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On articina, santaline, sarcocoline, & c

M. Pelletier

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It is powdery, insoluble either in concentrated or dilute muriatic acid, but dissolved by aqua regia and nitric acid. It burns when heated by the blowpipe with a phosphoric flame.

Phosphuret of Chromium.—The decomposition of anhydrous crystallized chloride of chromium is not effected by phosphuretted hydrogen below a red heat, which occasions the gas to deposit phosphorus. The phosphuret of chromium preserves the form of the chloride: it is black, insoluble in muriatic acid, and very slightly dissolved by nitric acid and aqua regia: it burns with the blowpipe, giving a phosphoric flame. It is composed of

Chromium . . .	64.5	or 1 atom of chromium . .	29
Phosphorus . .	35.5	1 atom of phosphorus . .	16
	<hr/>		<hr/>
	100.		45

In attempting to convert other metallic chlorides and sulphurets into phosphurets by means of phosphuretted hydrogen, satisfactory results were not obtained. Though at first combined with phosphorus, it was lost by continuing the heat necessary for the decomposition of the chlorides or sulphurets.

Phosphuretted hydrogen gas very readily decomposes chloride of silver, but metallic silver only is obtained; chloride of lead is not so quickly decomposed, but the results are similar. Muriatic acid gas is disengaged, and phosphorus is deposited in the cool parts of the apparatus. Chloride of mercury, decomposed by the gas, produces a phosphuret. There is a very violent disengagement of muriatic acid gas, but the combination is destroyed by heat.

Chloride of zinc may be converted into phosphuret, but the quantity obtained was too small for examination. Chloride of manganese also gives a phosphuret by the action of phosphuretted hydrogen: it has a metallic lustre, but does not give a phosphoric flame with the blowpipe. Protosulphuret of tin is very slowly decomposed at a low temperature by phosphuretted hydrogen gas; sulphuretted hydrogen gas is disengaged and phosphorus sublimes. No phosphorus was discoverable in the residue, but it still contained sulphur: it dissolved entirely in muriatic acid with disengagement of sulphuretted hydrogen gas.

Sulphuret of bismuth is also reduced by the action of phosphuretted hydrogen gas to the metallic state, and so also is sulphuret of antimony; phosphorus is deposited; sulphuretted hydrogen is given out: it is, however, remarkable that the greater part of the antimony sublimes, although the temperature is not raised to the degree at which the metal volatilizes *per se*.—*Ann. de Chim. et de Phys.* tom. li. p. 47.

ON ARICINA, SANTALINE, SARCOCOLINE, &c. BY M. PELLETIER.

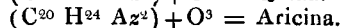
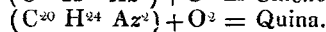
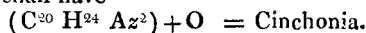
Aricina.—This is an organized salifiable and crystallizable base, accidentally discovered by MM. Pelletier and Coriol in examining some bark, which had the characters of yellow bark, but which it was stated did not yield any quina. Aricina, when combined with sulphuric acid, forms a compound which is more soluble in hot than

in cold water, and gelatinizes on cooling, provided the solution is perfectly neutral when examined by litmus paper: if, however, excess of acid be added, another sulphate is formed which crystallizes in flat needles; cinchonina, on the other hand, crystallizes with sulphuric acid in neutral solutions.

The following is the composition of this substance:

By direct Analysis.	Atomic Constitution.	Calculated Results.
Carbon 71.00	20	70.93
Hydrogen . . . 7.00	24	6.95
Azote 8.	2	8.21
Oxygen 14.	3	13.96

Estimating the atomic constitution according to the weights generally adopted in England, the atoms of hydrogen and azote in this statement, and the following analyses, will be reduced to one half the above numbers. M. Pelletier remarks, that if the analysis of aricina be compared with those of cinchonina and quina by Liebig, it will be seen that they may be represented as consisting of a common radical, united with 1, 2, 3 atoms of oxygen; this radical being $C^{20} H^{24} Az^2$, we shall have



M. Pelletier is of opinion, however, that cinchonina contains two atoms more of hydrogen than were found by M. Liebig. M. Pelletier observes that cinchonina, quina and aricina will then be considered as three degrees of oxidizement of the same substance, which explains the fact that aricina requires more acid to saturate it than the other two; and it will explain how two salifiable bases, as he discovered with respect to quina and cinchonina, may exist in the same bark.

Santaline. — This is the colouring matter of red saunders wood (*Plerocampus santalinus*). An account of this substance has been read before the Academy of Sciences, to which the author refers; but he mentions a curious circumstance respecting it. Sulphuric æther does not immediately dissolve santaline; the process takes place slowly, and the solution, instead of being red, as in alcohol, is orange or even yellow. By the spontaneous evaporation of the æther, exposed to the air, the colouring matter is obtained of a superb red; if the æther be quickly evaporated *in vacuo*, the colour is much less intense, often it is even quite yellow. It is further remarked, that deprived of water, as the æther employed may be, and although the santaline may have been perfectly dry, water always remains after the evaporation of the æthereal tincture: it sometimes even happens that ice is obtained when the æther is rapidly evaporated under the receiver of the air-pump. M. Pelletier seems inclined to believe that while dissolving in the æther, the santaline loses a portion of its oxygen, which forms water with the hydrogen of the æther, and that afterwards, the santaline, by exposure to the air, regains its colour by absorbing oxygen.

M. Pelletier states, that some chemists consider santaline as a resinous matter; he is however more inclined to rank it with acid colouring matters, on account of its affinity for salifiable bases.

Its composition is

	By direct Analysis.	Atomic Constitution.	Calculated Results.
Carbon	75.03	16	75.36
Hydrogen	6.37	16	6.15
Oxygen	18.60	3	18.48

Sarcocoline.—This substance was discovered by Dr. Thomson in sarcocol, the concrete juice of the *Pænea mucronata*. It is obtained by treating sarcocol with sulphuric æther to remove the resinous matter; the sarcocol is then to be dissolved in absolute alcohol, which is to evaporate spontaneously.

Sarcocoline is soluble in water, and more so when it is hot; the solution made in boiling water becomes milky on cooling; it is soluble in alcohol, insoluble in æther, and does not crystallize under any circumstance. When treated with nitric acid, it is converted into oxalic acid. The results of the analyses are

	By direct Analysis.	Atomic Constitution.	Calculated Results.
Carbon	57.15	13	57.39
Hydrogen	8.34	23	7.94
Oxygen	34.5	6	34.65

Piperine.—Piperine is a peculiar crystalline substance found in several species of the fruits of the genus *Piper*. It was discovered by CErsted. In order to obtain piperine, the method proposed by M. Pelletier or M. Poutet, may be employed; the latter process gives the piperine more free from fatty matter.

The composition is

	By direct Analysis.	Atomic Constitution.	Calculated Results.
Carbon	70.41	20	70.54
Hydrogen	6.80	24	6.91
Azote	4.50	1	4.08
Oxygen	18.28	4	18.45

It contains one atom more of oxygen and one less of azote than aricina.

[To be continued.]

PREPARATION OF FORMIC ACID.

The following is the method of preparing formic acid, adopted by M. Döbereiner.

"I dissolve one part of sugar in two parts of water, mix the solution in a copper alembic, with $2\frac{1}{2}$ to 3 parts of peroxide of manganese, well powdered; I heat the mixture to about 140° Fahr. and carefully stirring with a wooden rod, I add 3 parts of sulphuric acid, previously mixed with an equal weight of water. On the addition of the first third of the diluted acid, so strong an effervescence is produced, that the mixture would overflow the vessel, if it were not fifteen times larger than required to hold the mixture; along with carbonic

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