XXI.—*Note on the Action of Nitric Acid on Tribromophenol.*

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FAUST has shown (*Ann. Chem. Pharm.*, cxlix, 153) that trichlorophenol is converted by the action of concentrated nitric acid into dichloroquinone, in accordance with the equation :

It therefore appeared probable that tribromophenol would, in like manner, be convertible into the yet unknown dibromoquinone, which we were anxious to obtain for the purpose of another enquiry. We find, however, that the action of nitric acid on tribromophenol is simply to displace bromine by the NO_2 -group.

When tribromophenol is gradually added to ordinary concentrated nitric acid, reaction takes place, bromine is liberated, and heat is evolved. The product is entirely soluble in alkaline solutions; when potassic carbonate solution is employed, the liquid deposits crystals on cooling, which are easily purified by recrystallising from water with the aid of animal charcoal; they then separate in long orange-yellow needles, which are readily recognised as the potassium derivative of *orthobromo- α -dinitrophenol*. The phenol separated from the potassium derivative crystallises from water in long pale-yellow needles, which melt at about 117° .

But when tribromophenol is dissolved in glacial acetic acid, and nitric acid is added in the proportion of one molecule to one molecule of the tribromophenol, and the solution is warmed for a short time on the water-bath and then precipitated with water, *diorthobromoparanitrophenol* is produced. This compound was recognised by its characteristic behaviour on heating—it melts at about 141° , and decomposes with evolution of gas immediately on fusion—and by the preparation of

* According to Lautemann (*Ann. Chem. Pharm.*, cxx, 309), triiodophenol is converted into a substance of the composition $\text{CH}_2\text{I}_2\text{O}$, by the action of alkaline solutions, and I have noticed the formation of similar bodies from paracresol, metaxenol, and thymol, and the chief products of the decomposition of dichloro- and dibromoparanitrophenol by heat are not improbably members of the same class. I hope shortly, however, to be able to examine these bodies.—H. E. A.

its potassium derivative, which was analysed with the following results :

·3172 grm. of the air-dried salt gave ·075 grm. K_2SO_4 = 10·42 per cent. K. Theory requires 10·51 per cent.

·4216 grm. of the same salt lost, on heating to 130° , ·0418 = 9·91 per cent. H_2O . $2H_2O$ requires 9·70 per cent.

If nitric acid is added in a greater proportion, orthobromo- α -dinitrophenol is obtained, and it need scarcely be added that this body is formed on digesting diorthobromoparanitrophenol with nitric acid. It is noteworthy, however, that it is easier to convert tribromophenol into orthobromo- α -dinitrophenol than to produce the latter from diorthobromoparanitrophenol.

These experiments show that the action of nitric acid on trichloro- and tribromophenol, $(OH : \left\{ \begin{smallmatrix} Cl : Cl : Cl \\ Br : Br : Br \end{smallmatrix} \right\} = : 2 : 4 : 6)$, is similar in so far, that in both cases it is the atom of halogen in the para-position which is displaced.