changed by the addition of potassium iodide. In the absence of potassium iodide the rate is proportional to the square of the concentration of the ferrous salt, in its presence to the first power; in the absence of potassium iodide, to the second power of the concentration of the acid, in its presence, to the third or fourth power; in the absence of potassium iodide to the 1.4th or 1.8th power of the concentration of the bichromate, in its presence to the first power, while the effect of continuously increasing the concentration of the iodide is first to lower, then to increase the rate at which the ferrous sulphate was oxidized.

The case therefore comes under Class iii of page 15; and *it is quite impossible to assume*, with Manchot, and with Luther and Schilow, *that the reaction between ferrous sulphate and chromic acid in the presence of potassium iodide is essentially the same as in its absence.*

Chromic Acid, Arsenious Acid, Potassium Iodide. Type of Class ii

This reaction is not included in Luther and Schilow's tables, and is not mentioned by Manchot; the kineti vestigation, which has been carried out by Mr. R. E. e Lury,[1] establishes it as the type of Class ii.

Whether potassium iodide be present or not, the rate at which arsenious acid is oxidized by chromic acid is proportional to the concentrations of the arsenious acid and bichromate, and to the 1.4th power of that of the acid. When potassium iodide is added, iodine is set free; and as the concentration of the iodide is increased the rate of liberation of iodide increases and the rate of oxidation of arsenious acid decreases, until the latter falls to one-third the rate in the absence of iodide. When this point has been reached, two equivalents of iodine are liberated for each equivalent of arsenious acid oxidized, and further increase in the concentration of the iodide has no effect on the rates. Throughout, the rate at which the chromic acid is reduced by the mixture

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[1] Trans. Roy. Soc., Canada, May, 1905.