VII.—*Note on the Action of Chloropicrin and Chloroform on Acetate of Potash.*

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ALTHOUGH the experiments described in the following short note have not led to the production of any new substance, I venture to think they are of some interest, as a further example of the reactions of these bodies, and as tending to confirm the views as to their constitution arising from the behaviour of their ethylic derivatives; namely, that the groups C and CH contained in them have a decided tendency to form the corresponding carbonic and formic acids, in preference to giving rise to any tetra- or tri-atomic alcohol derivatives.

Chloropicrin heated to 100° in a closed vessel with fused acetate of potash, and alcohol, is decomposed with great readiness. No gas is disengaged, but a considerable quantity of chloride of potassium is formed, and the solution becomes acid. On cooling, a crystalline salt is deposited in large quantity. The experiment was tried at first with four equivalents of the acetate to one of chloropicrin, but it was found that a large quantity of the latter remained unacted upon after twelve hours' heating, although the reaction appeared to be completely finished. The quantity of acetate was therefore increased in subsequent experiments, until,

with nine equivalents of acetate, it was found that very little, if any, chloropicrin remained.

The alcoholic solution was filtered hot from the chloride of potassium, and gave a large crop of needle-shaped crystals on cooling. A further quantity was obtained from the mother-liquor by distilling off the alcohol in the water-bath. In this distillate, which had an acid reaction, the smell of acetic ether was very perceptible. The salt was recrystallized from alcohol, drained, and dried as completely as possible by pressure, and then left over sulphuric acid in vacuo for several hours. The dry salt thus obtained was not nearly so deliquescent as ordinary acetate of potash, and rotated violently on the surface of water. On heating, it gave off a large quantity of acetic acid, and left a fused mass of the normal acetate of potash.

Submitted to analysis, it gave the following results :

1. 499 grm. evaporated to dryness with hydrochloric acid and ignited, gave 238 grm. chloride of potassium.
2. 5065 grm. burnt with chromate of lead gave 561 grm. carbonic acid and 213 grm. water—numbers which agree perfectly with the composition of bi-acetate of potash, as will be seen by comparing the percentage amounts :—

	Exper.	$C_4H_7KO_4$
C	30.21	30.38
H	4.67	4.43
K	24.95	24.68
O	40.17	40.51
	<hr/> 100.00	<hr/> 100.00

The reaction taking place is as follows :—

The presence of nitrite and carbonate of potash was distinctly shown by the usual tests in the precipitated chloride of potassium.

Chloroform heated to 100° with acetate of potash and alcohol was only slightly attacked, but at 125° a large quantity of chloride of potassium was formed. In three or four hours the action was

complete, and the solution when cold deposited a large quantity of crystalline salt. On opening the tube, a small quantity of carbonic oxide escaped. After distilling off the alcohol, which smelt of acetic ether, the remaining salt was crystallized and dried, when it presented exactly the characters of that obtained from the chloropicrin experiments, and the identity of the two salts was shown by a potassium estimation.

·4595 grm. gave ·22 grm. chloride of potassium, corresponding to 25·07 p. c. of potassium.

The reaction in this case is perfectly similar to the former one.

The formate was readily detected in the salt obtained by evaporation of the mother-liquor from the bi-acetate, by the reduction of bichloride of mercury, and by the evolution of carbonic oxide when warmed with sulphuric acid.

The ease with which chloropicrin is attacked by reagents suggested an experiment with aniline; in fact, on heating a mixture of one part chloropicrin with three of aniline to 145°, and then removing the lamp, a violent reaction is established, accompanied by the evolution of a considerable quantity of nitrogen. Boiling water extracts from the product a certain quantity of a red colouring matter similar to that originally obtained by Hofmann from the tetrachloride of carbon; the solution also contains the hydrochlorate of a solid base, which was purified by precipitation and crystallisation, and converted into a platinum-salt.

·4605 grm. gave ·091 grm. platinum, corresponding to 19·76 p. c. the platinum-salt of carbo-triphenyl-triamine containing 20·01 p. c.

I am at present studying the action of chloropicrin on cyanide of potassium, and anticipate from it some interesting results.