpretation of galvanotropism in metazoans turns upon the at present necessary and sufficient assumption that the current serves to excite definite groups of nerve cell bodies (presumably as determined by the axial orientation of these cells with respect to the polarity of the current).^{1, 2, 3} The effects are such that among annelids, for example, the animal typically extends and lengthens when the head is toward the cathode, but shortens when the current is in reverse direction. These effects are in certain respects similar to those produced by neurophil drugs. Strychnine, for example, induces a similar and comparable elongation, whereas nicotine leads to shortening. It was considered that if the effects of such alkaloids are indeed due to selective or differential unions with particular groups of nervous elements, the result of combining the action of a substance of this type with that of the electric current should be merely an accentuation of the primary action, since the response induced involves activity of the same nerve muscle groups. In certain cases this turns out to be true.

The effect of strychnine is of especial interest. In the spinal cord of vertebrates it is usually supposed that the strychnine effect is due to abolition of the inhibitory component of normal coördination, so that the inhibitory effect is transposed into an excitatory one.

The cathodically galvanotropic orientation of nemerteans, *Lineus*, and the anodic orientation of the geophyrea *Echiurus*, are reversed by the action of strychnine under conditions such that the typical "reversal of inhibition," or reversal of reaction to tactile excitation, induced by this substance is apparent. Nicotine does not give this result. Since it is necessary to assume that the strychnine effect is due to action upon the central ganglia, and since the galvanotropic effect is supposed to depend upon action of the current on nerve cell bodies of the central ganglia, it must be assumed that the locus of reversal by strychnine is not perikaryial, but presumably synaptic.

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An Experimental Study of Mauthner's Cell in Amblystoma.*

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Anatomical descriptions of the connections of the two giant Mauthner neurones in the central nervous system of teleost fishes^{1, 2} and amphibia³ have strongly suggested a functional rôle in the equilibration of the organism during the performance of rapid and intricate movements.

The two perikarya lie in the medulla, at the level of entrance of the acoustic nerve roots. The axones decussate in the ventral commissure and course caudally through the spinal cord where synaptic connections are made with the motor horn cells. In addition to establishing a direct connection with the VIII root fibers, many additional dendritic connections have been described.^{2, 3}

The nature of the synapse of this cell has been investigated by Bartelmez² and by Marui.⁴ The latter author has also described certain effects of over-activity upon the morphological structure of the synapse.⁵

The developmental specificity of this cell became apparent during experiments in which the cephalic end of the spinal cord was replaced by an extraneous medulla. In some animals with two medullas in series, four Mauthner's cells with axones coursing through the cord have been noted.^{6, 7}

The experiments briefly reported here deal with the elimination

* The effects of embryonic ear extirpations upon development of Mauthner's cell in Amblystoma have been studied by Doctor W. F. Greene in the Yale Zoölogical Laboratory. His results have not yet been published.