it is due to some cause connected with the nature of the salts, cannot here be determined.

It has not been possible to calculate the solubility of the other salts studied, since data on their dissociation relations are not at hand. It is intended to provide the measurements for these calculations at a later date, and to continue the study of the solubility of other salts in concentrated acids, with the hope of gaining further information on the extent to which the dissociation of these compounds, as calculated by the laws of dilute solution, is affected by the presence of other electrolytes.

The results of this investigation may be summarized as follows:

(1) The solubilities of silver acetate, chloracetate, oxalate, iodate and sulphate, and of thallous chloride, have been determined in solutions of nitric acid of high concentration.

(2) A mathematical solution of the known laws bearing on solubility relations has been proposed.

(3) Comparison of experimental and calculated results has shown that the laws of dilute solutions hold for extremely concentrated solutions of a salt of a weak acid in a strong acid, while the solubility of a salt of a strong acid has been shown to be greatly depressed under the same conditions by some factor presumably connected with the neutral salt effect, but not yet capable of quantitative expression.

It is a pleasure to express our indebtedness to Professor Arthur B. Lamb, of this department, for much helpful advice in the prosecution of this work, and to Professor T. W. Edmondson, of the Department of Mathematics, for kind assistance in the mathematical part of this work.

NEW YORK UNIVERSITY.

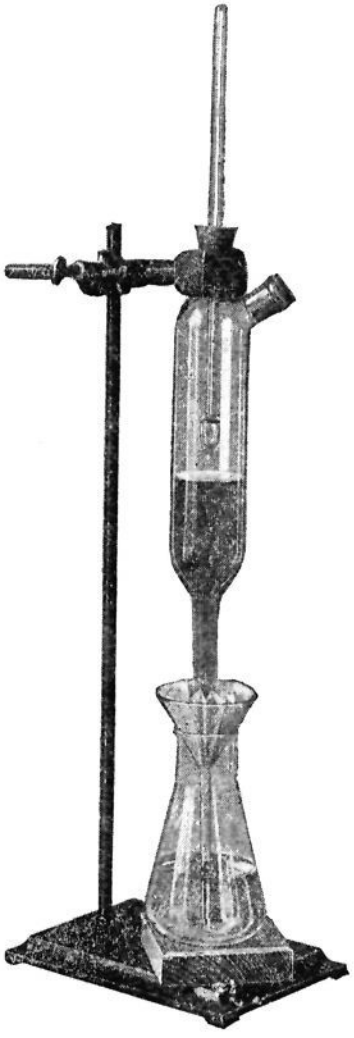
NOTE.

Constant-level Reservoir.—The writer has had trouble heretofore with liquids that would filter only with the greatest difficulty. The filter pump could not always be used to advantage on account of clogging, which necessitated the removal of the filtering medium and replacing it with another.

What seemed to be wanted was an apparatus that would supply to the funnel new liquid as fast as the filtration took place. The filter pump could then be used to an advantage or a funnel with its filter paper. With this object in view the writer proceeded to design an apparatus.

The illustration, which is almost self-explanatory, shows the survival of the fittest. It works the same as inverting a flask containing the liquid to be filtered over a funnel with its filter paper, having the opening of the flask a little below the edge of the paper.

When wanted for use the apparatus is set up as illustrated, with the lower opening about three-sixteenths of an inch below the edge of the paper. The glass rod, which passes through the perforated stopper at the top and terminates in a glass stopper at its lower extremity, is pushed down until it closes the apparatus. The rubber stopper is then removed from the side opening and the liquid to be filtered is poured in. The glass rod is then gently raised till enough liquid has entered the funnel to close the lower opening. At this point the stopper is replaced in the side opening and the glass rod raised an inch or two. The level of the liquid in the funnel starts to recede at once, exposing the lower opening, allowing air to enter at this point, with the consequent replenishing of the liquid to the funnel. After a filtration is made the precipitate may be washed by filling the apparatus with distilled water.



This reservoir has been in use for almost a year and has proved entirely satisfactory for a variety of work. The one in use has a capacity of 300 cc. It filters one-third faster than is possible by filling the funnel intermittently.

It frequently happens that there is not time enough to complete a filtration late in the afternoon and consequently a precipitation is not made, or if it is made it is allowed to stand over night. By placing the liquid in the apparatus and starting it before leaving the laboratory the chemist will find it filtered the next morning.

It is possible to filter and wash a precipitate by the use of two reservoirs placed side by side, the second one to be filled with distilled water and with the lower opening a little below the one which contains the precipitate. The one containing the water will remain inactive until the other is empty. The apparatus has also been used to keep a constant level in an evaporating dish while evaporating large quantities of solution, also to keep a constant level in a water bath. It also answers the purpose of a separatory funnel.

There is no difficulty in cleaning the reservoir as all of the openings are large.

The apparatus may be procured from the laboratory of The J. T. Baker Chem. Co., Phillipsburg, N. J.

W. P. FITZGERALD.
EASTON, PA.