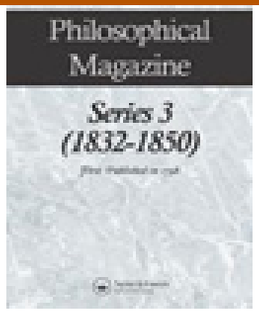

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Action of chlorine on cyanide of mercury

J. Bouis

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by the formulæ $C^{20}\begin{pmatrix}H^{10}\\Cl^{2}\end{pmatrix}$ (monochloruretted phenyle), $C^{20}\begin{pmatrix}H^{8}\\Cl^{2}\\N^{2}O^{4}\end{pmatrix}$,

and lastly $C^{20}\,H^{12}\,Cl^{2}\,N^{2}$, which is merely chlorinated nicotina, or perhaps a polymeric of this alkaloid.

The author states, that cinnamic acid, and even margaric acid, have already given him results comparable to the preceding. Suberic acid, under the same circumstances, gives rise to two new bodies, one of which is liquid and the other solid.

M. Saint-Evre states that he is now engaged in submitting to the same kind of reaction the anisic, cinnamic, nitrobenzoic, and hippuric acids.—*Comptes Rendus*, Decembre 13, 1847.

ACTION OF CHLORINE ON CYANIDE OF MERCURY. BY J. BOUIS.

When bottles of chlorine are exposed to the solar rays with a saturated and boiling solution of cyanide of mercury, there are produced, after a certain time, some drops which fall to the bottom of the water, in the form of a heavy yellow oil. The chlorine is absorbed with rapidity, and it must be supplied till the colour ceases to disappear. During the reaction there are formed chloride of mercury, hydrochloric acid, and hydrochlorate of ammonia, which remain dissolved in the water; chloride of cyanogen, nitrogen, and carbonic acid are disengaged.

M. Jules Bouis has examined this reaction. The yellow oil A which is produced has an extremely strong and irritating odour, and occasions a great flow of tears. It is more dense than water, and insoluble in it; but it is decomposed by it, and acquires an acid reaction. It is soluble in æther and in alcohol. Whether moist or dry, it deposits after a long time crystals of sesquichloride of carbon $C^{2}\,Cl^{6}$. It explodes when heated.

This very changeable substance gave by analysis, carbon 10·47 to 10·92; nitrogen 8·34 to 8·43; chlorine 78·49 to 78·89. M. Bouis deduces from these results the formula $[C^{6}\,N^{4}\,Cl^{14}]$, which requires carbon 11·6; nitrogen 8·9; chlorine 79·5.

It is to be observed that the coincidence is not perfect; according to this formula, there would even be a loss of 2 per cent. on the sum of the elements obtained by experiment. But it is to be remembered that the substance is very difficult to operate with, and a nearer approximation is perhaps impossible. M. Bouis does not say whether he collected any water by the combustion of this substance; and M. Gerhardt observes, that the formula $C^{3}\,N^{2}\,H\,Cl$ would require, carbon 11·4; nitrogen 8·9; hydrogen 0·3; chlorine 79·4.

When this compound is exposed to the action of a moderate heat it boils, gives out nitrogen mixed with carbonic acid, and there distils a colourless liquid B, which, on standing, deposits crystals of sesquichloride of carbon $C^{2}\,Cl^{6}$.

This new liquid is colourless, limpid, heavier than water, and has a strong irritating odour. It is insoluble in water, but soluble in

alcohol, and more so in æther. It boils at about 185° F.; but this point is not fixed, and rises gradually. M. Bouis found this liquid, cleared as much as possible from chloride of carbon, to consist of, carbon 12·36—11·57—12·35; chlorine 81·80—80·42—81·63; nitrogen 4·9—5·1. M. Bouis deduces the formula $[C^{10} N^4 Cl^{22}]$, which appears to M. Gerhardt to be rather complicated.

Lastly, when nitric acid is added to the liquid A, and the mixture is slightly heated, it boils and emits torrents of gas, which cause the apparatus to fly to pieces. Nitrogen and carbonic acid are disengaged, and much nitrous vapour is formed, mixed with yellowish vapours of a very strong odour. Distillation gives sesquichloride of carbon C^2Cl^6, and also a very volatile colourless liquid C, the odour of which is more irritating than that of the preceding products. M. Bouis found in the liquid C, carbon 10·26—10·9; chlorine 75·86—75·74; nitrogen 8·21—7·85. He represents these numbers by the formula $[C^6 N^4 Cl^{14} O^2]$, which require carbon 10·9; nitrogen 75·5; oxygen 4·9.

M. Gerhardt observes that, supposing hydrogen to exist in this compound, the formula would be $C^3 N^2 H Cl^7 O$; carbon 10·9; hydrogen 0·2; nitrogen 8·1; chlorine 75·5.

M. Gerhardt remarks that the preceding formulæ are not deducible in a simple manner from the composition of cyanides and water; the substance B appears to be specially inadmissible. M. Bouis supposes sesquichloride of carbon to pre-exist in these compounds, and sets out from this hypothesis to explain the formation of it.—*Journ. de Pharm. et de Ch.*, Octobre 1847.

FRIGORIFIC MIXTURE.

It is stated by M. B. F. Jourdan, that when a mixture is made of equal weights of commercial hydrochloric acid and finely-powdered sulphate of zinc, the cold produced sinks the thermometer from 50° to 20° F.—*Ibid.* Janvier 1848.

RESEARCHES ON PHOSPHORUS. BY M. P. THENARD.

The author states that in the last researches which he presented to the Academy, he announced that by passing hydrochlorate of methylene over phosphuret of calcium at a high temperature, five different products were obtained, all of which were new, and all phosphorized, and which vaporized and condensed in receivers, three in a solid state and two liquid; that the three solid products, entirely formed of phosphorus, hydrogen and carbon, were especially worthy of particular attention; that one of them is a powerful alkali, the properties and probable composition of which he had described; and that the most remarkable of the three, which is spontaneously inflammable, and has an odour analogous to that of cacodyl, is converted, under the influence of acids, into a certain quantity of the two others.

The author also added, that if it were true that the alkali was represented in its composition by 1 equivalent of phosphorus, 9 of