



On a series of organic alkalies homologous with ammonia

A. Wurtz

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rine should pass very slowly, at the rate of about three or four litres in twenty-four hours. All the gas however is not absorbed by the nitrate of silver. Oxygen is evolved, the volume of which appears to be equal to that of the chlorine employed. An apparatus thus constructed operates day and night without watching, care being however taken to renew the sulphuric acid which displaces the chlorine, the spirit of the lamp, and the ingredients of the freezing mixture.

The author states that he shall forward hereafter a more complete memoir, in which he will describe the chemical properties of the anhydrous nitric acid, and detail the results of his researches on the action of chlorine and hypochlorous acid on the salts of silver.—*L'Institut*, Fevrier 21, 1849.

ON A SERIES OF ORGANIC ALKALIES HOMOLOGOUS WITH
AMMONIA. BY A. WURTZ.

The history of the ammoniacal compounds, so complete and so important in a theoretical point of view, forms in some measure a transition between inorganic and organic chemistry. Ammonia should decidedly be regarded as the most simple and the most powerful of the organic bases; and it would be for all chemists the type of that numerous class of bodies, did it not differ in one undoubtedly important character, but to which an exaggerated value has been attributed. Ammonia contains no carbon. This difference however of composition does not suffice, in my opinion, to separate ammonia from the organic bases; I have succeeded, in fact, in converting this alkali into a true organic compound, by adding to it the elements of the hydrocarbon C^2H^2 or C^4H^4 , without depriving it of its characters of a powerful base, or of its most striking properties, for instance its odour. By adding to the elements of ammonia, NH^3 , the elements of 1 equiv. of methylene, C^2H^2 , the compound C^2H^5N , which may be called methylic ammonia, is obtained. By adding to ammonia the elements of ethylene, C^4H^4 , ethylic ammonia, C^4H^7N , is obtained.

The compounds C^2H^5N and C^4H^7N may be viewed as methylic æther, C^2H^5O , and ordinary æther, C^4H^5O , in which the equivalent of oxygen is replaced by 1 equiv. of amidogen, NH^2 ; or as ammonia in which 1 equiv. hydrogen is replaced by methylum, C^2H^3 , or ethylum, C^4H^5 . The following formulæ will exhibit the relations which exist between these substances and ammonia:—

NH^3 , ammonia.	NH^2 , H, <i>hydramide</i> .
C^2H^5N , methylic ammonia.	NH^2 , C^2H^3 , <i>methylamide</i> .
C^4H^7N , ethylic ammonia.	NH^2 , C^4H^5 , <i>ethylamide</i> .

I shall employ in preference the names methylamide and ethylamide to designate these new bases.

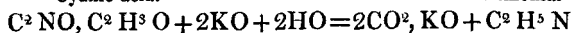
In the present communication I shall restrict myself merely to communicating the circumstances under which these substances are produced, and to communicating the results of some analyses which

establish their composition. They are produced under three different circumstances,—1st, by the action of potash on *cyanic æthers*; 2nd, by the action of potash upon *cyanuric æthers*; and 3rd, by the action of potash upon the *ureas*. These reactions will be best exhibited by a few formulæ:—



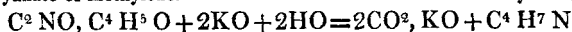
Cyanic acid.

Ammonia.



Cyanate of methylene.

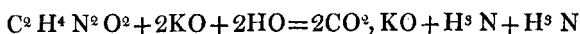
Methylamide.



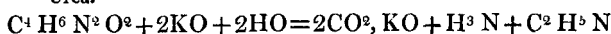
Cyanic æther.

Ethylamide.

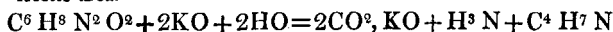
Cyanuric acid and the cyanuric æthers being isomeric with the cyanic compounds, it will suffice to multiply the preceding formulæ by 3 to explain the second mode of formation. With respect to the ureas, the following equations will show how they give rise to these bases:—



Urea.



Acetic urea.



Metacetic urea.

Hydrochlorate of Methylamide.—I obtained this salt by boiling cyanurate of methylene with an excess of potash in an apparatus arranged so that the vapours of methylamide, after having passed through a refrigerator, were condensed in a receiver containing a little pure water. The excessively caustic liquid thus obtained has a strong odour of ammonia, but does not contain a trace of that alkali; for if saturated with hydrochloric acid and evaporated to dryness, the residue, consisting of hydrochlorate of methylamide, dissolves very readily in hot absolute alcohol. The salt crystallizes on cooling in beautiful laminæ, which are iridescent so long as they float in the liquid, and assume a nacreous appearance when dry. Analysis gave—

Carbon	17.4	2 =	12	17.7
Hydrogen	8.7	6	6	8.8
Chlorine	52.2	1	35.5	52.5
Nitrogen	21.7	1	14	21.0

Hydrochlorate of Methylamide and Chloride of Platinum.—Beautiful golden scales, which are soluble in hot water, and contain $\text{ClH}, \text{C}^2 \text{H}^5 \text{N PtCl}_3$. Analysis gave—

Carbon	5.3	2 =	12	5.0
Hydrogen	2.8	6	6	2.5
Chlorine	44.4	3	106.5	44.9
Platinum	41.4	1	98.6	41.5
Nitrogen	1	14	

Nitrate of Methylamide—beautiful transparent prisms, which are soluble in alcohol.

Hydrochlorate of Ethylamide.—I have prepared this substance both with cyanic and with cyanuric æther. It dissolves readily in absolute alcohol, and crystallizes in laminæ; it melts below 212° , and solidifies on cooling into a crystalline mass. When distilled with burnt lime, it gives off ethylamide in the form of an excessively caustic liquid, which diffuses a strong odour of ammonia. This liquid precipitates all the metallic salts, and even the salts of magnesia. In solutions of salts of copper it at first forms a blue precipitate, which it afterwards redissolves, forming an azure-blue liquid; it produces a green precipitate in salts of nickel, which however is not redissolved, as is the case with ammonia. I ascertained that the liquid did not contain a trace of ammonia, by saturating it with hydrochloric acid; the residue, evaporated to dryness, dissolved entirely in absolute alcohol, and formed with chloride of platinum a double salt, the analysis of which will be found below.

The composition of the hydrochlorate of ethylamide is represented by the formula $\text{ClH}, \text{C}^4 \text{H}^7 \text{N}$. Analysis gave—

Carbon	28.9	29.4	4 = 24	29.4
Hydrogen	9.9	9.9	8 8	9.8
Chlorine	43.7	..	1 35.5	43.6
Nitrogen	17.5	...	1 14	17.2

Hydrochlorate of Ethylamide and Chloride of Platinum—golden scales, soluble in water. They gave on analysis—

Carbon	9.5	4 = 24	9.5
Hydrogen	3.2	8 8	3.2
Chlorine	42.0	3 106.5	42.4
Nitrogen	1 14	
Platinum	39.0	1 98.6	39.2

I hope soon to give a complete history of these alkalies.—*Comptes Rendus*, Feb. 12.

ON THE EXISTENCE OF MERCURY IN THE TYROL.

BY M. H. ROSE.

M. Weidenbusch, in analysing in the author's laboratory a specimen of tender gray copper ore, stated to be from Schwarz in the Tyrol, found it to contain a notable quantity of mercury, amounting to 15.5 per cent. This gray copper is mixed with quartz and sulphuret of copper. Its powder is almost black, and has a specific gravity of 5.1075; when heated in a flask, it yields a little metallic mercury with a light reddish-brown sublimate. If it be mixed with carbonate of soda and heated, a larger quantity of mercury is obtained. It contains also zinc, iron, antimony and sulphur, and traces of arsenic and silver. These substances exist in it in the same proportions as in other gray copper ores. A crystallized gray copper, also stated to be from Schwarz in the Tyrol, did not contain any mercury.—*L'Institut*, Fevrier 21, 1849.