spective precipitates of ephedrine (1) and other ephedrine derivatives (to be reported later) formed in the same manner require 5 to 20 days to show the same color change.

6. *Tests for the Iodide Only.*—Ferric chloride produces a reddish brown precipitate and copper sulphate a yellowish brown one. On the addition of sodium thiosulphate, the former dissolves entirely to form a clear solution but the latter only partially. Ephedrine and other ephedrine derivatives do not show these reactions.

SUMMARY.

1. Methyl-ephedrine-methyl-iodide was isolated in pure form from the methylation mixture used for preparing methyl-ephedrine-iodide.

2. Pure methyl-ephedrine-methyl-chloride and methyl-ephedrine-methyl-bromide were prepared from the iodide by a modified transformation method.

3. These three quaternary ammonium halides were found to produce no "biuret coloration." Their "molecular rotations" were equal, showing that the "atomic rotations" of these three halogens in their respective quaternary ammonium halides are the same.

4. Potassium di-chromate, auric chloride, platinic chloride, etc., are found to be good reagents for testing these three halides.

5. Methyl-ephedrine-methyl-iodide forms methyl-ephedrine-methyl-auric-iodide, $(C_{10}H_{14}ONMeMe)AuI_4$, which possesses most of the general physical properties of iodine except the coloration with starch.

6. Bismuth can be detected, by methyl-ephedrine-methyl-iodide, in an aqueous solution slightly acidified with nitric acid containing 0.001% bismuth nitrate.

7. These three halides crystallize into variable forms and with certain reagents produce characteristic crystals (Fig. 1 to 14).

LITERATURE.

(1) K. K. Chen and C. H. Kao, JOUR. A. PH. A., 15 (1926), 629, 632 (625-639).
(2) A. Eberhard, *Arch. Pharm.*, 258 (1920), 97.
(3) H. Emde, *Ibid.*, 244 (1906), 241.
(4) C. T. Feng, *Chinese J. Physiol.*, 1 (1927), 397-406.
(5) C. T. Feng, *Ibid.*, 4 (1930), 231-246.
(6) Schwantke, *Zeit. Kryst. Mineralogy*, 46 (1909), 73; cited by Chen and Kao.
(7) Sydney Smith, *J. Chem. Soc.*, 270 (1927), 2056-2058.
(8) T. and H. Smith, *Pharmaceutical J.*, 125 (1929, No. 3452), 606.

ON THE ASSOCIATE ACTION OF QUININE AND OF ETIOLOGIC URETHANE IN REGARD TO THEIR USE IN THE THERAPY OF MALARIA.

BY PROF. ANGELO SPANIO.

Etiologic urethane is very little used in therapy, and would have been completely forgotten if it had not been for Gaglio who suggested its particular use in dissolving quinine chloride for intramuscular injections for the cure of malaria. Although this solution (Gaglio Solution) is very widely used, nevertheless a few cases of sudden death through its use, influenced Prof. Spanio to make a pharmacological study of urethane. He arrived at the following conclusions:

1. The minimum lethal dose of etiologic urethane, by intravenous injection, is two Gm. per each Kg. of body weight of the animal.

2. Death is caused principally through the paralysis of the respiratory center.

3. Death is due to the direct action of the drug on the nerve center.—*Archivio di Farmacologia Sperimentale e Scienze Affini, Roma*, November 1931.