INTRODUCTION

Investigations described in Section A are primarily concerned with the development of general methods for the synthesis of polycyclic aromatic hydrocarbons, tetra- or pentacyclic in nature. Importance of these compounds arose in connection with the carcinogenic property, associated with 3:4-benzpyrene and its derivatives and of the isolation of alkylated picenes from dehydrogenation of triterpenoids. The main piece of work has been planned and executed independently. The elegance of these methods lies in the fact that the requisite number of carbon atoms necessary for the building up of the polycyclic compounds, is made available in one synthetic step and that through the coupling of two components. These again are capable of wide variations, having different alkyl residues. The significant fact to be noted down here is that the idea of $\alpha$-alkylation of $\alpha,\beta$-unsaturated ketones has been freely used and this procedure constitutes now-a-days one of the most powerful tools in synthetic organic chemistry.

Section B. Part I deals with studies connected with a stereospecific synthesis of 1-methyl-8-hydroxydecalin-2-one and this compound can very well serve the B and C rings of the tetracyclic system, characteristic of steroids.

Part II consists of studies, somewhat exploratory in nature, with a view to developing methods for the synthesis of C$_{13}$-tricarboxylic acid, which has been isolated from the oxidation of bile acids by Wieland.
In conclusion it is my pleasant duty to place on record my grateful thanks to Prof. P.C. Dutta, D.Sc., Mr. P. Bagchi, M.S (Brooklyn) and to Dr. Usha Ranjan Ghatak, M.Sc., D.Phil., for their kind encouragement and valuable discussion during the course of investigations and these have enabled me to achieve this result.

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