

elimination of manganese previous to this step is carried out in strongly acid solution, there is little danger of co-precipitation of the zinc.

Procedure.

§ 121.—The Separation of Manganese from Nickel, Cobalt, Zinc, the Rare-earth Elements, Beryllium, Uranium, and Chromium.—The Solution of P 96 in 10 cmm. of 6-M HNO_3 is evaporated to dryness by placing the cone in a steam bath and blowing a stream of air on the solution's surface. Treat the residue thus obtained with 2 cmm. of 16-M HNO_3 , and again evaporate to dryness. This treatment with nitric acid eliminates the chloride ion which would be objectionable at a later stage of the analysis.

Precipitate any manganese present in this solution as directed on pp. 154—155 of P.-S. Assume the combined liquid and washings to be solution S121.

Evaporate the solution S121 in a cone and dissolve the residue by adding 20 cmm. of water. If the solution should now contain MnO_2 (precipitate P121 A), remove it by centrifuging the mixture, and combine the MnO_2 with precipitate P 121. Transfer the clear solution S121 A to another cone.

§ 122.—The Confirmation of Manganese.—Estimate and confirm the manganese in combined precipitates P 121 and P121 A, as directed in § 41, p. 155, of P.-S.

§ 123.—The Separation of the Nickel Group from Zinc, Uranium, Beryllium, and Chromium.—Carry out a hydroxide-peroxide precipitation in the solution S121 A as directed on p. 152, of P.-S. The precipitate P123 will contain the oxides of nickel and cobalt, and the rare-earth elements, and possibly some zinc. The solution S123 will contain the uranium, beryllium, chromium, and the greater part of the zinc, and is analyzed by the procedures outlined in parts of this paper dealing with the analysis of the aluminum and chromium groups.

The Analysis of the Nickel Group.

Procedure.

The treatment of the nickel group may be summarized as follows: