A NEW TYPE OF CATALYSIS. THE ACCELERATION BY CHROMIC ACID OF THE REACTION BETWEEN BROMIC AND HYDRIODIC ACIDS

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The catalytic action of chromic acid on the rate of oxidation of hydrogen iodide by bromic acid was discovered by Ostwald in the course of his "Studien zur chemischen Dynamik;"[1] and when my own work had cleared up the kinetics of the reaction in question,[2] I entered on a detailed investigation of this case of catalysis, which has yielded some very remarkable results.

The method of carrying out the measurements, the stock solutions, and the units employed in recording the results, are all as described in my previous paper, with the addition of a solution of potassium bichromate, 0.1667-F, and another 0.001251-F, which were standardized against the acid by means of a solution of caustic potash and phenolphthalein. In the tables the number of cubic centimeters of 0.00125-F bichromate[3] is given under *Cr*.

As in the reaction between bromic and hydriodic acids, the presence of air had no material effect on the results of the measurements; and small quantities of iodine, such as are liberated during the reaction, exerted little or no effect on the rates.

Effect of the Bichromate on the Rate

The fact that the increased liberation of iodine in presence of chromic acid is not accompanied by a proportional reduction of the latter was observed by Ostwald, who found also that the increase in rate is proportional to the concentration of the chromic acid. Both these conclusions are supported by the measurements of Table I. In the first place, the

[1] Zeit. phys. Chem., **2**, 138 (1888).

[2] Jour. Phys. Chem., **10**, 679 (1906).

[3] 0.00125 gram-formula-weights $K_2Cr_2O_7$ per liter.