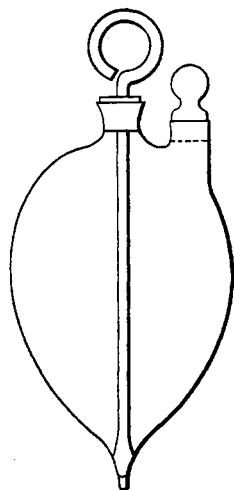


into which a glass rod is ground so as to make a tight joint. The rod runs through a perforated stopper in the central opening at the top in order that it may be kept in proper position. The second opening at the top is used when it is necessary to fill the bottle.

The apparatus may be supported by a small light tripod upon the pan of the balance, or it may be provided with two small hooks of brass wire fastened to a collar of the same metal which encircles the upper central tubulus. By means of these hooks the bottle is easily and quickly suspended from the bows supporting the balance pans.



I make use of a common pulp scale with four inch pans, and after counterpoising the filled bottle by means of brass cup weights supplemented by fine shot, perform the titration, and upon its completion determine the amount of liquid used by adding weights to that side of the balance from which the bottle is suspended. This necessitates but one calculation. The bottle

may be used for solution of potassium permanganate or silver nitrate or in fact any solution which is generally employed in a burette furnished with a glass stop-cock.

It is very readily taken apart, cleaned and dried.

NEWARK, N. J.

ON THE ESTIMATION OF POTASSIUM IODIDE AND SODIUM ACETATE IN THE PRESENCE OF COMPLEX ORGANIC MIXTURES.¹

BY JAMES H. STEBBINS, JR., PH.D.

I RECEIVED a short time since a sample of medicine for examination, which on qualitative analysis was found to contain potassium iodide and sodium acetate, together with certain complex vegetable extracts, and as the determination of the first two named compounds gave me a great deal of trouble before a

¹ Read January 19, 1894.

satisfactory method of analysis was found, I thought that an account of the process finally adopted, though containing no great novelty, might be of assistance to some of my colleagues should they ever by chance have to examine a mixture of this kind.

Potassium Iodide.—This compound was determined as follows without any trouble:

Ten cc. of medicine were diluted with 100 cc. of distilled water, and the salmon colored flocculent precipitate formed collected upon a filter.

After thoroughly washing the filter out with cold water, the iodine in the filtrate was determined as usual as iodide of silver and then calculated to iodide of potassium. The amount of the latter compound found was 3.58 per cent.

Sodium Acetate.—It was first sought to determine the acetic acid in the mixture as such in the usual way, by distillation with sulphuric acid, and from the quantity so found to calculate the percentage of sodium acetate present, but it soon became evident that this process could not be used, as the sulphuric acid was found to liberate iodine as well as acetic acid whose estimation was thus rendered impossible.

It was next sought to arrive at the percentage of sodium acetate by an examination of the ash left after igniting the dry extract. But unfortunately the usual method of incineration was found to be of no avail, as by this process the sodium acetate is either wholly or partially converted into sodium carbonate, no uniform products being obtainable, and the potassium iodide is likewise subject to decomposition and volatilization. Moreover it was found impossible to obtain an ash absolutely free from carbon, it always being necessary to treat the ash after ignition with water to free it from a small carbonaceous residue and then to ignite this residue a second time, to add its ash to the aqueous solution, to evaporate the whole to dryness, and to determine the per cent. potassium and sodium present as sulphates by the well-known process of indirect analysis.

As, however, no satisfactory conclusions could be reached in this way the following method was finally adopted:

Ten cc. of fluid extract were pipetted off into a capacious platinum dish and mixed with thirty cc. of twenty per cent. sulphuric

acid. The contents of the dish was now evaporated upon a steam bath to the consistency of a thick syrup. The dish was then transferred to a sand bath and gently heated until the contents had charred and no more fumes of sulphuric acid or iodine were given off. A compact carbonaceous mass will thus be obtained, which contains all the sodium and potassium in the fluid extract as sulphates. The contents of the dish were now moistened with ammonium nitrate solution evaporated to dryness over the steam bath, and then ignited over the direct flame of a Bunsen burner.

The carbon will in this manner be completely consumed, leaving a perfectly white residue of sodium and potassium sulphates, which are then further examined by the process of indirect analysis.

In the present case the sum of the sulphates of potassium and sodium, from ten cc. of fluid extract, was 0.2499 gram.

The amount of SO_3 contained in the 0.2499 gram of sulphates was 0.1208 gram, or equivalent to:

Sodium sulphate	0.57 per cent.
Potassium sulphate.....	1.92 " "

On now calculating the sodium sulphate to sodium acetate, and the potassium sulphate to potassium iodide, we get:

Sodium acetate.....	0.65 per cent.
Potassium iodide.....	3.65 " "

In the direct determination of the potassium iodide, as iodide of silver, we obtained 3.58 per cent. potassium iodide; hence it will be seen that the agreement between the direct and indirect methods of analysis is considering the complexity of the mixture under examination very satisfactory.