The increase of K with x observable in many of the experiments (*2c, 2d, 3b, 3c, 3d, 4b, 4c*) is just what would happen if K were calculated by Eq. II. from the data afforded by a reaction which in reality proceeded according to Eq. I.; the same can be said of the decrease of K when B is increased (*2a, 2b, 2c, 2d; 3d, 4c; 3b, 4a*). Finally the retardation caused by free iodine accumulated in the solution shows itself in some cases by a regular diminution of K from the beginning of the experiment until iodine was precipitated; one would expect this effect to be most marked when the concentration of the potassium iodide was low (cf. *2a* with *2d*).

Temperature coefficient

If B = C, then K of Eq. II calculated from the initial rate ($x = 0$) is equal to $k_a + k_b$. For Expt. 5 then, K = 0.00000146 at 30° C. The experiment of Schlundt's where the ratios between the initial concentrations are most like those of Expt. 5, is Expt. *4c* with $K(x = 0) = 0.0011$ at 100° C. Adopting the usual logarithmic formula, this corresponds to doubling the rate every 8.6 degrees.

In conclusion, I wish to express my thanks to Prof. W. Lash Miller, at whose suggestion this research was undertaken, and under whose direction it has been carried out.

University of Toronto,
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TABLE OF CONTENTS