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THE EFFECTS OF METABOLIC INHIBITORS ON THE REGRESSION-REPLACEMENT  
CYCLE OF Campanularia flexuosa

E. E. Palinscar, Loyola University, Chicago, Ill.

The effects of certain metabolic poisons on the regression-replacement cycle of Campanularia were examined to gain some insight into the dynamics of the cyclic transformations. Campanularia were cultured (using Crowell's method) in aerated sea water containing chemicals at various concentrations. Temperature was constant and observations were recorded up to 15 days. Dinitrophenol, iodoacetic acid, sodium fluoride, colchicine, sodium bromide, and sodium iodide, in concentrations ranging from  $10^{-5}$  M to  $10^{-4}$  M were added to the sea water in which the cultures were grown. With dinitrophenol, an effect was noted after 9 days wherein the complete hydranths with a prolonged phase passed into the senile phase of the regression cycle. With iodoacetic acid, the complete hydranths regressed to the senile stage after two days. It appeared that regression was delayed in sodium fluoride and sodium bromide and that gonophore production was higher than for the controls. Sodium iodide showed growth stimulation up to the fifth day but gonophore production appeared to be retarded. By the eighth day the colony did not recover from the regression phase. Colchicine increased the growth rate for 5 days and then the growth rate returned to normal. The halogen salts had a stimulating effect on growth rate. Complete forms lasted 1-2 days longer than normal and their number was 3 times greater than controls. The number of gonophores increased threefold in five days. There was also a tendency toward the production of free stolons using sodium fluoride. In all cases the chemicals had their greatest effects on the complete hydranth. The ability of sodium fluoride to increase the production of gonophores is being further investigated.

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RESPIRATION IN FISH WITH SPECIAL ATTENTION TO ARTIFICIAL PERFUSION  
OF GILLS

E. C. Peirce II, and R. A. Dabbs, University of Tennessee, Memphis, Tenn.

It was hoped that by using an artificial heart-lung for the perfusion of fish gills that some notion of maximum gas exchange possible in these structures might be obtained. This was the first year that we had worked in the Laboratory and many minor technical problems prevented our getting very far into the project.

The following were accomplished:

1. The dogfish was chosen as the experimental animal and the circulatory anatomy was reviewed and vinal injection preparations made through both the dorsal and ventral aortae. These injection preparations were studied in conjunction with sections provided by Dr. Sheldon made by conventional histologic techniques.
2. Using various concentrations of  $O_2$ - $CO_2$ , charts were constructed showing the variations