ated freely. To this solution was added alcohol of sp. gr. 0.84, amounting to a third of the entire volume. The precipitate was filtered off on paper and washed with dilute alcohol of gradually increasing strength—first, a mixture of one of alcohol to two of water, and then, successively, mixtures of one to two, one to one, and finally three to one of alcohol and water. The precipitate should contain the antimony as sodium antimonate, and the filtrate should contain sodium arsenate and sodium stannate in solution.

The precipitated sodium antimonate was dissolved from the filter in a mixture containing dilute hydrochloric acid (1 to 4) and 5 to 10 per cent of its weight of tartaric acid, the solution was diluted, and hydrogen sulphide passed to complete precipitation. The precipitate was filtered on asbestos, dried in an atmosphere of carbon dioxide (Paul's apparatus) at 240° C., and weighed as antimony trisulphide.

The solution, possibly containing sodium arsenate and sodium stannate, was acidulated with hydrochloric acid, cooled to 0°, treated with twice its volume of hydrochloric acid of sp. gr. 1.20, also cooled to 0°. Into the solution, filtered on asbestos, from precipitated sodium chloride, if necessary, hydrogen sulphide was passed for an hour and a half. After standing for two hours the precipitate was filtered off on asbestos, washed with hydrochloric acid (1 to 2) and then with hot alcohol, dried at 110° C., and weighed as arsenic pentasulphide.

From the filtrate separated from the arsenic pentasulphide nearly all free acid was removed by evaporation and the well-diluted solution was saturated with hydrogen sulphide. After addition of ammonium nitrate to aid coagulation, the precipitate was filtered off, washed with a solution of ammonium nitrate, ignited with ammonium carbonate, and weighed as stannic oxide. The residue was identified as stannic oxide by fusion with sodium carbonate, treatment of the mass with dilute hydrochloric acid and zinc, and testing of separate portions of the solution with mercuric chloride and, after addition of potassium hydroxide in excess, with an ammoniacal solution of silver nitrate.

V. Treatment of the Filtrate from the Residue Insoluble in Nitric Acid.

To the filtrate obtained after removal of the residue left after treatment of the original material with nitric acid was added sulphuric acid, about 5 c.cm. The liquid was evaporated to the fuming point of sulphuric acid, diluted to a volume of 50 c.cm., filtered on a weighed asbestos filter, and washed with dilute sulphuric acid (1 to 3). The filtrate was reserved. The precipitate was ignited upon the asbestos filter and weighed as lead sulphate.

VI. Treatment of the Filtrate from Lead Sulphate.

To the filtrate from lead sulphate were added 1 gram of tartaric acid and ammonium hydroxide nearly to neutralization. The solution was heated to boiling and 5 c.cm. of dilute sulphuric acid (1 to 4), 5 c.cm. of a saturated solution of ammonium acid sulphide, and 100 c.cm. of N/10 ammonium sulphocyanide,* were added. The whole was allowed to stand over night and the precipitated cuprous

*Van Name, Am. Jour. Sci., XIII, 138 (1902).