

that $15.76 \times 12/11 = 17.19$ instead of 26.02 and 17.18, respectively. In the case of the determination with pure potassium chloride, the calculated quantity of potassium was 0.01694, that obtained by the regular method $23.91 \times 0.0007111 = 0.01700$, and that obtained by the author's modification $26.02 \times 0.0006518 = 0.01696$.

Summary.

In this paper are given the results of some experiments on a modification of the cobaltinitrite method of determining potassium. Cobaltic cobalt is shown to be unable to oxidize nitrites in sulfuric acid solution under the conditions of the described method.

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NOTE.

The Asserted Explosivity of Uranyl Nitrate.—Under the title "Explosionsfähigkeit von salpetersaurem Uran" some interesting observations have been recently published by Ivanov.¹ This author saw crystals, supposed to be of uranyl nitrate, and which on analysis gave the correct percentage of uranium, that would explode on slight friction or even spontaneously. He appears inclined to assume that there was some connection, not definitely specified, between the explosivity of the salt and the radioactivity of uranium.

It would hardly be worth while to seriously combat so improbable a theory, which is both so vague and so unsupported, unless it were possible to offer an explanation of the facts, which if not demonstrated, at least rests on *some* evidence.

A number of years ago I made several involuntary observations on explosive uranyl "nitrate," of which the following are a part: A portion of about 40 grams of uranyl "nitrate" which had been recently made in the laboratory by me, was left at the close of the day's work in a porcelain bowl on a laboratory table, in order to give the smell of ether which still hung about it a chance to evaporate. In the morning it was discovered that the salt had exploded during the night. Fragments of the porcelain dish were embedded in the wood of a cupboard six or eight feet away and scattered all over the floor, a heavy bell jar quite two feet away was destroyed; in short, the explosion had been pretty sharp but not exactly violent, as there was no hole through the bench where the dish had stood. Another, much smaller portion of the same lot had been put in a desiccator and was found intact, in its glass dish. It was safely transferred. Then, when an attempt was made to scrape off the small quantity which stuck to the dish, a succession of flashes of flame resulted, similar to the sparks sometimes given out when a safety match is

¹ *Chem. Ztg.*, 36, 297 (1912).

drawn over the box without actually igniting. Another portion of the same preparation subsequently exploded. Small fragments could, at will, be made to blow up by rubbing in a mortar.

The salt did not noticeably differ in appearance from other or ordinary samples. In considering the possible causes of the phenomena, it at once occurred to me as likely that the material contained ether, although it did not smell of it after standing for some time in the open or in a desiccator. It had been prepared by shaking an aqueous solution of nitric acid and uranyl nitrate with ether, drawing the latter off and evaporating to crystallization. A specimen of the salt which no longer had any odor of ether was moistened with a strong solution of potassium hydroxide, whereupon a very marked smell of ether was evolved. Another specimen, when dissolved in water, gave a deep blue color to Congo-red test paper, indicating presence of "free" nitric acid.

All the phenomena observed by me, except the tests mentioned, are precisely similar to those recorded by Ivanov and it is difficult to avoid the conclusion that we both had in hand essentially the same material. If it is extremely difficult to understand how uranyl nitrate could be explosive, it is quite easy to comprehend how a uranyl nitrate, $\text{UO}_2(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$, in which the water had been replaced by ether and nitric acid of crystallization, might have a good deal of easily liberated energy. It is certain that my samples contained ether in a state of combination and it is not unreasonable to conclude that Ivanov's also did. It is not unlikely that further investigation will show that the formation of the explosive stands in an intimate relation with the concentration of nitric acid in the aqueous solution, while being shaken out with ether. I hope that this fragmentary note may stimulate some one to follow the matter up and to determine the formula of the explosive substance.

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DAVENPORT, IOWA, October, 1912.

[CONTRIBUTION FROM THE KENT CHEMICAL LABORATORY OF THE UNIVERSITY OF CHICAGO.]

CATALYSIS ON THE BASIS OF WORK WITH THE IMIDO ESTERS: THE "SALT EFFECT."¹

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In the course of our studies on the action of ammonia on imido esters

¹ Preliminary report. It had been intended to reserve the discussion herein presented until the degrees of ionization of the salts used had been redetermined with the aid of *viscosity* measurements, in order to insure the highest degree of accuracy (cf. A. A. Noyes and E. W. Washburn, *THIS JOURNAL*, 33, 1461). However, on receiving a courteous notification from Professor Acree that he intended to discuss part of our work at the forthcoming International Congress (without his specifying just what points would be discussed), it has been considered best, before learning the contents of the