
The synthesis of this ester has been attempted in this laboratory by several methods, one of which, viz., the action of sodium ethoxide upon trimethylene dimalonic ester has now yielded the desired product b.p. 140-142°/1.1·5 mm. The formation of the desired cyclohexane ring by this method has been definitely established by hydrolysis and decarboxylation of the ester into cyclohexanone.

Recourse has also been taken to another method for the preparation of the desired di-ester from cyclohexanone-2:2:6:6-tetracarboxylic ester, b.p. 175°/2.3 mm. (pure product 30% yield) obtained by the action of carbonyl bromide upon the disodium derivative of trimethylene dimalonic ester. The tetra ester on being hydrolysed with alcoholic potash gives the corresponding tetra acid m.p. 246°, and is converted into cyclohexanone on being boiled with 50 per cent. sulphuric acid during 16 hours. The
conversion of this tetra ester into the required diacid is being tried under regulated conditions of hydrolysis and decarboxylation. This reaction being of very general applicability has been extended for the preparation of cyclopentanone and cyclobutanone tetracarboxylic esters by condensing ethylene and methylene dimalonic esters, respectively, with carbonyl bromide. The cyclopentanone tetra ester on drastic hydrolysis accompanied by decarboxylation has given cyclopentanone. It has been possible to raise the yield of ethyl butane tetracarboxylate from 15 to 65 per cent. by using magnesium amalgam instead of sodium.\(^1\)

The cyclohexanone-2:6-dicarboxylic ester and the corresponding cyclopentanone and cyclobutanone diesters with two active hydrogen atoms in 1:3-positions should, it is expected, form convenient starting materials for the synthesis of some interesting bicyclic terpenes.

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