

From these values it will be seen that the conductivity of a silver nitrate solution steadily increased with the concentration.

Summary.—1. Tables I-III shew that as a $\frac{N}{10000}$ solution of HCl was added to water there was, at first, very little change in the conductivity of the solution, but as the HCl solution became more concentrated the conductivity gradually increased.

2. Tables IV-IX shew that on the addition of HCl to AgNO_3 of various dilutions a drop in the conductivity was observed. When, however, a 39.5×10^{-7} normal silver nitrate solution was reached this effect disappeared.

3. A similar drop in the conductivity was observed when a dilute nitric acid solution was added to a dilute silver chloride solution. Also, when a dilute silver nitric solution was added to a dilute solution of hydrochloric acid.

4. In the case of the silver nitrate solution (Experiment VII) the conductivity steadily increased with the concentration.

Explanation.—Two explanations may be given of the above phenomenon (1) The fact that, in Experiment III, the conductivity remains steady at first, may be due to the absorption of hydrogen by the platinum electrodes, and (2) The drop in conductivity indicated in Experiments IV, V, VI may be due to the hydrogen ion attracting to itself the neutral AgCl , and becoming loaded. Its mobility might, thereby, be decreased so as to have a value below that of the silver ion which it displaced.

Up to the present the results obtained are not sufficient to discriminate between these two explanations, and it is hoped that with additional observations the problem raised may be cleared up. In conclusion I wish to thank Mr. E. F. Burton for his kind assistance in the course of these experiments.