I. INTRODUCTION

In September 1962, the attention of the present investigator has been drawn to a serious complex fungal disease of Indian plum or Jujube trees (*Zizyphus mauritiana* Lamk. = *Zizyphus jujuba* Lamk.) growing in some of the private gardens of Calcutta and suburbs. About 15-20 per cent of 10-15 years old trees growing in mixed plantation are in a diseased condition. They appear unhealthy, their tops are poor, and they are in the process of dying. The situations are rather damp and heavily shaded. The suitable temperature* (maximum 34.4°C., minimum 22.8°C.), the dampness of the soil and high relative humidity* of the air (78%) are undoubtedly very favourable for fungal infection. After closer examination of the diseased trees it has been observed that the trees are badly deformed due to formation of destructive cankers in the older stout branches. Fructifications of two wood-rotting basidiomycetous fungi, viz., *Cornolopsis badia* (Berk.) Murr. (= *Trametes badia* Berk.) and *Favolus brasiliensis* Fr. have been found to be associated with these diseased plants. On the trunks, fructifications of *F. brasiliensis* have only been found to grow usually in clusters. From the cankers either fructifications of *C. badia* or those of *F. brasiliensis* have developed. They are have been found to be associated together. By subsequent field experiments it has been

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proved that these two fungi are capable of infecting healthy trees through wounds, under controlled conditions, eventually causing decay of the internal wood. This association of two pathogens has, thus, greatly increased the importance and complicated nature of the disease.

Though the causal organisms have been reported to occur in different parts of India for more than fifty years yet their activities as parasites on jujube trees have not so far been appreciated in this country. Since the economic importance of this plant as primarily a fruit and timber yielding one, it has been decided that informations concerning the causal organisms and the amount of damage to the trees caused by them are desirable. With this end in view the present study has been undertaken. At the present moment and within such a limited period it is difficult to make any assessment about the relative importance of the two fungi in causing the decay in living trees and the nature of interactions existing between them. The investigations of this nature will obviously require a prolonged period of study due to slow growth of the pathogens and their effects in the living trees. The data obtained so far have been presented in the following pages being based on studies in the laboratory as well as in private gardens.

The scope of the present investigation includes three main lines of inquiry, viz., (1) the pathogens and the host in relation
to external symptoms, gross characters of decay, microscopic details of the rotted structure, decay-resistance tests, microchemical tests, chemical changes in the decayed wood, toxicity tests, and oxidase tests, (ii) the pathogens in culture including their spore-germination, and effect of some physical and chemical environments on their growths, and (iii) inoculation experiments to prove the pathogenesis of the fungi under consideration.