of alcohol in excluding inert but instable constituents, in preventing oxidation, or in otherwise maintaining solution, is of prime importance. Stability and reliability in galenical and pharmaceutical preparations are of more importance than alcoholic restrictions.

As a whole, the preparations of our active potent drugs show a very satisfactory degree of stability during a considerable period.

LABORATORY OF
PARKE, DAVIS & COMPANY,
1919.

AN UNUSUAL METHOD FOR TESTING THE ALCOHOLIC STRENGTH OF PHARMACEUTICALS.*

BY WILLIAM G. TOPLIS.

On page 115 of the February 1919 issue of the *American Journal of Pharmacy* will be found a contribution by two Hindu gentlemen[1] connected with the Hindu University Chemical Laboratory at Benares, India, entitled, "A Simple and Rapid Method for the Estimation of Alcohol in Spirituous Liquors."

This is an example of widely separated minds operating along similar lines, each quite unknown to the other. The writer had occasion to visit Prof. C. H. LaWall some time before this article appeared in print, and one of the topics of discussion was this very subject.

The following is quoted from their paper to explain the method: "The method for the estimation of alcohol described below is the result of an investigation to devise a simple method for its estimation with a fair degree of accuracy, avoiding distillation."

The method consists of treating a known quantity of spirituous liquor, in a glass tube, graduated in tenths of a cubic centimeter, or finer, with an excess of anhydrous potassium carbonate, adding five to ten percent of water in case the alcohol is above ninety percent. The mixture is then thoroughly shaken and allowed to settle (or preferably centrifuged) when it will separate into a lower layer of solid potassium carbonate, a middle layer of solution (saturated) of potassium carbonate, and an upper layer of alcohol hydrate corresponding with the formula $4C_2H_5OH\text{-}H_2O$. The authors here set forth the evidence of the truth of their statements, and the method by which it was secured. They have treated the subject with great care and show that the method is dependable and gives precise results. To the purely chemical investigator thus far ends the chapter. To the pharmaceutical observer there appears a further usefulness. Employing a similar method with different agents it is possible to determine with useful accuracy, not alone the alcohol in a preparation but certain substances soluble in dilute alcohol that are insoluble in concentrated alcohol or saturated solution of a salt; for example, essence of pepsin or wine of pepsin may be made to disclose, in addition to the alcohol, the pepsin content as well, by placing a known quantity of either preparation in a test tube and simply saturating the liquid with potassium citrate (previously dried); immediately the alcoholic part will rise to form the

---

* Read before Scientific Section, A. Ph. A., New York Meeting, 1919.

[1] Magendra Chandra Nag and Panna Lal.

top layer, the pepsin will be salted out of the water solution, rise to form the middle layer, and the solution of potassium citrate will subside; a graduated tube will give the parts of each ingredient near to the truth. The writer has found that 50 percent alcoholic liquids respond promptly to the test. Since pepsin preparations are much lower in alcohol than this it is good practice to add alcohol in known quantity to the test, to insure the best result, making proper correction of course for the added spirit. Again, this test may be made to disclose in whisky not alone the alcoholic content but a factitious spirit, and the amount of caramel that has been used in coloring it. Simply proceed as before; a measured quantity of the suspected liquid is saturated in a graduated tube, with the dried potassium citrate; the alcohol rises at once; the caramel, insoluble in strong alcohol, separates from both it and the saturated water solution and assumes the middle portion between them. If this tube be corked and set aside for some days the caramel may be removed in one piece and weighed.

Strong mixtures of alcohol and water separate most readily under this method, though a 10 percent alcohol (and 90 of water) responds. So far the writer has not succeeded in separating the alcohol from five percent beer by this method. Such determinations must be assisted by the addition of known amounts of alcohol.

The specific gravity of alcohol prepared by this process indicates 89.25 percent by volume. There is, no doubt, a small quantity of water retained by the alcohol; on the other hand there is doubtless a small portion of alcohol retained by the water so that these errors are acting to neutralize each other and the result is a very fair approximation of the fact.

A METHOD FOR ESTIMATING QUININE AND STRYCHNINE WHEN OCCURRING IN COMMON SOLUTION.

BY A. RICHARD BLISS, JR., M.D.

INTRODUCTORY.

One of the recommendations turned over to the writer as Associate Referee on Alkaloids to the Association of Official Agricultural Chemists was "*That further work be done on the methods for separating Quinine and Strychnine, and that a method be submitted to the collaborators which has a reasonable certainty of yielding concordant results.*" A communication sent to all the collaborators on alkaloids and to the chief chemists of the great majority of the leading chemical manufacturers in which the question was asked, "*Have you been using a method for the separation of Quinine and Strychnine that has proved satisfactory?*" was answered in every case (where the communication was answered at all) in the negative. A search of recent chemical and pharmaceutical literature available to the writer failed to disclose mention of any methods for the estimation of Quinine and Strychnine when occurring in the same solution other than the *Oxalate Method*,[1] the *Tartrate Method*,[1] and the *Ferrocyanide Method* as modified by Simmonds.[2] It seems that most investigators have concluded that these methods are not entirely satisfactory.

[1] Allen, "Commercial Analysis," Vol. VI, p. 461; Vol. IX, p. 518.

[2] *The Analyst*, 39, 81–85, 1914.