

the pot. To the melt 25 g. of the sodium salt of dianilido-succinic acid was added. The temperature was held at 230–240° for 1½ hours. The melt was dissolved in water and blown with air. Indigo precipitated and was filtered off. The yield was 11.5 g. or 60.4% of that calculated on the basis of 100% indigo from pure (100%) dianilido-succinic acid, or 25% on the fumaric acid added.

This indigo was 96.5% pure by the method of Bloxam<sup>5</sup> and showed satisfactory dyeing qualities.

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**The Occurrence of Terpin Hydrate in Nature.**—Terpin hydrate, (C<sub>10</sub>H<sub>20</sub>O<sub>2</sub>.H<sub>2</sub>O), a well crystallized substance, has long been known as a product of the synthetic laboratory. It is easily prepared by allowing turpentine oil to stand in the air in contact with water for a long time or more rapidly by adding nitric acid and alcohol to the mixture. It seems strange, then, that it should not have been formed by natural agencies, yet until recently it was unknown in nature. In October, 1920, the writer described a crystalline substance, flagstaffite, found in buried pine logs, giving the result of chemical analyses, molecular weight determinations and crystallographic measurements.<sup>1</sup> At that time he was unable to find any natural or synthetic product that corresponded to it, but later, on the suggestion of Dr. Francis D. Dodge of Brooklyn, N. Y., careful comparisons were made with terpin hydrate with the result that both crystallographically and chemically they were found identical.<sup>2</sup> The discovery of this substance in logs buried at least 500 years as shown by tree rings in stumps still rooted in the debris, adds a new mineral species, while its identity with a well-known synthetic product is of general interest.

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**The Action of Halogens on Aceto-acetic Ester.**—The action of chlorine and of bromine on aceto-acetic ester has been the subject of many investigations and of considerable controversy. In a series of researches extending from 1890–4 Hantzsch finally proved, by a method that is both elegant and conclusive, that the product obtained by passing chlorine into the ester is an  $\alpha$ -chloro derivative, while that obtained by adding bromine to solutions of the ester is a  $\gamma$ -bromo compound. Hantzsch also discovered that in the presence of hydrogen bromide, the  $\alpha$ -bromo ester obtained by

<sup>5</sup> Bloxam, *J. Soc. Chem. Ind.*, **25**, 735 (1906).

<sup>1</sup> Guild, *American Mineralogist*, **5**, 155 (1920).

<sup>2</sup> Guild, *ibid.*, **6**, 133 (1921).