LX.—*On Oxypropyltoluidine.*

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PROPYLENE oxide dissolves an equivalent quantity of paratoluidine, producing a fall of some 15° in temperature. The solution was heated in a water-bath for four hours, and the viscid liquid thus formed was submitted to distillation; it contained no propylene oxide, and only a drop or two of toluidine, but the thermometer rose rapidly to 280° , remained constant for some time at 285 — 288° , and finally reached the boiling point of mercury before the liquid had all passed over.

The portion boiling above 360° contains, no doubt, dioxypropylene-toluidine.

The chief portion (285 — 296°) solidified after some time, and was analysed after recrystallisation from a small quantity of benzene.

- I. $\cdot 268$ gram substance gave $0\cdot 7166$ gram CO_2 and $\cdot 2243$ gram H_2O .
 II. $\cdot 256$ gram gave $17\cdot 7$ c.c. N at 11° C., bar. press. 782 at 13° .

Whence	Calculated for oxypropyltoluidine.	Found.
C	72·73	72·92
H	9·09	9·30
N	8·48	8·39

The numbers agree therefore with the formula—

and the reaction may be represented by the equation—

A better yield is obtained by avoiding the use of heat, and simply allowing the solution of toluidine in propylene oxide to stand for some days at the ordinary temperature. The limpid liquid then becomes gradually viscid, and at length the new base crystallises out. It may be separated from the mother-liquor by filtration and pressure, and recrystallised from light petroleum oil, when it is obtained in the form of slender needles.

In this way 20 grams of the base were obtained from 46 grams of toluidine.

A third method consists in converting the bases into oxalates and separating them by crystallisation from water.

The oxalate of the new base is very soluble; that of toluidine is, as is well known, nearly insoluble, while other oxalates present have intermediate solubility.

Oxypropyltoluidine melts at 74° and boils with slight decomposition at 293° (corr.); it has not much tendency to become coloured when exposed to air; it is insoluble in water, but soluble in benzene, ether, alcohol, and petroleum.

I have not been able to obtain its chloride, sulphate, chloroplatinate, or chloroaurate in crystalline form.

If the base be dissolved in aqueous oxalic acid and the solution concentrated by evaporation, crystals of the oxalate are formed; these may be recrystallised from water or spirit, when they form pearly plates melting at 151° .

The analysis of these crystals gave the following result:—

- I. .2686 gram was decomposed by CaCl_2 and the calcic oxalate converted into lime by ignition, .059 gram CaO .
- II. .2495 gram gave as combustion .5176 CO_2 and .1558 gram H_2O .

	Calculated for $\text{C}_{10}\text{H}_{15}\text{NO}, \text{H}_2\text{C}_2\text{O}_4.$	Found.
C	56.47	56.58
H	6.67	6.94
$\text{H}_2\text{C}_2\text{O}_4$	35.29	35.29

The compound is therefore the acid oxalate of oxypropyltoluidine, and it appears to be the only one capable of existing, for if excess of base (2 mols.) be dissolved in spirit and mixed with an alcoholic solution of oxalic acid (1 mol.), the acid oxalate crystallises out first, and afterwards the free base separates in needles.

It is to be observed that the neutral oxalate of *p*-toluidine is not known.

When the oxalate is heated to 150° it melts, and then gives off water, carbonic oxide, and carbonic acid, and leaves a non-crystallisable syrup, which is only partly basic (soluble in aqueous oxalic acid); the insoluble part begins to boil at about 270°.

I had hoped to find among the products of this reaction a base of the formula $C_{10}H_{13}N$, formed from oxypropyltoluidine by dehydration, and possibly belonging to the quinoline series, but I have not succeeded in isolating such a base.

I will take this opportunity of describing the—

Distillation of Oxypropyltrimethylammonium Hydrate.

This base, which I have described elsewhere (this Journal, **38**, 877) resembles ordinary neurine in its behaviour when heated; it first froths up, giving off trimethylamine, then propylene-glycol and other liquids come over, and finally carbonic acid is evolved.

The products were passed, first into a cold tube, then through dilute hydric chloride, next through lime-water, and finally into bromine (which did not, however, absorb any olefine).

The platinum salt of trimethylamine obtained from the hydric chloride solution was ignited.

·3544 gram contained ·1314 gram platinum.

	Theory.	Found.
Pt	37·38	37·08

The chief portion of the liquid distillate is propylene-glycol, recognised by its boiling point, sweet taste, and miscibility with water, alcohol, and ether.

It is formed by the equation—

The propylene-glycol is, however, mixed with small quantities of volatile bases produced by secondary reactions, but of which I have not obtained sufficient for identification.