PROCESS FOR THE RECOGNITION OF HYDROCYANIC AND OTHER ACIDS.

By A. LONGI.

THE substance under consideration is dissolved in water and the solution acidulated with acetic acid. If insoluble in water it is heated to a boil with sodium carbonate, and the filtrate is acidified with acetic acid. After any hydrogen sulphide present is expelled, silver nitrate is added in slight excess, and a little nitric acid. The precipitate may contain silver cyanide, chloride, bromide, iodate, ferrocyanide and ferricyanide. In the solution may be present silver chlorate, bromate (in part) and mercuric cyanide. The liquid A is separated from the precipitate B and examined separately.

A. In the liquid hydrogen is liberated by means of zinc and a little sulphuric acid. Silver chlorate and bromate are reduced to the corresponding chloride or bromide, and both these along with mercuric cyanide, to metallic silver and mercury, hydrogen, cyanide, chloride, and bromide being formed. When the reaction is at an end the mixture is filtered and the filtrate is divided into three parts.

The first part is tested for cyanogen with a ferric ferrous salt.

To the second part is added silver nitrate, which separates hydrocyanic, hydrochloric, and hydrobromic acids. The precipitate is washed and digested in ammonia of sp. gr. 0.998. If the liquid filtered from the precipitate gives with nitric acid a white precipitate, insoluble in concentrated boiling nitric acid, chloric acid was present.

The third portion was tested for bromine with carbon disulphide. The presence of bromine shows that the original substance contained bromic acid.

B. The precipitate is carefully washed, and then digested in ammonia of sp. gr. 0.998. The cyanide, chloride, bromate, iodate and ferricyanide dissolved, but not the bromide, iodide, and ferrocyanide.

The residue is washed and treated with a solution of hydrogen sulphide to which a little hydrochloric acid has been added. It is heated to expel excess of hydrogen sulphide and filtered.

The filtrate is tested for hydrogen ferrocyanide with a ferric-ferrous salt. Any ferrocyanide formed is filtered off, and the filtrate is tested for bromine and iodine with carbon disulphide.

The ammoniacal solution, which may contain cyanide, chloride, bromate, iodate and ferricyanide, is treated with sulphurous anhydride. Cyanide and chloride are separated out, bromate, iodate, and ferricyanide are reduced to bromide, iodide and ferrocyanide, and thrown down as such. The precipitate is washed by decantation and digested in ammonia. The cyanide and chloride are re-dissolved, but not the bromide, iodide and ferrocyanide. The mixture is filtered. The solid matter is tested for bromine, iodine, and hydrogen ferrocyanide as above directed. Their presence shows that the original substance contained bromic and iodic acids and hydrogen ferrocyanide.

To the liquid is added nitric acid by which cyanide and chloride are re-precipitated. The precipitate is divided into two parts. The one is treated with a little dilute hydrochloric acid and filtered. The filtrate is tested for hydrogen cyanide with a ferric-ferrous salt. The other portion is heated to boil with concentrated nitric acid. Cyanide is thus converted into nitrate, whilst chloride remains unchanged.—*Gazetta Chimica*.