

## NOTES

**A Note on the Use of Aniline in the Preparation of Amino Acids.—**

A standard method of isolating certain amino acids is to precipitate them from the alcoholic solutions of their hydrochlorides with pyridine. Cox, *J. Biol. Chem.*, **78**, 475 (1928), used aniline in preparing *d*-arginine monohydrochloride. A consideration of the basic ionization constants of glycine, alanine and aniline indicated that aniline should precipitate these amino acids from their hydrochlorides. Experiment justified this prediction. Glycine can be prepared by the method of Clarke and Taylor, "Organic Syntheses," **4**, 31 (1925), using aniline instead of pyridine. Alanine has been prepared by mixing acetaldehyde (1 mole), aqueous ammonium chloride (2 moles), and sodium cyanide (1 mole), and hydrolyzing by concentrated hydrochloric acid. This solution is then evaporated under reduced pressure to a thick paste, treated with absolute methanol (10 moles), filtered to remove solid chlorides and treated with aniline (1.3 moles). The yield of recrystallized alanine is 50% of the theoretical amount.

$\alpha$ -Amino-*isobutyric* and  $\alpha$ -amino-*n*-valeric acids can be easily prepared in a similar manner.

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**$\beta,\beta$ -Dinaphthyl Sulfide as a By-product in the Preparation of  $\beta$ -Naphthoic Nitrile. Reduction of the Sulfone with Sodium Cyanide.—** Colver and Noyes,<sup>1</sup> while working on the synthesis of anthracene from naphthalene, found that the hydrolysis of the crude nitrile of  $\beta$ -naphthoic acid by boiling with a 30% solution of sodium hydroxide "left an unsaponifiable residue which is a reddish colored liquid at the temperature of the hot water-bath, but solidifies to a dirty red solid upon cooling. It is heavier than water, easily soluble in benzene but much more difficultly soluble in alcohol and ether." Other properties of the substance were not ascertained and no further investigation was made by them as to its identity.

Several years ago, during the course of an investigation on the preparation of certain ketones derived from  $\beta$ -naphthoic acid, a considerable amount of this unsaponifiable residue was accumulated and an investigation was undertaken to identify the material. It was distilled with steam, first in a concentrated alkaline solution and then in a concentrated acid solution; the non-volatile residue was separated from the water, dried and then distilled under reduced pressure. The distillate was a

<sup>1</sup> Colver and Noyes, *THIS JOURNAL*, **43**, 901 (1921).