

Series D.—The concentration of the potassium iodide much less than those of the other reagents.

Series E.—The concentration of the acid much less than those of the other reagents.

Series F.—The chlorate and iodide present in comparable amounts, the acid in excess.

Series G.—The influence of the concentration of the chlorination on the rate. Experiments with sodium chloride.

Series H.—The influence of the concentration of the hydrogen-ion on the rate. Experiments with sulphuric acid.

Series J.—The influence of the concentration of the potassium iodide on the rate.

Method of operation

Evaporation of iodine.—Even comparative dilute solutions of iodine lose strength rapidly when exposed to the air at 30°C; for instance 200 cc of a $N/1000$ solution in a 300 cc beaker lost 5 percent of its iodine in ten minutes. The reacting mixture was consequently kept in small glass-stoppered bottles, and measurements were interrupted when the bottle was half empty. Even under these circumstances the last of a series of titrations is slightly affected by error due to loss of iodine.

Oxidation of hydriodic acid by air.—In order to avoid error from this source, all water used was boiled, cooled in a vacuum, kept under carbon dioxide, and delivered through a siphon. The pipettes, and the bottles in which the experiments were carried out were filled with carbon dioxide before using, and whenever the stopper was taken out of the bottle (to remove a portion for analysis) a slow current of carbon dioxide was passed in. The solutions used in making up the reacting mixtures were also freed from air, except in Series G and J, where the total duration of an experiment seldom exceeded ten minutes, and where the concentration of the potassium iodide was almost always small. In Series E, where the experiments extended over a period of several days, the reacting mixture was divided