THE EFFECTS OF CHANGES OF REDOX POTENTIAL ON THE GROWTH OF MARINE EGGS, PARACENTROTUS LIVIDUS

Matilda M Brooks

THE EFFECTS OF CHANGES OF REDOX POTENTIAL ON THE GROWTH OF MARINE EGGS, *PARACENTROTUS LIVIDUS*

Matilda M. Brooks

This is a preliminary report of the experiments on *Paracentrotus lividus* which were done at Banyuls-sur-mer. They are a continuation of those done elsewhere, on the effects of various changes in the oxidation reduction potential on the growth and development of embryos of *Paracentrotus lividus.*

Larvæ at different stages of development to the gastrula stage were placed in solutions of sea water containing one of the indicators of the redox scale of the Clark series as follows :

1. 2-6 dibrom phenol indophenol;
2. Guaiacol indophenol;
3. Methylene blue;
4. Indigo monosulphonate;
5. Janus green.

The concentrations used varied from .005 % to .000002 % depending on toxicity. The time in the solutions varied from 10 minutes to 4 days before being transferred to sea water.

In the experiments at Naples the eggs were pretreated before being subjected to experimental proceedure with such reagents as SCN^- or I^- or Ca free sea water. In the experiments at Banyuls no pretreatment was used.

The conclusions in general seemed to show that continuous immersion in the experimental solution containing the more negative dyes (numbers 3, 4, 5) development was stopped at the blastula stage. If returned to sea water after a certain time plutie form in the case of 1 and 2.

Numbers 3 and 4 produce a solid mass of mesoderm (?) at the vegetal end, whereas number 1 forms an over-developed apical end.

No spines are formed in the more negative solutions.

These results are a confirmation of the theory stated elsewhere that the oxidation-reduction potential is the controlling factor in over-developing either the apical or the vegetal end of various marine eggs.

From the Marine Laboratory, Banyuls-sur-Mer, and the Department of Physiology of the University of California, Berkeley, California.