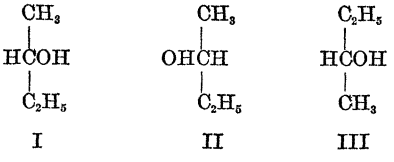
SPECIAL ARTICLES

THE CONFIGURATIONAL RELATIONSHIP OF DEXTRO-METHYLETHYL CARBINOL TO DEXTRO-LACTIC ACID[1]

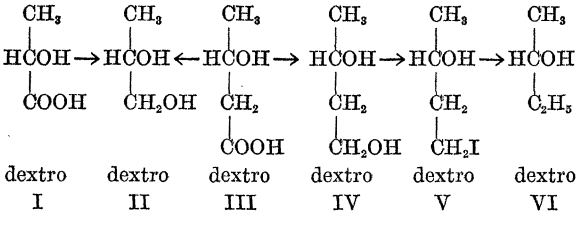
THE configurations of aliphatic substances containing in their molecules several secondary alcoholic groups, or one or more secondary alcoholic groups in addition to a polar radicle as $-COOH$, $-CHO$, or $=C=O$, have been correlated to a single reference substance: lactic acid. Nothing is known, however, regarding the stereochemical relationships of simple secondary alcohols to the same substance of reference, nor is there any definite knowledge as to the stereochemical relationships of individual secondary alcohols among themselves. The case of secondary alcohols is complicated by the following fact. The first member of the series is



I II III

methylethyl carbinol (I). Its enantiomorph (II) may be represented also as ethylmethyl carbinol (III). A question has been raised as to whether or not the higher homologues of the "methyl" and "ethyl" series should rotate in opposite directions as their first members do.

Dextro-methylethyl carbinol and dextro-lactic acid have now been correlated by the following set of reactions:



dextro I, dextro II, dextro III, dextro IV, dextro V, dextro VI

The reactions leading to the correlations of (I) to (IV) were described in previous communications by Levene and Haller and Levene and Walti. Thus dextro-methylethyl carbinol belongs to the *l* series of hydroxyacids, inasmuch as dextro lactic acid belongs to the *l* series.

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ELECTRICAL ACTIVATION OF THE NEREIS EGG

UNFERTILIZED starfish eggs will develop to larval stages after the passage of strong constant currents, but the effect is mainly due to the heat which accompanies the high current densities employed.[1] There is, however, a partial activation by strong currents at temperatures below those which cause heat-activation.

Experiments on the electrical activation of the eggs of *Nereis limbata* were made during the summers of 1925 and 1926 at the Marine Biological Laboratory. Fifty-three experiments, involving 839 dishes of eggs, form the basis of this report.

The same apparatus was used as in the experiments with the starfish eggs. A diagrammatic cross-section of the electrode system is shown in the figure. The bridges, which consisted of agar jelly of about 4 per cent. concentration, were constructed from agar agar which was allowed to solidify after having been liquefied by heat in fresh sea water.

These bridges, having low resistance, conduct currents of high density without becoming unduly heated, and form a type of non-polarizable electrodes having wide application in experiments where it is desired to pass the electric current through cells or tissues immersed in salt solutions.

The electrical circuit consisted of two slide wire rheostats connected in series with the 120-volt direct current supply of the laboratory. A secondary circuit was obtained by taking leads from these rheostats which served as a potential divider; a reversing switch, a milliammeter and the electrode system were connected in series with this second circuit.

The physical conditions were so adjusted that the desired current density was obtained. A female Nereis was then placed in the layer of sea water between the two bridges of agar, and the electrical circuit was closed. As a result of the enforced muscular contraction, the eggs were almost instantaneously ejected through a rupture in the body wall. At known intervals during the flow of the current (every five or ten seconds in the case of currents of high density) several hundred eggs were transferred with a pipette to a Syracuse watch-glass containing fresh sea water. These watch-glasses were then covered and set aside.

The percentages of eggs forming jelly and fertilization membranes and the percentages developing to an actively motile larval stage after about twenty hours were determined. Current densities of from 61 to 606 milliamperes per square centimeter of sectional area

[1] Lillie, R. S., and W. Cattell, *Biol. Bull.*, 1925, Vol. XLIX, No. 2, p. 100.