PREFACE

Productivity, accuracy and economy of a rolling mill depend on the proper production planning and successful operation of the rolling schedule. A proper roll-pass-design and its execution depends on spreading of material during rolling. Therefore, knowledge of metal flow in rolling is of great significance. The nature and degree of spreading is expected to depend on the size and shape of the work-stock.

The nature and degree of spreading are different for different materials. The magnitude of spreading is governed by various working parameters, but the ~~influence of~~ geometry of the deformation zone seems to influence it substantially. The other parameters which contribute towards the mechanism of spreading are rolling temperature, roll surface condition, composition of materials and strain rate etc. Therefore, for optimising the rolling process, it has been felt essential to explore the mechanism of spreading and the influence of deformation zone geometry on the deformation process.

An attempt has been made in this work to investigate the spreading and related mechanism in rolling of

steels. Experimental investigation in the area of steel rolling is expensive, laborious and difficult under industrial condition. It has been shown here that data from lead rolling (which is easier) can be used accurately to simulate hot rolling of steels. The inherent difficulties of experimentation of rolling can be further simplified and made reliable by adopting statistical design of experiments. This has been successfully visualised in this work.