XXV.—*The Action of Hydrochloric Acid on Ethylene Alcohol.*

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On saturating this glycol, $C_2H_4(OH)_2$, with the gaseous acid, and heating the mixture to 100°, it is, as Wurtz has shown, converted into ethylene chlorhydrate, $C_2H_4Cl(OH)$, whilst by the action of phosphorus pentachloride the alcohol is transformed into ethylene dichloride (*Ann. Chim. Phys.* [3], **55**, 418).

From these facts the conclusion has been drawn that, by means of

hydrochloric acid, only one hydroxyl could be replaced by chlorine, and consequently that its functions were different from those of the second. As this view is still maintained in modern handbooks (Kolbe, *Org. Chem.*, 2nd Ed., by v. Meyer, **1**, 275), and as I could not agree with it, I set to work in order to settle this point.

The reason why, in the experiment of Wurtz, the reaction did not extend to the second hydroxyl is obvious; he did not use an excess of the acid, and had to repeat the above treatment several times before all the glycol was converted into the chlorhydrate. It seemed more than probable that by employing a larger proportion of the acid, ethylene dichloride would be formed. I therefore enclosed some glycol with an excess of fuming hydrochloric acid in a sealed tube, and heated in a steam-bath. After some time the clear liquid became turbid, and a heavy oily liquid separated out, the quantity increasing until its bulk was about equal to that of the glycol employed.

This oil being washed with water, and dried over potassium carbonate, boiled at 83—85°, and exhibited all the characteristic properties of ethylene dichloride.