

Note on the Identity of Nitrohæmatic and Picramic Acids.

By A. GIRARD.

In a former paper the author showed that by the reducing action of sulphuretted hydrogen upon picric acid, a red, readily crystallizable acid, capable of giving rise to well-defined salts, was produced. He also proposed to compare this acid with that obtained by Wöhler by the action of the protosalts of iron upon picric acid, with which he thought his acid was perfectly identical; and this opinion has since been put forward by Gerhardt, who considers nitrohæmatic acid to be impure picramic acid. Mr. Pugh has recently published a paper to prove this identity, but the processes adopted by him are not calculated to inspire absolute confidence. He has, in fact, operated exactly as was done by Wöhler before the author had indicated the formation of picramic acid by the action of sulphuretted hydrogen. He mixes picric acid with protosulphate of iron, boils it with an excess of baryta, precipitates the soluble baryta-salt by ammoniacal acetate of lead, and *finally decomposes the lead-salt by sulphuretted hydrogen*. It is evident, in this case, that even if the protoxide of iron had not converted the picric acid into picramic acid, the sulphuretted hydrogen of itself would be sufficient to effect this reduction.

The following is the author's process to avoid the employment of sulphuretted hydrogen. When solutions of picric acid and protosulphate of iron are boiled together, no change is produced; but as soon as the precipitation of the protoxide is effected by the addition of an alkali, the liquid acquires a strong red colour, and an abundant precipitate of peroxide of iron is obtained. When the ammoniacal liquid is separated by filtration and slightly concentrated, the addition of acetic acid is sufficient to produce, almost immediately, fine red crystals presenting all the characters of picramic acid both in their forms and reactions. To confirm this analogy, the author made an analysis which gave—

	Found.	Calculated (picramic acid).
C	36.0	36.1
H	2.7	2.5

The silver-salt gave—

	Found.	Calculated.
Oxide of silver	37.3	37.6
Acid	62.7	62.4

Protosulphate of iron, therefore, like sulphuretted hydrogen, reduces picric acid to the state of picramic acid. The author has also tried Béchamp's process of reduction with protacetate of iron, and obtained the same results.

Picramic acid $[C^{13}H^5O^3(NO^4)^3N]$ is derived from picric acid $[C^{13}H^5O^3(NO^4)^3]$ by the destruction of 1 equiv. of hyponitrous acid, accompanied by the fixation of 2 equivs. of hydrogen. The author has tried whether it was possible, by the employment of other energetic reducing agents, to modify picric acid still more

deeply, and break up the other equivalents of hyponitrous acid, but hitherto without result. Picramic acid only is obtained by means of the alkaline sulphurets, nascent hydrogen, the protochlorides of tin, copper, &c. The reaction of the two latter agents only takes place after they have been precipitated by ammonia. Of course, to render these results certain, the employment of sulphuretted hydrogen must be avoided.—*Comptes Rendus*, Jan. 14, 1856, p. 59.

On a new Method of obtaining Silicium. By Prof. WÖHLER.

In preparing aluminium by means of kryolite ($3\text{NaFl} + \text{AlFl}_3$), according to the process recently indicated by M. H. Rose, I tried the employment of Hessian crucibles instead of iron ones. I then frequently obtained globules of aluminium covered and traversed by hexagonal crystals of a black substance with a metallic lustre. By treating this aluminium with muriatic acid, this substance was easily obtained in the form of metallic spangles, very similar to graphite, but with a lead-blue tint. This was silicium in the remarkable form discovered by M. Deville.

In reflecting on the process by which silicium is reduced in this case, it appeared probable to me, that by the contact of the alkaline fluoride with the silica of the crucible, the double fluoride of silicium and sodium was formed, and that it is this compound from which the silicium is reduced by the aluminium. This idea has been perfectly confirmed, and I am now master of the process by which silicium can be obtained at pleasure in this crystalline state. All that is necessary is to fuse aluminium with an excess of the double fluoride of silicium and potassium ($3\text{KFl} + 2\text{SiFl}_3$), in an ordinary crucible, at a heat about that required for the fusion of silver. When the crucible is broken on cooling, there is always, in the midst of the fused salt, a very brittle ingot, of a very crystalline texture and a dark iron colour. This appears to be that compound of silicium and aluminium already observed by M. Deville, containing in this case a very large quantity of silicium in the state of graphite. According to the length of the fusion, it contains from 75 to 80 per cent. of silicium, which is easily obtained by treating the ingot with muriatic acid.—*Comptes Rendus*, Jan. 14, 1856, p. 48.

CHEMISTRY APPLIED TO ARTS AND MANUFACTURES.

On Artificial Ultramarine. By C. STÖLZEL.

THE method of producing ultramarine artificially has, since its discovery, been repeatedly the subject of investigation, both scientifically and technically; and the production of artificial ultramarine can now no longer be regarded as a secret. Nevertheless the scientific questions involved in the process have never been sufficiently