PREFACE

In view of the acute shortage of maize starch which our Textile Industry is facing today, and of the general economic conditions which rule out possibility of any large scale import of it from other countries, vigorous attempts are being made to discover cheap and useful indigenous substitutes for maize starch. Gum exudates and a variety of seeds, which are abundant in our country, offer a promise in this respect. Tamarind kernel powder (T.K.Pr.) is an example of such a substitute which although has many advantages as a sizing material over maize starch, suffers from a very serious drawback of not being easily and efficiently removable from the fabric. The residual size may hamper the efficiency of subsequent chemical processes such as dyeing and printing. However, one may hope to minimise, if not completely eliminate, this drawback by suitable chemical modifications. T.K.Pr. is composed mainly of a polysaccharide, Tamarind Kernel Polysaccharide (T.K.P.), which is responsible for the characteristic sizing properties of T.K.Pr. Thus, a thorough understanding of the constitution of T.K.P. is essential before any chemical modifications can be envisaged.

In Part I of this thesis an attempt has been made to understand the constitution of T.K.P. by various methods used in the structural investigation of polysaccharides and, based on the results obtained, a new structure for the repeating unit of T.K.P. has been proposed.
Part II of the thesis is concerned with the development of improved methods of methylation. It is well known that methylation is one of the most important steps in the structural investigation of any polysaccharide. But as T.K.P. could not be completely methylated by any of the existing methods, certain modifications and improvements had to be introduced to these methods to achieve this goal.

To establish the versatility and superiority of the modified methods, a variety of carbohydrates have been methylated and the methylated products examined. The work presented here has already been published (see references 18, 19 and 20 in Part II of this thesis). Mention of one of the modified methods has been made in "Highlights of the Current Scientific Literature" Chemistry and Industry, 1964 (1963).