CHAPTER 2

RESEARCH OBJECTIVES

2.1 INTRODUCTION

The principal objectives of the research described in this thesis were:-

(i) a study of the effect of the opening roller speed, rotor speed, yarn twist and count on the bending, buckling and compression behavior of rotor yarns spun from cotton fibers.

(ii) a study of yarn and processing factors on the friction and the abrasion resistance of cotton rotor spun yarns.

2.2 EXPERIMENTAL INVESTIGATION

2.2.1 EFFECT OF MACHINE AND YARN PARAMETERS ON THE LOW STRESS PROPERTIES OF COTTON YARNS

The approach in this study is to examine the yarns produced at different opening roller and rotor speeds, with different yarn counts and twist factors, and determine how these changes affect the bending, buckling and compression behavior of cotton rotor spun yarns.

A large number of papers discuss the changes in strength, fiber breakage, evenness and imperfections, but hardly any work has been done on the low stress aspects of yarn behaviour.

2.2.2 EFFECT OF MACHINE AND YARN PARAMETERS ON THE FRICTION AND ABRASION BEHAVIOUR OF COTTON YARNS

Friction and abrasion, the surface properties of yarns are investigated to determine if they are affected by the processing parameters. A survey of the literature reveals that very little work has been published on these areas.
2.2.3 EFFECT OF MACHINE AND YARN PARAMETERS ON THE WICKING 
BEHAVIOR OF COTTON YARNS

The studies so far conducted on wicking behavior discuss the effects of count and twist
only, and no work seems to have been carried out on the effect of the opening roller and rotor
speeds on the wicking behavior. Since there are considerable changes in the structure of rotor
yarns as these parameters change, a detailed investigation seems to be justified.

2.3 CONCLUSIONS

Despite a considerable body of available literature, a detailed investigation of the low stress
mechanical properties such as bending, longitudinal compression, buckling and lateral compres-
sion is warranted. Such an investigation should yield a more detailed and realistic understanding
of the role of the processing parameters in rotor spinning, and also of their interaction with yarn
parameters in deciding the various yarn properties.