PREFACE

Since the time of the enunciation of Darwin's theory of evolution, many similarities (both structural and functional) have been noted in diverse living species. Examples of such similarities are innumerable, and at a molecular level, the record starts with the haemoglobins, and has culminated in the final proof for the universality of the genetic code. Hence it is not out of place to look for similarities in enzymes catalysing the same reactions in a complex mammal (rabbit) and a unicellular system like the mold (*Aspergillus nidulans*). The choice fell on these organisms because of the various investigations made on these two organisms in our University Laboratories by groups of workers.

In a mammal like rabbit, where a perfect homeostatic mechanism is active maintaining the body temperature constant and above the atmospheric temperature, pyrogen induced fever (hyperthermic state) will lead to (a) biochemical changes increasing enzyme activity and releasing heat energy to raise the body or cellular temperature (b) making the resistance mechanism available in homeotherms to regulate the rise in temperature and (c) the inevitable heat denaturation of
sensitive and labile enzymes. The observations made are the net results of these contributing factors.

On the other hand in unicellular organism, the temperature of the cell corresponds to the culture or growth temperature and the biochemical changes in high temperature cultures are the net result of the inhibition of the enzyme biosynthesis (repression) and heat denaturation. In short, in rabbits and other homeotherms we may study the additive value of the cause and effect of the rise in cell temperature, while in molds we observe the effect of temperature. The differences in the two distinct observations are discussed in the light of the original observations and the available literature.

The results presented in the subsequent pages are a description of a few similarities encountered in the present investigations on the effect of temperature. There are certain pointers for the understanding of the cause of hyperthermia and its effect on the mammalian system and the author hopes that the work done by him is worthy of continued interest.