

**SERIES V. HYDRIODIC AND IODIC ACIDS, IODINE (TRI-IODION)
PRESENT IN EXCESS**

Tables 39 to 41 give the results of measurements with the solutions of hydriodic and iodic acids to which an excess of iodine was added in the form of hydrogen tri-iodide (HI_3). As the results of this series are in full agreement with those of Series III, I shall merely add the following table (38) to show that the effect of tri-iodion on the rate between the pure acids is governed by the same laws as its effect when in presence of neutral salts (sodium acetate and potassium salts in Series III). The meanings of the symbols are the same as in the tables of Series III. In order to facilitate comparison of Series V with Series IV, I have recalculated the corresponding values of k_1 in the former series for the same concentration of iodion as in Tables 39 to 41 (assuming that the rate is proportional to the square of the concentration of the iodion). These numbers are entered under k_1 .

TABLE 38

No.	$\text{IO}^3 \times 10^6$	$\text{I} \times 10^6$	$\text{H} \times 10^6$	$\text{I}_2 \times 10^6$
39	5	356	569	208
40	10	356	574	208
41	5	712	1133	416

No.	$k_1' \times 10^4$	$k_1 \times 10^3$	$(k_1' - k_1) \times 10^3$	S
39	67.0	25.0	42.0	1.7
40	59.5	25.3	34.2	1.4
41	882.0	443.0	439.0	1.2

Av. 1.4

The constancy of the quotient,

$$S = \frac{(k_1' - k_1) \times 10^{-12}}{(\text{I}_2) \times (\text{H})^2 \times (\text{I})} \dots\dots\dots (\text{H})$$

shows that the rate, in the presence of an excess of iodine, is proportional to the square of the concentration of the hydron, to the first power of that of the iodion and to the first power of that of the tri-iodion.