

**A Pipet for Micro-Analyses.**—The accurate delivery of small amounts of fluid is essential for micro-analyses. Folin<sup>1</sup> has stated that the Ostwald pipet is accurate to the order of 0.1%. Van Slyke and Neill<sup>2</sup> have improved this. They calibrate between marks and place a stopcock under the bottom mark. Their pipet is excellent for introducing fluids into the Van Slyke gas apparatus but is not equally practicable for other uses. Unless the end is washed a variable and unknown amount of fluid clings to the tip.

The pipet which we use is a modification of Van Slyke's, with a glass Luer adapter sealed to the bottom end. This ground end fits snugly into a hypodermic needle B of small gage, 18-23, which is cut off horizontally and ground on a stone. Trevan and Bainbridge<sup>3</sup> have shown that drops of the order of 0.00015 cc. can be removed from such a needle tip. For corrosive liquids a platinum needle may be used.

A test of the amount delivered indicated a surprising degree of accuracy. One worker obtained for a given pipet the following weights of water: 0.9982, 0.9981 and 0.9980 g. A second investigator weighed the water delivered from the same pipet as 0.9982 and 0.9983 g.

CONTRIBUTION FROM THE  
LABORATORY OF  
PHYSIOLOGICAL CHEMISTRY  
YALE UNIVERSITY  
NEW HAVEN, CONNECTICUT  
RECEIVED NOVEMBER 12, 1927  
PUBLISHED FEBRUARY 4, 1928

ALFRED T. SHOHL



A, ground glass Luer adapter which fits into B; B, a hypodermic needle. Drawing is actual size.

Fig. 1.

**Apparatus for Micro-Filtration.**—The centrifuge tube technique for the separation and washing of precipitates has been very useful for micro-analyses. In the course of development of a method for potassium, however, a small amount of material was lost when the supernatant fluid was poured off. To overcome this difficulty the following form of apparatus was devised (Fig. 1).

The principle is that of a Caldwell crucible. The filter is made by mounting a one inch funnel in a Witt filtering apparatus (this is essentially a suction flask with a ground glass removable top so that the filtrate may be recovered in a small inner container. If the precipitate only is to be saved, an ordinary suction flask is satisfactory). Into the

<sup>1</sup> Folin, *J. Biol. Chem.*, **21**, 198 (1915).

<sup>2</sup> Van Slyke and Neill, *ibid.*, **61**, 532 (1924).

<sup>3</sup> Trevan and Bainbridge, *Biochem. J.*, **20**, 423 (1926).