SPONTANEOUS ALTERATION OF ANHYDROUS HYDROCYANIC ACID.

It is known that anhydrous hydrocyanic acid frequently undergoes in a short time azulmic decomposition, whilst in other cases it may be preserved for months without alteration. The cause of the difference is in the calcium chloride employed in the drying process. If the calcium chloride is neutral (see note) the acid obtained will be pure and will keep indefinitely; if it is alkaline, as it is when it has been fused in contact with air, the acid will soon decompose spontaneously.

The theory of the amides explains this fact. Calcium cyanide is first formed by the contact of the hydrocyanic acid with the lime contained in the calcined calcium chloride; the water which comes over with the hydrocyanic acid reacts on the calcium cyanide and produces calcium formiate and ammonia. This alkali, transformed in its turn into cyanide passes into the cooled matters with the condensed acid. Then, we know, from the works of Millon, that a trace of ammonia is sufficient to determine the alteration of anhydrous hydrocyanic acid.

But there is also another cause for the alteration, which is not connected with the presence of an alkali; it is heat. If the pure acid is heated, in a sealed tube, for four or five hours, at 100°, the liquid soon burns brown, and finally becomes a black compact mass. When the tube is opened, no gas escapes. The product, heated at 50° to remove any trace of unaltered hydrocyanic acid, represents the total weight of the acid employed, and has the percentage composition of the generating acid.

As P. Boullay has already noted, in his study of azulmic acid, this substance heated in a tube closed at one end, disengages at first ammonium cyanide, then cyanogen, and leaves a hard charcoal, slightly combustible. The ammonium cyanide does not appear to be ready formed in that body, seeing it may be heated to 50° without ammonia being disengaged.

NOTE.—Neutral calcium is obtained by evaporating the solution slightly acidulated and stopping as soon as dryness is obtained.—*J. de Girard, in Comptes Rendus, tome, LXXXIII. p.* 344.