It is significant that oxidation in the animal organism is accelerated by the presence of an agent which is an active hydrogen acceptor, and the degree of stimulation is dependent on the oxidizing potential of this hydrogen acceptor.

The function of thyroxin is to furnish a compound that can be acted on by mild oxidizing agents, among which is molecular oxygen, and which can then by an intramolecular re-arrangement produce an intensely oxidizing substance.

This same mechanism of increasing the intensity of oxidation is evidently a reaction which is used by other catalytic agents in the body, bringing about an increased rate of combustion.

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The mechanism and significance of the fragility test.

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If erythrocytes are treated with a solution of castor oil soap of such concentration that the liberation of hemoglobin is complete in about ten hours, there is a period of several hours before any hemolysis takes place. Fragility tests during this period show that there is a decreased fragility of these cells to hypotonic salt solution.[1] As these cells differ from normal cells in that they are being subjected to an accelerated hemolysis, the decreased fragility indicates an injury to the cell.

It has been well established that upon injury or death, there is an exosmosis of salts from cells. The work of G. N. Stewart[2] has shown that blood cells may lose salts by exosmosis without the liberation of hemoglobin. It would appear then that when blood cells are immersed in a hypotonic salt solution, not only does water pass into the cells, but salts also pass out. The most dilute salt solution in which blood cells will not hemolyze, represents a situation in which enough salts can pass out of the cell,

[1] Green and Evans, PROC. SOC. EXP. BIOL. AND MED., 1923, xv, 290-291.

[2] Stewart, G. N., *J. Pharmacol. and Exp. Therap.*, 1910, i, 49.

and bring about osmotic equilibrium, before sufficient water can pass in to liberate the hemoglobin. This is indicated by the following: Normal red blood cells transferred successively to solutions of lower salt concentration may be finally introduced into a 0.3 per cent NaCl solution without liberation of hemoglobin.

A decreased fragility of erythrocytes, then, represents not a greater strength but an inability to maintain an osmotic difference from the surrounding solution because of greater permeability of the cell wall to the contained salts. That soap-treated cells have an increased permeability coördinated with a decreased fragility, is shown by successive transfer to more dilute salt solutions, when the cells will not liberate hemoglobin in 0.15 NaCl solution. Electrical resistance measurements of cells treated with castor oil soap, measurements made with H. O. Halvorson, and the specific resistances calculated with MacDougall's formula for disperse systems,[3] have given values about half as great as those found by MacDougall and Green[4] for normal cells (2000 ohms). This is another indication of the increased permeability of cells exhibiting decreased fragility.

The above mechanism of the fragility test based on experimental results allows a satisfactory explanation of the decreased fragility in hypotonic salt solution found typically in the case of pernicious anemia. The blood cells in pernicious anemia are injured cells and are being subjected to an accelerated hemolysis.

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The fragility of human erythrocytes after treatment with pernicious anemia serums.

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It has been previously reported from these laboratories[1] that the resistance of normal cells to hemolysis by hypotonic saline solution is greatly increased by treating the normal cells with

[3] MacDougall, F. H., *Science*, 1924, lix, 403.

[4] MacDougall and Green, *J. Infect. Dis.*, in press.

[1] Green, PROC. SOC. EXP. BIOL. AND MED., 1923, xv, 291-292.