NOTE.

The Formation of Trichloroacetic Acid from Perchloroethylene by Atmospheric Oxidation. By

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WHILE seeking means of stabilising perchloroethylene against atmospheric oxidation (J., 1939, 767), one of us observed that carbonyl chloride was not the sole primary oxidation product, since the hydrochloric acid and carbonic acid formed on hydrolysis of the carbonyl chloride were always accompanied by an acid whose titration value was about half that of the hydrochloric acid. Glass bottles (250 c.c.), each containing 10 c.c. of perchloroethylene and 0·2 c.c. of water, were exposed to sunlight for about 4 months. The contents were then shaken with water for about ½ hour to complete hydrolysis, and the aqueous extract was evaporated in an exhausted desiccator. The solution deposited crystals (about 2 g.), the properties and colour reactions of which agreed exactly with those of trichloroacetic acid as described by Ware (*Chemist and Druggist*, **1935**, **123**, 282). This was confirmed by titration (Found : *M*, 164·6. Calc. for $CCl_3{\cdot}CO_2H$; *M*, 163·4), and by esterification with ethyl alcohol. The ester, which had the characteristics of ethyl trichloroacetate, on treatment with aqueous ammonia deposited a sparingly soluble amide [m. p. 140·8° ; mixed m. p. with authentic trichloroacetamide (m. p. 141°) 141·0°].

Trichloroacetic acid has been observed when perchloroethylene is oxidised by peracetic acid (Prileshaeva and Prileshaev, *J. Gen. Chem. Russia*, **1939**, **9**, 1766), and it is possible that in our experiments the real oxidising agent may be ozone or hydrogen peroxide, formed under the action of sunlight.—TRINITY COLLEGE, DUBLIN. [*Received, December 2nd,* **1940**.]