fication of that recommended by Noyes, Bray and Spear[2] in that the hydroxide of aluminum is reprecipitated with cobalt hydroxide adsorbed onto it before ignition instead of a piece of filter paper dipped into a solution of the mixed nitrates being ignited. In each procedure the ignition of the filter paper with the precipitate is specified.

On attempting to surmount the difficulty described above, it has been found that the decrepitation can be prevented by moistening the lump of precipitate with a small drop of concd. sulfuric acid before heating it. The presence of a small amount of filter paper mixed with the precipitate is immaterial, but an attempt should be made to take up as little paper is possible; this eliminates its subsequent oxidation. The drop of acid as added best by means of a stirring rod, not by dipping. The acid dissolves the combined aluminum and cobalt precipitate, forming sulfates which remain on the wire when the water and excess acid are evaporated and, when strongly heated, become a dull, dark blue mass.

Precipitated silicic acid, which is the substance usually mistaken for aluminum hydroxide, does not dissolve readily in the concd. sulfuric acid. When evaporated and strongly heated this yields a fusible, shiny blue mass easily distinguished from the former. When a mixture of approximately equal amounts of silica and aluminum hydroxide is treated in this way the cobalt and aluminum hydroxides dissolve immediately in the acid. The silicic acid, being slow to dissolve, remains segregated and on strong heating gives a bead of fusible cobalt silicate while the rest of the wire is coated with the dull, dark blue of cobalt aluminate.

The delicacy of the test by this procedure is about the same as that by the method of Noyes, but the manipulation is easier for students to execute. It has been tried by a class in qualitative analysis and has given results more satisfactory than the usual method.

CONTRIBUTION FROM THE CHEMICAL LABORATORY
UNIVERSITY OF MAINE
ORONO, MAINE
CARL OTTO

RECEIVED MARCH 8, 1926
PUBLISHED JUNE 5, 1926

A Boiling-stirring Rod to Prevent Bumping.—The prevention of bumping in boiling liquids has been the subject of much study, and many devices have been suggested to effect it. The one most often advocated is some adaptation of the capillary tube, which functions fairly well in some cases but cannot be used under all conditions, especially in quantitative work, and it has many limitations.

The rod here described possesses all of the advantages and none of the limitations of the capillary tube; it is suitable for quantitative work, functions satisfactorily, even when a precipitate is present, and it is

[2] Noyes, Bray and Spear, THIS JOURNAL, **30**, 544 (1908).

quite easily made, either from a piece of glass tube or a solid glass rod, as may be preferred.

When made from a piece of tube, the end is closed by rotating in the flame and is slightly blown out. It is then reheated at the extreme tip and when the pressure on the inside is reduced, a small dimple, or bellshaped depression is formed in the end. When made from a glass rod the depression may be formed with a piece of pointed hard carbon, care being exercised in either case to form the depression exactly in the end of the rod, the size and depth of the depression being rather unimportant. For quantitative work it should be of such size that any adhering precipitate can be easily removed with a small piece of filter paper.

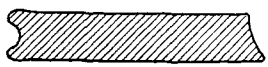

Fig. 1.—A boiling-stirring rod to prevent bumping.

CONTRIBUTION FROM THE DEPARTMENT OF CHEMISTRY
COLUMBIA UNIVERSITY
NEW YORK
DWIGHT L. SCOLES

RECEIVED MARCH 22, 1926
PUBLISHED JUNE 5, 1926

[CONTRIBUTION FROM THE UNIVERSITY OF VERMONT]

NORMAL BUTYLBENZENE

BY R. R. READ AND L. S. FOSTER

RECEIVED SEPTEMBER 21, 1925 PUBLISHED JUNE 5, 1926

During a study[1] of certain derivatives of normal butylbenzene it became necessary to prepare a considerable quantity of that material. Of the two methods available for the preparation, the Fittig and the Grignard, the former was chosen due to the more readily available materials.

Descriptions and comments regarding this reaction found in the literature do not encourage attempts to conduct the operation on a moderately large scale in the laboratory, yet it may be so carried out that the high yield and simplicity of operation leave little to be desired.

Experimental.—A copper kettle, the size of a gallon (3.8 liter) pail, was made of heavy material and fitted with the tinned iron friction ring and cover of such a pail. Three holes were cut in this cover and connections about 2 cm. in length and diameter soldered in place. The outlets were fitted with a dropping funnel, a thermometer well, and a reflux condenser (preferably an all-metal one) and the kettle was placed in a bath of running water so that it was immersed to within 5 cm. of the top.

Four hundred and sixty g. of sodium was prepared by rolling under a cement lawn roller, or slicing into pieces 2 mm. thick, and placed in the

[1] This study is directed towards the determination of the disinfectant power of phenol as influenced by groups placed in the various positions about the ring. The writers are indebted to Treat B. Johnson of Yale University for opening the field to them.