

XXII.—*Notice of a New Ammonio-Chrome Compound.*

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WHEN sulphocyanide of ammonium is fused, and powdered bichromate of potash added to it, this salt dissolves quietly at first, giving a purple coloration. After a short time, however, a very brisk reaction ensues, ammonia and aqueous vapour are given off abundantly, and the residue is of a beautiful crimson colour. This residue consists of sulphocyanide of ammonium, sulphocyanide of potassium, bichromate of potash, sulphate of potash and the sulphocyanide of a new ammonio-chrome com-

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pond; this last salt is easily purified from the others by washing with cold water, in which it is but sparingly soluble, and afterwards by crystallization from alcohol, which dissolves it freely, or from ether, in which it is moderately soluble. This new salt has the composition, $\text{Cr}_2 \text{Csy}_3 2\text{NH}_4\text{O}$. Analysis gave the following figures:—

	Theory.	Found.	
Cr	18·71	18·71	when the salt was dried at 120° C
S	34·53	34·37	
N	25·18	24·96	
C	12·95	13·27	
H	2·88	3·39	
O	5·76		

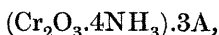
This is a perfectly neutral salt, crystallizing in the cubical system. I obtained crystals by the spontaneous evaporation of an ethereal solution, the form of which was the rhombic dodecahedron modified by the planes of the octahedron: it has a strongly bitter taste, especially at the back of the mouth. Heated in a closed tube, it gives off ammoniacal vapours, sulphuretted hydrogen, and some compound of cyanogen with a garlicky odour; the residue is sulphide of chromium, which, when heated in the air, ignites, gives off sulphurous acid, and leaves sesquioxide of chromium.

Neither acids nor alkalis decompose this salt in the cold, but alkalis on boiling throw down oxide of chrome; and acids, when concentrated, decompose it by uniting with the ammonia. Heated on the water-bath with sulphuric acid, it yields sulphate of ammonia and blue sulphate of chrome; oxalic acid gave violet oxalate of chrome and oxalate of ammonia.

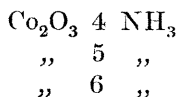
Persalts of iron are not coloured by this salt, but nitrate of silver immediately gives a precipitate of uncertain composition, as much of this chrome salt is carried down.

Other chromates as well as bichromate of potash also form this same salt with fused sulphocyanide of ammonium; chromate of potash, and chromate of lead succeed pretty well, but there are also other substances formed. I found the best proportion to be 5 of sulphocyanide to 2 of bichromate, corresponding to 1 eq. bichromate to 5 of sulphocyanide.

Frémy's roseo-chrome salts have the composition



which differs chiefly in the double quantity of ammonia. The cobalt-bases have, according to Frémy, the following compositions :—



I have attempted to form other compounds by the reduction of chromates in the presence of ammonia-salts, but at present without success.
