ual tapering off of oxygen consumption.

In the incomplete hydranths of the 1/2 and 3/4 stages, there was a significantly lower oxygen uptake (45 - 60% LESS). This was probably due to the relatively smaller amount of tissue in the developing hydranths as compared to the complete hydranth. No detectable oxygen uptake was observed in the terminal stages of regression. It appears that the aging complete hydranths of positions 1, 2, 3 and 4 continue all their normal feeding activities until the climactic onset of regression. The rate of aerobic respiration changes only after the onset of senility with its dramatic lysis of the hydranth.

1964 #21

In Vivo AND In Vitro STUDIES OF POTENTIAL DIFFERENCE OF THE VENTRICULAR FLUID OF ELASMOBRANCHII

C. S. Patlak, R. H. Adamson, W. W. Oppelt, and D. P. Rall, NIH, Bethesda, Md., and University of Florida, Gainesville, Fla.

An in vitro chamber system (Patlak, Fed. Proc., 1964, 23, 211) has been utilized to explore the fourth ventricle choroid plexus (CP) of the dogfish S. acanthias. The electrical potential difference (pd) in vitro was 2-4 mV, with ventricular fluid (VF) always positive in approximately 80 experiments. However, pd in in vivo experiments with dogfish (also lemon sharks, N. brevirostris and nurse sharks, G. cirratum) was 15-20 mV, VF negative (in agreement with results of Hogben, et al. (Am. J. Physiol., 1960, 199, 124). In vitro experiments with unmounted exposed fourth ventricle gave a VF pd that was negative with the electrode next to the brain (-5 mV) but positive with the electrode next to the CP (+2 mV).

Experiments utilizing the Ussing chamber with addition of 10^{-4} M ouabain to both sides or VF side caused a steady decrease so that the pd was less than 0.5 mV after 30 minutes. In contrast addition of ouabain to the extradural fluid side resulted in little or no change of the pd. Perfusion of ouabain (in from lateral ventricle to fourth ventricle) in an in vivo setup resulted in no change of the VF pd. Preliminary experiments changing pH in vitro resulting in little or no change of the VF pd whereas in vivo pH changes (acidosis 6.95) lowered the VF pd but the pd still remained negative. These experiments are not inconsistent with the hypothesis that the in vivo pd may arise predominantly from neural tissue.

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DURATION OF STIMULUS AND LATENT PERIODS PRECEDING CLEAVAGE IN SAND DOLLAR EGGS

R. Rappaport, Union College, Schenectady, N. Y.

It now appears that the mitotic apparatus releases a stimulus that alters the surface so that it produces a furrow. After stimulation, the mitotic apparatus may be removed without affecting cytokinesis. To further characterize the cleavage stimulus I tried to measure the total time required for stimulus and response together and the time required for stimulus and response sepa-