ectomized animals was largely due to pauses made by the cretin in choosing which way to turn after leaving the starting box. The experiments with the short maze have, thus far, verified the hypothesis previously advanced, viz.: that the greater time required by the cretin to escape from the maze is due to the lethargic functioning of the neural mechanism involved in avoiding the cul de sac when its position is changed at every trial. The expenses of this investigation were in part defrayed by a grant from the Heckscher Research Foundation.

ABSTRACT OF COMMUNICATIONS.

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62 (2294)

Threshold densities of the electric current for inhibition and orientation of growth in Obelia.

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If an electric current of proper density is passed lengthwise through an internode cut from the stem of the common hydroid *Obelia,* then the polyp on the end turned toward the cathode can be prevented from growing while a normal polyp will grow on the end turned toward the anode. The inhibition toward the cathode is reversible. The threshold density of electric current in the sea water for reversible inhibition on apical internodes is close to 66 microamperes per square millimeter of cross section. If an electric current of proper density is similarly passed through the internode at right angles to its long axis, then normal growth of a polyp occurs at each end, but the axis of symmetry in the regenerating tissue is deflected toward the anode. The magnitude of the angle of deflection depends in a certain definite quantitative manner upon the density of the electric current. The threshold density of the electric current in the sea water for a barely perceptible deflection of the growth

axis is between 6 and 13 microamperes per square millimeter of cross section.

Intensities slightly above the threshold for orientation exert no apparent effects, other than orientation, upon the growth process.

The occurrence of a definite type of quite constant bioelectric potentials in the stem of *Obelia* has already been demonstrated.[1] Recently it has become possible to measure these electrical potentials of internal origin. The results show that the magnitude of these inherent potentials is many times greater than would be required for the orientation effects in the growth process and consequently demonstrate the possibility that the living cells of the tissue possess a mechanism which might be brought into action in the rôle of a mechanism for cell correlation in growing tissues. The detailed experimental facts at the basis of the above suggestion will be presented in full elsewhere.

63 (2295)

Electrodes for the measurement of small bioelectric potentials.

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In connection with studies on certain types of small constant bioelectric potentials (about 0.5 millevolt) it has been impossible to use any of the electrodes in common use in physiological work.

The common Zn-$ZnSO_4$ non-polarizable type cannot be duplicated and marked variation in the E. M. F. with time occurs also. It was found that the E. M. F. of the more stable calomel electrode was susceptible to light and could not under the working conditions be maintained within a variation of 0.2 millevolt.

Cadmium amalgam $CaSO_4$ electrodes (saturated type of half Weston element) have not yielded the expected constancy under working conditions. The most stable electrode which has been

[1] Lund, E. J., *J. Exp. Zool.*, 1922, xxxvi, 477.