

into the acid salt when the aqueous solution is evaporated with acetic acid. Lead acetate and silver nitrate produce white precipitates in an aqueous solution.

Trihydroxyglutaric acid, $C_5H_8O_7$, obtained by decomposing the calcium salt with oxalic acid, crystallises from alcohol in colourless, microscopic plates, melts at 127° , and does not reduce Fehling's solution. The normal ammonium salt crystallises in slender needles and is very readily soluble.

F. S. K.

Action of Nitrous Acid on Hexamethylenamine. By F. MAYER (*Ber.*, 21, 2883—2890).—*Trimethylenetrinitrosamine*, $C_3H_6N_3O_3$, is obtained when an ice-cold solution of hexamethylenamine (1 part) in water (40 parts) is mixed with ice-cold, dilute ($1\frac{1}{2}$ per cent.) hydrochloric acid, and a solution of sodium nitrite ($2\frac{1}{2}$ parts) in a small quantity of water immediately added. After about 15 minutes, the yellowish, crystalline substance which separates at the surface is thrown on to a filter, washed with cold water, and dried on porous plates. The yield is 50 to 60 per cent., or more, of the amine employed. It crystallises from boiling alcohol, in which it is moderately soluble, in small, yellowish, silky needles or prisms, melts at 105 — 106° , and is readily soluble in cold acetone, but only moderately so in warm benzene, chloroform, and ether, and insoluble in light petroleum. It dissolves unchanged in cold glacial acetic acid, and the molecular weight determined by Raoult's method was found to be 196. On exposure to moist air, the crystals lose their silky appearance, and when treated with cold water, a slight evolution of nitrogen occurs. It melts under boiling water to a yellowish oil which gradually dissolves with evolution of nitrogen, and the solution contains formaldehyde. The same decomposition takes place, but much more quickly, when it is warmed with glacial acetic acid or dilute acids, but the decomposition into formaldehyde and nitrogen is not quite quantitative, as traces of ammonia are formed at the same time. When heated in a capillary tube, or when treated with concentrated acids, it is immediately decomposed with evolution of nitrous fumes, and when heated on platinum foil it explodes. It gives Liebermann's reaction. The filtrate obtained in the preparation of this compound contains unchanged hexamethylenamine; if, however, the mixture is kept for a long time before separating the nitrosoamine, the latter is decomposed into formaldehyde and nitrogen, and some of the hexamethylenamine is converted into formaldehyde and ammonia.

Dinitrosopentamethylenetetramine was obtained by gradually adding dilute hydrochloric acid to a solution of hexamethylenamine and sodium nitrite (compare Griess and Harrow, *Abstr.*, 1888, 1268). It melts at 202 — 203° , and gives Liebermann's nitroso-reaction.

F. S. K.

Identity of Putresine and Tetramethylenediamine. By L. v. UDRÁNSZKY and E. BAUMANN (*Ber.*, 21, 2938—2941).—A direct comparison of the dibenzoyl-derivatives of putresine (Brieger), tetramethylenediamine, and the compound obtained by the authors from