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THE PREPARATION OF AMMONIA FREE WATER FOR WATER ANALYSIS.

BY J. B. WEEMS, C. E. GRAY AND E. C. MYERS.

[*Contribution from the Department of Agricultural Chemistry, Iowa State College, No. 5.*]

The preparation of water which will not give the yellow coloration with Nessler's reagent is an important problem in the analysis of water. Where the laboratory water supply contains a small quantity of ammonia, suitable water for use in water analysis can no doubt be obtained by ordinary distillation and collecting that part of the distillate which is free from ammonia. The water supply of many laboratories will not permit of this ready method of preparing ammonia free water. The distilled water must be redistilled with sulphuric acid and potassium permanganate to obtain a satisfactory water which will remain colorless when the Nessler reagent is added to it. This method requires distillation in a glass flask and is subjected to the usual degree of breakage and loss.

Recently a method has been proposed for the preparation of water for water analysis which has the advantage that redistillation is not necessary. The method is as follows:

(1). "One or two liters of ordinary distilled water is placed in a stoppered bottle and a little bromine vapor is then poured into it. After shaking, the water should be just perceptibly tinted and should give a blue coloration when dropped on iodide and starch water. One drop of a strong solution of caustic soda is now added and the bottle again shaken and placed aside for ten minutes. Finally, one or two drops of a solution of potassium iodide are

(1). *Journal Society of Chemical Industry*, 1896, p. 255.

added and the water will be free from ammonia and suitable for Nesslerizing purposes."

In our experiments we have found that the water prepared by this method has been unsatisfactory, and probably due to the addition of potassium iodide. The presence of the iodide apparently destroys the sensitiveness of the Nessler reagent. While this method may be satisfactory under certain conditions, it has been found without value for work in this laboratory. The following method is suggested for the preparation of water free from ammonia and nitrogen as nitrates and nitrites.

Sodium peroxide is added to the water in an ordinary round bottom flask, in the proportion of one dram to each liter of water. Flasks of five or six liters in capacity are found to be very satisfactory. The contents of the flask is boiled for thirty minutes or longer, until it is estimated that the water is free from ammonia. The time for boiling and the amount of sodium peroxide will vary according to the amount of ammonia which may be present in the water. If it is desired to prepare water that is free from ammonia and nitrogen as nitrates and nitrites in order that one supply may serve for making standards for the determination of ammonia, nitrites and nitrates, the contents of the flask are transferred to a copper distilling vessel and distilled. The first portion of the distillate is rejected and the remainder kept in bottles in the usual manner.

THE PREPARATION OF PHENYL ETHER.

BY ALFRED N. COOK.

While ethyl ether, the common ether of the modern drug store, has been known for three and a half centuries, and has been used as an anesthetic for over fifty years, phenyl ether is of more recent origin. It has never been put upon the market and has never been put to